

**10:32 – 10:40 am**

**PRESENTER:** S. Tyler Hollmig, MD

**TITLE:** The Evolving Conception and Management Challenges of Undifferentiated Pleomorphic Sarcoma

**AUTHORS:** S. Tyler Hollmig, MD<sup>1</sup>; Brent Kirkland, MD<sup>1</sup>; Michael Henderson, BA<sup>1</sup>; Hayes B. Gladstone<sup>1</sup>, MD; Kerri Rieger, MD, PhD<sup>1,2</sup>; Robert West, MD, PhD<sup>2</sup>; Uma Sundram, MD, PhD<sup>1,2</sup>

**INSTITUTIONS:** 1. Dermatology, Stanford University Medical Center, Palo Alto, CA, United States 2. Pathology, Stanford University Medical Center, Palo Alto, CA, United States

**PURPOSE:** Undifferentiated pleomorphic sarcoma (UPS) represents a rare and aggressive tumor. Mohs micrographic surgery (MMS) has been reported as an effective treatment, although most cases were published before advances in cytopathological techniques led to reclassification of many tumors. Our primary objective was to evaluate a contemporary cohort of UPS in order to analyze for the most effective management practices. As a secondary goal, we attempted to clarify the immunohistochemical (IHC) staining profile of UPS, particularly as compared to atypical fibroxanthoma (AFX). Whereas the antibody LN-2 (CD74) has been purported by numerous authors as able to distinguish between these tumors, and to predict those AFX likely to exhibit aggressive behavior, there has never been a dedicated study to confirm the utility of this marker.

**DESIGN:** We reviewed all cases of UPS diagnosed at our institution from January 1995–December 2010, evaluating 839 records to identify 36 patients undergoing management of tumors of the head and/or neck. We collected demographic information, along with tumor location and size, IHC staining, treatment methods, presence of immunosuppression, and follow-up data for each patient. We also performed LN-2 staining of 73 UPS and 14 AFX specimens using an identical staining procedure, antibody clone, and scoring protocol as described by previous investigators. This study was approved by our Institutional Review Board.

**SUMMARY:** Of the total 36 patients (mean age 67 years) with UPS meeting inclusion criteria who were managed at our institution, 17 (47%) experienced local tumor recurrence and 10 (28%) developed metastases. Of 9 patients initially treated with MMS, 7 (78%) experienced recurrence (mean follow-up 19 months), compared to 10/24 (42%) treated with wide local excision (WLE; mean follow-up 53 months) ( $P=.065$ ). When compared to the cumulative recurrence rate of all UPS/MFH treated with MMS reported before the year 2000 (7.4%), the mean contemporary recurrence rate of tumors treated with MMS reported after 2000 is significantly higher (58.8%) ( $P<.0001$ ).

Of 73 UPS specimens available for IHC staining, 5 (6.85%) were immunoreactive for LN-2 (>30% of tumor cells staining), as compared to 3/14 (21.4%) AFX ( $P=.146$ ), while control specimens stained strongly with LN-2 (Figure 1). One of 2 (50%) clinically

aggressive AFX stained with this marker, as compared with 2/12 AFX that did not recur or metastasize ( $P=.429$ ).

**CONCLUSION:** Our study is consistent with reports of UPS as an aggressive neoplasm and describes the largest population treated with MMS in three decades (Table 1). Recent reports of higher recurrence rates may be explained by the changing conception of UPS, along with a propensity for in-transit metastases. IHC is helpful in evaluating these tumors, and serves most effectively as a tool to rule out other similar-appearing neoplasms rather than providing a specific profile for UPS. Our results do not support the use of LN-2 for distinguishing UPS from AFX. Furthermore, LN-2 did not appear to predict the clinical behavior of AFX. MMS represents the treatment of choice for AFX and a valuable therapeutic option for certain UPS, where it is likely to provide a tissue-sparing advantage and comparable recurrence rates as compared to WLE.

Table 1. Studies reporting treatment of MFH/UPS with MMS

Study	Dzubow	Brown and Swanson	Huether	Abstract Author
Year of publication	1988	1989	2001	Under Review
Cases (#)	2	25	7	9
Mean diameter (cm)	1.4	3	3	3.56
Primary Tumor, N (%)	1 (50)	12 (48)	5 (71.4)	9 (100)
Reported use of IHC	Y	N	Y	Y
Follow-up (mean, mos)	8	36	45.6	18.9
Recurrence, N (%)	0 (0)	2 (8)	3 (43)	7 (77.8)

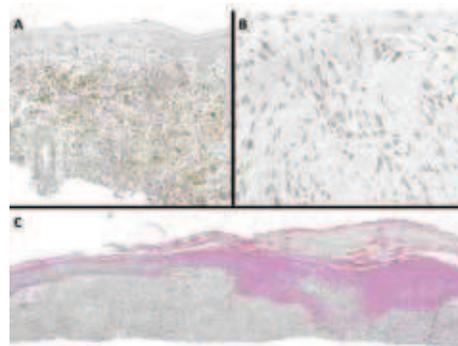


Figure 1. (A) AFX staining strongly with LN-2 (20X), as compared to (B) higher power view of UPS staining only sparsely with LN-2 (40X). Panel C depicts a tumor diagnosed as AFX on this insufficient biopsy specimen that was later reclassified as MFH during MMS, thus emphasizing the diagnostic importance of deep margin evaluation (H&E, 4X).

**10:42 – 10:50 am****PRESENTER:** Jamie L. McGinness, MD**TITLE:** **Optimizing Mohs Frozen Sections: Clini-RF Rapid Freeze Histology****AUTHORS:** Jamie L. McGinness, MD<sup>1</sup>; Chandra Goodman, BS, HTL<sup>1</sup>; Melissa P. Chiang, MD, JD<sup>4</sup>; Neil N. Farnsworth, MD<sup>1</sup>; Michael R. Migden, MD<sup>2</sup>; Thuy L. Phung, MD, PhD<sup>3</sup>; Tri H. Nguyen, MD<sup>1</sup>**INSTITUTIONS:** 1. Dermatology, Northwest Diagnostic Clinic, Houston, TX, United States 2. Dermatology, MD Anderson Cancer Center, Houston, TX, United States 3. Department of Pathology and Immunology, Baylor College of Medicine, Houston, TX, United States 4. Integrated Dermatology, Houston, TX, United States**PURPOSE:** Freeze artifact is a limitation of frozen section histology and is dependent on freezing time and temperature. The best histology results from snap freezing tissue as quickly as possible and as cold as possible. It has previously been reported that flash freezing of frozen sections for Mohs surgery with the Histobath (Thermo/Shandon Histobath Chiller, Pittsburgh, PA) minimizes freeze artifact and speeds slide turnaround time.<sup>1</sup> The Histobath, however, is no longer manufactured and not readily available and thus obsolete.

The purpose of this study was to evaluate a commercially available alternative to the Histobath, the Clini-RF (RF=Rapid Freeze, Bright Instruments, England). The Clini-RF is an ultra-low temperature freezer with two chambers; the upper chamber is air cooled at -40°C and the lower chamber is liquid cooled (Novec 7000 fluid, 3M) at -80°C. The Novec fluid is a novel engineered fluid with superior safety features compared to traditional methylbutane.

**DESIGN:** Our study randomized 300 consecutive Mohs sections to one of three methods for frozen section processing:

1) cryoembedder alone, 2) cryoembedder with histobath, 3) cryoembedder with the Clini-RF. All specimens were processed by the same histotechnician until each method reached 100 sections. All 300 slides were evaluated by 6 physicians (3 ACMS Mohs surgeons, 1 medical dermatologist, 1 pathologist, and 1 dermatopathologist- all blinded to the method of slide preparation) and graded on several histologic criteria on a 1-5 scale.

**SUMMARY:** Pre-study trials demonstrate superior histologic quality for the cryoembedder with Clini-RF method (Figures 1, 2). Preliminary studies were done using Burow's triangles from Mohs repairs. Each Burow's triangle was divided into three specimens and processed by each of the above methods. The sections were then evaluated by two blinded Mohs surgeons. In greater than 95% of examined specimens, the Clini-RF method greatly reduced processing artifact and produced superior frozen section histology relative to the other methods.**CONCLUSION:** Freeze artifact compromises histologic evaluation and can potentially decrease the effectiveness of Mohs surgery. The Clini-RF offers a rapid fluid heat extraction method in a novel

engineered fluid that achieves outstanding frozen section histology. We present a modification to frozen section histology that allows superior histologic quality approaching the quality seen with permanent histology sections.

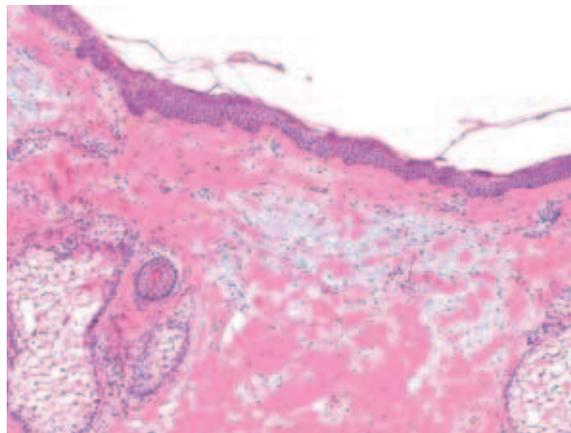
1. *Dermatol Surg* 2011;37:503–509

Figure 1. Mohs frozen section histology cryoembedder and Clini-RF

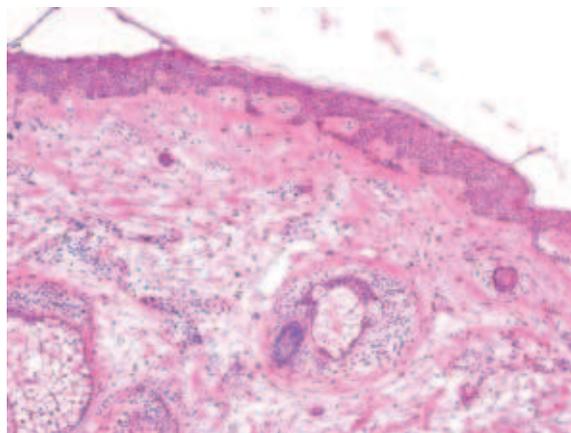


Figure 2. Mohs frozen section histology cryoembedder and cryostat

**10:52 – 11:00 am****PRESENTER:** John M. Strasswimmer, MD, PhD**TITLE:** **DermBase: A Web-based Research Platform Producing a 19,061 Tumor Prospective Mohs Study (and More)****AUTHORS:** John M. Strasswimmer, MD, PhD<sup>1,2</sup>; Murad Alam, MD<sup>3</sup>**INSTITUTIONS:** 1. Director, Melanoma & Cutaneous Oncology Program, Lynn Cancer Institute, Boca Raton, FL, United States 2. Biochemistry, Florida Atlantic University, Boca Raton, FL, United States 3. Dermatologic Surgery, Northwestern University, Chicago, IL, United States**PURPOSE:** Mohs surgery and dermatology studies suffer from low "N" of patients. We sought to design an online web-based collaborative research system to overcome logistical, IRB, and other issues to create massive prospective studies.

**DESIGN:** A computer based online system, DermBase, was designed. HIPAA, IRB, financial, ethical, and other issues were addressed collaboratively. Mohs surgeons were invited to propose research topics, which were then collaboratively vetted to produce a research protocol. Subsequently, other proposals for research were invited to be proposed and vetted online

**SUMMARY:** Invitations were sent to 71 Mohs surgeons in a mix of academic and private practice settings in the United States. A total of 32 enrolled to participate. Data were collected prospectively over a 28 week period. A total of 19,061 tumor-related datasets. Outcomes included incidence of rare malignancies, variation in patient safety practices, and rate of treatment-related adverse events. There were no withdrawals of participants from DermBase.

**CONCLUSION:** DermBase is a real-time collaborative online research platform which is able to facilitate large prospective clinical studies rapidly which are important to the community of Mohs surgeons. This platform is available for the Mohs College members.



DermBase is a collaborative tool for Mohs surgeons.

## 11:02 – 11:10 am

**PRESENTER:** Nicole F. Velez, MD

**TITLE:** Skin Cancer Outcomes in Patients with Chronic Lymphocytic Leukemia: A 20-year Retrospective Cohort Study

**AUTHORS:** Nicole F. Velez, MD<sup>1,2</sup>; Pritesh Karia, MPH<sup>1</sup>; Ye Guo, MScS<sup>1</sup>; Victor A. Neel, MD, PhD<sup>2</sup>; Chrysalyne D. Schmults, MD<sup>1</sup>

**INSTITUTIONS:** 1. Dermatology, Brigham and Women's Hospital, Boston, MA, United States 2. Dermatology, Massachusetts General Hospital, Boston, MA, United States

**PURPOSE:** To describe outcomes of skin cancer in patients with chronic lymphocytic leukemia (CLL).

**DESIGN:** A retrospective cohort study of patients diagnosed with both CLL and skin cancer was conducted over a 20-year period at 2 tertiary care centers. Medical records including clinic notes, operative notes, and pathology reports were reviewed. Demographics, CLL stage, tumor features, treatment, recurrence and metastases were recorded. Results were tabulated. Multivariate logistic regression analysis of factors potentially associated with skin cancer recurrence and death is underway including age, gender, multiple cancer formation, tumor diameter depth and differentiation, duration of CLL, CLL disease stage, and history of chemotherapy.

**SUMMARY:** 300 patients met inclusion criteria. A preliminary analysis of a randomly-selected 50 patient subset of this study cohort was performed. This group had a mean follow up of 10 years after CLL diagnosis, and mean age at CLL diagnosis of 64 years. 58% were men. 42% of patients received chemotherapy.

20% had died from CLL by end of follow up. In addition to skin cancer, 30% of patients developed a non-skin secondary malignancy. 10% of subjects developed nodal and distant metastasis from skin cancer and 12 % died of disease. Risk of death from melanoma was 22% (4 of 18 melanoma cases) and 4% from invasive SCC (2 of 47 SCC cases).

**CONCLUSION:** Our preliminary results indicate patients with CLL may have a higher risk of dying from skin cancer than the general skin cancer population from both melanoma, and SCC. A full analysis of the entire 300 person study cohort (the largest to date studying skin cancer outcomes in CLL patients) is underway and will help to define outcomes from skin cancer and other secondary malignancies in CLL patients.

## 11:12 – 11:20 am

**PRESENTER:** Craig C. Miller, MD

**TITLE:** Adnexal Carcinomas: A Case Series and Comparison of Mohs Micrographic Surgery vs. Wide Local Excision for Local Treatment

**AUTHORS:** Craig C. Miller, MD<sup>1</sup>; Preethi R. Raghu; Paul Bogner, MD<sup>3,1</sup>; Nathalie C. Zeitouni, MD<sup>1</sup>

**INSTITUTIONS:** 1. Dermatology, Roswell Park Cancer Institute, Buffalo, NY, United States 2. School of Medicine, Albany Medical College, Albany, NY, United States 3. Pathology, Roswell Park Cancer Institute, Buffalo, NY, United States

**PURPOSE:** Adnexal carcinomas (ACs), also known as cutaneous appendageal carcinomas, are rare and aggressive neoplasms derived from the eccrine or the folliculosebaceous-apocrine units of the skin. ACs normally manifest themselves on the head and neck region of middle-aged to older adults. Treatment options depend upon the stage at presentation but initial therapy for localized tumors has traditionally involved either wide local excision (WLE) or Mohs micrographic surgery (MMS). The objective of the present study is to describe the presenting characteristics of these rare cutaneous malignancies and to analyze the efficacy of localized tumor therapies (WLE vs. MMS) in a series of 37 patients presenting with adnexal carcinomas at a tertiary cancer treatment center.

**DESIGN:** We used the clinical database at a tertiary care cancer center to compile 37 confirmed cases of AC since January 2000. We then looked for associations between patient demographics (age, gender), tumor differentiation/histological subtype, tumor stage, tumor site, and treatment (WLE vs MMS) with outcome measures (local recurrence, metastasis, and overall survival).

**SUMMARY:** In our study population, eccrine carcinomas were the most prevalent of the cutaneous ACs (73.0%; 13.5% were of sebaceous origin, 8.1% of apocrine origin, and there was one case each of a mixed malignant tumor and a poorly differentiated adnexal carcinoma). The most common specific histological subtypes of tumors were microcystic adnexal carcinoma (18.9%)

# Scientific Abstract Session — Thursday, May 3: 10:30 – 11:30 am

and porocarcinoma (13.5%). ACs presented in older adults (average age at presentation 68.6+/-12.1 yrs, range 45-96) with no gender preference. Mean follow-up was 3.9 years. Overall, ACs favored presentation on the head and neck (46.0% vs 32.4% for the trunk, 10.8% each for the lower and upper limbs), however for males the trunk was the most likely site for an AC to present (47.4%) while in females the head and neck was the predominant site (66.7%). 43.2% of patients had a history of prior skin cancer. WLE was the most common initial treatment (51.3%; 40.5% of patients were initially treated by MMS, 2 patients with extra-mammary Paget's disease were treated with topical imiquimod, one patient was treated with XRT). Tumor stage (WHO classification, T1 = tumor < 2 cm, T2 = tumor 2-5 cm, T3 = tumor > 5 cm) did not appear to direct patients preferentially to either of these treatment modalities, however, MMS was more commonly performed on lesions of the face. Evaluation of outcome measures reveals that patients treated by MMS appeared to have a better prognosis with no local recurrences and only one case of metastasis and one death; patients treated by WLE fared worse with one local recurrence and 5 cases of metastasis and 4 deaths. However, the cases in which these patients succumbed to their disease were eventually identified as being secondary cutaneous ACs and these lesions represented early metastasis of a previously unidentified internal malignancy (3 breast CA, one lung CA, and one esophageal CA). The one patient treated by XRT was found to have widespread metastasis arising presumptively from the primary cutaneous AC and he succumbed to his disease. All of the patients who died from their disease, whether associated with a primary or secondary cutaneous AC, had lesions of "eccrine" origin. There was no statistically significant prognostic risk depending upon tumor stage, age, gender or anatomic location.

**CONCLUSION:** Adnexal carcinomas are rare cutaneous tumors with the potential for metastasis and death. In our decade long experience, tumors having histology consistent with eccrine origin were by far the most common pattern of differentiation with microcystic adnexal carcinomas and porocarcinomas being the most common subtypes. Anatomical distribution and history of prior skin cancers in these patients suggests a relationship between these lesions and sun exposure. Traditional tumor staging based upon the initial clinical presentation of the primary tumor (T1-3) may have little value in predicting outcome. Outcome is almost exclusively linked to identification of an underlying primary internal malignancy and all fatal outcomes were associated with ACs of "eccrine" origin. The risk of an underlying malignancy does not appear to depend upon tumor stage, histological subtype, age, gender or anatomic location. Both MMS and WLE were highly effective at limiting local recurrence (one case of local recurrence out of 34 patients, overall local control rate of 97.0%); there was no significant difference between local control rates for MMS (15/15) and WLE (18/19).

**11:22 – 11:30 am**

**PRESENTER:** Ashley Wysong, MD, MS

**TITLE:** **Is Metastatic Basal Cell Carcinoma on the Rise?: A Systematic Review from 1981-2011**

**AUTHORS:** Ashley Wysong, MD, MS<sup>1</sup>; Sumaira Z. Aasi, MD<sup>1</sup>; Jean Y. Tang, MD, PhD<sup>1</sup>

**INSTITUTION:** 1. Department of Dermatology, Stanford University, Stanford, CA, United States

**PURPOSE:** Metastatic BCC (mBCC) is rare with an estimated incidence of 0.0028% to 0.55%. A review was published by Domarus et al. (JAAD 1984) highlighting 170 cases of mBCC from 1894 to 1980, however, no systematic review has been performed in the last 30 years.

**DESIGN:** An extensive literature search was performed for all cases of mBCC from 1981-2011. A total of 236 cases were identified with 43 cases excluded (21 not in English, 5 in BCNS, 4 published elsewhere, 9 did not meet mBCC criteria) for a total of 193 cases. Two-sided X2 tests were performed to calculate differences of proportion.

**SUMMARY:** The M:F ratio of mBCC patients was 2.5:1 (72% male) in 1981-2011. The majority of cases were reported in Caucasians, however 6, 5, and 3 cases were observed in Asian, Black, and Hispanic individuals, respectively. The average age of onset of the primary tumor in our review was 52 years (median 50 years), which was increased by 5 years over the median age of 45 years reported by Domarus.

The average size of primary tumors was 7.5 cm in the largest dimension, with a range of 0.5 - 40 cm. The locations for the primary BCC tumors were similar over time with the most common site being head and neck (64%), followed by the trunk (21%), and extremities (5%). In cases on the head and neck, there was a significant increase in the percentage coming from the scalp (26% vs. 11% reported by Domarus,  $p=0.01$ ). Of note, there were 8 mBCC cases reported in 1981-2011 from the genitalia (5 vulva, 3 scrotum).

Nodal metastases were seen in 51% of cases, which was significantly increased over the 40% observed by Domarus ( $p=0.01$ ). The other common sites of metastases in this series included the lungs (34%), bone (21%), skin/soft tissues (11%), and the liver (4%).

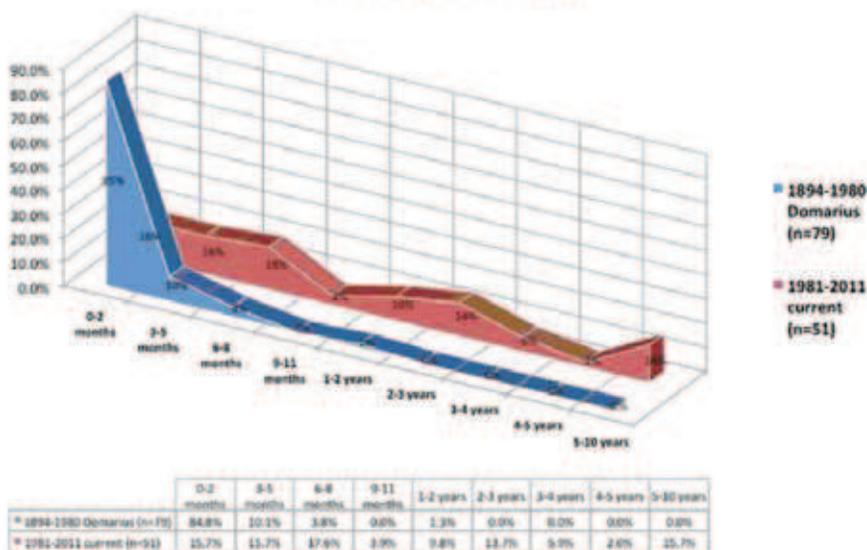
The average interval between the onset of the primary tumor and metastasis was 9.6 years. Despite metastasis, the majority of cases were reported living at the time of publication (74%). Of those reported deceased (26%), the average survival was 1.97 years. In contrast, Domarus reported a median survival of 8 months, with 85% deceased within the first 3 months (Figure 1). From 1981-2011, 50% of those reported deceased lived longer than 1 year after diagnosis of metastases, while 15% survived 5-10 years. In addition, 25% of those who lived less than 1 year had metastases on initial presentation with an average neglect of treatment for the primary tumor of 15 years (range 3-24 years).

# Scientific Abstract Session — Thursday, May 3: 10:30 – 11:30 am

Eighty cases reported the use of adjuvant therapy: radiation (54%), chemotherapy (28%), and radiation + chemotherapy (18%). The most commonly reported regimens included the use of cisplatin, bleomycin, 5-FU, and carboplatin. There was no difference in the proportion of patients reported alive at time of publication with adjuvant therapy. However, of those reported deceased, individuals who received adjuvant therapy lived 5 months longer (26.5 vs. 21.5 months); clinically though not statistically significant.

**CONCLUSION:** We report a total of 193 cases of mBCC in the literature from 1981-2011 for an updated total of 363 cases from 1894-2011. This number is likely an underestimate of global mBCC as only reported cases were included. There appears to be an increase in the number of cases of mBCC with an average of 6.4 cases/year in the last 30 years compared to 2 cases/year from 1894-1980. This may be due to publication or reporting bias, however, the rise in mBCC parallels the increasing incidence of sporadic BCC and is concerning in the era of high cure rates with Mohs micrographic surgery. Finally, we saw a positive shift in the survival of patients with mBCC with a higher proportion surviving at the time of publication and a longer observed survival time. There was a trend toward increased survival with adjuvant therapy that will likely continue to improve with the development of novel Hedgehog inhibitors and other new targeted therapies. Further population-based studies are needed to delineate the risk factors for progression to mBCC and to identify a subset of patients in need of increased surveillance and adjuvant therapies.

**Time to Death after Onset of Metastasis**  
(of those reported deceased)



**11:34 – 11:40 am****PRESENTER:** Joseph K. Francis, MD**TITLE:** Myocutaneous Island Pedicle Flaps of the Upper Eyelid**AUTHORS:** Joseph K. Francis, MD<sup>1,2</sup>; Richard G. Bennett, MD<sup>1,2</sup>**INSTITUTIONS:** 1. Dermatology, Keck School of Medicine at USC, Los Angeles, CA, United States 2. Medicine (Dermatology), David Geffen School of Medicine at UCLA, Los Angeles, CA, United States**PURPOSE:** The myocutaneous island pedicle flap on the upper eyelid is not well described in the literature. This flap can be very useful in this anatomic location.**DESIGN:** We present a case series of 5 patients with tumors on the upper eyelid treated with Mohs surgery. Wounds on these five patients were closed using island pedicles flaps on the upper eyelid either alone or with other flaps. The subcutaneous island pedicle flap is based on the concept of underlying loose subcutaneous tissue, usually fatty, enhancing flap movement. On the upper eyelid such underlying subcutaneous tissue is absent. However, the orbicularis oculi muscle that attaches to overlying skin has a rich blood supply. Thus a myocutaneous island pedicle flap based on underlying muscle can be created in this location and it moves easily. We have found that myocutaneous island pedicle flaps in this location are best created so that the flap moves in the horizontal rather than vertical direction.**SUMMARY:** All 5 patients in this case series were evaluated at 1 week 1 month and 1 year post operatively. Patients all had excellent cosmetic results with no ectropion.**CONCLUSION:** The myocutaneous island pedicle flap is useful for closure of upper eyelid defects.

Myocutaneous island pedicle flap designed and cut to close defect on right lateral upper eyelid.



Myocutaneous island pedicle flap horizontally advanced to close defect on right lateral upper eyelid.

**11:41 – 11:47 am****PRESENTER:** Matthew J. Mahlberg, MD**TITLE:** A New Spin on the Spiral Flap: Experience with Sixty-three Patients**AUTHORS:** Matthew J. Mahlberg, MD<sup>1,2</sup>; Brian C. Leach, MD<sup>2</sup>; Joel Cook, MD<sup>2</sup>**INSTITUTIONS:** 1. Dermatology Associates of Colorado, Englewood, CO, United States 2. Department of Dermatology and Dermatologic Surgery, Medical University of South Carolina, Charleston, SC, United States**PURPOSE:** The topographic contours of the lower nasal third are unique and present challenges in surgical reconstruction. In particular, the preservation or recreation of the reflective convexity of the ala and the adjacent shadowed concavity of the alar groove is essential. Numerous reconstructive options are available for resurfacing this region of the nose after tumor extirpation. However, many of the available options provide tissue coverage at the expense of native topography. The inherent curvilinear design of a spiral flap lends itself well to recreating this native topographic form. Several spiral flaps have been described in the literature. In this presentation, we will describe appropriate patient selection as well as the design and execution of a logarithmic spiral flap for reconstruction of distal nasal surgical defects following Mohs micrographic surgery. Particular emphasis will be given to understanding the geometric variations of the spiral shape and the influence of this variation on reconstructive results.**DESIGN:** A retrospective analysis was performed of all spiral flaps performed over a five-year period. Clinical documentation and photographs were reviewed to assess results. Intraoperative step-by-step photographs were taken to illustrate the operative procedure.**SUMMARY:** Sixty-three patients on whom the spiral flap was performed were identified over a five-year period. The flap was used to successfully reconstruct alar defects ranging in size from 5mm to 15mm in diameter. No persistent complications were noted.

**CONCLUSION:** When properly designed and executed, the spiral flap is a reliable, reproducible, single-stage, local flap that can serve as a workhorse for common alar defects following Mohs micrographic surgery.

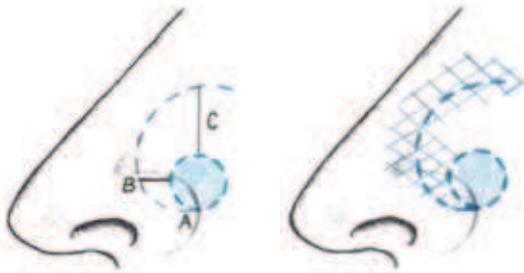


Figure 1. Spiral Flap Design; Area Undermined in Execution of the Spiral Flap



Figure 2. Surgical defect at alar groove repaired with spiral flap and three-month follow-up demonstrating excellent recontour of alar topography.

**11:48 – 11:54 am**

**PRESENTER:** Jamie L. McGinness, MD

**TITLE:** Prolonging the Primary Pivoting Point: Mathematical Effect of Prolonging the Primary Burow's Triangle on Trilobed Transposition Flap Rotation

**AUTHORS:** Jamie L. McGinness, MD<sup>1</sup>; Tri H. Nguyen, MD<sup>1</sup>

**INSTITUTION:** 1. Dermatology, Northwest Diagnostic Clinic, Houston, TX, United States

**PURPOSE:** The effect of lengthening the primary Burow's triangle and its effects on the total angle of rotation for a bilobed transposition flap (BLTF) was previously evaluated at the ACMS 2010 meeting. The purpose of this study was to evaluate lengthening of the primary Burow's triangle and its effect on the total angle of rotation for a trilobed transposition flap (TLTF).

**DESIGN:** Utilizing a TLTF design with primary, secondary, and tertiary lobes equal in size to the wound defect size and AutoCad (engineering design software); the length of the primary Burow's triangle was progressively lengthened to evaluate how the total angle of rotation of the TLTF changes.

**SUMMARY:** It was found that an inverse relationship exists with the total angle of rotation and the lengthening of the primary Burow's triangle. As the Burow's triangle is lengthened the total angle of rotation decreases (Figure 1). The formula  $\sin(\text{angle of rotation}/6) = \text{radius of the defect}/(\text{radius of the defect} + \text{length of the Burow's triangle})$  can be used to calculate the Burow's triangle length for a given angle of rotation when using sizes for the primary, secondary, and tertiary lobes equal to the size of the wound defect. Furthermore, if the angle of total rotation of the TLTF is 135° (45° between each lobe) then the length of the primary Burow's triangle is equal to 1.6131259 multiplied by the radius of the wound defect. Table 1 further describes the relationship of the different lengths of the primary Burow's triangle and the total angle of rotation.

**CONCLUSION:** The TLTF is a useful reconstructive option for defects on the distal nose.<sup>1</sup> Albertini and Hansen described designing the Burow's triangle 1 to 1.5 times the defect diameter.<sup>1</sup> The TLTF is commonly used for distal nasal defects in order to recruit more proximal nasal skin and allow for a more vertical tertiary lobe decreasing the possibility of alar distortion. The TLTF is especially useful for distal nasal defects when an oblique secondary lobe occurs with the use of a BLTF. The primary Burow's triangle length and the total angle of rotation of the TLTF needed will be dependent on the defect location. For example, the more distal the location of a wound defect on the nose the longer the primary Burow's triangle needed to achieve the larger the angle of rotation required for a more vertical orientation of the tertiary lobe. It should also be noted that the shorter the primary Burow's triangle and the larger the total angle of rotation the higher the pivotal restraint of the flap.

As a result, lengthening of the primary Burow's triangle in a TLTF will decrease the total angle of flap rotation and pivotal restraint.

Furthermore, changes in the primary Burow's triangle length can be used to manipulate the exact orientation of the tertiary lobe to obtain a more vertical orientation helping decrease the possibility of alar distortion.

1. Dermatol Surg 2010;36:1726–1735.

Table 1.

Burow's triangle length (pivot point) measured from the defect edge	Total degree of rotation (primary, secondary, and tertiary lobe equal to defect size
Radius	180
60% diameter or 120% of radius	162.21415
70% diameter or 140% of radius	147.74591
80% diameter or 160% of radius	135.71919
90% diameter or 180% of radius	125.54899
Diameter	116.82732
1.5 diameter	86.86507
1.6131259 radius	135

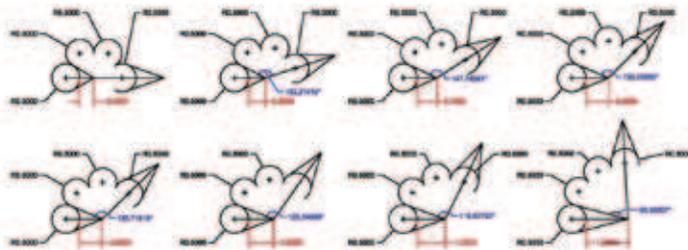


Figure 1.

**11:55 am – 12:01 pm**

**PRESENTER:** Rupert B. Barry, MB, BCh, BAO

**TITLE:** The Use of an Orbicularis Oris Hinge Flap to Recreate Volume and the Convex Contour of a Deep Lower Lip Vermilion Defect

**AUTHOR:** Rupert B. Barry, MB, BCh, BAO<sup>1</sup>

**INSTITUTION:** 1. Dermatology Surgical Unit, Royal Victoria Infirmary, Newcastle upon Tyne, United Kingdom

**PURPOSE:** Excision of a large, lower lip squamous cell carcinoma may result in a deep surgical defect with significant loss of orbicularis oris muscle. A lip wedge repair may be utilized though it may result in microstomia. An alternative cosmetic subunit approach to such complex, deep mucocutaneous lower lip defects is to utilize an island pedicle flap to close the cutaneous portion of the wound and a labial mucosal advancement to close the mucosal portion. However, there is frequently a persistent step-off deformity due to missing underlying muscle. A muscular hinge flap, harvested from the residual, adjacent orbicularis oris muscle may be used to restore both volume and contour to the lower lip vermilion. In addition, there is preservation of sphincter function as well as maintenance of oral aperture width.

**DESIGN:** Two similar cases are described to illustrate the technique and its advantages. Both cases were solid organ transplant recipients who had complete excision of an aggressive squamous cell carcinoma from the lower lip by frozen tissue Mohs micrographic technique. The defects were complex defects involving both the vermillion and cutaneous lower lip. There was significant resection of orbicularis oris in both cases. Both patients had similar reconstruction (an island pedicle flap to repair the cutaneous portion and a labial mucosal advancement to repair the mucosal defect). The first patient (hinge flap not used) had a persistent step-off contour deformity which was evident when his mouth was open. Oral sphincter function was preserved. In the second patient, a muscular hinge flap, based on the adjacent intact orbicularis oris, was developed. It is important to preserve a vascular pedicle equal to (at least) twenty-five per cent of the total hinge flap length in order to ensure flap viability. The flap is loosely secured to the base of the defect with a 6-0 rapidly absorbable polyglactin 910 polyfilament suture. The repair was completed by a labial mucosal advancement flap. Lower lip volume and contour was successfully recreated.

**SUMMARY:** The benefits of the incorporation of a muscular hinge flap in the repair of a deep surgical defect of the lower lip are presented. Clinical cases highlight the technique and the cosmetic advantages to be gained from such a reconstruction. This is a relatively straightforward technique which can optimize the aesthetic repair of complex lower lip wounds.

**CONCLUSION:** A muscular orbicularis oris hinge flap may be used to successfully recreate both volume and contour in deep, complex, lower lip vermillion defects.



Orbicularis oris hinge flap

**12:02 – 12:08 pm**

**PRESENTER:** Richard G. Bennett, MD

**TITLE:** Z-plasty for Correction of Nasofacial Webbing

**AUTHORS:** Joseph K. Francis, MD<sup>1,2</sup>; Richard G. Bennett, MD<sup>1,2</sup>

**INSTITUTIONS:** 1. Dermatology, Keck School of Medicine at USC, Los Angeles, CA, United States 2. Medicine (Dermatology), David Geffen School of Medicine at UCLA, Los Angeles, CA, United States

**PURPOSE:** To demonstrate how to design a Z-plasty to correct webbing/tenting in the apical lip triangle between the nose and cheek.

**DESIGN:** A Z-plasty is a technique to lengthen and redirect scars; it is often used to efface webbing across concavities. Occasionally, webbing occurs which obliterates the apical lip triangle between the cheek and nose especially after cheek to nose transposition flaps. To correct this tenting a Z-plasty is performed whereby a triangle of cheek tissue is cut and interpolated medially into the tented area (Figure 1). We present two examples of this technique. Patient 1 had a cheek transposition flap which resulted in nasofacial webbing. Patient 2 had an island pedicle flap to close a defect in the apical lip triangle which resulted in nasofacial tenting (Figure 2). Both cases were revised after patients were unhappy with their cosmetic appearance.

**SUMMARY:** The Z-plasties performed effaced the tenting in the apical triangle of the upper lip.

**CONCLUSION:** Z-plasty is a useful flap technique to correct webbing or tenting across the upper lip apical triangle concavity between the cheek and nose.



Figure 1. Z-plasty cut (left) and moved into place (right). Note that cheek tissue is moved medially and inferiorly to fill in the excised tented area.



Figure 2. Before (left) and after (right) z-plasty. Note release of tenting and softened appearance of melolabial cheek fold.

**12:09 – 12:15 pm**

**PRESENTER:** Kenny J. Omlin, MD

**TITLE:** The Utility of the Pursestring Pulley Combination Stitch for the Repair of a Wide Variety of Nasal Defects Following Mohs Surgery

**AUTHOR:** Kenny J. Omlin, MD<sup>1,2</sup>

**INSTITUTIONS:** 1. Dermatology, University of California, Davis, Sacramento, CA, United States 2. Mohs Surgery, Kaiser Permanente, Napa, CA, United States

**PURPOSE:** The nose is the most common cosmetic unit on the face requiring Mohs surgery for the effective removal of non-melanoma skin cancers. The unique topography of the nose, combined with the characteristic tissue types of the various subunits can pose a significant challenge to the reconstructive surgeon. Subtle alterations in structure and form may lead to displeasing aesthetic outcomes as well as impaired nasal airflow. Repair techniques described in the literature include secondary intention, primary closure, full-thickness skin grafts, and a variety of flaps. We describe a novel technique utilizing a combination of an intradermal pursestring suture combined with an overlying pulley stitch for the repair of a wide variety of nasal defects.

**DESIGN:** 24 patients underwent Mohs surgery for removal of either squamous cell carcinoma or basal cell carcinoma involving the nose. Defect sites included all nasal subunits, as well as, junctional points, such as the alarfacial groove and nasofacial sulcus. Defect size ranged between 0.4 cm x 0.3 cm to 1.7 cm x 1.5 cm. Immediate repair was performed in all cases utilizing the pursestring pulley combination suture technique. After meticulously undermining the surgical defect, an intradermal absorbable pursestring suture was placed. Subsequently, a single cutaneous, non-absorbable pulley suture was placed in such a fashion as to achieve minimal free margin distortion. The cutaneous suture was removed at one week. Patients were evaluated at one week, one month, and two months.

**SUMMARY:** After one month, all patients achieved excellent functional and aesthetic outcomes (Figure 1 and Figure 2).

**CONCLUSION:** The pursestring pulley combination stitch provides an excellent repair option for nasal defects following Mohs surgery. The centralized vector forces created by the pursestring stitch results in a significant decrease in the size of the primary defect. The strategic placement of the cutaneous pulley stitch not only closes the defect completely but also orients the vector forces to avoid free margin distortion. The combination of excellent aesthetic outcomes, minimal operative time, technical ease, and minimal patient morbidity make the pursestring pulley repair a valuable addition to the armamentarium of the reconstructive surgeon.



Figure 1. Left alar defect, pursestring in-place, pulley in-place, 1 month post-op

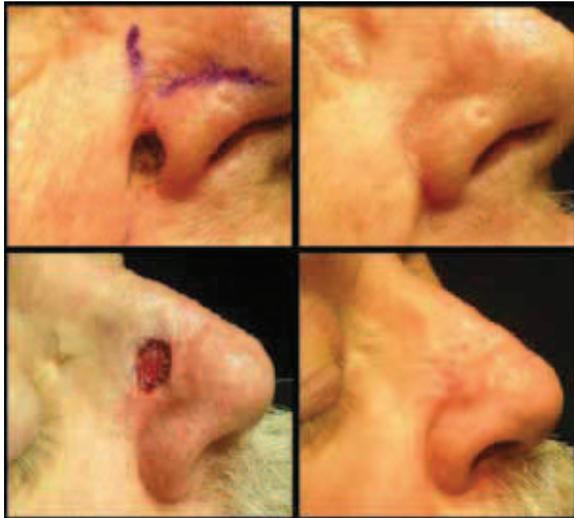


Figure 2. Top Row: Alarfacial Groove (Defect, 1 mo. result); Bottom Row: Nasal Sidewall (Defect, 1 mo. result)

## 3:34 – 3:42 pm

**PRESENTER:** Michael Campoli, MD, PhD

**TITLE:** Assessment of the Clinical and Pathologic Characteristics of Perineural Invasion in Patients with Cutaneous Squamous Cell Carcinoma

**AUTHORS:** Michael Campoli, MD, PhD<sup>1,2</sup>; David G. Brodland, MD<sup>2</sup>; John A. Zitelli, MD<sup>2</sup>

**INSTITUTIONS:** 1. Fairview Medial Group, Wyoming, MN, United States 2. Zitelli and Brodland P.C., Pittsburgh, PA, United States

**PURPOSE:** Background: Much of the available information regarding the incidence as well as clinical significance of perineural invasion (PNI) in cutaneous squamous cell carcinoma (CSCC) has been obtained from retrospective studies that have failed to present a unified definition of PNI, have utilized conventional techniques to evaluate histopathology and have not taken into account heterogeneity of the patient populations investigated as well as histopathological characteristics of the lesions analyzed.

**Purpose:** To more appropriately characterize the biological and clinical significance of PNI in CSCC and to determine the usefulness of documenting PNI in histologic specimens of CSCC as a marker to improve the precision of the prognostic assessment of patients.

**DESIGN:** A multicenter prospective analysis of the clinical and pathological characteristics of patients undergoing Mohs surgery for CSCC within four academic and eleven private practice Mohs micrographic surgery sites over twenty five working days was performed. Patients were separated by PNI status and variables were compared between categories using independent t-tests or chi-square tests, as appropriate. All continuous variables were checked for normality and type I error rate was set at  $\alpha=0.05$ .

**SUMMARY:** The results of the analysis of 753 CSCC from 645 patients are summarized in Table 1.

**CONCLUSION:** The incidence of PNI was found to be 3.9%. PNI was not found to be associated with patient age, gender, referral status (whether the patient was referred by an outside physician) or the type of treatment center, i.e. academic versus private practice setting. The presence of PNI was significantly correlated with preoperative tumor size, recurrent, previously treated and symptomatic tumors as well as the presence of lymphadenopathy. Furthermore, PNI was significantly associated with histologic variables such as degree of tumor differentiation, tumor thickness, tumors > 6mm and Clarks level > V. From a clinical standpoint, PNI was significantly correlated with the number of Mohs layers and maximum margin required to clear the tumor. To the best of our knowledge the present study is the first prospective multicenter study to address the clinical relevance of PNI in CSCC through a comprehensive analysis of the clinical and pathological characteristics of patients undergoing Mohs surgery. The association of PNI with clinicopathological indicators of poor prognosis such as lymphadenopathy, tumor thickness, tumor differentiation and maximum margin required to clear the tumor,

argues for a potential role of PNI in the clinical course of CSCC and suggests that documenting PNI in histologic specimens of CSCC may serve as a marker to improve the precision of the prognostic assessment of patients. Follow-up studies are currently in progress to determine the whether PNI in CSCC is associated with the clinical course of the disease.

**Table 1. Summary of Clinical and Pathologic Characteristics of Patients with Cutaneous Squamous Cell Carcinoma**

	PNI (n=35)	No PNI (n=718)	P value
<b>Age</b>	76.4 ± 11.9	74.4 ± 11.0	0.056
<b>Gender</b>			
Male	26 (74%)	517 (72%)	
Female	9 (26%)	201 (28%)	0.769
<b>Preoperative Area</b>	4.0 [1.2, 14.0]	1.0 [0.5, 2.1]	<0.001
<b>Referred</b>	26 (74%)	520 (72%)	0.810
<b>Specific Location</b>			
Ear	3 (9%)	76 (11%)	
Eyelid	1 (3%)	12 (2%)	
Face	17 (49%)	220 (31%)	
Foot	0	3 (<1%)	
Hand	0	45 (6%)	
Lip	0	31 (4%)	
Lower Ext	0	82 (11%)	
Neck	1 (3%)	19 (3%)	
Nose	2 (6%)	50 (7%)	
Scalp	7 (20%)	105 (15%)	
Trunk	2 (6%)	30 (4%)	
Upper Ext	2 (6%)	45 (6%)	0.321
<b>General Location</b>			
Ext	2 (6%)	175 (24%)	
Head and Neck	31 (89%)	513 (71%)	
Trunk	2 (6%)	30 (4%)	0.039
<b>Tumor type</b>			
Primary	21 (60%)	608 (85%)	
Recurrent	13 (37%)	110 (15%)	
Primary/Recurrent	1 (3%)	0	<0.001
<b>Lymphadenopathy</b>	2 (6%)	7 (1%)	0.012
<b>Symptoms</b>	25 (71%)	304 (42%)	0.001
<b>Previous Treatment</b>	14 (40%)	120 (17%)	<0.001
<b>Risk Factors</b>	11 (31%)	99 (14%)	0.004
<b>Differentiation</b>			
Poorly	13 (37%)	16 (2%)	
Well	22 (63%)	702 (98%)	<0.001
<b>Clark's V</b>	23 (66%)	43 (6%)	<0.001
<b>Thickness, mm</b>	6.4 ± 3.8	2.5 ± 2.3	<0.001
<b>Thickness</b>			
<6mm	17 (49%)	624 (87%)	
≥6mm	18 (51%)	63 (9%)	<0.001
<b>Invasion&gt;Fat</b>	23 (66%)	35 (5%)	<0.001
<b>Postoperative Area<sup>1</sup></b>	14.0 [3.5, 27.0]	2.3 [1.3, 4.8]	<0.001
<b>Mean # of Layers</b>	2.7 ± 1.7	1.4 ± 0.7	<0.001
<b>Layers</b>			
1	5 (14%)	503 (70%)	
2	16 (46%)	163 (23%)	
3	6 (17%)	42 (6%)	
4	5 (14%)	7 (1%)	
5	1 (3%)	2 (<1%)	
6	1 (3%)	1 (<1%)	
≥0	1 (3%)	0	<0.001
<b>Maximum margin (mm)</b>	8.1 ± 6.6	2.9 ± 2.2	<0.001
<b>Setting</b>			
Private practice	14 (48%)	373 (52%)	
University	15 (52%)	345 (48%)	0.698

Data are expressed as mean ± SD or n (%) unless otherwise specified  
<sup>1</sup> Data were not normally distributed, presented as median [IQR] and tested across groups using a Mann-Whitney test.

## 3:42 – 3:50 pm

**PRESENTER:** Kevin W. O'Bryan, MD

**TITLE:** An Evolving Paradigm for the Workup and Management of Very High Risk Cutaneous Squamous Cell Carcinoma

**AUTHORS:** Kevin W. O'Bryan, MD<sup>1</sup>; Désirée Ratner, MD<sup>1</sup>

**INSTITUTION:** 1. Dermatology, Columbia University Medical Center, New York, NY, United States

**PURPOSE:** The purpose of this study is to establish a protocol for the workup and management of very high-risk cutaneous squamous cell carcinoma (VCSCC). Low and moderate risk cutaneous squamous cell carcinoma (CSCC) can be managed effectively with conservative measures. However, VCSCCs display more aggressive behavior, with a propensity for extensive local invasion and metastasis. Importantly, they often have a greater number of high-risk features on initial presentation. Identifying VCSCC early, and treating these patients with more aggressive intervention, can decrease their morbidity and mortality.

## Tromovitch Award Abstract Session — Thursday, May 3: 3:30 – 4:30 pm

The current standard of care for patients who cannot be cured by surgery alone is adjuvant radiation, chemotherapy, or combination therapy, which are given for perineural involvement, bony invasion, satellitosis, in-transit metastasis, or regional or distant metastasis. Few studies have rigorously analyzed the effectiveness of adjuvant therapies in managing VCSCC, and experience with squamous cell carcinoma of the head and neck (HNSCC) has shown them to have low cure rates and high morbidity. As a result, there is great interest in using targeted molecular inhibitors such as the epidermal growth factor (EGFR) receptor inhibitor cetuximab to treat metastatic or unresectable VCSCC.

Cetuximab is a human-murine chimeric monoclonal antibody against EGFR which has shown promise in treating locally advanced, recurrent, or metastatic HNSCC. An increasing number of studies and case reports have shown its benefit in treating metastatic or unresectable CSCC. No randomized, controlled trials have compared the use of cetuximab with the established standard of care in patients with VCSCC. We have analyzed our clinical experience with this intervention at our institution, to assess the benefits of cetuximab monotherapy for VCSCC, as well as the effectiveness of early VCSCC identification and management.

**DESIGN:** This retrospective chart review compares VCSCC patients who received aggressive early intervention with those who did not. High risk cutaneous squamous cell carcinoma (HCSCC) was defined as a tumor with three or more high risk features on initial clinical and histologic evaluation, including: location on the head and neck, size > 2.0 cm, poor differentiation, recurrence, occurrence in a previously radiated field, and immunosuppression. The subset of SCC qualifying as VCSCC included tumors displaying perineural, parotid, periorbital, cartilaginous, or bony invasion, in-transit metastasis, or regional or distant metastasis.

Once a tumor was classified as HCSCC or VCSCC, patients were divided into six groups: HCSCC treated with surgery alone, HCSCC treated with surgery and standard adjuvant chemotherapy and/or radiation, VCSCC treated with surgery alone, VCSCC treated with surgery and standard adjuvant chemotherapy and/or radiation, VCSCC treated with adjuvant cetuximab, and VCSCC treated with adjuvant cetuximab and radiation. The outcomes of patients in these groups were compared to determine whether VCSCC patients treated with early intervention and adjuvant cetuximab had better outcomes.

**SUMMARY:** A chart review from 2000 through 2011 was performed. A total of 25 cases of HCSCC and VCSCC were identified. The shortest period of follow-up was nine months, with medians of 1.5 years, 1 year, and 3 years for all patients, non-responders, and responders respectively (range 0.5 to 5 years). Four patients with HCSCC were treated with surgery alone, with a 100% response rate. One patient with HCSCC was treated with surgery and adjuvant radiotherapy with a complete response. Four patients with VCSCC were treated with surgery alone, with 3/4 (75%) of patients suffering from disease progression within one year. Eleven patients with VCSCC were treated with surgery and chemotherapy or

radiation (or combination). Four (36.4%) had a complete response, and seven (64%) suffered from disease progression within one year, and ultimately died of their disease. Six patients with VCSCC were treated with adjuvant cetuximab. Three patients (50%) showed complete response, two (40%) showed disease progression, and one could not be assessed due to inability to tolerate the infusions (17%). One patient with VCSCC was treated with cetuximab and radiation, and shows no evidence of disease progression at two years follow-up.

**CONCLUSION:** This retrospective review of HCSCC and VCSCC patients suggests that a specific set of tumors benefit from early and aggressive intervention. VCSCC patients treated early in their disease course with the targeted molecular inhibitor cetuximab show a small but improved response rate to treatment. With the exception of one case, cetuximab was well tolerated in our patient population, and those patients were spared the morbidity of radiation and platin-based chemotherapy. Though our study is small in size and retrospective, this evidence has helped to shape our treatment paradigm for HCSCC and VCSCC.

**3:50 – 3:58 pm**

**PRESENTER:** Luciano J. Iorizzo, III, MD

**TITLE:** **The Importance of Vertical Pathology of the Debulking Specimen during Mohs Micrographic Surgery for Lentigo Maligna/Melanoma In Situ**

**AUTHORS:** Luciano J. Iorizzo, III, MD<sup>1</sup>; Isaac M. Chocron, MD<sup>1</sup>; Wilfred A. Lumbang, MD<sup>1</sup>; Thomas Stasko, MD<sup>1</sup>

**INSTITUTION:** 1. Medicine, Division of Dermatology, Vanderbilt University Medical Center, Nashville, TN, United States

**PURPOSE:** Mohs micrographic surgery (MMS) is frequently utilized in the treatment of lentigo maligna/melanoma in situ (LM/MIS) and thin melanomas. The horizontal frozen sections prepared for margin examination during MMS do not allow for examination of the Breslow depth of tumor invasion. Many Mohs surgeons send a full-thickness central debulking specimen for permanent histologic evaluation to ascertain an accurate Breslow measurement of the tumor for staging purposes. Previous studies have shown a discrepancy between the Breslow depth reported on biopsy specimens and the depth seen at excision. The primary purpose of this study was to examine LM/MIS cases and cases of thin melanomas that were treated via MMS to ascertain the number and circumstances of cases which were upstaged (TNM and AJCC classifications) on the basis of the examination of vertical sections from a full-thickness debulking. We contend that sending this central specimen for permanent histology is vital because the original biopsy is not always an accurate representation of the entire specimen.

**DESIGN:** We applied with our institutional IRB and received exempt status. A single center retrospective study was performed examining all cases of LM/MIS and thin melanomas that were treated with MMS from January 1, 2004 – September 30, 2011 in patients

over the age of 18. We included all cases for which a permanent pathology report on the central debulking specimen was available. The primary goal was to determine the number of cases in which the Breslow depth was altered because of the examination of the debulking specimen and utilizing the 2009 (implemented in 2010) 7th edition AJCC staging and TNM staging, the percentage of cases that were upstaged. We also evaluated sex, age, preoperative tumor size, postoperative size, history of non-melanoma skin cancer, and history of melanoma to examine possible differences in the characteristics between the cases which were upstaged and those that were not. We performed a Wilson 2-sided 0.95 confidence interval when analyzing the percentage of cases that were upstaged. When comparing age, preoperative tumor size and postoperative tumor size between tumors that were upstaged and tumors that were not upstaged for significance, we used a Wilcoxon test while we used a Pearson test when examining significance for sex, location, and history of non-melanoma skin cancer or melanoma.

**SUMMARY:** We identified 197 cases of LM/MIS or thin melanomas in 192 patients during the specified time period that were treated with MMS. Of those cases, 173 had permanent section pathology reports available for the central debulking specimen. We identified 14 cases (8.1%; 95% confidence interval 4.9-13.1%) in which the tumor was upstaged to a more aggressive melanoma based on 7th edition, TNM and AJCC criteria. All of the cases were upstaged based on an increase in Breslow depth rather than mitotic rate or ulceration. Thirteen of the cases which were initially diagnosed as melanoma in situ were now diagnosed as invasive melanoma and 1 initially thin melanoma (0.6 mm) showed a depth greater than 1 mm (1.2 mm). There were 11 cases upstaged from TNM stage TIS to T1A, 2 from TIS to T2A, and 1 from T1A to T2A. Using the 7th edition AJCC classification, 11 cases were upstaged from stage 0 to 1A, 2 from 0 to 1B, and 1 from 1A to 1B. In all, the debulking in 4 cases revealed a Breslow depth of 1 mm or greater. In those circumstances, variation in therapy, including a possible sentinel lymph node biopsy might have been considered. There were no significant differences in the age (median age 67 for both groups, P:0.64), sex (79% male upstaged vs. 75% male not upstaged, P:0.76), tumor location (P:0.12), preoperative tumor size, postoperative tumor size, history of non-melanoma skin cancer (P:0.24), and history of melanoma (P:0.53) between tumors that were upstaged and those that were not.

**CONCLUSION:** The data demonstrates that the initial biopsy of a pigmented lesion may not always be an accurate representation of the actual Breslow depth of the lesion. In 8.1% of cases, the melanoma was upstaged when the Mohs debulking section was sent for permanent histologic section. Furthermore, there were no differences when comparing patients in which tumors were upstaged versus those that were not, making the sending of selective debulking specimens for permanent sections impractical. This analysis emphasizes that when performing MMS for LM/MIS or melanoma, the processing of the central debulking specimen for vertical section histology is an integral part of the procedure.

**3:58 – 4:06 pm**

**PRESENTER:** Omar A. Ibrahim, MD, PhD

**TITLE:** *Perceptions of Expertise in Cutaneous Oncologic Surgery: What the Lay Public and Primary Care Physicians Think*

**AUTHORS:** Omar A. Ibrahim, MD, PhD<sup>1,2</sup>; April W. Armstrong, MD, MPH<sup>3</sup>; Haider K. Bangash<sup>4</sup>; Lawrence J. Green, MD<sup>5</sup>; Murad Alam, MD<sup>6</sup>; Daniel B. Eisen, MD<sup>3</sup>

**INSTITUTIONS:** 1. Dermatology, UConn Health Center, Farmington, CT, United States 2. Wellman Center for Photomedicine, Harvard Medical School, Boston, MA, United States 3. Dermatology, UC Davis, Sacramento, CA, United States 4. Aga Kahn University Medical College, Karachi, Pakistan 5. Private Practice, Rockville, MD, United States 6. Dermatology, Northwestern University, Chicago, IL, United States

**PURPOSE:** It is unclear what the general public and primary care physicians' perceptions are regarding expertise in cutaneous surgery.

**DESIGN:** A survey was administered to the lay public and to physicians in primary care medicine residency programs in the United States. Respondents were asked to select the healthcare provider most qualified to perform a variety of cutaneous procedures. Basic demographic information was also collected from both lay public and primary care physician (PCP) survey respondents for statistical analysis.

**SUMMARY:** Of 354 lay public survey respondents, dermatologists were identified as the preferred provider to see and evaluate a worrisome lesion on the face (70%), have a skin cancer on the back removed (73%), and have a skin cancer on the face removed (63%). Compared to women, men were twice more likely to prefer dermatologists to remove skin cancers of the face over other healthcare providers (Adjusted Odds Ratio [AOR], 2.03; 95% confidence interval [CI], 1.23-3.35). Furthermore, those with postgraduate degrees were 1.82 times more likely to prefer dermatologists to remove skin cancers of the face compared to those with only college degrees (AOR 1.82; 95% CI, 1.01-3.27). Of 561 PCP respondents, 60% of PCPs selected a Mohs fellowship trained dermatologist as the best physician to perform Mohs surgery (Figure 1), compared to dermatologists (22%) and plastic surgeons (16%). Compared to male PCPs, women PCPs are more than 1.5 times more likely to select a Mohs fellowship trained dermatologist as the most qualified physician to perform Mohs surgery (AOR, 1.56; 95% CI, 1.09-2.24). US medical school graduates are also more likely to select a Mohs fellowship trained dermatologist as the most qualified physician to perform Mohs surgery, relative to foreign medical school graduates (AOR, 1.52; 95% CI, 1.05-2.21). Seventy percent of PCPs correctly defined Mohs surgery (Figure 2). PCPs who diagnosed a greater number of skin cancers were more likely to correctly define Mohs surgery; specifically, with each additional skin cancer diagnosed, the PCP had increased adjusted odds of 1.08 (95% CI, 1.01-1.16) of correctly defining

Tromovitch Award Abstract Session — Thursday, May 3: 3:30 – 4:30 pm

Mohs surgery. Compared to those with exposure to dermatology in medical school, PCPs without exposure to dermatology in medical training were about half as likely to correctly define Mohs surgery (AOR, 0.51; 95% CI, 0.30-0.89). Furthermore, foreign medical graduates were significantly less likely to correctly define Mohs surgery compared to US medical graduates (AOR, 0.63; 95% CI, 0.41-0.95). Aside from Mohs surgery, PCPs selected dermatologists (56%) as the most qualified specialty physicians to perform all other types of skin cancer surgery, compared to plastic surgeons (40%), otolaryngologists (3%), and ophthalmologists (1%).

**CONCLUSION:** Despite the subspecialty nature of Mohs surgery, most PCPs knew enough about the procedure to correctly define it. Most PCPs preferred Mohs fellowship trained dermatologists over non-fellowship trained dermatologists and plastic surgeons to perform Mohs surgery. Dermatologists were also recognized by both the lay public and PCPs as the most qualified expert for cutaneous oncologic surgery. Statistical trends were identified that may help improve the education of the public and PCPs regarding cutaneous oncologic surgery.

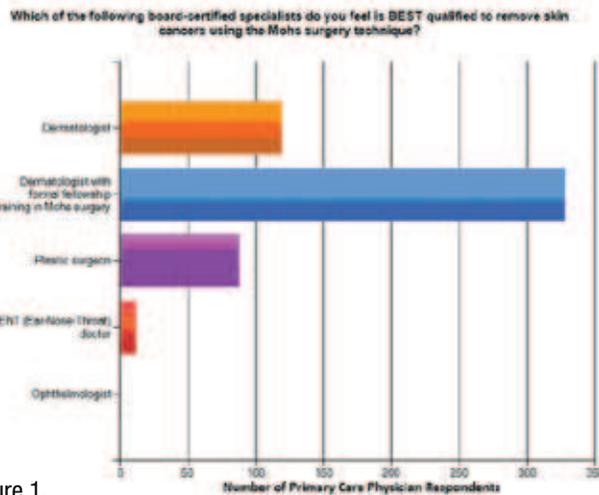


Figure 1.

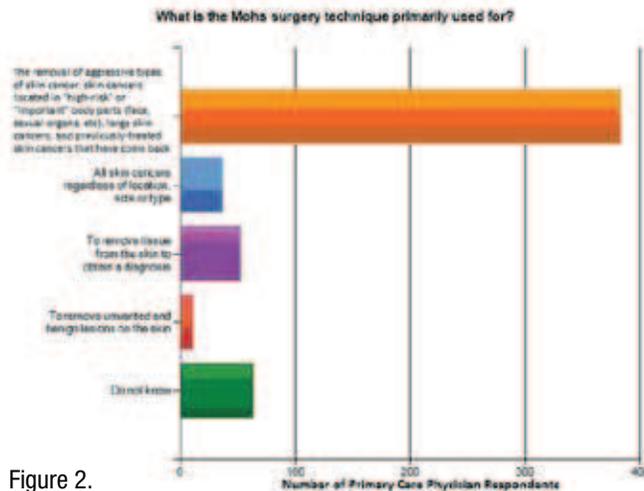


Figure 2.

4:06 – 4:14 pm

**PRESENTER:** Christopher W. Weyer, DO

**TITLE:** Investigation of Hyfrecators and their In Vitro Interference with Implantable Cardiac Devices

**AUTHORS:** Christopher W. Weyer, DO<sup>1</sup>; Ronald J. Siegle, MD<sup>2</sup>; Guillaume Girard, Eng<sup>3</sup>

**INSTITUTIONS:** 1. Dermatology, Cleveland Clinic Foundation, Cleveland, OH, United States 2. Otolaryngology, The Ohio State University, Columbus, OH, United States 3. Cardiac Rhythm Management, Medtronic, Mounds View, MN, United States

**PURPOSE:** This study performed in-vitro testing to investigate the potential interference of cardiac rhythm management (CRM) devices by Hyfrecators

**DESIGN:** Using a collagen based saline gel, 3 Implantable Pulse Generators (IPG or pacemaker) and 3 Implantable Cardioverter Defibrillators (ICD or defibrillator) were tested to measure the electromagnetic interference (EMI) from 2 commonly used Hyfrecator units. The 6 devices were tested using the Hyfrecator under "normal use" settings and on maximum power.

**SUMMARY:** Testing showed that using Hyfrecator devices show no interference with defibrillators and Hyfrecators only affected pacemakers when used in close proximity to the device. For the pacemakers, atrial inhibition was observed at a distance of 3 cm on maximum Hyfrecator settings and 1cm at "normal use". Ventricular inhibition occurred in very close proximity to the device (<1cm) or in direct contact.

**CONCLUSION:** This in vitro study suggests that Hyfrecators are safe to use in patients with defibrillators and can be used in pacemaker patients within 2 inches of the device perimeter.



Figure 1. CRM device test setup using a collagen tank



Figure 2. Distance of Hyfrecator wand to a pacemaker device, causing atrial inhibition at both “normal use” of 10W and High setting of 30W

**4:14 – 4:22 pm**

**PRESENTER:** Gary W. Mendese, MD

**TITLE:** **IMP3, A Novel Immunohistochemical Marker that Highlights Keratinocyte-derived Skin Cancers Enabling Differentiation from Benign Tumors during Mohs Micrographic Surgery**

**AUTHORS:** Gary W. Mendese, MD<sup>1,2</sup>; Gary S. Rogers, MD<sup>2</sup>; Donald J. Grande, MD<sup>1</sup>

**INSTITUTION:** 1. Mystic Valley Dermatology, Stoneham, MA, United States 2. Dermatology, Tufts University School of Medicine, Boston, MA, United States

**PURPOSE:** Insulin-like growth factor-II messenger RNA (mRNA)-binding protein-3 (IMP3), also known as K homology domain-containing protein over expressed in cancer or L523S, is a member of the insulin-like growth factor-II mRNA-binding protein family and has been shown to have diagnostic utility in distinguishing between numerous malignancies from their commonly confused benign counterparts. The marker has been used in melanoma, urothelial, renal, pancreatic, lung and other carcinomas, and has proven to be useful in situations where limited tissue is available for a proper diagnosis. Not infrequently during Mohs Micrographic Surgery (MMS), the surgeon encounters an area at the margin of a

cancer being resected that is difficult to diagnose as benign versus malignant. Benign adnexal tumors, tangential cuts, hair appendages and large follicles can be occasionally difficult to discern from basal cell carcinomas (BCC). It can occasionally be difficult to definitively diagnose an actinic keratosis (AK) versus squamous cell carcinoma in situ (SCCIS). The purpose of this study is to assess the diagnostic utility of IMP3 in differentiating between non-melanoma skin cancers (NMSCs) and their mimics.

**DESIGN:** To assess the potential utility of IMP3 during MMS, the antibody was first applied to several paraffin-embedded tumors: SCC, BCC, SCCIS, AK, trichoepitheliomas and syringomas at a 1:17 dilution with 200ul per slide. Given the promising results seen, we are currently using IMP3 on first layer blocks found to have residual tumor during routine MMS. IMP3 is being applied using an automatic immunohistochemical stainer at a 1:17 dilution with 200ul per slide. Several benign adnexal tumors along with normal follicular epithelium and AKs are also included. The presence (graded on a scale of 1-3) or absence of IMP3 staining was observed for all tissue in question.

**SUMMARY:** In the paraffin-embedded tissue, SCCs and BCCs demonstrated 2-3+ staining for IMP3 in 93% (28/30) and 90% (18/20) respectively. No AKs (0/20) or trichoepitheliomas (0/20) stained positive for the marker, and only 5% (1/20) of syringomas stained positive for IMP3. Our study using an automated 15-minute immunohistochemical stainer to assess the utility of IMP3 during MMS is ongoing and parallels those observed with permanent sections.

**CONCLUSION:** It can be difficult at times to determine if an area within a Mohs section is benign or another Mohs layer need be taken. Since tissue is limited during MMS and numerous artifacts are encountered on frozen section, the diagnostic dilemma can be a difficult one. As has been demonstrated in other human malignancies, IMP3, which is virtually absent in all benign tissues except the placenta, can be a great aid during MMS. Although rapid immunohistochemical stainers are not available in every Mohs practice, the use of IMP3 can help the surgeon in diagnostically difficult situations. Our preliminary results with permanent sections show that IMP3 can be an invaluable aid in differentiating between NMSCs and their mimics on paraffin-embedded tissues. We believe the antibody will also prove useful during MMS, where a prompt definitive diagnosis with limited tissue is essential.

**4:22 – 4:30 pm****PRESENTER:** Kristina M. Collins, MD**TITLE:** **Hot off the Press: Assessment of the Relative Perceived Newsworthiness of Cosmetic and Surgical Dermatology Using Content Analysis of Print News Media****AUTHORS:** Kristina M. Collins, MD<sup>1,2</sup>; Emily J. Fisher, MD<sup>1,2</sup>; Mollie A MacCormack, MD<sup>1,2</sup>; Suzanne M. Olbricht, MD<sup>1,2</sup>**INSTITUTIONS:** 1. Department of Dermatologic Surgery, Lahey Clinic, Burlington, MA, United States 2. Harvard Department of Dermatology, Boston, MA, United States**PURPOSE:** Anecdotal evidence and a small body of previous research suggests that the general public frequently views dermatology as a primarily cosmetic specialty, and may fail to recognize dermatologists as surgeons or as physicians managing complex medical issues. Nevertheless, very little research has focused on the root of these assumptions by patients and within pop culture. The purpose of this research is to comparatively analyze news coverage of dermatology issues in major US print media across various categories, including cosmetic, oncologic, surgical, and medical.**DESIGN:** Using the academic version of Lexis-Nexis, a database subject search was performed within the top ten widely circulated US newspapers for all dermatology-related news published over a 10-year period, from 2001-2011. A search was performed for articles with at least 85% relevance to a Lexis-Nexis subject term relevant to dermatology, including hair loss, dermatology, cosmetic treatments, nonsurgical cosmetic procedures, wound care, skin cancer, acne, dermatitis, eczema, psoriasis, and skin disorders. Articles were excluded from the study if the majority of the text was not actually relevant to a dermatology topic or the search result was an obituary, crime report, or local event. All 1,669 remaining news stories were included in the study and analyzed for content, with data recorded for source, general subject, specific topic, and whether the content was primarily cosmetic. For the purposes of the study, cosmetic information was defined as subject matter that would never be covered by insurance, affects appearance only, and has no relevance to a medical condition or disease. Because these articles were identified and reviewed based on a subject term search of dermatology-related topics, they were not required to specifically include the term “dermatology” within the text. Therefore, an additional search technique was performed in order to identify articles which repeatedly mention dermatology or dermatologists, as these articles may have an even greater impact on public perception of the specialty. For this separate search, a search syntax was created to identify articles that contained at least five mentions of dermatology in sources identified by Lexis-Nexis as “major US newspapers” over the same time period from 2001-2011. In this search, 991 articles were identified and similar exclusion criteria were used.**SUMMARY:** Using a Lexis-Nexis database search of the most widely circulated US newspapers, we compared the relative coverage of cosmetic and non-cosmetic dermatology issues and found that 49% of articles had primarily cosmetic information. When news coverage was evaluated by broad subject matter, the topic most frequently covered was cosmetic procedures (32% of articles) and the most frequently encountered specific topic was Botox. When only articles containing at least five references to dermatology or dermatologists were examined, a similar emphasis on cosmetic news was identified. 301 of these articles included reference to Botox, fillers, or laser treatments while the total number of articles with even a single reference to melanoma was 232. There was a relative paucity of news coverage of non-melanoma skin cancers, with only 93 total articles including a single reference to either basal cell carcinoma or squamous cell carcinoma. Overall six articles contained a single reference to Mohs surgery, and of these, only three included at least a one sentence description of the procedure or its indications. Only one article discussed Mohs surgery in detail. Although national practice data indicates that the average dermatologist spends a minority of time per week on cosmetic dermatology, this study indicates that news coverage of dermatology focuses a majority of attention on aesthetic concerns. Negative press over the past ten years predominantly focused on economic interests in dermatology, relationships with industry, and “hard sell” tactics to promote cosmetic treatments.**CONCLUSION:** We believe this is the first quantitative demonstration of the emphasis on cosmetic news over oncologic, surgical, or medical dermatology within the media. Non-melanoma skin cancers have received relatively scarce news coverage, and Mohs surgery was covered in detail in only one article over a ten year period. Insight into which topics within dermatology are generally considered “newsworthy” is essential in understanding common public perceptions about our field. Furthermore, identifying areas poorly covered may help guide future educational outreach programs.