Poster Presentation List

Posters will be displayed in the International Ballroom (2nd Floor) inside the Exhibit Hall. Posters will be displayed from 12:00 pm Thursday, May 3 through 1:30 pm Saturday, May 5.

001

Significant Bleeding Events Following Mohs Micrographic Surgery: Does Systemic Anticoagulation Alter Risk?

Lael L. Leithauser, MD[1]; Janelle M. King, MD[1]; Elias E. Ayli, DO[1]; Adam Ingraffea, MD[1]; Brian Adams, MD[1]; Hugh M. Gloster, Jr., MD[1]

1. Dermatology, University of Cincinnati, Cincinnati, OH, United States

002

Bedside Pathology with Ex Vivo Fluorescence Confocal Microscopy to Guide Mohs Surgery

Antoni A. Bennàssar, MD[1]; Isaac Zilinsky, MD[2]; Susanna Puig, MD[1]; Cristina Carrera, MD[1]; Josep Malvehy, MD[1]

1. Dermatology, Hospital Clínic, Barcelona, Spain 2. Plastic Surgery, Sheba Medical Center, Tel Aviv, Israel

003

Chemowraps for Diffuse Actinic Damage: Need for Close Monitoring to Avoid Systemic Toxicity

Julia Tzu, MD[1]; Michael Sargen, BA[1]; Karolyn A. Wanat, MD[1]; Joseph F. Sobanko, MD[1]; Anokhi Jambusaria-Pahlajani, MD, MSCE[1]; Misha A. Rosenbach, MD[1]; Christopher J. Miller, MD[1]

1. University of Pennsylvania, Philadelphia, PA, United States

004

An Immunohistochemical and RT-PCR Evaluation of Dermatofibrosarcoma Protuberans (DFSP) for Platelet-derived Growth Factor Beta (PDGFB) and Platelet-derived Growth Factor Receptor Beta (PDGFRB)

Faramarz H. Samie, MD, PhD[1]; Jason M. Rizzo, BA[2]; Ari-Nareg Meguerditchian, MD[2]; Richard T. Cheney, MD[2]; Michael J. Buck, PhD[2]; Craig C. Miller, MD[2]; Nathalie C. Zeitouni, MD[2]

1. Dartmouth-Hitchcock Medical Center, Lebanon, NH, United States 2. Roswell Park Cancer Institute, Buffalo, NY, United States

005

The Effects of Video-based Patient Education for Wound Care Instructions on Patient Knowledge and Satisfaction after Cutaneous Surgery: A Randomized Controlled Trial

Rebecca C. Tung, MD[1]; Christina L. Kranc, MS4[1]; Krisanne Sisto, MD[1]; Vanessa Lichon, MD[1]; Anthony Peterson, MD[1]; Marsha Moran, RN[1]; Rong Guo[2]; Carole Banasiak[2]

1. Division of Dermatology, Loyola University Chicago, Stritch School of Medicine, Maywood, IL, United States 2. Loyola University Chicago, Stritch School of Medicine, Maywood, IL, United States

006

Clinical Stage of Merkel Cell Carcinoma and Survival are not Associated with Breslow Thickness of Biopsied Tumor

Leonid Izikson, MD[2,1]; Thomas N. Helm, MD[2]; Novie Sroa, MD[2]; Nathalie C. Zeitouni, MD[2]

1. Dermatology, Wellman Center for Photomedicine, Massachusetts General Hospital, Boston, MA, United States 2. Dermatology, Roswell Park Cancer Institute, Buffalo, NY, United States

007

Mohs Surgery for Nail Tumors: Avulsion is Unnecessary

Nathaniel J. Jellinek, MD[1,2]; Katharine Cordova, MD[1,3]

1. Dermatology Professionals, Inc., East Greenwich, RI, United States 2. Dermatology, University of Massachusetts Medical School, Worcester, MA, United States 3. Dermatology, Warren Alpert Medical School at Brown University, Providence, RI, United States

008

Management of Primary and Encountered Superficial Non-melanoma Skin Cancers with Mohs Surgery

Chong Wee Foo, MD[1]; Payam Tristani-Firouzi, MD[1]; Glen M. Bowen, MD[1]; Keith L. Duffy, MD[1]; Michael L. Hadley, MD[1]

1. Department of Dermatology, University of Utah, Salt Lake City, UT, United States

009

A Single Center Series of Dermatofibrosarcoma Protuberans Cases Treated by Frozen Section Mohs Micrographic Surgery

Haytham Al - Rawi, BMedSci, MBBS, MRCP[1]; Sanjay Rajpara, MBBS, MRCP, MD[2]; Sandeep Varma, BMedSci, MBBS, MRCP[1]; Anthony G. Perks, MBBS, FRCS, FRACS[3]; Iain H. Leach, MD[4]; William Perkins, MBBS, FRCP[1]

1. Dermatology, Queen's Medical Centre, Nottingham, United Kingdom 2. Dermatology, Aberdeen Royal Infirmary, Aberdeen, United Kingdom 3. Plastic Surgery, Queen's Medical Centre, Nottingham, United Kingdom 4. Pathology, Queen's Medical Centre, Nottingham, United Kingdom

Poster Presentation List

010

Non-invasive Imaging of NMSC using a Targeted Fluorocoxib Probe: Potential for Early Detection, Guided Biopsies, and Improved Margin Control

Ashley Wysong, MD, MS[1]; Hyejun Ra, PhD[2]; Emilio Gonzalez, PhD[2]; Irfan Ali-Khan, PhD[2]; Lawrence J. Marnett, PhD[3]; Sumaira Z. Aasi, MD[1]; Jean Y. Tang, MD, PhD[1]; Christopher H. Contag, PhD[2]

1. Department of Dermatology, Stanford University, Stanford, CA, United States 2. Clark Center for Biomedical Engineering and Sciences, Molecular Imaging Program, Stanford University, Stanford, CA, United States 3. A.B. Hancock Jr. Memorial Laboratory for Cancer Research, Departments of Biochemistry, Chemistry, and Pharmacology, Vanderbilt University, Nashville, TN, United States

012

DMM: the Mohs Surgeons' Program for Africa

John M. Strasswimmer, MD, PhD[1,2]

1. Dermatology Medical Missions, Inc., Delray Beach, FL, United States 2. Melanoma & Cutaneous Oncology, Lynn Cancer Institute, Boca Raton, FL, United States

013

Salvage Mohs Micrographic Surgery for Highly Destructive Facial Non-melanoma Skin Cancer

Benvon Moran, MB, BCh, BAO[1]; Bairbre Wynne, MD, MRCPI[1]; Patrick Ormond, MD, MRCPI[1]

1. Dermatology, St. James's Hospital, Dublin, Ireland

014

The Utility of Antihelical Cartilage Autografts for Reconstruction of Mohs Micrographic Surgery Defects

Robert J. Sage, MD[1]; Brian C. Leach, MD[1]; Joel Cook, MD[1]

1. Dermatologic Surgery, Medical University of South Carolina, Charleston, SC, United States

015

Evaluation for Residual Tumor of Mohs Micrographic Specimens of Clinically Resolved Preoperative Biopsy Sites

Soonyou Kwon, MD[1]; Hugh M. Gloster, Jr., MD[1]

1. Dermatology, University of Cincinnati, Cincinnati, OH, United States

016

Retrospective Evaluation of the Safety of Large Skin Flap and Graft Surgery in the Outpatient Setting

Adam R. Schmitt, BA[1]; Jeremy S. Bordeaux, MD, MPH[2,1]

1. Case Western Reserve University School of Medicine, Cleveland, OH, United States 2. Department of Dermatology, University Hospitals Case Medical Center, Cleveland, OH, United States

017

Skin Cancer in Lung Transplant Recipients

Jenny C. Hu, MD[1]; Rajan Saggar, MD[2]; Rajeev Saggar, MD[2]; Teresa Soriano, MD[1]

1. Division of Dermatology, David Geffen School of Medicine at UCLA, Los Angeles, CA, United States 2. Division of Pulmonary and Critical Care Medicine, David Geffen School of Medicine at UCLA, Los Angeles, CA, United States

018

Pain Control by a Two-step Irradiance Schedule Photodynamic Therapy of Basal Cell Carcinoma

Joseph P. Housel, MD[1,2]; Nathalie C. Zeitouni, MD[2,1]

1. Dermatology, University at Buffalo School of Medicine, Amherst, NY, United States 2. Dermatology, Roswell Park Cancer Institute, Buffalo, NY, United States

020

Asymmetric Sectioning of Mohs Micrographic Surgery Specimens

Hilary C. Reich, MD[1]; Sarah E. Schram, MD[1]; Theresa L. Ray, MD[1]; Peter K. Lee, MD, PhD[1]; Stephanie Wallschlaeger, HT[1]; Anna Deem, HT[1]

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

021

Controlling Sharps Using a Cost-effective, Reusable Magnet

Anne J. Goldsberry, MD[1]; Rae Jean Broderick, RN[2]; Ross M. Levy, MD[2]

1. Department of Dermatology, Northwestern University, Feinberg School of Medicine, Chicago, IL, United States 2. Dermatology Surgery Unit, Division of Dermatology, NorthShore University HealthSystem, Skokie, IL, United States

Poster Presentation List

022

Squamous Cell Carcinoma In Situ of the Ear

Kachiu C. Lee, MD[1]; H. William Higgins, II, MD[1]; Newsha Lajevardi, BA, MS[1]; Antonio P. Cruz, MD[1]; Raymond G. Dufresne, Jr., MD[1]

1. Dermatology, Brown University, Providence, RI, United States

023

Mohs Micrographic Surgery for Atypical Fibroxanthoma: A Retrospective Review of 68 Cases

Andrew M. Swanson, MD[1]; Juliet L. Gunkel, MD[1]; B. Jack Longley, MD[1]; Stephen N. Snow, MD[1]

1. Department of Dermatology, University of Wisconsin - Madison, Madison, WI, United States

024

Use of Full Thickness Skin Grafts to Repair Lower Eyelid Defects Involving the Eyelid Rim

Lixia Z. Ellis, MD, PhD[1]; Misha D. Miller, MD[1]; Renata Prado, MD[1]; Mariah R. Brown, MD[1]; J. Ramsey Mellette, Jr., MD[1]

1. Dermatology, University of Colorado, Denver, CO, United States

025

Diagonal Tarsal Suture Technique Sine Marginal Sutures for Primary Lid Closure

Andrea Willey, MD[1,2]; Richard H. Caesar, MA, MB, Bchir, FRCOphth[3]

1. Solano Dermatology Associates, Sacramento, CA, United States 2. University of California, Davis, Sacramento, CA, United States 3. Cheltenham General Hospital, Cheltenham, Gloucestershire, United Kingdom

026

Incidence and Treatment of Non-melanoma Skin Cancer in Ontario, Canada

Joseph Doumit, MD[1]; Julie Lacroix, MD[1]; Megan Collie[2]; Ryan Kroll[2]; Adam J. Mamelak, MD[1,3]

1. Dermatology, University of Ottawa, Ottawa, ON, Canada 2. Queen's University School of Medicine, Kingston, ON, Canada 3. Sanova Dermatology, Austin, TX, United States

027

Novel Pedicle Design Enhances Utility of Tunneled Island Pedicle Flap for Single-staged Repair of Auricular Defects

Nisha Desai, MD[1]; Hakeem Sam, MD, PhD[1]

1. Department of Dermatology, University of Pittsburgh Medical Center, Pittsburgh, PA, United States

028

A Histopathologic Frozen Section Digital Database for the Mohs Surgeon in Training

Mark F. Suchter, MD[1,2]; Christine E. Cabell, MD[1,2]; Victor J. Marks, MD[2]

1. Procedural Dermatology, Geisinger Wyoming Valley Medical Center, Wilkes-Barre, PA, United States 2. Procedural Dermatology, Geisinger Medical Center, Danville, PA, United States

029

A Comparison of Wound Reactivity to Two Common Postoperative Ointments

Adisbeth Morales-Burgos, MD[1]; Michael P. Loosemore, MD[1]; Leonard H. Goldberg, MD[1]

1. Methodist Hospital, Houston, TX, United States

030

Profile of Female Mohs Patients

Kachiu C. Lee, MD[1]; H. William Higgins, II, MD[1]; Ugur Uslu, BA[1]; Raymond G. Dufresne, Jr., MD[1]; Antonio P. Cruz, MD[1]

1. Dermatology, Brown University, Providence, RI, United States

031

Basal Cell Carcinoma of the Upper Lip

H. William Higgins, II, MD[1]; Kachiu C. Lee, MD[1]; Newsha Lajevardi, BA, MS[1]; Antonio P. Cruz, MD[1]; Raymond G. Dufresne, Jr., MD[1]

1. Dermatology, Brown University, Providence, RI, United States

032

Mohs Micrographic Surgery at an Academic Mohs Center, 10 Year Comparison (2001-2011)

H. William Higgins, II, MD[1]; Kachiu C. Lee, MD[1]; Ugur Uslu, BA[1]; Raymond G. Dufresne, Jr., MD[1]; Antonio P. Cruz, MD[1]

1. Dermatology, Brown University, Providence, RI, United States

033

Grossly Inaccurate Dermatology and Mohs Surgery Physician Rosters Maintained by Private Health Insurers in 3 Major US Cities

Jennifer A. Cafardi, MD[1]; Richard Torbeck, III, MS, BA[1]; Pryze Smith, PhD[2]; Brett M. Coldiron, MD, FACP[1]

1. The Skin Cancer Center/TriHealth, Cincinnati, OH, United States 2. Hatton Research Institute, Cincinnati, OH, United States

Poster Presentation List

034

Comparing MITF to Mart-1 Immunostaining of Frozen Radial Sections in the Treatment of Lentigo Maligna

Mark A. Hyde, MMS, PA-C[1,2]; Glen M. Bowen, MD[1,2]; Anneli R. Bowen, MD[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

035

Repair of Difficult Post-Mohs Defects with Porcine Urinary Bladder Extracellular Matrix

Gunjan M. Modi, MD[1]; Mohsin Mir, MD[1]; Jodi S. Markus, MD[1]; Ida F. Orengo, MD[1]

1. Dermatology, Baylor College of Medicine, Houston, TX, United States

036

Use of Porcine Xenografts on Large Partial-thickness Vermillion and Mucosal Lower Lip Mohs Defects

Amanda J. Pickert, MD[1]; Shari A. Nemeth, MD[1]

1. Dermatology, Mayo Clinic Arizona, Scottsdale, AZ, United States

037

The Island Pedicle Flap is a Cosmetically Acceptable Alternative to more Conventional Repairs for Subcentimeter Defects on the Lower Two-thirds of the Nose

Gary W. Mendese, MD[1,2]; Donald J. Grande, MD[1,2]; Stuart H. Bentkover, MD[3,4]

1. Mystic Valley Dermatology, Stoneham, MA, United States 2. Dermatology, Boston University School of Medicine, Boston, MA, United States 3. Bentkover Facial Plastic Surgery and Laser Center, Worcester, MA, United States 4. Harvard Medical School, Boston, MA, United States

038

Bovine Collagen Xenograft Repair of Extensive Surgical Scalp Wounds with Exposed Calvarium

Jordan B. Slutsky, MD[1]; Megan Rogge[1]; M. Laurin Council, MD[1]; Scott W. Fosko, MD[1]

1. Dermatology, Saint Louis University, St. Louis, MO, United States

039

Full-thickness Skin Grafts Do Not Need Tie-over Bolster Dressings

Ikue Shimizu, MD[1]; Deborah F. MacFarlane, MD, MPH[1]

1. Dermatology, UT MD Anderson Cancer Center, Houston, TX, United States

Poster Presentation Summaries

001

TITLE: **Significant Bleeding Events Following Mohs Micrographic Surgery: Does Systemic Anticoagulation Alter Risk?**

AUTHORS: *Laurel L. Leithauser, MD[1]; Janelle M. King, MD[1]; Elias E. Ayli, DO[1]; Adam Ingraffea, MD[1]; Brian Adams, MD[1]; Hugh M. Gloster, Jr., MD[1]*

INSTITUTION: 1. Dermatology, University of Cincinnati, Cincinnati, OH, United States

PURPOSE: We sought to determine the frequency of significant postoperative bleeding events following Mohs micrographic surgery among patients taking a variety of systemic anticoagulant agents compared with controls taking no anticoagulant medications, and to determine whether patient demographics influence the rate of bleeding complications.

DESIGN: A retrospective chart review of 901 patients undergoing Mohs micrographic surgery at a University from June 2007 through January 2011 was performed. The medical records were analyzed for significant postoperative bleeding episodes, and patients taking a variety of anticoagulant medications were compared with controls taking no anticoagulation. Patient demographic data including gender, race and age were also evaluated with respect to bleeding risk using a logistical regression model.

SUMMARY: Patients on any type of systemic anticoagulant had a significantly greater risk of serious postoperative bleeding than controls (p=0.005), men were more likely to experience bleeding than women (p=0.01), and older patients were more likely to experience bleeding episodes than younger patients (p=0.0008). Patients taking aspirin alone (p=0.02), aspirin and warfarin (p=0.03), clopidogrel alone (p=0.02) and aspirin, warfarin and clopidogrel (p=0.05) were more likely to experience bleeding events than non-anticoagulated controls. In a multi-variable logistical regression analysis, older age (p=0.01), clopidogrel alone (p=0.01) and the combination regimen of clopidogrel, aspirin and warfarin (p=0.02) remained independent variables for increased bleeding risk.

CONCLUSION: Older patients and patients taking clopidogrel either alone or in combination with aspirin and warfarin are at increased risk for significant postoperative bleeding complications compared with controls. Men and patients taking aspirin either alone or in combination with warfarin may be at increased risk for severe postoperative bleeding, although these factors were no longer significant after controlling for other variables.

Table 1. Patient Characteristics and Significant Bleeding Events

Patient characteristics	All	Bleeding	No Bleeding
All patients	901	34/901 (3.8%)	867/901 (96.2%)
Male	558	28/558 (5.0%)	530/558 (95.0%)
Female	344	6/344 (1.7%)	338/344 (98.3%)
Mean age	70.47	72.4	69.2
No systemic anticoagulation	502	11/502 (2.2%)	489/502 (97.8%)
Any systemic anticoagulation	399	23/399 (5.8%)	376/399 (94.2%)
One agent	333	19/333 (5.7%)	314/333 (94.3%)
Aspirin only	278	15/278 (5.4%)	263/278 (94.6%)
Clopidogrel only	10	2/10 (20%)	8/10 (80%)
Warfarin only	45	2/45 (4.4%)	43/45 (95.6%)
Two or more agents	66	4/66 (6.1%)	62/66 (93.9)
Aspirin and clopidogrel	36	0/36 (0%)	36/36 (100%)
Aspirin and warfarin	28	3/28 (10.7%)	25/28 (89.3%)
Aspirin, clopidogrel and warfarin	2	1/2 (50%)	1/2 (50%)

A significant bleeding event was defined as bleeding occurring within three weeks following cutaneous surgery requiring medical intervention such as re-suturing, electrocoagulation or re-application of a pressure dressing. Bleeding events which resolved with pressure at home were not considered significant.

Table 2. Univariate and Multivariable Logistical Regression Analysis of Significant Bleeding Complications With Respect To Individual Variables

Variable	Univariate analysis (Chi Square, Fisher's exact or T-test)	Multivariable logistical regression
Male gender	P=0.01 (Chi-square)	P=0.06 (corrected for age and anticoagulant type)
Older age	P=0.008 (T-test)	P=0.01 (corrected for sex and anticoagulant type)
Any anticoagulant	P=0.005 (Chi-square)	P=0.18 (corrected for sex and age)
Two or more agents	P=0.08 (Fisher's exact)	P= 0.27 (corrected for sex and age)
Aspirin alone	P=0.02 (Chi-square)	P=0.15 (corrected for sex and age)
Clopidogrel alone	P=0.02 (Fisher's exact)	P= 0.01 (corrected for sex and age)
Warfarin alone	P= 0.29 (Fisher's exact)	P=0.47 (corrected for sex and age)
Aspirin and warfarin	P=0.03 (Fisher's exact)	P=0.06 (corrected for sex and age)
Aspirin, clopidogrel and warfarin	P=0.05 (Fisher's exact)	P=0.02 (corrected for sex and age)

Poster Presentation Summaries

002

TITLE: **Bedside Pathology with Ex Vivo Fluorescence Confocal Microscopy to Guide Mohs Surgery**

AUTHORS: *Antoni A. Bennàssar, MD[1]; Isaac Zilinsky, MD[2]; Susanna Puig, MD[1]; Cristina Carrera, MD[1]; Josep Malvehy, MD[1]*
INSTITUTIONS: 1. Dermatology, Hospital Clínic, Barcelona, Spain 2. Plastic Surgery, Sheba Medical Center, Tel Aviv, Israel

PURPOSE: BACKGROUND: Real-time high-resolution imaging of human skin is possible with a confocal microscope. Ex vivo fluorescence confocal mosaicing microscopy (FCM) offers an attractive alternative to frozen histopathology during Mohs surgery since nuclear and cellular morphology may be observed in real time and directly in freshly excised tissue similar to that in conventional histology. An application of interest is rapid detection of residual basal cell carcinoma (BCC) in skin excisions during Mohs surgery.

OBJECTIVES: 1. To evaluate the overall sensitivity (Se), specificity (Sp), positive predictive value (PPV) and negative predictive value (NPV) of ex vivo imaging with FCM for the detection of residual BCC in Mohs fresh tissue excisions.

2. To describe and validate FCM criteria for the diagnosis of BCC.

DESIGN: METHODS: Seventy-five consecutive patients from our Mohs Surgery Unit with eighty surgically removed BCCs were prospectively enrolled in the present study. All lesions underwent Mohs surgery.
One hundred and twenty skin samples were prospectively collected during Mohs surgery, consisting of excisions with and without residual BCC of all major subtypes. The tissue was stained with acridine orange and imaged with an ex vivo fluorescence confocal mosaicing microscope in fields of view of 12x12 mm. Each mosaic was divided into 2 or 4 subsections, resulting in 400 submosaics for study. The Mohs surgeon (presenting author) and two dermatopathologists who were blinded to the cases, independently assessed the confocal images and the frozen sections (Gold standard) respectively, recording the presence or absence of BCC.

SUMMARY: 1. The overall Se, Sp, PPV, NPV of ex vivo FCM detecting residual BCC was 88%, 99%, 98% and 97% respectively. Very good correlation was observed for benign and malignant skin structures.

2. Seven different BCC criteria for FCM were described and evaluated including, fluorescence, demarcation, nuclear crowding, palisading, clefting, nuclear pleomorphism, and enlarged nuclear to citoplasm ratio (Figure 1). The correlation with conventional histology was very good (Kappa: 0.89).

3. Moreover the new technique took half time when compared with the processing with conventional hematoxilin & eosin frozen sections.

CONCLUSION: The results demonstrate the feasibility of confocal mosaicing microscopy in fresh tissue toward rapid surgical bedside pathology to potentially guide Mohs surgery.

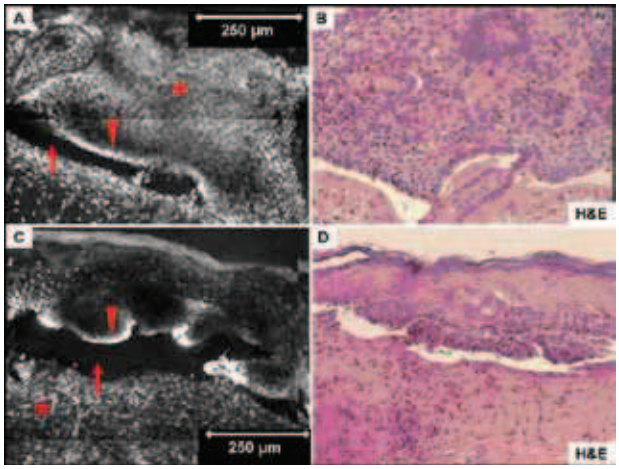

Figure 1.

003

TITLE: **Chemowraps for Diffuse Actinic Damage: Need for Close Monitoring to Avoid Systemic Toxicity**

AUTHORS: *Julia Tzu, MD[1]; Michael Sargen, BA[1]; Karolyn A. Wanat, MD[1]; Joseph F. Sobanko, MD[1]; Anokhi Jambusaria-Pahlajani, MD, MSCE[1]; Misha A. Rosenbach, MD[1]; Christopher J. Miller, MD[1]*
INSTITUTION: *1. University of Pennsylvania, Philadelphia, PA, United States*

PURPOSE: The risk of systemic absorption from application of 5-fluoruracil under occlusion or to ulcerated skin is unclear. Mann et al. described a modified approach to treating diffusely actinically damaged skin with topical 5-FU applied under an Unna boot (chemowrap). In their series of over 200 patients, they reported local irritation and hair loss in two patients, but no signs or symptoms of systemic toxicity were reported. We report a case of a woman who developed systemic side effects related to topical 5-FU chemowraps on a single lower leg. We also present a more conservative treatment regimen that may reduce the risk of developing systemic complications from chemowraps.

DESIGN: A 64 year old female with diffusely actinically damaged lower legs underwent treatment with a 5-FU chemowrap. The actinic keratoses on her left lower leg were first shaved and curetted, and then covered with 5-FU and an Unna wrap. The patient returned one week later and the chemowrap was removed. She had a brisk local response with confluent erythema under the wrap, but no ulcerations of her skin aside from those induced by curettage. The chemowrap was applied again. The following day the patient returned to clinic complaining of fevers, chills, and an erythematous eruption on her lower abdomen. The chemowrap was removed immediately, and her symptoms resolved. Following a two week break from therapy, her erythema nearly resolved, and the chemowrap was reapplied. Five days later the patient returned to clinic with fever (102 F), chills, fatigue, diarrhea, shortness of

breath, dark urine, and an eruption consisting of pink macules on her proximal trunk and proximal extremities. Actinic keratoses remote from the treated area were also inflamed. On examination, her left lower leg had deep, confluent erythema with erosions of the epidermis over >50% of the treated skin surface. The patient was hospitalized for further management. Laboratory workup revealed a mild transaminitis (ALT=219 IU/L, AST=161 IU/L). CBC, CMP, and urinalysis were all within normal limits. A dihydropyrimidine dehydrogenase gene mutation assay was negative. After receiving intravenous fluids, her systemic symptoms resolved. Since this episode with systemic symptoms, the patient's other three limbs have been successfully treated with chemowraps using a revised treatment protocol (described below).

SUMMARY: Contrary to the results reported in Mann's large case series, our case study demonstrates that, application of topical 5-FU to large surface areas under occlusion carries risks for systemic side effects. There are few guidelines to determine a maximum surface area for safe application, the effect of occlusion on absorption, and the amount of absorption when applied to eroded skin. Due to these uncertainties, we have instituted the following more conservative treatment protocol to prevent systemic side effects.

1. Application of the 5-FU and Unna boot on a Monday and removal of the wraps on Thursday or Friday (first application of chemowrap for only 4-5 days prior to assessment). 2. Stop with chemowraps once the treated area exhibits erosions 3. If some lesions ulcerate and there are still residual areas in the treatment field that require additional 5-FU, the medication should be applied twice daily without occlusion to allow immediate titration of dose according to symptoms.

CONCLUSION: Systemic toxicity can occur from 5-FU chemowraps. We recommend a conservative treatment protocol with close patient monitoring and shorter application times between patient visits.

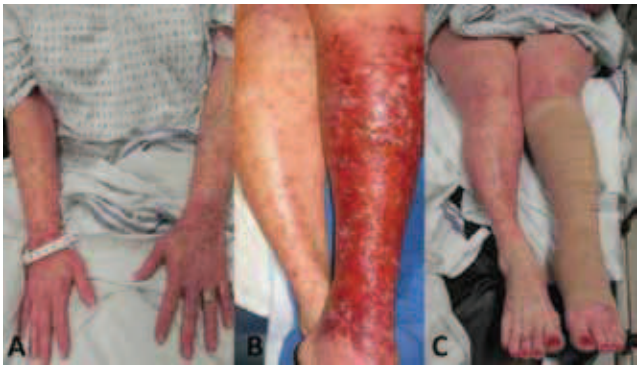

Figure 1.

004

TITLE: **An Immunohistochemical and RT-PCR Evaluation of Dermatofibrosarcoma Protuberans (DFSP) for Platelet-derived Growth Factor Beta (PDGFB) and Platelet-derived Growth Factor Receptor Beta (PDGFRB)**

AUTHORS: *Faramarz H. Samie, MD, PhD[1]; Jason M. Rizzo, BA[2]; Ari-Nareg Meguerditchian, MD[2]; Richard T. Cheney, MD[2]; Michael J. Buck, PhD[2]; Craig C. Miller, MD[2]; Nathalie C. Zeitouni, MD[2]*

INSTITUTIONS: 1. Dartmouth-Hitchcock Medical Center, Lebanon, NH, United States 2. Roswell Park Cancer Institute, Buffalo, NY, United States

PURPOSE: A chromosomal translocation involving chromosomes 17 and 22, leading to the placement of the platelet-derived growth factor beta (PDGFB) under control of the highly active collagen 1 alpha 1 (COL1A1) promoter, is implicated in the development of dermatofibrosarcoma protuberans (DFSP). This translocation results in the constitutive expression of PDGF- , leading to the continuous activation of platelet-derived growth factor receptor (PDGFR), a tyrosine kinase receptor, which promotes DFSP growth. Although, the gold standard for the treatment of the DFSP is wide local excision, not all tumors are amenable to surgery. Imatinib, a tyrosine kinase inhibitor, has been approved for use in unresectable, recurrent and/or metastatic DFSPs. However, studies have demonstrated partial and inconsistent response to imatinib. The variable response to imatinib may be the result of heterogeneity of DFSPs at the molecular level. Due to the potential side effects and the cost of the drug, it seems prudent to limit the treatment to patients that harbor the translocation. Immunohistochemical assays are readily available and a potentially useful tool to select patients for molecular targeted therapy. Here, we confirm that PDGF- , the product of the pathologic chromosomal translocation, can be detected in paraffin-embedded primary DFSP samples with standard immunohistochemical assays, thus, providing an easy method to identify patients that may respond to IM therapy. Using RT-PCR, we have further confirmed these results by demonstrating expression of PDGFB, and PDGFRB transcripts in DFSP tumors.

DESIGN: Tissue samples of DFSPs were obtained from 17 patients identified from our tumor registry. Formalin-fixed paraffin-embedded tumor samples were graded for the proportion of tumor cells showing immunoreactivity for the antibody and for the intensity of staining. Negative immunoreactivity was defined when no tumor cells showed nuclear or cytoplasmic staining. Weakly positive, moderately positive, and strongly positive immunoreactivity was defined as staining in 1-10%, 10-50%, and greater than 50% of atypical tumor cells respectively. Intensity was graded as zero, low, medium, and high. Tumors were also compared for levels of PDGFB and PDGFRB mRNA by quantitative RT-PCR and were recorded as fold increase over matched control dermal samples normalized to the housekeeping gene porphobilinogen deaminase.

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SUMMARY: Staining patterns were analyzed in all 17 tumors. PDGF-expression was demonstrated in all 17 samples. In 100% (17/17) of the samples, anti-PDGF- antibodies demonstrated strongly positive staining patterns. The intensity of staining was graded as at least medium in 88% (15/17) and low in 12% (2/17) of the samples. The vast majority (88%; 15/17) of tumor samples showed a marked up-regulation (fold-change > 1) in expression for both PDGFB and PDGFRB transcripts relative to matched normal tissues. A larger degree of transcript up-regulation was seen for PDGFB as 76% (13/17) of tumor samples showed a greater than 3-fold up-regulation compared to only 41% (7/17) showing up-regulation of PDGFRB. Overall, PDGFB expression correlated well to expression of PDGFRB (r = 0.83) across all samples.

CONCLUSION: The robust PDGFB expression, as demonstrated by IHC, suggests that chromosomal translocation t(17;22) occurs in the vast majority of DFSPs. This data is further supported by demonstration of high levels of PDGFB and PDGFRB mRNA expression by RT-PCR. When considering imatinib for therapy of DFSP, immunohistochemistry may provide a powerful tool to quickly and easily identify patients that harbor t (17;22) translocation.

005

TITLE: **The Effects of Video-based Patient Education for Wound Care Instructions on Patient Knowledge and Satisfaction After Cutaneous Surgery: A Randomized Controlled Trial**

AUTHORS: *Rebecca C. Tung, MD[1]; Christina L. Kranc, MS4[1]; Krisanne Sisto, MD[1]; Vanessa Lichon, MD[1]; Anthony Peterson, MD[1]; Marsha Moran, RN[1]; Rong Guo[2]; Carole Banasiak[2]*

INSTITUTIONS: 1. Division of Dermatology, Loyola University Chicago, Stritch School of Medicine, Maywood, IL, United States 2. Loyola University Chicago, Stritch School of Medicine, Maywood, IL, United States

PURPOSE: To evaluate the effects of adding video-based education to traditional written and oral education for wound care instructions on patient comprehension, compliance and satisfaction after primary cutaneous excision or Mohs surgery.

DESIGN: We consecutively recruited patients who were recommended to have primary excision or Mohs surgery from August to September 2011. The patients were screened, consented and randomized to one of two study groups, Group A (control group) or Group B (video group). Before surgery, all participants completed a 15-item multiple choice questionnaire (pre-test) to assess baseline wound care knowledge. After surgery, all patients received the standard written and verbal wound care instructions. In addition, Group B participants watched a 2-minute instructional video. All patients completed the questionnaire for a second time (post-test) to assess a change in knowledge. The subjects then demonstrated the once-daily wound care steps for the investigators. Lastly, participants completed satisfaction and appeal assessments using 0-10 visual analog scales.

SUMMARY: A total of 31 patients were enrolled. The post-test score (Figure 1) was significantly higher (p=0.02) for patients who received video education when compared to those who did not (13.67 ± 1.23 in Group A vs. 14.69 ± 0.48 in Group B). The test score difference (Figure 2) between the pre-test and post-test was significantly higher (p=0.02) in participants who received video education when compared to the control group, suggesting a greater improvement in wound care knowledge in this group (2.67 ± 1.4 in Group A vs. 5.0 ± 2.63 in Group B). The video group also scored significantly higher (p=0.05) than the control group on the graded demonstration. All participants reported a high level of satisfaction, appeal and compliance. A trend toward higher satisfaction and appeal was noted in Group B, but the difference was not statistically significant (p=0.64 and 0.26, respectively).

CONCLUSION: Proper wound care following skin procedures is essential to optimize healing and minimize scarring and complications. Patient adherence is an important component of wound healing. A strong patient-physician relationship and solid patient education are critical elements in achieving high patient compliance and efficient implementation of recommended wound care. It is the physician's responsibility to give clear and concise wound care instructions after surgery to ensure a positive recovery period, but this can be challenging in the setting of a busy clinic. The addition of video education to traditional verbal and written wound care instructions is associated with a high level of patient satisfaction and acquisition of wound care knowledge. The combined audio-visual appeal leads to greater comprehension and a reduction in patient anxiety related to wound care responsibilities. This translates into improved wound healing, without requiring additional time from the physician. Dermatologic surgeons can take advantage of advancements in technology and consider utilizing video education to augment traditional patient education.

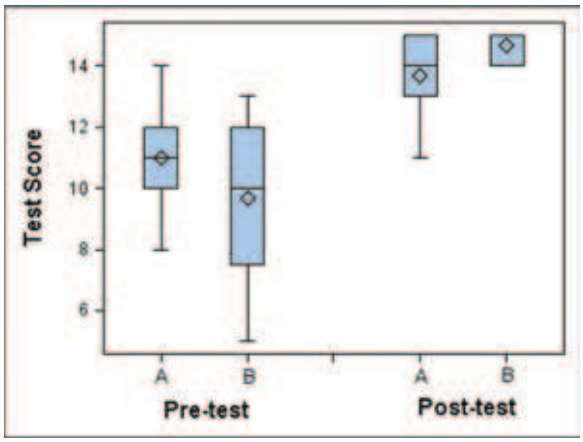

Figure 1. Boxplot of pre-test and post-test scores by group

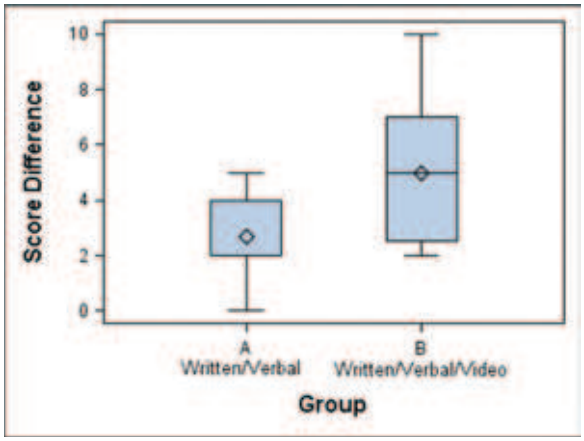

Figure 2. Boxplot of test score difference by group

006

TITLE: **Clinical Stage of Merkel Cell Carcinoma and Survival are not Associated with Breslow Thickness of Biopsied Tumor**

AUTHORS: *Leonid Izikson, MD[2,1]; Thomas N. Helm, MD[2]; Novie Sroa, MD[2]; Nathalie C. Zeitouni, MD[2]*

INSTITUTIONS: 1. Dermatology, Wellman Center for Photomedicine, Massachusetts General Hospital, Boston, MA, United States 2. Dermatology, Roswell Park Cancer Institute, Buffalo, NY, United States

PURPOSE: Merkel cell carcinoma (MCC) is an aggressive malignancy that often presents on the skin with concurrent metastatic disease. We asked whether Breslow thickness of biopsied MCC correlates with clinical disease stage in MCC patients.

DESIGN: We performed a retrospective review of clinical data and histopathology specimens from 34 MCC patients treated at the Cancer center, for whom complete clinical information and histopathology specimens were available.

SUMMARY: There was no correlation between Breslow thickness of biopsied MCC on the head and neck or body and clinical stage of disease, progression-free survival, or overall survival.

CONCLUSION: Thin MCCs should not be taken to represent lesions with less aggressive clinical behavior. Our findings validate the current practice of staging all newly-diagnosed MCC, irrespective of size or Breslow thickness, with clinical, radiologic, and histopathologic examination of sentinel lymph nodes, and with radiologic evaluation for possible metastatic disease in distant organs.

007

TITLE: **Mohs Surgery for Nail Tumors: Avulsion is Unnecessary**

AUTHORS: *Nathaniel J. Jellinek, MD[1,2]; Katharine Cordova, MD[1,3]*

INSTITUTIONS: 1. Dermatology Professionals, Inc., East Greenwich, RI, United States 2. Dermatology, University of Massachusetts Medical School, Worcester, MA, United States 3. Dermatology, Warren Alpert Medical School at Brown University, Providence, RI, United States

PURPOSE: Mohs surgery is commonly performed for malignant nail tumors, achieving high cure rates while sparing uninvolved skin. Traditionally, all such surgeries that involve the nail bed or matrix are preceded with total or partial nail plate avulsions. Plate removal facilitates gross examination of the nail bed, matrix, and lateral sulci, and is a logical preceding step to debulking/curettage of the tumor. Ideally, such avulsions are performed with minimal trauma to the thin epithelium of the nail bed so that subsequent histology demonstrates all representative epithelium for analysis.

We have appreciated that despite our best efforts during Mohs surgery, nail bed and/or matrix epithelium is occasionally missing on our Mohs slides, either from tearing/transection during avulsion and/or difficulty visualizing the thin epithelium during grossing. Alternatively, the histologic slides show only the basal layer of nail bed or matrix epithelium, with the superficial cells transected due to their tenacious adherence to the ventral plate.

A better method is needed.

DESIGN: In an effort to achieve a complete and full thickness epithelial margin, we started to gross and mount nail tumor specimens for frozen sections with the plate intact. We have found this to be a simple technique that reliably preserves the epithelial margin.

Prior to surgery, the excision (either Mohs layer or otherwise) is marked after careful examination with good surgical lighting and loop/dermoscopic magnification. Then the nail plate is softened by soaking the digit in warm water with or without an antiseptic solution such as chlorhexidine. The surgery is performed in routine fashion, however any cuts in the nail bed/matrix are made through the attached plate. Avulsion is avoided whenever possible. The tissue may then be removed with scalpel or scissors. During the grossing, mounting/embedding steps of surgery, the tissue is laid flush so that the plate and attached bed/matrix epithelium are mounted en face in whatever technique the surgeon and technician prefer. The authors mount the tissue directly on a frozen stainless steel chuck, and we have found that this technique is simple, efficient, and freezes the tissue quickly. Occasionally the nail bed, and to a lesser extent, matrix epithelium retract slightly from the plate when it is incised through to dermis and/or periosteum. To overcome this tendency and visualize plate and bed, one places mild pressure when pushing the tissue onto the chuck. Relaxing incisions are also needed in select cases.

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Once frozen, the tissue is cut at a typical thickness (three to five microns thick in our lab), and stained in standard fashion. The tissue feels stiffer than typical sections because of the nail plate, and cuts easily.

SUMMARY: Histology reliably demonstrates the light staining plate in direct contact with the bed and/or matrix, although artefactual clefting has been observed along the plate/bed junction; however, this does not interfere with histologic interpretation.

The full range of nail histolopathology, benign and malignant, are easily observed with this technique – significantly more so than with sections cut after plate avulsion; commonly subungual epidermoid inclusions are appreciated. Identification of squamous cell carcinoma (invasive and in situ,) even quite focal, is quite straightforward when the surgeon/pathologist is familiar with nail subunit histology.

Multiple cases with both techniques will be demonstrated.

CONCLUSION: The traditional dogma of complete nail plate avulsion prior to all nail surgeries has been replaced with one advocating more selective, targeted techniques of partial plate avulsion. Perhaps a similar shift from a traditional approach is warranted during tissue processing of nail tumors for Mohs surgery and frozen section analysis. We have found that avoiding avulsion, cutting though the plate during excision and mounting the tissue with the plate intact, yields improved, high quality histologic specimens with preserved epithelium over the entire cut surgical margin.

008

TITLE: **Management of Primary and Encountered Superficial Non-melanoma Skin Cancers with Mohs Surgery**

AUTHORS: *Chong Wee Foo, MD[1]; Payam Tristani-Firouzi, MD[1]; Glen M. Bowen, MD[1]; Keith L. Duffy, MD[1]; Michael L. Hadley, MD[1]*

INSTITUTION: 1. Department of Dermatology, University of Utah, Salt Lake City, UT, United States

PURPOSE: The purpose of this study was to understand the current management practices of Mohs surgeons in the treatment of primary (previously untreated) superficial NMSC (superficial basal cell carcinoma and squamous cell carcinoma in-situ), as well as treatment of residual superficial NMSC encountered during Mohs surgery. In particular, we want to ascertain the prevalence of usage of alternative modalities (imiquimod, 5-fluorouracil, photodynamic therapy, curettage) as adjunct treatments for incidentally encountered superficial NMSC.

DESIGN: An internet-based questionnaire survey was sent to a total of 890 members of the American College of Mohs Surgery between September and October of 2011.

SUMMARY: We received a total of 212 responses (24% response rate). The results showed that a majority of Mohs surgeons will treat primary superficial basal cell carcinoma (sBCC) and squamous cell carcinoma in-situ (SCCIS) with additional stages of Mohs surgery, 87% and 91% respectively. Cited rationale included large tumor size (>2cm), location of tumor (face, eyelid), and indistinct clinical margins.

When sBCC is incidentally encountered during Mohs surgery, the majority (58%) of Mohs surgeons continue with additional stages until all carcinoma, including sBCC, is removed. Another 34% of surgeons will take additional stages with limits, and the majority (99%) of these surgeons will limit themselves to 4 additional stages.

When SCCIS is incidentally encountered during Mohs surgery, the majority (51%) will continue with Mohs surgery until all carcinoma, including SCCIS is removed. Another 42% of surgeons will take additional stages with limits, and the majority (92%) of these surgeons will limit stages to an additional 4 stages.

Survey data also showed that 50% of surgeons will be LESS likely to treat encountered superficial NMSC with Mohs surgery if the surgical site shows a background of actinic damage. Interestingly, most surgeons (78%) will NOT treat the surgical site with a topical agent prior to Mohs surgery, despite clinically suspecting a component of superficial NMSC in addition to original biopsied tumor.

CONCLUSION: Our initial data analysis showed that the majority of Mohs surgeons will treat primary and incidentally encountered superficial NMSC (sBCC and SCCIS) with additional stages of Mohs surgery until all tumor is cleared. Interestingly, a significant percentage of Mohs surgeons (~40%) will treat incidentally encountered superficial NMSC with additional, but limited, numbers of stages of Mohs surgery. This percentage was higher than expected. We hypothesize that these surgeons will pursue an alternative treatment modality to manage encountered superficial NMSC after aborting Mohs surgery. We are in the process of conducting a follow-up survey to learn about these alternate treatment modalities that are used. These additional results will also be presented during the meeting.

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009

TITLE: **A Single Center Series of Dermatofibrosarcoma Protuberans Cases Treated by Frozen Section Mohs Micrographic Surgery**

AUTHORS: *Haytham Al - Rawi, BMedSci, MBBS, MRCP[1]; Sanjay Rajpara, MBBS, MRCP, MD[2]; Sandeep Varma, BMedSci, MBBS, MRCP[1]; Anthony G. Perks, MBBS, FRCS, FRACS[3]; Iain H. Leach, MD[4]; William Perkins, MBBS, FRCP[1]*

INSTITUTIONS: 1. Dermatology, Queen's Medical Centre, Nottingham, United Kingdom 2. Dermatology, Aberdeen Royal Infirmary, Aberdeen, United Kingdom 3. Plastic Surgery, Queen's Medical Centre, Nottingham, United Kingdom 4. Pathology, Queen's Medical Centre, Nottingham, United Kingdom

PURPOSE: Our aim was to review the details and recurrence rate of dermatofibrosarcoma protuberans (DFSP) cases treated by Mohs micrographic surgery (MMS) in our center between 1996 and 2011. We report the largest case series of DFSP patients treated by frozen section MMS.

DESIGN: Dermatofibrosarcoma protuberans (DFSP) is an uncommon soft tissue tumor of mesenchymal origin that is locally aggressive. It has a high recurrence rate. Mean recurrence rate for standard surgery has been reported to be 18% compared with 1.3% for MMS. There are no randomized controlled or prospective studies comparing the two surgical treatments.

Tumescent local anesthesia was used and the border of each tumor was marked at the clinically palpable margin for debulking. Mohs layers were taken at 1cm margin at each stage on the body, and at 0.5cm margin for the face.

SUMMARY: 67 patients (36 male and 31 female) were treated during this period. 60 cases were primary and 7 were recurrent. Mean age was 46 (range 17 - 82) years. The average duration of the lesion was 84 (range 2 – 480) months. The lesions were located on the back (11), chest (14), abdomen (7), limbs (27), head and neck (7) and genitalia (1). The average tumor/ scar size at maximum diameter/ length was 65.5 mm (range 15 – 250).

The average number of Mohs stages required was 2 (range 1-4), using an average of 12 (range 3 - 25) tissue blocks. Complete clearance was achieved with 1cm margin or less in 28 patients, 2cm margin or less in 22 patients, 3cm or less in 7 patients, 4cm or less margin in 4 patients and 5cm or more margin in 4 patients.

The defects were closed by direct primary closure (48), flap repair (4), split thickness skin graft (8) and secondary intention wound healing (3).

Average duration of follow up was 52.8 (range 2-132) months. There was one recurrence (1.49%). Our recurrence rate is similar to what is quoted in the literature.

CONCLUSION: We report the largest case series of DFSP patients treated by frozen section MMS. Our study confirms that MMS is the best treatment option for DFSP as it has a low recurrence rate as well as the advantage of being tissue sparing.

010

TITLE: **Non-invasive Imaging of NMSC using a Targeted Fluorocoxib Probe: Potential for Early Detection, Guided Biopsies, and Improved Margin Control**

AUTHORS: *Ashley Wysong, MD, MS[1]; Hyejun Ra, PhD[2]; Emilio Gonzalez, PhD[2]; Irfan Ali-Khan, PhD[2]; Lawrence J. Marnett, PhD[3]; Sumaira Z. Aasi, MD[1]; Jean Y. Tang, MD, PhD[1]; Christopher H. Contag, PhD[2]*

INSTITUTIONS: 1. Department of Dermatology, Stanford University, Stanford, CA, United States 2. Clark Center for Biomedical Engineering and Sciences, Molecular Imaging Program, Stanford University, Stanford, CA, United States 3. A.B. Hancock Jr. Memorial Laboratory for Cancer Research, Departments of Biochemistry, Chemistry, and Pharmacology, Vanderbilt University, Nashville, TN, United States

PURPOSE: The detection of NMSC depends on recognition of skin changes by the patient, high clinical suspicion by a trained dermatologist, and pathologic confirmation with biopsy. A non-invasive method to detect early skin cancer has been long desired. Cyclooxygenase-2 (COX-2) is highly unregulated in inflammation and cancer cells and is largely absent from normal cells. The importance of COX-2 in tumor progression has been documented in BCC and other cancers. A fluorocoxib probe (indomethacin labeled with 5-ROX) targeting COX-2 was developed and could function as an effective and non-invasive molecular probe for targeted imaging and early detection of NMSC.

DESIGN: Using a transgenic mouse model of NMSC (ptch1+/- K14 Cre ER p53 flox/flox), fluorocoxib was delivered via retro-orbital injection and whole animal, live mice were imaged 3 hours later with the MaestroTM fluorescence imaging system. Control mice of the same strain were imaged to unmix autofluorescence, then the resulting signal was thresholded for detection of macroscopic and microscopic tumors. After euthanasia, cutaneous tissues were excised and processed for histologic evaluation. In addition, human ex vivo studies were performed on 5 freshly excised Mohs surgery tumors. The tissue specimens were pre-washed in PBS and the probe was topically applied to the surface epidermis, after 30 minutes at room temperature, the tissue was washed in PBS and imaged with the MaestroTM system and a tabletop dual-axis confocal (DAC) microscope.

SUMMARY: Figure 1A-B shows in vivo whole-animal fluorescence imaging (unmixed and thresholded) where tumors A-F (Figure 1A, or region 1 using a lower threshold in Figure 1B) correspond to macroscopic, palpable tumor masses. Histology was performed on both macroscopic tumors as well as other sites without visible tumor mass but identified by fluorescent imaging, such as region 3 (Figure 1C-D, histology). Microscopic tumors were confirmed by a board certified dermatologist (Figure 1C 4x, Figure 1D 10x). Sensitivity and specificity analyses were performed showing 100% specificity (3/3) and 91% sensitivity (20/22) for macroscopic

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tumors and 75% specificity (3/4) and 94% sensitivity (17/18) for microscopic tumors by in vivo imaging using the fluorocoxib probe, with the ability to detect microscopic tumors approximately 100-150 microns in size. In addition, excised human tumor tissue was imaged ex vivo applying the fluorocoxib probe topically and comparing to histologic examination. Imaging data and videos will be presented on tumor (Figure 2) and normal tissue. Finally, initial studies performed using a newly developed topical cream formulation of the fluorocoxib probe show accumulation within the tumor mass and penetration 0-5mm into the skin (peak concentrations at 1-3mm) on excised human tumors.

CONCLUSION: These preclinical data demonstrate the potential for early detection of non-melanoma skin cancer using the fluorocoxib probe in vivo in whole animal, live mice and ex vivo in excised human tissues. Ultimately, through further development of topical applications and clinical testing, targeted imaging using fluorocoxib may have future applications in early detection, guided biopsies, margin detection, and diagnosis of micrometastasis.

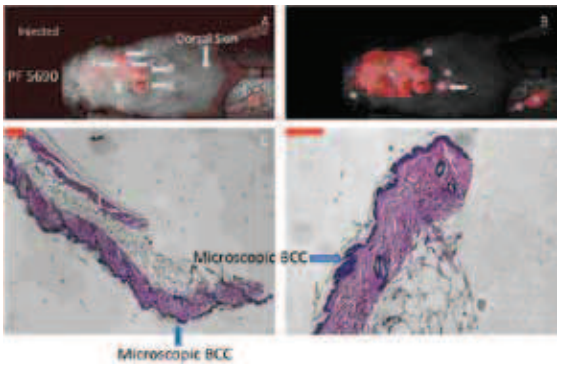


Figure 1.

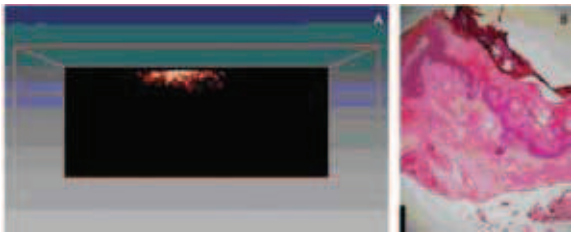


Figure 2.

012

TITLE: DMM: the Mohs Surgeons' Program for Africa

AUTHOR: John M. Strasswimmer, MD, PhD1,2

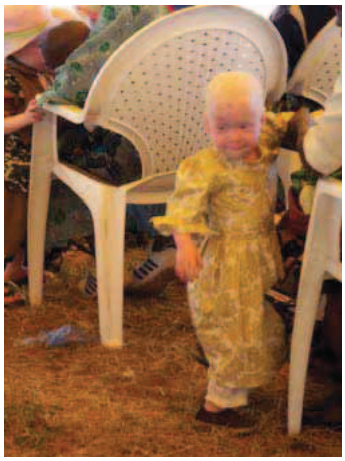
INSTITUTIONS: 1. Dermatology Medical Missions, Inc., Delray Beach, FL, United States 2. Melanoma & Cutaneous Oncology, Lynn Cancer Institute, Boca Raton, FL, United States

PURPOSE: Cancer care in the developing world is a new (2011) priority of the United Nations, as more people die there from cancer than from AIDS, TB, and malaria combined. Mohs surgeons are uniquely positioned to provide life saving prevention and cure for skin cancer in the developing world. Sub-Saharan Africa provides a special opportunity because of the high (up to 1:1,800) prevalence of albinism. In contrast to other specialists, such as plastic surgery, Mohs surgeons do not have an international charity program suited to the unique skills and clinical interests. We sought to identify programs which could potentially take advantage of the skills of the Mohs College physicians

DESIGN: As a result of hands-on skin cancer treatment missions to Africa, a two year review was undertaken to evaluate charitable organizations within the fields of dermatology and international health in order to determine the practicality of providing Mohs surgeons' services to the sub-Saharan African region. The review included both review of organizations' formal literature, interviews with directors, and interviews with the target recipients. Additional consultations with philanthropy consultants were obtained. A total of approximately 27,000 miles were flown over a two year period to evaluate in person both potential programs and locations.

SUMMARY: Consultation with representatives from medical charities (both related and unrelated to dermatology or Mohs surgery) revealed a complete absence of a US-based charitable 501 c (3) medical services program suited to support a visiting volunteer "medical mission" program for Mohs surgeons to Africa. As a result, Dermatology Medical Missions Inc, (DMM), was founded as a not for profit 501 c (3) organization. DMM exists to serve the need for Mohs surgeons to be able to donate time to overseas skin cancer care and to provide needy Africans with services. DMM is able to receive volunteer efforts to build skin cancer prevention, education, and surgery programs in Africa for members of the Mohs College.

CONCLUSION: Mohs surgery in particular, suffers from a lack of a comprehensive organized medical mission programs. Dermatology Medical Missions Inc, (DMM) is a program designed by and for Mohs College surgeons wishing to provide skin cancer services in Africa.



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013

TITLE: Salvage Mohs Micrographic Surgery for Highly Destructive Facial Non-melanoma Skin Cancer

AUTHORS: *Benvon Moran, MB, BCh, BAO[1]; Bairbre Wynne, MD, MRCPI[1]; Patrick Ormond, MD, MRCPI[1]*

INSTITUTION: 1. Dermatology, St. James's Hospital, Dublin, Ireland

PURPOSE: To determine whether Mohs micrographic surgery (MMS) is of benefit in obtaining clear histological margins after wide clinical margins are excised and, in some cases, in preserving structures to facilitate superior subsequent defect repair in advanced non-melanoma skin cancers affecting the face.

DESIGN: A retrospective review of all salvage MMS cases of destructive facial non-melanoma skin cancers performed after wide local excision by the primary surgeon (plastic or otolaryngology) over a four-and-a-half-year period (June 2006 to January 2011) in a national MMS unit in a university teaching hospital.

SUMMARY: Ten patients were included in the study (five male and five female), with a mean age of 61.8 years (range 36 – 84). The majority of the tumors were squamous cell carcinomas (SCC; seven). The remainder was basal cell carcinomas (two) and dermatofibromasarcoma protuberans (one). Six of the lesions had been treated by conventional surgery in the past, and were recurrent.

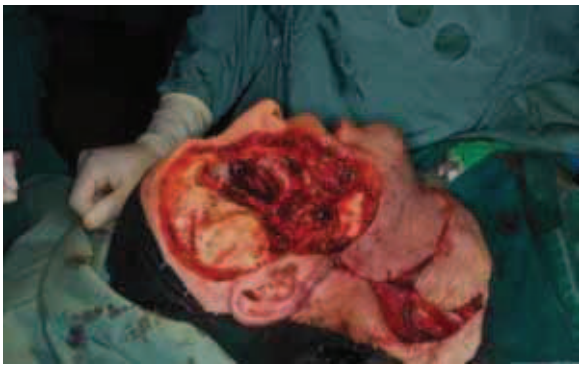
Excision of all tumors was performed under general anesthetic by the primary surgeon. Orbital exenteration was required in four cases, rhinectomy in three, maxillectomy in five and radical neck dissection in four patients. Clinical margins varied between patients, and in some cases the deep margin was preserved to allow a Mohs layer to be taken. Despite attempted clearance by standard surgery in the majority of cases (with margins of up to five cm), all patients required two Mohs layers to achieve histological clearance (in nine cases) and to confirm bony invasion (one case).

Mean patient follow-up was 31.2 months (range eight - 48). Two patients have died from their disease, including the patient with bony involvement (SCC).

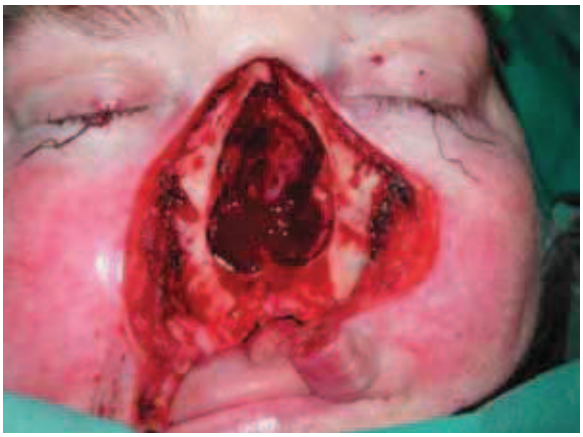
CONCLUSION: Salvage MMS for destructive, advanced, facial non-melanoma skin cancers was of benefit in our cohort. Clearance by standard methods was attempted in the majority of cases prior to the first Mohs layer – despite this all patients required two layers to achieve histological clearance.

60% of patients had recurrent skin cancers. If MMS had been available to them originally salvage surgery may not have been required, with a better cosmetic outcome for the patient.

A multi-disciplinary treatment approach is now used for these cases in our hospital, and the opinion of a Mohs surgeon is requested for all large cutaneous malignancies of the head and neck.



Defect after histological clearance by MMS



Large central facial defect following two Mohs layers

014

TITLE: The Utility of Antihelical Cartilage Autografts for Reconstruction of Mohs Micrographic Surgery Defects

AUTHORS: *Robert J. Sage, MD[1]; Brian C. Leach, MD[1]; Joel Cook, MD[1]*

INSTITUTION: 1. Dermatologic Surgery, Medical University of South Carolina, Charleston, SC, United States

PURPOSE: To illustrate the safety, efficacy, and versatility of antihelix donor site cartilage autografts in the reconstruction of Mohs micrographic surgery defects of the nose and auricle.

DESIGN: We performed a retrospective chart review of all cartilage autografts performed at our institution for the 5-year period from July 1, 2006 to June 30, 2011. Each case was reviewed for demographic data, graft donor site, repair type, complication (if occurred), and revision (if performed).

SUMMARY: A total of 307 auricular cartilage autografts for donor material were performed in 297 patients. 291 donor cartilage grafts were used as batten grafts for nasal ala or columella reconstruction and 16 helical or scaphoid strut grafts for reconstruction of auricular defects. The median follow up was 8 months. The donor site complication rate was low (3%). No patients voiced concern for cosmetic or functional deformity of the donor ear. No patients

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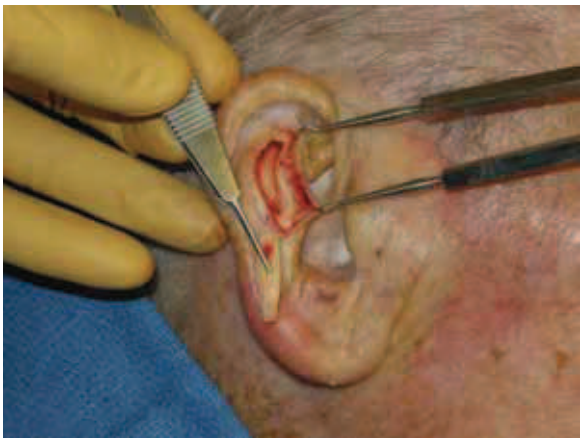
experienced cartilage graft resorption or infection.

CONCLUSION: Antihelix cartilage autografts can serve as a safe, effective, and versatile alternatives to septal, conchal bowl, and costal margin grafts. This conclusion is supported by their successful use in a wide variety of surgical reconstructive techniques with long-term follow-up. The authors feel strongly that the antihelix donor site should be favored over conchal bowl donor site when harvesting auricular cartilage for its easy accessibility with rapid harvest, large dimension that may be harvested, smooth texture, and graft flexibility with minimal morbidity.

Auricular Graft Statistics

GRAFT TYPE	n (%)
Alar/Columellar Batten	291 (94.8%)
Helical rim/Scaphoid Strut	16 (5.2%)
DONOR SITE	n (%)
Antihelix	305 (99.3%)
Conchal Bowl	2 (0.7%)
DONOR SITE COMPLICATIONS	n (%)
Postoperative Bleeding	5 (1.7%)
Non-suppurative Chondritis	3 (1.0%)
Hematoma During Reconstruction	1 (0.3%)



Clinical photograph of harvested antihelical cartilage graft. Skin hooks have been used to increase visualization of the donor site.

015

TITLE: **Evaluation for Residual Tumor of Mohs Micrographic Specimens of Clinically Resolved Preoperative Biopsy Sites**

AUTHORS: *Soonyou Kwon, MD[1]; Hugh M. Gloster, Jr., MD[1]*

INSTITUTION: 1. Dermatology, University of Cincinnati, Cincinnati, OH, United States

PURPOSE: To examine Mohs specimens for microscopic evidence of residual tumor in clinically resolved preoperative biopsy sites. Characteristics such as age of the patient, type of tumor, location of the biopsy site, and size of the Mohs specimen were also collected. The implication of the study impacts the need for Mohs micrographic surgery after apparent clinical resolution following a preoperative biopsy.

DESIGN: Prospective case series of 19 patients with previous biopsy sites that appeared clinically resolved were further evaluated. The scar was excised with 1-2mm margins using the Mohs technique. Six micron sections were cut through the whole specimen to determine whether any residual tumor was present in the preoperative biopsy site.

SUMMARY: Nineteen patients presented for Mohs procedure with a faint biopsy scar from February 2011 to December 2011. The average mean age of the patients was 65 years old. Initial biopsy reports were read as squamous cell carcinoma in situ (SCCIS) in 9/19 patients, superficial SCC in 2/19 patients, SCC in 7/19 patients, and basal cell carcinoma (BCC) in 1/19 patients. The locations of the biopsy sites were the head and neck (15/19) and extremities (4/19). The specimen sizes ranged from 0.3 cm to 1.5 cm in diameter. None of the patients had residual tumor found on microscopic examination of Mohs sections (see Table 1).

CONCLUSION: On occasion, patients will present to the Mohs surgeon with only a faint scar at the biopsy site and no clinically apparent residual tumor. On physical examination, there usually is a white or pink faint thin smooth scar at the previous biopsy location. We conducted a prospective trial to determine the incidence of microscopic residual tumor at the biopsy site in the patients in whom no clinical evidence of tumor remains except a small scar. Complete sectioning through the tissue block revealed no residual tumor in all 19 specimens. The majority of the original tumors that clinically appeared to have resolved was SCC (18/19), nine of which were SCCIS. The clinical size of the preoperative biopsy scar was less than 1 cm in 17 out of the 19 cases. In conclusion, when only a small scar remains at the biopsy site without clinical evidence of residual tumor, re-evaluation with a shave biopsy should be considered, especially when the preoperative biopsy reveals SCCIS. This conservative approach will decrease the cost of health care by preventing unnecessary Mohs procedures on small, superficial tumors that resolve after the initial biopsy.

Poster Presentation Summaries

Table 1.

Age of patient (years)	Tumor reported on biopsy	Biopsy site	Mohs specimen size (cm)	Tumor found on step frozen section (Y/N)
65	SCCIS	sole of left foot	1x0.7	N
56	SCCIS	left lower eyelid	1x0.2	N
82	SCC	right nasal tip	0.5x0.4	N
42	SCC	left alar groove	1x0.5	N
52	SCCIS	left temple	1.5x0.5	N
56	SCCIS	right lower eyelid	1x0.5	N
85	SCCIS	right nasal sidewall	1.5 x 0.5	N
80	SCC	left dorsal hand	0.5x0.5	N
55	SCC, superficial type	nasal dorsum	1x0.5	N
75	SCCIS	helix of left ear	0.7x0.5	N
69	SCC, superficial type	right neck	0.5x0.5	N
60	SCCIS	right nasal tip	0.3x0.3	N
83	SCCIS	left lateral forehead	0.7x0.5	N
85	SCC	right dorsal hand	0.7x0.7	N
82	SCC	left dorsal hand	0.7x0.5	N
62	SCC	left nasal tip	1x0.3	N
27	BCC	right lower eyelid	0.5x0.4	N
83	SCCIS	left cheek	0.6x0.4	N
38	SCC	mid philtrum	0.6x0.3	N

SCCIS: Squamous cell carcinoma in situ
SCC: Squamous cell carcinoma
BCC: Basal cell carcinoma

016

TITLE: **Retrospective Evaluation of the Safety of Large Skin Flap and Graft Surgery in the Outpatient Setting**

AUTHORS: *Adam R. Schmitt, BA[1]; Jeremy S. Bordeaux, MD, MPH[2,1]*

INSTITUTIONS: 1. Case Western Reserve University School of Medicine, Cleveland, OH, United States 2. Department of Dermatology, University Hospitals Case Medical Center, Cleveland, OH, United States

PURPOSE: Our objective was to determine the rates of postoperative infection, bleeding, necrosis, and dehiscence in outpatient dermatologic surgery utilizing large flap and graft repairs, and to determine the relationship between these outcomes and defect location, closure type, repair size, and the use of anticoagulants, antiplatelets, or antibiotics.

DESIGN: Charts of patients requiring large flap (≥ 30 sq cm) or graft (≥ 20 sq cm) repair in the University's Department of Dermatology during a 42-month period were reviewed retrospectively. Medications, procedures, and complications were recorded.

SUMMARY: Following the 154 procedures, 40% of patients were prescribed an antibiotic. Risk of infection was 7.1%. Flap repairs that were 70-100 sq cm (odds ratio [OR] = 6.72) were more likely to be infected than all other flaps (P = .031). Postoperative antibiotic use (P = .35) and defect location (overall P = .27) were not significantly associated with infection, though the risk of infection was greater than 13% on the forehead, temple, chest, and lower limb. At the time of surgery, 45% of patients were on one anticoagulant or antiplatelet, and 8% were on two. Anticoagulant or antiplatelet use was not significantly associated with bleeding (P = .57). There were no instances of hemorrhage, and there was a 3.2% risk of hematoma formation. There was a 4.5% risk of necrosis, and a 1.3% risk of dehiscence. Necrosis was not significantly associated with defect location (P = .21) or flap size (P = .11), though partial flap necrosis occurred in 12% of nose defects and in 14% of interpolation/paramedian forehead flap repairs. All complications resolved without sequelae.

CONCLUSION: The risk of complications following large flap and large graft procedures is low. Bleeding risk was not increased with anticoagulant or antiplatelet use, and the risk of infections fell within the accepted rate for clean-contaminated procedures, even without consistent antibiotic use. Larger flaps were associated with a higher infection risk.

017

TITLE: **Skin Cancer in Lung Transplant Recipients**

AUTHORS: *Jenny C. Hu, MD[1]; Rajan Saggar, MD[2]; Rajeev Saggar, MD[2]; Teresa Soriano, MD[1]*

INSTITUTIONS: 1. Division of Dermatology, David Geffen School of Medicine at UCLA, Los Angeles, CA, United States 2. Division of Pulmonary and Critical Care Medicine, David Geffen School of Medicine at UCLA, Los Angeles, CA, United States

PURPOSE: Solid organ transplant recipients are at increased risk of malignancies following transplantation, with non-melanoma skin cancer (NMSC) being the most common malignancy. These patients are particularly at high risk of developing squamous cell carcinoma (SCC), with an incidence of 65-250 times greater than that of the general population. The incidence of SCC appears to correlate with duration of immunosuppressive therapy. Also, SCC is more aggressive and has a higher metastatic rate in transplant recipients. More notably, lung transplant recipients may have a greater risk given their high immunosuppressive regimens and older age at transplantation. To date, there has not been a published study evaluating the incidence of skin cancers in lung transplant recipients. The aim of this study is to examine the incidence of NMSC, identify immunosuppressive risk factors, and evaluate prognosis of lung transplant recipients who develop NMSC.

Poster Presentation Summaries

DESIGN: We retrospectively reviewed medical records of patients who received lung transplantation at our institution from 2000 to 2008.

SUMMARY: A total of 385 patients had received lung transplantation during this period, of which 48 patients (12.5%) developed a total of 363 skin cancers. The skin cancers included 254 SCC (70.0%), 83 SCC in-situ (22.9%), 17 basal cell carcinoma (4.7%), 2 basosquamous carcinomas (0.6%), 5 unspecified NMSC (1.4%), 1 melanoma in-situ (0.3%), and 1 spindle cell carcinoma (0.3%). Of the SCCs, 16 demonstrated perineural invasion (4.4%) and 10 (2.8%) were associated with metastasis to skin, lymph nodes, or lungs. A total of 108 (29.8%) SCC or SCC in-situ lesions were located on high-risk locations including the scalp, ear, and lip. Mean time from transplantation to first skin cancer was 33.2 months.

CONCLUSION: It is important for dermatologists and dermatologic surgeons to be vigilant about the increased risk of NMSC in lung transplant recipients and counsel these patients on sun protection, regular skin exams, and prompt surgical treatment.

018

TITLE: **Pain Control by a Two-step Irradiance Schedule Photodynamic Therapy of Basal Cell Carcinoma**

AUTHORS: *Joseph P. Housel, MD[1,2]; Nathalie C. Zeitouni, MD[2,1]*

INSTITUTIONS: 1. Dermatology, University at Buffalo School of Medicine, Amherst, NY, United States 2. Dermatology, Roswell Park Cancer Institute, Buffalo, NY, United States

PURPOSE: Photodynamic therapy (PDT) with aminolevulinic acid (ALA) is a useful treatment for selected basal cell carcinomas (BCC) but patients can experience pain or discomfort during the session. In an earlier study, a two-step irradiance schedule for the treatment of BCC was devised in an attempt to decrease treatment related pain. That study was restricted to BCC's of no more than 5-20 mm in diameter and to two lesions per patient. BCC lesions were illuminated at varying low irradiances (10-60 mW/cm2) until 90% of PpIX was photobleached, thereafter increasing the irradiance to 150mW/cm2 for a total light dose of 200 J/cm2. The prior study revealed three major results: 1) photobleaching rates were enhanced under low irradiance, indicating more efficient PDT, 2)treatment outcomes were comparable to continuous 150mW/cm2 treatment, 3) illumination at irradiances below 50mW/cm2 caused no or minimal pain and, when preceded by low irradiance, 150 mW/cm2 likewise caused no or minimal pain. In our updated study we treated multiple or large BCC's with the two step irradiance PDT approach and to assess both pain and clinical outcome in these patients.

DESIGN: An open, uncontrolled study was conducted on patients with either superficial or nodular basal cell carcinomas. ALA was applied to each lesion followed by four irradiances: 30, 40, 50, and 150mW/cm2. PDT was delivered in two parts: the initial therapy was delivered at the 30, 40, or 50mW/cm2 for a total of 20J/cm2 which was established as the irradiance where ~80-90 ± 10% of the PpIX fluorescence contribution in the lesions bleached. When this point was reached the irradiance was continued at 150mW/cm2 until 200-300 J/cm2 was delivered. Each area was exposed to visible red light at a continuous wavelength of 632.8 ±3 nm. Pain was assessed using a visual analog 11-point pain scale (VAS) in which 0 represents no pain, 10 represents unbearable distress. A VAS of 4 represents moderate pain and would require an intervention including anesthetic or other pain relieving measure. If pain was VAS≥4, the irradiance was lowered by 10mW/cm2 and/or the lesion was injected with 1% lidocaine without epinephrine. When the irradiance was changed to 150 mW/cm2 pain was assessed as prior. Patients were evaluated at ~6 months, then approximately every 6 months thereafter.

SUMMARY: Nine patients: 7 men and 2 women, ranging in age from 18-71(mean 48, median 53) with a total of 73 distinct BCC's, 39 nBCC and 34 sBCC were treated. All patients received at least one treatment with one receiving a separate treatment for other bcc's. The predominant location of lesions was the trunk with thirty four, followed by the head and neck with twenty one, lower extremities with ten, and upper extremities with eight. Twenty four sBCC's were evaluable with twenty one reported as CR (87.5%), three as PR (12.5%) at six month follow-up. Of the thirty nine nBCC's, fifteen were reported as CR (38%), twenty as PR (51%), three as MR (8%) and 1 as CF (3%) at six month follow-up. 66% of patients had multiple areas treated in one treatment session. Average number of lesions treated per treatment session was 7.3. Average VAS was 1.89. 52 lesions fell in the 1-2 cm field size, 18 in the 2-3cm size, and 3 in the 3-4 cm size. As a predictor of pain, individual area treated was not significant nor was total treatment area. Number of lesions treated was not a strong predictor of pain nor were the individual sizes. Location was the strongest predictor, with areas producing the highest pain, with the least subcutaneous tissue (i.e. pretibia/temple). ≤ 40mW/cm2 was the starting irradiance for all but one treatment which was started at 50mW/cm2 for 2.5 minutes until pain reached 3/10 at which point the irradiance was adjusted to 40mW/cm2 with pain dropping to 1/10. One patient had a lesion on the nose started at 30mW/cm2 for 4 j/cm2 with no pain, so irradiance was increased to 40 mw/cm2 with patient experiencing 7/10 pain. The irradiance was decreased to 30mW/cm2 with pain dropping to 5/10 requiring lidocaine. Of those treatments that were started at 40mW/cm2, only two patients required downward adjustment of the irradiance. After the initial 20mW/cm2 was delivered, the irradiance was increased to 150mW/cm2 for the remainder of the treatment. Only five lesions had a VAS increase to a level ≥4, max level 5/10 with no lidocaine required. All patients were able to complete the treatments as planned. No adverse events occurred and patients tolerated the treatment.

CONCLUSION: Photodynamic therapy with topical aminolevulinic acid using a two-step irradiance schedule with ~40mW/cm2 for 20

J/cm2 then 150mW/cm2 for the remainder of the treatment allowed for minimal patient discomfort with no interventions required to complete the full treatment. Similar treatment results were achieved compared to continuous 150mW/cm2.

020

TITLE: Asymmetric Sectioning of Mohs Micrographic Surgery Specimens

AUTHORS: *Hilary C. Reich, MD[1]; Sarah E. Schram, MD[1]; Theresa L. Ray, MD[1]; Peter K. Lee, MD, PhD[1]; Stephanie Wallschlaeger, HT[1]; Anna Deem, HT[1]*

INSTITUTION: 1. Dermatology, University of Minnesota, Minneapolis, MN, United States

PURPOSE: Evaluation of an accurate en-face surgical margin is a mandatory component of Mohs micrographic surgery. Just as tears, incurling, or folding of the epidermal edge of a specimen prior to freezing and cutting may lead to false positives, so may cutting of a frozen sample through the bulk of a tumor if proper imbedding, freezing, or cutting methods are not employed1,2. Single-section tissue preparation has been proposed as a method of reducing false positives3, however this process can be challenging, particularly when specimens are large. We propose an alternative method: a simple, fast, and novel sectioning technique using asymmetric sectioning to avoid the tumor bulk. This may lead to reduced tissue folding during processing and cutting, with fewer false positive margins overall. Additionally, tissue orientation is easily maintained with asymmetric sections.

DESIGN: Surgical specimens are obtained in the standard fashion for Mohs micrographic surgery. Rather than sectioning tissue layers into two symmetric semicircular pieces, as is traditionally done, we section asymmetrically to avoid cutting through the obvious tumor bulk. The tissue is divided into two sections: one comprising approximately two-thirds of the total layer and containing the visible tumor, and the other remaining one-third of the layer. The remainder of the tissue processing is performed in the usual fashion.

SUMMARY: The asymmetric sectioning technique has been used on numerous sections. We have found it to be a quick and easy method of tissue preparation. Our histotechnicians have found the specimens easy to process. Examination of specimens sectioned this way reveals a better representation of the true deep margin, visible in a single microscopic field.

CONCLUSION: Asymmetric sectioning of Mohs surgery specimens is a quick and easy method of tissue preparation that may lead to fewer false positive results and may be a helpful tool in maintaining orientation of tissue sample prior to processing. Future study goals include a randomized trial to assess false positive rates between symmetric and asymmetric sectioning.

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021

TITLE: Controlling Sharps Using a Cost-effective, Reusable Magnet

AUTHORS: *Anne J. Goldsberry, MD[1]; Rae Jean Broderick, RN[2]; Ross M. Levy, MD[2]*

INSTITUTIONS: 1. Department of Dermatology, Northwestern University, Feinberg School of Medicine, Chicago, IL, United States
2. Dermatology Surgery Unit, Division of Dermatology, NorthShore University Health System, Skokie, IL, United States

PURPOSE: We report the novel use of a small, multiple-use magnet as a superior method for collecting sharps.

DESIGN: The annual frequency of sharps injuries is approximately 600,000-800,000. Wicker et al analyzed the incidence of sharps injuries among dermatologists and their staff and found that nearly 60% of physicians and 27% of nurses had endured a needlestick in the prior 12 months. In dermatology surgery, sharps injuries can result from scalpel blades, skin hooks, and needles, with suture needles being the most common etiology of sharps injuries. Residency programs report especially high rates of needlesticks among trainees. Preventing these types of injuries is of critical importance. Approximately 1.7 % of patients in the United States have HIV, Hepatitis C or Hepatitis B. The estimated rate of transmission for individuals who are stuck with a large bore needle from a patient with HIV is 0.3%, with Hepatitis C is 1.8% and with Hepatitis B is 6-30%.

Dermatology surgery provides challenges to preventing needlestick injuries including limited surgical space, a mobile instrument tray, multiple practitioners (physicians, residents, physicians assistants, and nurses) using the same instruments, and revisiting the surgical tray numerous times during a procedure. As a consequence, Mohs surgeons have been innovative in exploring different methods to segregate and dispose of sharps in order to prevent injuries. These techniques have included the use of commercial needle counters, Petri dishes, glass cups, and foam sponges.

The optimal technique for managing sharps requires a method that is compatible with the limited space available, stable during the movement of adjacent instruments, able to be sterilized, and cost effective.

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SUMMARY: Magnets are purchased at a national retail crafts store for approximately $5 per 6 magnets (83 cents per unit). They are approximately 1 cm in diameter allowing them to fit easily on the try with other instruments. During the surgical procedure, the magnet is placed in the right hand corner of the tray and is used to control suture needles between uses. The magnet allows easy reuse of the suture without dulling of the needle. It can also be used to manage surgical blades or other important metal objects. Once the procedure has concluded, the magnet is easily transported to the sharps disposal container, and they are removed ensuring appropriate sharps control. In addition, if any sharps fall on the floor, the magnet can facilitate finding and disposing of them safely. The magnets are then re-autoclaved for multiple uses.

CONCLUSION: The use of small, multiuse magnets provides dermatologic surgeons with a safe, cost effective method of controlling sharps that does not interfere with the surgical tray or compromise equipment or technique.

022

TITLE: Squamous Cell Carcinoma In Situ of the Ear

AUTHORS: *Kachiu C. Lee, MD[1]; H. William Higgins, II, MD[1]; Newsha Lajevardi, BA, MS[1]; Antonio P. Cruz, MD[1]; Raymond G. Dufresne, Jr., MD[1]*

INSTITUTION: 1. Dermatology, Brown University, Providence, RI, United States

PURPOSE: Mohs micrographic surgery (MMS) is a commonly used treatment modality for squamous cell carcinoma in situ (SCCIS). The ear is a critical location for tissue conservation. Progression to an invasive squamous cell carcinoma on the ear has significant morbidity and risk to the patient. A large series of patients with SCCIS of the external ear is reviewed.

DESIGN: We performed a retrospective 6-year review (2005 to 2011) of 173 consecutive patients with confirmed cases of SCCIS of the external ear. All cases were referred to an academic center for Mohs micrographic surgery. Data on the following were collected: gender, age, location, primary versus recurrent, initial area, sub-clinical extension (defect size and number of Mohs layers), and type of repair.

SUMMARY: In a retrospective, 6 year review of primary SCCIS of the ear, 173 cases referred for surgery at an academic Mohs practice were identified over a period spanning 2005-2011. The patient ages ranged from 51-94 with a mean of 74 years. There was a significant preponderance of males corresponding to 94% of all the patients ($p<.01$). More cases occurred on the left ear (93) than the right (73) but this did not reach statistical significance. 92% of patients were identified as having primary SCCIS with the remaining 8% defined as recurrent following attempted treatment with cryosurgery. The tumors designated as recurrent SCCIS (n=11) were exclusively observed in male patients and were independently associated with a larger final defect size ($p=0.01$). Of note, recurrent tumors also had a larger mean initial area of 2.2 cm2 vs. primary tumors with a mean of 1.15 cm2 ($p=.05$). Recurrent SCCIS treated with MMS overall required more layers for extirpation when compared to primary tumors (2 vs. 1.61, $p= .059$). Location on the ear, sex, and age did not have a significant influence on the number of layers required. Notably, larger initial area was independently associated with older age ($p<.01$). Regarding closure, the complexity of repair (higher complexity = grafts/flaps) was independently associated with more layers ($p<.01$), larger initial area ($p=.012$), and larger final area ($p=.02$). Gender did not affect repair type.

CONCLUSION: The findings of our study show that SCCIS appears to be a predominantly male disease. Tumors designated as recurrent were associated with greater significant subclinical spread of tumor. Notably, they were found to require a significantly larger initial Mohs layer ($p=.05$) and to have a larger final defect size ($p=0.01$). Recurrent tumors did require more layers, however, this value approached, but did not reach statistical significance. Even primary tumors on average required 1.6 Mohs layers with approximate 2-3 mm margins, suggesting the presence of subclinical spread regardless of recurrence. Thus, Mohs surgery is valuable in delineating the sub-clinical spread of this tumor type in this location. Tissue conservation and a superior definition of tumor margins is a benefit in a smaller tumor when a surgical option is elected. In addition, cases requiring more layers and having larger initial/final defect size were significantly more likely to require more complex repairs (flap or grafts), which further substantiates the use of MMS in these cases.

023

TITLE: Mohs Micrographic Surgery for Atypical Fibroxanthoma: A Retrospective Review of 68 Cases

AUTHORS: *Andrew M. Swanson, MD[1]; Juliet L. Gunkel, MD[1]; B. Jack Longley, MD[1]; Stephen N. Snow, MD[1]*

INSTITUTION: 1. Department of Dermatology, University of Wisconsin - Madison, Madison, WI, United States

PURPOSE: Atypical fibroxanthoma (AFX) is an uncommon spindle cell neoplasm that typically develops on the sun-exposed areas of elderly white men. It was originally described in 1963 by Helwig as a low-grade dermal tumor. Since then, the potential for malignant behavior has been debated in the literature with AFX being described as a benign tumor, a reactive process or "pseudosarcoma", and a potentially aggressive tumor with the possibility of metastasis and even death. It is currently regarded as a tumor of intermediate malignant potential. Recurrence rates vary widely based on the treatment method and range from 0-16%. Because of increasing recognition of the malignant potential of AFX, it is being treated with Mohs micrographic surgery (MMS) with increasing frequency. Because of the recent adoption of MMS in the treatment of this uncommon tumor there are few large studies of recurrence rates with this technique.

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DESIGN: This is a retrospective chart review of all patients with AFX who were treated by MMS between 1984 and 2011 in the Mohs surgery clinic of our institution. Patients were classified as having AFX based on clinical-pathologic correlation at the time of their initial surgery.

SUMMARY: Between 1984 and 2011 there were 64 patients with biopsy-confirmed diagnoses of AFX treated with MMS. Of the 64 patients, 50 (78%) were male. Four patients were found to have a second primary AFX, for a total of 68 tumors. Of the 68 tumors, 65 (96%) were on the head and neck, 2 (3%) were on the upper extremity, and 1 (1%) was on the trunk. Four of the 68 tumors recurred after their initial treatment with MMS for an overall recurrence rate of 5.8%. Of the recurrent tumors, all were located on the head and neck with one on the frontal scalp, one on the forehead, one on the ear, and one on the cheek. Two of the recurrent tumors had multiple recurrences with one extending to bone on the second recurrence over 5 years. This patient also had a history of an eccrine carcinoma with spread to lymph nodes that had been treated with extensive radiation 5 years prior to the development of his AFX. Clear margins were very difficult to obtain in this case as atypical radiation fibroblasts could not be definitively distinguished from individual cells from the known AFX. There were no cases of metastatic AFX.

CONCLUSION: To the best of our knowledge, this is the largest reported case series of AFX treated with MMS. Similar to previous studies, our cases were predominantly on sun exposed areas of elderly men. The observed recurrence rate of 5.8% illustrates the challenge of completely clearing these tumors despite complete histologic analysis of margins. Specifically, patients with a history of radiation therapy may have tumors that are difficult to differentiate from surrounding skin and radiation fibroblasts.

024

TITLE: **Use of Full Thickness Skin Grafts to Repair Lower Eyelid Defects Involving the Eyelid Rim**

AUTHORS: *Lixia Z. Ellis, MD, PhD[1]; Misha D. Miller, MD[1]; Renata Prado, MD[1]; Mariah R. Brown, MD[1]; J. Ramsey Mellette, Jr., MD[1]*

INSTITUTION: 1. Dermatology, University of Colorado, Denver, CO, United States

PURPOSE: The reconstruction of the lower eyelid defects following Mohs micrographic surgery can be challenging given the complex anatomy of the eyelids and risk of ectropion. When the eyelid rim is involved, often wedge excisions with complex repairs or advancement flaps are used. Because there is usually redundant skin at the upper eyelid, and that there is perfect match of color, texture, thickness and sebaceous qualify between upper and lower eyelid skin, we prefer to repair lower eyelid defects with upper eyelid full thickness skin grafts. If the eyelid rim involvement is small, we have found that this full thickness graft provides excellent functional and cosmetic results.

DESIGN: We have repaired lower eyelid defects involving the eyelid rim in 10 patients with upper eyelid full thickness grafts with good functional and cosmetic results without causing ectropion. After a lower eyelid tumor is removed with Mohs micrographic surgery, the defect is outlined with a sterile marking pen. A template of non-adherent gauze is pressed against the defect, and the inked outline on the gauze is used to create the template. The template is then used to mark the ipsilateral upper eyelid donor site, and the graft is incised and harvested following local anesthesia of the donor site. The graft is oversized relative to the defect size in order to avoid ectropion. The graft is trimmed of underlying fat, and sutured into the recipient bed using 6-0 Ethibond suture. The donor site is usually closed primarily.

SUMMARY: In this report, we describe our experience of repairing lower eyelid Mohs defects with ipsilateral upper eyelid full thickness skin grafts, even when the eyelid rim is involved.

CONCLUSION: Using upper eyelid full thickness skin grafts to repair lower eyelid defects not only provides cosmetically optimal result because of perfect match of skin quality, but also is successful in preventing ectropion. The partial involvement of the eyelid rim should not be considered a contraindication for the use of full thickness skin graft in this location.

025

TITLE: **Diagonal Tarsal Suture Technique Sine Marginal Sutures for Primary Lid Closure**

AUTHORS: *Andrea Willey, MD[1,2]; Richard H. Caesar, MA, MB, Bchir, FRCOphth[3]*

INSTITUTIONS: 1. Solano Dermatology Associates, Sacramento, CA, United States 2. University of California, Davis, Sacramento, CA, United States 3. Cheltenham General Hospital, Cheltenham, Gloucestershire, United Kingdom

PURPOSE: Repair of marginal defects remains a fundamental technique in ocular reconstruction for primary wound closure or as part of more complex reconstructions. Precise apposition of the tarsal plates and meticulous alignment of the lid margins is essential to ensure a seamless repair and avoid disfiguring notching of the lid margin. Traditional methods of lid closure involve a three layered technique that includes marginal sutures to align the lid margin. Recent modifications have suggested various approaches to minimize the disadvantages associated with marginal sutures, including the potential for corneal irritation or abrasion. We present a simple and reliable technique for primary lid closure that provides precise and secure apposition of the tarsus while avoiding marginal sutures altogether.

DESIGN: A pentagonal defect is created to minimize tension on the lid margin. The key tarsal suture is placed so that it enters the tarsus approximately 2mm inferior and medial to the tarsal edge, extends diagonally across the tarsus, and exits just inside the conjunctival border at the uppermost point of the posterior tarsal

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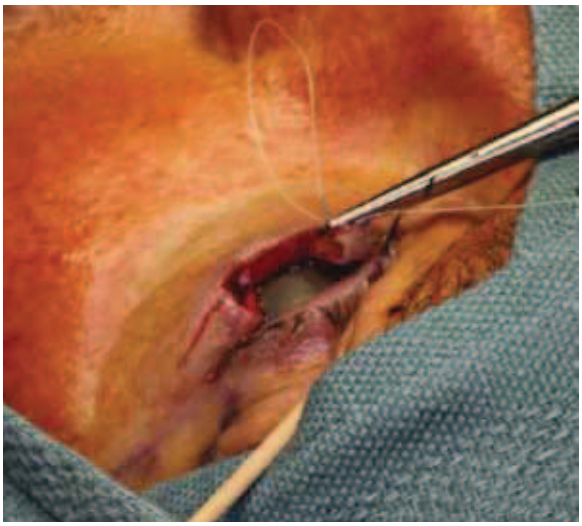
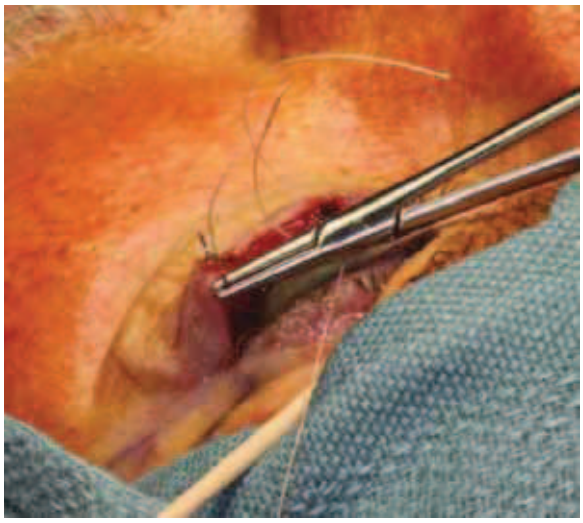
plate. The exit point of this tarsal suture is matched precisely to the entry point on the opposing tarsal margin, followed by the diagonal suture pattern and corresponding exit point. A second tarsal suture is then placed in the traditional manner parallel to the lid margin just below the key diagonal suture. The anterior lamella is then closed using simple continuous sutures that begin just inferior to the lash line.

SUMMARY: The key diagonal tarsal suture soundly apposes the tarsal plate with ample security so that there is precise alignment along the x, y, and z axes and eliminates the potential for notching as well a trichiasis that may result from twisting of the lid margin under tension. Placement of the apex of the key diagonal suture at the uppermost point of the posterior tarsal plate allows for an exacting alignment of the lid margin and lash line, obviating the need for margin sutures.

CONCLUSION: The diagonal tarsal suture technique without marginal sutures is a simple "first time, every time" technique that precisely aligns and firmly apposes the lid margins while avoiding the need for marginal sutures that can abrade the cornea and be bothersome to patients. The technique can be applied to primary lid closures and more complex reconstructions, and can be readily learned by less experienced as well as more advanced periocular reconstructive surgeons.





026

TITLE: Incidence and Treatment of Non-melanoma Skin Cancer in Ontario, Canada

AUTHORS: *Joseph Doumit, MD[1]; Julie Lacroix, MD[1]; Megan Collie[2]; Ryan Kroll[2]; Adam J. Mamelak, MD[1,3]*

INSTITUTIONS: 1. Dermatology, University of Ottawa, Ottawa, ON, Canada 2. Queen's University School of Medicine, Kingston, ON, Canada 3. Sanova Dermatology, Austin, TX, United States

PURPOSE: There is currently no provincial tumor registry for non-melanoma skin cancer (NMSC) making it difficult to track the incidence and treatment of this disease in Ontario. Within the context of a publically-funded single payer provincial healthcare system, the absence of this data makes health care planning and resource allocation to the appropriate medical specialties exceedingly difficult. The objectives of this study are: (1) to estimate the incidence of NMSC in Ontario; (2) to identify the primary medical specialties treating this disease; and (3) to determine the therapeutic modalities utilized in treating these cancers.

DESIGN: Billing claims associated with the NMSC diagnosis code '173' submitted to and paid by the Ontario Health Insurance Program between 2003 and 2009 were examined. The incidence and rate of increase of NMSC claims submitted were calculated. The number of E/M procedure codes, including skin biopsy, electrodessication and curettage (EDC), excision, intraoperative frozen section, radiation therapy, and Mohs surgery, submitted each year were analysed and stratified by the associated medical specialty.

SUMMARY: The number of NMSC claims submitted increased by 36% between 2003 and 2009, with the total number of claims rising by over 100,000 in this time period. Increases in the number of biopsies (22%), EDC (21%), and surgeries (55%) were

similarly observed, with the greatest increases seen in the number of radiation therapies (2.8 x) and Mohs surgeries (over 10 x) performed. Dermatologists were responsible for the majority of skin biopsy and EDC procedures, followed by family medicine and plastic surgery. Plastic surgery was responsible for the majority of surgical excisions during this time period, followed by dermatology.

CONCLUSION: The number of reimbursed NMSC claims increased at a rate of approximately 6% per year between 2003 and 2009. The majority of NMSC claims were submitted by Dermatology. Surgery was the most common means for treating NMSC in the province. The proportion of excisions performed by Dermatologists increased from 2003 (14%) to 2009 (21%). Despite the significant increase, the number of Mohs codes submitted in 2009 only represents 1.1% of all NMSC claims. A decrease in EDC procedures between 2008 and 2009 might be reflective of the increase use of surgical excision by dermatologists and/or the greater accessibility to Mohs surgery in the province.

027

TITLE: **Novel Pedicle Design Enhances Utility of Tunneled Island Pedicle Flap for Single-staged Repair of Auricular Defects**

AUTHORS: *Nisha Desai, MD[1]; Hakeem Sam, MD, PhD[1]*

INSTITUTION: 1. Department of Dermatology, University of Pittsburgh Medical Center, Pittsburgh, PA, United States

PURPOSE: Reconstruction of auricular defects, especially those involving cartilage devoid of perichondrium, can be challenging. The tunneled island pedicle or "flip-flop" island pedicle flap has been described to repair small to moderate-sized defects of the ear, most commonly involving the conchal bowl and less commonly the scapha, earlobe, antitragus, antihelix and external auditory meatus. Flap movement has been referred to as rotation or revolving door such that the anterior portion of the flap ends up at the posterior border of the wound being repaired. What these flaps have in common is a short, central, vertically based pedicle centered on the post auricular sulcus or posterior ear. These short pedicles limit movement of the flap to repairing of defects located on the opposite side of the flap, mainly the conchal bowl, but much less applicable to repairing defects elsewhere on the ear. We introduce a novel pedicle design for repairing larger defects involving the scapha, antihelix and helix. This pedicle design extends the reach of the flap, making it amenable for use in additional areas of the ear.

DESIGN: A 44 year-old healthy Caucasian man presented with a basal cell carcinoma involving the scapha, antihelix and helix. Mohs micrographic surgery was performed to obtain clear tumor margins. The final defect measured 3.5cm x 1.5cm (Figure 1). It involved the inferior portion of the scapha, the majority of the antihelix and a portion of the helix. The tunneled flap was marked out centered on the postauricular mastoid region. A circumferential peripheral incision of the flap to the level of the superficial subcutis was made. Next, a horizontally based pedicle, with pedicle width approximately one-third the length of the flap was created by undermining in the superficial subcutis and deep fascial plane above and below the pedicle respectively . When complete, the pedicle ran horizontally from the center of the flap to a base at the postauricular sulcus. Undermining in the superficial subcutis was extended superiorly behind the lateral conchal bowl, creating a tunnel opening at the sulcus between the helix and antihelix where cartilage was missing in the defect. The flap was mobilized and tunneled into place with the pedicle movement mimicking the turning of a book page from a horizontal to vertical position (Figure 1). The secondary defect was closed in a side-to-side fashion. No long term complications were noted.

SUMMARY: After carefully evaluating various options, a postauricular tunneled island pedicle flap was performed in a single-stage reconstruction. Our novel pedicle design introduces a technique to repair large defects, in our case involving the scapha, anti-helix and helix. The flap template was centered over the mastoid, unlike the traditional design of centering the flap over the postauricular sulcus. Further, our lateral pedicle design differs from the previously described central, vertical pedicle. Previously, the tunneled flaps on the ear were created through the conchal bowl itself. We tunneled our flap in the subcutaneous plane behind the conchal bowl through a window between the helix and anti-helix. The flap pedicle essentially lifts up like turning the page of a book from horizontal to vertical, and the anterior portion of the flap ends up at the anterior border of the wound being repaired. This flap movement differs from the revolving door motion of the classic tunneled island pedicle flaps.

CONCLUSION: The lateral pedicle design of the post-auricular tunneled island flap significantly enhances the reach of this flap, making it amenable for a single-staged repair of relatively large defects of the ear involving the helix, antihelix and scapha. Additional studies are needed in order to better define the full limits and applications of this flap.

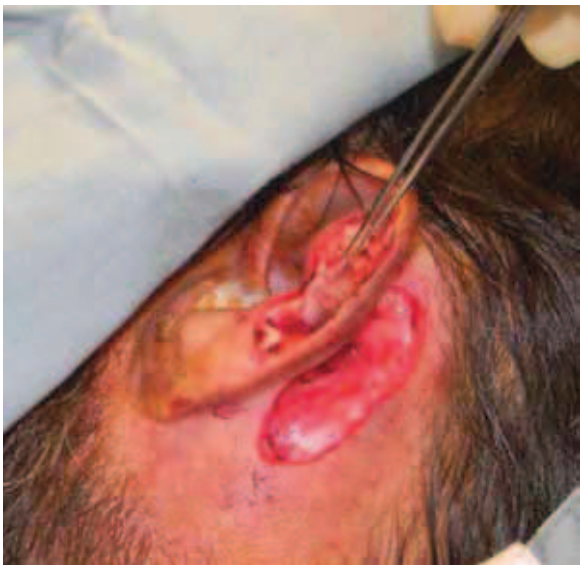


Figure 1.

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028

TITLE: **A Histopathologic Frozen Section Digital Database for the Mohs Surgeon in Training**

AUTHORS: *Mark F. Suchter, MD[1,2]; Christine E. Cabell, MD[1,2]; Victor J. Marks, MD[2]*

INSTITUTIONS: 1. Procedural Dermatology, Geisinger Wyoming Valley Medical Center, Wilkes-Barre, PA, United States 2. Procedural Dermatology, Geisinger Medical Center, Danville, PA, United States

PURPOSE: Early in training, interpreting malignant versus non-malignant pathology via frozen sections is often a source of confusion, which can lead to unnecessary surgery, increased patient adverse effects, or tumor recurrence. The purpose of this project is to create a histopathologic frozen section digital database which may improve the diagnostic accuracy of the Mohs surgeon in training through self study.

DESIGN: Digital images of Mohs frozen sections from various benign and malignant tumors, variants of normal pathology, different tissue stains, or interesting incidental findings were captured and uploaded to a database. After opening the database and viewing an uploaded digital slide, a specific question was asked. This question/answer format was chosen to focus on more specific learning objectives. Some examples of frozen section digital images include erector pili muscle mimicking squamous cell carcinoma, benign follicular hamartoma mimicking basal cell carcinoma, subtypes of basal cell and squamous cell carcinomas, lentigo maligna stained with MART-1 immunostain, basal cell carcinoma stained with toluidine blue, and electrodessication artifact. The digital database can easily be accessed from any computer in the dermatology clinic.

SUMMARY: A histopathologic frozen section digital database was created to help increase the familiarity with less common histologic findings which may lead to confusion for the Mohs surgeon in training. We feel that this database may improve the diagnostic accuracy of the Mohs surgeon in training.

CONCLUSION: Histopathologic diagnostic accuracy of the Mohs surgeon in training may be improved by the use of a frozen section digital database. Further studies with future Mohs fellows will help answer this question.

029

TITLE: **A Comparison of Wound Reactivity to Two Common Postoperative Ointments**

AUTHORS: *Adisbeth Morales-Burgos, MD[1]; Michael P. Loosemore, MD[1]; Leonard H. Goldberg, MD[1]*

INSTITUTION: 1. Methodist Hospital, Houston, TX, United States

PURPOSE: Topical ointments are commonly used for postoperative wound care after dermatologic procedures. A moist environment allows for more rapid re-epithelialization and wound healing. Aquaphor healing ointment (AHO; Beiersdorf Inc, Wilton, CT) and petroleum jelly (Vaseline, Unilever) are reparative moisturizers commonly utilized by dermatologists for postoperative wound care. While these ointments have beneficial properties for wound healing, they also have the potential to cause redness and swelling likely as the result of a contact dermatitis. Aquaphor is known to contain lanolin which may be the cause of redness on some wounds.

We have compared the reaction of primarily closed wounds to the application of AHO, Vaseline petroleum jelly, or no-ointment in patients during the postoperative period.

DESIGN: A total of 83 patients who underwent Mohs surgery on the head and neck with primary closure of the defect were randomized to use either AHO, Vaseline, or no-ointment (27, 32, and 17 patients, respectively) during the postoperative wound care period. The patients were evaluated for erythema, edema and crusting/scabbing of the wound at an average of 10.9 days postoperatively. No antibiotics were administered to the patients and no infections related to the surgery were observed.

SUMMARY: Clinical assessment of the wounds treated with AHO showed a 52% incidence of redness at the wound site, with 33% of patients showing redness and swelling. The Vaseline cohort had a 12% incidence of redness with 9% having redness and swelling. Patients who did not apply ointment to their wound also manifested redness in 12%, with redness and swelling occurring in 6%.

AHO resulted in significantly more erythema and swelling than Vaseline or no-ointment ($p \leq 0.000263$ and $p \leq 0.001229$ respectively). Vaseline did not cause significant redness or swelling when compared to the use of no-ointment ($p \leq 0.392211$). However, crusting and scabbing of the wounds were significantly more common in the no-ointment group when compared to Vaseline or AHO ($p \leq 0.009904$ and $p \leq 0.030535$, respectively).

CONCLUSION: As the ointment with the lowest incidence of redness and swelling, Vaseline is superior to Aquaphor for postoperative wound care. In addition, both ointments resulted in significantly less wound crusting than the no-ointment group. The ability of Vaseline to create a moist and favorable environment for wound healing, while avoiding the increased tissue reactivity seen with Aquaphor, makes it the superior choice for postoperative wound care.

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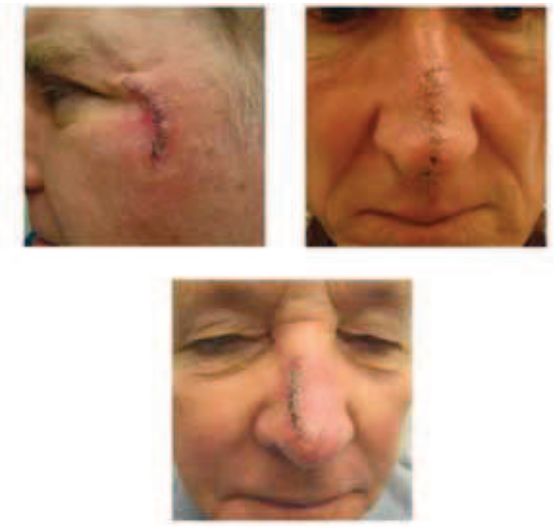
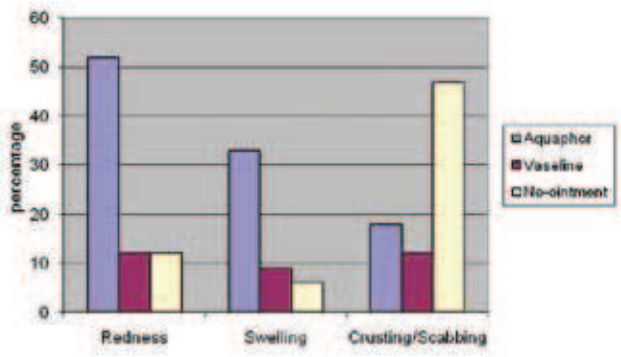


Patients using Aquaphor healing ointment, Vaseline petroleum jelly, and no-ointment for postoperative wound care (left upper corner, right upper corner and bottom, respectively)



030

TITLE: **Profile of Female Mohs Patients**

AUTHORS: *Kachiu C. Lee, MD[1]; H. William Higgins, II, MD[1]; Ugur Uslu, BA[1]; Raymond G. Dufresne, Jr., MD[1]; Antonio P. Cruz, MD[1]*

INSTITUTION: 1. Dermatology, Brown University, Providence, RI, United States

PURPOSE: The aim is to better define differences in male and female Mohs patients by evaluating characteristics such as age, skin cancer type, and repair selection at an academic Mohs micrographic surgery (MMS) center.

DESIGN: A retrospective review of over 1,600 Mohs patients was performed. Data on the following were collected and analyzed: patient demographics (gender, age), tumor type/subtype, anatomic site of the tumor, primary versus recurrent tumors, initial area, sub-clinical extension (defect size and number of Mohs layers), and repair method.

SUMMARY: 540 of these patients were female and 1,153 patients were male. Data analysis revealed that the female population was younger on average (65.88 vs. 70.55, p<.01). There was no significant difference in primary vs. recurrent tumors. Differences in tumor type/subtype were as follows: males had a significantly higher number basal cell and squamous cell carcinomas (p<.001); females were more likely to have superficial basal cell carcinomas (p=.03), whereas males were more likely to have aggressive tumors (p=.03). Regarding location, women had a significantly larger number of truncal (all locations, excluding head/neck) lesions treated by Mohs surgery (p<.001). Analysis of repair type revealed that women were much more likely to have plastics repair (p<.001), whereas men had a much higher proportion of lesions treated by second intent (p<.001). Finally, women had a significantly smaller initial lesion size (0.85 vs. 1.09cm2, p<.001), however, there was no significant difference in the number of layers.

CONCLUSION: This study may suggest that female patients may have earlier detection and treatment of non-melanoma skin cancers. Female patients were significantly younger and had a smaller initial lesion size. There were also found to have less invasive tumors (females had significantly more superficial BCC's, men had more aggressive BCC's). Our data may also suggest that female patients have a higher concern for cosmesis as they were more likely to have repair by plastic surgery, less likely to have repair by second intent, and a significantly higher proportion of lesions on the trunk treated by Mohs micrographic surgery.

031

TITLE: **Basal Cell Carcinoma of the Upper Lip**

AUTHORS: *H. William Higgins, II, MD[1]; Kachiu C. Lee, MD[1]; Newsha Lajevardi, BA, MS[1]; Antonio P. Cruz, MD[1]; Raymond G. Dufresne, Jr., MD[1]*

INSTITUTION: 1. Dermatology, Brown University, Providence, RI, United States

PURPOSE: There is currently a lack of U.S-based case series on the characteristics of basal cell carcinoma (BCC) of the upper lip treated by Mohs micrographic surgery (MMS). Historically, such non-melanoma skin cancers on the lip are more common in women and have been associated with poorer quality of life outcomes when compared to similar cancers in other anatomic locations. The aim is to report the clinical findings of a large series of patients with basal cell carcinoma of the upper lip treated with MMS at an academic facility from 2005 to 2011.

DESIGN: A retrospective 6-year review (October 2005 to October 2011) of 281 consecutive patients with confirmed cases of basal cell carcinoma of the upper cutaneous lip and treated at an academic Mohs practice was performed. Data was analyzed according to age, gender, histological subtype, clinical size of tumor, sub-clinical extension (defect size and number of Mohs layers), and type of repair.

SUMMARY: 281 cases were identified over a period spanning 2005-2011. All patients were Caucasians (skin phototypes I, II, and III). 55% of patients were female and 45% were male with no

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statistically significant difference in gender. The mean age of our patients was 76.64 (range, 31-94 years). 10% were treated for recurrent tumors. The predominant histological subtypes were as follows: nodular (186 cases), infiltrative (39 cases), and other (58 cases). Perineural invasion was not observed in any case. Overall, males were more likely to present with a larger initial defect ($p<.01$) as well as a larger final defect ($p<.03$) when compared to their female counterparts. Gender was not associated with the number of Mohs layers, histological subtype or the nature of tumor (primary vs. recurrent). Regarding histological subtype, infiltrative tumors were found to present with larger initial area ($p<.01$), final area ($p<.01$) but were not associated with a significant difference in the number of Mohs layers required for clearance. Tumors designated as recurrent were more likely to have a larger initial defect size (mean 1cm2 vs. 0.5cm2, $p<.001$). A larger final area ($p<.01$) and older age ($p=.03$) were independently associated with larger initial area. Reconstruction in this anatomic location required a high level of complexity; 44% of repairs were accomplished with either a local flap or graft. In addition, 13% elected for repair by plastic surgery (of note, females were more likely opt for plastics; this approached, but did not reach significance [$p=.08$]).

CONCLUSION: The results of this retrospective study support current findings in the literature that BCC of the upper lip is more commonly seen in women. This U.S. population of patients treated with Mohs surgery for upper lip basal cell carcinoma consisted of a 1.2:1 ratio of females to males, in contrast to previous reports of female predominance ranging upwards of 3.5:1 in Canadian and Australian populations. Males were found to have a significantly larger initial defect size. However, gender did not influence the number of Mohs layers, tumor subtype, or repair characteristics (women were more likely to have plastics repair but this was not statistically significant).

Elderly patients were more likely to present with a larger initial lesion size. In addition, tumors designated as recurrent made up 10% of all tumors, which was much higher than prior studies which reported rates of 3%. These finding may suggest the need for increased screening efforts by dermatologists and primary care physicians to aide in early detection of primary lesions in the elderly population as well as better surveillance of recurrence in this anatomic location.

The findings also suggested that tumors designated as recurrent tended to be more aggressive with statistically significant larger pre-operative and final defect sizes. They also required more Mohs layers for clearance (although this finding did not reach statistical significance). Further research on the disease course and nature of recurrent basal cell carcinomas of the upper lip is necessary.

Regarding repair, a large number of patients required flap or graft closure or elected for reconstruction by plastic surgery. This may reflect a higher level of cosmetic concern. Given the critical anatomic location, frequent subclinical extension, and risk of recurrence, the use of Mohs micrographic surgery is further validated as the preferred treatment for BCC of the upper cutaneous lip.

032

TITLE: **Mohs Micrographic Surgery at an Academic Mohs Center, 10 Year Comparison (2001-2011)**

AUTHORS: *H. William Higgins, II, MD[1]; Kachiu C. Lee, MD[1]; Ugur Uslu, BA[1]; Raymond G. Dufresne, Jr., MD[1]; Antonio P. Cruz, MD[1]*

INSTITUTION: 1. Dermatology, Brown University, Providence, RI, United States

PURPOSE: Our aim is to evaluate changes over a 10-year span in patient demographics, skin cancer type, and choice of repair at an academic Mohs micrographic surgery (MMS) center.

DESIGN: We conducted a retrospective study on patients treated with MMS at our facility in 2001 against those treated in 2011. Data on the following were collected and analyzed: patient demographics (gender, age), tumor type/subtype, anatomic site of the tumor, primary versus recurrent tumors, initial area, sub-clinical extension (defect size and number of Mohs layers), and repair method.

SUMMARY: We analyzed 793 cases from 2001 and compared them with 893 cases in 2011. The 2011 cohort was slightly older (69 vs. 72 vs. years, $p<.001$) and there were significantly more male patients in 2011 (63% vs. 72%, $p<.001$). Regarding anatomic site, there were far more "body" cases in 2011 (all sites excluding head and neck) with 3% in 2001 and 16% in 2011 ($p<.001$). Tumor types were notably different with far more squamous cell carcinoma in situ (SCCIS) cases in 2011 (41 vs. 110, $p<.001$) as well as more treated cases of keratoacanthoma (KAC) (1 vs. 13, $p<.01$). There were also significantly more invasive squamous cell carcinomas (SCC) treated (52 vs. 129, $p<.001$). Furthermore, the initial area (defect size after first layer is taken) was slightly larger (0.94cm2 vs. 1.08 cm2, $p<.01$) and there were more layers taken in 2011 (1.50 vs. 1.69, $p<.0001$). When evaluating repairs, it was noted in 2011 that there was a significant increase in the number of flaps (76 vs. 120, $p=.011$), linear closures (357 vs. 494, $p<.001$) and in the use of second-intention healing (51 vs. 111, $p<.001$). There was also a large decrease in the number of plastic surgery referrals (274, 2001 vs. 119, 2011, $p<.001$).

CONCLUSION: The findings in our study confirm that non-melanoma skin cancer continues to be a predominantly male disease. The fact that our center treated more "body" cases could represent a softening criteria for Mohs or even increasing patient preference for more definitive excision. Utilization of Mohs for the treatment SCCIS and/or KAC is still a topic of controversy. However, our center's significantly increased use of Mohs for margin control in these tumor types may suggest that MMS is helpful and necessary to delineate the sub-clinical spread of these tumor types. The recent increase in invasive SCC's may explain the increase in initial defect size and the increase in layers needed to clear the tumor. Also, our center was less apt to refer for outside repair, suggesting our patient's increasing comfort with complex closures by a Mohs surgeon.

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033

TITLE: Grossly Inaccurate Dermatology and Mohs Surgery Physician Rosters Maintained by Private Health Insurers in 3 Major US Cities

AUTHORS: *Jennifer A. Cafardi, MD[1]; Richard Torbeck, III, MS, BA[1]; Pryze Smith, PhD[2]; Brett M. Coldiron, MD, FACP[1]*

INSTITUTIONS: 1. The Skin Cancer Center/TriHealth, Cincinnati, OH, United States 2. Hatton Research Institute, Cincinnati, OH, United States

PURPOSE: Private health care insurers maintain directories of health care providers which have important implications: (1) These directories are used to market their health networks to businesses, groups and individuals. Businesses use these directories as accurate to buy coverage for their employees. (2) Patients refer to these directories to find a health care provider, and (3) Subspecialty practice restrictions (which are usually not listed) further restrict the number of health providers. These inaccurate directories become a barrier for patients and clinicians trying to schedule appointments. It is impossible for providers to correct these errors since they are not allowed to edit the directories.

DESIGN: Online searches were conducted within the major health insurances' websites, utilizing the "find a physician" option. The physician directory was searched, using radius of 25 miles for each city, in order to find a list of dermatologists and Mohs surgeons for each plan under each insurance company in 3 Major US Cities – Cincinnati, OH, Birmingham, AL and San Francisco, CA. These physicians' names were entered into a database consisting of their name, age, zip code(s) where they practice, practice restrictions in terms of diseases treated, days per week they are working, whether they are accepting new patients. Physicians' specialties were confirmed via telephoning the office and by the website maintained by the state medical board, the American Academy of Dermatology (for dermatologists), the Mohs College, and/or the American Medical Association. All duplicate names, retired/deceased physicians, and inaccuracies within the specialties were recorded. The accuracy of the reported number was compared to the actual number.

SUMMARY: We found that the accuracy of these physician rosters is less than 70% for all cities for dermatology and Mohs surgery. The roster for Mohs surgeons was the most inaccurate. Many Mohs surgeons were found on the insurance plans under "dermatologists" but not under "micrographic Mohs surgery" within the same plan.

CONCLUSION: The inaccuracies in these rosters are due to providers who are retired, dead, have moved, wrong and nonspecific specialty listings, and multiple duplicate listings. Such inaccuracies may lead to delay in patient care, preferential access to the Mohs surgeons who are listed correctly, inflate the apparent accessibility of these providers, and are deceptive to businesses purchasing the plans.

034

TITLE: Comparing MITF to Mart-1 Immunostaining of Frozen Radial Sections in the Treatment of Lentigo Maligna

AUTHORS: *Mark A. Hyde, MMS, PA-C[1,2]; Glen M. Bowen, MD[1,2]; Anneli R. Bowen, MD[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

PURPOSE: Freeze artifact associated with the preparation of tissue sections stained with hematoxylin and eosin of resected lentigo maligna can make the distinction between melanocytes and basal cells very difficult. To overcome the ambiguity associated with freeze artifact many Mohs surgeons utilize immunostaining of frozen sections with either Mart-1, Melan-A, or MITF. Mart-1/Melan-A antibodies recognize epitopes on pre-melanosomes whereas MITF directed antibodies target intranuclear antigens in melanocytes and osteoclasts. In our experience, Mart-1 yields superior sensitivity while MITF gave better specificity. In order to evaluate the strengths and weaknesses of the two immunostains we sought to perform a randomized prospective blinded study to determine if the Mohs surgeon and the dermatopathologist would reproducibly create identical tumor maps of specimens immunostained with Mart-1 compared to MITF.

DESIGN: Twenty patients with lentigo maligna or lentigo maligna melanoma were prospectively enrolled in a study where staged excisions were performed, radial frozen sections prepared, and stained with routine hematoxylin and eosin (H and E) as well as with Mart-1 and MITF. As Mart-1 and H and E have been used as our standard of care, clinical decisions were based on review of those stains alone. All slides were then de-identified and randomized and submitted for microscopic review to the Mohs surgeon and a dermatopathologist who were given two blank tumor maps: one for Mart-1 and one for MITF. The two physicians looked at all slides independently of each other and were asked to create tumor maps of areas of positivity marked with red ink. The dermatopathologist made maps for all of the Mart-1 specimens while the Mohs surgeon made maps for all of the MITF specimens. One week later, the physicians were then given the opposite immunostain in random fashion and created a new set of tumor maps for the alternate antibody. Once the maps were completed, the data was compared to evaluate reproducibility between immunostains and between physicians. Subsequently, each physician reviewed all maps together to discuss discrepancies and pros and cons of each antibody were evaluated and summarized.

SUMMARY: Pending.

CONCLUSION: Pending.

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035

TITLE: **Repair of Difficult Post-Mohs Defects with Porcine Urinary Bladder Extracellular Matrix**

AUTHORS: *Gunjan M. Modi, MD[1]; Mohsin Mir, MD[1]; Jodi S. Markus, MD[1]; Ida F. Orengo, MD[1]*

INSTITUTION: 1. Dermatology, Baylor College of Medicine, Houston, TX, United States

PURPOSE: To examine the use of porcine urinary bladder extracellular matrix (UBM) as an option for management of post-Mohs surgical defects.

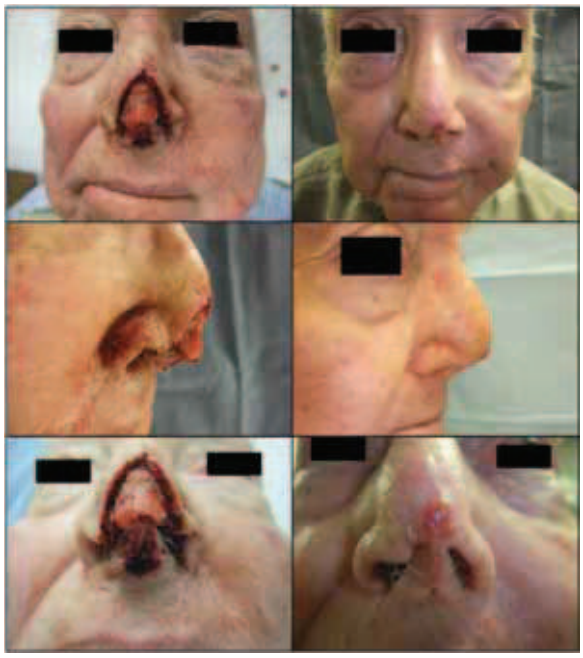
DESIGN: Four patients were selected, each with a full-thickness defect on the face (A. nasal tip, B. cutaneous lip, C. nasofacial sulcus, D. nasal dorsum) following clearance of non-melanoma skin cancer by Mohs surgery. Patients had refused surgical repair, including by skin flap, skin graft, and primary intention. Commercially available UBM was applied to the defects immediately post-operatively, and then re-applied weekly to twice-weekly, until granulation of the wound bed and re-epithelialization was clinically noted.

SUMMARY: All four patients were photographed during each follow-up visit to document response (initial and final pictures of each patient shown). No patients showed any signs of infection or hypersensitivity reaction. Cosmetic results were acceptable to all of the patients.

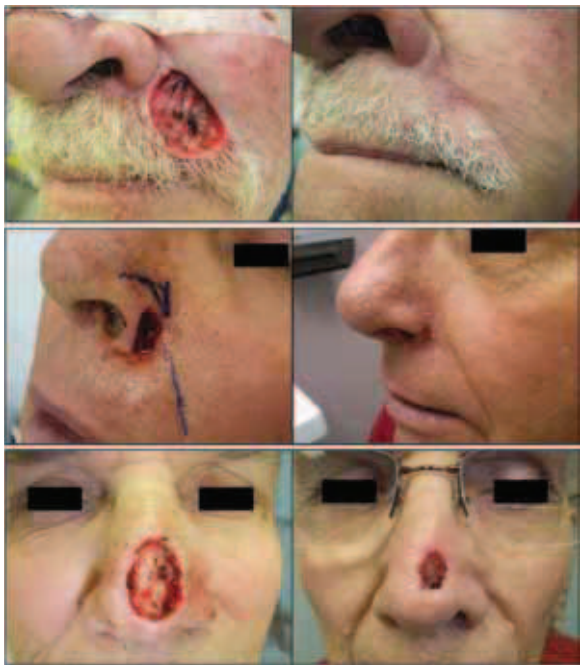
Patient A had complete re-epithelialization of the nasal tip and columella, with nares patent bilaterally. Patient B had complete re-epitheliazation of the defect with maintenance of the nasolabial fold. There was no lip retraction noted. Patient C had complete re-epithelialization of the defect including re-establishment of the lateral nasal ala and nasofacial sulcus, with no disruption of the nasolabial fold. Patient D was lost to follow-up, but at 1 month post-operatively, had significant reduction in the size of the defect with near-complete granulation, and partial epitheliazation. Mild retraction of the left nasal ala was noted.

CONCLUSION: This case series demonstrates that UBM provides an acceptable alternative for patients with complex surgical defects who are either poor candidates for reconstructive surgery or refuse reconstruction.

Clinically, the use of UBM has been previously reported with promising results in the treatment of chronic non-healing ulcers in diabetic patients. In animal models, its use has been studied more extensively, with efficacy in the repair of defects in a variety of tissues, including esophagus, trachea, thoracic and abdominal wall, tympanic membrane, and myocardium. While the mechanism of action of this extracellular matrix (ECM) scaffolding remains poorly understood, one reasonable hypothesis is the presence, survival, and integrity of basement membrane complex during the processing of porcine bladder to extract UBM. This is reportedly a property unique to UBM when compared to other ECM scaffolds and may play a role in preferentially inducing site-specific tissue repair instead of scar formation.



Patient A. Left column: defect immediately post-Mohs. Right column: 3-months post-Mohs.



Top Row: Patient B immediately post-Mohs and at 1-month post-Mohs. Middle Row: Patient C immediately post-Mohs and at 6-weeks post-Mohs. Bottom row: Patient D immediately post-Mohs and at 6-weeks post-Mohs.

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036

TITLE: **Use of Porcine Xenografts on Large Partial-thickness Vermillion and Mucosal Lower Lip Mohs Defects**

AUTHORS: *Amanda J. Pickert, MD[1]; Shari A. Nemeth, MD[1]*

INSTITUTION: 1. Dermatology, Mayo Clinic Arizona, Scottsdale, AZ, United States

PURPOSE: Large partial-thickness Mohs defects on the vermilion and mucosal lower lip can be difficult to repair. The objectives of a repair are to maintain lip function and aesthetics. Second-intention healing will often result in a desirable outcome, even on large defects. However, exposure to foreign material, the environment, and oral flora increases the likelihood of post-operative pain, infection, and prolonged healing. Placement of a porcine xenograft protects the wound during the immediate post-operative period, decreases healing time, minimizes wound care, and potentially facilitates a good surgical outcome in this location.

DESIGN: Seven patients in our practice underwent porcine xenograft closure of a Mohs defect on the mucosal and/or vermillion lower lip from November 2010 to December 2011. Defect size ranged from 1.6 to 13.0 cm2. All wounds were immediately reconstructed with the porcine xenograft. Clinical endpoints included patient discomfort during healing, healing time, oral competence, and aesthetic outcome. Endpoints were evaluated using patient reports and photographic assessments.

SUMMARY: All patients reported an acceptable level of discomfort during healing and would have the procedure performed again if needed. Porcine graft disintegration resulted in a "goopy lip" which per patient report was the most unpleasant facet of healing. Although there was variation in wound size, on average, re-epithelialization was complete by 3-6 weeks, which is below reports for second-intention healing. No patient reported functional impairment and all had satisfactory cosmetic outcomes.

CONCLUSION: Second-intention healing of large partial-thickness vermillion and/or mucosal lower lip Mohs defects can result in acceptable surgical outcomes. When felt to be the best repair option, application of a porcine xenograft to the defect should be considered. Application augments patient discomfort and facilitates quicker healing.

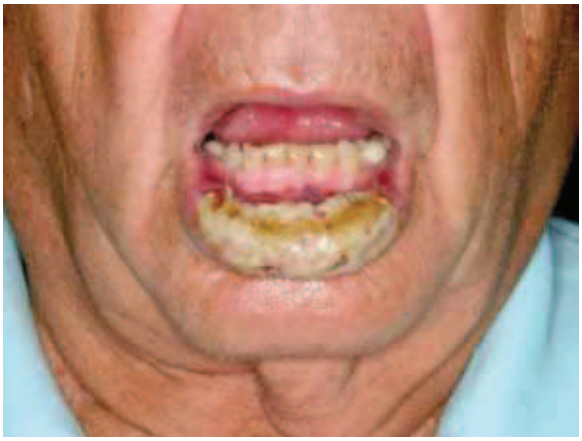

Figure 1. Postoperative day 7 after placement of a porcine xenograft to a 13.0 cm2 Mohs defect on the lower lip, graft is being to disintegrate and gives the lip a goopy appearance.

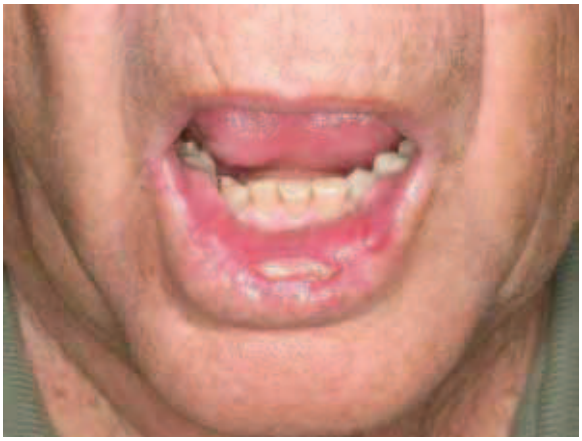

Figure 2. Postoperative day 21 after placement of a porcine xenograft to a 13.0 cm2 Mohs defect on the lower lip, defect is greater than 90% healed with good cosmetic result.

Poster Presentation Summaries

037

TITLE: **The Island Pedicle Flap is a Cosmetically Acceptable Alternative to more Conventional Repairs for Subcentimeter Defects on the Lower Two-thirds of the Nose**

AUTHORS: *Gary W. Mendese, MD[1,2]; Donald J. Grande, MD[1,2]; Stuart H. Bentkover, MD[3,4]*

INSTITUTIONS: 1. Mystic Valley Dermatology, Stoneham, MA, United States 2. Dermatology, Boston University School of Medicine, Boston, MA, United States 3. Bentkover Facial Plastic Surgery and Laser Center, Worcester, MA, United States 4. Harvard Medical School, Boston, MA, United States

PURPOSE: Defects on the lower two-thirds of the nose often present reconstructive challenges. Surgical defects on the lower third (consisting of the alae, alar grooves and nasal sidewalls) and even the middle third (nasal supratip area) are commonly repaired by the standard bilobed transposition flap. Though consistent and cosmetically acceptable, the bilobed flap often violates the principal of single cosmetic subunit reconstruction, can lead to trapdoor deformity and in some cases can distort the alar rim. As an alternative, the island pedicle flap can be readily used to repair lesions upwards of 1 cm in diameter on the lower nose.

DESIGN: Full thickness Mohs surgery defects of the lower two-thirds of the nose are presented. The stepwise surgical reconstruction of the defects using the island pedicle flap is described. Step-by-step intraoperative and postoperative photographs are presented and reviewed.

SUMMARY: At least six defects on the lower portions of the nose have been repaired by the island pedicle flap the last year alone, all with acceptable cosmesis and no complications.

CONCLUSION: The island pedicle flap can be safely and easily used to repair lower nasal defects encountered during Mohs micrographic surgery. The final cosmetic and functional results can be equal if not superior to the more conventional repairs employed in this area. Patient satisfaction is high and no follow-up procedures have been needed. The island pedicle flap can be a useful tool in repairing selected defects of the lower nose.

038

TITLE: **Bovine Collagen Xenograft Repair of Extensive Surgical Scalp Wounds with Exposed Calvarium**

AUTHORS: *Jordan B. Slutsky, MD[1]; Megan Rogge[1]; M. Laurin Council, MD[1]; Scott W. Fosko, MD[1]*

INSTITUTION: 1. Dermatology, Saint Louis University, St. Louis, MO, United States

PURPOSE: Mohs micrographic surgery (MMS) or staged "slow Mohs" staged excision (SMSE) for infiltrative skin cancers of the scalp may leave wounds exposed to the level of the calvarium, many extensive in size. Reconstruction of these complex wounds using local flaps, full or split thickness skin grafts (FTSG, STSG) or free flap repair is often challenging, may result in large secondary defects, has high associated morbidity and may not provide optimal cosmetic outcome. Elderly skin cancer patients, many with multiple co-morbidities, may not be candidates for complex reconstructive procedures, and younger patients who could tolerate such repairs might not desire to undertake them. Healing by secondary intention is a viable method of closing these wounds, but is complicated by prolonged healing time and significant wound care. Collagen xenografts are another reconstructive option and seemingly expedite the process of secondary intention healing with minimal surgical morbidity. Collagen xenografts promote healing by providing the matrix for regenerative cells while being remodeled and incorporated into host connective tissue. The objective of this study is to assess clinical outcomes with the use of a bovine collagen xenograft (BX) for reconstruction of scalp wounds with exposed calvarium.

DESIGN: We reviewed 5 cases of infiltrative skin cancers (3 SCC, 2 BCC) of the scalp in which a BX was used successfully and solely for reconstruction of wounds extending to calvarium, after periosteum was removed for tumor extirpation (4 cases of SMSE, 1 case of MMS). The wounds ranged in size from 3.6x2.7cm to 15.1x8.5 cm (9.7cm2 to 128.4cm2). In each case, 2 layers of BX moistened with sterile saline were sutured into the wound bed using 5-0 fast absorbing gut. For each patient, a BX was placed either immediately post-operatively or in a delayed manner, with some patients requiring replacement of the BX up to 2 times depending on the depth/size of wound and if there was residual exposed bone. Wound care involved petrolatum ointment covered with a bandage twice daily until appropriate contour of wound was reached and then acetic acid soaks to promote re-epithelialization. Patient outcomes were assessed using clinic notes, measurements and photographs. Granulation tissue covering calvarium was achieved in 3 to 6 weeks in all patients. Re-epithelialization was complete in 15 weeks in 1 patient and is progressing in all patients. No patients experienced post-operative bleeding or wound infections; 2 took pre-operative antibiotics (1 for a prosthetic heart valve, 1 for a hip replacement). Patients reported minimal pain which did not require analgesics stronger than acetaminophen.

Poster Presentation Summaries

CONCLUSION: Reconstruction of scalp wounds extending to the calvarium can be effectively accomplished with bovine collagen xenografts. Our success using BXs for extensive scalp wounds with exposed bone is better than initially anticipated, and our surgical colleagues in otolaryngology are now discussing this with patients as an alternative to more complex repairs. Advantages include minimal surgery and associated morbidity, especially when compared to flap/graft/free flap repairs. BXs are especially useful in elderly patients with multiple co-morbidities who are not ideal candidates for complex repairs. Unlike flaps and grafts, BXs do not require second surgical sites or the enlargement of surgical wounds. Compared to secondary intention, BXs immediately cover exposed bone making wound care easier, and appear to expedite granulation. BX placement is a simple procedure appreciated by patients who have undergone lengthy tumor extirpation. BXs may be replaced as many times as needed, and can serve as a bridge to another type of repair if needed by decreasing wound diameter and depth. We have found that BXs provide good contour and cosmesis for scalp repairs; in one case the BX was cosmetically superior to a previous STSG. Disadvantages of BXs for deep scalp wounds include the duration of healing, the need for daily wound care, and multiple follow-ups to ensure proper healing and guide wound care.

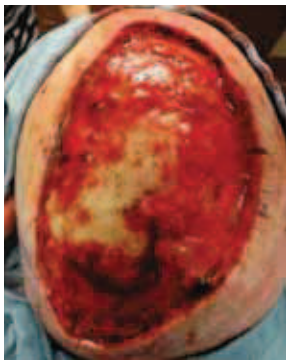

Figure 1. Surgical scalp wound to calvarium.

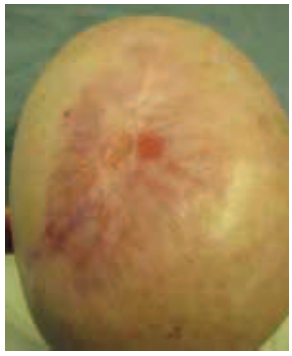

Figure 2. Granulating wound at 6 months after BX; note depressed STSG scar on left scalp from previous surgery.

039

TITLE: Full-thickness Skin Grafts Do Not Need Tie-over Bolster Dressings

AUTHORS: *Ikue Shimizu, MD[1]; Deborah F. MacFarlane, MD, MPH[1]*
INSTITUTION: 1. Dermatology, UT MD Anderson Cancer Center, Houston, TX, United States

PURPOSE: Although traditionally performed following full-thickness skin grafts (FTSGs), tie-over bolster dressings are bulky, unsightly, inconvenient for the patient, and often a source of complaint. There is little evidence in the literature that shows that tie-over bolsters are necessary.

DESIGN: In this IRB-approved retrospective study, FTSGs were performed with bolsters in the first year and without bolsters in the second year of the study. Patient age, gender, smoking status, immune status, site, greatest defect length, and clinical outcome (graft take) at suture removal were analyzed. Graft take was defined as "complete" if there was a well-vascularized graft with minimal crusting, and "incomplete" if there was generalized superficial crusting or sloughing with viable graft underneath.

In the bolster group (BG), bolsters consisted of petrolatum gauze secured with tie-over sutures. No basting sutures were used. In the non-bolster group (NBG), grafts were secured with peripheral sutures and no basting sutures, then dressed with a layer of petrolatum gauze, mupirocin ointment, and a pressure dressing for 48 hours. Subsequent dressings involved replacing the petrolatum gauze and mupirocin ointment, then covering with a non-stick dressing and tape daily.

SUMMARY: A total of 96 FTSGs were performed (47 bolster, 49 non-bolster). Defect sites included the nose, ear, face, neck, hand, arm, and trunk. Greatest defect length ranged from 0.7cm - 5.3cm for the BG (mean 2.01cm), and 0.7cm - 5.0cm for the NBG (mean 1.92cm). Average age was 72.1 years for the BG versus 69 years for the NBG.

Graft take did not differ significantly between the two groups at suture removal. Incomplete take was seen in 7 of the bolster and 8 of the non-bolster cases. Neither smoking status nor immunodeficiency interfered with graft take. All cases showed excellent long term appearance regardless of bolster use.

CONCLUSION: Bolster use does not affect surgical outcome of FTSGs. We conclude that tie-over bolsters may be unnecessary for FTSGs when defects are smaller than 5cm. It is more efficient and economical for the surgeon and more convenient for the patient if tie-over bolster dressings are not used. .