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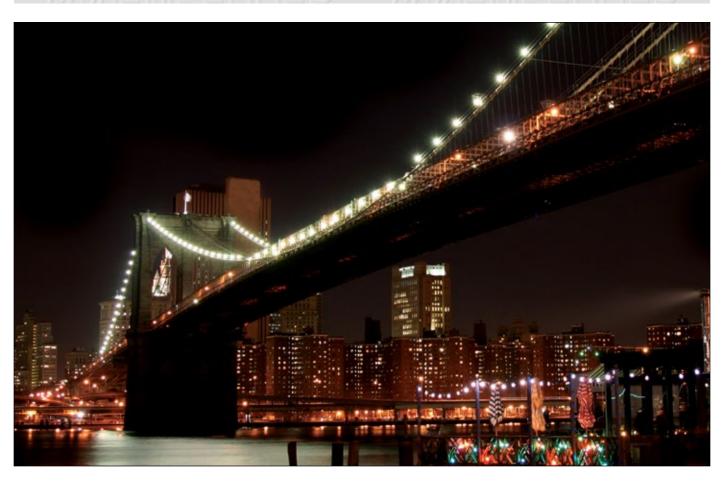
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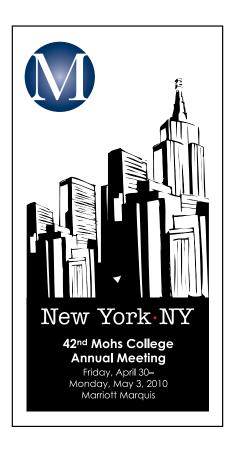
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ACUS American College of Mohs Surgery



Final Program

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New York

ACMS

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Désirée Ratner, MD, Chair

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Scientific Program Committee

Roberta D. Sengelmann, MD, Chair

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Fellowship Training Committee

Suzanne Olbricht, MD, Chair

Slide Review Committee

Glenn D. Goldstein, MD, Chair

NY

42nd American College of Mohs Surgery Annual Meeting

Welcome from the President



Dear ACMS Members and Colleagues,

On behalf of the ACMS Board of Directors, I welcome you to the Big Apple for the 42nd Annual Meeting of the American College of Mohs Surgery.

I hope you have been looking forward to this week as much as I have; to join the nearly 800 fellowship-trained skin cancer and reconstructive surgeons to learn, collaborate, and share with one another for the benefit of our patients. My sincere hope is that you are able to take much away from this meeting, which will resonate long after in your own practice.

I extend my sincere appreciation and gratitude to the Scientific Program Committee, headed by Chair, Dr. Roberta D. Sengelmann, who has put together an outstanding program that will highlight many relevant topics to enhance your practice skills in cutaneous oncology, Mohs micrographic surgery, and reconstruction. Special thanks go to the members of the Scientific Program Committee: Drs. Brett Coldiron, Leonard Dzubow, Tatyana Humphreys, and Ken Lee, for their dedication and contributions in planning this year's events.

In addition to an excellent program, the Exhibit Hall will provide information and extensive resources to benefit your practice. I strongly encourage you to take full advantage of the exhibitors' presence and visit them during their time here (Saturday, 10 am – 4 pm & Sunday, 10 am – 3 pm).

Aside from the opportunities available at our meeting for you to grow as a Mohs surgeon, take the time to explore New York City. Since it is dubbed the City that Never Sleeps, I'm sure you will not be at a loss for places to visit and experience.

I hope you enjoy your time here in New York City for what I believe will be another outstanding Annual Meeting of the American College of Mohs Surgery!

nane (Whitaker

Sincerely,

Duane C. Whitaker, MD **ACMS President**

New York · NY

Welcome from the Scientific Program Chair



Dear Colleagues/Friends,

I am pleased to present the educational program for the 2010 ACMS Annual Meeting. The program has been created in direct response to your feedback following last year's meeting to enhance your practice skills in Mohs surgery and cutaneous oncology, with special emphasis on dermatopathology and reconstructive surgery.

There are several new additions to this year's program. We have added a broader selection of morning mini-sessions which will be smaller and more intimate to encourage information exchange. The Research Abstract sessions will be held concurrently with morning mini-sessions on Friday and Saturday to offer a free-of-charge morning option. A new 2-appearance-per-speaker rule is in effect with the goal of encouraging new faces to take the podium diversifying our speaker draw. And, this year, ALL College members are invited to celebrate our newest members at the Fellows-in-Training Reception on Sunday evening from 4:30 – 6:30 pm in the Marquis ballroom (9th Floor). Come mingle and have a drink on us!

I am delighted to have Keynote Speaker, Dick Couch, Advisor to the Commander, US Special Operations Command, join us on Friday evening at 4:30 pm (Broadway ballroom) to deliver a poignant speech entitled "On the Eve of Battle: Taking & Saving Lives". Mr. Couch's talk will give us a chance to step back from our harried lives to think about the value and need for ethics in our society, and the role of ethics in our professional lives, whether we are in the business of taking lives, such as the military, or saving lives, as in the medical profession. Don't miss it!

Additionally, we are fortunate to have two distinguished guest speakers who will bring unique and valuable perspectives from longstanding relationships with Mohs surgeons. Dr. George W. Niedt, Assistant Professor of Dermatology and staff Dermatopathologist at Columbia, will team up with Dr. Désirée Ratner for the session entitled "Challenging Dermpath Cases from Columbia University Medical Center" on Friday from 2:00 – 3:00 pm (Broadway ballroom). This session was a hit at last year's meeting and will be sure to sharpen our diagnostic and management abilities. Then on Saturday from 11:30 am – 12:30 pm (Broadway ballroom), Dr. Allan C. Halpern, MSc, Chief of Dermatology and Co-Leader of the Melanoma Management Team at Memorial Sloan-Kettering Cancer Center, will bring us up-to-date on the latest melanoma news and research in his lecture entitled "Melanoma: New Developments." Drs. Niedt and Halpern will also be panelists at Tumor Board on Sunday from 9:00 – 10:30 am (Broadway ballroom).

A great big "THANK YOU" goes out to the Scientific Program Committee members: Ken Lee, Len Dzubow, Tanya Humphreys, Duane Whitaker, and Brett Coldiron. You have been an incredible sounding board and have shared so much of your time to make this program outstanding. I would have been stumped many times along the way without you and I definitely would not have enjoyed the process as much.

Lastly, thank you for being here. Your attendance/involvement in the Mohs College is the greatest contribution of all. It has been a busy and fun year working on this program and I sincerely hope you enjoy it!

Welcome to The Big Apple!

Sincerely,

Poludo 2

Roberta D. Sengelmann, MD

Chair, ACMS 2010 Scientific Program Committee

42nd American College of Mohs Surgery Annual Meeting

Program-at-a-Glance

Thursday, April 2	9	
3:30 – 6:30 pm	Speaker Ready Room	Gilbert; 4th Floor

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Friday, April 30	I				
6:00 am – 9:00 pm	Slide Library and Diagnostic Quality Control Self-Examination	Lyceum; 5th Floor			
6:00 am – 5:00 pm	Registration	5th Floor Registration Desk			
6:30 am – 5:00 pm	Speaker Ready Room	Gilbert; 4th Floor			
7:15 – 8:45 am	Research Abstract Session Please note: this session is being held concurrently with the below morning mini-sessions. It is free of charge with beverages provided.	Broadway; 6th Floor			
7:15 – 8:45 am	Concurrent Morning Mini-sessions:				
	103.1 Through & Through Nasal Defects	Odets; 4th Floor			
	103.2 EMR: What You Need to Know Now	Broadhurst; 5th Floor			
	103.3 The Art of Reconstructive Surgery—Over 60 Years of Combined Experience	Majestic; 6th Floor			
	103.4 Lab and Histopath Pearls & Pitfalls	Wilder; 4th Floor			
	103.5 Regional Reconstruction	Plymouth; 6th Floor			
	103.6 Update on the Role of Antibiotics in Cutaneous Surgery	Winter Garden; 6th Floor			
	103.7 Merkel Cell & Dermatofibrosarcoma Protuberans	Juilliard; 5th Floor			
	103.8 Approach to Reconstruction of the Scalp & Ear	Shubert; 6th Floor			
9:00 – 9:30 am	Opening Session: Dermatology Uncensored	Broadway; 6th Floor			
9:30 – 10:30 am	Reconstruction Videos	Broadway; 6th Floor			
10:30 – 10:45 am	Break	6th Floor Pre-Function			
10:45 – 11:45 am	Literature Review	Broadway; 6th Floor			
11:45 am – 1:00 pm	Networking Lunch (Lunch Provided)	Broadway; 6th Floor			
11:45 am – 1:00 pm	WDS Networking Luncheon	Wilder; 4th Floor			
1:00 – 2:00 pm	Complications: Prevention, Early Detection, & Management	Broadway; 6th Floor			
2:00 – 3:00 pm	Challenging Dermpath Cases from Columbia University Medical Center Guest Speaker: George W. Niedt, MD	Broadway; 6th Floor			
3:00 – 3:30 pm	Break	6th Floor Pre-function			
3:30 – 4:30 pm	Cost & Quality of Mohs Micrographic Surgery	Broadway; 6th Floor			
4:30 – 5:30 pm	Keynote Address – On the Eve of Battle: Taking & Saving Lives featuring Dick Couch, Advisor to the Commander, US Special Operations Command	Broadway; 6th Floor			
5:30 – 7:00 pm	Welcome Reception	Broadway Lounge; 8th Floor			

Program-at-a-**G**lance

Saturday, May 1				
6:00 am - 9:00 pm	Slide Library and Diagnostic Quality Control Self-Examination	Lyceum; 5th Floor		
6:30 am - 2:30 pm	Registration	5th Floor Registration Desl		
6:30 am - 2:30 pm	Speaker Ready Room	Gilbert; 4th Floor		
7:15 – 8:45 am	Research Abstract Session Please note: this session is being held concurrently with the below morning mini-sessions. It is free of charge with beverages provided.	Broadway; 6th Floor		
7:15 – 8:45 am	Concurrent Morning Mini-sessions:			
	203.1 Sebaceous Carcinoma & EMPD	Winter Garden; 6th Floor		
	203.2 Skin Grafting	Majestic; 6th Floor		
	203.3 Applying Aesthetic Principles to Mohs Reconstruction	Juilliard; 5th Floor		
	203.4 Reconstruction of Common Nasal Defects	Wilder; 4th Floor		
	203.5 Role of Radiation in Cutaneous Oncology	Odets; 4th Floor		
	203.6 Setting Up & Certifying a Mohs Lab	Broadhurst; 5th Floor		
	203.7 Non-surgical & Combination Therapy for Skin Cancer	Shubert; 6th Floor		
9:00 – 10:00 am	Conundrums on Mohs Frozen Sections	Broadway; 6th Floor		
10:00 – 11:00 am	Scar Revisions: Making Lemonade out of Surgical Lemons	Broadway; 6th Floor		
10:00 am – 4:00 pm	Exhibit Hall Open	Salons 3 & 4; 5th Floor		
11:00 – 11:30 am	Break; Visit the Exhibit Hall for Refreshments	Salons 3 & 4; 5th Floor		
11:30 am - 12:30 pm	Melanoma: New Developments Guest Speaker: Allan C. Halpern, MD, MSc	Broadway; 6th Floor		
12:30 – 2:30 pm	Clinical Pearls Abstract Session	Broadway; 6th Floor		
2:30 – 4:00 pm	Visit the Exhibit Hall	Salons 3&4; 5th Floor		
2:45 – 4:00 pm	Fellowship Training Directors' Session	Wilder; 4th Floor		

Consider More O				
Sunday, May 2				
6:00 am – 9:00 pm	Slide Library and Diagnostic Quality Control Self-Examination	Lyceum; 5th Floor		
6:30 am – 5:00 pm	Registration	5th Floor Registration Desk		
6:30 am – 5:00 pm	Speaker Ready Room	Gilbert; 4th Floor		
7:15 – 8:45 am	Concurrent Morning Mini-sessions:			
	304.1 Comprehensive & Concise Update of Melanoma	Odets; 4th Floor		
	304.2 Nail Tumors: Diagnosis & Treatment	Winter Garden; 6th Floor		
	304.3 Interpolation Flaps: Getting Started	Wilder; 4th Floor		
	304.4 Immunostains 101	Broadhurst; 5th Floor		
	304.5 Lower Extremity Reconstruction & Wound Healing	Shubert; 6th Floor		
	304.6 Periorbital Reconstruction: From Basic to Advanced	Majestic; 6th Floor		
	304.7 Practice Management: East vs. West Coast Strategies for Practice Growth During Uncertain Times	Juilliard; 5th Floor		
	304.8 Dermatologic Surgery Down Under: How We Do It	Plymouth; 6th Floor		
9:00 – 10:30 am	Tumor Board	Broadway; 6th Floor		
10:00 am – 3:00 pm	Exhibit Hall Open	Salons 3 & 4; 5th Floor		
10:30 – 11:00 am	Break; Visit the Exhibit Hall for Refreshments	Salons 3 & 4; 5th Floor		
11:00 am - 12:00 pm	Tromovitch Award Abstract Session	Broadway; 6th Floor		
12:00 – 2:00 pm	ACMS Annual Business Meeting and Lunch Non-Members: Lunch on your own	Broadway; 6th Floor		
2:00 – 3:00 pm	Coding for Mohs Surgery/Reconstruction	Broadway; 6th Floor		
3:00 – 4:15 pm	How Would You Reconstruct It?	Broadway; 6th Floor		
4:30 – 6:30 pm	Reception to Welcome Fellows-in-Training (All ACMS members encouraged to attend)	Marquis Ballroom; 9th Floor		

Program-at-a-Glance

Monday, May 3						
7:00 – 10:00 am	7:00 – 10:00 am Registration					
7:00 – 10:00 am	Speaker Ready Room	Gilbert; 4th Floor				
7:00 – 8:00 am	Diagnostic Quality Control Exam Review	Broadway; 6th Floor				
8:15 – 9:45 am	Practice Management of a Mohs Surgery Practice	Broadway; 6th Floor				
10:00 am - 12:00 pm	Reconstruction with the Masters	Broadway; 6th Floor				
12:00 pm	Meeting Adjourns					
	Drawing for free 2011 Annual Meeting registration, must be present to win!	Broadway; 6th Floor				



ecial Event for Friday, April 30

Keynote Speaker & Welcome Reception 4:30 – 7:00 pm

Don't miss this chance to relax and unwind with colleagues before an evening out in the Big Apple. Keynote speaker Dick Couch will begin the evening with a poignant speech for attendees entitled On the Eve of Battle: Taking & Saving Lives. Hors d'oeuvres and beverages will be provided for your enjoyment.

ACMS Annual Business Meeting & Lunch 12:00 – 2:00 pm; Broadway, 6th Floor

Mohs College members are encouraged to attend the annual membership business meeting and lunch. This important meeting brings members up-to-date on issues of significance. The winners of the Frederic E. Mohs Award and the Distinguished Service Award will be announced.

Fellows-in-Training Reception 4:30 – 6:30 pm; Marquis Ballroom 9th Floor

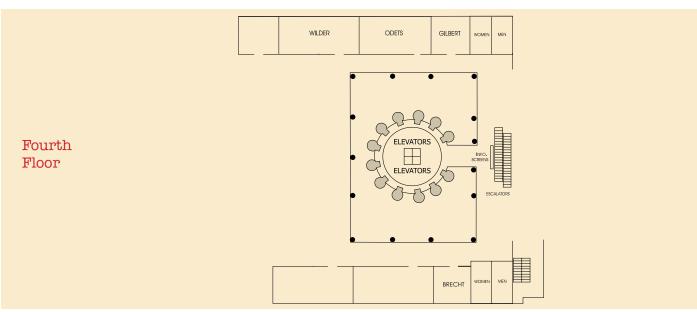
ACMS members are invited to attend. This event offers the opportunity for ACMS members to meet and congratulate members-to-be. The winner of the Tromovitch Award will be announced and hors d'oeuvres and beverages will be provided. Fellows-in-training and training directors should come prepared to introduce themselves to ACMS membership.

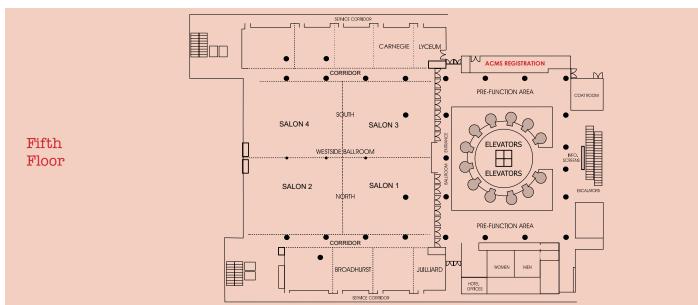
ent for Monday, May 3

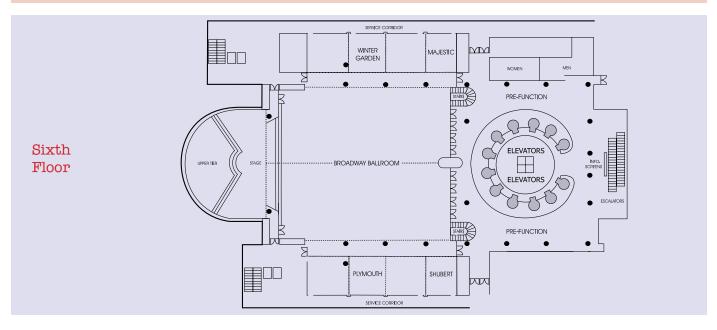
ACMS 2011 Annual Meeting Registration Drawing 12:00 pm; Broadway, 6th Floor

Following the Noon adjournment of the 2010 Annual Meeting, there will be a drawing, available to all present meeting attendees, for one participant to win FREE 2011 Annual Meeting registration.

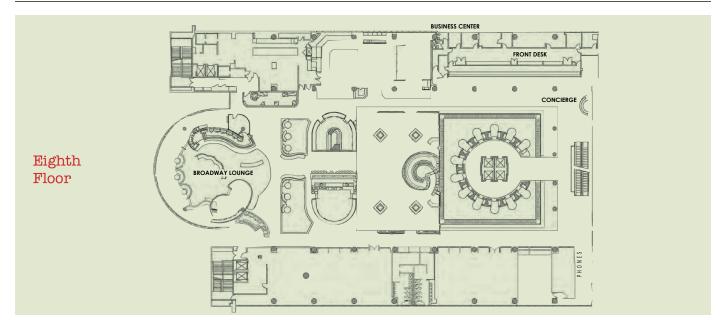
Marriott Marquis Tear-Out Floor Maps

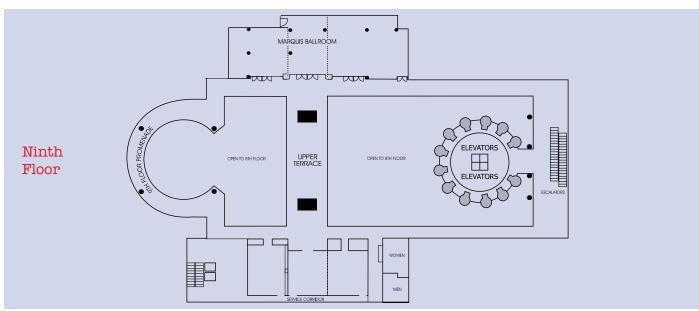






Marriott Marquis Tear-Out Floor Maps





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Murad Alam, MD John G. Albertini, MD Joseph Alcalay, MD John P. Arlette, MD, FRCPC Christopher J. Arpey, MD Philip L. Bailin, MD David S. Becker, MD Anthony V. Benedetto, DO Richard G. Bennett, MD Daniel Berg, MD Robert A. Buzzell, MD Roger I. Ceilley, MD Armand B. Cognetta, Jr., MD Brett M. Coldiron, MD, FACP Brian Cook, MD Joel Cook, MD Scott M. Dinehart, MD Heidi B. Donnelly, MD Raymond G. Dufresne, Jr., MD Yehuda D. Eliezri, MD Michael J. Fazio, MD Franklin P. Flowers, MD Scott W. Fosko, MD Algin B. Garrett, MD Roy G. Geronemus, MD Hugh M. Gloster, Jr., MD

David J. Goldberg, MD Leonard H. Goldberg, MD Glenn D. Goldman, MD Glenn D. Goldstein, MD Donald J. Grande, MD Steven S. Greenbaum, MD Hubert T. Greenway, Jr., MD Roy C. Grekin, MD C. William Hanke, MD George J. Hruza, MD Satori Iwamoto, MD, PhD S. Brian Jiang, MD Timothy M. Johnson, MD David E. Kent, MD Pearon G. Lang, Jr., MD Gary Lask, MD Naomi Lawrence, MD Susana M. Leal-Khouri, MD David J. Leffell, MD Deborah MacFarlane, MD Mary E. Maloney, MD Victor J. Marks, MD Michael W. McCall, MD J. Ramsey Mellette, Jr., MD Gary D. Monheit, MD Greg S. Morganroth, MD

Ronald L. Moy, MD Christian Murray, MD, BSC, FRCPC Peter B. Odland, MD Suzanne Olbricht, MD Ida F. Orengo, MD Robert D. Paver, MD Michael L. Ramsey, MD Désirée Ratner, MD Randall K. Roenigk, MD Thomas E. Rohrer, MD Paul J.M. Salmon, MD Daniel M. Siegel, MD Ronald J. Siegle, MD Stephen N. Snow, MD Thomas Stasko, MD Neil A. Swanson, MD R. Stan Taylor, III, MD Abel Torres, MD Carl Vinciullo, MD Carl V. Washington, Jr., MD J. Michael Wentzell, MD Phillip M. Williford, MD Nathalie C. Zeitouni, MD John A. Zitelli, MD David M. Zloty, MD



New York

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Keynote & Guest Speaker Biographies



Keynote Speaker: Dick Couch, Advisor to the Commander, US Special Operations Command

A 1967 graduate of the U.S. Naval Academy, Dick Couch served with the Navy Underwater Demolition and SEAL Teams. He led one of the only successful POW rescue operations of the Vietnam War, while a platoon leader with SEAL Team One in 1970.

On release from active duty in 1972, he joined the Central Intelligence Agency, where he served as a Maritime Operations Officer, from 1972–1976. He retired from the Naval Reserve in 1997 with the rank of captain. In addition to his military service, Mr. Couch spent 20 years as retail broker with Solomon Smith Barney. The focus of his business at SSB was the selection and ongoing monitoring of investment advisors for his client base.

Mr. Couch began his writing career in 1990 and has published six novels:

SEAL Team One (Avon, 1990)

Pressure Point (Putnam/Berkeley, 1992)

Silent Descent

(Putnam/Berkeley, 1994)

Rising Wind (Naval Institute Press, 1997) The Mercenary Option

(Pocket, 2003)

Covert Action (Pocket, 2005)

The Warrior Elite, his first nonfiction work, was published in 2001 by Crown Books. Subsequent nonfiction books include:

The U.S. Armed Forces Nuclear, Chemical, Biological Survival Manual (Basic Books, 2003, acting editor)

Down Range Navy SEAL Operations in the War on Terror (Crown, 2005) The Sheriff of Ramadi

Navy SEALS and the Winning of

al Anbar (NIP, 2008)

The Finishing School Earning the Navy SEAL Trident

(Crown Books, 2004)

Chosen Soldier

The Making of a Special Forces Warrior

(Crown, 2007)

A Tactical Ethic

Moral Conditioning for the Modern

Warrior (NIP, 2010)

Mr. Couch's work has been featured nationwide, in leading media outlets such as the Wall Street Journal, the New York Times, the Washington Post, the Boston Globe, the Seattle Post-Intelligencer, the Christian Science Monitor, Variety magazine, Booklist, Kirkus, and Library Journal. He has served as an analyst for FOX TV, MSNBC TV, and ABC radio during combat operations in Afghanistan and Iraq. He has also been featured on National Public Radio, "The O'Reilly Factor," "Hardball" with Chris Matthews, and the "NBC Nightly News" with Brian Williams. He often travels to the wartime theaters as an embed with American Special Operations Forces.

He has lectured at the Air Force Academy, the Naval Special Warfare Center, the JFK Special Forces Center and School, the FBI Academy, the Naval Postgraduate School, The Joint Special Operations University, and The Academy Leadership Forum on issues of character development, the Warrior Ethic, and counterinsurgency. Mr. Couch recently completed an assignment as an adjunct professor of ethics at the US Naval Academy. He is currently serving as the ethics advisor to the Commander, US Special Operations Command.

Mr. Couch and his wife Julia live in Ketchum, Idaho.

Mr. Couch will be speaking to meeting attendees as the Keynote Speaker of the 2010 Annual Meeting on Friday, April 30, at 4:30 pm in Broadway, on the 6th floor, during the session *On the Eve of Battle: Taking & Saving Lives*. He will speak on the topic of ethics, the need for ethics in our society, and the role of ethics in our professional lives, whether we are in the business of taking lives, as in the military, or saving a life, such as in the medical field.

Guest Speaker Biographies



Allan C. Halpern, MD, MSc

Allan C. Halpern, MD, MSc, is a board-certified internist and dermatologist with special expertise in skin cancer, particularly melanoma. He is Chief of Dermatology Service and Co-Leader of the Melanoma Disease Management Team at Memorial Sloan-Kettering Cancer Center in New York City.

Much of Dr. Halpern's clinical career has focused on the early detection and management of melanoma in high-risk individuals. To improve the early detection of melanoma, he has pioneered the use of whole-body photography to assist in the detection of changing moles in patients with dysplastic nevi and has been part of establishing a fully computerized digital imaging system to monitor moles in patients who have dysplastic nevi or a personal history of melanoma.

Dr. Halpern's research efforts are focused on epidemiologic studies of risk factors for developing melanoma and strategies for the prevention and early detection of this disease. Part of his research is an ongoing study of the genetic and environmental factors that influence the development of moles in children and adolescents. Another exciting area of his research involves the development of novel optical imaging techniques for the non-invasive diagnosis and management of skin cancer. These techniques include the use of automated computerized image analysis and non-invasive subsurface microscopy and are currently being developed in a research setting.

Dr. Halpern will bring us up-to-date on the latest news and research on melanoma to help us better manage our patients during the lectures *Melanoma*: New Developments on Saturday, May 1, from 11:30 am – 12:30 pm and as a panelist at *Tumor Board* on Sunday, May 2, from 9:00 – 10:30 am. Both sessions are located in Broadway.



William D. James, MD, FAAD

William D. James, MD, FAAD, currently serves as Director of Residency Program, Paul R. Gross Professor, and Vice Chair of the Department of Dermatology at the University of Pennsylvania. He is also the President-Elect of the American Academy of Dermatology (AAD).

Dr. James will be providing the College membership with an update on the challenges and opportunities that the ACMS and AAD will face in the coming year during the *Opening Session* on Friday, April 30, from 9:00 – 9:30 am located in Broadway.



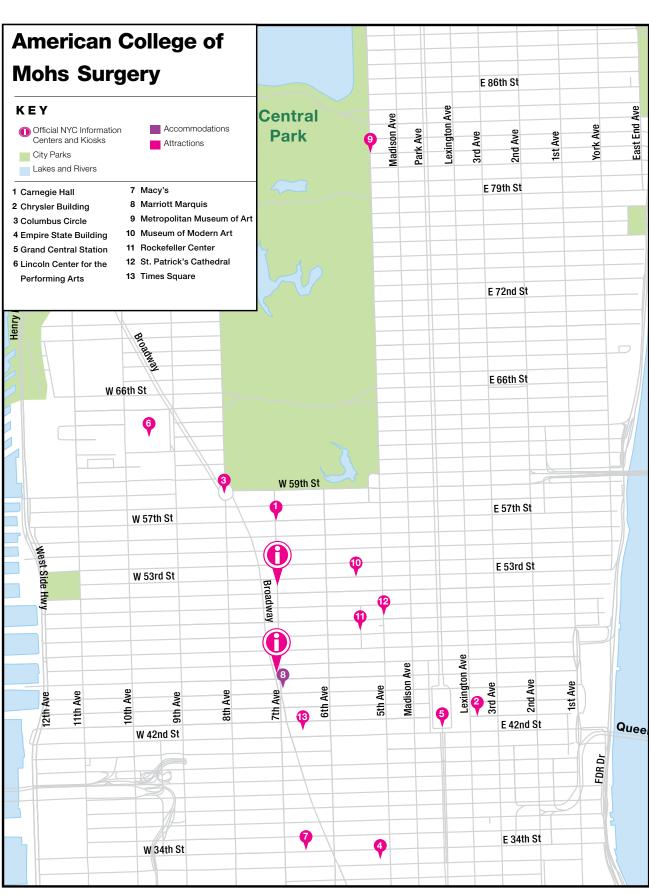
George W. Niedt, MD

George W. Niedt, MD, board certified in Dermatopathology, Anatomic Pathology, and Cytopathology, currently serves as Assistant Professor of Clinical Dermatology at Columbia University Medical Center. Prior to joining the faculty at Columbia University Medical Center as an Assistant Professor of Pathology in Dermatology in 2002, Dr. Niedt was the director of Dermatopathology at Quest Diagnostics from 1995 -1999, and Assistant Laboratory Director at Dermpath, Inc.

Dr. Niedt is one of four dermatopathologists at Columbia University Medical Center. He lectures dermatology and pathology residents from Columbia University and St. Luke's Roosevelt Medical Centers. He recently was awarded teacher of the year by St. Luke's Roosevelt residents.

Dr. Niedt will share his insights and experience with a focus on clinical relevance and management in his session with Dr. Ratner entitled Challenging Dermpath Cases from Columbia University Medical Center on Friday, April 30, from 2:00 – 3:00 pm and as a panelist at Tumor Board on Sunday, May 2, from 9:00 – 10:30 am. Both sessions are located in Broadway.

NYC Map & Attractions



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Invited Faculty and Guest Speakers

Sumaira Z. Aasi, New Haven, CT Murad Alam, Chicago, IL John G. Albertini, Greensboro, NC Michael J. Albom, New York, NY Shawn Allen, Boulder, CO Stephen D. Antrobus, Baton Rouge, LA Anna A. Bar, Portland, OR Mark F. Baucom, Atlanta, GA Christian L. Baum, Iowa City, IA Ashish Bhatia, Chicago, IL Christopher K. Bichakjian, Ann Arbor, MI

Elizabeth M. Billingsley, Hershey, PA Jeremy S. Bordeaux,

Shaker Heights, OH Jerry D. Brewer, Rochester, MN Gregory M. Bricca, Roseville, CA David G. Brodland, Pittsburgh, PA Clarence W. Brown, Jr., St. Joseph, MI Marc D. Brown, Rochester, NY Tracy M. Campbell, Sacramento, CA John A. Carucci, New York, NY Suephy Chen, Atlanta, GA Leslie J. Christenson, Ames, IA Vinh Q. Chung, Colorado Springs, CO Brett M. Coldiron, Cincinnati, OH Michael B. Colgan, Rochester, MN **Siobhan C. Collins, Farmington, CT** Jeremy Cook, Minneapolis, MN Joel Cook, Charleston, SC Jonathan L. Cook, Durham, NC Dick Couch, Ketchum, ID Bryce J. Cowan, Vancouver, BC Natalie M. Curcio, Nashville, TN James R. DeBloom, II, Greenville, SC

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Bart T. Endrizzi, Minneapolis, MN
Mary F. Farley, Annapolis, MD
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Zoran Gaspar, Brisbane Queensland, Australia

David E. Geist, Worcester, MA
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Glenn D. Goldman, Burlington, VT
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Burlington, MA

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Larisa Ravitskiy, Columbus, OH
Theresa L. Ray, St. Louis Park, MN
Saadia T. Raza, Chesterfield, MO
Kavitha K. Reddy, Boston, MA
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Howard W. Rogers, Norwich, CT
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Paul J.M. Salmon, Bayfair,
New Zealand

Roberta D. Sengelmann, Santa Barbara, CA

Joshua Spanogle, Rochester, MN James M. Spencer, St. Petersburg, FL Leslie Storey, Loma Linda, CA John Starling, III, Cincinnati, OH John M. Strasswimmer,

Delray Beach, FL

Ernest Tan, South Perth, Australia

Tina Tarantola, Rochester, MN

Valencia D. Thomas, Houston, TX

Emily P. Tierney, Boston, MA

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Yang Xia, La Jolla, CA
Yaohui G. Xu, Madison, WI
Summer Youker, Sacramento, CA
Siegrid Yu, San Francisco, CA
Priya Zeikus, Sherman, TX
Isaac Zilinsky, Tel-Hashomer, Israel
John A. Zitelli, Pittsburgh, PA
Fiona O'Reilly Zwald, Atlanta, GA

CME Information

This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of the Institute for the Advancement of Human Behavior (IAHB) and the American College of Mohs Surgery. The IAHB is accredited by the ACCME to provide continuing medical education for physicians.

The IAHB designates this educational activity for a maximum of 24.25 AMA PRA Category 1 Credit(s) $^{\text{TM}}$. Physicians should only claim credit commensurate with the extent of their participation in the activity.

The American College of Mohs Surgery Annual Meeting (Program #197100) is recognized by the American Academy of Dermatology for 24.25 AAD Recognized Category 1 CME Credit(s) and may be used toward the American Academy of Dermatology's Continuing Medical Education Award.

AAD members should self-report their AAD recognized Category 1 Credits via the AAD Online Transcript Program.

Physician Assistant Credit

The American Academy of Physician Assistants accepts AMA PRA Category 1 Credit(s) ™ from organizations accredited by the ACCME. Physician Assistants attending the Annual Meeting can submit certificates or transcripts showing how many physician CME credits were offered for an activity to the American Association of Physician Assistants and get them "converted" to PA CME credit.**

** Doctors earn AMA PRA Category 1 Credits from CME activities. The AAPA also grants and counts Category 1 CME credits, but those are specifically for PAs and have to come from a provider accredited by the AAPA. Both groups label their credits Category 1 CME, but the labels, though they read the same, refer to different evaluations.

Disclosure of Faculty Financial Affiliations

To comply with the Accreditation Council for Continuing Medical Education (ACCME) Standards of Commercial Support on the need for disclosure and monitoring of proprietary and financial interests that may affect the scientific integrity and balance of content delivered in continuing medical education activities under our auspices, the American College of Mohs Surgery will disclose faculty and commercial relationships at the Annual Meeting.

Disclosure of Discussion of Non-FDA Approved Uses for Pharmaceutical Products and/or Medical Devices

The ACCME requires that all faculty presenters identify and disclose any off-label uses for pharmaceutical and medical device products. The American College of Mohs Surgery recommends that each physician fully review all the available data on new products or procedures prior to instituting them with patients.

Disclaimer

The views expressed and the techniques presented by the speakers of the ACMS-sponsored educational meetings are not necessarily shared or endorsed by the organization. Speakers are required to disclose all relevant conflicts of interest and any unapproved or offlabel uses of medical devices or pharmaceutical agents that they discuss, describe, or demonstrate during their presentations.

Meeting attendees should use their independent judgment in applying the information discussed in these educational sessions in the treatment of patients. Handout materials are prepared and submitted for distribution by the presenters, who are solely responsible for its content.

We are going paperless, claim your CME only online!

To get your certificate, visit www.CmeCertificateOnline.com.

Locate the American College of Mohs Surgery listing and select the "42nd Annual Meeting" event. On the site, you will be asked to enter a password which is Mohs10, evaluate various aspects of the program (participants must complete an attendance/ evaluation form in order to receive a certificate of completion/attendance. Your chosen sessions must be attended in their entirety. Partial credit of individual sessions is not available). Your hours will be automatically calculated.

You may then print your certificate immediately (encouraged), anywhere you have internet access. No more waiting for the mail! A copy of the certificate will also be emailed to you in case you need to print additional copies (check your spam filter and junk email folder if you do not see it come through). The emailed copy is simply a backup if you didn't print it right away.

IMPORTANT!

The online certificate site <u>will be available May 2, 2010 through June 11, 2010. After that date, the site will be removed and certificates will no longer be available.</u> If you need a CME / CE certificate, you must complete the evaluation and certificate process prior to that date; otherwise you will forfeit your credit for the course.

Please direct any questions regarding the process to: Jillian Davis JDavis@smithbucklin.com; (651) 789-3722

AM

Learning Objectives

Upon completion of the Annual Meeting, participants will be able to describe the latest advances in the treatment of skin cancer, discuss recent research findings in the area of Mohs micrographic surgery and cutaneous oncology, and explain new techniques in reconstruction that promote optimal surgical outcomes.

The specific learning objectives, upon completion of the ACMS Annual Meeting include, but are not limited to:

- Describe various research projects being pursued within the areas of Mohs surgery, cutaneous oncology, and reconstruction.
- Identify controversial practices in the field of Mohs surgery and cutaneous oncology and explain both arguments for and against particular techniques.
- Describe the correct and/or ethical way to bill for Mohs surgery, reconstruction, and other dermatologic surgery procedures in real clinical situations.
- Discuss novel techniques for repair of surgical defects of the nose, ears, lips, eyes, scalp, and extremities.
- Discuss the principles and limitations of MR, CT, and US as applied to non-melanoma skin cancer.
- Discuss various ways to reconstruct specific surgical defects for optimal cosmetic and functional results.
- Discuss the optimal management of unusual and difficult tumors.
- Approach nail surgery with a greater understanding of anatomy and principles of anesthesia and techniques to achieve excellent surgical exposure, including novel plate avulsion techniques, nail fold reflection, and methods to obtain a bloodless field.
- Get to know the different laser and non-laser devices available on the market and understand how to use lasers in your practice as an adjunct to Mohs surgery.
- Apply new practice management pearls to ones practice.
- More accurately diagnose skin cancers.
- Understand the latest advances in management of various skin cancers including melanoma, EMPD, DFSP, BCC, SCC, and less common tumors.



Faculty Disclosure Information

Interest Disclosures

As an organization accredited by the ACCME to sponsor continuing medical education activities, Amedoo is required to disclose any real or apparent conflicts of interest (COI) that any speakers may have related to the content of their presentations.

IAHB requires that each speaker participating in a program designated for AMA Physician's Recognition Award Category 1 Credit disclose any financial interest/arrangement or affiliation with a corporate organization that may impact on his/her presentation (i.e. grants, research support, honoraria, member of speakers' bureau, consultant, major stock shareholder, etc.). In addition, the faculty member must disclose when an unlabeled use of a commercial product or an investigational use not yet approved for any purpose is discussed during the educational activity.

No Interests to Disclose:

Sumaira Z. Aasi, MD Murad Alam, MD John G. Albertini, MD Michael J. Albom, MD Shawn Allen, MD Stephen D. Antrobus, MD Anna A. Bar, MD Mark F. Baucom, MD Christian L. Baum, MD Ashish Bhatia, MD Christopher K. Bichakjian, MD Elizabeth M. Billingsley, MD Jeremy S. Bordeaux, MD Jerry D. Brewer, MD Gregory M. Bricca, MD David G. Brodland, MD Clarence W. Brown, Jr., MD Marc D. Brown, MD Tracy M. Campbell, MD John A. Carucci, MD, PhD Leslie J. Christenson, MD Suephy Chen, MD, MPH Vinh Q. Chung, MD Brett M. Coldiron, MD, FACP Michael B. Colgan, MD Siobhan C. Collins, MD Jeremy Cook, MD Joel Cook, MD Jonathan L. Cook, MD Bryce J. Cowan, MD Natalie M. Curcio, MD, MPH James R. DeBloom, II, MD Leonard M. Dzubow, MD Peggy Eiden, CSC, CCS-P Daniel B. Eisen, MD Timothy G. Elliott, MD Bart T. Endrizzi, MD, PhD Mary F. Farley, MD Edgar F. Fincher, MD, PhD Galen H. Fisher, MD Jorge A. Garcia-Zuazaga, MD, MS Zoran Gaspar, MD David E. Geist, MD Montgomery O. Gillard, MD Jason D. Givan, MD Julie Gladsjo, MD, PhD

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Faculty Disclosure Information

Interests to Disclose/COI/Bias Resolved*:

Ali Hendi, MD Financial Support – Tiemann Surgical Jennifer L. Linder, MD Speaker's Bureau – Sanofi-Aventis

Speaker's Bureau – Allergan Speaker's Bureau – Medicis Major Stockholder - PCA SKIN

James M. Spencer, MD Grant/Research Support – Graceway Pharmaceuticals

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YN

M

Scientific Program – Friday, April 30

6:00 am - 9:00 pm

Slide Library and Diagnostic Quality Control Self-Examination

Lyceum

7:15 - 8:45 am

Research Abstract Session

Broadway

At the conclusion of this session, participants should be able to understand and identify new research developments in Mohs surgery and oncology. Anna A. Bar, MD; John A. Carucci, MD, PhD

7:17 - 7:25 am

A Concordance Study Comparing Histology Reports from Permanent Sections and Frozen Sections for Staged Surgical Excisions for Lentigo Maligna

Cort McCaughey³; Mark Hyde, MMS, PA-C¹; Scott Florell, MD²; Anneli Bowen, MD²; Glen M. Bowen, MD^{1, 2}

1. Melanoma and Cutaneous Oncology, Huntsman Cancer Institute at the University of Utah, Salt Lake City, UT, United States 2. Department of Dermatology, University of Utah, Salt Lake City, UT, United States 3. School of Medicine, University of Utah, Salt Lake City, UT, United States

7:25 - 7:33 am

Cost-effectiveness of Non-melanoma Skin Cancers Treated with Mohs Micrographic Surgery versus Traditional Surgical Excision with Permanent Sections and Excision with Intraoperative Frozen Sections

Kavitha K. Reddy, MD¹; Emily P. Tierney, MD¹; Alexa B. Kimball, MD, MPH²; C. William Hanke, MD³

1. Dermatology, Boston University School of Medicine, Boston, MA, United States 2. Dermatology, Harvard Medical School, Boston, MA, United States 3. Laser and Skin Surgery Center of Indiana, Carmel, IN, United States

7:33 - 7:41 am

Mortality Due to Skin Cancer after First and Second Renal Transplants

Natalie M. Curcio, MD, MPH 1 ; Li Wang, MS 2 ; Thomas Stasko, MD 1

1. Dermatology, Vanderbilt University, Nashville, TN, United States 2. Biostatistics, Vanderbilt University, Nashville, TN, United States

7:41 - 7:49 am

Incidence Estimate of Non-melanoma Skin Cancer in the United States, 2006

Howard W. Rogers, MD, PhD¹; Martin Weinstock, MD, PhD²; Ashlynne Harris, MSIV²; Michael Hinckley, MD³; Steven Feldman, MD, PhD³; Alan B. Fleischer, Jr., MD³; Brett M. Coldiron, MD, FACP⁴

1. Advanced Dermatology, Norwich, CT, United States 2. Brown Medical School, Providence, RI, United States 3. Wake Forest University School of Medicine, Winston-Salem, NC, United States 4. University of Cincinnati Hospital, Cincinnati, OH, United States

7:49 - 7:57 am

Risk of Second Primary Malignancies Following Cutaneous Melanoma Diagnosis: A Populationbased Study

Joshua Spanogle, MD^{1,2}; Christina Clarke, PhD, MPH³; Sarah Aroner³; Susan M. Swetter, MD^{1,4}

1. Dermatology, Stanford University Medical Center, Stanford, CA, United States 2. Dermatology, Mayo Clinic, Rochester, MN, United States 3. Northern California Cancer Center, Fremont, CA, United States 4. Veterans Affairs Palo Alto Health Care System, Palo Alto, CA, United States

7:57 - 8:05 am

Treatment of Surgical Scars with the 595nm
Pulsed Dye Laser Using Purpuric and Nonpurpuric
Parameters: A Comparative Study

Julie Gladsjo, MD, PhD; Shang I.B. Jiang, MD Medicine (Dermatology), UC San Diego, San Diego, CA, United States

8:05 - 8:13 am

Mohs Micrographic Surgery for the Treatment of Cutaneous Lymphadenoma

Allison M. Hanlon, MD, PhD¹; Anna S. Clayton, MD¹; Brent R. Moody, MD²; Thomas Stasko, MD¹

1. Dermatology, Vanderbilt University, Nashville, TN, United States 2. Skin Cancer and Surgery Center, Nashville, TN, United States

8:13 - 8:21 am

The Routine Use of Adjuvant Cytokeratin Immunostaining in Mohs Micrographic Surgery for Non-melanoma Skin Cancer

Jason Litak, MD; Jeffrey Altman, MD; Heydar Karimi, PhD; Lady C. Dy, MD

Dermatology, Rush University Medical Center, Chicago, IL, United States

8:21 - 8:29 am

Prospective Study of Wound Infections in Mohs Micrographic Surgery Using Clean Surgical Technique in the Absence of Prophylactic Antibiotics

Heather D. Rogers, MD¹; Edward B. Desciak, MD²; Rebecca Marcus, MD²; Shuang Wang, PhD³; Julian MacKay-Wiggan, MD, MS²; Yehuda D. Eliezri, MD²

1. Medicine, University of Washington School of Medicine, Seattle, WA, United States 2. Dermatology, Columbia University Medical Center, New York, NY, United States 3. Biostatistics, Columbia University Medical Center, New York, NY, United States

8:29 - 8:37 am

Post-operative Lower Leg Wound Infections Following Mohs Micrographic Surgery: A Comparison of Incidence Rates Pre- and Postimplementation of a Clinical Care Protocol

Jason D. Givan, MD; Dori Goldberg, MD; David E. Geist, MD; Mary E. Maloney, MD

Dermatology, University of Massachusetts, Worcester, MA, United States

Shubert

Scientific Program - Friday, April 30

7:15 - 8:45 am

Concurrent Morning Mini-sessions

103.1 Through & Through Nasal Defects

Odets

At the conclusion of this session, participants should be able to:

- Understand the basic challenges and goals for reconstruction of full thickness nasal defects;
- Develop a reconstruction strategy for the restoration of lost structure including mucosal resurfacing or repair, cartilage support, and flap or graft coverage of the surface defect.

Mark F. Baucom, MD; Steven M. Rotter, MD

103.2 EMR: What You Need to Know Now

Broadhurst

At the conclusion of this session, participants should be able to:

- Understand upcoming government regulations regarding EMR;
- Understand upcoming inceptive programs related to EMR:
- Understand how to avoid medical-legal pitfalls involving EMR;
- 4) Make more informed decisions when choosing an appropriate EMR.

Ashish Bhatia, MD; Saadia T. Raza, MD

103.3 The Art of Reconstructive Surgery—Over 60 Years of Combined Experience

Majestic

At the conclusion of this session, participants should be able to:

- 1) Understand the important principles of reconstructive surgery;
- Evaluate and choose the optimum repair for any given Mohs wound;
- 3) Assess and manage the cases where complications develop.

Michael J. Albom, MD; J. Ramsey Mellette, Jr., MD

103.4 Lab and Histopath Pearls & Pitfalls

Wilder

At the conclusion of this session, participants should be able to:

- Review the histopathologic features of both common and rare cutaneous malianancies;
- Identify common pitfalls encountered in the evaluation of frozen sections;
- 3) Discuss various subtleties of tumor evaluation on frozen sections.

Deborah MacFarlane, MD; Valencia D. Thomas, MD

103.5 Regional Reconstruction

Plymouth

At the conclusion of this session, participants should be able to:

- Learn different approaches to reconstruct defects on different regions on the face;
- Learn how to avoid distortion of facial free margins (brow, lid, alar, rim, lips) during facial reconstruction surgery;
- 3) Learn various surgical pearls that can enhance your outcomes after surgery.

Ali Hendi, MD; Isaac M. Neuhaus, MD

103.6 Update on the Role of Antibiotics in Cutaneous Surgery W

Winter Garden

At the conclusion of this session, participants should be able to:

- Discuss the rationale and controversies surrounding the use of antibiotics prophylaxis in dermatologic surgery;
- Discuss the role of antibiotic resistance and its relevance to our use of antibiotics in dermatology;
- Review the current guidelines for the use and choice of antibiotics in postoperative wound infections.

Margaret Mann, MD; Michel A. McDonald, MD

103.7 Merkel Cell &

Dermatofibrosarcoma Protuberans Juilliard

At the conclusion of this session, participants should be able to:

- Identify when and how to complete a systemic work-up for Merkel cell carcinoma and dermatofibrosarcoma protuberans;
- Identify pitfalls in the management of Merkel cell carcinoma and dermatofibrosarcoma protuberans;
- Understand current data in the management and outcomes of Merkel cell carcinoma and dermatofibrosarcoma protuberans.

Christopher K. Bichakjian, MD; Leslie J. Christenson, MD

103.8 Approach to Reconstruction of the Scalp & Ear

At the conclusion of this session, participants should be able to:

- 1) Have an improved understanding of the surgical anatomy of the ear and scalp;
- Review multiple reconstructive options for both simple and complex wound defects;
- 3) Incorporate new techniques to improve reconstructive outcomes.

Edgar F. Fincher, MD; Todd E. Holmes, MD

Z

York

American College of Mohs Surgery Annual Meeting

Scientific Program - Friday, April 30

9:00 - 9:30 am

Opening Session:

Broadway Dermatology Uncensored

At the conclusion of this session, participants should be able to:

- 1) Provide a comprehensive view of Mohs surgery as practiced in the current modern setting and discuss the critical role this specialty has within Dermatology and broader health care for Americans:
- 2) Discuss the role of Mohs surgery and reconstruction with reference to its important impact on retaining good overall health in the population we serve.
- 3) Understand the challenges and opportunities that the ACMS and AAD will face in the coming year.

Duane C. Whitaker, MD

Guest Speaker - William D. James, MD, FAAD, AAD President-Elect (page 13)

9:30 - 10:30 am

Reconstruction Videos Broadway

At the conclusion of this session, participants should:

- 1) Understand basic and advanced reconstructive techniques currently being used after Mohs surgery;
- 2) Understand pitfalls of various reconstructive techniques;
- 3) Understand how to prevent and deal with complications that can occur after reconstructive techniques.

Moderators: David J. Goldberg, MD; Kavita Mariwalla, MD

Panelists: James R. DeBloom, II, MD; Stanley J. Miller, MD; Melissa Pugliano-Mauro, MD; Leslie Storey, MD

10:30 - 10:45 am

Break

10:45 - 11:45 am

Literature Review Broadway

> At the conclusion of this session, participants should be able to:

- 1) Critically evaluate the most important recent literature in dermatologic surgery and cutaneous reconstruction;
- 2) Summarize the latest advances and techniques being used for dermatologic surgery and cutaneous reconstruction by Mohs surgeons and plastic surgeons;
- 3) Use peer-reviewed literature to improve your surgical practice.

Moderators: Michael Murphy, MD; Summer Youker, MD

10:46 - 10:58 am

Update in Dermatologic Surgery Literature

Carl Vinciullo, MD

10:58 - 11:10 am

Update in Plastic Surgery Literature

Daniel B. Eisen, MD

11:15 - 11:27 am

Update in Oculoplastic Surgery Literature

Stanley J. Miller, MD

11:27 - 11:39 am

Update in Facial Plastic Surgery Literature

Elizabeth M. Billingsley, MD

11:45 am - 1:00 pm

Networking Lunch (provided)

Enjoy lunch and the time to network with your colleagues.

WDS Networking Luncheon

Wilder

Broadway

1:00 - 2:00 pm

Complications: Prevention, Early

Detection, & Management Broadway

At the conclusion of this session, participants should be able to:

- 1) Promptly recognize acute and subacute complications following reconstruction;
- 2) Develop the best strategies for the management of these complications;
- 3) Understand the risk factors and how to prevent surgical complications.

Moderators: Hugh M. Gloster, Jr., MD; Tatyana R. Humphreys, MD

1:00 - 1:10 pm

Bleeding & Infection

Mary F. Farley, MD

1:10 - 1:20 pm

Periocular Complications

Ann G. Neff, MD

1:20 - 1:30 pm

Free Margin Distortion of the Nose & Lips

Sumaira Z. Aasi, MD

1:30 - 1:40 pm

Nasal Valve Compromise

Timothy S. Wang, MD

1:40 - 1:50 pm

Nerve Injury

Shawn Allen, MD

2:00 - 3:00 pm

Challenging Dermpath Cases from

Columbia University Medical Center

At the conclusion of this session, participants should be able to:

- 1) Identify tumors at unusually high risk of aggressive clinical behavior:
- 2) Discuss unconventional approaches to the treatment of high risk skin malignancies;
- 3) Appreciate the need for multidisciplinary management of selected high risk skin cancers.

Moderator: Désirée Ratner, MD

Guest Speaker - George W. Niedt, MD, Dermatopathologist, Columbia University Medical Center (page 13)

Scientific Program - Friday, April 30

3:00 - 3:30 pm

Break

6th Floor Pre-function

3:30 - 4:30 pm

Cost & Quality of Mohs

Micrographic Surgery

Broadway

At the conclusion of this session, participants should be able to:

- Understand the evidence-based rationale for Mohs surgery as a cost-effective procedure in the context of health reform;
- Understand the literature supporting Mohs surgery and the effects on quality of life and patient satisfaction:
- Understand future research efforts needed from ACMS members to expand the literature on costeffectiveness and quality of life.

Moderators: Aaron K. Joseph, MD; John A. Zitelli, MD

What is the Rationale for the Widespread Use and Acceptance of MMS?

David G. Brodland, MD

What is the Current State of Mohs Surgery Costeffectiveness Research and What Evidence Supports Mohs Surgery Vs. Other Treatments for Skin Cancer?

Howard W. Rogers, MD, PhD

Introduction to Cost-effectiveness Research for Dermatologic Surgery and Future Strategies for Cost-effectiveness Research by the ACMS

Suephy Chen, MD, MPH

4:30 - 5:30 pm

Keynote Address

Broadway

Dick Couch, Advisor to the Commander, US Special Operations Command will deliver the keynote address—On the Eve of Battle: Taking & Saving Lives.

5:30 - 7:00 pm

Welcome Reception Broadway Lounge; 8th Floor Hors d'oeuvres and beverages will be provided.

Saturday, May 1

6:00 am - 9:00 pm

Slide Library and Diagnostic
Quality Control Self-Examination

Lyceum

7:15 - 8:45 am

Research Abstract Session Broadway

At the conclusion of this session, participants should be able to understand and identify new research developments in Mohs surgery and oncology. Mary E. Maloney, MD; P. Kim Phillips, MD

7:17 - 7:25 am

Resident Training in Mohs Micrographic Surgery and Procedural Dermatology: A Survey Assessing the Residents' Role and Perceptions

Erica H. Lee, MD¹; Kishwer S. Nehal, MD¹; Stephen W. Dusza, MPH¹; Elizabeth K. Hale, MD³; Vicki J. Levine, MD²

1. Dermatology Service, Memorial Sloan-Kettering Cancer Center, New York, NY, United States 2. Dermatology, New York University Langone Medical Center, New York, NY, United States 3. Laser & Skin Surgery Center of New York, New York, NY, United States

7:25 - 7:33 am

A Novel Interactive High-fidelity Cutaneous Surgical Training Model of the Head, Neck, and Shoulders

Keoni Nguyen, DO; Joseph McGowan, MD; Tom G. Olsen, MD; Brett M. Coldiron, MD, FACP; Heidi B. Donnelly, MD

Dermatology, Wright State University, Dayton, OH, United States

7:33 - 7:41 am

The Predictive Value of Imaging Studies in Evaluating Regional Lymph Node Involvement in Merkel Cell Carcinoma

Michael B. Colgan, MD¹; Tina I. Tarantola, MD¹; Laura A. Vallow, MD⁴; Michele Y. Halyard, MD³; Amy L. Weaver, MS²; Randall K. Roenigk, MD¹; Jerry D. Brewer, MD¹; Clark C. Otley, MD¹

1. Dermatology, Mayo Clinic-Rochester, Rochester, MN, United States 2. Biomedical Statistics & Informatics, Mayo Clinic-Rochester, Rochester, MN, United States 3. Radiation Oncology, Mayo Clinic-Scottsdale, Rochester, MN, United States 4. Radiation Oncology, Mayo Clinic-Jacksonville, Jacksonville, FL, United States

7:41 - 7:49 am

Utilization of Physician Assistants in Mohs Micrographic Surgery, a Survey of Fellowship Trained Mohs Micrographic Surgeons

Mark Hyde, MMS, PA-C¹; Michael L. Hadley, MD^{3,1}; Conrad Roberson¹; Lisa Pappas²; Abby A. Jacobson, MS, PA-C⁴; Glen M. Bowen, MD^{3,1}

1. Cutaneous Oncology, Huntsman Cancer Institute at the University of Utah, Salt Lake City, UT, United States 2. Biostatistics Shared Resources, Huntsman Cancer Institute at the University of Utah, Salt Lake City, UT, United States 3. Department of Dermatology, University of Utah, Salt Lake City, UT, United States 4. Physician Assistant Program, Hahnemann/Drexel University, Philadelphia, PA, United States

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Saturday, May 1

7:49 - 7:57 am

Efficacy, Tolerability and Cost-effectiveness of Topical 5-Fluorouracil vs. Imiguimod for the Treatment of Superficial Basal Cell Carcinoma: A Randomized Double Blind Clinical Trial

Kevan G. Lewis. MD^{1, 2}: Katherine Cordova, MD²: Nathaniel J. Jellinek²

1. Dermatology, Mayo Clinic, Rochester, MN, United States 2. Dermatology, Brown Medical School, Providence, RI, United States

7:57 - 8:05 am

Staged Excision for Lentigo Maligna and Lentigo Maligna Melanoma: Analysis of Surgical Margins and Long-term Recurrence in 71 Cases from a Single Practice

Joshua B. Wilson, MD1; Hobart W. Walling, MD, PhD3; Roger I. Ceilley, MD1; Andrew K. Bean, MD1; Richard Scupham, MD²

1. Dermatology PC, West Des Moines, IA, United States 2. Iowa Pathology Associates, Iowa Methodist Medical Center, Des Moines, IA, United States 3. Town Square Dermatology, Coralville, IA, United States

8:05 - 8:13 am

Human Cutaneous Squamous Cell Carcinoma is Associated with Increased Lymphatic Density in the Tumor Microenvironment and Increased **Expression of Macrophage Derived VEGF-C**

John A. Carucci. MD. PhD1: Dariush Moussai, MD1: Hiroshi Matsui, MD²; Katherine C. Pierson²; James G. Krueger, MD, PhD²

1. Dermatology, Weill Medical College of Cornell, New York, NY, United States 2. Investigative Dermatology, Rockefeller University, New York, NY, United States

8:13 - 8:21 am

Prevalence of Underdiagnosed Aggressive Non-melanoma Skin Cancers Treated with Mohs Micrographic Surgery: Analysis of 468 Cases

Leonid Izikson, MD; Marie Seyler; Nathalie C. Zeitouni, MDCM, FRCPC

Dermatology, Roswell Park Cancer Institute, Buffalo, NY, United States

8:21 - 8:29 am

Modified Flap Design for Symmetric Reconstruction of the Apical Triangle of the Upper Lip

Hillary Johnson-Jahangir, MD, PhD; Mary Stevenson, BA: Désirée Ratner, MD

Dermatology, Columbia University, New York, NY, **United States**

8:29 - 8:37 am

Randomized Study to Assess the Wound Infection Incidence Using Clean versus Sterile Gloves for Mohs Micrographic Surgery (MMS) Wound Repairs

Yang Xia, MD¹; Sunghun Cho, MD²; Daniel E. Zelac, MD1; Hubert T. Greenway, Jr., MD1

1. Division of Mohs Surgery, Scripps Clinic, La Jolla, CA, United States 2. Dermatology, Darnall Army Medical Center, Ft. Hood, TX, United States

8:37 - 8:45 am

A Prospective Pilot Study of the Alexandrite Laser on Basal Cell Carcinomas

Daniel I. Wasserman, MD1; Zeina S. Tannous, MD2; Gary D. Monheit, MD1.

1. Total Skin & Beauty Dermatology Center, Birmingham, AL, United States 2. Dermatology, Massachusetts General Hospital, Boston, MA, United States

7:15 - 8:45 am

Concurrent Morning Mini-sessions

203.1 Sebaceous Carcinoma & EMPD Winter Garden

At the conclusion of this session, participants should be able to:

- 1) Correctly identify and diagnose sebaceous carcinoma and EMPD using improved clinical skills and utilization and interpretation of laboratory data, including indications and implications of genetic testing;
- 2) Understand the underlying causes and systemic conditions associated with the diagnoses of sebaceous carcinoma and EMPD;
- 3) Use newly acquired understanding/information to plan an accurate and clinically relevant/ cost effective staging evaluation of patients with sebaceous carcinoma and EMPD.

Bradley Kovach, MD; Marcy Neuburg, MD

203.2 **Skin Grafting**

Majestic

At the conclusion of this session, participants should be able to:

- 1) Assess the indications for skin grafts;
- Evaluate the different techniques for skin grafts;
- Describe the post operative care and potential complications of skin grafts.

Hayes B. Gladstone, MD; Arash Kimyai-Asadi, MD

203.3 **Applying Aesthetic Principles to Mohs Reconstruction**

Juilliard

At the conclusion of this session, participants should be able to:

- 1) Understand and perform facial analysis utilizing cosmetic principles;
- 2) Identify and delineate specific cosmetic unit defects in patients awaiting reconstruction;
- Apply cosmetic principles to the reconstruction of facial subunits.

Stephen D. Antrobus, MD; Bryce J. Cowan, MD; Justin H. Piasecki, MD

203.4 **Reconstruction of Everyday Nasal Mohs Defects**

Wilder

At the conclusion of this session, participants should be able to:

- 1) Describe accurately and gain a better understanding of the nasal surgical defects following Mohs surgery and any pertinent functional and cosmetic anatomical considerations;
- 2) Gain competence in understanding the basic concepts of tissue movement and tension vectors as they relate to primary, flap, and graft closures;
- Consider critical aspects in designing a closure that both preserve function and improve the cosmetic outcome of your repair.

Shawn Allen, MD; Gary D. Monheit, MD

Saturday, May 1

203.5 Role of Radiation in Cutaneous Oncology

Odets

At the conclusion of this session, participants should be able to:

- Understand the mechanisms, dosing rationale, and side effects of radiation therapy for cutaneous malignancies;
- List the advantages, disadvantages, and contraindications of radiation therapy for cutaneous malignancies;
- Understand the indications for radiation therapy as primary or adjunct treatment for cutaneous malignancies.

Jorge A. Garcia-Zuazaga, MD, MS; Allison T. Vidimos, MD

203.6 Setting Up & Certifying a Mohs Lab Broadhurst

At the conclusion of this session, participants should be able to:

- Discuss ways to organize the Mohs laboratory space and design;
- Identify essential laboratory equipment and supplies necessary for the Mohs laboratory;
- Review preparation of the Mohs laboratory manuals for CLIA and quality assurance, and preparation for the CLIA inspection;
- 4) Discuss staffing of the Mohs laboratory and training histotechnicians.

Clarence W. Brown, Jr., MD; Priya Zeikus, MD

203.7 Non-surgical & Combination Therapy for Skin Cancer

Shubert

At the conclusion of this session, participants should be able to:

- Learn about medical and non-surgical treatment of skin cancer including Lasers, Fraxel Photodynamic Therapy, Combination treatments, Peplin, PTCH gene inbhibitor, tarceva, Imiquimod, Retinoids, NSAIDs, T4 endonuclease V, etc.;
- 2) Apply these therapies for treatment of various skin cancers and precancerous lesions;
- Understand the side effects and complications associated with these therapies and ways to prevent these complications.

Ellen S. Marmur, MD; Keyvan Nouri, MD; James M. Spencer, MD

9:00 - 10:00 am

Conundrums on Mohs

Frozen Sections

Broadway

At the conclusion of this session, participants should be able to:

- 1) Improve competence in interpreting complex histopathology during Mohs surgery;
- 2) Troubleshoot common technical problems when evaluating Mohs histopathology;
- 3) Differentiate false positives and false negatives when evaluating Mohs histopathology.

Moderators: Naomi Lawrence, MD; Kishwer S. Nehal, MD Panelists: Murad Alam, MD; Erica H. Lee, MD; Vicki J. Levine, MD; Shari Nemeth, MD

10:00 - 11:00 am

Scar Revisions: Making Lemonade out of Surgical Lemons

ut of Surgical Lemons Broadway

At the conclusion of this session, participants should

be able to:

1) Evaluate the results of a reconstructive surgery

- and determine if a revision is needed and when the revision would be best performed;
- Become familiar with scalpel and non-scalpel approaches to scar revision;
- Discern what form of revision is best for correcting the defect and best for that given patient.
 Moderators: David G. Brodland, MD; Larisa Ravitskiy, MD
 Speakers: Hugh M. Gloster, Jr., MD; Christopher B.
 Harmon, MD; Ali Hendi, MD; Tri H. Nguyen, MD; Isaac

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Zilinsky, MD

10:00 am - 4:00 pm

Exhibit Hall Open

Salons 3 & 4

11:00 - 11:30 am

Break; Visit the Exhibit Hall for Refreshments

Salons 3 & 4

11:30 am - 12:30 pm

Melanoma: New Developments Broadway

At the conclusion of this session, participants should be able to:

- 1) Discuss recent developments in the changing epidemiology of melanoma;
- Integrate the newest imaging procedures for melanoma diagnosis into clinical practice;
- Be familiar with recent dramatic advances in targeted therapies for advanced melanoma.

Moderator: Leonard M. Dzubow, MD

Guest Speaker–Allan C. Halpern, MD, MSc, Chief of Dermatology Service, Memorial Sloan-Kettering Cancer Center (page 13)

12:30 - 2:30 pm

Clinical Pearls Abstract Session

Broadway

At the conclusion of this session, participants should be able to understand and identify new research developments in Mohs surgery and oncology. Moderators: Karen J. Johnson, MD; Jerome R. Potozkin, MD

12:30 - 12:38 pm

Revisiting the One-stage Nasolabial Transposition Flap

Christopher J. Miller, MD^{2,1}; Aerlyn G. Dawn, MD, MBA¹
1. Dermatology, University of Pennsylvania,
Philadelphia, PA, United States 2. Division of
Dermatologic Surgery, University of Pennsylvania,
Philadelphia, PA, United States

12:38 - 12:46 pm

Retroauricular Chondrocutaneous Interpolation Flap for Reconstruction of Large Helical Defects

Theresa L. Ray, MD; Rehana L. Ahmed, MD; Peter K. Lee, MD, PhD

Dermatology, University of Minnesota, St. Louis Park, MN, United States

Z

Saturday, May 1

12:46 - 12:54 pm

Massive Hemorrhage and Platelet Dysfunction Following Mohs Surgery and Nasal Reconstruction with Cartilage Graft and Interpolation Flap: Lessons Learned

David E. Kent, MD^{1, 2}; Keith M. Harrigill, MD¹

1. Medicine, Mercer Medical School, Macon, GA, United States 2. Dermatology, Medical College of Georgia, Augusta, GA, United States

12:54 - 1:02 pm

A Tunneled and Turned-over Nasolabial Flap for Reconstruction of Full Thickness Nasal ala Defects

Christopher Kearney, MD; Adam T. Sheridan, MBBS, FACD; Carl Vinciullo, MD; Timothy G. Elliott, MD Skin and Cancer Foundation, Sydney, Australia, Bondi Junction, NSW, Australia

1:02 - 1:10 pm

Using Electrosurgery for Scar Revision

Tracy M. Campbell, MD; Daniel B. Eisen, MD Department of Dermatology, UC Davis Medical Center, Sacramento, CA, United States

1:10 - 1:18 pm

Challenges to Marketing the Mohs College: A Florida Experience

John M. Strasswimmer, MD, PhD; Richard Krathen, MD www.MohsForSnowbirds.com, Palm Beach County, Delray Beach, FL, United States

1:18 - 1:26 pm

Detection and Treatment of Nasal Valve Insufficiency Despite Complete Preservation of Cartilage Following Mohs Surgery and Reconstruction

Christian L. Baum, MD; Christopher J. Arpey, MD Department of Dermatology, University of Iowa Hospitals and Clinics, Iowa City, IA, United States

1:26 - 1:34 pm

A Reconstructive Pearl: The "Bottom-Up" Cheek Advancement Flap

David E. Geist, MD; Dori Goldberg, MD; Jason D. Givan, MD; Mary E. Maloney, MD

Dermatology, UMass Medical School, Worcester, MA, United States

1:34 - 1:42 pm

Use of the Temporary Suspension Suture in Melolabial Interpolation Flap Nasal Reconstruction: A Tool to Prevent Distal Flap Necrosis and Dehiscence

Jeremy Cook, MD; Sarah Schram, MD; Peter K. Lee, MD, PhD

Dermatology, University of Minnesota, Minneapolis, MN, United States

1:42 - 1:50 pm

Curvilinear Advancement Flap for Infraorbital Defects: A Case Series

Juan Vasquez, MD; Oliver Perez, MD; Hakeem Sam, MD, PhD

Dermatology, University of Pittsburgh, Pittsburgh, PA, United States

1:50 - 1:58 pm

Bilateral Transposition Flap for Reconstruction of Circular Mohs Surgery Defects

Yaohui G. Xu, MD, PhD; Stephen N. Snow, MD Dermatology, University of Wisconsin, Madison, Madison, WI, United States

1:58 - 2:06 pm

Interpolated Paranasal Flap: An Advantageous Alar Reconstructive Option for Selected Defects

Galen H. Fisher, MD1; Joel Cook, MD2

1. Galen Fisher, Laser & Skin Surgery Center of Richmond, Richmond, VA, United States 2. Dermatologic Surgery, Medical University of South Carolina, Charleston, SC, United States

2:06 - 2:14 pm

Digital Photography Mohs Mapping for the Electronic Health Record

Justin J. Vujevich, MD¹; Arash Kimyai-Asadi, MD²; Leonard H. Goldberg, MD²

1. Vujevich Dermatology Associates, PC, Pittsburgh, PA, United States 2. DermSurgery Associates, PC, Houston, TX, United States

2:14 - 2:22 pm

The Nasal Sidewall Rotation Flap: A Workhorse Flap for Small Defects of the Distal Nose

Paul J.M. Salmon, MD¹; Eugene Tan, MD²; Neil J. Mortimer, MBChB¹; Syed W. Hussain, MD¹

1. Dermatologic Surgery Unit, Skin Cancer Institute, Tauranga, New Zealand. 2. Dermatology Department, Waikato Hospital, Hamilton, New Zealand

2:22 - 2:30 pm

Metastatic Nasopharyngeal Carcinoma Presenting as a Soft Tissue Scalp Tumor: Cautionary Tales in Two Patients

Lorraine Jennings, MD; Chrysalyne D. Schmults, MD Mohs micrographic surgery center, Brigham and Women's Hospital, Harvard Medical School, Jamaica Plain, MA, United States

2:45 - 4:00 pm

Fellowship Training Directors' Session

Wilder

-OR- Free afternoon – Enjoy New York City!

Sunday, May 2

6:00 am - 9:00 pm

Slide Library and Diagnostic Quality Control Self-Examination

Lyceum

7:15 - 8:45 am

Concurrent Morning Mini-sessions

304.1 Comprehensive & Concise Update of Melanoma

Odets

At the conclusion of this session, participants should be able to:

- Identify current histology and imaging techniques used for melanoma staging;
- Integrate current evidence-based approach to management of patients with melanoma;
- 3) Discuss the rationale for adjunct therapy with surgery of melanoma.

Naomi Lawrence, MD; John M. Strasswimmer, MD, PhD

304.2 Nail Tumors:

Diagnosis & Treatment

Winter Garden

At the conclusion of this session, participants should be able to:

- 1) Develop and differential diagnosis for nails tumors based on directed history and physical exam;
- Review relevant anatomy and highlight key points for anesthesia and surgical exposure of the nail unit:
- Develop and carry out a surgical plan to address longitudinal erythronychia, longitudinal melanonychia, glomus tumors, digital myxoid cysts, and perform Mohs surgery on nail tumors.

Nathaniel J. Jellinek, MD; Siobhan Collins, MD

304.3 Interpolation Flaps: Getting Started

At the conclusion of this session, participants should be able to:

- 1) Confidently perform your first interpolation flap;
- Efficiently incorporate interpolation flaps into a busy practice;
- Develop a thoughtful approach to the indications, limitations, design, and execution of straightforward interpolation flaps.

John G. Albertini, MD; Jeremy S. Bordeaux, MD, MPH

304.4 Immunostains 101

Broadhurst

At the conclusion of this session, participants should be able to:

- Have a practical understanding of immunostaining science in order to incorporate immunostaining and/or troubleshoot common challenges in the Mohs lab;
- Recognize and manage common diagnostic challenges in the interpretation of frozen section immunostains for melanoma;
- Have a comprehensive understanding of the literature to compare the advantages and disadvantages of Mohs surgery versus other surgical approaches to melanoma.

Gregory M. Bricca, MD; Christopher J. Miller, MD

304.5 Lower Extremity Reconstruction & Wound Healing

Shubert

At the conclusion of this session, participants should be able to:

- Understand the different treatment of modalities for patients with multiple squamous cell carcinomas of the lower extremities;
- 2) Understand how to close large surgical defects of the lower extremities.

Peter K. Lee, MD, PhD; Jeffrey E. Petersen, MD

304.6 Periorbital Reconstruction: From Basic to Advanced

Majestic

At the conclusion of this session, participants should be able to:

- Understand the relevant anatomy of the periorbital area necessary for restoration of form and function following Mohs surgery;
- 2) Understand the fundamental principles of upper and lower lid reconstruction and maintenance of the canthal support systems;
- Become familiar with advanced reconstructive techniques required for complex periorbital defects.

Ronald L. Moy, MD; Andrea Willey, MD

304.7 Practice Management: East vs. West Coast Strategies for Practice Growth During Uncertain Times

Juilliard

At the conclusion of this session, participants should be able to:

- Understand the challenges facing the referral practice of Mohs surgery and strategies to create reliable long-term referrals;
- Understand the hidden cost centers in the Mohs practice that are typically underutilized to ensure better diversification of revenue streams;
- 3) Understand and be able to implement two different business models to achieve reinvention of the practice of Mohs surgery during a time of transition for our specialty.

Christopher B. Harmon, MD; Greg S. Morganroth, MD

304.8 Dermatologic Surgery Down Under: How We Do It

Plymouth

At the conclusion of this session, participants should be able to:

- Understand the epidemiology and management of skin cancer from the perspective of a different region of the world;
- Approach the management of skin cancer with a greater diversity of options;
- 3) Refine surgical and anesthetic techniques. Moderators: Timothy G. Elliott, MD; Paul J.M. Salmon, MD Panelists: Zoran Gaspar, MD; Christopher Kearney, MD; Karyn R. Lun, MD; Tim J. Rutherford, MD; Ernest Tan, MD, FACD

Z

York

Sunday, May 2

9:00 - 10:30 am

Tumor Board

At the conclusion of this session, participants should be able to:

- Discuss the diverse histology of non-melanoma skin cancer in organ transplant recipients with high risk features (e.g. perineural invasion and metastatic risk);
- Develop an aggressive multidisciplinary management approach for non-melanoma skin cancer in organ transplant recipients, including staging, Mohs surgery, adjuvant therapy, use of EGFR inhibitors;
- 3) Discuss the presentation of malignant melanoma in organ transplant recipients, risk factors, management, and prognosis as it pertains to the immune status of the patient.

Moderators: Clark C. Otley, MD; Fiona O'Reilly Zwald, MD Panelists: Jerry D. Brewer, MD; Marc D. Brown, MD; Allan C. Halpern, MD; George W. Niedt, MD, MSc; Allison T. Vidimos, MD

10:00 am - 3:00 pm

Exhibit Hall Open

Salons 3 & 4

Broadway

10:30 - 11:00 am

Break; Visit the Exhibit Hall

for Refreshments

Salons 3 & 4

11:00 am - 12:00 pm

Tromovitch Award Abstract Session Broadway

At the conclusion of this session, participants should be able to:

- 1) Become updated on recent advances in cutaneous oncology and pathology;
- Become aware of the current state of the practice of Mohs surgery;
- Learn about young investigators research and scholarly activities

Moderators: Vinh Q. Chung, MD (2009 Tromovitch Award Winner); Ken K. Lee, MD (2009 Scientific Program Committee Chair)

11:04 - 11:12 am

Cost Analysis: Mohs Micrographic Surgery

Larisa Ravitskiy, MD¹; David G. Brodland, MD²; John A. Zitelli, MD²

1. Dermatology, OSU Medical Center, Columbus, OH, United States 2. Dermatology and ENT, University of Pittsburgh, Pittsburgh, PA, United States

11:12 - 11:20 am

Prognostic Factors in Merkel Cell Carcinoma

Tina I. Tarantola, MD^{1,3}; Laura A. Vallow, MD²; Michele Y. Halyard, MD⁴; Roger Weenig, MD¹; Karen E. Warschaw, MD ⁴; Randall K. Roenigk, MD¹; Jerry D. Brewer, MD¹; Clark C. Otley, MD¹

1. Dermatology, Mayo Clinic, Rochester, MN, United States 2. Radiation Oncology, Mayo Clinic, Jacksonville, FL, United States 3. Dermatology, Mayo Clinic, Scottsdale, AZ, United States 4. Radiation Oncology, Mayo Clinic, Scottsdale, AZ, United States

11:20 - 11:28 am

A Case Controlled Study of Mohs Recurrences and the Role of Surgeon Error and Tissue Processing

Tracy M. Campbell, MD; Daniel B. Eisen, MD Department of Dermatology, UC Davis Medical Center, Sacramento, CA, United States

11:28 - 11:36 am

A Two-year Perspective on the Efficacy of Capecitabine in Tumor Reduction for Transplant Patients

Bart T. Endrizzi, MD, PhD; Theresa L. Ray, MD; Peter K. Lee, MD, PhD

Dermatology, University of Minnesota, Minneapolis, MN, United States

11:36 - 11:44 am

The Risk of Wrong Site Surgery and the Mohs Surgeon

Shari A. Nemeth, MD¹; Naomi Lawrence, MD²
1. Dermatology, Mayo Clinic Arizona, Scottsdale, AZ, United States 2. Center for Dermasurgery, Cooper University Hospital, Marlton, NJ, United States

11:44 - 11:52 am

Mohs Surgery Workforce: Trends in Career Paths, Job Satisfaction and Academic Productivity

Emily P. Tierney, MD^{1, 2}; C. William Hanke, MD²; Alexa B. Kimball, MD, MPH³

1. Dermatology, Boston University, Boston, MA, United States 2. Dermatologic Surgery, Laser and Skin Surgery Center of Indiana, Carmel, IN, United States 3. Dermatology, Harvard University School of Medicine, Boston, MA, United States

11:52 am - 12:00 pm

Outcome of Six Years of Protocol Use for Preventing Wrong Site Office Surgery

John Starling, III, MD; Brett M. Coldiron, MD, FACP The Skin Cancer Center, Cincinnati, OH, United States

12:00 - 2:00 pm

ACMS Annual Business Meeting & Lunch
(Lunch Provided) Broadway

(Non-Members: Lunch on your own)
Duane C. Whitaker, MD; Leonard M. Dzubow, MD

2:00 - 3:00 pm

Coding for Mohs

Surgery/Reconstruction Broadway

At the conclusion of this session, participants should be able to understand, identify, and address claim adjudication errors.

Speakers: Murad Alam, MD; Brent R. Moody, MD Guest Presenter: Peggy Eiden, CSC, CCS-P AAD Coding and Reimbursement Specialist

42nd

Marriott Marquis New York

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Sunday, May 2

3:00 - 4:15 pm

How Would You Reconstruct It?

Broadway

At the conclusion of this session, participants should be able to:

- Understand a regional approach to reconstruction and be able to apply that to common defects on the face;
- Evaluate multiple reconstruction options for common surgical defects;
- Recognize potential pitfalls for some reconstructive options in certain locations.
 Moderators: Roy C. Grekin, MD; Thomas E. Rohrer, MD

3:05 - 3:15 pm

Interesting cases from Chicago

Vivek Iyengar, MD

3:15 - 3:30 pm

Interesting cases from St. Louis

Eva A. Hurst, MD

3:30 - 3:45 pm

Interesting cases from Philadelphia

Leonard M. Dzubow, MD

3:45 - 4:00 pm

Interesting cases from San Francisco

Siegrid Yu, MD

4:00 - 4:15 pm

Interesting cases from Durham

Jonathan L. Cook, MD

4:30 - 6:30 pm

Reception to Welcome

Fellows-in-Training Marquis Ballroom; 9th Floor

All ACMS Members Invited

Hors d'oeuvres and drink ticket provided. Suzanne Olbricht, MD; Duane C. Whitaker, MD

Monday, May 3

7:00 – 8:00 am

Diagnostic Quality Control

Exam Review Broadway

At the conclusion of this session, participants should be able to understand the importance of dermatopathology in Mohs surgery.

Moderator: Sumaira Z. Aasi, MD

Panelists: Daniel B. Eisen, MD; Montgomery O. Gillard, MD; Ashraf M. Hassanein, MD, PhD

8:15 - 9:45 am

Practice Management of a

Mohs Surgery Practice Broadway

At the conclusion of this session, participants should be able to:

- Improve competence in practice management and development issues specific to a Mohs surgery practice;
- Improve performance in management of one's practice.

Moderators: Glenn D. Goldstein, MD; Andrew J. Kaufman, MD, FACP

The Business Side of Mohs Surgery: Human Resources, Practice Management, Buy-ins or Not

Jerome R. Potozkin, MD

Avoiding Embezzlement: How to Keep What Got to Your Office

Glenn D. Goldstein, MD

Coding & Reimbursement for Mohs Surgery, Present & Future

Brett M. Coldiron, MD, FACP

Adding Cosmetic Procedures & Products to Your Mohs Practice without Upsetting the Golden Goose

Jennifer L. Linder, MD

Marketing Your Mohs Practice Most Effectively

Andrew J. Kaufman, MD, FACP

10:00 am - 12:00 pm

Reconstruction with the Masters Broadway

At the conclusion of this session, participants should be able to:

- Evaluate challenging and complex wounds of the nose, perioral region, periocular region, and ear to determine what tissue has been lost and to identify appropriate tissue reservoirs for local flap reconstruction:
- Select appropriate reconstructive options for these defects, and plan aesthetic and functional reconstruction;
- Actualize the reconstructions with attention to operative technique and detail in order to affect the optimal outcome.

Introduction: Roberta D. Sengelmann, MD

Speakers: Jonathan L. Cook, MD: Joel Cook, MD; Glenn D. Goldman, MD; Tri H. Nguyen, MD

12:00 pm

RAFFLE to win free

2011 ACMS meeting registration! Broadway

Drawing for a free 2011 Annual Meeting registration,

must be present to win!

Meeting adjourns

M

Research Abstract Session - Friday, April 30: 7:15 - 8:45 am

7:17 - 7:25 am

PRESENTER: Cort McCaughey

TITLE: A Concordance Study Comparing Histology Reports from Permanent Sections and Frozen Sections for Staged Surgical Excisions for Lentigo Maligna

AUTHORS: Cort McCaughey³; Mark Hyde, MMS, PA-C¹; Scott Florell, MD²; Anneli Bowen, MD²; Glen M. Bowen, MD¹.²

INSTITUTIONS: 1. Melanoma and Cutaneous Oncology, Huntsman Cancer Institute at the University of Utah, Salt Lake City, UT, United States 2. Department of Dermatology, University of Utah, Salt Lake City, UT, United States 3. School of Medicine, University of Utah, Salt Lake City, UT, United States

Purpose: Staged excisions for lentigo maligna (LM) and lentigo maligna melanoma (LMM) are generally done with either overnight rush permanent sections or with frozen sections frequently augmented with immunostaining such as MART-1/Melan-A. Proponents of permanent sections argue that frozen sections lack the ability to capture cellular detail to the degree that can be rendered with permanent sections. To date there are no published studies comparing the two techniques within the same tumors. We sought to ascertain whether tumor margins determined at the time of surgery using frozen tissue immunostained with a melanoma-specific antibody was equivalent to the accuracy of standard overnight permanent sections in the detection of margins of LM/LMM.

Design: Forty patients with biopsy proven LM/LMM were prospectively enrolled in the study. Each patient underwent a staged excision beginning with two millimeter margins if they had been previously treated with imiguimod 5% cream and five millimeter margins if they had not been pretreated beyond the visible tumor observed with a Wood's lamp. The excised tumor was divided into sixteen radial pie-wedge sections, with odd sections submitted for frozen sections, and opposing even sections submitted for permanent sections. Care was taken to make sure cuts were made from opposing faces of the tissue to optimize the observation of the same tissue area with both techniques. A negative control from sun-damaged skin was taken and stained with Melan-A in all cases to give a picture of background melanocytic hyperplasia in an uninvolved site. Two dermatopathologists interpreted the permanent sections while the Mohs surgeon interpreted the frozen sections of hematoxylin-eosin (H and E) staining as well as Melan-A immunostaining. The results were recorded with each group blinded to the others' interpretation. Once the tumor maps were completed, the final maps were compared and concordance rates were calculated. Concordance rates were based on complete concordance (maps and recommendations identical), incomplete concordance (map disagreement but surgical recommendations identical), and complete discordance (map and surgical recommendation disagreement).

Summary: Of the forty patients enrolled in the study 25/40 (62.5%) were completely concordant meaning that either no residual tumor was seen or residual tumor was identified in the same locales between the two parties with a 95% confidence interval of 45.8%-76.8%. 12/40 (30%) patients were incompletely concordant meaning that there was incomplete agreement between the two maps but without the consequence of leading to a differing surgical/treatment recommendation with a 95% confidence interval of 17.1%-46.7%. 3/40 (7.5%) patients were completely discordant as there was disagreement between the two maps and therefore led to differing clinical decisions with a 95% confidence interval of 2.0%-21.5%. Of the 3 cases of complete disconcordance, 2 (5%) were thought to be over-read by the Mohs surgeon when comparing immunostains with permanent sections and additional unnecessary surgical stages were taken and 1 (2.5%) was under-read by the Mohs surgeon and required the patient to have additional tissue excised. This under-read case had a nidus of invasion that on frozen immunostaining was interpreted as a compound nevus by both the Mohs surgeon and a consulted dermatopathologist but was called invasive melanoma by the two dermatopathologists in this study who viewed the permanent sections of that specimen. This failure to distinguish between invasive melanoma and a benign compound nevus was attributed to the lack of cellular detail in the frozen sections making the theques more banal in appearance than was more obvious with permanent sections.

Conclusion: The inter-observer concordance rates between the Mohs surgeon viewing frozen sections with H and E and immunostaining with Melan-A and two dermatopathologists looking at permanent sections with H and E compares favorably with prior published studies of inter-observer concordance rates between dermatologists viewing permanent sections for LM/LMM. Permanent sections were superior in quality with regards to cellular detail that could not be reproduced with frozen sections. Frozen sections stained with Melan-A provide a good method of evaluating the quantity and pattern of melanocyte distribution in LM/LMM but in specific circumstances, the inability to assess cellular detail with frozen sections can present a serious pitfall. In such cases it seems that the Mohs surgeon is well served to error on the side of caution, especially with regards to potential invasion.

7:25 - 7:33 am

PRESENTER: Kavitha K. Reddy, MD

TITLE: Cost-effectiveness of Non-melanoma Skin Cancers Treated with Mohs Micrographic Surgery versus Traditional Surgical Excision with Permanent Sections and Excision with Intraoperative Frozen Sections

AUTHORS: Kavitha K. Reddy, MD¹; Emily P. Tierney, MD¹; Alexa B. Kimball, MD, MPH²; C. William Hanke, MD³

INSTITUTIONS: 1. Dermatology, Boston University School of Medicine, Boston, MA, United States 2. Dermatology, Harvard Medical School, Boston, MA, United States 3. Laser and Skin Surgery Center of Indiana, Carmel, IN, United States

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Purpose: Analysis of the existing literature on efficacy of Mohs micrographic surgery (MMS) relative to surgical excision confirms the value of MMS in obtaining both the highest initial cure rates and lowest recurrence rates. In the current health care climate, cost-effective treatment of non-melanoma skin cancer is an increasingly important issue. Identification of treatments that provide the greatest reduction in morbidity and mortality and maximize outcomes with reasonable associated incremental cost is of benefit to patients. We set out to compare the incremental cost-effectiveness ratio (ICER) of Mohs micrographic surgery (MMS) with traditional surgical excision (TSE) and excision with intra-operative frozen sections (EIOFS) in the treatment of non-melanoma skin cancers (NMSC).

Design: Cost-effectiveness analysis was performed for treatment of facial non-melanoma skin cancers (primary basal cell carcinoma (BCC) < 2 cm, primary BCC > 4 cm, recurrent BCC, primary squamous cell carcinoma (SCC) < 2 cm, primary SCC > 4 cm, high-risk SCC (ear), and recurrent SCC), with MMS, TSE, or EIOFS. For MMS and EIOFS, repair modalities of complex linear closure (CLC), adjacent tissue transfer (ATT), full thickness skin graft (FTSG), island pedicle (IP), and granulation were analyzed. For TSE, complex linear closure only was analyzed, consistent with standard practice. Costs were calculated utilizing CPT codes and reimbursement data from the American Medical Association 2009 RUC Database. The multiple surgery reduction rule was applied. Effectiveness was defined by 5-year cure rate as derived from metaanalysis by our group of Pubmed literature reviewing over 250 studies reporting recurrence rates of non-melanoma skin cancer after Mohs micrographic surgery and excision. Incremental cost-effectiveness ratios (ICERs) were then calculated from the cost-effectiveness data according to methodology described by the Centers for Disease Control.

Summary: When comparing tumor removal with MMS to TSE with permanent section margins, incremental costs of MMS associated with one percentage point reduction in recurrence rate (ICERs) were: BCC < 2 cm \$3.28 per additional 1% recurrence rate reduction, BCC > 4 cm \$44.15, recurrent BCC \$1.11, SCC < 2 cm \$2.62, SCC > 4 cm \$15.16, high-risk SCC \$0.99, and for recurrent SCC \$0.99. When comparing tumor removal with MMS to TSE with permanent section margins, incremental costs of MMS associated with avoidance of one tumor recurrence (ICERs) were: BCC < 2 cm \$328 per recurrent tumor avoided, For BCC > 4 cm \$4415, recurrent BCC \$111, SCC < 2 cm \$262, SCC > 4 cm \$1516, high-risk SCC \$99, and for recurrent SCC \$99. When MMS was compared to excision with intra-operative frozen sections (EIOFS), MMS was lower in cost for all tumor types and sizes, given the higher costs for ambulatory surgery center fees and more costly pathology fees associated with EIOFS.

When the cost of repair was added to the cost of tumor removal, the incremental cost of MMS became larger with flap and graft repairs. However, for large and high risk tumors, the increased effectiveness of MMS relative to excision lead to lower incremental cost per recurrent tumor avoided for all repair modalities.

Conclusion: Analysis of the existing literature on efficacy of MMS relative to surgical excision confirms the value of MMS in obtaining both the highest initial cure rates and lowest recurrence rates. We found MMS to be cost effective for tumor removal, where the incremental costs of MMS associated with one percentage point reduction in recurrence rate ranged from \$0.99 to \$44. Future cost effectiveness analysis demonstrating the outcomes based efficiency of MMS are critical in the current health care climate with heightened sensitivity to financial pressures and declining reimbursement rates which challenge our ability to provide patients with the most optimal treatment for NMSC.

7:33 - 7:41 am

PRESENTER: Natalie M. Curcio, MD, MPH

TITLE: Mortality Due to Skin Cancer after First and Second Renal Transplants

AUTHORS: Natalie M. Curcio, MD, MPH¹; Li Wang, MS²; Thomas Stasko, MD¹

INSTITUTIONS: 1. Dermatology, Vanderbilt University, Nashville, TN, United States 2. Biostatistics, Vanderbilt University, Nashville, TN, United States

Purpose: In the renal transplant population cutaneous malignancies are more frequent, more aggressive, and carry an increased risk of death. Dermatologists are frequently asked for an opinion as to the advisability of a second renal transplant in a graft recipient with a history of skin cancer and a failing transplant. The purpose of this study was to determine whether the intense immunosuppression required after a second renal transplant increased the risk of death from cutaneous malignancy vs. the risk after only one transplant. We also intended to identify what types of skin cancer most often lead to mortality in the renal transplant population and to determine how long after transplant death occurs.

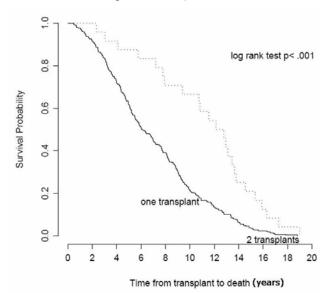


Figure 1: Kaplan-Meier estimate for patients who died from skin cancer (one transplant vs. two transplants).

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Types of Skin Cancer	Cases (N)	Percent (%)
Squamous Cell Carcinoma	120	38
Melanoma	90	29
Merkel Cell Carcinoma	42	13
Skin Cancer	24	7.6
Head and Neck Cancer	23	7.3
Sarcoma	5	1.6
Anogenital Cancer	4	1.3
Basal Cell Carcinoma	3	0.95
Kaposi Sarcoma	2	0.63
Spindle Cell Carcinoma	2	0.63
TOTAL	315	100

Table 1: Skin Cancer Causes of Death by Incidence

Design: We conducted a retrospective case-series using the United Network for Organ Sharing (UNOS) database. Patients, both living and deceased, who received only renal transplants from 1987 to 2008, were included in the study. We used primarily descriptive statistics to analyze patient demographics, geographical distribution, causes of death due to malignancy and skin cancer, and time to death. A Kaplan-Meier estimate and Cox proportional hazards model were used to analyze survival.

Summary: Between October 1, 1987 and May 16, 2008, there were 255,115 patients who underwent renal transplants in the United States, with 231,418 patients receiving kidney-only transplants. Of these patients. 214,141 received a single renal transplant and 17,227 received two renal transplants. The median age at first transplant for patient receiving one transplant is 47 years vs. 33 years for patients with two transplants. For both groups, approximately 60% of patients were male and nearly 90% were Caucasian.

During the period analyzed, 19.4% of patients died. Of the 44,849 deaths, 2,909 were due to malignancy and 315 of those were due to skin cancer. The three leading causes of death from cutaneous malignancy were squamous cell carcinoma, melanoma, and Merkel cell carcinoma, respectively. See Table 1 for the full list of skin cancers contributing to death after transplant and their incidences. The median age at first transplant of patients who died from skin cancer was 54 years for patients with one transplant compared to 47.5 years for those with 2 transplants. Males comprised 80% of patients with one transplant who died from skin cancer, but only 67% of those with two transplants. Caucasians comprised 98% and 100% of the patients with one and two transplants, respectively.

When analyzing time to death for patients who died of skin cancer, patients who underwent one renal transplant died an average of 7 years after transplantation. Patients who underwent two renal transplants died an average of 11.3 years after their first transplant and 5.5 years after their second transplant. Figure 1 depicts a Kaplan-Meier estimate of time to death for patients with one vs. two

transplants who died of skin cancer (log rank test, p < 0.001). According to the Cox proportional hazards model, the estimated risk of death in patients with one transplant is 1.94 times that of patients with two transplants (p = 0.003).

Conclusion: In the UNOS database population there is no significant increase in skin cancer mortality after a second renal transplant. However, it is likely that the absolute incidence of skin cancer death among the renal transplant population is underrepresented due to under-reporting and a lack of standard terminology in the database.

7:41 - 7:49 am

PRESENTER: Howard W. Rogers, MD, PhD

TITLE: Incidence Estimate of Non-melanoma Skin Cancer in the United States, 2006

AUTHORS: Howard W. Rogers, MD, PhD¹; Martin Weinstock, MD, PhD2; Ashlynne Harris, MSIV2; Michael Hinckley, MD³; Steven Feldman, MD, PhD³; Alan B. Fleischer, Jr., MD3; Brett M. Coldiron, MD, FACP4

INSTITUTIONS: 1. Advanced Dermatology, Norwich, CT, United States 2. Brown Medical School, Providence, RI, United States 3. Wake Forest University School of Medicine, Winston-Salem, NC, United States 4. University of Cincinnati Hospital, Cincinnati, OH, United States

Purpose: To estimate the incidence of non-melanoma skin cancer in the United States population in 2006.

Design: This is a cross sectional study employing multiple US government data sets including the Centers for Medicare and Medicaid Services Fee-for-Service Physicians Claims databases to calculate totals of skin cancer procedures performed for Medicare beneficiaries in 1992 and from 1996 to 2006 and related parameters. The National Ambulatory Medical Care Service database was used to estimate non-melanoma skin cancer related office visits. We combined these to estimate totals of new skin cancer diagnoses and affected individuals in the overall US population.

Summary: The total number of procedures for skin cancer in the Medicare fee-for-service population increased by 77% from 1,158,298 in 1992 to 2,048,517 in 2006. The age-adjusted procedure rate per year per 100,000 beneficiaries increased from 3514 in 1992 to 6075 in 2006. From 2002 to 2006 (years in which the databases allow procedure linkage to patient demographics and diagnoses), the number of procedures for non-melanoma skin cancer in the Medicare population increased by 16%. In this period, the number of procedures per affected patient increased by 1.5%, and the number of persons with at least one procedure increased by 14.3%. We estimate the total number of non-melanoma skin cancers in the US population in 2006 at 3,507,069 and the total number of persons in the US treated for NMSC at 2,152,500.

Conclusion: The number of skin cancers in Medicare beneficiaries increased dramatically over the years 1992 to 2006, due mainly to an increase in the number

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of affected individuals. Using nationally representative databases, we provide evidence of much higher overall totals of skin cancer diagnoses and patients in the United States population than previous estimates. These data give the most complete evaluation to date of the under recognized epidemic of skin cancer in the United States.

7:49 - 7:57 am

PRESENTER: Joshua Spanoale, MD

TITLE: Risk of Second Primary Malignancies Following Cutaneous Melanoma Diagnosis: A Populationbased Study

AUTHORS: Joshua Spanogle, MD^{1, 2}; Christina Clarke, PhD, MPH³; Sarah Aroner³; Susan M. Swetter, MD^{1, 4}

INSTITUTIONS: 1. Dermatology, Stanford University Medical Center, Stanford, CA, United States 2. Dermatology, Mayo Clinic, Rochester, MN, United States 3. Northern California Cancer Center, Fremont, CA, United States 4. Veterans Affairs Palo Alto Health Care System, Palo Alto, CA, United States

Purpose: To describe incidence patterns of second primary malignancies (SPMs) occurring after cutaneous melanoma (CM).

Design: Using the Surveillance, Epidemiology and End Results (SEER) program data from 1973-2003, we calculated incidence rates and relative risks for the development of 65 different SPMs occurring in 16,591 CM survivors and over 1.3 million person-years of observation.

Summary: Characteristics for all patients with CM and for those who had at least one SPM are shown in Table 1. Compared with the general population, CM survivors had a 32% higher risk of developing any SPM and demonstrated significantly elevated risks for 13 cancers: melanoma of the skin (SIR 8.99), soft tissue (SIR 2.80), melanoma of the eye and orbit (SIR 2.64), non-epithelial skin (SIR 2.31), salivary gland (SIR 2.18), bone and joint (SIR 1.70), thyroid (SIR 1.90), kidney (SIR 1.29), chronic lymphocytic leukemia (SIR 1.29), brain and nervous system (SIR 1.31), non-Hodgkin lymphoma (SIR 1.25), prostate (SIR 1.13), and female breast (SIR 1.07) (Table 2; only statistically significant data shown). Risks of second primary melanoma of the skin, melanoma of the eye and orbit, and cancers of the prostate, soft tissue, salivary aland, bone and joint were elevated throughout the study period, implying no surveillance bias (Table 2).

Conclusion: The increased risks for developing particular SPMs after CM may be explained by surveillance bias or shared risk factors. However, these probably do not explain the increased risks observed for prostate, soft tissue, salivary gland, and bone and joint cancers years after CM diagnosis. Further investigation into genetic or environmental commonalities between CM and these cancers is warranted.

	First Primary CM	SPM After CM		
Characteristic	No.	%	No.	%
Total Patients	151,996	100	16,591	100
Sex				
Women	69,853	46.0	6,107	36.8
Men	82,143	54.0	10,484	63.2
Age at Diagnosis				
<56 y	79,804	52.5	5,256	31.7
56-65 y	27,658	18.2	4,188	25.2
66-74 y	24,780	16.3	4,622	27.9
≥75 y	19,754	13.0	2,525	15.2

Table 1: Distribution of patients by first cutaneous melanoma (CM) and second primary malignancy (SPM) diagnosis.

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Site	All study period		2-11 mo		12-59 mo		12-59 mo		□120 mo	
	Observed Cases	O/E ratio	Observed Cases	O/E ratio	Observed Cases	O/E ratio	Observed Cases	O/E ratio	Observed Cases	O/E ratio
All sites	16,591	1.32	2135	1.69	6382	1.40	4205	1.23	3869	1.15
Salivary gland	67	2.18	5	1.59	29	2.58	17	2.03	16	1.99
Pharynx	27	0.61	4	0.81	7	0.40	11	0.89	5	0.45
Hypopharynx	14	0.54	2	0.72	3	0.31	6	0.86	3	0.49
Other oral cavity	2	0.21	0	0.00	2	0.54	0	0.00	0	0.00
Esophagus	102	0.78	12	0.91	40	0.85	30	0.86	20	0.59
Liver	72	0.77	9	0.90	28	0.77	19	0.69	16	0.58
Larynx	72	0.58	10	0.72	34	0.70	17	0.49	11	0.36
Lung and other respiratory	1572	0.83	167	0.86	565	0.81	430	0.82	410	0.79
Bones and joints	21	1.70	1	0.73	7	1.45	5	1.45	8	2.56
Soft tissue (including heart)	158	2.80	16	2.70	59	2.76	42	2.64	41	2.66
Skin-melanoma	3923	8.99	672	16.02	1561	10.16	897	7.73	793	7.06
Other non-epithelial skin	95	2.31	15	3.67	32	2.14	31	2.69	17	1.44
Female breast	1565	1.07	146	1.13	560	1.15	428	1.08	431	1.01
Cervix uteri	40	0.57	4	0.48	18	0.58	9	0.39	9	0.44
Prostate	2870	1.13	322	1.27	1140	1.25	721	1.08	687	1.09
Kidney	359	1.29	61	2.21	129	1.28	84	1.11	85	1.14
Eye and orbit-melanoma	45	2.64	7	4.07	17	2.74	8	1.74	13	2.93
Brain and other nervous system	186	1.31	21	1.45	76	1.46	46	1.20	43	1.21
Thyroid	217	1.90	45	4.06	90	2.20	42	1.37	40	1.40
Non-Hodgkin lymphoma	601	1.25	111	2.40	206	1.23	149	1.17	135	1.06
Chronic lymphocytic lymphoma	168	1.29	28	2.28	56	1.28	40	1.23	44	1.38
Nonlymphocytic leukemia	133	0.78	10	0.59	42	0.70	35	0.78	46	1.05
Myeloid and monocytic leukemia	118	0.82	9	0.63	35	0.69	33	0.87	41	1.10
Other leukemia	15	0.58	1	0.37	7	0.74	2	0.29	5	0.75

Table 2: Standardized incidence ratios (SIRs) of second primary malignancies (SPMs) after cutaneous melanoma (CM) according to time to diagnosis of SPM, 1973-2003.

Bold denotes that 95% confidence intervals (CIs) excluded 1.0. Excess risk is per 10,000 person-years.

7:57 – 8:05 am

PRESENTER: Julie Gladsjo, MD, PhD

TITLE: Treatment of Surgical Scars with the 595nm Pulsed Dye Laser Using Purpuric and Nonpurpuric Parameters: A Comparative Study

AUTHORS: Julie Gladsjo, MD, PhD; Shang I.B. Jiang, MD

INSTITUTION: Medicine (Dermatology), UC San Diego, San Diego, CA, United States

Purpose: Since the 1980's, the pulsed dye laser has been used to improve the cosmetic appearance of scars. However, the optimal laser parameters for treating scars are not known. The purpose of this study was to determine whether treatment of fresh surgical scars with a pulsed dye laser using purpura-inducing settings will improve

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clinical appearance better than one using non-purpurainducing settings or no treatment. A secondary goal is to determine whether multiple treatment sessions are superior to a single treatment.

Design: Patients with a linear surgical wound measuring at least 4.5 cm located anywhere on the body except for hands, feet or genitals, were enrolled at the excision visit. At the post-operative suture removal visit, patients received the first of 3 pulsed dve laser treatments, spaced 4 weeks apart (at 2, 6, and 10 weeks after surgery). The surgical wounds were divided in 3 equal contiguous parts, each measuring at least 1.5 cm. One segment was treated using purpuric settings (pulse duration of 1.5msec), a second segment was treated at the same fluence but nonpurpuric settings (10msec pulse duration), while a third control segment received no treatment. Fluence delivered was determined by Fitzpatrick skin type. In order to minimize the effects of wound tension, position of each treatment condition was randomly assigned. Outcome of each scar segment was assessed by the investigator using the Vancouver Scar Scale which evaluates overall scar appearance, visibility of scar, erythema, hyperpigmentation, and hypopigmentation; and by a blinded evaluator who rated the overall cosmetic appearance. Outcomes assessments were performed at 6, 10, and 14 weeks.

Summary: Preliminary results of 6 patients showed that there were no significant differences in the appearance of the three scar segments between the three study conditions overall, or at the 14 week assessment visit, as rated on the Vancouver Scar scale. Neither was there any difference in the subjective rating of pain between the purpuric and nonpurpuric treatment settings. No subject reported any adverse event.

At the meeting, we will present our study results, projected to include data from 20 patients, comparing the ratings of scar appearance for the three treatment parameters. We will also report whether multiple laser treatments result in significantly better appearance than a single treatment.

Conclusion: The differences between purpuric versus nonpurpuric settings with the pulsed dye laser and single versus multiple treatments for improving the cosmetic appearance of scars will be discussed.

8:05 - 8:13 am

PRESENTER: Allison M. Hanlon, MD, PhD

TITLE: Mohs Micrographic Surgery for the Treatment of Cutaneous Lymphadenoma

AUTHORS: Allison M. Hanlon, MD, PhD¹; Anna S. Clayton, MD¹; Brent R. Moody, MD²; Thomas Stasko, MD¹

INSTITUTIONS: 1. Dermatology, Vanderbilt University, Nashville, TN, United States 2. Skin Cancer and Surgery Center, Nashville, TN, United States

Purpose: The purpose of the study was to investigate the clinical characteristics and outcome of cutaneous lymphadenoma patients treated with Mohs micrographic surgery.

Design: We performed a retrospective chart review of four cutaneous lymphadenoma patients treated with Mohs

micrographic surgery from 1998-2008. We included the anatomical location, tumor size, patient age, number of Mohs layers, and recurrence rate.

Summary: Cutaneous lymphadenoma is a rare, benian, slow growing tumor that presents on the head and neck in young and middle aged adults. The usual clinical presentation is a slow growing papule resembling a basal cell carcinoma. Metastasis has not been documented. Cutaneous lymphadenomas are treated with surgical excision. The tumor usually presents in an anatomically sensitive area where margin control and conservative excision are indicated; therefore, Mohs micrographic surgery may be preferred over wide local excision. We present four cases of cutaneous lymphadenoma treated with Mohs micrographic surgery from 1998 to 2008. The average age of the patient at diagnosis was 49.5 years old. All of the patients had tumors presenting on the face. The average pre-operative tumor size was 0.9 cm. The average number of MMS layers was 2. Follow up was available for three patients with an average follow up period of 29 months. None of the three patients had a recurrence.

Conclusion: To our knowledge, this is the largest series describing the use of Mohs micrographic surgery for the treatment of cutaneous lymphadenoma. Our data indicate that cutaneous lymphadenoma patients treated with Mohs micrographic surgery had a favorable recurrence rate making it a treatment option for this rare tumor.

8:13 - 8:21 am

PRESENTER: Jason Litak, MD

TITLE: The Routine Use of Adjuvant Cytokeratin Immunostaining in Mohs Micrographic Surgery for Non-melanoma Skin Cancer

AUTHORS: Jason Litak, MD; Jeffrey Altman, MD; Heydar Karimi, PhD; Lady C. Dy, MD

INSTITUTION: Dermatology, Rush University Medical Center, Chicago, IL, United States

Purpose: The respective recurrence rates for basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) treated with conventional Mohs micrographic surgery (MMS) are 1-2% and 3.1% for primary tumors, and 5-6% and 7% for recurrent tumors. These recurrences may be due to residual tumor not identified with standard hematoxylin and eosin (H&E) staining.

To determine whether the addition of immunohistochemical staining with a mixture of AE1/AE3 cytokeratin monoclonal antibodies will identify residual tumor cells in sections in which the H&E-stained frozen sections were negative.

Design: One hundred consecutive cases of non-melanoma skin cancer were treated with the Mohs procedure under standard conditions using H&E-stained slides. Once the "final layer" was determined to be tumor free by the Mohs surgeon, an extra slide from the "tumor free" tissue block was stained with a mixture of AE1/AE3 cytokeratin monoclonal antibodies. Any cases identified with residual tumor cells were further evaluated with an additional frozen section slide processed with H&E staining.

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Summary: Of the 100 cases of non-melanoma skin cancer determined to be tumor free on H&E-stained frozen sections, the adjuvant use of immunostaining with AE1/AE3 cytokeratin monoclonal antibodies identified:

1. # cases showing no positivity

2. # cases with positivity corresponding to occult tumor cells (#BCC, #SCC) (#obscured with inflammatory cells)

Preliminary Results: Of 4 cases and 5 slides, 1 slide was positive for residual tumor identified by immunohistochemistry (Figure 1). Correlation to the original H&E slide (Figure 2) revealed occult residual tumor not originally indentified.

Conclusion: The routine use of adjuvant cytokeratin immunostaining in MMS for the treatment of nonmelanoma skin cancer is useful in identifying residual tumor cells not identified on standard H&E-stained frozen sections. This technique is limited by the experience of the Mohs surgeon in the interpretation of immunohistochemical frozen section slides. The technique is also limited by the technical skill of the histotechnologist in the preparation of the immunohistochemical slides.

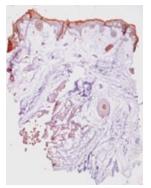


Figure 1: Positive AE1/AE3 cytokeratin immunostaining revealing tumor cells in the dermis.

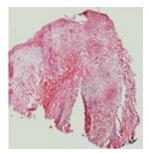


Figure 2: Original H&E slide from Mohs procedure initially called "tumorfree". Occult tumor identified by correlation with IHC slide.

8:21 - 8:29 am

PRESENTER: Heather D. Rogers, MD

TITLE: Prospective Study of Wound Infections in Mohs Micrographic Surgery Using Clean Surgical Technique in the Absence of Prophylactic **Antibiotics**

AUTHORS: Heather D. Rogers, MD1; Edward B. Desciak, MD²; Rebecca Marcus, MD

²; Shuang Wang, PhD³; Julian MacKay-Wiggan, MD, MS2; Yehuda D. Eliezri, MD2

INSTITUTIONS: 1. Medicine, University of Washington School of Medicine, Seattle, WA, United States 2. Dermatology, Columbia University Medical Center, New York, NY, United States 3. Biostatistics, Columbia University Medical Center, New York, NY, United States

Purpose: Mohs micrographic surgery (MMS) has a low rate of surgical site infection (SSI) without the use of prophylactic antibiotics. In the studies to date, there has been variation in the steps taken by each surgeon to

prevent SSIs but in all cases sterile technique was used during wound reconstruction. We sought to evaluate the rate of SSIs among patients undergoing MMS with the use of clean surgical technique for all steps of MMS including wound reconstruction in the absence of prophylactic antibiotics.

Design: We prospectively evaluated 1000 patients undergoing MMS using clean surgical technique for SSIs. Clean suraical technique includes the use of clean surgical gloves and towels and a single pack of sterile instruments for all steps including wound reconstruction.

Summary: There were 11 infections among 1000 patients with 1204 tumors; the SSI rate was 0.91% (CI 0.38% to 1.45%). Three of the 11 infections were complications of hematomas. Four of the 11 infections occurred in flap closures, with the highest rate of SSI of 2.67% (4/146).

Conclusion: This is the first study to examine the rate of SSIs with the use of clean surgical technique for all steps of MMS including wound reconstruction in the absence of antibiotic prophylaxis. Our rate of SSIs of 0.91% is exceedingly low, underscoring the overall safety of MMS and its performance in the outpatient setting without the use of antibiotic prophylaxis or sterile technique.

8:29 - 8:37 am

PRESENTER: Jason D. Givan, MD

TITLE: Post-operative Lower Leg Wound Infections Following Mohs Micrographic Surgery: A Comparison of Incidence Rates Pre- and Postimplementation of a Clinical Care Protocol

AUTHORS: Jason D. Givan, MD; Dori Goldberg, MD; David E. Geist, MD; Mary E. Maloney, MD

INSTITUTION: Dermatology, University of Massachusetts, Worcester, MA, United States

Purpose: The purpose of this study is to evaluate the effectiveness of a simple clinical care protocol with regard to the incidence of post-operative lower leg (i.e. below the knee) wound infections following Mohs micrographic surgery. Pre- and post-protocol wound infection rates will be compared.

Design: We designed and implemented a simple clinical care protocol for patients undergoing Mohs micrographic surgery on the lower leg. The protocol was invoked for all patients requiring Mohs surgery on a site below the knee and involved pre-operative, operative, and post-operative aspects. Pre-operatively patients were instructed to wash the entire involved leg with anti-bacterial soap the night prior to and the morning of surgery. Prior to the initiation of surgery, all patients were instructed to remove both shoes and both socks, as well as long pants. An initial surgical prep of the entire involved lower leg from the knee to the toes, including the toe web spaces, was performed with Hibiclens scrub. This was followed by a standard Hibiclens surgical prep locally at the surgical site. Post-operatively, patients were given specific wound care instructions including instructions to re-wash the surgical site separately after showering to

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remove bacteria that may have been carried over and into the wound. Mupirocin ointment was prescribed in all cases. Local compression wraps and leg elevation were utilized. Strenuous exercise and prolonged standing/walking were prohibited. Post-operative wound infection rates will calculated and compared to pre-protocol infection rates to determine protocol effectiveness.

Summary: Our research efforts are on going. However, early statistical trends suggest that there has been a clear decrease in post-operative wound infection (and wound dehiscence) rates following the implementation of this clinical care protocol.

Conclusion: Lower extremity post-operative wound infections following Mohs micrographic surgery are not uncommon. Multiple factors are likely to contribute to this clinical scenario including bacterial contamination during the operative procedure and wound contamination post-operatively as microorganisms are carried over and directly into the surgical wound through the act of bathing. Additionally, increased venous and lymphatic pressures, inherent to the lower leg, contribute to micro and macroscopic wound dehiscence and prolonged healing time. We have addressed each of these issues via the implementation of a simple clinical care protocol with clear preliminary benefit.

7:17 - 7:25 am

PRESENTER: Erica H. Lee, MD

TITLE: Resident Training in Mohs Micrographic Surgery and Procedural Dermatology: A Survey Assessing the Residents' Role and Perceptions

AUTHORS: Erica H. Lee, MD¹; Kishwer S. Nehal, MD¹; Stephen W. Dusza, MPH¹; Elizabeth K. Hale, MD³; Vicki J. Levine. MD²

INSTITUTIONS: 1. Dermatology Service, Memorial Sloan-Kettering Cancer Center, New York, NY, United States 2. Dermatology, New York University Langone Medical Center, New York, NY, United States 3. Laser & Skin Surgery Center of New York, New York, NY, United States

Purpose: In the past decade the scope of surgical training in dermatology residency has increased. Understanding the residents' role in Mohs surgery and procedural dermatology provides insight to current training practices, trends and overall compliance. To assess the residents' surgical experience and training perceptions, a survey was sent to third year dermatology residents.

Design: A 34-question survey was sent to 107 dermatology residency programs accredited by the Accreditation Council for Graduate Medical Education (ACGME). The survey was mailed to third year dermatology residents in March 2009. The survey was designed to assess: 1) resident experience in Mohs surgery and procedural dermatology, 2) resident self-evaluation of competency and preparation level, 3) resident perspective of procedural dermatology training and 4) overall satisfaction. A follow-up survey was mailed to non-responders in April 2009.

Summary: Two hundred forty one surveys were returned, for a response rate of 66%. A total of 95 programs responded (89%).

Sixty three percent of respondents spend more than one month in a Mohs surgery rotation, 24% spend two to four weeks and 9% spend less than two weeks during an academic year. In the majority of Mohs cases, 18% of responding residents are the primary surgeon, 66% assist and 10% observe. In flap reconstructive surgery, forty-nine percent of residents are the primary surgeon (designing, cutting and suturing) and 45% assist only (supplement anesthesia, undermine, suture and cauterize). A similar response pattern was observed for skin graft reconstruction. The primary surgeon and assistant role were clearly defined in the survey.

Residents are generally the primary surgeon in botulinum toxin, injectable fillers, sclerotherapy, superficial chemical peels and nail surgery, however experience is limited in dermabrasion, liposuction and medium depth peels. Over 50% are not exposed to hair transplantation, ambulatory phlebectomy, blepharoplasty and rhytidectomy during training.

Competency level was self-assessed by residents. Residents felt competent in suturing techniques and excisional surgery (>90%), advancement flaps (60%) and full thickness skin grafts (48%). Residents generally felt better prepared to integrate botulinum toxin and laser

surgery into practice after graduation compared to injectable fillers and sclerotherapy.

The surgical procedures residents feel competence should be achieved at the end of training include excisional surgery, chemical peels, botulinum toxin, injectable fillers and the laser treatment of vascular lesions.

Conclusion: Resident training in Mohs micrographic surgery is primarily limited to the assistant role. Competency in Mohs micrographic surgery is not achieved during residency and post-residency training is warranted for proficiency. Residents feel confident in reconstructive surgery likely due to increased exposure in training, but may not reflect true competency. Residents are performing laser and cosmetic procedures; however, experience varies widely among various types of procedures. Overall, residents are satisfied with their training in procedural dermatology.

7:25 - 7:33 am

PRESENTER: Keoni Nguyen, DO

TITLE: A Novel Interactive High-fidelity Cutaneous Surgical Training Model of the Head, Neck, and Shoulders

AUTHORS: Keoni Nguyen, DO; Joseph McGowan, MD; Tom G. Olsen, MD; Brett M. Coldiron, MD, FACP; Heidi B. Donnelly, MD

INSTITUTION: Dermatology, Wright State University, Dayton, OH, United States

Purpose: Dermatologic surgery continues to take on an important role in the surgical arena due to the increase in skin cancers in an aging population. Although the dermatology surgical curriculum is changing to accommodate the demands of our healthcare system. there is great variation in the surgical training received among dermatology residencies and procedural dermatology fellowships. In 2008, Reid et al. reviewed 211 training anonymous surveys of recent graduates and confirmed that residents were dissatisfied with their surgical and cosmetic training. One factor that may restrict residents from acquiring more hands-on surgical experience is the ethical concerns of "practicing" on live patients. Adequate cutaneous surgical models for residents and fellows are lacking to repetitively practice their surgical skills. Currently, eighty-four percent of dermatology training programs are utilizing pig's feet models to instruct and evaluate dermatology residents. Pig's feet are low-fidelity models, meaning they do not accurately simulate skin elasticity and turgor. Low-fidelity models are suboptimal for teaching advanced concepts of flap vectors, dissecting planes, danger zones, and tumor free margins. Our objective is to introduce a novel three-dimensional "highfidelity" cutaneous surgical training model.

Design: A high-fidelity cutaneous surgical model of the head, neck, and shoulders was developed. Over thirty tumors are strategically placed on the head, neck, and shoulders (Figure 1a). Beneath the cutaneous layer, there are simulated subcutaneous fat, nerves, blood vessels, muscles, fascia, cartilage, and bony structures of the head, neck, and shoulders (Figures 1b - 1c). This is a useful adjunct for learning and understanding head

and neck anatomy, including danger zones and planes for undermining. The "high-fidelity" model allows a close simulation of human tissue properties facilitating the instruction of flap dynamics and advanced reconstruction in a controlled, reproducible setting (Figures 2a – 2b). Ten skin-simulant samples composed of various mixtures of elastomers and fibers were tested on an Instron E3000 dynamic testing machine to simulate normal mechanical values of human skin. Sample four was selected for the cutaneous layer of the model. Values include: specimen width of 14.47 mm, thickness of 1.45 mm, strain at break of 93.36 percent, Young's Modulus of 12.76 MPa, and tensile strength of 9.05 MPa.







Summary: We believe this novel high-fidelity cutaneous surgical training model is optimal for teaching basic and advanced concepts of flap vectors, dissecting planes, danger zones, and tumor free margins (Figures 2a – 2d).



Conclusion: This cutting edge three-dimensional interactive high-fidelity surgical training model is unique and optimal to teach and evaluate dermatology residents and fellows. The training model can be integrated into dermatology training programs and procedural fellowships such that residents and fellows may develop an effective surgical technique prior to clinical practice. The surgical model has the potential to revolutionize dermsurgery training.

7:33 - 7:41 am

PRESENTER: Michael B. Colgan, MD

TITLE: The Predictive Value of Imaging Studies in Evaluating Regional Lymph Node Involvement in Merkel Cell Carcinoma

AUTHORS: Michael B. Colgan, MD¹; Tina I. Tarantola, MD¹; Laura A. Vallow, MD⁴; Michele Y. Halyard, MD³; Amy L. Weaver, MS²; Randall K. Roenigk, MD¹; Jerry D. Brewer, MD¹; Clark C. Otley, MD¹

INSTITUTIONS: 1. Dermatology, Mayo Clinic-Rochester, Rochester, MN, United States 2. Biomedical Statistics & Informatics, Mayo Clinic-Rochester, Rochester, MN, United States 3. Radiation Oncology, Mayo Clinic-Scottsdale, Rochester, MN, United States 4. Radiation Oncology, Mayo Clinic-Jacksonville, Jacksonville, FL, United States

Purpose: To clarify the utility of various imaging modalities including CT, PET/CT, and MRI in detecting nodal involvement in patients with primary Merkel cell carcinoma.

Design: A multi-center, retrospective, consecutive study reviewing 105 patients diagnosed with known primary Merkel cell carcinoma (MCC) between 1986 and 2008 was completed. All patients had a documented imaging study evaluating their regional lymph node basin as part of the staging process, followed by an elective or therapeutic nodal dissection or sentinal lymph node biopsy. Data from three academic medical centers was collected and combined for analysis.

Summary: Of the 105 patients reviewed 75 patients had a CT, 33 patients had a PET/CT, and 10 had an MRI. CT scan (75 patients) demonstrated a sensitivity of 54%, a specificity of 95%, a positive predictive value of 90%, and a negative predictive value of 70% in detecting nodal basin involvement. PET/CT scan (33 patients) demonstrated a sensitivity of 77%, a specificity of 95%, a positive predictive value of 91%, and a negative predictive value of 87% in detecting nodal basin involvement. MRI (10 patients) demonstrated a sensitivity of 0%, a specificity of 86%, a positive predictive value of 0%, and a negative predictive value of 67% in detecting nodal basin involvement.

Conclusion: The use of PET/CT in the evaluation of a regional lymph node basin in primary MCC is significantly more sensitive and equally specific when compared to traditional CT. For this reason, it may be the most appropriate imaging study when determining regional nodal involvement in these patients. MRI does not appear to provide a high sensitivity or predictive value as an imaging technique for nodal involvement, although our study had too few numbers to draw any statistical significance.

7:41 - 7:49 am

PRESENTER: Mark Hyde, MMS, PA-C

TITLE: Utilization of Physician Assistants in Mohs Micrographic Surgery, a Survey of Fellowship Trained Mohs Micrographic Surgeons

AUTHORS: Mark Hyde, MMS, PA-C¹; Michael L. Hadley, MD^{3,1}; Conrad Roberson¹; Lisa Pappas²; Abby A. Jacobson, MS, PA-C⁴; Glen M. Bowen, MD^{3,1}

INSTITUTIONS: 1. Cutaneous Oncology, Huntsman Cancer Institute at the University of Utah, Salt Lake City, UT, United States 2. Biostatistics Shared Resources, Huntsman Cancer Institute at the University of Utah, Salt Lake City, UT, United States 3. Department of Dermatology, University of Utah, Salt Lake City, UT, United States 4. Physician Assistant Program, Hahnemann/Drexel University, Philadelphia, PA, United States

Purpose: An increasing number of dermatologists are using Physician Assistants (PAs) in their practices. A lack of information regarding the utilization of PAs in Mohs micrographic surgery (MMS) served as the driving force for this research.

Design: 576 fellow members of the American College of Mohs Surgery were sent surveys via the US postal service in January 2009. The survey was focused on what portion of Mohs surgeons are using PAs and how those PAs are being utilized.

Summary: Of the 576 surgeons surveyed, 143 (24.8%) responded. Of those, 43/143 (30.1%) currently employed 1 or more PA. 15/43 (34.9%) surgeons reported that PAs in their practice perform preoperative consults. 25/43 (58.1%) surgeons noted that PAs are performing the postoperative follow up. 18/43 (41.9%) surgeons reported that PAs were participating in some aspect of repairs. 35/43 (81.4%) surgeons reported that PAs were seeing general dermatology patients.

Conclusion: It appears that some Mohs surgeons are utilizing PAs for perioperative care as well as seeing general dermatology patients. A smaller percentage of Mohs surgeons are using PAs to perform portions of Mohs surgery or the consequent repairs.

Presurgical consults	15/43 (34.88%)			
Excision of Mohs sections	1/43(2.33%)			
Mapping Mohs sections	0/43			
Inking excised tissue	1/43(2.33%)			
Interpreting pathology	0/43			
Primary repair-design	8/43(18.6%)			
Primary repair-dermal sutures	12/43 (27.91%)			
Primary repair-epidermal sutures	18/43 (41.86%)			
Adjacent tissue transfer-design	2/43 (4.65%)			
Adjacent tissue transfer-dermal sutures	8/43(18.6%)			
Adjacent tissue transfer-epidermal sutures	14/43(32.56%)			
Skin graft-design	6/43 (13.95%)			
Skin graft-dermal sutures	10/43 (23.26%)			
Skin graft-epidermal sutures	16/43 (37.21%)			
Surgical follow-ups	25/43 (58.14%)			

Breakdown of tasks delegated to Physician Assistants by Mohs Micrographic Surgeons

This data was in response to the question: "What portions of the MMS process are being delegated to PAs?"

7:49 - 7:57 am

PRESENTER: Kevan G. Lewis, MD

TITLE: Efficacy, Tolerability and Cost-effectiveness of Topical 5-Fluorouracil vs. Imiquimod for the Treatment of Superficial Basal Cell Carcinoma: A Randomized Double Blind Clinical Trial

AUTHORS: Kevan G. Lewis, MD^{1, 2}; Katherine Cordova, MD²; Nathaniel J. Jellinek²

INSTITUTIONS: 1. Dermatology, Mayo Clinic, Rochester, MN, United States 2. Dermatology, Brown Medical School, Providence, RI, United States

Purpose: To compare the efficacy, tolerability and cost-effectiveness of topical 5-fluorouracil to imiquimod for the treatment of superficial basal cell carcinoma.

Design: A prospective, randomized, double blind, vehicle-controlled clinical trial.

Summary: Results are based on an intent-to-treat analysis of 18 subjects (9 female, 9 male; ages 39-77, mean 71y) meeting the criteria for inclusion who enrolled in the study. Subjects were randomized to one of two study groups: (N=7) 5-fluorouracil 5% cream (twice daily application for 6 weeks), or (N=11) imiquimod 5% cream (once daily application of drug and once daily application of vehicle cream for 6 weeks). Sixteen subjects completed the study; 2 terminated early due to exuberant local skin reactions. Primary lesions were located on the trunk (n=8), extremities (5), and head/ neck (5). Histopathologic evaluation of formalin fixed, paraffin embedded, H&E stained step-sections of posttreatment excision specimens demonstrated residual basal cell carcinoma in 2 cases (both following treatment with imiguimod). Histopathologic assessment of complete response (no residual tumor) occurred in 7 of 7 (100%) subjects in the 5-fluorouracil group and in 9 of 11 (82%) subjects in the imiguimod group. The proportion of cases with histopathologic evidence of persistent tumor was not statistically different (p=0.23) between study groups. Subject reported symptoms of pain, burning or itching were similar between study groups. Investigator assessed signs of erythema, edema, induration, vesicles, ulceration, crusting, excoriation were similar between groups. Although insurance coverage and market price varies over time, the cost of 5-fluorouracil may be less than imiquimod for treatment of superficial BCC. One limitation of the study is less than 100% margin control with bread loaf sectioning of excision specimens.

Conclusion: The data suggest that 5-fluorouracil and imiquimod are effective and well tolerated topical medical therapies for superficial basal cell carcinoma.

7:57 - 8:05 am

PRESENTER: Joshua B. Wilson, MD

TITLE: Staged Excision for Lentigo Maligna and Lentigo Maligna Melanoma: Analysis of Surgical Margins and Long-term Recurrence in 71 Cases from a Single Practice

AUTHORS: Joshua B. Wilson, MD¹; Hobart W. Walling, MD, PhD³; Roger I. Ceilley, MD¹; Andrew K. Bean, MD¹; Richard Scupham, MD²

INSTITUTIONS: 1. Dermatology PC, West Des Moines, IA, United States 2. Iowa Pathology Associates, Iowa Methodist Medical Center, Des Moines, IA, United States 3. Town Square Dermatology, Coralville, IA, United States

Purpose: Margin control surgery offers the highest cure rate for lentigo maligna (LM) and LM melanoma (LMM). However, recommended margins often prove inadequate. Limited data are available regarding recurrence after staged excision. The purpose of this was to assess the surgical margins necessary for clearance of LM and LMM and the long-term recurrence rate of LM/LMM treated by staged excision with rush permanent sections.

Design: Retrospective chart review of patients with LM treated by staged excision.

Summary: Seventy-one patients (41 male, 30 female, mean age 68.3 ± 10.1 years) were treated for LM (61) or LMM (10) from 1986 to 2005, with ongoing follow-up through 2009. Fifty-one tumors (72%) were located on the head and neck (32% cheek). Mean follow-up duration was 91.3 months (range 8-266 months). Four tumors (all facial LM) recurred after a mean interval of 24.3 months (range 8-35). The recurrent tumors did not vary significantly compared to the non-recurrent tumors in any parameter, including pre-operative size, post-operative size, or number of stages. The 5-year recurrence risk (via Kaplan-Meier calculations) was 5.8% (95% confidence interval 1.9% - 14.7%). This recurrence risk remained stable at 10 years. Among 67 tumors that did not recur, clear margins were obtained in one stage in 36 cases (54%), two stages in 19 cases (28%), three stages in 7 cases (10%), and four or more stages in 5 cases (7%) The overall margin for tumor clearance was 6.1 \pm 0.5 mm for LM and 9.0 \pm 1.5 mm for LMM. LM of the cheek required more stages (2.5 \pm 0.4) and a wider margin (8.0 \pm 1.2 mm) than LM at other sites (p<0.04). Recommended margins (0.5 cm for LM, 1 cm for LMM) would have been adequate for 29/54 (54%) LM cases, 19/40 (48%) of head/neck LM, and 7/8 (88%) cases of LMM.

Conclusion: Staged excision of LM and LMM is associated with a low recurrence rate. Tumors of the cheek required more stages and a greater margin for clearance. The finding that nearly half of tumors were not cleared with the recommended surgical margin underscores the importance of margin-control surgery.

8:05 - 8:13 am

PRESENTER: John A. Carucci, MD, PhD

TITLE: Human Cutaneous Squamous Cell Carcinoma is Associated with Increased Lymphatic Density in the Tumor Microenvironment and Increased **Expression of Macrophage Derived VEGF-C**

AUTHORS: John A. Carucci, MD, PhD1; Dariush Moussai, MD¹; Hiroshi Matsui, MD²; Katherine C. Pierson²; James G. Krueger, MD, PhD²

INSTITUTIONS: 1. Dermatology, Weill Medical College of Cornell, New York, NY, United States 2. Investigative Dermatology, Rockefeller University, New York, NY, United States

Purpose: Metastases from primary cutaneous SCC account for the majority of deaths from non-melanoma skin cancer in the United States each year. We studied lymphangiogenesis in human SCC because of the potential link to metastasis.

Design: Human SCC samples were stained for lymphatic endothelial vessel marker LYVE-1 and positive cells were counted in tumors and compared with normal skin. Gene set enrichment analysis and RT-PCR was performed on SCC, adjacent non-tumor bearing skin and normal skin to determine differential expression of lymphangiogenesis associated genes. Laser capture microdissection was performed to isolate tumor and tumor-associated inflammatory cells for further gene

expression analysis. Immunofluorescence microscopy was performed to determine the source of VEGF-C in the tumor microenvironment.

Summary: We found increased lymphatic density and reorganized lymphatic endothelial vessels in the dermis adjacent immediately to SCC tumor nests. RT-PCR confirmed the presence of VEGF-C in skin immediately adjacent to SCC. Laser capture microdissection allowed us to isolate the inflammatory infiltrate adjacent to SCC which confirmed the increased expression of VEGF-C. The presence of CD163+/VEGFC+ cells by immunofluorescence microscopy suggested that VEGF-C is macrophage derived.

Conclusion: Tumor associated macrophages may be an important source of VEGF-C contributing to increased lymphatic vessel density surrounding SCC. Based on this, a higher density of tumor associated macrophages may be associated with a "pro-tumor" rather than "antitumor" effect. Clarification of mechanisms governing lymphangiogenesis in the tumor microenvironment may lead to identification of novel targets for therapeutic intervention for high risk SCC.

8:13 - 8:21 am

PRESENTER: Leonid Izikson, MD

TITLE: Prevalence of Underdiagnosed Aggressive Non-melanoma Skin Cancers Treated with Mohs Micrographic Surgery: Analysis of 468 Cases

AUTHORS: Leonid Izikson, MD; Marie Seyler; Nathalie C. Zeitouni, MDCM, FRCPC

INSTITUTION: Dermatology, Roswell Park Cancer Institute, Buffalo, NY, United States

Purpose: To examine the prevalence of biopsy-based underdiagnosis of aggressive non-melanoma skin cancer (NMSCA) subtypes in cases referred for Mohs micrographic surgery (MMS).

Design: A retrospective chart review was performed of 468 consecutive cases of primary NMSCA with a biopsy-proven diagnosis of basal (BCC) or squamous cell (SCC) carcinoma treated with MMS. All histological tumor layers were reexamined by two dermatologists to establish an intraoperative diagnosis. Correlation was then made between the preoperative lesion diagnosis and the histological tumor layer diagnosis. Tumors were classified as aggressive subtypes (invasive SCC, as well as basosquamous carcinoma and infiltrating, morpheaform, micronodular, and keratinizing BCC) or non-aggressive subtypes (SCCIS, as well as superficial, nodular, adenoid cystic, and follicular BCC). Cases were divided into categories based on whether the preoperative and intraoperative diagnosis showed discordance in identifying tumor subtypes. The total number of cases in each category was tabulated, and percentages calculated based on the total number of 468 examined cases.

Summary: In 52.4% of the cases, biopsy and intraoperative examination of NMSCA showed concordance in the diagnosis of an aggressive or a non-aggressive tumor subtype. In 17.3% of the cases, intraoperative examination revealed an aggressive tumor

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subtype that was not diagnosed by biopsy. In 23.3% of the cases, intraoperative examination found no residual tumor in the biopsied site.

Conclusion: In the majority of cases, there was concordance between the initial NMSCA diagnosis and the final Mohs tumor layer diagnosis. The prevalence of aggressive SCC and BCC subtypes underdiagnosed by biopsy in this study suggests that a significant proportion of biopsied NMSCA may be treated sub-optimally in the clinical settings.

8:21 - 8:29 am

PRESENTER: Hillary Johnson-Jahangir, MD, PhD

TITLE: Modified Flap Design for Symmetric Reconstruction of the Apical Triangle of the Upper Lip

AUTHORS: Hillary Johnson-Jahangir, MD, PhD; Mary Stevenson, BA; Désirée Ratner, MD

INSTITUTION: Dermatology, Columbia University, New York, NY, United States

Purpose: The apical triangle of the upper lip, described by Burget, is a subunit of the cutaneous upper lip located at the confluence of the nose, lip, and cheek (Figure 1a). Defects of the apical triangle present a reconstructive challenge in terms of proper placement of the upper nasolabial fold and preservation of facial symmetry. If the apical triangle is not taken into account when repairing such defects, the upper nasolabial fold may be displaced inferiorly with asymmetric loss of the apical triangle subunit, which may lead to visible facial asymmetry. We present a further modification of the cheek advancement flap for repair of apical triangle defects to address this concern.

Design: Twenty-seven patients with defects involving the apical triangle of the upper lip after Mohs micrographic surgery for BCC or SCC were followed between 2002 through 2008 (Table 1). Patients were reconstructed with or without modification of the cheek advancement flap. The modified cheek advancement flap was performed by making an incision extending from the alar crease onto the nasal sill in order to optimize facial symmetry. For larger defects extending onto the nose or including additional subunits of the upper lip, Burrow's full thickness skin grafts were sometimes required to repair a portion of the defects. Photographs taken at the time of surgery were reviewed for evaluation of symmetry of the bilateral apical triangle.

Characteristic	Modified Advancement Flap	Standard Advancement Flap		
Patients, n	17	10		
Sex, % male	6	40		
Sex, % female	94	60		
Age, range (mean, median)	53-95 (74,76)	51-81 (72,76)		
Defect size, cm2,%	-	-		
<1.0	12	0		
1.0-3.0	40	60		
3.1-5.0	6	10		
5.1-7.0	18	10		
7.1-9.0	12	10		
>9.0	12	10		
Burrow's FTSG, n	13	4		

Table 1: Patient Characteristics

Summary: Apical triangle defects were repaired utilizing a standard cheek advancement flap (Figure 1b) or a modified cheek advancement flap (Figure 1c) in which an additional incision was made inferiorly along the alar crease onto the nasal sill. The modification allowed for advancement of the upper cutaneous lip to meet the apex of the hairless triangle with symmetrical placement of the nasolabial fold. For larger defects involving significant portions of the upper lip or nasal sidewall, Burrow's full thickness skin grafts were required to fully repair the defects.

No difference in complications was noted between the two reconstructive methods. Complications included hypertrophic scarring, foreign body reaction to ingrown hair, suture granuloma, or pyogenic granuloma. Hemorrhage, necrosis, and infection did not occur.



Figure 1.

Conclusion: Modification of the cheek advancement flap for reconstruction of perialar defects involving the apical triangle subunit of the upper lip is a simple and reliable technique for aesthetic preservation of facial symmetry. Rotation flaps may be a useful alternative for recreating defects of the upper lip involving the lower portion of the apical triangle. Other reconstructive alternatives, including crescentic advancement flaps, nasolabial transposition flaps, or island pedicle flaps, may not be as effective in recreating the apical subunit and may present additional aesthetic challenges.

8:29 - 8:37 am

PRESENTER: Yang Xia, MD

TITLE: Randomized Study to Assess the Wound Infection Incidence Using Clean versus Sterile Gloves for Mohs Micrographic Surgery (MMS) Wound Repairs

AUTHORS: Yang Xia, MD¹; Sunghun Cho, MD²; Daniel E. Zelac, MD¹; Hubert T. Greenway, Jr., MD¹

INSTITUTIONS: 1. Division of Mohs Surgery, Scripps Clinic, La Jolla, CA, United States 2. Dermatology, Darnall Army Medical Center, Ft. Hood, TX, United States

Purpose: The purpose of this study is to assess the difference in the wound infection rate when using clean, non-sterile gloves versus sterile gloves for wound repairs in Mohs micrographic surgery.

Design: This is a prospective subject-blinded single institution pilot study with plans to expand to a multi-institutional study within one year. The study is designed to investigate the difference in infection rate using clean, non-sterile gloves versus sterile gloves when repairing surgical defects during Mohs surgery. Enrollment for this pilot study will include 60 patients. Patients who are repaired by an outside physician, take antibiotics prior to

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the procedure, or have other serious medical conditions are excluded. Subjects will be stratified and randomized to have their repairs performed with either clean, nonsterile gloves or sterile gloves. The particular glove type will be used throughout the entire repair, even if the physician or surgical assistant requires multiple glove changes. Sterile patient prep and sterile surgical trays will still be used during all wound repairs. In addition to the glove type, data to include patient's age, sex, anatomic location of skin cancer, number of Mohs stages, closure type, final surgical defect size, and total surgical time (from first cut to closure) will be collected. After wound repair, each patient will follow-up between 5 to 21 days for suture removal and wound assessment. Wound assessment is performed by a healthcare professional (i.e. a nurse or a medical assistant) outside of the study and the wound is scored based on the following scale. A score of 0 is given to wounds with zero or slight erythema. A score of 1 is given to wounds with erythema less than 1 cm from suture line. A score of 2 is given to wounds with erythema areater than 1 cm from suture line with or without edema. A score of 3 is given to wounds with exudates and purulent drainage.

Summary: Three months of data have been collected from the 29 patients enrolled in the study. Eighteen patients were repaired with clean gloves and 11 patients were repaired with sterile gloves. One patient from the clean glove arm of the study had clinical infection during follow-up and 2 patients from the sterile glove arm of the study had clinical infection during follow-up. Seven months of data, to include information on patient demographics and characteristics of the skin cancer excised, will be available at the time of the Mohs College meeting.

Conclusion: (Preliminary) the infection rate in MMS wound repairs between clean, non-sterile gloves versus sterile gloves is not statistically significant. From our pilot study, dermatologic surgeons can use clean, non-sterile gloves for simple uncomplicated wound repairs. The implication from this study may lead to significant cost savings when using clean, non-sterile gloves instead of sterile gloves for Mohs surgical repairs.

8:37 - 8:45 am

PRESENTER: Daniel I. Wasserman, MD

TITLE: A Prospective Pilot Study of the Alexandrite Laser on Basal Cell Carcinomas

AUTHORS: Daniel I. Wasserman, MD¹; Zeina S. Tannous, MD²; Gary D. Monheit, MD¹.

INSTITUTIONS: 1. Total Skin & Beauty Dermatology Center, Birmingham, AL, United States 2. Dermatology, Massachusetts General Hospital, Boston, MA, United States

Purpose: Skin cancer represents the most common form of human cancer. Basal cell carcinomas (BCC) are slow growing tumors that comprise roughly 80% of all nonmelanoma skin cancers (NMSCs). Due to the lack of its emergent nature, several approaches have evolved for the treatment of this slow growing, locally destructive cancer. They include Mohs micrographic surgery (MMS), excision, electrodessication and curettage (ED&C), cryosurgery, topical immunomodulators, photodynamic therapy, and radiotherapy. Recently, the pulsed-dye laser (PDL) (595 nm) has demonstrated considerable efficacy for superficial BCCs. The PDL for the use of BCCs is limited by its penetration of approximately 2 mm. Increasing the penetration 50% to a depth of 3 mm, achieved by the 755-nm alexandrite laser, could potentially provide increased complete clearance rates for not only superficial BCCs, but also perhaps nodular BCCs. Based on the deep penetration of long wavelength visible and near infrared light, and a small peak of hemoglobin absorption in the 800–900 nm range, long-pulsed millisecond-domain alexandrite lasers (755-nm) have been developed to treat moderately deep, larger caliber spider and feeding reticular veins. Currently, there are no reports for the use of the 755-nm alexandrite laser for the purpose of treating basal cell carcinomas. The goal of this pilot study is to determine whether superficial and nodular basal cell carcinomas can be successfully treated using the 755-nm alexandrite laser.

Design: Approximately 12 patients with biopsy-proven nodular or superficial basal cell carcinomas less than 2 cm located on the trunk or extremities (chest, abdomen, back, arms or legs), suitable for treatment by standard surgical excision were enrolled in this study. Following a standard baseline screening visit, each tumor was treated with the 755-nm alexandrite laser (GentleLASE®, Candela Corporation, Wayland, MA) either once or 4 times at 2-4 week intervals. Two-to-four weeks following the final treatment, all tumors were excised according to standard of care. All excisional specimens were then reviewed histologically for the complete clearance or partial clearance of tumors. In addition to efficacy, pain, purpura, edema, and blistering following treatments were measured during the study. Photos were taken throughout the study.

Summary: This study is currently in progress and preliminary results will be discussed at the Annual Meeting.

Conclusion: Conclusion will be discussed at the Mohs College Annual Meeting pending analysis of all available data.

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12:30 - 12:38 pm

PRESENTER: Christopher J. Miller, MD

TITLE: Revisiting the One-stage Nasolabial Transposition Flap

AUTHORS: Christopher J. Miller, $MD^{2,1}$; Aerlyn G. Dawn, MD, MBA^1

INSTITUTIONS: 1. Dermatology, University of Pennsylvania, Philadelphia, PA, United States 2. Division of Dermatologic Surgery, University of Pennsylvania, Philadelphia, PA, United States

Purpose: The small size of the alar subunit forces the surgeon to recruit donor tissue from outside cosmetic subunits to repair all but the smallest defects. One-stage reconstruction with local flaps risks deformity of the subtle contours of the convex ala, its free margin, and the concave transition to the neighboring cosmetic subunits. The one-staged nasolabial transposition flap provides excellent color and texture match for alar defects. However, the flap can succumb to trapdoor deformity and interrupt contour by blunting the concave boundaries of the ala. We present a simple, reliable approach to the nasolabial transposition flap that minimizes these common complications, reliably produces a cosmetic outcome that rivals or surpasses other reconstruction options, and offers patients the convenience of a one-stage flap that rarely requires secondary scar revision.

Design: We present flap indications, design, execution, and tips for success in a step-by-step manner using clinical photos. We report our experience in 21 patients using a one-stage nasolabial transposition flap for reconstruction of alar defects.

Summary: Twenty-one patients underwent Mohs micrographic surgery for tumors of the ala. All patients were successfully repaired with a nasolabial transposition flap. All patients had excellent cosmetic and functional outcomes with preservation of the subtle concavity of the superior alar crease. Scar revision was rare and primarily used to address focal inversion of the scar.

Conclusion: The one-stage nasolabial transposition flap is a reliable reconstruction option that results in reproducibly excellent cosmetic and functional outcomes for alar defects. This approach to the nasolabial transposition flap provides an excellent alternative to traditional multistaged flaps. This technique offers advantages including single-stage procedure, suitable color and texture match, excellent vascular supply, abundant tissue laxity from the medial cheek, and well-concealed donor site scar along the melolabial fold.





Figure 1. Defect (A) and postoperative result (B) 2 months after reconstruction with NLT flap.





Figure 2. Defect (A) and postoperative result (B) 4 months after reconstruction with NLT flap.



Figure 3. Defect (A) and postoperative result (B) 5 months after reconstruction with NLT flap.

12:38 - 12:46 pm

PRESENTER: Theresa L. Ray, MD

TITLE: Retroauricular Chondrocutaneous Interpolation Flap for Reconstruction of Large Helical Defects

AUTHORS: Theresa L. Ray, MD; Rehana L. Ahmed, MD; Peter K. Lee, MD, PhD

INSTITUTION: Dermatology, University of Minnesota, St. Louis Park, MN, United States

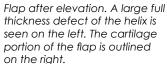
Purpose: Full thickness defects of the helical rim present a reconstructive challenge. If the defect is large, the ear may be structurally compromised leading to difficulty with use of hearing aids and eyeglasses. Further, the loss of cartilage presents a challenge cosmetically, as a loss of helical contour is unacceptable for many patients. The classic retroauricular interpolation flap can be used for large helical defects and can provide superior cosmetic results; however, if the helical cartilage is lost, a cartilage graft should be placed under the flap to maintain structural integrity. Harvesting a separate cartilage graft adds time to reconstruction and could leave an additional donor-site scar if taken from the contralateral ear. We propose a retroauricular interpolation flap for reconstruction of large helical defects, which incorporates retroauricular cartilage into the flap itself. To our knowledge, this has not yet been described in the literature. Herein is our experience with 18 patients.

Design: All defects resulted from Mohs micrographic surgery and were large enough to risk structural compromise to the ear. A traditional retroauricular interpolation flap was outlined posterior to the defect. A portion of the underlying cartilage just behind the leading edge of the flap was taken as part of the flap and used to reconstruct the helix. The cartilage is attached to the flap, thereby maintaining its innate vascular supply. The flap is then sutured into place and the leading edge of the flap, anterior to the cartilage graft, wrapped around the front of the ear to recreate the anterior helical rim. Buried vertical mattress sutures using 5-0 polyglactin were used for deep closure followed by interrupted anchoring sutures using 5-0 polypropylene. The remainder of the superficial closure was then achieved using a running stitch with 5-0 chromic gut. A through and through basting stitch is then placed through the scapha to hold the cartilage in place at the helix. After 3 weeks the flap is divided and inset in the standard fashion. The secondary defect continues to heal by second intent.

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Results immediately after flap placement showing excellent restoration of auricular contour and structural integrity.

Summary: All 18 patients had successful reconstruction with restoration of the auricle's structural integrity and excellent cosmetic results. We experienced no cases of flap failure or necrosis. We had one case of postoperative infection, which resolved with oral antibiotics and no long term complications. Post-operative pain was minimal for all patients.

Conclusion: In our experience, the retroauricular chondrocutaneous interpolation flap is an excellent option to reliably restore auricular structure after large, full thickness helical defects. It offers a faster, more reliable alternative to the standard interpolation flap over a cartilage graft, with lack of an additional scar at the cartilage donor site. Since the cartilage's innate blood supply is maintained, the potential for graft/flap failure is reduced as compared to the previous combination. As an additional benefit, it gives excellent cosmetic results with restoration of normal helical contour without shortening the ear.

12:46 - 12:54 pm

PRESENTER: David E. Kent, MD

TITLE: Massive Hemorrhage and Platelet Dysfunction Following Mohs Surgery and Nasal Reconstruction with Cartilage Graft and Interpolation Flap: Lessons Learned

AUTHORS: David E. Kent, MD1,2; Keith M. Harrigill, MD1

INSTITUTIONS: 1. Medicine, Mercer Medical School, Macon, GA, United States 2. Dermatology, Medical College of Georgia, Augusta, GA, United States

Purpose: The purpose of this presentation is to highlight the potential results of platelet dysfunction that occurred during Mohs surgery and a nasal composite reconstruction. The dysfunction was caused by use of two platelet inhibitors (aspirin and clopidogrel) and co-morbid conditions including renal insufficiency. We will discuss the use and interpretation of platelet function studies, patient management protocol for platelet dysfunction and attempt to identify those patients with specific co-morbid conditions that might benefit from preoperative platelet function testing.

Design: We present a case of a 73 y/o male that underwent Mohs surgery for a basal cell carcinoma of the left nose resulting in a 3.8 x 3.0 cm soft tissue defect. The defect involved the left nasal ala, underlying cartilage and portion of the side wall. His co-morbid conditions

were numerous and included chronic tobacco use, anticoagulation with two anti-platelet agents, and chronic renal insufficiency. The patient experienced persistent perioperative bleeding during the Mohs resection and later that night requiring a trip to the ER. A delayed reconstruction had been planned the next day under monitored anesthesia care at the patient's request. He underwent a cartilage graft with a cheek interpolation flap accompanied by extensive bleeding difficult to control. Because of his bleeding, he was admitted for 24 hour observation. Within 2 hours post-op he experienced profuse bleeding from all operative sites. A presumptive diagnosis of platelet dysfunction of uncertain cause was made. Platelet function tests were drawn. The patient required a return to the OR with general anesthesia, administration of DDAVP based on patient's body weight, transfusion of phoresed platelets, and other blood products during the 24 hours perioperatively. His platelet function studies returned grossly abnormal and his hemoglobin dropped from 10.6 to 7.3. Hematologic evaluation revealed findings consistent with drug induced platelet dysfunction. Prior to an uneventful division and inset of the flap, repeat platelet function studies were normal.

Conclusion: Platelet dysfunction due to antiplatelet agents can result in massive bleeding. Identification of these patients preoperatively is desirable. Management may require blood products as well as DDAVP. Recognition of these patients preoperatively with platelet function testing may help to avoid such bleeding. Specific patient profiles may help the physician identify these patients.



Post op hemorrhage due to platelet dysfunction.

12:54 - 1:02 pm

PRESENTER: Christopher Kearney, MD

TITLE: A Tunneled and Turned-over Nasolabial Flap for Reconstruction of Full Thickness Nasal ala Defects

AUTHORS: Christopher Kearney, MD; Adam T. Sheridan, MBBS, FACD; Carl Vinciullo, MD; Timothy G. Elliott, MD

INSTITUTION: Skin and Cancer Foundation, Sydney, Australia, Bondi Junction, NSW, Australia

Purpose: We describe, with illustrative cases, a single stage flap for repair of full thickness nasal alar rim where the lateral portion of the alar and the alar groove has been preserved during excisional surgery.

Design: This utilized a nasolabial turnover flap as described by Spear and colleague with the additional maneuver of tunneling the flap beneath the alar groove to its recipient site at the alar rim.

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Summary: Before, during, immediately post-procedure, and long term follow up of multiple cases are shown.

Conclusion: This procedure has the advantages over alternative repairs of preserving the important lateral alar groove, having a reliable vascular supply, providing a single stage solution, and providing a good cosmetic outcome.





1:02 - 1:10 pm

PRESENTER: Tracy M. Campbell, MD

TITLE: Using Electrosurgery for Scar Revision

AUTHORS: Tracy M. Campbell, MD; Daniel B. Eisen, MD

INSTITUTION: Department of Dermatology, UC Davis Medical Center, Sacramento, CA, United States

Purpose: Many techniques have been advocated for scar revision over the years to improve both contour and color match between the surgery site or scar and that of the normal surrounding skin. Dermabrasion is one of the most utilized, however, the need for specialized equipment, inability to address redundant tissue such as surgery dog-ears, and bleeding after completion of the procedure are disadvantages. We describe two alternative scar revision methods using electrosurgery that address some of the shortcomings of dermabrasion. Electrosurgical instruments are readily available and settings are adjusted to provide different depths of tissue ablation. Low power settings and short dwell time results in superficial tissue ablation where as higher power settings or longer dwell times cause deeper tissue ablation. The distance between the electrode tip and the tissue can be varied which also results in different levels of ablation. Using these various techniques the scar or surgery site can be quickly ablated to the desired level similar to that of dermabrasion. We have coined the term "electroblation" for this technique. Alternatively, when presented with redundant tissue, such as a surgery dogear, a fine tipped electrosurgery epilating tip can be used to burn into the subcutaneous tissue. When performed in a grid like pattern over the affected grea it causes significant dermal tissue contraction while sparing the intervening overlying tissue. We have termed this method "fractionated electroblation."

Design: For scars where better color or contour match with surrounding normal tissue is desired an electrosurgical device maybe used in lieu of dermabrasion. The site is identified, cleansed, numbed, and ablated with a standard hyfrecator needle using low power on a setting of 10. A sweeping motion is used to paint the scar and several millimeters of adjacent skin to the level of the superficial papillary dermis. Figure 1 illustrates this technique for scar revision on a forehead flap repair. For areas with cutaneous redundancies or bulky type

of scars where the color match is already good and complete deep ablation of the entire skin surface is likely to cause atrophic scars we use fractionated electroblation. A fine epilating needle is used on lower power on a setting of 5-10 and advanced into the deep dermis or subcutaneous plane depending on the size of the redundancy. Treatment is continued in a grid like pattern until the contour of the treated tissue is made to match that of the surrounding skin. Figure 2 illustrates this technique on a graft which has pin cushioned with contour irregularities. Petroleum jelly is applied to the treatment area until re-epithelialization.





Figure 1. (A, B) 10 wks s/p forehead flap repair (C) Electroblation. (D) 6 wks s/p electroblation

Figure 2. (A, B) 6 wks s/p FTSG (C, D) 4 wks s/p fractionated electroblation

Summary: The primary advantages of electroblation are the ability to treat cutaneous redundancies or bulky flaps, no need for specialized equipment that is typically present on hand in most dermatologic surgeon's offices, greatly reduced bleeding, and faster procedure time.

Conclusion: Electroblation is a convenient and easy method for scar revision. Potential advantages of electroblation over dermabrasion and laser systems include decreased expense, ease of use, diminished bleeding, and ability to treat cutaneous redundancies.

1:10 – 1:18 pm

PRESENTER: John M. Strasswimmer, MD, PhD

TITLE: Challenges to Marketing the Mohs College: A Florida Experience

AUTHORS: John M. Strasswimmer, MD, PhD; Richard Krathen, MD

INSTITUTION: www.MohsForSnowbirds.com, Palm Beach County, Delray Beach, FL, United States

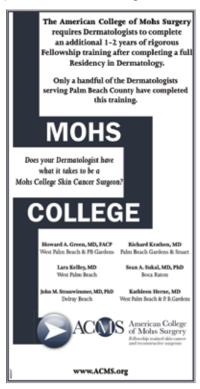
Purpose: We describe the challenges of growing an ACMS Mohs surgery practice in Florida and the creation of a cooperative marketing approach to promote local Mohs College members.

Design: We provide a description of the challenges posed to ACMS members in a county in Florida. These include the practice of dermatologic surgery by non-ACMS members, non-dermatologists, non ABD-certified dermatologists and non MD physicians. The public's lack of knowledge about the ACMS fellowship program is a limitation to growing a practice by ACMS members. In response, we describe genesis of an initial cooperative marketing plan. The plan might serve for other grass-roots Mohs Surgery ACMS marketing in other locations in the US.

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Summary: An informal review revealed that the vast majority of Mohs surgery providers in a county in Florida are not ACMS certified. Moreover, the public did not understand the significance of ACMS training and the potential advantages that provides. We will describe an initial cooperative advertising approach which has met with great satisfaction from the participants.

Conclusion: A cost-effective advertising approach promoting the ACMS resulted in conversion of patients from dermatologists who did not participate in this plan. Patient feedback was positive and the ACMS member expressed universal satisfaction with this program. We hope this approach will be used elsewhere in the US to promote the "branding" of the ACMS.



Initial advertisement used for print

1:18 - 1:26 pm

PRESENTER: Christian L. Baum, MD

TITLE: Detection and Treatment of Nasal Valve **Insufficiency Despite Complete Preservation** of Cartilage Following Mohs Surgery and **Reconstruction**

AUTHORS: Christian L. Baum, MD; Christopher J. Arpey,

INSTITUTION: Department of Dermatology, University of Iowa Hospitals and Clinics, Iowa City, IA, United States

Purpose: The nasal valve is often altered during Mohs surgery and reconstruction. As a result of nasal valve insufficiency (NVI), patient morbidity may be limited at best to a sensation of nasal fullness and, at worst, to a physiologically significant diminution of airflow. Therefore, a working knowledge of the nasal valve and management of NVI may facilitate optimal clinical

outcomes and patient satisfaction. Readily applicable clinical pearls regarding the nasal valve will be reviewed in order to provide a practical understanding of nasal valve anatomy and physiology, a framework for perioperative assessment, and recommendations for surgical management.

Design: Anatomy and physiology pearl: Soft tissue is a key structural component of the nasal valve.

The nasal valve is a dynamic structure that may move physiologically with sufficiently deep inspiration. It imparts the locus of highest resistance in the respiratory system. Although the precise boundaries and components of the valve have been debated from a physiologic and a surgical perspective, a reasonably practical view may consider the entire valve as being composed of an internal and external valve. The internal valve is formed by the anterior caudal edge of the upper lateral cartilage the septum while the external valve is formed by the fibrofatty tissues of the alar lobule and overlying skin, the lateral crus of the alar cartilage, the caudal septum, and the piriform aperture. The corresponding surface landmarks of the valve may be approximated by the distal lateral nasal sidewall, the alar groove, and the alar lobule.

Preoperative assessment pearl: A thorough preoperative evaluation may facilitate identification of patients at high-risk of NVI. At a minimum the surgeon should take into careful consideration the native structure and rigidity of the nose, any baseline nasal valve dysfunction, and the precise anatomic location of the tumor. Several methods have been described to assess nasal valve function, including the Cottle test and Adamson nasal patency test. Patients at high risk for nasal valve impingement include those with long, thin noses, a deviated septum, atrophy of the intrinsic nasal muscles, and tip ptosis. Specific tumoral characteristic that impart an increased risk of nasal valve collapse include: 1.) lesions or defects that cross the alar crease; 2.) lesions greater than 1 cm in diameter on the ala or lateral sidewall and within 1 mm of the alar crease.

Surgical management pearl: NVI may develop despite complete preservation of native cartilage.

Though surgical loss of nasal cartilage is likely the most obvious risk for NVI, other, more subtle factors may occur intraoperatively. In our practice, we have identified at least two settings in which NVI may develop even though native cartilage may be preserved. First, tumor extirpation may lead to sufficient loss of fibrofatty, soft tissue, and intrinsic nasal muscle to compromise the structural integrity of the nasal valve, resulting in NVI. In such cases we have found the application of a polypropylene suspension suture to the medial cheek to be useful in mitigating NVI. This technique decreases the morbidity associated with harvesting a cartilaginous graft while affording more predictable results. In another setting, NVI may develop as a result of sub-optimally placed tension vectors during reconstruction, rather than as a direct consequent of tumor extirpation. In such cases, re-orientation of the tension vector or, perhaps, consideration of another reconstructive option may be necessary. Thus, we recommend careful and periodic assessment of nasal valve patency during all phases of Mohs surgery and reconstruction.

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Conclusion: The nasal valve may be compromised during Mohs surgery solely due to sufficient soft tissue loss, or as a direct result of reconstruction. Awareness of the nasal valve at all times, even when native cartilage has been preserved, may facilitate avoidance of NVI, minimize postoperative morbidity, and improve patient satisfaction.

1:26 - 1:34 pm

PRESENTER: David E. Geist, MD

TITLE: A Reconstructive Pearl: The "Bottom-Up" Cheek Advancement Flap

AUTHORS: David E. Geist, MD; Dori Goldberg, MD; Jason D. Givan, MD; Mary E. Maloney, MD

INSTITUTION: Dermatology, UMass Medical School,

Worcester, MA, United States

Purpose: Large medial cheek and combined nasal sidewall-cheek defects can be challenging to repair. A classic approach is to use a laterally based advancement or rotation flap with a horizontal infraorbital incision. A disadvantage of this approach is long-lasting residual eyelid edema and a large flap. When the defect extends onto the nasal sidewall, an additional challenge is effectively tacking the flap down to prevent tenting over the melonasal junction.

Design: An alternate approach to these defects is a modified cheek advancement flap in which an inferior redundancy is designed and immediately removed as the first step. The flap and wound are then undermined without releasing the superior pole of the flap. The closure is then performed from the "bottom-up" placing deep and superficial sutures from the inferior pole upwards gradually closing the defect. Tacking sutures can be placed along the melonasal junction either to maxillary periosteum, if it can be reached, or simply to subcutaneous tissue and/or SMAS and tightened variably to recreate the appropriate contour and avoid tenting. With this contour recreated, nasal sidewall portions of the defects can be closed as well.

During the closure, the relatively elastic skin of the superior cheek and lower eyelid tends to stretch allowing closure of the superior pole, again without a releasing incision. A small burrows wedge or M-plasty can be performed at the medial lower eyelid, healing almost imperceptibly. There is minimal residual eyelid edema and the overall suture lines are shorter. In a short case series there have been several excellent cosmetic and functional outcomes. In one case under high tension, hypertrophic scarring was seen along the suture line.

Conclusion: The "bottom-up" cheek advancement flap offers an alternative approach for repairing large cheek and cheek-nasal sidewall defects. Advantages include shorter scar lines and limited eyelid edema versus traditional approaches.



"Bottom-up" cheek advancement flap: A large inferior cone is taken initially. Then deep sutures are placed from bottom to top. Only a small superior cone is needed on the eyelid to complete the closure.

1:34 - 1:42 pm

PRESENTER: Jeremy Cook, MD

TITLE: Use of the Temporary Suspension Suture in Melolabial Interpolation Flap Nasal Reconstruction: A Tool to Prevent Distal Flap Necrosis and Dehiscence

AUTHORS: Jeremy Cook, MD; Sarah Schram, MD; Peter K. Lee, MD, PhD

INSTITUTION: Dermatology, University of Minnesota, Minneapolis, MN, United States

Purpose: Nasal defects involving the inferior third of the nose can be challenging to repair. For extensive or complex defects, reconstruction utilizing distant flaps is often necessary. The melolabial interpolation flap, and variations thereof, has been reported to provide adequate tissue match in terms of color, texture, and thickness, while preserving nasal architecture. Necrosis of the distal flap may complicate this repair, however, and in the authors' experience, often results from tension at the distal margin. Here we present a series of 6 cases of melolabial interpolation flap repairs of nasal defects in which temporary suspension sutures were placed to reduce tension and thereby prevent distal flap necrosis and dehiscence.

Design: We used the melolabial interpolation flap with placement of a temporary suspension suture for closure of 6 medium to large nasal tip and alar defects generated after Mohs micrographic surgery. After proper positioning of the flap, a single 3-0 polypropylene suture was passed through the skin into the subcutaneous tissue lateral to the flap donor site and then again over the nasal dorsum, where a knot was tied to secure it. In this manner, tension was displaced from the distal flap margin to the temporary suspension suture. After three weeks, the suspension suture was removed and takedown of the melolabial interpolation flap was performed in the typical fashion.

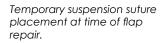
Summary: All patients in our series had successful reconstructions. Restoration of nasal architecture and good cosmetic outcomes were obtained in all cases. There were no cases in which necrosis or dehiscence

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of the distal flap occurred. No complications related to placement or removal of the temporary suspension sutures was observed.

Conclusion: Previously described as a method to prevent ectropion in oculoplastic procedures, the temporary suspension suture was used in our series to reduce tension across melolabial interpolation flaps used in nasal reconstruction. In contrast to the axial blood supply of the paramedian forehead flap, the melolabial interpolation flap is a random-based flap and has a more tenuous blood supply. The additional effect of gravity on the flap may further compromise blood flow to the distal margin, resulting in an increased susceptibility to excess tension. We found the temporary suspension suture to be an effective tool for reducing tension across the distal flap margin and preventing associated necrosis and dehiscence.







Four weeks status/post flap takedown and removal of temporary suspension suture.

1:42 - 1:50 pm

PRESENTER: Juan Vasquez, MD

TITLE: Curvilinear Advancement Flap for Infraorbital Defects: A Case Series

AUTHORS: Juan Vasquez, MD; Oliver Perez, MD; Hakeem Sam, MD, PhD

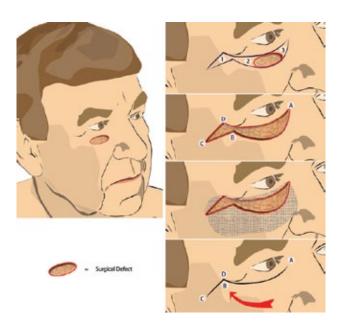
INSTITUTION: Dermatology, University of Pittsburgh, Pittsburgh, PA, United States

Purpose: Infraorbital defects from surgical excisions arise commonly and numerous methods for closure of these lesions exist. However, many befitting repairs for this area result in less-than-ideal geometric scars, while others are rather tedious to execute. We describe an alternative flap for closure which is aesthetically pleasing, functional, and avoids either ectropion or lower eyelid traction. Our closure is also less involved than others flaps.

Design: We present a case series of 5 patients with defects in the infraorbital region repaired by the curvilinear advancement flap.

Summary: Functional and aesthetic outcomes were excellent. No serious complications were encountered.

Conclusion: This flap enhances the dermatologic surgeon's repertoire and should be considered for appropriately located lesions found in the infraorbital cheek, close to the lower eyelid.



1:50 - 1:58 pm

PRESENTER: Yaohui G. Xu, MD, PhD

TITLE: Bilateral Transposition Flap for Reconstruction of Circular Mohs Surgery Defects

AUTHORS: Yaohui G. Xu, MD, PhD; Stephen N. Snow, MD

INSTITUTION: Dermatology, University of Wisconsin, Madison, Madison, WI, United States

Purpose: Bilateral transposition flap, also described as a double opposing semicircular flap, a modified opposing Z-plasty, has been proven reliable and elegant in the reconstruction of circular defects in various body parts. We propose that it is likely underutilized in daily practice due to the relatively complicated preoperative planning and the lack of experience in comparing to other more commonly conducted closures. We report our successful experience using symmetric or asymmetric bilateral transposition flap for closure of large circular defects on the face and neck in 12 patients.

Design: All defects were the result of Mohs micrographic surgery. The defects were located on the forehead, brow, nose, chin, cheek, ear lobe, temple, and neck, ranging from 1 to 4 cm in size. Bilateral transposition flaps were designed to orientate opposing parallel straight lines in the junction of cosmetic subunits and relaxed skin tension lines. Flaps were transposed to the circular defect and then sutured.

Summary: All 12 patients had successful reconstruction with good cosmetic outcome assessed immediately and long-term up to one to three years. There were no flap failures, infection, dehiscence, or necrosis. There was only one patient who was not entirely pleased with her scar on the nasal dorsum due to mildly asymmetric elevation of the alar rim.

Conclusion: In our experience, the bilateral transposition flap is a valuable option providing a functionally and aesthetically pleasing reconstruction of circular defects on the face and neck. It is particularly useful when there is insufficient unilateral donor skin. Having techniques that

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use bilateral donor skin increases the options for closure of large defects. Additionally, a utilization of modified Z-plasty principles permits reliable cosmesis by minimizing the later contracture of the scar.

1:58 - 2:06 pm

PRESENTER: Galen H. Fisher, MD

TITLE: Interpolated Paranasal Flap: An Advantageous Alar Reconstructive Option for Selected Defects

AUTHORS: Galen H. Fisher, MD1; Joel Cook, MD2

INSTITUTIONS: 1. Galen Fisher, Laser & Skin Surgery Center of Richmond, Richmond, VA, United States 2. Dermatologic Surgery, Medical University of South Carolina, Charleston, SC, United States

Purpose: Alar reconstruction is often accomplished with superiorly based melolabial interpolation flaps. In men this can be problematic due to transfer terminal hairs to the nose. To circumvent this problem we have used an inferiorly based paranasal interpolation flap that sidesteps the issue of terminal hair transfer and has fewer tendencies towards medial cheek distortion when compared to the traditional interpolated melolabial flap.

Design: Presentation of two representative cases where this flap was used to fix a partial and total alar skin subunit loss.

Summary: To date the presenting author has used this flap in well over 50 patients and has had no significant complications such as infection, hemorrhage, necrosis or pin cushioning. It is a fast reconstruction to execute, reliable vascularity and can be used for a variety of defects with a high degree of predictability.

Conclusion: A superiorly based paranasal interpolation flap adds a versatile and reliable option to the reconstructive repertoire of the contemporary Mohs and reconstructive surgeon.





Alar defect

Interpolated paranasal flap in place

2:06 - 2:14 pm

PRESENTER: Justin J. Vujevich, MD

TITLE: Digital Photography Mohs Mapping for the Electronic Health Record

AUTHORS: Justin J. Vujevich, MD¹; Arash Kimyai-Asadi, MD²; Leonard H. Goldberg, MD²

INSTITUTIONS: 1. Vujevich Dermatology Associates, PC, Pittsburgh, PA, United States 2. DermSurgery Associates, PC, Houston, TX, United States

Purpose: Accurate mapping is crucial to the Mohs surgeon to orient removed tissue and to identify residual neoplasm for subsequent stages. While the majority of Mohs surgeons use a pen and paper for Mohs mapping, digital photography Mohs mapping is an effective alternative, particularly in the age of electronic health records.

Design: We describe our six-year experience with digital photography Mohs mapping. After the first stage is excised, the tissue is placed on non-stick gauze (with a notch at 12 o'clock for anatomic orientation) and photographed adjacent to the Mohs surgical defect. Using the preinstalled Microsoft Windows Paint program and computer mouse, the histologist marks on the same photograph where the tissue was stained. After the slides are processed, the Mohs surgeon uses the Paint program and computer mouse to mark any remaining neoplasm on the same photograph. All digital photographs can be opened, modified, and imported into the electronic health record on any computer desktop in the practice using a shared external hard drive.

Summary: Advantages of digital photography Mohs mapping include superior tissue orientation, easy storage of images, quick retrieval and interpretation of Mohs maps, and low-cost of equipment. Disadvantages include a reliance of an operating computer and the learning curve of training your staff.

Conclusion: Digital photography Mohs mapping is an easy, accurate, cost-effective means of providing tissue orientation and assessing surgical margins for the Mohs surgeon.

2:14 - 2:22 pm

PRESENTER: Paul J.M. Salmon, MD

TITLE: The Nasal Sidewall Rotation Flap: A Workhorse Flap for Small Defects of the Distal Nose

AUTHORS: Paul J.M. Salmon, MD¹; Eugene Tan, MD²; Neil J. Mortimer, MBChB¹; Syed W. Hussain, MD¹

INSTITUTIONS: 1. Dermatologic Surgery Unit, Skin Cancer Institute, Tauranga, New Zealand. 2. Dermatology Department, Waikato Hospital, Hamilton, New Zealand

Purpose: Skin cancers of the nasal tip present a challenge for the dermatologic surgeon. The bilobed flap has widely been utilized as the 'workhorse' flap for such defects but requires meticulous design and may be complicated by a tendency for pin-cushioning.

We describe the use of the nasal sidewall rotation flap for reconstructing defects on the nasal tip.

Design: A retrospective analysis of the Mohs micrographic surgery database over a 4 year period was performed. All cases where the nasal sidewall rotation flap was used were identified. Defect location, size and any post-operative complications were noted. All patients were reviewed at the time of suture removal and at 6-weeks.

Summary: There were 65 cases in total (19 men and 46 women). Their age ranged from 39-86 years old with a mean of 60.5 years (median age 59 years old). Defect size varied from 0.4 cm to 2.0 cm in diameter with the majority (63%) measuring 1.0-1.4 cm. Good to excellent results

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were seen in all patients and postoperative complications were uncommon and minor.

Conclusion: The nasal sidewall rotation flap is a versatile and useful alternative for reconstructing surgical defects of the nasal tip.

2:22 - 2:30 pm

PRESENTER: Lorraine Jennings, MD

TITLE: Metastatic Nasopharyngeal Carcinoma
Presenting as a Soft Tissue Scalp Tumor: Cautionary
Tales in Two Patients

AUTHORS: Lorraine Jennings, MD; Chrysalyne D. Schmults, MD

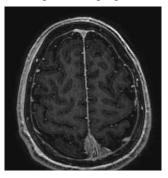
INSTITUTION: Mohs micrographic surgery center, Brigham and Women's Hospital, Harvard Medical School, Jamaica Plain, MA, United States

Purpose: Metastatic carcinoma of nasopharyngeal origin should be considered in patients presenting with rapidly growing soft tissue tumors of the scalp.

Design: Two patients present with a similar history of rapidly growing tumors of the scalp over three months. A 50-year old gentleman with a past history significant for right tonsillar squamous cell carcinoma (SCC) two years ago and a 70-year old lady with a history of nasopharyngeal SCC nine years ago, both treated with chemoradiation. Initial histology of the scalp tumors reported basal cell carcinoma (BCC) and SCC respectively and patients were referred for Mohs surgery. On review, the gentleman mentioned severe headaches, while the lady was asymptomatic. Imaging work-up

revealed intracranial extension of both subcutaneous masses, erosion through the calvarium with parenchymal compression and, in the gentleman, involvement of the superior sagittal sinus with associated non-occlusive clot, warranting urgent surgical decompression due to high stroke risk. Repeat biopsies were performed in both patients and histology was compared with the original biopsy results. Both confirmed infiltrative squamous carcinoma, consistent with metastasis from a nasopharyngeal primary.

Conclusion: These cases demonstrate that rapidly growing soft tissue tumors of the scalp may represent secondary metastatic spread from an ENT source. One should consider repeat biopsy and appropriate radiological imaging in the management of these tumors



Non-occlusive clot in the posterior aspect of the superior sagittal sinus (arrow) - Surgical emergency due to stroke risk.



Rapidly growing tumor of the scalp over 3 months.

11:04 - 11:12 am

PRESENTER: Larisa Ravitskiy, MD

TITLE: Cost Analysis: Mohs Micrographic Surgery

AUTHORS: Larisa Ravitskiy, MD¹; David G. Brodland, MD²; John A. Zitelli, MD²

INSTITUTIONS: 1. Dermatology, OSU Medical Center, Columbus, OH, United States 2. Dermatology and ENT, University of Pittsburgh, Pittsburgh, PA, United States

Purpose: As the incidence of skin cancer continues to increase following the trend of our aging population, delivery of cost efficient skin cancer treatment is a top priority. As with any therapeutic intervention, the intent is to achieve high cure rates, with minimal morbidity and cost effectiveness. Attempts to control costs have resulted in repeated re-examinations of relative values for physician's work and practice expenses as well as policy changes such as the loss of exemption of Mohs micrographic surgery (MMS) from the multiple surgery reduction rule (MSRR).

Design: We compared the costs associated with removal of skin cancers using each of four methods: (1) MMS, (2) Office-based standard surgical excision (SSE) with permanent margin control, (3) Office-based SSE with frozen margin control followed by permanent margin examination, and (4) Ambulatory surgical center (ASC)-based SSE with frozen margin control followed by permanent margin examination. SSE margins were based on current recommendations of National Comprehensive Cancer Network. Subsequently, the simplest and most functionally and cosmetically pleasing reconstruction of the resulting SSE defect was designed. An assumption was made that all SSE defects would be reconstructed. The plan was recorded and coded based on preoperative determination of clinical tumor and excision margins. Next, MMS was performed on all tumors and codes for MMS and reconstruction, if performed, were recorded. Costs for actual MMS and calculated costs for all SSE were calculated based on 2009 CPT and, when applicable, CMS ASC fees. For patients with multiple tumors, the MSRR was applied. Based on historical estimates, 11% of tumors treated with SSE and permanent sections margin control would be expected to have positive margin(s). The cost of subsequent re-excision and reconstruction for tumors with positive margins was added to the total cost of treatment. Based on prior studies, 21% of tumors treated with SSE and frozen sections margin control would have positive margin(s) thus translating into 1.21 stages to clear. It was presumed that the final margin would be evaluated with permanent sections to confirm tumor clearance. Tumor recurrence was included in the calculations as well: 10.1% of SSE tumors and 1.0% of tumors treated with MMS would recur. The cost of treating recurrences with MMS (equal to the average cost of Mohs surgery calculated herein) was added to the final estimate.

Summary: A total of 344 patients with 406 tumors were included in the study. Of 344 patients, 12.5% had multiple tumors. Data on previous treatment were available on 379 tumors: 341 (90%) were primary and 38 (10%) were recurrent. An average tumor was cleared in 1.6 stages (median 1.0; range 1-8), with nearly 60% of patients cleared in one stage. Of tumors treated with MMS,

37.9% were allowed to heal by secondary intention, while another 37.5% were closed primarily (complex or intermediate linear closures). Only 13.8% and 8.9% of MMS defects required a flap or graft, respectively. Conversely, due to larger expected size of defects, tumors treated with SSE necessitated nearly 3 times as many flaps and grafts. Complicated repairs, such as two- and more staged procedures, compound and cartilage grafts, were twice as likely to occur in the SSE groups. Of surgical procedures evaluated, MMS was the least expensive at \$805 per tumor. Office-based SSEs with permanent margins were more expensive than MMS, but less than office-based SSE with frozen margins (\$1026 vs. \$1200, respectively) and ASC-based SSE with frozen margins (\$2507).

<u> </u>		
	Cost (\$)	Range (\$)
MMS	805	545 — 8398
Office excision/permanent	1026	438 — 13459
Office excision/frozen	1200	693 — 13702
ASC excision/frozen	2507	1142 — 16761

Costs for treatment per tumor: MMS (actual), SSE (calculated).

	Nose	Ear	Eyelid	Face	Scalp/ Neck	Trunk/ Extremity	Hands/ Feet	Genitalia
MMS	996	803	1043	876	783	828	652	596
Office SSE/permanent	1219	1347	1330	1143	922	863	1036	886
Office SSE/frozen	1323	1451	1434	1247	1026	967	1140	990
ASC SSE/frozen	3853	4004	4060	2983	2686	2310	3179	2641

Cost for treatment per tumor: MMS (actual), Traditional Excision (calculated).

Conclusion: When adjusted for inflation, the cost of MMS, inclusive of initial work up, biopsy, and 5 year follow up, in 2009 is in fact lower than in 1998 (\$1376 vs. \$1635, respectively). Based on previously published costs of non-surgical modalities, MMS (\$805) is less expensive option (radiation (\$2559 to 4558), imiquimod (\$959), all SSEs) and only more expensive than electrodessication and curettage (\$471 to \$652). Low recurrence rates, smaller defects resulting in simpler, less costly repairs or secondary intention healing, and the demonstrated cost effectiveness confirm Mohs surgery as the cornerstone of efficacious and cost effective treatment when compared to standard surgical excision, regardless of place of service (office or ASC) or type of margin control pathology.

11:12 – 11:20 am

PRESENTER: Tina I. Tarantola, MD

TITLE: Prognostic Factors in Merkel Cell Carcinoma

AUTHORS: Tina I. Tarantola, MD^{1,3}; Laura A. Vallow, MD²; Michele Y. Halyard, MD⁴; Roger Weenig, MD¹; Karen E. Warschaw, MD ⁴; Randall K. Roenigk, MD¹; Jerry D. Brewer, MD¹; Clark C. Otley, MD¹

INSTITUTIONS: 1. Dermatology, Mayo Clinic, Rochester, MN, United States 2. Radiation Oncology, Mayo Clinic, Jacksonville, FL, United States 3. Dermatology, Mayo Clinic, Scottsdale, AZ, United States 4. Radiation Oncology, Mayo Clinic, Scottsdale, AZ, United States

Purpose: To determine factors that impact prognosis in patients with a known primary Merkel cell carcinoma.

Design: A multi-center, retrospective, consecutive study reviewing 240 subjects diagnosed with known primary Merkel cell carcinoma (MCC) between 1981 and 2008 was completed. Data from three academic medical centers was collected and combined for analysis. Each diagnosis was confirmed histologically at one of the three institutions.

Summary: The average age at diagnosis was 69.6 years, and the majority of subjects were male (70%) and Caucasian (98.3% of those reported). Immunosuppressed subjects - those with solid organ transplant, on immunosuppressive medication, or with a diagnosis of CLL or HIV - comprised 13.8% of the patients. The majority of tumors occurred on the head and neck (46.3%), followed by the extremities (37.9%) and the buttock (8.8%). The most common clinical impression was cyst or nonmelanoma skin cancer, 11.7% and 10% respectively. The average size at diagnosis was 1.7 cm on the head and neck, and 2.6 cm below the head and neck. At diagnosis, 31.3% were Stage I, 17.1% Stage II, 22.9% Stage III, 2.5% Stage IV, and 26.3% could not be staged based on the current AJCC staging system as no initial tumor size was recorded. Diameter on biopsy histology was available in 46 subjects with stage I or II disease, with median diameter being 7 mm.

Wide local excision was the most common primary intervention, followed by Mohs micrographic surgery. When wide local excision was used, and surgical margins recorded, 1 cm and 2 cm margins were used equally at 39.4%. Histologic nodal evaluation was completed in 120 subjects, 72 with sentinel lymph node biopsy (SLNB), 29 with elective lymph node dissection (ELND), and 40 with therapeutic lymph node dissection (TLND). Of the 120 subjects, 41.7% had positive nodes at diagnosis. Tumor size did not predict nodal involvement. The positive predictive value of a clinical lymph node exam was 79.2% (19/24), with SLNB and TLND used for histologic nodal evaluation. The negative predictive value of a clinical lymph node exam was 75.3% (58/77), with SLNB and ELND used for histologic nodal evaluation. Adjuvant radiation therapy was administered in 107 subjects, 52% of stage I patients and 51.2% of stage II patients. Adjuvant chemotherapy was administered in 30 patients, 19 of which were stage III or IV. Among the 116 stage I and II patients, there were a total of 17 local recurrences all of which occurred within 1.5 years of the primary diagnosis.

A log rank test revealed no statistically significant difference in survival between stage I and II patients. Stage III patients had a statistically significant decrease in survival compared with stage I and II patients. Immunosuppressed patients had a significant decrease in survival with an overall two year survival of 47.9% compared with 74.3% in the immunocompetent.

When combining stage I and II patients for analysis, no statistically significant difference in overall survival or survival free of local recurrence was demonstrated with: histologic diameter less than 7 mm versus greater than 7 mm; male versus female gender; location on head and neck, versus extremities, versus all other locations combined; timely diagnosis versus delayed diagnosis – greater than 90 days

from appearance of the lesion; timely treatment versus delayed treatment – greater than 30 days from diagnosis; SLNB versus no SLNB; or ELND versus no ELND. In this same group, those with a history of other cancer demonstrated a statistically significant decrease in overall survival (p<0.001), and those with age beyond 70 years demonstrated a statistical trend toward decreased survival (p=0.064). Additionally, though there was no significant difference in overall survival between patients treated with local or locoregional radiation therapy versus untreated patients in this group, there was a statistical trend demonstrating improved survival free of local recurrence when locoregional radiation therapy was used versus none or local only (p=0.089).

Conclusion: The data presented represents one of the largest collections of data on primary MCC in the literature. Our data confirm the findings of other studies that suggest that MCC of all sizes has metastatic potential, supporting the NCCN recommendations to consider SLNB for all primary MCC. The trend toward survival free of local recurrence demonstrated by stage I and II patients treated with adjuvant locoregional radiation supports recommendations to strongly consider adjuvant radiation for MCC in this group. Because immunosuppressed patients had a worse prognosis, we recommend aggressive treatment of this population, with timely surgical excision and adjuvant radiation. Due to the unpredictable natural history of MCC, we recommend individualization of care based on the details of each patient's tumor and clinical presentation.

11:20 - 11:28 am

PRESENTER: Tracy M. Campbell, MD

TITLE: A Case Controlled Study of Mohs Recurrences and the Role of Surgeon Error and Tissue Processing

AUTHORS: Tracy M. Campbell, MD; Daniel B. Eisen, MD

INSTITUTION: Department of Dermatology, UC Davis Medical Center, Sacramento, CA, United States

Purpose: To determine the role of surgeon error vs. adequate tissue processing in Mohs recurrences.

Design: Our study is a case controlled study looking at Mohs recurrences at an academic center involving 2 Mohs surgeons ranging from 2002-2009. The Mohs recurrences were identified, tallied, and an extensive chart review was done for demographic information. For all 18 recurrences the original slides and Mohs maps were pulled, compared, and analyzed by 2 Mohs surgeons and a dermatopathologist. Parameters were outlined and set for various histotechnician errors, surgeon error, and slide quality. A random sampling of slides without recurrences from 2002-2009 were also analyzed by same physicians and parameters. Each recurrence could fill more than 1 parameter.

Summary: Of the 18 recurrences: 7 were aggressive subtypes, 6 were due to tissue drop out, 5 were inadequate tissue staining, 5 dense lymphoid like inflammation, 4 of them were due to surgeon error, 4 had a large number of stages (>3) (surgeon stage averages 1.78 and 1.64), 3 had less than 100% visibility of the epidermal border, 3 had large specimen size (>4

pieces per stage), 2 had indeterminate cell types, 1 was inadequate tissue processing, 1 was too superficial of a layer (above a scar), and 1 the tissue was folded on all cuts.

None had PNIV, inconsistent staining, too thick of tissue cut, a busy adenexal slide, a residual floater not removed, tumor present deep in the block, or fibrosis without obvious tumor. The random sampling slide analysis is pending. The final data analysis is pending but will be presented at the ACMS meeting.

Conclusion: In this case control study will hope to highlight the role of surgeon error in Mohs recurrences and the importance of adequate tissue processing.

11:28 – 11:36 am

PRESENTER: Bart T. Endrizzi, MD, PhD

TITLE: A Two-year Perspective on the Efficacy of Capecitabine in Tumor Reduction for Transplant Patients

AUTHORS: Bart T. Endrizzi, MD, PhD; Theresa L. Ray, MD; Peter K. Lee, MD, PhD

INSTITUTION: Dermatology, University of Minnesota, Minneapolis, MN, United States

Purpose: This study was initiated to evaluate the efficacy and tolerance of capecitabine in reducing the development of cutaneous squamous cell carcinomas of the skin in transplant patients.

Design: Screening was performed during regular skin checks of a transplant patient population. Patents were identified who had a high level of actinic damage and a rate of cutaneous squamous cell carcinoma (CSCC) development that was refractory to standard therapy. Upon induction into the study other skin cancer adjunctive treatment modalities were halted, and patients were initiated on oral capecitabine. Cryotherapy for precancerous lesions was continued at monthly visits. Initiation on capecitabine was performed in conjunction with the Hematology and Oncology department in a protocol that was previously designed for treatment of colorectal cancer, but with a lower dose of capecitabine. Capecitabine was administered on a 14 days-on/7 daysoff schedule for a total of 1000-1500 mg/m2/day, with cycles repeated every three weeks. Monthly follow up to assess side effects of the medication and impact on transplant were performed, including repeat laboratory assessments. The rate of CSCC development was assessed following capecitabine induction with monthly full body skin checks.

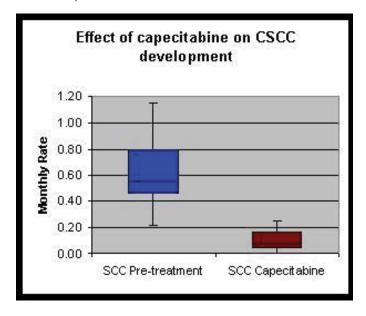
Summary: To date, 15 patients have undergone treatment with capecitabine for an average of 11 months (range 4-22 months). Prior to the study the average rate CSCC development was just above 0.6 per month, that represents a rate of greater than 7 tumors per year. (Range of 0.25 to 1.15 per month) This high rate of tumor development reflected the selection process and could be roughly correlated with a high level of immunosuppression and multiple solid organ transplants.

Following initiation on capecitabine the rate of tumor development for all patients was reduced. The overall reduction in the rate of CSCC development was 6-fold,

or an average rate of 0.1 per month. (The range in rate reduction was between 2 to 15-fold, with 2 patients not developing any tumors while on the study.) This rate would extrapolate to the development of just over 1 tumor per year for each individual. A general trend was seen where the higher the rate of tumor development prior to study enrollment, the greater the response to capecitabine.

There are common serious side effects reported in approximately 30% of the patients who have used capecitabine, most of which can be treated symptomatically, with dose reduction, or delay of dose administration. Some form of side effects was noted in all patients on capecitabine. Fatigue was the most common side effect seen in the study patients. This side effect ranged from mild to rate-limiting. A few patients also developed neutropenia which necessitated a dose reduction or delay in treatment. Renal function was closely monitored, and 2 patients developed elevation in creatinine. After reducing the capecitabine dose, their creatinine level resolved to baseline and the patients were able to continue with the study. Other common side effects included hand and foot syndrome, mild diarrhea, and abdominal pain.

Conclusion: The use of capecitabine in our study showed a significant reduction in the development of CSCC in transplant patients. This drug does have common side effects. Patients need close monitoring of fatigue, neutropenia, and renal function, and a reduction in dose may need to be performed. A tendency to delay biopsy of inflamed lesions while on capecitabine was evident in a review of clinical visits, which may have an impact on the study results. While the results are very exciting, a future study needs to occur where the patients and the physician are blinded to the treatment to determine conclusively the level of response and the true level of tumor reduction.



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American College of Mohs Surgery Annual Meeting 42nd /

Tromovitch Award Abstract Session - Sunday, May 2: 11:00 am - 12:00 pm

11:36 - 11:44 am

PRESENTER: Sheri A. Nemeth, MD

TITLE: The Risk of Wrong Site Surgery and the Mohs Surgeon

AUTHORS: Shari A. Nemeth, MD¹; Naomi Lawrence, MD²

INSTITUTIONS: 1. Dermatology, Mayo Clinic Arizona, Scottsdale, AZ, United States 2. Center for Dermasurgery, Cooper University Hospital, Marlton, NJ, United States

Purpose: Patients presenting for Mohs micrographic surgery in our practice were noted to have significant difficulty in identifying their surgical site on the day of surgery. Unfortunately, records from the referring physician are often inadequate to allow the Mohs surgeon to identify the site based on biopsy records, pathology reports, diagrams, or photographs. Lack of accurate or inaccurate documentation of biopsy sites at a minimum can result in a significant inconvenience for the patients who may need to cancel or delay their surgery until they can return to the referring physician to help identify the biopsy site. The most severe consequence of poor biopsy site documentation is wrong site surgery and eventual tumor recurrence.

Design: A retrospective chart review of 996 Mohs cases in a single physician academic surgical practice was performed. IRB approval was obtained. For each Mohs surgery, the presence of a photograph, measurement from anatomic landmarks, diagram, and location as listed on the pathology report were recorded. The quality of the diagrams was assessed as being of good quality if it allowed easy localization of the cancer based on day of surgery photographs. Poor quality diagrams were assessed as such because they did not provide specific enough anatomic detail to enable localization of the biopsy site. The location listed on the pathology report was compared to the actual anatomic location of the tumor and considered concordant if it accurately identified the site of the lesion versus providing a generalized location (i.e. right ear vs. right tragus).

Summary: In our study, 2.3% patient referrals for Mohs had a photo. A measurement from an anatomic landmark was provided in 0.6%. Diagrams were provided for 16.8% of referred patients. Of these, 49.1% were classified as high quality (i.e. 8.2% of referred patients had diagram of good quality). Overall, 29.1% of biopsy sites on the pathology report specifically and correctly identified the anatomic location of the tumor. Locations on the nose were correctly named on the pathology report 45.3% of the time, 49.1% of ear tumors were correctly named, 18.7% of tumors on the trunk were correctly named, 14.5% of extremity lesions were correctly identified, 0% of genital tumors were correctly labeled.

Conclusion: Few patient referrals to the Mohs practice were accompanied by adequate documentation of the biopsy site. As all lesions must be biopsied prior to Mohs surgery, the pathology report always accompanies the patient referral. Unfortunately, the location on the pathology report only corresponds to the anatomic location of the tumor in 29.1% of cases. The most useful form of documentation is in the form of a photograph which provides detailed skin topography and anatomic landmarks to enable site identification despite patient confusion. Given that the number of patients who struggle

to identify their site on the day or surgery, it would be greatly beneficial for referring physicians to provide the Mohs surgeon with accurate and detailed site identifying information to minimize the risk of wrong site surgery which is one reason for "recurrence" after Mohs surgery.

11:44 - 11:52 am

PRESENTER: Emily P. Tierney, MD

TITLE: Mohs Surgery Workforce: Trends in Career Paths, **Job Satisfaction and Academic Productivity**

AUTHORS: Emily P. Tierney, MD^{1,2}; C. William Hanke, MD²; Alexa B. Kimball, MD, MPH3

INSTITUTIONS: 1. Dermatology, Boston University, Boston, MA, United States 2. Dermatologic Surgery, Laser and Skin Surgery Center of Indiana, Carmel, IN, United States 3. Dermatology, Harvard University School of Medicine, Boston, MA, United States

Purpose: While many residents and fellows in Mohs surgery express an interest in academics early in their career, departure from academics occurs at the level of many trainees or junior faculty, with an adverse effect on the training and recruitment of the next generation of dermatologic surgeons. We designed a survey to specifically criteria affecting initial selection and subsequent changes in practice setting for Mohs surgeons.

Design: The survey was issued to all members of the ACMS in 2009. A response rate of 58.3% (315/540) was obtained.

Summary: A total of 315 Mohs surgeons completed the survey with a total of 84 female surgeons (26.7%) and 231 male surgeons (73.3%). A total of 52 surgeons (16.4%) were in full time academics, 238 (75.6%) were in full time private practice and 28 were in partial private/academic practice (8.8%). Of those in private practice, 116 (48.7%) had a clinical appointment in academics.

In terms of fellowship training setting, the largest majority of surgeons, 179 (56.9%), trained in Mohs fellowships in academics. A total of 137 Mohs surgeons (53.1%) trained in fellowships in private practice. A total of 72 Mohs surgeons (40.2%) who trained in fellowships in academic practices entered academics whereas, 107 Mohs surgeons (59.8%) who trained in academics entered into private practice. In contrast, Mohs surgeons who trained in private practice settings were significantly less likely to enter academia. For the Mohs surgeons who trained in private practice, 107 (78.1%) entered into careers in private practice and 30 (29.9%) entered into careers in academia (p<.01).

For Mohs surgeons entering into academics after fellowship, the strongest factors influencing job selection were an interest in teaching (3.82, on a scale of 0-5, where 0=not important and 5=very important), referral base (3.29), professional ties to institution (3.03). The least important factors were salary (2.25) and opportunities in cosmetics (1.39). For Mohs surgeons entering into private practice after fellowship, the strongest factors influencing job selection were the referral base (3.88), geographic location (3.797), excellent facilities (3.107) and competitive salary (2.89). The least important factors were opportunities in research (.6), teaching (1.099), and cosmetics (1.244).

The survey data also analyzed reasons for departure of surgeons from each practice setting. The most common

reason for departure from academic Mohs surgery to private practice was lack of support from the academic chair (4.00), potential for increased salary (3.47), inadequate support staff (2.57) and facilities (2.03). For Mohs surgeons who left one private practice setting for another, the most common reasons were increased salary (3.3), geographic move (2.28), greater referral base (2.20) and lack of support from colleagues (2.03).

Mohs surgeons were asked to evaluate their overall job satisfaction in each practice setting. The practice settings with the highest satisfaction were solo practice (1.29, 1-5 scale where 1=excellent, 5=poor) and dermatology group practice (1.66), both of which were significantly higher than academics (2.72) (p<.01).

In terms of academic productivity, the practice setting with the highest productivity was academics, where the mean number of publications was 24.8, lectures 92.8, clinical trials 2.9 and research grants 1.3 (p<.01). However, Mohs surgeons in private practice were also highly academically productive. In private solo practices the mean number of publications was 6.1, lectures 23.5, clinical trials 4.2 and research grants .2. In dermatology group practices the mean number of publications was 5.8, lectures 23.5, clinical trials 1.9 and research grants .7. Interestingly, the same individuals who were highly academically productive in academics were often more productive later in their careers upon moving to private practice.

Conclusion: Our study demonstrates that similar to previous studies in dermatology, pursuit of an academic career is most highly correlated with interest in the academic pursuits of teaching, research and scientific writing. One novel finding uncovered by this study is the reasons for departure from academic Mohs surgery, including lack of support from the academic chair, potential for increased salary in private practice and inadequate support staff and facilities. The majority of Mohs fellowships remain in academic practices or academically affiliated private practices. Training and recruitment of the next generation of leaders and teachers in Mohs surgery is essential to the continued success of the specialty. Novel efforts to recruit and retain academic Mohs surgeons are highly needed. Interestingly, the most senior and tenured Mohs surgeons today are primarily in private practice; however, their early exposure to academics may have ensured their continued pursuit of academic interests throughout their career.

11:52 am - 12:00 pm

PRESENTER: John Starling, III, MD

TITLE: Outcome of Six Years of Protocol Use for Preventing Wrong Site Office Surgery

AUTHORS: John Starling, III, MD; Brett M. Coldiron, MD, FACP

INSTITUTION: The Skin Cancer Center, Cincinnati, OH, United States

Purpose: As future medical legislation brings increased emphasis on both patient outcomes and measures of quality, patient safety is emerging as an integral part of the overall strategy to improve healthcare in the United States. Wrong site, wrong procedure, and wrong person surgery are considered sentinel events

(an unexpected occurrence involving death or serious physical or psychological injury) by the Joint Commission and have been identified by the American Academy of Dermatology Association (AADA) Ad Hoc Task Force as major patient safety issues in dermatology. The true incidence of wrong site surgery is difficult to determine as the medical literature on the subject mostly limited to operating room situations. A recent survey of 300 Mohs surgeons revealed that 14% of malpractice cases were due to wrong site surgery. We sought to determine the incidence of wrong site, wrong procedure, and wrong person surgery following implementation of a preoperative protocol in patients presenting for treatment of skin cancer at a high-volume, Joint Commission accredited, tertiary referral center for dermatologic surgery.

Design: Over six years we prospectively collected a series of 7983 cases of Mohs micrographic surgery (MMS) performed on patients presenting for treatment of skin cancer. The three components of the Joint Commission Universal Protocol (i.e. pre-procedure verification of patient identity, site identification, and performance of a "time-out"), were applied to daily patient care. Patient identity was established during consultation prior to the procedure by confirming patient name and date of birth on office provided disposable wristbands placed on patients' left wrists at registration. Patients personally confirmed operative sites in the presence of the operating physician via use of a mirror, and the sites were then both clearly circled and initialed with surgical marker by the dermatologic surgeon performing the procedure. Digital photos of each marked surgical site were taken and printed for inclusion in the medical record. A "timeout" confirming correct patient, correct site, and correct procedure was taken prior to performing all procedures, and recorded with doctor's initials on the reverse side of the patient's micrographic surgery map. Numbers of wrong site office skin surgery were then obtained from prospective mandatory adverse reporting data from the last ten years in the state of Florida and the last six years in the state of Alabama.

Summary: Analysis of 7983 cases of MMS for treatment of skin cancer revealed no cases of wrong site, wrong procedure, or wrong person surgery in a dermatologic surgery practice. Detailed study of mandatory adverse reporting data from ten years in the state of Florida and six years in the state of Alabama revealed one account of wrong site skin surgery performed by a dermatologist.

Conclusion: Wrong site office surgery is a rare but unacceptable event. It is one of the major causes of medical lawsuits in the United States, and was the most frequently reported event in the Joint Commission sentinel event statistics database in 2008. The incidence of wrong site surgery is unknown in the outpatient clinic setting, and there are no universal mandatory reporting guidelines in most states. Integration of a correct surgery site protocol into a daily patient care model is a vital step in preventing occurrences of wrong site dermatologic surgery. Our experiences with integration of a correct surgery site protocol into an everyday patient care model are presented so that hopefully more dermatologic surgeons will include this protocol when adopting a zero-tolerance policy for wrong site cutaneous surgery.

Poster Presentation List

Posters will be displayed in the 5^{th} Floor South Lobby, outside the Exhibit Hall. Posters will be displayed from 12:00 pm Friday, April 30 through 2:00 pm Sunday, May 2.

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Burden of Non-melanoma Skin Cancer in the US 1998-2007

Eleni Linos, MD, MPH¹; Hayes B. Gladstone, MD¹; Tina M. Hernandez-Boussard, MPH, PhD²; Jean Tang, MD, PhD¹

1. Dermatology, Stanford, Stanford, CA, United States 2. Surgery, Stanford University, Stanford, CA, United States

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Survey of Mohs Surgeons in Management of Squamous Cell Carcinoma (SCC) of the Skin with Perineural Invasion (PNI)

Tina Rakkhit, MD; Jeremy S. Bordeaux, MD, MPH; Jorge A. Garcia-Zuazaga, MD, MS

Dermatology, University Hospitals Case Medical Center, Cleveland, OH, United States

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National Utilization Patterns and Treatment Outcomes of Mohs Micrographic Surgery for Malignant Melanoma and Melanoma In-situ

Ryan B. Turner, MD⁴; Kate Viola, MD¹; Lou Gonsalves, PhD²; Arnold S. Lee, MD³

1. Robert Wood Johnson Clinical Scholars Program, Yale University School of Medicine, New Haven, CT, United States 2. Connecticut Tumor Registry, State of Connecticut Department of Public Health, Hartford, CT, United States 3. Otolaryngology/Facial Plastic & Reconstructive Surgery, Tufts Medical Center, Boston, MA, United States 4. Dermatology, Albert Einstein College of Medicine, Bronx, NY, United States

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The Final Histologic Grade of Biopsy-proven Squamous Cell Carcinoma In-situ Sent for Mohs Micrographic Surgery

Gary S. Chuang, $MD^{1,2}$; Linh K. Lu, MD^2 ; Daniel T. Finn, MD^2 ; Gary S. Rogers, MD^2 ; Dennis Lee, MD^2

1. Dermatology, Medical University of South Carolina, Charleston, SC, United States 2. Dermatology & Dermatologic Surgery, Tufts Medical Center, Boston, MA, United States

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Skin Cancer Following Pancreas Transplantation

Joshua Spanogle, MD¹; Yogish C. Kudva, MBBS²; Randall K. Roenigk, MD¹; Walter K. Kremers, PhD³; Jerry D. Brewer, MD¹; Ross A. Dierkhising, MS³; Patrick G. Dean, MD⁴; Clark C. Otley, MD¹

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 Endocrinology, Mayo Clinic, Rochester, MN, United
 States 3. Biomedical Statistics and Informatics, Mayo
 Clinic, Rochester, MN, United States 4. Transplantation
 Surgery, Mayo Clinic, Rochester, MN, United States

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The "X" Relaxing Incision for Tissue Flattening in Mohs Micrographic Surgery

Sarah Schram, MD; Jeremy Cook, MD; Anna Deem, HT; Stephanie Wallschlaeger, HT; Peter K. Lee, MD, PhD

Dermatology, University of Minnesota, Minneapolis, MN, United States

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Partial Subunit Island Pedicle Flap for Defects of the Upper Cutaneous Lip

Aerlyn G. Dawn, MD, MBA¹; Christopher J. Miller, MD^{2, 1}

1. Dermatology, University of Pennsylvania, Philadelphia, PA, United States 2. Division of Dermatologic Surgery, University of Pennsylvania, Philadelphia, PA, United States

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Dual Staining of Mohs Surgery Specimens with \$100 and Cytokeratin for the Detection of Perineural Invasion in Non-melanoma Skin Cancers

Joshua A. Tournas, MD; Christine Nelsen, MD; Brian Nixon; M. Yadira Hurley, MD; Scott W. Fosko, MD

Dermatology, Saint Louis University, Saint Louis, MO, United States

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Factors Predictive of Complex Mohs Surgery Cases

Seema Sahai, MD1; Hobart W. Walling, MD, PhD2

1. Dermatology, University of Iowa, Iowa City, IA, United States 2. Mohs Surgery, Town Square Dermatology, Coralville, IA, United States

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Unknown Primary Merkel Cell Carcinoma

Tina I. Tarantola, MD^{1, 3}; Laura Vallow²; Michele Y. Halyard, MD⁴; Roger Weenig, MD¹; Karen Warschaw, MD³; Randall K. Roenigk, MD¹; Jerry D. Brewer, MD¹; Clark C. Otley, MD¹

1. Dermatology, Mayo Clinic, Rochester, MN, United States 2. Radiation Oncology, Mayo Clinic, Jacksonville, FL, United States 3. Dermatology, Mayo Clinic, Scottsdale, AZ, United States 4. Radiation Oncology, Mayo Clinic, Scottsdale, AZ, United States

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Translational Research Pearl: Mirrored Bread Loaf Processing of Mohs Melanoma In-situ Debulk Tissue for Drug Testing

Bryan Carroll, MD, PhD¹; Antoanella Calame, MD¹; Lishu Zhang, MD²; Mark E. Mummert, PhD²; R. Stan Taylor, III, MD¹

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Integra® Dermal Regeneration Template for the Repair of Large Scalp Defects Extending to Bone

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TITLE: Burden of Non-melanoma Skin Cancer in the US 1998-2007

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Purpose: Epidemiologic statistics on non-melanoma skin cancers (NMSC) including basal cell carcinoma and squamous cell carcinoma are generally excluded from nationally representative cancer registries. Therefore, information on the prevalence and burden of NMSC to healthcare providers and treatment patterns have not been fully evaluated.

Our primary goal was to evaluate the burden of NMSC in the US over the last 10 years. Our secondary goal was to estimate the proportion of skin cancers treated surgically by gender, age, race, geographic location, and according to physician specialty.

Design: This is a cross sectional analysis of the National Ambulatory Medical Care Survey (NAMCS) between 1998 and 2007. The NAMCS is an annual federal survey (National Center for Health Statistics) of office visits made by ambulatory patients to a sample of approximately 1,500 non-federally employed physicians. Practices are selected from the American Medical Association database, including all US physicians, based on multistage probability sampling techniques to yield a nationally representative sample. This weighted sampling technique allows for calculation of unbiased national estimates of the number of patient visits and patient characteristics. Specially trained interviewers visit the physicians prior to their participation in order to instruct them on how to complete the surveys. Each physician is randomly assigned to a 1-week reporting period. Data are obtained on patients' symptoms, physicians' diagnoses, medications, demographic characteristics, diagnostic procedures, and treatment. We restricted our analysis to patients over 18 years of age who had NMSC recorded as a reason for their physician visit (ICD9 codes 173, 232). Benian skin conditions including seborrheic keratosis, corns, scars (ICD9 216., 702.1, 700., 701., 709.) as well as actinic keratosis and malignant melanoma were also excluded (ICD9 702.0, 172.). All analyses were weighted to account for survey sampling in order to make results applicable to the entire US population. Statistical analysis was performed in SAS v10.0.

Summary: A total of 1586 physician visits for NMSC were identified, representing a total of 37.8 million (SD 2.2 million) NMSC visits across the US over the 10 years studied. Approximately 20 million were men, and 17.8 million were women. The majority (87.6%) visits for NMSC were in patients 50 years or older, however over 1.4 million cases were noted in patients younger than 40 years. Most cases were present in whites, however over 442,000 and 487,000 were noted in Hispanics and blacks respectively. 19.6 million of these visits (52%) were associated with a surgical procedure including biopsy, excision and chemosurgery/ Mohs surgery. Sixty percent of male patients underwent

a surgical procedure compared to 56% female patients (p=0.05). We found that 67% of visits by dermatologists or dermatologic surgeons were associated with a surgical procedure, compared to 33% and 42% among surgical, and medical specialties respectively (p<0.0001). When analyzed by race, we found that while 59% of white patients with NMSC underwent a surgical procedure, only 56% of Hispanic and 35% of black patient visits were associated with a surgical procedure (p=0.078).

Conclusion: Non-melanoma skin cancer poses a significant burden to healthcare providers nationwide. The reasons for significant differences in the proportion of cancers treated surgically in men vs. women, blacks and Hispanics vs. whites and according to physician specialty are unclear, and deserve further study.

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TITLE: Survey of Mohs Surgeons in Management of Squamous Cell Carcinoma (SCC) of the Skin with Perineural Invasion (PNI)

AUTHORS: Tina Rakkhit, MD; Jeremy S. Bordeaux, MD, MPH; Jorge Garcia-Zuazaga, MD, MS

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Purpose: While perineural invasion (PNI) of a tumor has traditionally been identified by extension of a tumor along the nerve sheath, there exists no formal definition of SCC with PNI among Mohs surgeons. There are variable practices in the management of SCC of the skin with PNI with regard to both excision practice and administration of adjuvant radiation therapy. We surveyed American College of Mohs Surgery (ACMS) members in order to identify variable management practices of SCCs of the skin that exhibit PNI.

Design: A voluntary, twelve-item, online survey regarding management of SCC with PNI was distributed to 795 registered ACMS members. Answers were collected in a secure database and frequency of response was observed. Respondents identified themselves as members of academic vs. private practice and by geographic region within the United States. Questions aimed to establish frequency of encounter of such tumors, accepted definition of PNI as observed on histology, excision practice of tumors with PNI, and the clinical settings in which adjuvant radiation therapy is a component of treatment.

Summary: One-hundred twenty-seven ACMS members (~16%) completed the survey. Most members defined PNI as either tumor cells identified around a nerve bundle or tumor cells invading the nerve itself. Among respondents, 122 (96.1%) use adjuvant radiation therapy in management of SCC with PNI, with most administering it between 75-100% of the time such a tumor is encountered. For nonfacial SCCs, approximately half of respondents do not use anatomic location to decide whether or not adjuvant radiation is indicated.

Conclusion: Adjuvant radiation is a commonly administered therapy among ACMS members in management of SCC with PNI. A prospective trial for evaluating the role of post-operative radiation therapy for such tumors is needed to establish standardized guidelines for effective management.

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New York

National Utilization Patterns and Treatment Outcomes of Mohs Micrographic Surgery for Malignant Melanoma and Melanoma In-situ

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Purpose: Although Mohs micrographic surgery (MMS) for the treatment of melanoma is controversial; a greater body of recent literature has demonstrated the optimal use of this surgical technique for melanoma in-situ and specific conditions of malignant melanoma. We will identify current physician practices in the community through identification of national utilization trends of MMS as compared with other types of surgical intervention for malignant melanoma and melanoma in-situ. In addition, we will determine the five year mortality outcome of these patients, treated surgically or with no surgical intervention.

Design: We performed a retrospective review of patients receiving surgical intervention for melanoma from 2002 through 2006 utilizing the Surveillance, Epidemiology and End Results (SEER) database, representing 26% of the US population with 18 SEER cancer registries throughout the country. Patient characteristics were collected including age, gender, race, tumor thickness/depth, lesion location, margin size, cause of death if applicable, and site of tumor registry.

Summary: There were 119,805 recorded cases of melanoma from 2002 through 2006, of which 72,706 were malignant and 47,009 were melanoma in-situ. Four percent of melanoma in-situ cases and 1.6% of malignant melanoma diagnoses were treated with MMS. Table 1 identifies the proportion of patients who died in the five year period of study with a primary diagnosis of melanoma in-situ or malignant melanoma which resulted in malignant melanoma as the cause of death; the remaining percentage of patients that were diagnosed with melanoma died of other causes.

Primary Diagnosis	MMS* N(%)	No Surgical Treatment N(%)	Surgical Treatment** (non MMS) N (%)
Melanoma In Situ	3(3.5%)	10(6.4%)	124(6.1%)
Malignant Melanoma	28(37.8 %)	1367(67.8%)	2677 (42.6%)

Table 1. Proportion of Patients who died from Malignant Melanoma within a five year period.

Conclusion: To our knowledge, these findings are the first to examine national patterns of MMS utilization in comparison to other treatment modalities for melanoma over time. As expected, there is a decreased survival in those with malignant melanoma who do not undergo surgery. However, the five year mortality is similar among each treatment group for melanoma in-situ. Also, MMS compared to standard excisional surgery appears to have similar five year mortality. Comprehensive statistical analysis of the treatment groups and further determination of the significance of such independent variables such as sex, race, age, survival time, and anatomical location are underway. Our goal is to better describe the treatment outcomes of MMS in the management of melanoma insitu and malignant melanoma.

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TITLE: The Final Histologic Grade of Biopsy-proven Squamous Cell Carcinoma In-situ Sent for Mohs Micrographic Surgery

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Purpose: Squamous cell carcinoma in-situ (SCCis) is often treated without pathological confirmation of tumor clearance. It is unclear whether more aggressive disease such as squamous cell carcinoma (SCC) is harbored in lesions whose initial biopsy demonstrated SCCis. This study examines the final histologic tumor grade in whose initial biopsies showed SCCis.

Design: We prospectively recruited 29 consecutive patients with biopsy-proven squamous cell carcinoma in-situ who were sent for Mohs micrographic surgery. Each tumor underwent Mohs micrographic surgery. The central blocks of the Mohs debulking were horizontally sectioned at 30-micrometer intervals until exhausted. These sections were processed and examined by one Mohs surgeon and one dermatopathologist to determine the histological grade of the tumor.

Summary: Among the 29 subjects, 10 had SCCis and 4 had SCC. The remaining lesions showed scar and/or actinic keratosis. Approximately 14% of lesions showed evidence of invasive SCC.

Conclusion: Although biopsy-proven SCCis is most often treated with modalities (e.g., cryotherapy, electrodessication and curettage) that are best suited for superficial disease and do not involve pathologic review of the specimen, this study demonstrated that 14% of biopsy proven SCCis lesions harbored invasive SCC. This data suggests that treatment modalities that include histologic control of tumor removal should also be strongly considered for the treatment of selected biopsy-proven SCCis.

^{*}MMS NOS, MMS with 1-cm margin or less, or MMS with more than 1-cm margin

^{**} Includes shave biopsy followed by a gross excision of the lesion, punch biopsy followed by a gross excision of the lesion, incisional biopsy followed by a gross excision of the lesion.

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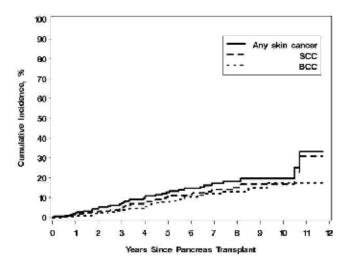
TITLE: Skin Cancer Following Pancreas Transplantation

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Purpose: In this study, we describe the incidence and risk factors for skin cancer following a pancreas transplant.

Design: We calculated the cumulative incidence (CI) of skin cancer for 216 pancreas transplant recipients at a tertiary care center from 1996-2007. Death was a competing risk. Three transplant groups were analyzed together and separately: pancreas after kidney (PAK) (N=107), pancreas transplant alone (PTA) (N=67), and simultaneous pancreas-kidney (SPK) (N=42). Univariate



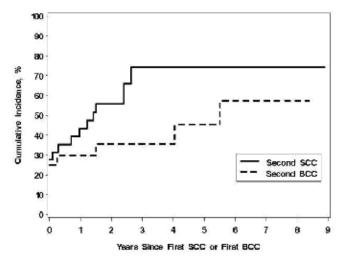


Figure 1.

Cox models with hazard ratios (HR) were used to examine the association of certain risk factors on the development of skin cancer in this patient population, namely age, sex, type of transplant (PAK, PTA, SPK), induction therapy, initial immunosuppressive regimen, and rejection status.

Summary: The sample had 111 males (51%) and a mean age of 43.4 years (range 21-71) (Table 1). Allogenic pancreas transplant recipients had a skin cancer CI of 4.7%, 12.7%, and 19.6% by 2, 5, and 10 years posttransplant, respectively (Figure 1). For squamous cell carcinoma (SCC), the 2, 5, and 10 year CI was 2.8%, 10.3%, and 16.7%, respectively; for basal cell carcinoma (BCC), the 2, 5, and 10 year risk was 2.4%, 7.8%, and 17.4%, respectively (Figure 1). For patients who developed an SCC, the CI of developing a second SCC was 56% at 2 years: for patients who developed a BCC, the CI of developing a second BCC was 36% at 2 years (Figure 1). Analyses for cancer development in the sub-groups followed similar trends. None of the following variables were associated with an increased risk of skin cancer: type of transplant (PAK, PTA, SPK), induction therapy, initial immunosuppressive regimen, rejection status, or sex. Only age was predictive for the development of skin cancer (HR=1.05, p=0.01) (Table 1).

<u>Demographics</u>				1
Demographics				
Gender	Frequency	Percent		
Male	105	48.6		
Female	111	51.4		
1 dilialo		0		
Type of Transplant				
PAK	107	49.5		
PTA	67	31		
SPK	42	19.4		
Age				
Mean	Standard Deviation	Median	Min	Max
43.4	9.0	43 .0	21	71
Predictors for Developing Any Skin Cancer				
Variable	Hazard Ratio	95% Confidence Interval		p-valu
Age	1.05	1.01	1.09	0.01
Male (vs. Female)	0.94	0.48	1.82	0.84
Transplant type				
PTA vs. PAK	0.71	0.32	1.58	0.4
SPK vs. PAK	0.83	0.36	1.94	0.67
Induction therapy				
Anti-thymocyte globulin vs. muromonab CD3 and steroid	1.4	0.52	3.75	0.51
Initial immunosuppressive regimen				
Tacrolimus and mycophenolate mofetil vs. Combined Group*	0.50	0.18	1.43	0.20
Rejection status	1.27	0.60	2.67	0.53

Table 1: Demographics of patient population and predictors of skin cancer

*Combined Group: cyclosporin A (CSA) and mycophenolate mofetil, OR CSA and sirolimus, OR tacrolimus and zidovudine, OR tacrolimus and sirolimus.

Conclusion: SCC and BCC commonly occur in recipients of pancreas transplants, and those patients who have a prior history of non-melanoma skin cancer have a very high likelihood of further skin cancer development. As such, intensive educational and preventive strategies should be targeted at the pancreas transplant population.

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TITLE: The "X" Relaxing Incision for Tissue Flattening in Mohs Micrographic Surgery

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Purpose: This abstract describes a clinical pearl for the preparation of Mohs micrographic sections: the "X" relaxing incision for tissue flattening.

Evaluation of the complete surgical margin is a mandatory component of Mohs micrographic surgery. In some situations this may be more challenging, particularly when thick tissue specimens are encountered, or, when for the sake of tissue preservation, it is more desirable to excise the tumor using a 90 degree angle. In these situations, to obtain a complete evaluation of the margin, a technique for tissue flattening may be required. Several methods for tissue flattening have been previously described (Figures 1 and 2). We describe a simple, fast, and novel technique, the "X" relaxing incision, for tissue flattening that is less involved than previously described methods and does not interrupt the surgical margin.

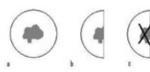




Figure 1: a) Mohs section; b) Mohs section bisected; c) eccentric "X" shaped relaxing incision made

Figure 2: "X" shaped relaxing incision

Design: The Mohs layer is removed in the typical fashion with an excision bevel of 45 to 90 degrees. After the tissue is excised, an eccentric X-shaped relaxing incision is made through the epidermis into the dermis (Figures 1 and 2). The tissue may then be flattened with downward pressure and processed in the usual fashion.

Summary: We have used the "X" relaxing incision successfully on numerous specimens and our histotechnicians feel it provides excellent tissue flattening.

Conclusion: We describe a simple method to achieve tissue flattening for Mohs micrographic surgery. This method does not interrupt the surgical margin and is relatively fast. If desired by the surgeon, it could also be performed in-vivo.

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TITLE: Partial Subunit Island Pedicle Flap for Defects of the Upper Cutaneous Lip

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Purpose: For defects on the upper cutaneous lip, the island pedicle flap (IPF) affords maximal tissue sparing and reconstruction with skin of similar color, texture, and hair density. However, the flap can sometimes pincushion and leave an unaesthetic scar if one arm of the IPF is placed centrally within the cosmetic subunit. For both small and large defects of the lateral upper cutaneous lip, we present a variation -- the "partial subunit IPF" -- that allows placement of the side limbs of the IPF within the cosmetic subunit junction lines of the melolabial fold and the vermilion cutaneous junction and produces a single scar within the relaxed skin tension lines running radially from the vermilion lip. The flap is termed a "partial subunit" repair since it corresponds to the entire portion of the cutaneous upper lip subunit lateral to the defect.

Design: We present flap indications, design, execution, and tips for success in a step-by-step manner using clinical photos. We report our experience in 20 patients using a partial subunit island pedicle flap of the upper cutaneous lip, including anatomic and technical considerations.

Summary: Twenty patients underwent Mohs micrographic surgery for tumors of the cutaneous upper lip. All patients were successfully repaired with a partial subunit island pedicle flap. All patients had excellent cosmetic and functional outcomes with preservation of the normal position and contour of the upper lip free margin, nasal ala, philtrum, and melolabial fold. Some patients required minor revision surgery to correct downward push of the free margin.

Conclusion: The partial subunit island pedicle flap is a reliable reconstruction option that results in reproducibly excellent cosmetic and functional outcomes for cutaneous upper lip defects. This simple modification of the traditional IPF has multiple advantages, including reconstruction within one cosmetic unit, suitable tissue quality, color, and texture match, preservation of hair follicles, lack of distortion of anatomic boundaries between cosmetic units, excellent blood supply and mobility, sparing of tissue around a surgical defect, minimal wound tension, and preservation of free margin position.





Figure 1. Defect (A) and postoperative result (B) 6 weeks after reconstruction with partial subunit IPF.





Figure 2. Defect (A) and postoperative result (B) 6 months after reconstruction with partial subunit IPF.





Figure 3. Defect (A) and postoperative result (B) 10 weeks after reconstruction with partial subunit IPF.



Figure 4. Defect (A) and postoperative result (B) 3 months after reconstruction with partial subunit IPF.

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TITLE: Dual Staining of Mohs Surgery Specimens with \$100 and Cytokeratin for the Detection of Perineural Invasion in Non-melanoma Skin Cancers

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Purpose: Perineural invasion (PNInv) of non-melanoma skin cancers, namely basal cell carcinoma (BCC) and squamous cell carcinoma (SCC), is a well-known risk factor for recurrence and metastasis. Identification of PNInv can often be difficult, with small foci of tumor often located within larger aggregates of inflammatory cells, so-called "perineural inflammation" (PNInf). Our group has identified a specific dual immunohistochemical staining protocol with both cytokeratin antibodies (to stain tumor cells) and \$100 antibodies (to stain the nerves which are encircled by tumor) which has proven useful in these cases.

Design: Some medical centers are fortunate to have a dermatopathology laboratory with the capability to produce immunohistochemically-stained specimens. Mohs surgery with traditional frozen section tissue processing is effective in identifying PNInv, and in some cases more sensitive (unpublished data). Perineural inflammation (PNInf) can be a harbinger of PNInv not clearly identified on frozen sections (unpublished data). In select cases with the concern of PNInv we have managed these tumors with excision in the Mohs fashion yet processed with permanent sections ("slow Mohs", or "staged excision"). Herein we describe our technique utilizing a dual-stain technique to ascertain if it aids in the identification of PNInv. Specimens are immunohistochemically stained with two primary antibodies: mouse monoclonal anti-pancytokeratin (Z0622, Dakocytomation, Denmark) diluted 1:500 and rabbit polyclonal anti-S100 (PA0900, Leica, UK) diluted 1:100. 4-micron sections are cut from tissue previously fixed in formalin and embedded in paraffin blocks. Sections are then mounted to positively charged slides, dried at 60°C for 30 minutes and are then placed into the immunohistochemical processor (Bond system, Leica) where the slides are deparaffinized, hydrated and rinsed. Immunohistochemistry is then performed sequentially with pancytokeratin applied first and then \$100 using commercial equipment (Bond Polymer Refine Detection System, Leica). This system contains biotinylated antimouse and anti-rabbit antibodies which form a complex

with peroxidase-conjugated streptavidin molecules. For the dual stain color development, 3, 3'-diaminobenzidine is used with the pancytokeratin primary antibody and 3-amino-9-ethylcarbazole is used with the \$100 antibody to stain the tumor epithelial cells red and the nerves brown, respectively. Slides are then counterstained with hematoxylin and manually washed with deionized water, dehydrated through graded alcohols and xylene, and then cover slipped. Negative controls are prepared in the same manner without primary antibodies. Turnaround time for the dual staining process is approximately six hours, and the cost to prepare the slides is approximately \$30.

Conclusion: Perineural invasion (PNInv) of non-melanoma skin cancer is a well-documented harbinger of both deep extension and in some cases, eventual metastasis. Extra care is certainly warranted in managing these tumors, including a multidisciplinary approach with medical and surgical colleagues when appropriate. While it is not our practice to perform immunohistochemical stains on our Mohs frozen sections, the separate use of both cytokeratin and \$100 to stain Mohs frozen sections has been welldocumented. Given this, the adaptation of this technique to frozen sections would certainly seem reasonable. Although it has been suggested that \$100 staining of frozen sections to detect melanocytic lesions does not provide the clarity needed to reliably diagnose these tumors, for the purposes of the current discussion simply identifying the nerves will suffice. Advanced techniques such as those described here will likely allow detection of smaller foci of PNInv in Mohs sections, the detection of which are often limited by a lack of tumor bulk given prior biopsy and debulking procedures, and the fact that the first stage of Mohs often will clear any residual tumor, leaving little to direct the histologic examination. The dual cytokeratin-\$100 protocol in our experience has highlighted subtle PNInv in some cases which may or may not have been detectable by other means. Plans for further study include identification of cases in which histologically occult PNInv was detected by this protocol and how care may have been improved as a result by such interventions as earlier referral for multidisciplinary care, increased attention to local nodal basins, perioperative imaging, and potential radiation therapy.

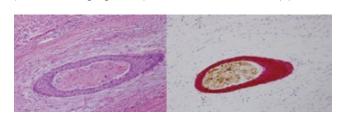


Figure 1: Dense focus of SCC enveloping a cutaneous nerve shown with H+E (left) and the dual cytokeratin-\$100 stain (right).

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TITLE: Factors Predictive of Complex Mohs Surgery Cases

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Purpose: Mohs surgery allows excision of skin cancer in a tissue-sparing fashion that minimizes recurrence risk. Factors predictive of complex Mohs cases are not well-studied. The purpose of this was to determine patient, tumor, and surgeon characteristics associated with Mohs cases requiring four or more stages to achieve clear margins.

Design: A retrospective chart review was performed for a 3 year period (7/2006 – 6/2009) at our academic (3 Mohs surgeons) and private (1 Mohs surgeon) institutions to identify Mohs cases requiring 4 or more stages ("complex"), and a control population requiring 3 or less stages ("noncomplex"). A 2:1 ratio of complex to noncomplex cases was selected.

Summary: In total, 77 complex Mohs cases were identified (51 academic, 26 private) and were compared against 154 control cases. There were no significant differences between the groups in patient age (69.0 ± 14.6 years complex vs. 66.0 ± 14.0 years noncomplex), gender (62% male complex; 57% male noncomplex), presence of immunosuppression (5% complex; 6.5% noncomplex), or history of prior skin cancer (69% complex, 57% noncomplex). Similarly, no significant differences between the groups were seen between academic (2.7% of total cases complex) vs. private practice (3.5% of total cases complex), or years experience of the primary Mohs surgeon (under 5 years post-fellowship vs. >10 years post-fellowship).

Recurrent tumors were highly associated with complexity (p<0.001; OR 6.88, 95% CI 2.8-17). Basal cell carcinoma with infiltrative or morpheaform histology was significantly associated with complexity (p=0.0019; OR 3.0, 95% CI 1.5-6.3). Tumors of the nose (p=0.0168; OR 2.05, 95% CI 1.1-3.7) and especially nasal tip (p = 0.0103; OR 3.68; 95% CI 1.3-10.6) and ear (p=0.0178; OR 3.0, 95% CI 1.2-7.9) and especially helix (p=0.00744; OR 5.9, 95% CI 1.5-22.7) were significantly more likely to be complex, as were tumors involving more than one cosmetic subunit (p=0.0072; OR 5.0, 95% CI 1.5-16.7). Tumors with pre-operative size >1 cm or >2 cm were significantly more likely to be complex (p=0.018; OR 2.0, 95% CI 1.1-3.6 for >1 cm; OR 3.0, 95% CI 1.2-7.9 for >2 cm). Complex tumors had a significant greater pre-operative maximal diameter (1.4 \pm 0.54 cm vs. 0.92 ± 0.54 ; p= 0.0008), post-operative area (10.6 ± 1.3 vs. 3.6 \pm 0.7; p<0.0001), and were significantly more likely to require flap or graft repair (p<0.0001; OR 6.9, 95% CI 3.7-13.1).

Conclusion: Recurrent tumors, BCC with aggressive histology, tumors over 1 cm pre-operatively, and tumors on the nose and ear are significantly more likely to prove surgically complex. Advanced knowledge of these factors may be useful pre-operatively as Mohs surgeons plan their scheduled cases.

	COMPLEX (N=77)	NONCOMPLEX (N=154) p value		Odds Ratio (95% Confidence Interval)	
Gender (M:F)	48:29	88:66	0.45	1.24 (0.71-2.17)	
Age	69.0 ± 14.6 (range 35-93)	66.0 ± 14 (range 28- 91)	0.13		
Recurrent tumor (%)	19	7	<0.0001	6.88 (2.75-17.2)	
Pre-op tumor size >1 cm	30	37	0.018	2.02 (1.12-3.63)	
Pre-op tumor size >2 cm	11	8	0.018	3.04 (1.17-7.9)	
Selected Tumor Sites					
All Facial Sites	73	135	0.105	2.57 (0.84-7.83)	
Nose	29	35	0.0168	2.05 (1.13-3.73)	
Nasal Ala	13	15	0.117	1.88 (0.85-4.19)	
Nasal Tip	10	6	0.0103	3.68 (1.29-10.55)	
Ear	11	8	0.0178	3.04 (1.17-7.91)	
Helix	8	3	0.00744	5.9 (1.5-22.7)	
All Non-facial Sites	4	19	0.105	0.39 (0.13-1.19)	
Tumor involves >1 anatomic subunits	9	4 0.0072		5.0 (1.5-16.7)	
Selected Histology					
BCC (all)	63	120	0.61	1.28 (0.64-2.55)	
Morpheaform BCC	6	1	0.0061	12.9 (1.5-109)	
Infiltrative BCC	16	17	0.046	2.11 (1.0-4.5)	
SCC	9	31	0.11	0.53 (0.24-1.17)	
Repair: Linear	16	100	<0.0001	0.14 (0.07-0.27)	
Repair: Flap or graft	60	52	<0.0001	6.9 (3.67-13.1)	

Selected Tumor and Patient Characteristics

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TITLE: Unknown Primary Merkel Cell Carcinoma

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Purpose: To further understand the characteristics and behavior of unknown primary Merkel cell carcinoma.

Design: A multi-center, retrospective, consecutive study reviewing 23 subjects diagnosed with unknown primary Merkel cell carcinoma (UPMCC) between 1981 and 2008 was completed. Data from three academic medical centers was collected and combined for analysis.

Summary: The average age at diagnosis was 66.0 years; the majority of subjects were male (87%) and Caucasian (100% of those reported). The most common lymph node basin involved was inguinal (7/23), followed by cervical (4/23), axillary (4/23), and parotid (4/23). One subject was immunosuppressed, and 39% had a history of other cancer. Following the initial biopsy, 16 patients had further evaluation of the lymph node basin. Half of these had additional positive nodes (8/16). Of the 23 total subjects, the majority had lymph node basin involvement only (78%), while the remaining had distant metastasis (22%). The median size of the involved lymph node at diagnosis was 5.0 cm. Overall survival at 2 years was 62.8%. When compared to stage III known primary MCC, patients with UPMCC had no statistically significant difference in overall survival (hazard ratio for known versus unknown primary, 1.5 (95% CI 0.7-3.1).

Conclusion: The data presented represents the largest collection of data on unknown primary Merkel cell carcinoma in the literature. Our data demonstrated no difference in overall survival in patients with UPMCC versus those with stage III known primary MCC. Due to the

unpredictable natural history of MCC, we recommend individualization of care based on the details of each patient's tumor and clinical presentation.

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TITLE: Translational Research Pearl: Mirrored Bread Loaf Processing of Mohs Melanoma In-situ Debulk Tissue for Drug Testing

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Purpose: The debulk tissue from Mohs excision of melanoma in-situ (MIS) is an ideal source of fresh melanoma tissue for research purposes. Debulk tissue from Mohs excision of MIS is often sent for pathologic review to confirm or determine the depth of any residual cancer. At our institution, about 50% of the Mohs MIS debulk tissues show residual melanoma on histopathological examination. These specimens are processed by cutting them into several smaller specimens then sectioning 3-5 micrometer "slices" off the edges of each of these smaller specimens. This "bread loafing" approach allows microscopic evaluation of approximately 5% of the debulk specimen with the remaining tissue left in the unsectioned tissue blocks. A simple alteration of the bread loafing approach allows the use of this remaining tissue to be used for in-vitro drug testing without compromising the diagnostic testing of the debulk specimen.

We used fresh MIS debulk tissue to test the selectivity of a novel drug that targets melanoma through these cells' tendency to increase the uptake of hyaluronan. Interruption of normal hyaluronan function impedes melanoma growth and metastasis in a murine tumor model and holds promise for human therapy. Conjugation of hyaluronan to doxorubicin can target melanoma in-vivo in a murine tumor model and in cultured human melanoma tissue. Use of tissue sections from bread loafed specimens of Mohs MIS debulk tissue allows safe testing of melanoma-specific uptake of hyaluronan bioconjugate in whole tissue.

Design: Immediately after harvesting, the debulk MIS specimen is bread loafed into three smaller specimens by making through and through incisions perpendicular to the skin surface. The middle specimen is cut to a thickness of approximately 3 mm and is used for investigational purposes. Diagnostic staging sections are cut from the other specimens and are used to confirm the diagnosis and depth of penetration of malignant cells. These sections are taken from the vertical surfaces facing the middle specimen and they "mirror" the histology of the corresponding surfaces of the middle specimen, thereby obviating the need to cut sections from middle specimen for staging purposes. The middle specimen is then incubated with the doxorubicin-hyaluronan bioconjugate for several hours and then fixed in formalin, processed and cut. The cut sections are then stained with antibodies to doxorubicin and evaluated to determine the presence

or absence of doxorubicin in melanoma cells. The central hypothesis of the project is that doxorubicin will be enriched within the melanoma cells in the fresh tissue sections harvested from MIS debulk specimens using this approach.

Summary: Seven Mohs MIS debulk specimens were submitted for study. Four of the seven specimens demonstrated residual MIS. None of the specimens contained evidence of invasive melanoma, which was consistent with the pre-Mohs evaluation of the biopsy specimens.

Conclusion: Mirrored bread loaf processing of Mohs MIS debulk tissue gives access to fresh tissue for translational investigation of chemotherapy physiology without compromising patient care.

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TITLE: Stem Cell Therapy for Dermatologic Surgery: GCSF Can Accelerate Mouse and Human Wound Healing

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Purpose: There is evidence that stem cells can accelerate wound healing and reduce scarring. Stem cells may therefore be used to enhance wound healing during Mohs surgery reconstructions (whether by secondary intention, linear closures, flaps, or grafts). We have previously reported a method where we aspirated stem cells out of the bone marrow, grew the cells in tissue culture plates, and then placed the (autologous) stem cells on Mohs surgery defects (Falanga, Iwamoto, et al. Tissue Engineering, 2007, 13: 1200-1312). Since then, we have been seeking to make stem cell therapy more usable for Mohs surgery reconstructions by optimizing a method that avoids bone marrow biopsies and in-vitro cell culture. Such a method is presented here. We present early results of an approach to stem cell therapy that only involves injections of a cytokine----granulocyte colony stimulating factor (GCSF)---to mobilize stem cells out of the bone marrow, into the peripheral blood, and then to the wound site. Our objectives were to optimize parameters for this method using mouse models and to test safety in human subjects.

Design: Mice were injected for five days with two different formulations of GCSF and compared to controls. To monitor stem cell mobilization (how effectively stem cells moved from the bone marrow to the peripheral blood), flow cytometric measurements of Sca-1 and c-Kit, and colony forming cell (CFC) assays were performed. Full thickness tail wounds were created and monitored for clinical evidence of healing. To measure connective tissue formation, polyvinyl alcohol sponges were implanted to monitor collagen content as a function of time. To monitor bone marrow stem cell homing to wound sites, chimeric mice transplanted with Green Fluorescent Protein (GFP)

bone marrow cells were scanned by live imaging. We have been enrolling patients for an approved human subjects study comparing the rates of healing of chronic wounds (refractory to standard care) treated by systemic GCSF to those without stem cell therapy.

Summary: (1). The concentration of peripheral blood stem cells increased between three to five days following the initiation of GCSF administration, as shown by flow cytometric data and as confirmed preliminarily by CFC assays. (2). GCSF treatment resulted in cleaner, less crusted wound beds in mouse-tail wounds. (3). There was a small increase of connective tissue formation in GCSF treated mice. (4). Live imaging revealed an increasing accumulation of bone marrow-derived cells at the tail wound for at least eight days after wounding. (5). At this writing, one patient has completed a course of GCSF. The wound of our single human subject treated with systemic GCSF showed an increase in granulation tissue, followed by nearly a 50% decrease in the ulcer area.

Conclusion: Stem cell therapy using GCSF to mobilize stem cells to the wound site shows promise for improving wound healing.

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TITLE: Management of Advanced Cutaneous Squamous Cell Carcinoma: A Case Study

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Purpose: The treatment of locally advanced or metastatic cutaneous squamous cell carcinoma remains difficult, with no evidence based data on a standard chemotherapy regime. When traditional therapies, such as surgical excision or radiotherapy, fail clinical management of these patients often becomes difficult. We present a case that demonstrates the efficacy of the epidermal growth factor receptor (EGFR) inhibitor cetuximab in treating metastatic squamous cell carcinoma after limited success with other chemotherapeutic agents. This case also highlights the need for a flexible and diverse approach to these complex cases.

Design: A 75 year-old male patient presented with an aggressive squamous cell carcinoma of the scalp that had recurred after both excision and radiotherapy. At the time of presentation, the patient had inoperable local disease on the scalp and the decision was made to treat with capecitabine, an oral analogue of 5-fluorouracil. After three months of therapy, the patient had an improvement in local disease on capecitabine and an attempt was made to resect the residual scalp tumor. The excision had widely positive margins, and within two months the patient presented with recurrent local disease, as well as an enlarged supraclavicular node (2.5 cm) positive for squamous cell carcinoma. Given the presence of metastatic disease, the patient was started on paclitaxel chemotherapy. After four months of therapy, the patient had improvement of his local disease and

lymph node involvement, but persistent squamous cell carcinoma remained on his scalp. He also had multiple hospitalizations for infections on his scalp that were felt to be related to the paclitaxel treatment. Given the patient's residual disease and the poor tolerability of single agent paclitaxel, the decision was made to change the patient's chemotherapy regime. The patient's paclitaxel dose was reduced and cetuximab, an EGFR inhibitor, was added.

Summary: Within two months on this chemotherapy regimen of cetuximab and paclitaxel, the patient had complete resolution of all residual squamous cell carcinoma on the scalp and his affected lymph node remained small and stable. The patient was treated with this combination for six months total with gradual tapering of the cetuximab dose and discontinuation of the paclitaxel. The treatment was well tolerated, with the patient noting mild fatigue and the typical rash induced by EGFR inhibitors. The patient is currently stable on single agent cetuximab, with no evidence of cutaneous disease, a single stable and unchanging supraclavicular lymph node (1 cm), and no other evidence of metastatic disease on clinical or radiological examination.

Conclusion: This case highlights the promise that the targeted therapy of EGFR inhibitors holds in the treatment of advanced squamous cell carcinoma of the skin, in combination with other therapies or as single agent chemotherapy. It also emphasizes the need to try multiple and diverse approaches when attempting to manage aggressive disease in these patients. Controlled trials will be needed to elucidate the most effective chemotherapy regimen for locally advanced and metastatic cutaneous squamous cell carcinoma.

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TITLE: Ultraviolet-light Fluorescent Tattoo Localization of Non-melanoma Skin Cancer

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Purpose: With the usual wait time between the biopsy of a lesion suspicious for non-melanoma skin cancer (NMSC) ranging between 1 week to 3 months, the original site of biopsy can be difficult to locate at the time of the definitive surgical removal. The biopsy scar often can camouflage in a background of severe chronic sun damage or hide as a well-healed scar. The lack of close anatomic landmark can make tools such as photography and triangulating measurements ineffective. A prior study has shown that wrong-site surgery is a top cause of lawsuit against Mohs surgeons. An unequivocal method of identifying and documenting the biopsy site prior Mohs surgery is of utmost importance.

The objective of this study seeks to investigate the safety and applicability of UV-fluorescent tattoo to localize the biopsy site. The UV-fluorescent tattoo used in this study (UV Titanium White) is coated by biocompatible polymethymethacrylate beads and is most visible under fluorescent light and minimally visible under ambient light.

Design: The UV-fluorescent tattoo used in this study (UV Titanium White) is coated by biocompatible polymethymethacrylate beads and is most visible under fluorescent light and minimally visible under ambient light.

The fluorescent tattoo dye was initially applied to infant foreskin samples to examine the ease of application, permanence and stability of fluorescence and visibility under Wood's lamp and fluorescent microscopy.

Summary: An initial study to the applicability of the fluorescent tattoo dye was completed on infant foreskin culture. The fluorescent tattoo appears to be compatible and permanent. The fluorescence of the tattoo was localized and visible under gross visual inspection under Wood's lamp and histological examination under fluorescent microscopy.

In the clinical study of the fluorescent tattoo, been one subject with one lesion that has been suspected to be a basal cell carcinoma and consented to the biopsy with UV-fluorescent dye. The lesion is confirmed to be a basal cell carcinoma by histological examination. At a follow-up, 2 months after the date of biopsy, the subject has difficulty correctly localizing the biopsy site on his back. A dermatologist blinded to the study also could not identify the biopsy site. With the help of a Wood's lamp, the correct biopsy site is subsequently identified. The subject denies any noticeable side effect from the tattoo, including localized site reaction. The UV-fluorescent tattoo remains fluorescent under Wood's lamp 3 months after the date of the biopsy.

Conclusion: This report supports the applicability, safety, and permanence of the fluorescent tattoo as a tool to localize biopsy site for lesions that are highly suspicious for non-melanoma skin cancer. The fluorescent tattoo will be a valuable tool to facility identifying and documenting biopsy site prior to Mohs surgery.

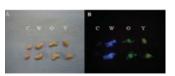


Figure 1. The cultured foreskin specimens on day 7 (A) as seen under visible light and (B) as seen under Wood's lamp (C=Control, W=White Tattoo, O=Orange Tattoo, Y=Yellow Tattoo).



Figure 2. Tattooed specimen viewed by standard visible light microscopy (upper panels) and by fluorescent microscopy (lower panels). The fluorescent dye is seen in the vertical tracks made by the biopsy punch in the lower panels but not in the upper panels.

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TITLE: Management of Multiple Granular Cell Tumors: Treatment by Mohs Surgery and Review of the Literature

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Purpose: Granular cell tumors (GCT) are uncommon neoplasms with a high rate of local recurrence after surgery. Although rare, malignant transformation is possible. Up to 25% of patients may present with multiple GCT; however, there are no published guidelines for the management of such tumors. To our knowledge, there are only five published reports of GCT treated by Mohs micrographic surgery (MMS) and no previous reports of MMS in a patient with multiple granular cell tumors. We were presented with an otherwise healthy 20 year-old man with multiple new and recurrent biopsy-proven GCT. We present recommendations for management of multiple granular cell tumors based on our experience and literature review.

Design: We present clinical and histologic images from our case along with relevant literature. We performed a comprehensive review of the English-language medical literature. Related articles and references were reviewed.

Summary: Our case illustrates several key points in the management of granular cell tumors:

- Recurrence rates after standard excision are high. Evaluation of 100% of the microscopic margin may be necessary to detect subclinical spread, especially perineural spread.
- Potentially fatal malignant GCT may be histologically indistinguishable from benign GCT; therefore, patients with large, rapidly growing, or locally aggressive tumors require judicious clinical follow-up.
- Patients with multiple GCT warrant a thorough history and physical exam to rule out signs or symptoms of associated systemic abnormalities.

Local recurrence rates for benign GCT following standard excision with clear margins range from 2% to 8%. When surgical margins are positive, recurrence rates of 21% to 50% have been reported. GCT exhibit perineural involvement in 75% of cases. Reports indicate that 1% to 7% of GCT are malignant. Malignant GCT are usually larger (4cm or greater) and may grow rapidly. Many malignant GCT demonstrate areas of nuclear pleomorphism and increased mitotic activity; however, some are impossible to differentiate from benign GCT on pathology and are identified only following nodal and metastatic spread. Malignant GCT are aggressive and nearly universally fatal. Wide excision is recommended for malignant lesions. Mohs micrographic surgery may be indicated for GCT located in functionally or cosmetically sensitive areas or for aggressive tumor variants. For our patient, we elected to treat a recurrent, enlarging, symptomatic GCT on the right ulnar wrist by MMS given its functionally sensitive location. Of patients with multiple GCT, only 14% have been reported to have systemic findings suggestive of a syndrome, and the vast majority of these cases are children.

Conclusion: Patients with multiple granular cell tumors present management challenges. In cosmetically or functionally sensitive locations, evaluation of the entire microscopic margin is desirable to identify subclinical spread and perineural invasion. Close clinical follow-up is warranted for large or rapidly growing tumors. In adults with multiple granular cell tumors, a thorough history and physical exam should be performed to rule out any signs or symptoms of associated systemic abnormalities.



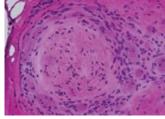


Figure 1. Recurrent granular cell tumor on ulnar wrist.

Figure 2. Perineural invasion encasing superficial branch of ulnar nerve (40x).

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TITLE: The Helix Jellyroll Flap: A Modification of Helical Advancement Flaps to Reconstruct the Helical Rim

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Purpose: Postauricular advancement flaps can lead to undesirable attenuation of the fleshy helix due to tension and contractile forces on the leading edge of the flap. In addition, tension on the leading edge of the flap can "uncurl" the natural anterior curvature of the underlying helical cartilage. To prevent this untoward outcome, we demonstrate an alternative anchoring technique, for both one and two-stage helical advancement flap procedures, that restores the tuft of tissue over the helical rim. This is accomplished by rolling the flap forward in a "jellyroll" configuration to recreate the anterior helical fold.

Design: The proposed jellyroll technique places the leading portion of a postauricular advancement flap under compression rather than tension. It rolls the leading edge of the flap over itself creating a tissue redundancy at the anterior helical rim. The basis of this technique lies in the placement of the anchoring sutures of the helix to the wound's adjacent fixed skin. The first suture is a horizontal mattress placed approximately 5 mm behind the leading edge of the advancing flap (the larger the defect, the further back is suture placement from the leading edge of the flap). The flap is advanced and the suture is anchored anteriorly, but not at the anterior wound margin. Rather, it is placed into the scaphoid fossa or antihelix beyond the wound margin, in a horizontal mattress. This version of the jellyroll flap differs from the traditional approach, which sutures the apposing wound edges directly together. When flap-edge sutures are used to tension the wound into position, maximal flap stress occurs at the wound margin. This tension attenuates the tissues. The helix jellyroll flap prevents attenuation of the flap by creating a redundancy that rolls the flap's leading edge over itself and places the wound's leading edge under compression. The skin and cartilage of the scaphoid fossa and the adjacent antihelix are relatively fixed and inflexible. Anchoring the flap at this fixed position prevents back-pull on the flexible helical cartilage until the healing process fixes the flap in position, preventing uncurling of the delicate curvature.

Conclusion: The anchoring technique in the helix jellyroll flap improves the cosmetic outcome of a traditional postauricular advancement flap by preventing attenuation of the helical tuft while preserving the more natural anterior curvature of the underlying helical cartilage. The helix jellyroll flap is a simple modification of the traditional approach that should be utilized to maximize the cosmetic repair of helical surgical wound defects.

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TITLE: Free Cartilage Grafts for Alar Defects Coupled with Secondary Intention Healing

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Purpose: Repairing the alar subunit of the nose after Mohs surgery is a challenge and can be a lengthy procedure. The inability to let it heal by second intention because of alar retraction, nasal valve collapse, and unacceptable scar leads to long procedures involving flaps, composite grafts and a combination of both to recreate the contour of the nose. The standard opinion about second intention healing over cartilage is not considered favorable because of the risk of desiccation necrosis. We describe a technique that is time conscious, reproducible, and helps to prevent nasal valve collapse. This method is mentioned in the plastic surgery literature and our findings concur.

Design: This technique allows the surgeon to recreate the alar subunit of the nose by second intention healing. This technique also adds support in the alar region and aims to prevent external valve collapse and alar retraction. This method maybe useful in for defects in the soft triangle, as recreating this anatomical surface is difficult.

The alar defect and ipsilateral helix are cleansed with chlorhexidine antiseptic solution, infiltrated with a local anesthetic. The ipsilateral helix is used unless there is an obvious contraindication. The length of the defect is measured and 4 mm is added to the measurement to insure the batten will fit snuggly inside the subcutaneous pockets of tissue. The width of the defect is measured to ensure that the batten width is just slightly less than that of the defect by 2-3 mm. A skin flap is incised over the antihelix and retracted back, the cartilage is harvested taking special attention to leave an intact perichondrium. The perichondrium provides an optimal environment for granulation tissue. The helical skin flap is sewn together with 6-0 absorbable suture. Two pockets of tissue are made with a scalpel on the lateral most edges of the round defect as buried subcutaneous pockets in which the cartilage will fit snuggly. These pockets may also help with vascular supply to the free cartilage graft. The graft is removed from the saline and slipped into the buried dermal pockets, first one side then the other. At this point a 5-0 absorbable suture is used to tie 2 buried figure eight sutures into the defect. The cartilage is now firmly imbedded into the defect with pericondrium intact. This is covered with petroleum jelly and a pressure bandage for 48 hours. Figure 1 illustrates this technique with a fairly deep left alar Mohs defect 5 mm from the

alar rim measuring 1.1 x 0.7 cm. The cartilage batten is placed and the patient is seen 8 weeks later. In Figure 2 a right alar defect measuring 1.4 x 1.2 cm is repaired with a cartilage batten and the patient was seen 10 weeks later with a slight hypertrophic scar. In both cases there was complete re-epithelialization by secondary intention. Both patients and physicians were pleased with this cosmetically acceptable result that kept the form and function of the nose and the nasal valves intact.



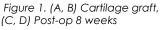




Figure 2. (A, B) Cartilage batten, (C, D) Post-op 10 weeks

Summary: This technique of a free cartilage graft coupled with secondary intention healing allows for a satisfactory cosmetic outcome with little morbidity.

Conclusion: A free cartilage batten is a good alternative for a medium to deep repair on the nasal ala.

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TITLE: Microcystic Adnexal Carcinoma Associated with Multiple Benign Syringomatous Proliferations: A **Report of Two Cases**

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INSTITUTION: Dermatology, New York University, New York, NY, United States 2. Dermatology, Memorial Sloan Kettering Cancer Center, New York, NY, United States

Purpose: We report two cases of microcystic adnexal carcinoma (MAC) associated with multiple benign syringomatous proliferations. Surgical management in both cases was challenging. Overlapping histologic features between MAC and syringoma made it difficult on intraoperative frozen sections to separate the peripheral border of the MAC from the background of multiple benign lesions, especially since, to our knowledge, no such scenario (MAC associated with multiple subclinical benign syringomatous proliferations) has previously been reported.

Design: Case 1: A 47-year-old white female initially presented to the dermatologist complaining of patchy hair loss and scaling of the scalp and intermittent pain and burning on the right scalp for several months. On examination, an ill-defined pink tender plaque with overlying alopecia was noted on the right parietal scalp. A biopsy showed a microcystic adnexal carcinoma with perineural invasion.

Case 2: A 73-year-old white male presented to the dermatologist after noting a palpable lesion on the right cheek. On examination was a 2 cm plaque on the right cheek. A biopsy revealed a microcystic adnexal carcinoma.

Summary: Case 1: Mohs micrographic surgery was performed. Frozen sections during Mohs surgery showed classic basophilic strands, cords, and ductal structures in a desmoplastic stroma consistent with a MAC. Six stages of Mohs surgery were initially required to clear the tumor, resulting in a 6 cm defect. Additional peripheral and deep margins around the entire defect were excised and sent for permanent sections to rule out residual tumor. In the permanent section evaluation by dermatopathology, focal syringomatous proliferations in the dermis were found extending to peripheral margins. Although the syringomatous foci were indistinguishable from benign syringomas histologically, in the context of an adjacent MAC, it was difficult to exclude the possibility that the foci could be peripheral syringoma-like extensions of the MAC. Therefore, the patient underwent further Mohs surgery. In stages seven and eight, superficial syringomatous proliferations were seen; in stage nine, there was only a single ectatic sweat duct confined to the superficial dermis. Given the presence of additional small distinct syringomatous foci, which after three dimensional mapping of the lesions based on permanent sections were clearly separated from each other and the main MAC tumor by normal skin, it seemed most plausible that the syringomatous foci were benign lesions. However, this conclusion could only be draw with confidence after all permanent sections had been reviewed. During intraoperative frozen section analysis, it was difficult to be definitive, which is why additional tissue peripheral to the sites of syringomatous foci was excised and reviewed. The final margin showed benign skin with no tumor seen. The final tumor-free area was a 7 cm defect to periosteum. Plastic surgery used a split thickness graft to repair the defect.

Case 2: A wide excision was performed by plastic surgery. The patient underwent two additional re-excisions because pathologists reported MAC at peripheral margins. The patient was then referred to radiation oncology for further treatment. Pathology slides were reviewed at a cancer center. In the first excision a lesion with features consistent with a microcystic adnexal carcinoma was identified. Review of the subsequent excisions showed multiple benian syringomatous proliferations confined to the dermis that were separated from each other by intervening benign skin. The proliferations had the appearance of a syringoma. All of them were confined to the dermis. None of the foci extended into the subcutis or showed perineural invasion. Therefore these syringomatous proliferations most likely represented benign syringomatosis.

Conclusion: MAC is a locally aggressive tumor with extensive unpredictable subclinical extension; therefore Mohs surgery is the treatment of choice. While margin assessment of a MAC on frozen sections is usually straightforward, we encountered two unusual scenarios that made margin assessment and surgical management very difficult, because of the unusual constellation of a MAC arising in a subclinical background of multiple benign syringomatous proliferations. It is important for Mohs surgeon to be aware of this phenomenon.

American College of Mohs Surgery Annual Meeting

Poster Presentation Summaries

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TITLE: Atypical Fibroxanthoma in the Setting of **Chronic Lymphocytic Leukemia**

AUTHORS: Michael B. Colgan, MD¹; Jerry D. Brewer, MD¹; Amy L. Weaver, MS²; Randall K. Roenigk, MD¹; Clark C. Otley, MD1

INSTITUTION: Dermatology, Mayo Clinic-Rochester, Rochester, MN, United States 2. Biomedical Statistics & Informatics, Mayo Clinic-Rochester, Rochester, MN, United

Purpose: To further understand the characteristics and behavior of AFX in the setting of concomitant CLL.

Design: Institutional review board approval was obtained for a retrospective chart review. The master diagnosis index was queried for AFX and lymphoma from 1980 to 2008. A total of 11 patients were identified with both the diagnosis of AFX and lymphoma. A retrospective chart review was then conducted.

Summary: The 11 identified patients with AFX and lymphoma did not demonstrate an increased risk of recurrence, metastasis, or mortality due to AFX compared to previous case reports in the literature. No patients treated at this institution in the past 26 years have had a true case of metastatic AFX. In addition, patients with AFX and CLL did not fare worse compared to patients with AFX and other types of lymphoma.

Conclusion: AFX does not behave more aggressively in the setting of concomitant lymphoma; however more studies are needed to definitively evaluate the characteristics and behavior of AFX in this patient population.

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TITLE: VIDEO - Videos in Dermatology Education

AUTHORS: Matthew A. Molenda, MD; David R. Lambert, MD

INSTITUTION: Division of Dermatology, The Ohio State University Medical Center, Columbus, OH, United States

Purpose: The availability and use of streaming video has exploded online. Websites such as YouTube™ have paved the way for online video sharing that requires relatively little computer knowledge for both the publisher and end user. Such technology presents an opportunity for dermatologic surgeons to utilize a rich online multimedia experience to teach surgical concepts and techniques to patients and students.

Dermatologic surgery is particularly well suited for online video instruction. For example, many patients (and even physicians in non-dermatologic specialties) do not understand the benefits of Mohs surgery versus simple excision. A 3-D video contrasting Mohs sectioning to standard "bread-loaf" sectioning, for example, would prove to be a valuable tool in enhancing patient understanding. In addition, medical students and residents can enhance their learning of dermatologic surgery techniques (biopsy techniques, suturing techniques, flaps, lasers, cosmetic procedures, assistance techniques, etc.) using this same technology.

Design: The first author of this abstract has developed a website that allows physicians within his practice setting to display videos in a manner similar to YouTube™. While it may be less expensive (for now) to develop videos and post them on YouTube™, there are numerous benefits of hosting the videos on a physician-run website. Such benefits include: (1) ability to maintain of control over who accesses videos with user-level authentication (e.g. videos of flaps may not be appropriate for public viewing, and patients may be less likely to agree to be recorded if the video will be publicly available); (2) ability to maintain copyright and ownership of videos; (3) YouTube™ is losing hundreds of millions of dollars annually, so a pay-per-view model could soon be introduced; (4) videos will not be limited by size, time, or content constraints imposed by YouTube™; (5) ability to avoid YouTube™ placement of advertisements over videos; (6) quality control of videos that are backed or endorsed by an academic institution or organization (e.g. a University, Hospital, or organization such as Mohs College), thereby adding to the credibility of the information; and (7) ability to place internal and external links to reliable educational resources, surveys, and printable forms that the patient will see while viewing a video.

Summary: No formal surveys have been conducted. Several videos have been made and used for patient education during office visits. Patient response to these videos has been extremely positive, as has physician satisfaction with the time saved.

The presentation will include: discussion of online videos in dermatologic surgery; how streaming videos can be incorporated into a website independent of YouTubeTM; the pros and cons of privately hosting videos; a demonstration of a website that has its own authentication system and videos that can be designated as public or private.

Conclusion: Dermatologic surgery is particularly well suited for online video instruction. Not only do videos save physician time spent on repetitive counseling, but they can also effectively be used to train students of surgery and to further educate patients. Videos that are backed by a reliable entity may be perceived as being more credible than videos posted on YouTube™. Some videos may not be suitable for unrestricted public viewing, so maintaining control over the videos is important.

TITLE: An Interesting Observation in Lip Reconstruction

AUTHORS: Carin Litani, MD^{1, 2}; Joel Cook, MD²; John C. Maize, MD²

INSTITUTIONS: 1. Newton Wellesley Hospital, Wellesley, MA, United States 2. Dermatology, Medical University of South Carolina, Charleston, SC, United States

Purpose: The reconstruction of surgical defects of the cutaneous or vermilion lip may prove to be a challenging task for the dermatologic surgeon. While mandating the restoration or preservation of form and function for operative success, the aesthetic appearance of the lip must also be maintained. Excessive scarring or distortion due to a repair is likely to disappoint both the patient and

the surgeon. A wide variety of reconstruction options are available for repair. We present a case of a full thickness lip defect after Mohs surgery to extirpate a squamous cell carcinoma repaired with a radial forearm free flap. Longitudinal follow-up of the patient has demonstrated the apparent clinical transformation of the keratinizing volar forearm skin into mucosa when placed in the mouth. We further noticed similar changes with less complex repairs such as full thickness skin grafts used to repair partial thickness wounds of the lip. This paper investigates and discusses the utility of reconstructing defects encompassing both the vermilion and cutaneous lip with a local flap or graft that crosses the cosmetic boundary of the vermilion line by analyzing this mucosal transformation.

Design: In effort to determine if the pathological findings echoed the clinical mucosal transformation, biopsies for comparison were obtained from the transformed surface of the flap, the native mucosa, and the native donor forearm skin from the contralateral arm. Additional case analysis showed the successful use of full thickness skin grafts and local flaps used to repair partial thickness defects involving both the cutaneous and vermilion lip as one cosmetic unit due to this transformative process.

Summary: The results show that while the transformed flap mucosa more closely resembled the native mucosa in regards to thickness and architecture, it still retained some cutaneous features. Overall, the flap clinically mimics native mucosa and histologically resembles a hybrid of native skin and mucosa with its own unique features of increased inflammation, candida, and subepithelial granulation tissue.

Conclusion: We encourage dermatologic surgeons to consider utilizing a full thickness cutaneous skin graft or flap to repair such defects involving both the cutaneous and mucosal lip and reassure the patient that transformation into mucosa is likely to occur as the graft/flap matures in its new environment.



Full thickness defect after Mohs surgery of the lower vermilion and cutaneous lip.



Note the clinical mucosal appearance after reconstruction with a radial forearm free flap.

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TITLE: Bovine Triple Helix Collagen Wound Dressing Obviates the Need for Delayed Full Thickness Skin Graft for Sub Centimeter Alar Mohs Surgery Defects

AUTHORS: Joshua A. Tournas, MD; Scott W. Fosko, MD; **Quenby L. Erickson, DO**

INSTITUTION: Dermatology, St. Louis University, St. Louis, MO, United States

Purpose: Small but deep alar MMS defects present a common reconstructive challenge. Although defects 1cm or less are relatively small, second intention healing can result in contraction leading to notching of the alar rim. Reconstructive options for small alar defects such as flaps and grafts have significant limitations. Flaps often involve violating the cosmetically important alar crease and a delayed full thickness skin graft results hypopigmented "patch" and an additional wound, the donor site. These reconstructive imperfections present a special challenge given that the wounds are so small. The use of an acellular triple helix collagen wound dressing in small but deep alar MMS defects has resulted in beautifully healed wounds with an excellent color texture match and restored contour without the ever-feared alar notching.

Design: On two occasions young women presented with basal cell carcinoma on the ala which resulted in relatively deep but small defects. After thorough discussion of reconstructive options, these women opted for placement of an acellular collagen xenograft which was sutured into place with Fast Absorbing Gut followed by evaluation 10 days later for possible delayed full thickness skin graft. The patients both used a small piece of thin Duoderm over the xenograft while the wound was healing. At the 10 day follow up, the wounds were fully granulated and it was determined that a skin graft was unnecessary. The wounds healed remarkably well, without alar notching.

Conclusion: The use of an inexpensive acellular collagen microscaffold wound dressing as a xenograft on small but deep alar MMS defects presents an excellent alternative reconstructive option for these challenging defects.



Left panel: 0.7 mm alar Mohs defect; central panel: acellular collagen xenograft sutured into defect with absorbable suture; right panel: one month post operative photo without alar notching.



Left panel: 1.1 cm alar defect; right panel: one month post operative photo after acellular collagen xenograft placement; note no alar notching.

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TITLE: Vulvar Melanoma Screening and Case Analysis

AUTHORS: Michael Krathen, MD; Daniel S. Loo, MD

INSTITUTION: Dermatology, Tufts Medical Center, Boston, MA, United States

Purpose: The standard of care with respect to the female genital examination during dermatologic "full skin examination" is unclear. The goal of this pilot study is to assess physician perspective and behavior regarding screening for vulvar melanoma, one of the most aggressive and deadly forms of melanoma. Furthermore, a second goal is to examine the portal by which these patients entered the medical system and the clinical characteristics of the cases of both malignant melanoma in-situ (MMIS) and malignant melanoma (MM).

Design: Two physician groups (attending gynecologists and dermatologists) were assessed via separate survey instruments. Cases from 1980 to 1994, and 2000 to 2009 of melanocytic vulvar neoplasms were identified via pathology database. Pathologic data and available clinical charts were reviewed.

Summary: Thirteen gynecologists and 7 dermatologists completed the survey instrument.

Nine of 13 gynecologists perform annual gynecologic exams as part of their practice, 12 of 13 always examine the vulva when performing an examination, and 13 of 13 either agree or strongly agree that routine visual inspection of the vulva is their responsibility as a gynecologist. 12 of 13 either agree or agree strongly that the diagnosis of vulva melanoma is their responsibility and 11 of 13 agree or agree strongly that it is the coresponsibility of the dermatologist to diagnose vulvar melanoma.

One of 7 dermatologists reported always examining the vulva on routine annular examinations; 4 sometimes examined the vulva and 2 did so often. When presented with a female patient and a single risk factor for melanoma, 4 of 7 dermatologists report offering vulvar examination although 6 of 7 agree or strongly agree that vulvar examination for such patients is their responsibility. 2 of 7 dermatologists disagree or strongly disagree that routine examination of the vulva is their responsibility.

Three cases with atypical melanocytic hyperplasia, 4 cases of MMIS, 1 metastatic melanoma to the vulva, and 13 cases of MM were identified.

For the MM patients (10 charts available for review), the average depth of invasion was 4.1 mm and the mean age was 69 years, at least 7 were white, at least 4 cases developed metastatic disease, 2 cases each had a brother who died from MM, and 5 lesions initially presented as persistent genital bleeding, itching, or a nonhealing erosion. 8 of 10 MM patients (at least) were either self referred or referred by another service to gynecology for evaluation and ultimate biopsy.

For the MMIS patients (3 charts available for review), the average age 24 years, 1 case had a second degree relative (paternal aunt) with a history of MM, 2 were discovered incidentally while at the gynecologist for other reasons (dysmenorrhea, abdominal pain), and 1 brought the lesion to the attention of the gynecologist because of concerning vulvar pigment. 2 of 3 MMIS patients (at least) were either self referred or referred by another service to gynecology for evaluation and ultimate biopsy.

Conclusion: Routine vulvar examination is the standard of care in gynecology whereas this is less clear in dermatology. The development of vulvar MM may be associated with older age, white race, family history of MM, and symptoms of genital bleeding and itching. 2 of 3 cases with MMIS were detected early due to routine inspection of the vulva during unrelated gynecologic evaluation. Regular examination of the vulva may be indicated for female patients when at least 1 first- or second-degree family member has a history of MM.

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TITLE: Island Pedicle Double Rotation Flap: A Novel Method of Closure for Large Nasal Defects

AUTHORS: Theresa L. Ray, MD; Sarah Schram, MD; Peter K. Lee, MD, PhD

INSTITUTION: Dermatology, University of Minnesota, St. Louis Park, MN, United States

Purpose: The reconstruction of large defects on the nasal tip, dorsum and ala can be quite challenging. It is difficult to maintain the normal nasal architecture while simultaneously restoring the color and texture of the tissue unique to this area. When the defect is large, the options for closure are few and may be limited to a two-staged closure, such as a paramedian forehead flap. While two-staged procedures provide adequate tissue for closure, they require a donor site outside of the cosmetic unit, which leads to complications in tissue matching as well as an additional scar. Here we report a series of 14 cases using a novel island pedicle double rotation flap as an alternative for closing large and difficult defects of the nasal tip and dorsum.

Design: We used the island pedicle double rotation flap for closure of 14 large nasal defects generated after Mohs micrographic surgery. Donor tissue was identified superior and lateral to the defect. The perimeter of the donor tissue was incised to generate a horseshoe shape around the defect. The lateral aspects of the donor area were then undermined circumferentially below the nasalis muscles in the submuscular plane. Thus, an island pedicle flap was created with its subcutaneous blood supply in the center of the flap. A vertical incision was then placed at the upper pole of the island pedicle to provide greater mobility of the lateral rotating arms of the flap, which were rotated downward to cover the primary defect. The lateral aspects of the donor tissue were then sutured into place and the secondary defect at the superior margin was closed linearly.

Summary: In all cases the tissue closely matched that of the defect area and proper nasal architecture was restored. There was viability of the tissue graft in all cases with only a few experiencing slight distal flap necrosis.

Conclusion: This flap design combines the robust blood supply of an island pedicle flap with the mobility of a rotation flap. Additionally, it utilizes donor skin from the same cosmetic unit allowing for excellent tissue match with minimal distortion of nasal architecture. Another advantage of the island pedicle double rotation flap is the tissue economy it provides with lack of a distant donor site. This allows for same day closure and avoidance of a two-staged procedure, resulting in a localized closure option for large nasal defects using less extensive flap design with a good cosmetic outcome.





Defect is seen centrally and inferiorly and involves the nasal tip and dorsum. The flap is outlined around the defect with a small cutback seen at the superior pole.

Flap after placement

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TITLE: Triage in Mohs Surgery

AUTHORS: Jonathan L. Bingham, MD^{1, 2}; J. Ramsey Mellette, Jr., MD²

INSTITUTIONS: 1. Dermatology, National Naval Medical Center, Silver Spring, MD, United States 2. Mohs Surgery, University of Colorado Denver Medical Center, Aurora, CO, United States

Purpose: Validation study for triage scheduling system for university-based Mohs surgery practice based on tumor characteristics of clinical, location, size, and type.

Design: All tumors referred for Mohs surgery from 01 July to 31 Dec 2008 where triaged (categorized) as a large or small tumor based on the following criteria:

Triage Categorization (see Table 1).

If any criteria for a "large" tumor was met, the tumor was classified as such.

Large and small tumors were then compared to number of stages required to clear the tumor and types of repair for the subsequent defect.

Clinical		
Large	Small	
Recurrent		
Location		
Large	Small	
Nose	Scalp	
Ear	Forehead	
Lip	Cheek	
Eyelid	Neck	
Genitalia	Trunk	
Fingers	Extremity	
Toes		
Size		
Scalp >2cm	Scalp <=2m	
Forehead >1cm	Forehead <=1 cm	
Cheek >1cm	Cheek <=1cm	
Neck >2 cm	Neck <=2cm	
Trunk >2 cm	Trunk <=2 cm	
Extremity >2 cm	Extremity <=2cm	
Histology	<u> </u>	
Large	Small	
Melanoma in situ	Superficial BCC	
Melanoma	Nodular BCC	
Desmoplastic BCC	Micronodular BCC	
Morpheaform BCC	Well-differentiated SCC	
Sclerosing BCC	SCC-KA type	
Poorly-differentiated SCC		
Perineural invasion		
AFX		
MFH		
Merkel Cell Carcinoma		
DFSP		
MAC		
Paget's Disease		

Table 1: Triage Categorization

Summary: Number of Stages to Tumor Clearance

Large 2.1

Small 1.8

Type of Repair

(see Table 2)

Type of Repair	Large (N=265)	Small (N=218)
Flap	20.3%	6.5%
Complex	25.9%	61.0%
FTSG	19.2%	5.5%
Xenograft	3.4%	3.7%
2nd Intention	30.5%	22.9%

Table 2: Comparison of Type of Repair

Conclusion: The study did not demonstrate a significant difference in number of stages required to clear tumor between the two categories but there were significant differences in the types of repairs used to repair the subsequent defects. The results, with respect to type of repair, did validate the use of this triage system for the scheduling and prioritizing of Mohs surgery cases for our institution.

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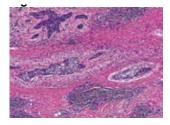
TITLE: A Case of Intravascular Basal Cell Carcinoma Without Evidence of End-Organ Metastasis

AUTHORS: Jordan Slutsky, MD; Kavita Mariwalla, MD; Evan C. Jones, MD

INSTITUTION: Dermatology, Stony Brook University Medical Center, Stony Brook, NY, United States

Purpose: We present a case of intra-arteriolar BCC without evidence of metastatic basal cell carcinoma (MBCC). Intravascular BCC (IVBCC) represents the "grayzone" between locally invasive BCC and MBCC, and may be a sign of in-transit metastases. Despite the fact that BCC is a stroma-dependant neoplasm and the hypothesis that most BCC cells do not remain viable within the lumen of vessels, a case of intra-arterial BCC with subsequent pulmonary and lymph node metastasis has been reported (1). There is a lack of literature on IVBCC without metastasis and the prognostic significance and the need for adjuvant treatment in such cases is unknown. Patients with high risk BCC including IVBCC should be carefully monitored in follow-up, as a literature review found that the median time between primary BCC and MBCC was nine years (1). We are conducting a survey of Mohs surgeons in order to determine the prevalence of IVBCC, facilitate a better understanding of this pathology, and to aid in formulating evidence-based treatment algorithms.

Design: A 60-year-old Caucasian man was seen in consultation for a biopsy proven infiltrative BCC on the right anterior parietal scalp. The previously untreated lesion was symptomatic with bleeding and poor healing for two years. The BCC measured 1.5 x 1.1 cm and was treated via Mohs micrographic surgery. Peripheral and deep margins were cleared of tumor, however intravascular invasion was observed on frozen H & E sections. The surgical defect measured 2.8 x 2.0 cm and the closure was performed by plastic surgery. The intraarteriolar invasion was confirmed with permanent H & E staining which demonstrated BCC inside the wall of a small arteriole which stained positively for smooth muscle actin (Figures 1 and 2). Lymph node examination and computed tomography (CT) scans of the head, neck, and chest were negative, and the patient did not have evidence of metastasis. He was evaluated by radiation oncology and head and neck oncology for external beam radiation therapy, which was deferred secondary to lack of evidence regarding the significance of IVBCC without positive surgical margins, perineural invasion, or metastasis. The patient was healthy without signs of local recurrence, lymphadenopathy, or metastasis at one-year follow-up.



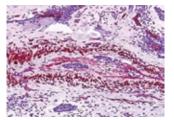


Figure 1.

Figure 2.

Conclusion: BCC is generally considered to be a slow-growing, locally invasive tumor with low risk of metastasis (1). MBCC is extremely rare with a reported incidence of 0.003% to 0.55% and approximately 300 reported cases in the literature (1). MBCC has a poor prognosis and occurs most often in regional lymph nodes, but may also spread hematogenously to the lungs and bone (1). There is a lack of literature on IVBCC without metastasis and the necessity of adjuvant treatment in such cases is unknown.

Close clinical follow-up and possibly serial imaging of patients with intravascular BCC should be the standard of care, as cases of MBCC have been reported to occur years after Mohs excision with negative surgical margins (1). It has been hypothesized that most intraluminal BCC cells may not remain viable to implant in a capillary bed, and that immunologic surveillance may impair distant tumor growth (1). More cases and studies of IVBCC are needed in order to determine the prevalence, incidence, and prognostic significance of this pathology, and to formulate evidence-based treatment and monitoring algorithms.

(1) Robinson JK, Dahiya M. Basal cell carcinoma with pulmonary and lymph node metastasis causing death. Arch Dermatol. 2003; 139:643-8.

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TITLE: Maximizing Sun Protection for the Skin Cancer Patient

AUTHOR: Jennifer L. Linder, MD 1,2

INSTITUTIONS: 1. Jennifer Linder MD, PLLC, Scottsdale, AZ, United States 2. Assistant Clinical Professor, WOS, Department of Dermatology, University of California San Francisco, San Francisco, CA, United States

Purpose: Recent studies regarding sunscreen safety and vitamin D production have raised unnecessary concern with patients all over the world. A review of the clinical and scientific data provided by these studies will assist the physician in recommending the most efficacious sun protection products and regimens.

Design: Multiple legitimate studies have been performed and although some have been misconstrued by the mass media, their results support sunscreen usage. A comprehensive review of research conducted at the University of California, Riverside, the Dermatology Service, Memorial Sloan-Kettering Cancer Center, Stanford University Medical Center and the University of Hawaii at Manoa will provide evidence of lifestyle changes that can be made to support sunscreen benefits. Knowledge of these changes will assist the physician in conducting the most effective patient education concerning sun protection.

Summary: Studies performed at the University of California, Riverside, indicate that improper application and usage of sunscreen products may lead to reactive oxygen species production and cellular oxidation. The research also suggests that the addition of topical antioxidants and appropriate re-application of sunscreen may resolve this concern. Research conducted by the Dermatology Service, Memorial Sloan-Kettering Cancer Center, suggests that patient knowledge regarding sunscreen usage, safety, and efficacy is insufficient. The debate regarding vitamin D is ongoing and unfortunately misleading to the patient. Studies performed by the Stanford University Medical Center show that vitamin D levels may help to reduce the occurrence of nonmelanoma skin cancers, leading to even more confusion among the patient. A recent study conducted at the University of Hawaii at Manoa however, provides adequate evidence that the sun is not only a dangerous means of vitamin D production but also an unreliable

source.

Conclusion: Despite media reports, recent studies support the fact that sunscreens are not only safe when used as directed but also support overall health. Patient education regarding sunscreen is lacking, and the physician must be prepared to answer inquiries in order to preserve and protect healthy skin. Sunscreen selection depends upon appropriate ingredient blends to ensure maximum broad-spectrum protection. The UV absorbing and reflecting capacity of all FDA-approved sunscreen ingredients has been evaluated, and the best protective agents can be identified. The addition of topical antioxidants to daily patient routines and oral supplementation of vitamin D will provide further protection and support skin and body health.

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TITLE: Juxtatumoral Plasma Cell Density as a Histologic Clue to Squamous Cell Carcinoma

AUTHORS: Keith L. Duffy, MD¹; Bryce J. Cowan, MD, PhD, FRCPC¹; Magdalena Martinka, MD, FRCPC²; David M. Zloty, MD, FRCPC¹

INSTITUTIONS: 1. Dermatology, University of British Columbia, Vancouver, BC, Canada 2. Pathology, University of British Columbia, Vancouver, BC, Canada

Purpose: Most cutaneous tumors have variable densities of mononuclear cell infiltrates in the surrounding stroma. In the field of pathology, before the advent of immunohistochemistry, mononuclear cell infiltrates were used to signal to pathologists that tumor might be close to a margin or tumor cells may be obscured by the inflammatory infiltrate. Most Mohs surgeons rely on routine frozen H and E or toludine blue stained sections without the aid of immunohistochemical stains to clear cutaneous tumors. Mononuclear cell density and quality can still be very valuable to us in Mohs surgery. Previous studies have shown that high densities of plasma cells are associated with invasive squamous cell carcinoma. Our preliminary study was designed to determine if plasma cell infiltrates can be helpful in identifying tumor that was very close to the margin in our examined sections or tumor that could be obscured by inflammation.

Design: We prospectively screened all cases of invasive squamous cell carcinoma for aggregates of plasma cells. We included cases with signification mononuclear inflammation and a prominent population of plasma cells. Initial sections had no histologically discernable tumor in the sections but tumor was demonstrated on deeper Mohs levels. Only primary tumors without previous surgical manipulation were examined.

Summary: Five cases were identified that fit our criteria. Case 1 showed a significant lymphoplasmacytic infiltrate in the base of the lesion without obvious tumor. The first 4 sections were negative for tumor but the 5 and 6th sections showed obvious invasive SCC. Case 2 had only moderately dense plasma cell aggregates at the deep margin of a bisected specimen with no identifiable tumor. The other half of the bisected specimen showed plasmacytic aggregates as well as obvious invasive SCC. Case 3 had a dense lymphohistioplasmacytic infiltrate with a central epithelioid nest that was not diagnostic for

SCC. Deeper levels on the specimen revealed obvious SCC in the center of the plasmacytic infiltrate. Case 4 had multiple lymphoplasmacytic aggregates in the deep dermis with no obvious tumor. Additional, deeper levels on the same block revealed obvious invasive squamous cell carcinoma. Case 5 exhibited large collections of lymphohistioplasmacytic aggregates in the papillary and reticular dermis. Deeper levels on the same block revealed obvious invasive SCC.

Conclusion: These cases demonstrate that plasma cell aggregates may act as a surrogate marker for invasive squamous cell carcinoma. Plasma cells can be easily identified on hematoxylin and eosin staining characterized by their amphophilic (purple) staining, prominent peri-nuclear hoff and eccentrically placed and clock-faced nuclei. In cases of suspected invasive squamous cell carcinoma, finding a significant amount of plasma cells within the infiltrate can be helpful in deciding whether a tumor might warrant an additional Mohs layer or at the very least a deeper level on the current block to ensure an adequate margin of resection.

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TITLE: Evaluation of Residual Basal Cell Carcinoma after Intraoperative Biopsy by Mohs Micrographic Surgery

AUTHORS: Joseph Alcalay, MD; Ronen Alkalay, MD

INSTITUTION: Skin and More Medical Center, Tel Aviv, Israel

Purpose: To determine the incidence of residual basal cell carcinoma after intraoperative biopsy during Mohs micrographic surgery.

Design: A prospective study was performed on patients undergoing Mohs surgery for primary basal cell carcinoma. The tumor was removed using a No. 15 blade at the clinical borders like a shave biopsy (Mohs shave). The base of the tumors were sectioned at the middle and cut to the periphery at 20 microns intervals till the edge.

Summary: Fifty-one patients were evaluated. In forty patients residual basal cell carcinoma was found at the base of the intraoperative biopsy site (78%).

Conclusion: Intraoperative shave biopsy performed during Mohs surgery for basal cell carcinoma is "curative" in 22% of the patients. However as with preoperative biopsy the majority of patients show residual tumor. This study strengthens the fact that a preoperative biopsy of basal cell carcinoma is a diagnostic tool only and Mohs surgery is needed for complete removal of the tumor.

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TITLE: A Novel Method for Repair of the Oral Commissure: Partial Purse String Closure with Subsequent Secondary Intention Healing

AUTHORS: Kenny J. Omlin, MD 1, 2; Melanie Tuerk, MD²

INSTITUTIONS: 1. Kaiser Permanente, Vacaville, CA, United States 2. University of California at Davis, Medical Center, Sacramento, CA, United States

Purpose: Repair of perioral defects following Mohs surgery presents a unique challenge to the surgeon. The oral commissure is particularly difficult in that it is the intersection of layers of oral mucosa, perioral muscles including orbicularis oris, vermilion borders, and perioral skin. Maintenance of oral sphincter competence is of upmost importance. Additionally, aesthetics play an integral role in facial reconstruction. Techniques described in the literature include free flaps for large defects, conversion to full thickness defects, or disruption of intact vermilion borders. We present a novel method for repair of a defect of the oral commissure utilizing a partial purse string stitch combined with secondary intention.

Design: A 46-year-old female presented with a micronodular basal cell carcinoma involving the right lower cheek and right oral commissure. Tumor extirpation resulted in a 1.9 cm x 1.3 cm surgical site defect (Figure 1). After meticulously undermining the surgical site, an intradermal partial purse string stitch was placed in the cutaneous portion of the oral commissure, carefully avoiding placement of suture into vermilion portion (Figure 1b). The strategic placement of the purse string stitch serves as a trussel for the initial stages of wound healing. The vector forces guide skin growth in such a manner as to reproduce the unique topography of this complex region. The vermillion portion of the defect was allowed to granulate (Figure 2a).

Summary: After six weeks the patient achieved full oral competence and excellent aesthetic outcome (Figure 2b, 2c).

Conclusion: The strategic placement of a partial purse string intradermal stitch can provide an excellent option for oral commissure surgical defects. The circumferential vector forces created by the purse string stitch reproduce the natural creases of this unique anatomic location, resulting in an aesthetically pleasing outcome in an otherwise challenging site.



Figure 1. - Surgical defect: 1a; Purse string suture in place: 1b



Figure 2. - Final outcome: 2a; Three weeks: 2b; Six weeks: 2c

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TITLE: Pathological Correlation Between Preoperative Biopsy and Intraoperative Positive Mohs Sections

AUTHORS: Jennifer Lucas, MD¹; Ally-Khan Somani, MD, PhD^{1, 2}; Christine Poblete-Lopez, MD¹; Christopher Gasbarre, DO¹; Allison T. Vidimos, MD¹; Philip Bailin, MD, MBA¹; W. Elliot Love, DO¹; Jon G. Meine, MD¹

INSTITUTIONS: 1. Dermatology and Plastic Surgery Institute, Cleveland Clinic, Cleveland, OH, United States 2. Dermatology, Indiana University School of Medicine, Indianapolis, IN, United States

Purpose: This study examines the pathological correlation between preoperative biopsy and intraoperative positive Mohs sections for non-melanoma skin cancers (NMSC). Determining the frequency and nature of any discrepancy is imperative to our understanding of the adequacy of preoperative biopsies. As patients with NMSC are managed with other treatment modalities, this study will provide important information regarding treatment and biopsy recommendations for patients with primary and recurrent NMSC that are more aggressive or found to be a different tumor morphology than the initially biopsy would suggest.

Design: We performed a retrospective review of all patients referred for Mohs surgery to the clinic in a 12 month period with a preoperative biopsy of NMSC. At the time of surgery, information was obtained regarding the tumor type, pathological subtype, primary or recurrent nature, size of the biopsy, and any biopsy comments. The intraoperative tumor type and subtype and number of layers required for clearance were also recorded. Statistical analysis will be preformed on the collected data to determine the degree of correlation and account for any discrepancies.

Summary: Preliminary data has shown that pathologic discrepancy exists between preoperative and intraoperative tumor types and subtypes. Statistical analysis is currently underway to assess the nature/ frequency of the discrepancy. Potential causes may include inadequate preoperative biopsy, sampling error, and recurrence of a previously treated tumor.

Conclusion: Numerous treatment modalities exist for NMSC and we rely on our biopsies to formulate our treatment plans. This study demonstrates that there exists a discrepancy between the preoperative and intraoperative tumor subtype. A potentially more aggressive subtype noted intraoperatively may directly affect our treatment decisions. Upon further examination of the data we hope to identify patients at risk for more aggressive NMSC subtypes and subsequently develop better diagnostic and treatment recommendations.

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TITLE: The Sun Exposure Behavioral Index
Questionnaire: A Method to Assess Skin Cancer Risk

AUTHORS: Lorraine Jennings, MD¹; Anokhi Jambusaria-Pahlajani, MD²; Faith Miller Whalen, MD²; Chrysalyne D. Schmults, MD¹

INSTITUTIONS: 1. Mohs Micrographic Surgery Center, Department of Dermatology, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, United States 2. Department of Dermatology, University of Pennsylvania, Philadelphia, PA, United States

Purpose: To produce a simple questionnaire to assess a patient's cumulative sun exposure and validate this instrument against skin cancer risk. Sun exposure has been linked to an increase in non-melanoma skin cancer (NMSC), though no validated measurement tool has been designed to quantify the risk of sun exposure or sun behaviors on skin cancer development.

Design: An immunosuppressed cohort was used in this study due to their increased incidence of NMSC, enabling validation in a small cohort. 251 organ transplant recipients (ORTs) attending an immunosuppression and skin cancer clinic completed a SEBI (Sun Exposure Behavioral Index) questionnaire composed of 16 questions, assessing 3 domains; current sun behavior, current sun exposure, and prior sun exposure. The internal consistency of the SEBI was assessed by reliability analysis, using Cronbach's alpha.

Summary: Cronbach's alpha for SEBI was acceptable for each domain tested, indicating good internal consistency; current sun behavior 0.73, prior sun exposure 0.68, current sun exposure 0.62. Of 251 patients, 35% (n=87) had a history of skin cancer. Those with Fitzpatrick skin types IV, V and VI had a low risk of NMSC (n=4/87, 4.5%). Prior sun exposure was evaluated based on number of sunburns, blistering sunburns, tanning bed use, and estimate of lifetime sun exposure relative to the average person. Those with prior sun exposure scores above the mean were twice as likely to develop NMSC as those below the mean. History of sunburn predicted development of NMSC (p=0.016) and the number of blistering burns increased this risk in a dose-dependant manner. Tanning bed use and history of living in a warmer climate were not significant predictors of NMSC in this patient population, so these will be eliminated from future versions of the SEBI.

Fitzpatrick Skin type	N(total)	# NMSC	Percentage (%)
I	24	15	62.5%
II	51	23	45.1%
III	83	38	45.8%
IV	52	3	5.8%
V	16	1	6.3%
VI	18	0	0.0%
Unknown	7	7	100%

Distribution of NMSC relative to Fitzpatrick skin type

Conclusion: Based upon the results of this first validation study, the prior sun exposure domain predicted skin cancer risk, providing construct validation of this portion of the SEBI as a tool to estimate skin cancer risk. Current sun exposure and current sun behavior domains did not correlate with cancer risk in this group, possibly because those with a history of cancer do more to avoid/protect themselves from the sun. Questions from these domains may be useful in assessing the impact of sun education programmes but may only be seen to impact skin cancer risk in larger longitudinal studies. Further validation of the SEBI and its domains is planned in a larger population.

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TITLE: Expanding Mohs Surgery in the 21st Century: Assessing Mohs Surgical Missions Abroad

AUTHOR: Hayes B. Gladstone, MD

INSTITUTION: Division of Dermatologic Surgery, Dermatology, Stanford University, Redwood City, CA, United States **Purpose:** Skin cancer is a world wide epidemic. While Mohs surgery is available in several countries, there are many emerging countries which have a high rate of skin cancer, but do not have access to Mohs surgery. In these countries there are thousands of skin cancer patients who must wait many months to be treated by a plastic surgeon. Some of these patients do not receive treatment at all. There is a long tradition of American doctors going abroad to volunteer their services. While not as developed as other fields, the Mohs College does have members who volunteer abroad. The purpose of this study is to present the experiences and results of one team of Mohs surgeons who have performed Mohs surgery in the emerging countries of Chile, Romania, and Greece over the past 5 years.

Design: This is a case based study of three examples of Mohs surgery abroad by a team of Mohs College members, histotechnicians, and nurses. The methods of organizing and assessing patients, educating host country dermatologists, performing the surgery, and following the patients will be described and evaluated.

Summary: The average number of skin cancer patients treated per mission was 15. The team actually evaluated an average of 25 patients. These numbers were limited by the facilities including the challenge of processing the Mohs slides. There was a low complication rate, and to our knowledge, there were no recurrences. The host dermatologists unanimously acknowledged the value of the didactic sessions, and the ability to view Mohs surgery live or by simultaneous video. The best experiences for the host dermatologic surgeons were when they assisted the team members in the surgeries.

Conclusion: In order for Mohs surgery missions abroad to be successful, the host country must have at least one "point" dermatologist invested in the process; there must be adequate preoperative evaluation both via digital images and an on-site visit; there must be a didactic component; the host dermatology team must organize follow up. While Mohs surgery and the reconstructions have aided numerous underserved patients abroad, there are limitations in the actual overall change that these trips make. In the future, there needs to be local dermatologists who are fellowship trained in Mohs surgery, and possibly permanent surgery centers where American Mohs surgery teams can volunteer on a regular basis.

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TITLE: Mohs Micrographic Surgery for the Treatment of Cutaneous Leiomyosarcoma

AUTHORS: John Starling, III, MD; Brett M. Coldiron, MD, FACP

INSTITUTION: The Skin Cancer Center, Cincinnati, OH, United States

Purpose: Cutaneous leiomyosarcoma is an extremely rare, malignant mesenchymal tumor of smooth muscle origin, and is thought to arise from the arrector pili muscle of the hair follicle. This tumor is often misdiagnosed clinically, and the correct diagnosis is most often achieved after histologic examination with the aid of immunohistochemical staining. Although primary cutaneous leiomyosarcoma is generally considered a low-

grade malignancy, there may be significant local invasion and subclinical extension. Rare cases of metastasis have been reported. We sought to review the clinical characteristics and outcome of patients with primary cutaneous leiomyosarcoma referred to and treated with Mohs micrographic surgery (MMS) at our practice.

Design: We performed a retrospective chart review of 11 consecutive patients who had cutaneous leiomyosarcoma treated with MMS from 1995-2009. Patient demographic data, tumor size, tumor location, information regarding previous treatment, number of Mohs stages to obtain tumor clearance, size of the surgical defect, duration of follow-up, and presence or absence of recurrence were compiled and tabulated. Duration of follow-up was measured as the length of time from MMS to the most recent outpatient follow-up either in our office or that of the referring physician. For patients who had died or moved away, telephone contact was obtained with the patient, relative of the patient, or referring physician to determine whether or not the tumor recurred.

Summary: Our 11 patients were all Caucasians (Fitzpatrick phototypes I, II, III), and included 7 (63.6%) males and 4 (36.4%) females. The average age of patients at the time of diagnosis was 51 years (range 7 to 84 years). Three (27.3%) lesions were located on the head and neck, and 5 (45.4%) of lesions were located on the extremities. Three (27.3%) lesions were located on the trunk. The average preoperative clinical lesion size was 6.56 cm². The average number of MMS stages required for tumor clearance was 2.4. The average size of the surgical defect was 19.33 cm². One lesion was recurrent at the time of presentation after excision at an outside institution, and all remaining tumors were primary (untreated). The overall recurrence rate, average follow-up period, average time to diagnosis of recurrence for this cohort of patients is currently being determined by contacting patients, patients' families, and/or referring doctors as none of the patients to this point have returned to our practice with a tumor recurrent after MMS. This data will be available for presentation at the 2010 ACMS meeting.

Conclusion: Cutaneous leiomyosarcoma is a rare spindle cell malignancy that is not commonly encountered by practicing dermatologists, and as a result standards for evaluation and management of these tumors are not clearly defined in the literature. Recent literature has demonstrated successful treatment with both narrow margin excision and MMS although no comparisons to wide local excision have been performed. Reported recurrence rates for cutaneous leiomyosarcoma vary widely from 0% to 50% due to variation in treatment modality and duration of follow-up, and recurrence rates for cutaneous leiomyosarcoma treated with MMS are reported to be as low as 14% in the recent literature. This is the largest series of cutaneous leiomyosarcoma treated with MMS in the current literature. After review of our preliminary recurrence data we expect that our data will support utilization of MMS for the treatment of cutaneous leiomyosarcoma.

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TITLE: Integra® Dermal Regeneration Template for the Repair of Large Scalp Defects Extending to Bone

AUTHORS: Dori Goldberg, MD; Jason D. Givan, MD; Mary E. Maloney, MD

INSTITUTION: Dermatology, University of Massachusetts Medical School, Worcester, MA, United States

Purpose: Mohs surgeons frequently are faced with large, complex scalp defects that present unique reconstructive challenges. Defects extending to bone are especially challenging as they exclude the use of skin grafts and may require large rotation flaps, galeal hinge flaps, or bone burring. Such techniques may be undesirable in frail or elderly patients, individuals on multiple anticoagulants or in the repair of high risk tumors. We present two cases in which scalp defects extending to bone were successfully repaired with Integra®, an acellular dermal regeneration template that allows formation of neodermis and subsequent re-epithelialization.

Design: Two elderly patients each presented for Mohs micrographic surgery of a squamous cell carcinoma on the vertex of the scalp. The first patient had a poorly differentiated SCC with perineural involvement and his Mohs defect measured 5.4 by 3.7 cm. The second patient was a 95 year old man with 6.3 by 5.2 cm welldifferentiated SCC that resulted in a Mohs defect of 7.5 by 7 cm. In both cases Integra® was chosen to repair the wound to decrease the risk of postoperative bleeding and minimize the complexity of the closure in a frail patient. Integra® was sutured into place using non-absorbable suture in an interrupted fashion. Sutures were removed at one week postoperatively. Patients were seen every one to two weeks until re-epithelialized. Patient 1 was placed on cephalexin at the time of his Mohs procedure and had a porcine xenograft placed at week 4. His wound had intact epidermis at week 5 with no subsequent loss of his xenograft evident. Patient 2 was allowed to reepithelialize without use of a xenograft or autologous skin graft. He was not placed on post-operative antibiotics and developed a wound infection with resulting loss of 40% of the Integra® down to bone by week 2. He was placed on ciprofloxacin and within 2 weeks his wound size had decreased by 25-30%. His wound was fully granulated by week 6 and re-epithelization was almost complete by week 9. Both patients tolerated the procedure and postoperative course well and were pleased with the surgical outcome.

Conclusion: Large scalp defects extending down to bone can be successfully repaired with Integra®. The benefits of this closure method include the speed and ease of the procedure, the tolerability for patients, minimal risk of post-operative bleeding or dehiscence, and good surgical results.

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April 30 - May 1, 2010

Friday, April 30		
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6:00 am – 7:30 am	Exhibit Set-up Westside Ballroom Salon 1, 5th Floor	
6:30 am – 4:30 pm	Meeting Registration/Information 46th Street Registration Area, 5th Floor	
7:30 am – 8:30 am	Continental Breakfast Westside Ballroom Salon 1, 5th Floor	
7:30 am – 6:00 pm	ASMH Exhibit Hall Open Westside Ballroom Salon 1, 5th Floor	
8:30 am – 10:00 am	General Session 1 Westside Ballroom Salon 2, 5th Floor	
8:30 am	Opening Remarks and Welcome Barbara Beck, HT (ASCP), ASMH President	
8:45 am	Proactive Tech: What You Should Know Under the Microscope Kavita Mariwalla, MD	
9:15 am	We Have Our Work Cut Out For Us Marilyn McCulloch, CLT	
9:30 am	The How's and Why's of Using Immunostaining in the Mohs Lab Adrian Connolly, MD	
10:00 am	Break	
10:15 am – 11:45 am	General Session 2 Westside Ballroom Salon 2, 5th Floor	
10:15 am	Lessons We Learned from Past Mohs Lab Inspections Kishwer Nehal, MD	
10:45 am	CLIA and Mohs Francisca Lehr	
11:45 am – 1:15 pm	Lunch on Your Own	
1:15 pm – 2:30 pm	General Session 3 Westside Ballroom Salon 2, 5th Floor	
1:15 pm	ASMH Membership Meeting	
1:45 pm	Mohs from the Other Side of the Pond: Issues with Tissues Guy Edward Orchard	
2:30 pm – 4:30 pm	Workshops Westside Ballroom Salon 1, 5th Floor —Cryostat Workshop —Immunostaining Workshop —Slide Troubleshooting Workshop	
4:30 pm – 6:00 pm	Networking Reception Westside Ballroom Salon 1, 5th Floor	

Saturday, May	1
6:00 am – 9:00 pm	Visit Mohs Slide Library Lyceum Room, 5th Floor
8:00 am – 4:30 pm	Meeting Registration/Information 46th Street Registration Area, 5th Floor
8:30 am – 9:00 am	Continental Breakfast Westside Ballroom Salon 1, 5th Floor
8:30 am – 4:00 pm	ASMH Exhibit Hall Open Westside Ballroom Salon 1, 5th Floor
10:00 am – 4:00 pm	ACMS Exhibit Hall Open Westside Ballroom Salon 3, 5th Floor
9:00 am – 10:15 am	General Session 4 Westside Ballroom Salon 2, 5th Floor
9:00 am	Opening Remarks and Welcome Barbara Beck, HT (ASCP), ASMH President
9:15 am	Challenging Super-Sized Specimens Hillary Johnson-Jahangir, MD, PhD
9:30 am	Economizing in the Mohs Lab Barbara Strippoli, HT (ASCP)
9:45 am	Identifying Floaters and How to Prevent Them Marie Tudisco, PhD, HT (ASCP)
10:00 am	2010 Abstract Award Winner: The Reverse Embedding Method Utilizing a Frosted Heat Extractor on the Tumor Side of the Specimen Marilyn McCulloch, CLT
10:15 am	Break
10:30 am - 11:30 am	General Session 5 Westside Ballroom Salon 2, 5th Floor
10:30 am	Troubleshooting Open Forum
11:30 am	Lunch on Your Own
1:00 pm – 2:00 pm	General Session 6 Westside Ballroom Salon 2, 5th Floor
1:00 pm	Specialty in Mohs and Transplant Patients Fiona Zwald, MD
1:15 pm	Mapping "Beyond the Box" Erica Lee, MD
2:00 pm – 4:00 pm	Workshops Westside Ballroom Salon 1, 5th Floor —Cryostat Workshop —Slide Troubleshooting Workshop
4:00 pm	Meeting adjourned

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