# 2007 ACMS Annual Meeting: Accepted Abstracts and Posters

Thursday, May 3, 2007 MG111 Tromovitch Award Abstracts 9:30 AM-9:38 AM

PRESENTER: Nicole M. Annest, M.D., M.S.

**TITLE:** The Utility of FDG-PET/CT Imaging in the Follow-Up Management of Patients with Primary Cutaneous Malignant Melanoma

**AUTHORS:** Nicole M. Annest, M.D., M.S.; Sarah J. Grekin, B.S.; Marta J. VanBeek, M.D., M.P.H.; Hubert T. Greenway, M.D.

#### Purpose:

The goal in monitoring patients with a history of cutaneous malignant melanoma is to detect and promptly treat recurrent disease in order to improve both patient survival and quality of life. In contrast to the substantial body of literature guiding the evidence-based initial staging of melanoma patients, there is a relative dearth of data to guide many practices for melanoma follow-up management. 2-deoxy-2(F-18)fluoro-D-glucose (FDG) positron emission tomography (PET) scanning combined with computed tomography (CT) scanning (PET/CT) has recently been demonstrated to have efficacy in the initial staging of melanoma patients. However, the appropriate clinical setting in which to use this highly sensitive, costly tool for follow-up management of melanoma patients has not yet been defined. Current NCN guidelines for follow-up of melanoma patients recommend CT when "clinically indicated", though the guidelines do not provide insight into the use of PET/CT imaging for melanoma follow-up. The purpose of our study was to evaluate the utility of PET/CT in the follow-up management of patients with a history of primary cutaneous malignant melanoma. Specifically, we sought to determine the utility of PET/CT in relationship to patient history and physical examination findings, particularly in the setting of a completely normal history and examination.

#### Design:

In this retrospective analysis, a total of 150 PET/CT scans in patients seen at an academic university setting were examined. Data including patient age, patient sex, tumor location, Breslow depth, ulceration, LDH, lymph node sampling results, AJCC stage, time between diagnosis and PET scan, patient clinical history, physical examination, and patient mortality were recorded. PET/CT scan results were recorded as either normal or abnormal. Based upon subsequent histopathologic verification and clinical course, scan results were then categorized as true positive, true negative, false positive, or false negative. The effect of patient-specific variables on the odds of a true-positive PET/CT scan was modeled with both univariate and multivariate logistic regression analysis.

#### **Summary:**

Our study population consisted of eighty patients with an average age at diagnosis of 57.5 years. 10% (8/80) of our study patients had a history of AJCC Stage I melanoma, 36% (29/80) Stage II, 45% (36/80) Stage II, and 9% (7/80) Stage IV. Overall, PET/CT was found to be 98% sensitive and 96% specific for detection of recurrent disease in our patient population. Patient history and physical exam findings were a significant predictor of a true-positive PET/CT scan. The overall likelihood of detection of occult disease on PET/CT scanning was 0.63 (95% CI 0.55-0.71) for patients with either an abnormal history or abnormal physical examination, while there was only a 0.27 (95% CI 0.20-0.34) likelihood of disease detection for patients with a completely normal patient history and physical examination. In multivariate analysis, the odds-ratio of a true positive

PET/CT scan was 4.92 for patients with abnormal histories while the odds-ratio was 4.68 for patients with abnormal physical exams.

#### Conclusions:

This data confirms the intuition of the astute clinician – imaging studies are more likely to detect recurrent disease in melanoma patients with abnormal histories or physical exam findings. However the finding that over one-quarter of our study patients with a completely normal history and physical examination had recurrent disease which was detected on PET/CT imaging is a clinically significant finding. As the strong majority of our study patients had AJCC Stage II or Stage II disease, our findings demonstrate the utility of PET/CT as a highly sensitive and specific screening modality in this patient population, even in cases in which the scan may not seem "clinically indicated". In summary, follow-up PET/CT imaging in melanoma patients is effective in the detection of recurrent disease, even in the absence of abnormal patient findings. While our study results are promising, future studies are needed to demonstrate the effect of PET/CT imaging on patient outcomes.

Thursday, May 3, 2007 MG111 Tromovitch Award Abstracts 9:38 AM-9:46 AM

PRESENTER: Steven Cronquist, MD

**TITLE:** Response of Lentigo Maligna to Treatment with Topical Imiquimod; A Series of Ten Cases.

AUTHORS: Steven Cronquist, MD; Donald J. Grande, MD

#### Purpose:

Topical imiquimod has gained recent attention in the treatment of lentigo maligna (LM). We report a series of ten cases of biopsy-proven LM involving the face, and histologically valuate the response to pretreatment with topical imiquimod followed by definitive treatment with modified Mohs micrographic surgery.

## Design:

The study consisted of patients with the diagnosis of biopsy-proven facial LM referred to our practice for modified Mohs micrographic surgery. A total of ten patients successfully completed pretreatment with imiquimod, followed by surgery. All patients underwent a six-week course of therapy with topical imiquimod 5% cream. The cream was applied once daily to the entire lesion on Monday through Friday of each week. Upon completion of six weeks of therapy, a rest period of two weeks was allowed prior to surgery. Definitive treatment consisted of modified Mohs micrographic surgery. The initial layer consisted of the entire clinical lesion (full skin thickness) plus a margin of three to five millimeters, depending on location. The specimen was sent for rush permanent sections. A dermatopathologist examined the specimen for any residual LM or other melanocytic atypia.

#### Summary:

Three of ten cases demonstrated no residual LM or other melanocytic atypia on histologic examination of the entire specimen. One case demonstrated invasive melanoma (Breslow depth of 0.8 mm), requiring revision of the original diagnosis. The remaining six cases demonstrated residual LM (five cases) or residual severe melanocytic atypia (one case).

#### **Conclusions:**

This series demonstrates the variability of response to treatment of LM with topical imiquimod. Select patients (3 of 10) demonstrated excellent response with no histologic evidence of residual. In contrast, the majority had residual disease, including one case of invasive melanoma. Careful

case selection, management, and follow-up are warranted when considering imiquimod's therapeutic role in the treatment of LM.

Thursday, May 3, 2007 MG111 Tromovitch Award Abstracts 9:46 AM-9:54 AM

PRESENTER: Ross M. Campbell, M.D.

**TITLE:** "Confusing Follicular Proliferations" Seen on Mohs Slides: Dermatopathologic Correlation and Review of Basaloid Mimickers

**AUTHORS:** Ross M. Campbell, M.D.; Christopher Harmon, M.D.; James E. Elder, M.D.; Gary Monheit, M.D.

## Purpose:

Distinguishing between benign follicular proliferations and basal cell carcinoma is a sometimes frustrating and often confusing duty of Mohs surgeons. We have assembled a series of Mohs horizontal specimens in which we attempt to better clarify the distinguishing features of diagnoses and review basaloid mimickers of true carcinoma. **Design:** A series of horizontally prepared Mohs sections were collected for review from our Mohs practice. The specimens were reviewed with 2 dermatopathologists. Distinguishing criteria were then proposed for the most common diagnoses confused with basal cell carcinomas.

# **Summary:**

Distinguishing features of confusing follicular proliferations were assembled. Each slide is reviewed for salient features of diagnosis. Other basal cell mimicking tumors were reviewed with and emphasis on distinguishing benign tumors from true basal cell carcinoma.

## **Conclusions:**

Distinguishing benign basaloid proferations from carcinoma is of paramount importance for the Mohs surgeon. We have attempted to provide a useful guide to help both trainees and experienced surgeons better differentiate these entities in order to minimize unnecessary surgical layers.

Thursday, May 3, 2007 MG111 Tromovitch Award Abstracts 9:54 AM-10:02 AM

PRESENTER: James R. DeBloom, M.D.

**TITLE:** The Characteristics and Invasive Growth Potential of Locally Recurrent Malignant Melanoma and Melanoma In Situ

AUTHORS: James R. DeBloom II, M.D.; David G. Brodland, M.D.; John A. Zitelli, M.D.

# Purpose:

Although locally recurrent melanoma and melanoma in situ continues to be a concern for all dermatologic surgeons, little is known about the potential for these tumors to recur locally with greater Breslow depth and therefore poorer prognosis. In particular melanoma in situ is considered by many physicians to be a precursor tumor with only superficial potential. To what degree these tumors have the potential to recur with an invasive growth pattern is largely unknown. Our goal is to analyze the features of recurrent melanoma and melanoma in situwhere are recurrences most common, when do they recur, what changes if any are seen in

Breslow depth at the time of recurrence? By having a better understanding of locally recurrent melanoma we can provide more accurate information to our patients and potentially improve our initial treatments to limit the chance of local recurrence.

#### Design:

Over the past 25 years we have treated 202 locally recurrent melanomas and melanoma in situs. An extensive chart review was performed for all of these patients. For each case, location, initial treatment, age at initial treatment and recurrence, pathology at initial biopsy and biopsy at recurrence as well as overall outcome were reviewed and tabulated.

# Summary:

202 cases were reviewed. The average age at recurrence was 69 years old and 54% were male. The most common locations for a local recurrence were the right cheek, nose and left cheek. Standard excision was the most common failed initial treatment (48%) followed by cryosurgery (20.3%). Of the 84 lesions that were initially treated as melanoma in situ 19 (22.6%) recurred locally with an invasive component. The mean Breslow depth at the time of local recurrence for these lesions was 0.94mm with an average disease-free interval of 61 months. For these 19 recurrent cases the average follow-up after recurrence was 67.5 months. 9(47.4%) were dead of all causes with one death directly attributable to melanoma with systemic metastases. For initially invasive melanomas there was a mean change in Breslow depth from 1.47mm initially to 1.72mm at time of recurrence.

#### Conclusions:

With this review we provide the clinician with a better understanding of what to expect when and if a melanoma locally recurs. The most striking finding was the potential for melanoma in situ to recur locally as an invasive melanoma if not completely and adequately excised at the time of initial treatment almost 23% of the time. Although most dermatologic surgeons recognize melanoma in situ as a serious and potentially dangerous tumor, too often it is underestimated and treated in a suboptimal fashion. It is imperative to completely remove the entire melanoma at the time of intial treatment whether it be in situ or invasive so that local recurrences with potentially poorer prognoses can be limited if not prevented.

Thursday, May 3, 2007 MG111 Tromovitch Award Abstracts 10:02 AM-10:10 AM

PRESENTER: Michael Murphy

**TITLE:** The Frequency of Errors in Reading Mohs Pathology Sections over A One-Year Fellowship

AUTHORS: Michael Murphy; David Brodland, MD; John Zitelli, MD

**Purpose:** The purpose of this study is to examine how fellows in Mohs surgery learn to correctly read and map Mohs sections and the period of time needed to obtain expertise in this crucial component of Mohs surgery.

# Design:

This is a prospective single institution pilot study with plans to expand to a multi-institutional study in one year. The study was designed to track errors involving the reading of Mohs pathology sections based on a graded scale over the course of a year long Mohs surgery fellowship. All sections were pre-read by the Mohs fellow and marked on the Mohs map. Subsequently, all sections were reviewed by the Mohs program directors and the fellow together. Any errors were noted and scored based on the following scale. Serious errors: Errors in reading and mapping Mohs sections which could potentially lead to a recurrence of the cancer. These were scored as 3

points Errors: Errors in reading and mapping of Mohs sections which could lead to taking additional layers/tissue when it was not necessary. These were scored as 2 points. Equivocal errors: The fellow's judgment and the program director's judgment differ and upon review by the program directors, the errors are deemed either equivocal in nature or insignificant to the patient's outcome. These were scored as 1 point. A score of 0 was given for every case in which the program director and the fellow concurred in the reading and mapping of the Mohs section. Scores were tallied daily, summed, and a mean error score per section read was obtained. Serious errors were tracked separately to analyze their occurrence trend over time. The nature of the errors was categorized and later analyzed to determine the faulty process leading to the error. The categorization enabled the directors to adjust the teaching methods utilized for subsequent trainees.

#### Summary:

Two months of data are now collected. Ten months of data will be available at the time of the Mohs college meeting. The mean error score has declined in the second month. Serious errors still occur but the rate and total number of serious errors has decreased. Errors did not decrease precipitously over a short period of time but rather at a gradual rate over time.

#### Conclusions:

Errors in the reading and mapping of Mohs sections are a common occurrence for the inexperienced Mohs fellow. Learning Mohs surgery takes longer than a weekend or a month of study as serious errors are not eliminated over a short period of time. Formal and ongoing testing of the Mohs fellow by their program director is essential to improve the Mohs fellow's ability to read and map Mohs sections and to minimize the number of errors which could lead to recurrence or additional unnecessary layers. We invite additional institutions to participate in this study with their Mohs fellows to strengthen our conclusions.

Thursday, May 3, 2007 MG116 Abstract Session 4:00 PM-4:08 PM

PRESENTER: Natalie I. Bene, M.D., Ph.D.

**TITLE:** Mohs Micrographic Surgery for Treatment of Cutaneous Melanoma In Situ: Are Frozen Sections Adequate?

AUTHORS: Natalie I. Bene, M.D., Ph.D.; Brett M. Coldiron, M.D.

# Purpose:

Mohs micrographic surgery represents a promising option for treatment of cutaneous melanoma in situ, especially in cosmetically and functionally sensitive areas (1,2). However, interpretation of melanocytic lesions by fresh frozen sections may be difficult (3), and Mohs for melanoma remains controversial. The purpose of this prospective study was to determine if margins called clear by Mohs surgery were clear by paraffin-embedded sections.

# Design:

We treated 146 patients referred for treatment of primary cutaneous melanoma in situ over 10 years. All melanomas were excised with Mohs micrographic surgery technique. Subclinical extension of a tumor was determined with Wood's lamp prior to the excision of the first layer. Mohs frozen sections were used to evaluate the margins of each specimen. Vertical frozen sections of the bulk of the tumor were used as a positive control. After achievement of clear margins with the Mohs technique, an additional 1 mm layer of epidermis and dermis was taken for formalin-fixed, paraffin-embedded sections. The paraffin-embedded sections were evaluated by a board certified dermatopathologist. After the confirmation of clear margin by paraffinembedded sections, the defects were repaired.

# **Summary:**

Out of 146 cases treated, the majority of melanoma in situ was located in the head and neck area with the distribution shown in Table 1. Some cases of malignant melanoma in situ were located on the trunk and extremities, with the distribution shown in Table 2. The mean of 1.8 stages was required to clear the tumor. The highest number of stages was seven in one case of malignant melanoma in situ on the neck. The largest tumor in this series was 15.3x12.1 cm malignant melanoma in situ located on the left lower eye-lid continuing to the left cheek, and it took three stages to clear this tumor. Out of 146 cases of malignant melanoma in situ, eight cases had a positive margin on paraffine-embedded sections, resulting in 95% clearance rate by Mohs frozen sections. This clearance rate of malignant melanoma in situ is significantly higher than 83%-85% clearance rate with the standard surgical excision with 6 mm margin(4-6).

#### **Conclusions:**

The gold standard for determining margins of excision of a melanoma is evaluation of paraffinembedded sections. We used it as an end point in evaluation of excisional margins of tumors treated with Mohs micrographic surgery. We conclude that by these criteria, Mohs micrographic surgery is a viable method for treatment of cutaneous malignant melanoma in situ which may give a higher cure rate and yield smaller defects in comparison with surgical excision with commended margins, especially in such areas as head and neck, genitals and digits. References 1. Zitelli JA, Brown CD, Hanusa BH. Mohs micrographic surgery for treatment of primary cutaneous melanoma. J Am Acad of Dermatol. 1997; 37:236-245. 2. Bricca GM, Brodland DG, Ren D, Zitelli JA. Cutaneous head and neck melanoma treated with Mohs micrographic surgery. J Am Acad Dermatol. 2005; 52: 92-100. 3. Barlow RJ, White CR, Swanson NA. Mohs micrographic surgery using frozen sections alone may be unsuitable for detecting single atypical melanocytes at the margins of melanoma in situ. Br J Dermatol. 2002; 142:290-4. 4. Zitelli JA, Brown CD, Hanusa BH. Surgical margins for excision of primary cutaneous melanoma. J Am Acad of Dermatol. 1997; 37:422-429. 5. Bub JL, Berg D, Slee A, Odland PB. Management of lentigo maligna and lentigo maligna melanoma with staged excision. Arch Dermatol. 2004; 140:552-558. 6. Zitelli JA. Surgical margins for lentigo maligna, 2004. Arch Dermatol 2004; 140:607-608.

Thursday, May 3, 2007 4:08 PM-4:16 PM

PRESENTER: Ali Hendi, MD

**TITLE:** Is it Benign Melanocytic Hyperplasia or Melanoma?

AUTHORS: Ali Hendi, MD

# Purpose:

Surgical treatment of lentigo maligna (LM)/ LM melanoma (LM) can be challenging. This is due to the fact the margins of the tumor are often not clinically visible. Also, the pathologic examination of the margins can be difficult as there has not been a widely accepted criterion for distinguishing melanocytic hyperplasia in sun-damaged skin from that of LM/LM. The purpose of this presentation is to review recently published data and its utility in the management of patients with LM/LM using the Mohs technique.

# Design:

Normal skin of the head and neck from 149 patients was stained with the Mart-1 immunostain. The density, confluence and depth of adnexal extension of melanocytes were evaluated.

#### Summary:

Benign melanocytic hyperplasia seen in sun-damaged skin has an increased number of melanocytes (15-20 per high power field), confluence (up to nine side by side melanocytes) and extension along the adnexal epithelium. The utility of this data in the treatment of LM/LM is

discussed with the aid of case presentations.

#### Conclusions:

The findings of increased melanocyte density, confluence, and adnexal extension alone do not substantiate a diagnosis of melanoma. In excising melanomas on sun damaged skin, these finding should not be used as a criterion to excise more tissue.

Thursday, May 3, 2007 4:16 PM-4:24 PM

PRESENTER: Neil J. Mortimer, MBChB

TITLE: Muscular Hinge Flaps: Technique and Applications in Dermatological Surgery

AUTHORS: Neil J. Mortimer, MBChB; Paul J. Salmon, MD; Sarah Hill, MBChB

# Purpose:

Facial skin cancer surgery frequently results in deep surgical defects. Sacrifice of the periosteum and perichondrium from underlying bone or cartilage may be necessary for complete tumour extirpation. When repairing such defects, replacement of soft tissue volume loss needs to be addressed during reconstruction to achieve a cosmetically acceptable outcome. If a local skin flap is not an option either due to the size or location of the defect, then a skin graft may need to be utilised. In this situation, a muscular hinge flap can provide both the required volume and a vascular bed to resurface exposed bone or cartilage. Hinge flaps also have an application in the replacement of soft tissue volume loss when reconstructing deep defects of the vermillion of the lips. This allows preservation of normal contour prior to resurfacing with thin mucosal flaps.

#### Design:

We describe four sites on the face where the muscular hinge flap can be a useful tool in reconstructive surgery: Orbicularis oris hinge flaps for reconstruction of the lower lip; nasalis hinge flaps for nasal reconstruction; frontalis hinge flaps for reconstruction of the forehead; and auricularis posterior hinge flaps for reconstruction of the posterior pinna.

## Summary:

For each of these hinge flaps we describe our personal experience with respect to the technique and applications with illustrated case examples.

#### Conclusions:

Muscular hinge flaps have an application when repairing surgical defects that require soft tissue volume replacement and/or resurfacing of exposed bone or cartilage prior to skin grafting. Knowledge of their application and technique is a useful addition to the reconstructive repertoire of the dermatological surgeon.

Thursday, May 3, 2007 4:24 PM-4:32 PM

PRESENTER: Rachel E. Sahn

TITLE: Sentinel Lymph Node Biopsy for High-Risk Nonmelanoma Skin Cancers

AUTHORS: Rachel E. Sahn; Pearon G. Lang, MD

# Purpose:

The objectives of our study were to report our experience with patients who underwent sentinel

lymph node biopsy (SLNB) for the staging of a high-risk nonmelanoma skin cancer (NMSC) and to help establish clinical and histologic criteria that might predict a positive SLNB in such individuals.

#### Design:

We identified 13 patients with a high-risk NMSC who underwent SLNB between 1998 and 2006 and conducted a retrospective review of their medical records and tumor pathology. Their status as regards tumor recurrence and survival was obtained when possible.

# **Summary:**

Of 13 patients, 9 had a squamous cell carcinoma (SC), 2 had a sebaceous gland carcinoma, 1 had a porocarcinoma, and 1 had an atypical fibroxanthoma. All SLNBs were negative for metastatic disease, but one patient, who appears to have had a false-negative SLNB, later developed regional node involvement and eventually died of metastatic disease. Another patient developed distant metastatic disease without regional node involvement and subsequently died.

# **Conclusions:**

Compared to melanoma, SCs of the skin are much less predictable as regards their tendency to metastasize to the regional lymph nodes. Although the SLNB appears to be a reliable staging procedure for NMSC (especially SC), the yield may be too low to justify its routine use in this patient population. More data is needed to determine when the SLNB is indicated in the management of a NMSC.

Thursday, May 3, 2007 4:32 PM-4:40 PM

PRESENTER: Arash Kimyai-Asadi, M.D.

TITLE: Margin Involvement After the Excision of Malignant Melanoma: The Need for Complete En-Face Examination of the Margins

**AUTHORS**: Arash Kimyai-Asadi, M.D.; Tracy Katz, B.A.; Leonard H. Goldberg, M.D.; Gabriel Ayala, B.S.; Steven Q. Wang, M.D.; Ming H. Jih, M.D., Ph.D.

# Purpose:

The standard treatment for cutaneous malignant melanoma is surgical excision followed by pathologic evaluation. Serial cross-sections of tissue (bread-loaf technique) may result in higher local recurrence rates than Mohs micrographic surgery, which histologically evaluates the entire surgical margin by using en-face tissue sectioning. The purpose of our study is to estimate the sensitivity of bread-loafing in detecting residual melanoma at the margins.

# Design:

A retrospective study of 43 malignant melanomas treated with Mohs micrographic surgery with positive margins after an excision with 5 mm margins was performed. The portions of the margins involved with melanoma were measured. The ability of bread-loafing to detect residual tumor was calculated. Reports from paraffin section pathology of the debulked specimens were utilized for comparative purposes.

#### Summary:

The average linear extent of tumor found at the surgical margin was  $1.6 \pm 2.0$  mm. Bread-loaf cross-sections performed every 1, 2, 4, and 10 mm have a 60%, 39%, 21%, and 10% chance of finding positive margins, respectively. In order to detect 90% and 100% of positive margins, bread-loafing must be performed every 0.2 mm and 0.1 mm, respectively. The fixed-tissue pathology reports indicated the presence of melanoma at the margins of the narrower debulking

excision in only 28% of cases, whereas more peripheral Mohs sections indicated positive margins.

# **Conclusions:**

Bread-loaf cross-sections through excised melanoma specimens are unreliable at detecting residual melanoma at surgical margins. We recommend complete histologic margin control of the entire surgical margin by using en-face tissue orientation (Mohs technique) to reduce the risk of tumor recurrence after excision of primary cutaneous melanoma. AFX, atypical fibroxanthoma; SC, squamous cell carcinoma; pr, pre-operative; po, post-operative; BCC, basal cell carcinoma; SLNB, sentinel lymph node biopsy

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**PRESENTER**: Arash Kimyai-Asadi, M.D.

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Thursday, May 3, 2007 4:40 PM-4:48 PM

PRESENTER: Anthony J. Dixon, MD

**TITLE:** Bleeding Complications in Skin Cancer Surgery are Associated with Warfarin but Not Aspirin Therapy - A Prospective Study

AUTHORS: Anthony J. Dixon, MD

#### Purpose:

To identify the risk factors for post operative bleeding following skin cancer surgery procedures, including the risk of warfarin and aspirin therapy.

# Design:

A 44 month prospective study of 5950 skin lesions treated on 2394 patients from July 2002. No patient ceased aspirin or warfarin unless INR exceeded 3.0.

# Summary:

The post operative bleeding complication incidence was 0.67% overall and was 2.5% (n=320) in patients taking warfarin Procedures had the following bleeding incidence: curettage 0.20% (1/488); skin flap repairs 1.02% (20/1958), simple excision and closure 0.42% (14/3364); skin grafts 4.95% (5/101); and wedge excision 0% (0/39). The ear was the only body site demonstrating an increased bleeding incidence: 2.16% (9/416) (p<0.001). Diabetic patients and smokers had no difference in bleeding incidence. Age was significant with an incidence of 0.17% (5/2947) in those under 67 years of age, and 1.19% (35/2939) in those older. (p<0.001) Binary logistic regression analysis revealed 4 independent risk factors for bleeding. These were: age sixty seven years or older, odds ratio (OR) 4.7 (95% confidence interval, 1.8 – 2.2), warfarin OR 2.9, (1.8 – 12.2), surgery on or around the ear OR 2.6 (1.2 – 5.7) and closure with a skin flap or graft OR 2.7 (1.4 – 5.3). The presence of two of these risk factors provides a sensitivity of 73% and a specificity of 72% for predicting a bleeding complication. Subjects taking aspirin were not at increased risk.

# **Conclusions:**

Warfarin therapy, increasing age, surgery on or around the ear and closure with flap or graft are independent risk factors for post operative bleeding complications in skin cancer surgery. Bleeds were inconvenient and not life threatening in contrast to the thrombo-embolic risk from ceasing warfarin and aspirin. Clinicians should ensure safe INR levels in patients on or more bleeding risk factors.

Thursday, May 3, 2007 4:48 PM-4:56 PM

PRESENTER: Jerry D. Brewer, MD

**TITLE:** The Effects of Chronic Lymphocytic Leukemia on the Development and Progression of Malignant Melanoma

**AUTHORS:** Jerry D. Brewer, MD; Leslie J. Christenson, MD; Roger H. Weenig, MD; Amy L. Weaver, MS

# Purpose:

Malignant Melanoma (MM) is among the top 10 most commonly diagnosed cancers in the U.S., and causes significant morbidity and mortality. An association between MM and chronic lymphocytic leukemia (CL) has been shown in prior studies. In particular, it has been shown that patients with CL are more likely to develop MM compared to the normal population. In addition, the incidence of both MM and CL are increasing. However, the clinical behavior of MM in patients with concomitant CL, including tumor aggressiveness, response to therapy, recurrence, and

mortality has not been studied. Our purpose was to determine the effect of CL on the stage at presentation, recurrence rate, metastatic rate, and mortality of MM.

# Design:

A search of the master diagnosis index at Mayo Clinic was queried from 1980 to 2005 to identify patients who had received a diagnosis of both CL and MM. A retrospective chart review was conducted to extract the following data: date of birth, sex, date of diagnosis of MM, date of diagnosis of CL, MM pathology report, MM stage, recurrence of MM and metastasis of MM. The date of last follow up or date of death along with the cause of death if available, was also extracted. A stage by stage comparison was then conducted between the study group and the published results on melanoma survival rates by Balch et al. In addition, the available pathology slides of the MM were reviewed by a board certified dermatopathologist to confirm diagnosis, tumor stage, the presence or absence of tumor regression, and to evaluate for the presence and characteristics of an inflammatory infiltrate.

#### Summarv:

70 patients (79% male) were identified with both MM and CL. Of these 70 patients, 36 were diagnosed with CL prior to being diagnosed with MM (median interval 4.4 years; median age at MM diagnosis 74 years), 33 were diagnosed with CL after being diagnosed with MM (median interval 5.3 years; median age at MM diagnosis 63 years), and the timing was unknown for 1 patient. The MM AJCC clinical stage was available on 46 patients: 10 in-situ, 15 IA, 9 IB, 6 IIA, 4 IIB, and 2 IIB. Breslow depth was available on 45 patients and included 10 in-situ, 16 <1mm, 8 1.01-2mm, 7 2.01-4mm and 4 >4 mm (median 0.8mm). Clark's level was also available on 45 patients, (note: not the same 45) with 10 at Clark's level I, 13 at level II, 8 at level II, 12 at level IV, and 2 at Clark's level V. The median Clark's level at presentation was Clark's level II. An inflammatory infiltrate was present in 18 (64.3%) of the 28 primary MM tumors reviewed pathologically. Of these 18 cases, 11 (61.1%) contained CL cells within the inflammatory infiltrate, confirmed by CD3, 5 and 20 immunohistochemical staining. There were 12 documented metastases, one of which (1.4%) occurred in the setting of a previously diagnosed thin melanoma (< 1.00mm Breslow depth). Of the 8 documented recurrences, 4 occurred in patients with unknown Breslow depths, 1 in a patient with an in-situ primary lesion, 1 in a patient with a Breslow depth between 2.01-4mm, and 2 in patients with a Breslow depth of > 4mm. At last follow-up, 33 were deceased including 9 due to MM. Among the 37 alive at last follow-up, the median duration of follow-up was 4 years. The recurrence-free survival at 2, 5, and 10 years was 93.4%, 89.1%, and 83.8%, respectively. The metastasis-free survival at 2, 5, and 10 years was 92.0%, 86.1%, and 80.9%, respectively. The MM disease-free specific survival was 95.1%. 87.3%, and 80.9% at 2, 5, and 10 years, and the overall survival was 91.8%, 78.5%, and 54.8%, at 2, 5, and 10 years respectively. When looking at survival by stage, the MM disease-specific survival at 5-years was 100% for stage IA, 88.9% for stage IB, and 100% for stage IIA. These rates were comparable to those of a previously published group of patients (information published by Balch et al.) with 5-year disease-free specific survival estimates of 95%, 90%, and 79%, respectively.

## **Conclusions:**

This retrospective study does not confirm that CL influences the outcomes of MM in terms of recurrence rate, metastatic rate, and mortality. Patients with MM and concomitant CL were not found to have worse survival rates when comparative analysis was conducted among patients with stage IA, IB, and IIA. The limitations of this study include its retrospective nature and small numbers of patients studied. Further research and prospective study of a large cohort of patients is needed to further clarify the effects of CL on the outcome of concomitant MM.

Thursday, May 3, 2007 Late-breaking 4:56 PM-5:04 PM PRESENTER: Ikue Shimizu, BA

**TITLE:** Peri-Operative Continuation of Multiple Oral Anti-Coagulant and Anti-Platelet Agents Increases the Risk of Post-Operative Hemorrhage in Dermatologic Surgery

**AUTHORS:** Ikue Shimizu, BA; Raymond G. Dufresne, MD; Nathaniel Jellinek, MD; Tianyu Li, MS; Karthik Devarajan, PhD; Clifford Perlis, MD

# Purpose:

Oral anti-coagulant and anti-platelet agents are frequently used for prevention of acute thrombotic events. Multiagent therapy further reduces the risk of an adverse thrombotic event in selected high-risk patient populations compared to single agent therapy. Moreover patients may take herbal supplements that act as anti-coagulants. Studies in dermatologic surgery suggest that withholding aspirin or warfarin peri-operatively appears to increase the risk of a thrombotic event without significantly reducing the risk of bleeding complications. These studies have not addressed, however, the question of whether multi-agent therapy influences the risk of post-operative bleeding in dermatologic surgery. This study aimed to investigate bleeding complications when multi-agent therapy is continued peri-operatively.

# Design:

This was a retrospective chart review study approved by the Lifespan Institutional Review Board. All patients who underwent Mohs surgery and post-operative care at University Dermatology from June 1, 2005 to June 1, 2006 were included. Charts were reviewed for age, pre-operative and post-operative blood pressure, alcohol intake, anticoagulant use, cancer type, location of tumor, tumor size, repair type, and presence or absence of bleeding complications. Bleeding complications were defined as hematoma; excessive bleeding requiring surgical intervention; or hemorrhage associated with flap necrosis, graft necrosis, or dehiscence. Agents studied included: aspirin, warfarin, clopidogrel, heparin, combined aspirin/dipyramidole; and the supplements vitamin E, fish oil, and gingko. A univariate analysis of influence on bleeding complications was run for the variables involving age, blood pressure, alcohol use, tumor type and size, and repair type. Wilcoxon test was used for continuous variables, and Fisher's exact test for categorical variables. In addition, a Fisher's exact test was performed to compare the presence or absence of post-operative bleeding in patients on more than one agent at the time of surgery versus those who were on one or none.

# **Summary:**

A total of 760 patients were included in the final analysis. Patients who underwent repair and follow-up care by plastic surgeons or about whom data were missing were excluded from analysis. The median age was 73 years. The percent of patients taking no agents at the time of surgery was 62.5%, one agent was 29.9%, and two or more agents 7.6%. The most commonly used agent was aspirin, representing 28% of all patients. When more than one agent was being taken at the time of surgery, the most commonly used combination was aspirin and warfarin (3.2%). Four patients experienced post-operative bleeding complications. Three of them took two or more agents at the time of surgery. Univariate analysis demonstrated that those patients with bleeding complications were more likely to be older (79- vs. 73-years-old), receive a graft for repair (p=0.0055), and larger post-operative tumor size (4.2 vs. 2.2 cm2). In addition, patients who took two or more agents at the time of surgery were more likely to bleed than those who took no or only one agent (p=0.0016; OR=38.24).

# **Conclusions:**

In contrast to studies of single-agent anti-coagulation and anti-platelet therapy, this data, gleaned from a retrospective chart review, suggests that patients on two or more agents at the time of dermatologic surgery and repair may have an increased risk of post-operative bleeding complications. Despite this obvious conclusion, these results must be considered tentative due to study limitations. The study is retrospective in nature, limited to one site and two surgeons, and

reports only four bleeding events. Future research should include more patients from multiple sites studied in a prospective manner. A larger study population should also allow researchers to better assess the impact of individual anti-coagulant and anti-platelet agents. An even more relevant question for the future will be how these findings should influence patient management. The likelihood of a thrombotic event with severe morbidity and mortality must be weighed against the likelihood and severity of a post-operative hemorrhagic complication.

Friday, May 4, 2007 MG210 Abstract Session 9:00 AM-9:08 AM

PRESENTER: Todd E. Holmes, MD

**TITLE:** Island Pedicle Flaps Twisted and Transposed

AUTHORS: Glenn Goldman, MD; Todd E. Holmes, MD

#### Purpose:

Standard island pedicle flaps are restricted in their motion by deep or lateral restraint. This limits the distance they can advance. Transposition flaps are limited in their rotation by a combination of deep and surface restraint at their bases. By elevating an island and transposing the tip while gently advancing the base, a twisted and transposed island pedicle flap can recruit tissue laxity from a great distance, allowing for closure of challenging operative wounds.

#### Design:

This was a retrospective study of cases from the practice of a single academic Mohs surgeon over ten years. The index case was a nasal repair that was started as a linear repair with a burrow's graft. In harvesting the 'graft' it was apparent that leaving a small deep attachment and twisting the 'flap' as an island would allow for repair of the distal wound. Since then the twisted and transposed island pedicle flap was used to repair defects of the glabella, the helical root, the nasal dorsum, the apical triangle of the lip, and the mental protuberance of the chin. The transposed island flap is designed as an elongate island and all lateral attachments are freed. The trailing 3/4 of the flap is then elevated, leaving only a proximal deep or deep and lateral pedicle in place. The pointed tip of the island is then twisted and transposed 90 to 180 degrees, allowing for closure.

# Summary:

In all cases a satisfactory result was achieved. There were no cases of necrosis nor infection.

# **Conclusions:**

By adding a twist to the island pedicle flap the island is able to reach farther than by advancement alone. Similarly, by severing the dermal and epidermal attachment of a transposition, greater motion is enabled and a dog ear is avoided. In select situations the twisted and transposed island pedicle flap allows for the aesthetic repair of challenging facial operative wounds.

Friday, May 4, 2007 9:08 AM-9:16 AM

**PRESENTER:** Matthew Halpern, M.D.

**TITLE:** Elective Lymph Node Evaluation in Patients with High Risk Squamous Cell Carcinomas: A Review of the Current Literature

AUTHORS: Matthew Halpern, M.D.; Desiree Ratner, M.D.

## Purpose:

The majority of patients with cutaneous squamous cell carcinoma are at low risk for regional or distant metastatic spread (1-12.5%). Once metastatic spread has occurred, patient survival is significantly reduced. Certain risk factors, including large tumor size, depth of invasion, histologic features, site, recurrence, immunosuppression and etiology, have been found to place patients at higher risk for aggressive tumor behavior, with rates of regional or distant metastasis that range from 11-43%. We sought to review and summarize the literature regarding options for lymph node evaluation and management in patients with high risk squamous cell carinoma without clinical evidence of lymph node involvement.

# Design:

MEDLINE and Pubmed searches were performed to identify studies quantifying the effectiveness of lymph node evaluation, including sentinel lymph node biopsy (SLNB), elective lymph node dissection (ELND), and radiographic imaging, for cutaneous squamous cell carcinoma in patients at high risk for regional or distant metastases.

# **Summary:**

Nine retrospective analyses of patients with high risk squamous cell carcinomas recommended ELND in selected patients on the basis of significantly elevated rates of metastasis or ineffective clinical observation. Location on the lip, ear, and preauricular cheek, and aggressive histologic features including invasion greater than 4 mm, poor differentiation, invasion of cartilage and desmoplastic differentiation were all predictive of local or distant metastasis. Four prospective studies were identified in which SLNB was performed to detect subclinical lymph node involvement in patients with high risk squamous cell carcinomas. One study determined that this technique had a sensitivity of 88% and a negative predictive value of 0.94 for assessing risk of local and distant metastases. When FDG PET scanning was used to evaluate the presence of subclinical metastasis in patients with high risk squamous cell carcinomas, 25% of patients had regional lymph node involvement and 8.3% had distant metastasis confirmed by surgical resection.

# **Conclusions:**

Currently there are no randomized controlled prospective studies that demonstrate survival benefit from aggressive lymph node evaluation for patients with high risk squamous cell carcinomas. The recommendations by several authors to perform elective lymph node dissections are based on high rates of metastasis and the ineffectiveness of close clinical observation in selected high risk tumors. SLNB and FDG PET scans are promising technologies that may enable early detection of subclinical metastases, but additional studies to fully evaluate these techniques are necessary. At this time, dermatologists must manage patients with high risk squamous cell carcinomas on a case by case basis. Patients with multiple risk factors for metastasis should be considered for elective lymph node evaluation in conjunction with head and neck surgery, surgical oncology, and radiology.

Friday, May 4, 2007 9:16 AM-9:24 AM

PRESENTER: Kavita Mariwalla, MD

**TITLE:** Mohs Surgery Histopathology Concordance

AUTHORS: Kavita Mariwalla, MD; David J. Leffell, MD

#### Purpose:

The accuracy of the Mohs surgeon to interpret frozen sections is an essential element of the Mohs Micrographic

Surgery (MMS) procedure. Little data exists regarding the slide interpretation concordance rates between dermatopathologists and Mohs surgeons.

## Design:

We performed a retrospective study of 1,156 slides submitted in an ongoing basis over a 10 year period as part of a pre-existing randomized, blinded, quality assurance protocol in the Yale Dermatologic Surgery Unit. Slides were read by one of five dermatopathologists and represent an accumulated case load from three different MMS surgeons and five MMS fellows; agreement or disagreement was recorded in a binary system as "tumor" or "no tumor".

#### Summary:

Of the BCC, 68 were recurrent, 12 were morpheaform and 10 exhibited features of SC. Of the SC, 4 were keratoacanthomas and 17 were recurrent. Of the 1,156 slides analyzed by both dermatopathologists and Mohs surgeons, 33 slides (2.9%) were initially read disparately. After further review and analysis of the nature of the disagreements, the true concordance rate was determined to be 99.7% (n=1,153). The majority of disputed slides resulted from dermatopathologists' evaluation of actinic damage or in situ malignancy at the Mohs margins of invasive malignancy. Specifically, 23 of 33 slides (2.0% of total slides) were diagnosed as actinic keratosis (AK) or SCIS and 7 (0.6% of total slides) contained foci of superficial basal cell carcinomas. At the time of the Mohs procedure itself, documentation revealed that the Mohs surgeons recognized the superficial keratinocytic atypia or malignancy and treated appropriately with topical chemotherapeutic agents or with close clinical follow-up. Of the three cases (0.3% of total slides) where discordance occurred (one morpheaform BCC, one superficial multifocal BCC and one infiltrative BCC), no adverse patient outcomes accrued.

#### Conclusions:

We conclude that Mohs surgeons and dermatopathologists concur on interpretation of Mohs sections and that discordance arises most often in the interpretation interface of AK and SCIS.

Friday, May 4, 2007 9:24 AM-9:32 AM

PRESENTER: John A. Zitelli, MD

TITLE: Sentinel Lymph Node Biopsy: Another View

AUTHORS: John A. Zitelli, MD

#### Purpose:

This presentation will review the final data of the Multicenter Selective Lymphadenectomey Trial (MSLT), and present an alternative interpretation of the data compared to the original presentation of the investigators.

#### Design:

The final results of the MSLT are unpublished, but available for public use. Although the investigators have presented their interpretation of the data in a non-peer reviewed fashion through lectures and slide shows, this analysis of the same data comes to significantly different conclusions for the secondary aims of the study.

#### Summary:

The primary aim of the MSLT study has shown no survival benefit to sentinel lymph node biopsy followed by complete node dissection for positive node biopsy. The data also shows that for the secondary aims of the study that 1) complete node dissection for positive sentinel nodes does not improve survival compared to complete node dissection for palpable nodes, 2)complete node

dissection for positive sentinel nodes does not improve disease free survival, and 3)sentinel lymph node status has very little prognostic value compared to Breslow's thickness.

# **Conclusions:**

There is no controversy that sentinel lymph node biopsy offers not survival advantage for patients with melanoma.

However the data of the MSLT study is now available for review and does not support the original investigators' opinion about their secondary aims. The alternate interpretation of the secondary aims, using their data, is presented.

Friday, May 4, 2007 9:32 AM-9:40 AM

PRESENTER: Arash Kimyai-Asadi, M.D.

TITLE: Alar Rotation Flap for Repair of Nasal Alar Defects

AUTHORS: Arash Kimyai-Asadi, M.D.

# Purpose:

Significant defects of the nasal ala are typically repaired using skin grafts or by flaps taken from other cosmetic subunits of the nose (e.g. nasal sidewall) or the cheek. These repairs typically result in alterations to the texture or symmetry of the nasal ala. The purpose of this study is to describe my experience with the alar rotation flap to repair defects of the medial and central nasal ala.

#### Design:

30 patients with nasal alar defects who underwent this repair were included in the study. An incision is made in the alar crease from the superior edge of the defect laterally to the alar-facial sulcus or the nasal sill. The skin is undermined in a superficial subcutaneous plane and is rotated onto the defect. A dogear is removed inferolaterally to prevent a standing cone on the alar rim. Sutures are removed in one week.

## Summary:

The average defect repaired using this flap was 1.0 x 0.8 cm. Necrosis of the flap was not seen in any patient. No patient needed any surgical revision of the flap. Notable distortion of the alar rim was not seen in any patient. Cosmetic outcomes were excellent and scars were typically impossible to detect in patients seen several months postoperatively.

# **Conclusions:**

The alar rotation flap provides an optimal first-line repair choice for defects of the central and medial nasal ala. It has clear advantages over skin grafts, bilobed flaps and cheek-based advancement, transposition and interpolation flaps.

Friday, May 4, 2007 9:40 AM-9:48 AM

PRESENTER: Brad Kovach, M.D.

TITLE: Use of Immunostains in the Measurement of Breslow Depths of Malignant Melanoma

AUTHORS: Brad Kovach, M.D.; Frank Q. Zhan, M.D.; Alan S. Boyd, MD; Thomas Stasko, MD

Purpose:

This study sought to determine if the use of immunohistochemical stains, specifically S-100 and Mart-1 immunostains, allows detection of deeper foci of invasion of cutaneous melanoma than appreciated on hematoxylin and eosin (H&E) stained sections.

#### Design:

Approval for this study was obtained through the Vanderbilt University Institutional Review Board. Paraffin-embedded tissue blocks from 16 cutaneous melanomas were obtained. Three serial histologic sections were obtained from each tissue block and stained with H&E, S-100 immunostain, and Mart-1 immunostain. The 48 slides thus obtained from the 16 melanoma tissue blocks were blinded and randomly assigned a number, 1 through 48. A board-certified dermatopathologist then measured Breslow depths for each of the 48 slides. Differences between Breslow depths recorded with H&E and the corresponding depths measured using immunostains were then compared using the paired 2-tailed student t-test.

# Summary:

Breslow depths recorded for each of the 16 cases using H&E, Mart-1 immunostain, and S-100 immunostain were compared. When the Breslow depths measured via H&E were compared to the greatest depth measured with either of the three stains, there was a statistically-significant difference (p=0.01), with deeper foci of invasion appreciated with the addition of the two immunostains when compared to use of H&E alone. Although there was a strong trend toward greater depths of invasion detected with S-100 or Mart-1 immunostains individually when compared to use of H&E alone, these differences did not reach statistical significance (p=0.16 and p=0.86, respectively). There was also no statistically significant difference in depths measured with S-100 immunostain when compared to those recorded with Mart-1 immunostain (p=0.56).

#### Conclusions:

In this small randomized blinded pilot study, the addition of a panel of S-100 and Mart-1 immunostains allowed the identification of significantly deeper foci of invasion of malignant melanoma when compared to use of H&E-stained sections alone. Although there were trends towards greater depths being detected with each immunostain individually when compared to use of H&E, they did not reach statistical significance. This could potentially be due to the small sample size. Our results suggest that the addition of a panel of S-100 and Mart-1 immunostains to the standard use of H&E-stained sections increases the sensitivity of detecting deeper foci of invasion of cutaneous melanoma. Identification of such deeper foci could influence staging, thereby providing additional prognostic information and altering subsequent evaluation and therapeutic strategies. When considering the costs of melanoma staging workups and treatment, as well as the potential for poor clinical outcomes, the addition of these two immunostains to the histopathologic examination of melanoma specimens is reasonable. The results of this small pilot study should be confirmed with larger studies.

Friday, May 4, 2007 9:48 AM-9:56 AM

**PRESENTER:** Matthew Halpern, M.D.

TITLE: The Galeal Hinge Flap: A Useful Tool for the Immediate Repair of Scalp Defects

Extending to Bone

**AUTHORS:** Matthew Halpern, M.D.

#### Purpose:

Traditional approaches to the repair of large scalp defects extending to bone include healing by secondary intention, delayed full thickness skin grafting, split thickness skin grafting over burred

bone, and large rotation or transposition flaps. Full thickness skin grafting directly over bone is not a viable option due to the avascular nature of bony tissue. We describe a novel option for the immediate repair of scalp defects extending to bone utilizing the adjacent galea aponeurotica.

## Design:

We describe the use of a galeal hinge flap, in which the galea adjacent to a surgical defect is incised, transposed, and sutured over an area of exposed bone prior to placement of a skin graft.

# **Summary:**

Galeal hinge flaps recreate the vascular bed necessary for the survival of full thickness or split thickness skin grafts, which would likely necrose if placed directly on exposed bone.

#### **Conclusions:**

Galeal hinge flaps provide a technically simple and reliable means of recreating the vascular bed required for placement of a full or split thickness skin graft. These flaps serve as a useful adjunct in reconstructing scalp defects extending to bone, allowing repair of such defects to be successfully accomplished in a single operative session.

Friday, May 4, 2007 9:56 AM-10:04 AM

PRESENTER: Lisa B. Campbell, MD

TITLE: Transposition Island Pedicle Flaps for Nasal Sidewall, Root and Combination Defects

AUTHORS: Lisa B. Campbell, MD; Michael L. Ramsey, MD

# Purpose:

Island pedicle flaps fulfill a unique role in dermatologic surgery defect repair. In many cases they offer increased mobility and vascular supply compared to traditional transposition and advancement flaps. Multiple variations have been published and this presentation verbally and graphically describes a series of the transposition island pedicle flap combined with rotation on the pedicle applied to nasal sidewall, root and combination defects.

# Design:

Six cases with defects ranging in diameter from 1.0-2.6 cm illustrate this variation on the traditional island pedicle flap. In order to maximize cosmesis, the donor tissue needed to be oriented obliquely with ensuing transposition and rotation on the pedicle. In each of the cases, suture lines were ideally placed in relaxed skin tension lines or along cosmetic subunit junctions, disguising both the secondary closure and island. Tension on surrounding tissue was also minimized as pedicles were designed individually to maximize mobility for each case.

# Summary:

Applications of the island pedicle flap abound offering flexibility and consistent results.

# **Conclusions:**

Visualizing the variety of possibilities with this flap as illustrated in this case series will add to the dermasurgeon's armamentarium of repairs.

Friday, May 4, 2007 Late-breaking 10:04 AM-10:12 AM PRESENTER: Kevan G. Lewis, MD, MS

TITLE: Technical Innovation in Tissue Mounting During Mohs Surgery

AUTHORS: Kevan G. Lewis, MD, MS; Raymond G. Dufresne Jr, MD; Nathaniel J. Jellinek, MD

#### Purpose:

The quality of frozen Mohs sections is determined by a confluence of technical factors. Accuracy, reliability and efficiency in the laboratory setting are critical. Tissue mounting and processing techniques vary but the goal is always the same: 100% margin control through direct visual inspection of the epidermis, dermis and deeper structures.(1-3) The quality of slide preparation is dependent on the experience of the technician and technical difficulty of the procedure. Numerous techniques and devices for mounting tissue have been reported.(4,5) The purpose of this study is to describe a mounting technique that produces accurate and reliable frozen sections in a time efficient manner and minimizes operator-dependency. Preliminary experience using a prototype nested aluminum jig has been described previously.(6) We report on advancements in the technique and long-term experience incorporating it into a busy academic Mohs surgery practice.

# Design:

Following routine excision during Mohs surgery, the cut surgical margin of the fresh tissue is placed (epidermis facing up) onto a frozen (-20°C) polished disc that is permanently mounted to a handheld aluminum block. The tissue is rolled over using the technician's hands or a forceps to create the optimal oblique plane of section and covered with OCT compound. Embedding medium is also applied to a frozen button (with concentric circular ridges) that rests in a mobile jig. The aluminum block is then inverted and nested with the mobile jig, leaving the tissue apposed with the button and embedded in medium. When the OCT compound stabilizes, the button adheres to the aluminum block which is lifted from the jig. Lateral pressure dislodges the aluminum block leaving the embedded tissue mounted on the button ready for sectioning.

# Summary:

During the 20-year period from 1988 to 2007, over 20,000 cases of Mohs surgery have been performed utilizing this technique. Video segments and digital photographs illustrate the ease and simplicity of this procedure. This method for mounting Mohs excisions eliminates the need to adjust the cryostat yolk (chuck) in order to orient the plane of section perpendicularly to the microtome blade when facing the block. The extra step required by conventional methods of manually inverting the tissue in order to arrange the correct plane of section nearest the microtome is also omitted. Few passes of the microtome blade are necessary to obtain optimal sections. Optimal orientation of the block may reduce the number of sections requiring examination by the Mohs surgeon and may minimize the risk of missing tumor skip areas. Together these modifications improve the speed and reliability of processing by simplifying the procedure. Potential limitations of this technique include difficulty handling fragile tissue or thick, firm tissues. Because the excised tissue adheres instantly to the frozen block, correct placement of thin, flaccid tissue such as eyelid skin is more challenging. Application of cyanoacrylate glue can quickly fix this fragile tissue and facilitate subsequent mounting steps. (7) Mounting thicker, less compliant tissue in scar or heavy sebaceous skin may require relaxing incisions and demands appropriate beveling during excision Additionally, care must be taken in bi-sectioned or multi-sectioned Mohs excisions not to compress or roll down a non-marginal tissue edge which can create a false positive epidermal margin.

# Conclusions:

Results of this study demonstrate the utility of the modified aluminum jig technique for mounting tissue during Mohs surgery. This report of 20-years experience underscores the simplicity, accuracy and reproducibility of the procedure. Practice efficiency and patient care may be improved by incorporating this device into routine histologic processing during Mohs surgery. References 1. Davis DA et al. Preparation of frozen sections. Dermatol Surg. 2004 Dec;30 (12 Pt

1):1479-85. 2. Hanke CW et al. Cryostat use and tissue processing in Mohs micrographic surgery. J Dermatol Surg Oncol. 1989 Jan;15(1):29- 32. 3. Miller LJ et al. The preparation of frozen sections for micrographic surgery. A review of current methodology. J Dermatol Surg Oncol. 1993 Nov;19(11):1023-9. 4. Randle HW et al. Histologic preparation for Mohs Micrographic surgery. The single section method. J Dermatol Surg Oncol. 1993 Jun;19(6):522-4. 5. Nouri K et al. The Miami Special: a simple tool for quality section mounting in Mohs surgery. J Drugs Dermatol. 2004 Mar-Apr;3(2):175-7. 6. Carter VH. A new method for preparing tissue blocks for cryostat sectioning. J Dermatol Surg Oncol. 1985 Jul;11 7):687-9. 7. Zeikus P. et al. Novel technique for use of cyanoacrylate in Mohs surgery. Dermatol Surg 2006;32(7):943-4.

Friday, May 4, 2007 MG213 Abstract Session 3:15 PM-3:23 PM

PRESENTER: Murad Alam, MD

**TITLE:** Health-Related Quality of Life and Utilities in Patients with Chronic Nonmelanoma Skin Cancer: A Multispeciality Assessment

**AUTHORS:** Murad Alam, MD; Ray Hah, BA; Elizabeth Calhoun, PhD; John Y. Kim, MD MA; Simon Yoo, MD; Lucile White, MD

#### Purpose:

There has been a recent interest in assessment of quality of life in patients with nonmelanoma skin cancer, and specialized measures have been developed. However, the quality of life burden of chronic, recurrent nonmelanoma skin cancer has not been specifically assessed via utility measures. Additionally, quality of life in nonmelanoma skin cancer has usually been measured by dermatologists, and very limited data are available on how quality of life may vary in patients treated by other specialists. The purpose of this study was to: (1) measure utilities in patients with nonmelanoma skin cancer presenting to physicians from multiple disciplines; and (2) attempt to better understand the cause of these preferences via an extensive questionnaire eliciting information about diagnosis and treatment history, psychometric parameters, and other preferences.

#### Design:

One-on-one survey study of patients with biopsy-diagnosed nonmelanoma skin cancer presenting to dermatology, otolaryngology, or plastic surgery practices at an urban academic medical center. The survey elicited demographic information; social history; work history; general medical history; complete skin cancer history including dates of prior diagnoses and treatments, including the type of treatment and the specialty of the treating physician; information about depression, anxiety, and overall skin quality of life via the Beck Depression Inventory, the State-Trait Anxiety Inventory, and Skindex; and utilities via time-tradeoff analysis of 5 real and hypothetical health states.

# Summary:

106 patients were asked to participate and 102 acceded, and completed all the sections, except for utilities. Complete utility information was elicited from 72 patients, with the remainder declining (6), being too tired (10; the utility questions were the last part of the survey); not understanding the questions sufficiently, as determined by themselves or the survey administrator (14). Utilities associated with hypothetical health states (A: development of first lesion; B: day of surgery; C: postsurgery; D: recovery; E: chronic state) were, respectively: 0.89 (A), 0.93 (B), 0.92 (C), 0.87 (D), 0.83 (E). Utilities were similar for patients who had experienced a hypothetical health condition and those who had not. Results did not vary by the specialty of the physician to whom patients presented.

#### Conclusions:

Health-related quality of life appears to be significantly negatively impacted in patients with nonmelanoma skin cancer, who exhibit utility values typically associated with serious medical disease. Utilities associated with the chronic, recurrent diathesis are particularly low, with patients willing to give up 1 full year of life in the disease state for only 10 months of life in perfect health. Further analysis is needed to isolate the specific underlying causes, so that targeted interventions may be provided to improve quality of life.

Friday, May 4, 2007 3:23 PM-3:31 PM

PRESENTER: Aradhna Saxena, M.D.

**TITLE:** Bilateral Upper Blepharoplasty For Full Thickness Skin Grafts: Synergy In the Repair of Eyelid Defects Following Mohs Surgery

AUTHORS: Aradhna Saxena, M.D.; Greg S. Morganroth, MD

#### Purpose:

Lower eyelid and medial canthus defects following Mohs Micrographic Surgery (MMS) represent some of the most challenging defects for reconstruction because of the risk of ectropion, webbing, asymmetry, and scarring. The upper eyelid skin is the best match for a FTSG of a lower lid defect, however removal of upper eyelid skin may create asymmetry with resultant dissatisfaction with the cosmetic outcome. This study evaluates the effectiveness, safety, and patient satisfaction of combining bilateral upper blepharoplasty and the repair of medial eyelid defects immediately following MMS to achieve an ideal FTSG match and to provide an overall aesthetic improvement without requiring revision surgery.

# Design:

A series of 8 patients underwent Mohs Micrographic Surgery (MMS) of medial canthus/lower eyelid tumors followed by reconstruction with full thickness skin grafts harvested from upper eyelid skin removed during a bilateral upper lid blepharoplasty. The patient tolerance of the procedure, satisfaction of the reconstruction outcome, satisfaction of the blepharoplasty outcome, and complications were evaluated on the basis of retrospective chart review, investigator observation, digital images, and a patient questionnaire.

# Summary:

The 8 patients included 6 women and 2 men with an average age of 58.3 years. 7/8 patients had basal cell carcinomas and 1/8 had melanoma in situ. All defects were located in the medial canthus extending to the lower lid with an average size of 1.65cm. Patients were evaluated at an average of 119.4 days post-op. Two patients had mild graft edema that resolved with a single injection of kenalog. All patients were very satisfied to extremely satisfied with the cosmetic outcome of both procedures despite that fact that none of the patients considered cosmetic eyelid surgery prior to MMS and all patients decided to have the upper blepharoplasty on the day of surgery. The addition of the blepharoplasty did not increase downtime. All patients would recommend this combination to a friend and would repeat the procedure in the future.

#### **Conclusions:**

Upper blepharoplasty is an excellent method to harvest upper eyelid FTSGs for the repair of eyelid defects following MMS. The procedure is well-tolerated, has high patient acceptance, is extremely safe, and does not increase recovery time. The synergy of combining the bilateral upper blepharoplasty with the eyelid defect repair eliminates concerns regarding asymmetry of the upper lids and increases overall patient satisfaction.

Friday, May 4, 2007 3:31 PM-3:39 PM

PRESENTER: Arash Kimyai-Asadi, M.D.

**TITLE:** Efficacy of Excision of Well-Demarcated Primary Nodular Facial Basal Cell Carcinomas with 2-mm Surgical Margins

**AUTHORS:** Arash Kimyai-Asadi, M.D.; Leonard H. Goldberg, M.D.; Steven Q. Wang, M.D.; Daniel S. Behroozan, M.D.; S Ray, Peterson, M.D.; Murad Alam, M.D.; Ming H. Jih, M.D., Ph.D.

# Purpose:

A 4 mm surgical margin of clinically normal skin is the current standard for elliptical excision of basal cell carcinomas. However, a 4 mm surgical margin is often not optimal on the face due to cosmetic and functional concerns. As such, facial excisions of basal cell carcinomas are often performed with either narrower surgical margins or with the use of Mohs micrographic surgery. We designed a study to test whether small, well-demarcated nodular basal cell carcinomas on the face can be effectively treated using elliptical excision with 2 mm surgical margins.

# Design:

300 primary, small (<1 cm), well-demarcated, nodular facial basal cell carcinomas were excised as an ellipse with 2 mm margins around the visible border of the tumor. Frozen sections were prepared and examined microscopically to provide complete histologic margin control.

#### Summarv:

300 facial basal cell carcinomas were included in the study. On average, the tumors measured 0.6 x 0.5 cm. 52 (17.3%) had positive margins, requiring additional excision.

#### **Conclusions:**

Narrow margins (2 mm) are inadequate for the excision of small, well-demarcated primary nodular basal cell carcinomas of the face. In order to avoid repetitive surgeries and the risk of recurrence in anatomically sensitive areas, these tumors should be treated with standard wide margins (i.e. 4 mm), or undergo Mohs micrographic surgery.

Friday, May 4, 2007 3:39 PM-3:47 PM

PRESENTER: Arianne E. Chavez-Frazier, M.D.

**TITLE:** The Use of High Definition Video Clips for Informed Consent and Wound Care in the Mohs Surgery Unit

AUTHORS: Arianne E. Chavez-Frazier, M.D.; Tri Nguyen, M.D.; Michael Migden, M.D.

# Purpose:

At the University of Texas Mohs Surgery Center, we are currently employing high definition video clips to assist with daily tasks of our Mohs surgeons and the nursing staff and to keep patients well informed. The purpose of this is to allow the patient to be well informed of all of the details on the informed consent form before they sign, and to instruct patients on the proper care of their surgical wound after they leave the Mohs Surgery Center. This allows the Mohs surgeon and the nursing staff to attend to other required tasks within the Mohs Surgery Center while still informing the patient of necessary information; essentially completing two tasks at once.

# Design:

Using high definition recording equipment, we recorded real time high definition video clips detailing the risks/benefits of Mohs surgery and reviewing thoroughly the informed consent form (recorded by surgeon) as well as detailed instructions for wound care (recorded by RN). Once recorded, the high definition video clips were stored on a central server in the Texas medical Center approximately one mile from the Mohs Surgery Unit. The video clips can quickly and easily be accessed from this central server from any computer in the Mohs surgery Unit. All rooms are currently equipped with a computer and the patient is allowed to watch the videos at times when they would otherwise be waiting. To quantify the benefits of using the high definition video clips in a Mohs surgery practice we are currently comparing the amount of time it takes our Mohs surgeons to verbally review the informed consent form with the patient versus letting the patient watch the video and answering any specific patient questions afterwards. The time saved or lost on average will be evaluated using a cost-analysis method to evaluate the productivity of the video clips for an average Mohs surgery practice. In addition, we will conduct a patient questionnaire survey to evaluate the patient satisfaction regarding the use of high definition video clips.

# Summary:

Parts of the high definition video clips will be able to be viewed at the meeting and the results of the cost-analysis and patient satisfaction survey will be presented. We have found the use of high definition video clips helps our Mohs Surgery Center run more effectively and allows our patients to be better informed regarding the risks/benefits of Mohs surgery, as well as their own wound care once they leave the Mohs surgery unit.

# **Conclusions:**

The use of high definition video clips in the Mohs Surgery Center enables our patients to be well informed of the risks/benefits of Mohs surgery as well as the required wound care following surgery. In addition it allows our Mohs surgeons and nursing staff to accomplish the same goals of informing patients and providing patient education, while having more time during the day to complete other required tasks in the Mohs surgery Center.

Friday, May 4, 2007 3:47 PM-3:55 PM

PRESENTER: Teris M. Chen, MD

**TITLE:** Superficial Musculoaponeurotic System (SMAS) Plication in Facial Reconstructive Surgery

**AUTHORS:** Rungsima Wanitphakdeedecha, MD; Teris M. Chen, MD; Michael R. Migden, MD; Tri H. Nguyen, MD

#### Purpose:

The SMAS envelops the muscles of facial expression. This fascia may be plicated in facial rejuvenation of the aging face or facial palsy. The authors discuss SMAS plication in the setting of facial reconstructive surgery to reduce both wound tension and defect size.

## Design:

Hydrodisect with local anesthesia to facilitate undermining of the surgical wound above the SMAS. Place either nonabsorbable or absorbable sutures into the SMAS at the most inferior and superior aspects of the undermined surgical defect. Instruct patients to avoid forcible movement of the skin, which remains tight for as many as 3 weeks. The vector of lift with the SMAS plication is in a line that is perpendicular to the nasolabial fold, from the lateral nasal ala to the lateral canthus of the eye. To maintain the lift, it may be necessary to anchor the tissue to periosteum or the deep temporal fascia.

# **Summary:**

Figure 1 Pre-SMAS plication Figure 2 Post-SMAS placation

#### Conclusions:

Plication of the SMAS before suturing overlying tissue provides an excellent functional and cosmetic result. By reducing tension and wound size, repairs are often less complex than anticipated, in addition to providing a unilateral rejuvenating effect.

Friday, May 4, 2007 3:55 PM-4:03 PM

PRESENTER: Robert J. Willard, M.D.

**TITLE:** Nasalis Myocutaneous Island Pedicle Flap with Partial Alar Second Intention Healing for Repair of Lateral Nasal Sidewall and Partial Alar Defects

AUTHORS: Robert J. Willard, M.D.; Raymond G. Dufresne, MD; Nathaniel Jellinek, MD

#### Purpose:

Nasal sidewall defects with or without alar involvement present unique reconstructive challenges. The sidewall is bordered by the cheek laterally, dorsum medially, and ala inferiorly. The borders between these units provide important anatomic and cosmetic landmarks. When possible, optimal reconstruction stays within one cosmetic subunit. The purpose of this study is to describe a novel repair technique for reconstruction of nasal sidewall and partial alar defects following Mohs micrographic surgery.

#### Design:

8 patients, studied retrospectively, presented for Mohs surgery and reconstruction for basal cell carcinoma of the nose. These defects involved the sidewall with variable involvement of the alar groove and ala. All patients were repaired using a superiorly-based myocutaneous island pedicle flap (IPF), tacked inferiorly at the alar groove, with secondary intention healing of the alar defect, and guiding sutures placed at the time of reconstruction to prevent alar lift. The patients were followed for 3-12 months postoperatively, with long-term photographs taken to compare to baseline. Results: All patients healed well without complication. There was no alar asymmetry or elevation in any patients. No patient required postoperative scar revision.

# Summary:

IPFs are advancement flaps with a deeply-based pedicle that may be subcutaneous or myocutaneous. Muscle-based flaps, which offer increased vascular supply compared to subcutaneous flaps, are particularly important for repair of defects on the nose. The nasalis myocutaneous flap is dependent on the lateral nasal branch of the angular artery. Reconstruction of the nasal tip and sidewall using a nasalis muscle-based IPF with bilevel undermining has been described previously. Repair of the nasal ala using single or bi-pedicled nasalis IPFs has also been reported. In these cases, defects were limited to a single cosmetic unit. Advancement flaps oriented perpendicular to free margins, including the ala, risk postoperative pulling on the free margin, potentially resulting in alar notching. We describe a technique that involves advancing an IPF inferiorly along the nasal sidewall and limiting its movement to the sidewall subunit. The leading edge of the flap is aligned with the alar groove, recreating that anatomic boundary. The medial and lateral sides of the leading edge of the flap are tacked with absorbable suspension sutures which serve to obviate any vertical tension vector that might result in notching of the alar rim. The remaining alar defect is left to heal by second intention and is either packed with a bolster dressing or covered with a guiding suture parallel to the alar rim. This last step further prevents the possibility of alar lift associated with secondary intention wound healing adjacent to a free margin.

#### Conclusions:

Reconstruction of the nasal sidewall and portions of the alar groove and ala through the use of a superiorly based myocutaneous IPF and secondary intention alar healing provide excellent cosmetic and functional results, without anatomic distortion. Lateral tacking of the leading flap edge, combined with guiding sutures placed over the alar portion of the defect prevent alar lift with the secondary intention wound healing.

Friday, May 4, 2007 4:03 PM-4:11 PM

PRESENTER: Arash Kimyai-Asadi, M.D.

**TITLE:** Cellular Dermatofibroma: Benign or Malignant?

AUTHORS: Arash Kimyai-Asadi, M.D.; Ming H. Jih, M.D., Ph.D.; Leonard H. Goldberg, M.D.

# Purpose:

Cellular dermatofibroma ("benign cellular fibrous histiocytoma") is considered to be a variant of dermatofibroma that is characterized by large, deeply-penetrating lesions with a high propensity for recurrence and uncommon systemic metastases. Variants of cellular dermatofibroma include atypical and indeterminate fibrous histiocytomas, which demonstrate cellular atypia and overlap features with dermatofibrosarcoma, respectively.

# Design:

We describe 5 patients with cellular dermatofibroma. We also review the literature with particular attention to the biologic behavior of this tumor.

#### Summary:

Tumors are typically large (> 2 cm) with a history of recurrence after previous treatment. Histologically, there is infiltration into the subcutaneous fat, in 2 cases requiring excision to or including the deep fascia. Factor XIIa staining is diffuse, but focal staining with CD34 is often present. None of the tumors recurred following Mohs surgery. The literature has several examples of metastasis from these tumors.

#### Conclusions:

Cellular dermatofibromas have 4 features that together prove their malignant nature: (1) the large size tumors can attain; (2) the potential for significant deep subcutaneous infiltration and invasion; (3) the high rate of local recurrence; and (4) the occurrence of distant metastases. As such, we propose that cellular, atypical and indeterminate dermatofibromas be thought of as malignant in terms of their biologic behavior. Mohs micrographic surgery is the treatment of choice for these tumors, particularly when they are clinically large or recurrent.

Friday, May 4, 2007 4:11 PM-4:19 PM

PRESENTER: Ravi S. Krishnan, M.D.

TITLE: A Technique for Fat Conservation when Releasing Interpolation Flap Pedicles

AUTHORS: Ravi S. Krishnan, M.D.; Heidi B. Donnelly, M.D.

#### Purpose:

Complex interpolation flaps, such as the paramedian forehead flap and the melolabial interpolation flap, are commonly used in the reconstruction of large defects. When performing

such flaps, large amounts of tissue must be taken from the donor sites in order to have an adequate amount of tissue for reconstruction. This often results in some degree of deformity in the donor site. It behooves the Mohs surgeon to minimize the extent of this deformity so that optimal cosmesis can be achieved. One of the most common ways in which the donor site can be deformed is by the development of a depression or concavity that results from the loss of the adipose tissue which was used in the interpolation flap and its pedicle. We describe a technique for pedicle inset that allows most of the adipose tissue in the flap's pedicle, which is traditionally discarded, to be reincorporated into the donor site. This tecnique minimizes any postoperative donor site concavities which may arise.

# Design:

This is a pilot study involving 10 patients with nasal defects resulting from Mohs surgical excision of skin cancers. Five patients who underwent paramedian forehead flap reconstructions and 5 patients who underwent melolabial interpolation flap reconstructions had this technique performed at the time of pedicle release. All patients were followed for a minimum of six months, and their results were compared with historical controls with similar defects and reconstructions who did not have this technique performed at the time of pedicle takedown.

## Summary:

This technique is fairly simple to execute and allows restoration of some of the volume which is lost from the donor site. All patients had excellent cosmetic outcomes and demonstrated, at worst, only minor concavities at follow-up.

# **Conclusions:**

This fat conservation is a relatively simple technique that all surgeons who perform interpolation flaps should consider using. The technique is easily performed at the time of pedicle inset will result in a significant reduction in donor site depressions or concavities.

Friday, May 4, 2007 4:19 PM-4:27 PM

PRESENTER: Jeff Petersen, MD

**TITLE:** Modified Bernard-Burow's Reconstruction for Near Complete Lower Lip Resection Following Mohs Surgery

AUTHORS: Jeff Petersen, MD

#### **Purpose**

Demonstrate a modified Bernard-Burow's reconstruction for a near complete lower lip resection with maintenance of muscular innervation, mucosal reconstruction, and no loss of lower lip dam function.

# Design:

Bernard-Burow's reconstruction may be required when complete or near complete loss of the lower lip (greater than two-thirds). With modification of the originally described procedure, the expected results from that procedure; insensate lower lip, loss of mobility, drooling, can be minimized. This requires attention to the undermining planes and the flap design. We will discuss these modifications and the designing of the flap to minimize these expected post surgical results.

# **Summary:**

When one is left with complete or near-complete loss of the lower lip. One should consider reconstruction using the modified Bernard-Burow's flap and understand the expected post surgical results.

#### Conclusions:

The modified Bernard-Burow's flap can be used effectively in lower lip reconstruction and the expected post surgical results can be minimized.

Friday, May 4, 2007 4:27 PM-4:35 PM

PRESENTER: Neil J. Mortimer, MBChB

**TITLE:** Investigation of the Effectiveness of Anaesthesia of the Nasal Ala Provided by an Infraorbital Nerve Block

AUTHORS: Neil J. Mortimer, MBChB; Paul J. Salmon, MD; Michael J. Sladden, MBChB

## Purpose:

Dermatological surgical procedures involving the nasal alae are commonplace in clinical practice. Direct infiltration of local anaesthetic into the nasal ala is extremely uncomfortable. Nerve blocks are generally well tolerated. We sought to investigate the effectiveness of alar anaesthesia provided by an infraorbital nerve block. This was evaluated by means of a prospective clinical study.

#### Design:

75 consecutive patients requiring dermatological surgical procedures involving the nasal ala (or other sites necessitating an infraorbital nerve block) were recruited. Following topical mucosal anaesthesia with benzocaine 20%, an infraorbital nerve block (1ml of 2% lidocaine without epinephrine) was administered via the intraoral route according to standard technique. After ten minutes, the effectiveness of anaesthesia was assessed by testing the perception of a sharp stimulus (30 G needle) tested at five standardised reference points on the nasal ala. If the ala was not completely anaesthetised, an external nasal nerve block (1ml of 2% lidocaine without epinephrine) was administered according to standard technique. Sensation of the nasal ala was again assessed after ten minutes by the method described above.

## Summary:

Complete anaesthesia of the nasal ala was achieved with an infraorbital nerve block in 67% (50/75) patients. Of the remaining 25 patients, the addition of an external nasal block achieved complete anaesthesia in 44% (11/25).

#### **Conclusions:**

An infraorbital nerve block provides effective alar anaesthesia in the majority of patients. In those where it is ineffective for complete anaesthesia, an external nasal block is a useful adjunct. Use of an infraorbital nerve block (and external nasal nerve block if required) is recommended prior to direct infiltration of local anaesthetic into the nasal ala to reduce the discomfort associated with this.

Friday, May 4, 2007 Late-breaking 4:35 PM-4:43 PM

PRESENTER: Steven Chow, MD

TITLE: Subcutaneous Pedicle Nasolabial Transposition Flap

AUTHORS: Steven Chow, MD; Peter K. Lee, MD, PhD

## Purpose:

The traditional design of a nasolabial transposition flap requires that the flap pedicle width have a 1:1 ratio with the diameter of the primary defect. Extensive undermining is needed to maximize the flap's ability to pivot around its axis. Tissue economy is also not optimized, and large secondary defects may be created. Pin-cushioning secondary to excess subcutaneous fat beneath the pedicle may also occur despite careful surgical technique. To address the issues of enhancing flap rotation, maximizing tissue conservation and minimizing pin-cushioning, a subcutaneous pedicle nasolabial transposition flap is proposed.

# Design:

After tumor clearance secondary to Mohs microsurgery, patients at the University of Minnesota Dermatologic Surgery Clinic underwent reconstruction using a subcutaneous pedicle nasolabial transposition flap. Rather than utilizing a traditional nasolabial transposition flap, with a cutaneous pedicle width equal to the diameter of the primary defect (Figure 1), the modified version incorporated a pedicle consisting of 1) full-thickness skin that is only one-half the diameter of the primary defect and 2) subcutaneous fat that is the other half of the pedicle (Figure 2). The flap was excised with the subcutaneous fat removed from the primary defect region to be incorporated as part of the flap pedicle. After flap transposition, the subcutaneous fat along the flap pedicle was positioned beneath the undermined region of the primary defect. Following flap closure, patients returned to clinic one week for suture removal and again at 6 weeks to assess appearance and function.

#### **Summary:**

Nasolabial transposition flaps allow for excellent skin matching. Unfortunately, their utility can be limited due to pivotal restraint caused by the width of the pedicle. Tip necrosis may occur if the flap has an inadequate pedicle. The subcutaneous pedicle nasolabial transposition flap allows for greater movement of the flap pedicle due to its smaller width of full-thickness skin. Additionally, the rich vascular supply from the subcutaneous portion of the pedicle does not appear to compromise the integrity of the flap body or tip. An additional benefit of the subcutaneous pedicle nasolabial transposition flap is that of tissue economy at the secondary defect site. A pedicle whose width is one-half full thickness skin can result up to a 69% smaller secondary defect compared to that produced by a conventional flap. Redistribution of the subcutaneous fat along the undermined area surrounding the primary defect also reduces flap pin-cushioning.

#### Conclusions:

A subcutaneous pedicle nasolabial transposition flap enhances pedicle rotation, tissue conservation and minimizes pin-cushioning compared to a conventional nasolabial transposition flap.Previously Presented : NoneSubmitted for Future Meeting: None

Friday, May 4, 2007 Late-breaking 4:43 PM-4:51 PM

PRESENTER: Raj Mallipeddi, MD, MRCP

**TITLE:** A Novel Two-Hour Method for Rapid Preparation of Permanent Paraffin Sections of Melanoma In Situ during Mohs Micrographic Surgery

**AUTHORS:** Raj Mallipeddi, MD, MRCP; Jeffrey Stark, BSc; Xian-Jin Xie, PhD; Mark Matthews, MD; R. Stan Taylor, MD

#### Purpose:

Distinguishing sun induced melanocyte atypia from residual melanoma in situ (MIS) on paraffin histology can be extremely challenging. The challenge is greater for the Mohs surgeon when working with frozen sections. Immunostains such as MART-1 can assist but most agree paraffin

sections represent the melanocyte histology 'gold standard'. Our study assesses an expedited method of providing rapid permanent paraffin sections to the Mohs surgeon when the Mohs technique is used for removing MIS.

#### Design:

Using microwave tissue processing technology, we have developed a laboratory technique to produce good quality permanent paraffin sections within 2 hours. With IRB approval, 13 MIS debulk specimens were divided into 4 pieces with each piece processed 1 of 4 ways: 1. Our rapid microwaved paraffin technique with Hematoxylin and Eosin (H&E). 2. Standard nonmicrowave paraffin processing with H&E. 3. Frozen sections with H&E. 4. Frozen sections with MART-1 immunostaining. They were all compared in a blinded fashion by an experienced Mohs surgeon and dermatopathologist who assessed 3 criteria: 1) Ease of visualizing normal melanocytes. 2) Ease of visualizing abnormal melanocytes. 3) Overall ability to adequately visualize epidermal and dermal structures. Each investigator scored 3 for good, 2 for fair and 1 for poor on each of the 3 criteria.

## **Summary:**

A non-inferiority test showed that our microwave technique is at least as good as the standard paraffin processing for all 3 criteria. Furthermore, a non-parametric signed rank test indicated that there were no significant differences between the two paraffin techniques in all 3 criteria (P-value=0.29, 0.63, 0.75, respectively). A non-parametric signed rank test also showed that when compared with frozen H&E sections, our microwave technique was significantly better for all 3 criteria (P value=0.046, 0.004, 0.005, respectively) and when compared with frozen MART-1 sections, it was significantly better in the ability to visualize abnormal melanocytes (P value=0.03), but was found to be similar in the ability to visualize normal melanocytes (P value=1).

#### Conclusions:

We document that the rapid microwave tissue processing technique is comparable to standard 24 hour paraffin section processing and advocate the use of this new rapid technique to produce permanent paraffin sections to assist in the treatment of MIS with Mohs surgery.

# **Posters**

#### 101

**TITLE:** The Experience of Perineural Skin Cancer at Saint Louis University Department of Dermatology

**AUTHORS:** Erin J. Allen, M.D.; Summer R. Youker, M.D.; M. Yadira Hurley, M.D.; Anne Thai, B.S.; Mark A. Varvares, M.D.; Scott W. Fosko, M.D.

# Purpose:

To identify the number of tumors with perineural extension and/or perineural inflammation seen at Saint Louis University Mohs Unit. Additionally, we aim to identify any predictor or prognostic information of this cohort of patients. Lastly, we will compare the treatment methods and adjunctive therapy in patients with perineural involvement.

#### Design:

All tumors treated with Mohs Micrographic surgery in 2004 and 2005 were reviewed to identify if perineural involvement or inflammation was seen at the time of surgery as marked on the Mohs map. All cases in question were submitted for permanent histological examination. Special stains (S-100, cytokeratin) were used, as needed, on permanent slides for confirmation. Frozen slides were re-reviewed if there was any discrepancy between the permanent and frozen histological

diagnosis. Charts on all patients in question were reviewed and recorded.

# Summary:

PN (perineural tumor invasion) was defined as the presence of tumor cells immediately peripheral to or involving the perineurium or cutaneous nerve. Close proximity or "near-by" was not included in our analysis. PNI (perineural inflammation) was defined as the presence of inflammatory cells immediately peripheral to or abutting the perineurium or cutaneous nerve. Two surgeons performed 2,191 Mohs cases from 2004-2005. 54 cases (2.5%) were identified due to histopathologic tumor patterns. The mean age was 72 and represented 36 men and 18 women. The most common locations were forehead 9 (25%), cheek 6 (17%), nose 6 (17%) and ear 5 (14%). PN was identified in 37 cases (1.7%). PNI or PN was identified in 45 cases (2.1%). PN or PNI was seen in 18 (1.1%) of basal cell cancers (BCC), 25 (4.7%) of squamous cell cancers, and 1 microcystic adenexal carcinoma. In some circumstances, the diagnosis changed between the frozen and the permanent slide interpretation. In 8 cases, perineural invasion was seen on frozens, but only perineural inflammation was appreciated on permanent sections. Conversely, 5 cases showed perineural invasion on permanents when only perineural inflammation was seen on frozen sections. Special stains (cytokeratin and/or S-100) were used in 32% of permanent cases to aid diagnosis. In reviewing the slides, the change in diagnosis is more likely to represent different sections of the block revealing different tumor characteristics than misinterpretation. All of the BCC's were of an aggressive subtype (morpheaform, infiltrating, or micronodular). Of the 45 patients with PN or PNI, 12 (27%) patients reported pain. Tumors were also larger if PN or PNI was present. Tumors were 3.3 times larger pre-operatively and 3.1 times larger after the final stage than tumors without PN. Tumors with PN or PNI required 2.83 stages compared to 2.06 stages of controls. 9% of patients were immunocompromised and 27% of tumors were recurrent. Many patients were referred to further treatment after clearing the tumor with Mohs surgery. Eighteen (49%) of patients were referred to Otolaryngology and 6 (16%) patients received postop radiation therapy.

#### Conclusions:

It is imoportant to identify perineural involvement as it is associated increased morbidity and mortality. PN or PNI was seen in 2.1% of our cases and was more likely in SC (4.7%)than BCC (1.1%). Tumors with PN features are larger, require more stages, and are more likely to be recurrent than control tumors. The diagnosis of perineural invasion can be assisted with both permanent sections of the tumor as well as special stains such as cytokeratin and S-100. The discordance seen between frozen and permanent sections documents the range of histopathologic features that results from different tissue sampling.

#### 102

TITLE: The Truth About Over-the-Counter Scar Products: False Claims of Efficacy

AUTHORS: Alissa C. Wilmot, B.A.; Christopher J. Miller, M.D.

## Purpose:

Patients frequently inquire about over-the-counter (OTC) products to prevent or treat scars. Many OTC products claim to improve the color, texture, and volume of scars, sometimes in as few as 72 hours. Few government regulations apply to the production and sale of these products. The purpose of our study was to identify the claims to efficacy, ingredients, directions for use, warnings, and prices of the best-selling OTC scar treatment products and to review the English literature for evidence regarding the efficacy of the 10 most common OTC product ingredients.

# Design:

Best-selling OTC scar treatment products were identified on the popular consumer website, drugstore.com. The popularity, price, ingredients, and package information were evaluated for the twenty best-selling products. A review of the literature was performed from a Pub Med search

cross-referencing each of the ten most common ingredients of OTC scar treatment products with the word. "scar."

# **Summary:**

The search on drugstore.com identified 20 OTC scar products costing an average price of \$16.25 (range \$9.49- \$59.99). Only 2 of these products were registered with the Federal Drug Administration. Many products make spurious claims of efficacy. The majority of products require prolonged application for several months. The average product included 9.2 ingredients. The 10 most common ingredients included silicone, vitamin E, water, methylparaben, glycerin, onion extracts, carbomer, polyethylene glycol, vitamin A derivatives, and vitamin C. Review of the English medical literature indicates that little evidence supports the use of OTC scar products.

# **Conclusions:**

Scant data support the efficacy of OTC products to treat scars. Patients who use these products may incur considerable expense and effort only to obtain disappointing results. Due to the lack of Federal Drug Administration oversight, physicians have an obligation to counsel patients about the use of OTC scar products.

## 103

TITLE: The Importance of Reviewing Pathology Specimens before Mohs Micrographic Surgery

AUTHORS: Susan T. Butler, MD; Joshua Mandrell, B.A.; Summer R. Youker, M.D.

#### Purpose:

To emphasize the importance of reviewing pathology slides before performing Mohs micrographic surgery by identifying the number of times the diagnosis was changed as a result of a second histopathologic opinion. Additionally, we will identify how frequently the change in diagnosis resulted in a change in the management of the patient.

# Design:

It is the policy of our Mohs surgeons that all outside pathology be reviewed by an internal dermatopathologist prior to surgery. All patients treated with Mohs micrographic surgery between January 2003 and September 2006 were evaluated to determine if there was a change in diagnosis between the original biopsy report and the slide review by Saint Louis University dermatopathologists. If there was a change in the recorded diagnoses, the patient's chart was reviewed to determine if that change resulted in alteration of the patient's management.

# Summary:

The total number of cases reviewed was 3,324. The review of the original biopsy slide resulted in 81 changed diagnoses (2.4%). Of these changes, 26 (32.1%) were from malignant to benign diagnoses, 5 (6.2%) were from benign to malignant diagnoses, 31 (38.3%) involved a change in malignant tumor classification, 4 (4.9%) were from a benign to another benign condition, 2 (2.5%) were from benign to premalignant diagnoses, 6 (7.4%) were from malignant to premalignant diagnoses, and 7 (8.6%) were from premalignant to malignant diagnoses. Of the 81 cases in which the diagnosis was changed, 41 (50.6%) resulted in a change in the management of the patient. Most often it was a cancellation of the surgery, changing from Mohs to a wide local excision, or vice versa.

#### Conclusions:

In a considerable number of cases, review of the pathology slides before surgery resulted in a change in diagnosis. In nearly half of those cases, the second opinion led to a change in the management of the patient. While reviewing pathology before surgery is the standard of care in many specialties, it is not the standard for many dermatologic surgeons. This quality assurance practice can have an enormous therapeutic and prognostic impact on patients.

#### 104

**TITLE:** Effective Regional Anaesthesia of the Second and Third Divisions of the Trigeminal Nerve (V2, V3) Using a Single Cutaneous Entry Point

AUTHORS: Seaver L. Soon, MD; Brian N. Streams, MD; Jeffrey S. Eaton, MD

# Purpose:

Although effective, surgical procedures such as facial ablative resurfacing or large tumor resection may require anesthesia in a broad distribution not achieved by conventional infraorbital and mental nerve blocks. Indeed, conventional regional anesthesia of these nerves spares the temple, lateral malar prominence, lateral cheek, and anterior auricle. To address this deficit, we describe a method to achieve regional anaesthesia of the complete second and third divisions of the trigeminal nerve (V2, V3) using a single cutaneous entry point.

# Design:

Skull base anatomy texts were reviewed to identify superficial landmarks for a safe approach to the nerve trunks associated with the second and third divisions of the trigeminal nerve (V2, V3) as they exit the foramen rotundum and the foramen ovale, respectively. Head and neck magnetic resonance images from 11 patients were analyzed mathematically to determine mean angles of insertion and distances to the nerve roots.

#### **Summary:**

Entry is at the center of the mandibular notch, defined anteriorly by the coronoid process, superiorly by the zygomatic arch, and posteriorly by the temporomandibular joint. For the second division of the trigeminal nerve (V2), the angle of needle insertion is, on average, 27 degrees anterior to the coronal plane and 17 degrees superior to the axial plane. Mean needle advancement distance is 40mm. For the third divison of the trigeminal nerve (V3), the angle of needle insertion is, on average, 90 degrees to the sagittal plane. Mean needle advancement distance is 35mm. This approach has been successfully applied to 12 patients undergoing ablative facial resurfacing without complication.

# **Conclusions:**

Safe, reliable regional anaesthesia of the second and third divisions of the trigeminal nerve (V2, V3) may be achieved through a single cutaneous entry point. This approach may benefit patients who require anesthesia of the lower face in a broader distribution than that achieved by conventional infraorbital and mental blocks.

#### 105

**TITLE:** Anatomic Variation of Secondary Intention Healing

AUTHORS: Daniel B. Stewart, M.D., Ph.D.; Juliet L. Gunkel, M.D.; Stephen N. Snow, M.D.

#### Purpose:

Secondary intention healing remains an important method for wound healing after cutaneous surgery. Based on experience, Zitelli proposed dividing the face into three anatomic zones to help predict cosmetic results from secondary intention healing. While Mott et al. carefully assessed the amount of wound contraction in these zones, a blinded comparison of cosmetic outcome between these zones has not been performed. The objective of our study was to compare in a blinded fashion the cosmetic outcomes predicted by the zones of secondary intention healing proposed by Zitelli.

# Design:

Patient files were randomly selected from the University of Wisconsin – Madison Mohs clinic and reviewed for cases of secondary intention healing. Criteria required for inclusion included: 1) availability of clear photographs of the post Mohs surgery wound immediately post-operative and at least 8 weeks post-operative, 2) greater than 90% of each individual wound was located in a

single anatomic subunit as described by Zitelli, 3) each wound was at least 1 cm in average diameter, 4) each wound extended in depth to at least the reticular dermis. Photographs of the wound post operatively and the healed result were evaluated by both a trained dermatologic surgeon and a non-medically trained reviewer who were not aware of the study design or purpose. Scars were evaluated for color, texture/contour, and overall scar cosmesis.

#### **Summary:**

Analysis of results demonstrated that anatomic subunits as defined by Zitelli can help predict cosmetic outcome; however within any individual subunit, cosmetic outcome can vary.

#### Conclusions:

Knowledge of variables affecting secondary intention healing, including variation between anatomic subunits of the face, is critical for proper patient selection and optimization of cosmetic outcome.

# 107 Late-breaking

**TITLE:** Adjuvant Radiotherapy for High Risk Cutaneous Squamous Cell Carcinomas: A Systematic Review of the English Literature

**AUTHORS:** Anokhi H. Jambusaria, MD; Nanamiba Smith, MD; Rhonda Quain, BA; Christopher J. Miller, MD; Harry Quon, MD; Chrysalyne D. Schmults, MD

# Purpose:

A systematic review of the English medical literature was conducted comparing reported outcomes for high-risk cutaneous squamous cell carcinoma patients treated with surgery alone versus surgery plus adjuvant radiotherapy. Outcomes evaluated were local recurrence, nodal and distant metastasis, and disease-specific survival.

# Design:

A systematic search of the Medline database was conducted to collect reports of treatment of high-risk cutaneous squamous cell carcinoma. Lesions were considered high risk if they were >2 cm in diameter (or >1.5 cm in diameter on the lip), >4mm deep, recurrent, located on the ear, anogenital region or in areas of chronic inflammation, had evidence of perineural or lymphovascular invasion, or were poorly differentiated. We included all reports that provided patient level data for outcomes of interest (local recurrence, nodal recurrence, distant metastasis, and disease-specific survival) stratified by treatment (surgery versus surgery plus radiotherapy). Cases were excluded if it was stated that the surgical margin was positive prior to radiation.

#### Summary:

The Medline search enumerated 1,888 reports. Treatment and outcome data were available in 105 reports. 53 reports concerned squamous cell carcinoma of the anogenital region. The remaining 51 reports included non-anogenital squamous cell carcinoma. Only 20 reports explicitly stated that surgical margins were clear prior to radiotherapy. There were no significant differences in outcomes for those treated with surgery compared to those treated with surgery plus adjuvant radiotherapy. (Surgical monotherapy: local recurrence 8.03%, nodal metastasis 7.66%, distant metastasis 2.14%, disease specific death 4.43%; Surgery and adjuvant radiotherapy: local recurrence 10.53%, nodal metastasis14.04%, distant metastasis 8.77%, disease specific death 6.14%). In a subgroup analysis, cases which had only met high-risk criteria by location (ear, lip and anogenital) were excluded. In this analysis, those treated with adjuvant radiotherapy had worse outcomes than those treated with surgery alone (Surgical monotherapy: local recurrence 8.99%, nodal metastasis 4.64%, distant metastasis 5.07%, disease specific death 4.49%; Surgery and adjuvant radiotherapy: local recurrence 10.71%, nodal metastasis 12.50%, disease specific death 10.71%).

# **Conclusions:**

There is no clear data demonstrating that adjuvant radiotherapy decreases local recurrence, nodal or distant metastasis, nor disease-specific death. Though the data compiled in this review show worse outcomes for those treated with adjuvant radiotherapy, it is likely that many patients who received adjuvant radiotherapy had tumors where a clear surgical margin was in doubt or who otherwise had a worse prognosis as compared to those who did not undergo adjuvant radiotherapy. Thus, it is not possible to determine from available data whether adjuvant radiotherapy leads to improved outcomes in high-risk SC patients. Since surgical monotherapy results in high cure rates, even for high-risk SC, a benefit to adjuvant radiotherapy may only exist in highest-risk cases. This has yet to be proven. Further work to establish prognostic estimates for patients with various combinations of high-risk criteria is needed to define a "highest-risk" group. Randomized clinical trials involving these highest-risk patients are necessary to determine whether adjuvant radiotherapy is beneficial in high-risk cutaneous squamous cell carcinoma.

#### 108

**TITLE:** Utilization of Mohs Micrographic Surgery and Related Procedures in the Medicare Population

**AUTHORS:** Julie A. Neville, MD; Steven Feldman, MD; Phillip M. Williford, MD; David J. Leffell, MD

# Purpose:

Mohs micrographic surgery (MMS) is the most effective treatment for non-melanoma skin cancer. With the increasing incidence of these cancers, the frequency of use of MMS may be changing. We examined the utilization of MMS and related reconstruction.

# Design:

MMS claims were identified by Current Procedural Terminology (CPT) codes 17304 through 17310 from Medicare part B claims data in the Medicare Current Beneficiary Survey, 1992 to 2000. These claims were analyzed by physician specialty including dermatology, plastic surgery, general surgery, and otolaryngology. Claims for closure of MMS defects were identified using the CPT codes for intermediate, complex linear, adjacent tissue transfer/rearrangement and split and full thickness grafts. Data was weighted to obtain nationally representative estimates. The number of physicians in each specialty was obtained from the American Medical Association data for the year 2000.

# Summary:

A total of 2.2 million claims were made for MMS procedure codes from 1992-2000. Claims increased from 160,429 in 1992 to 362,148 in 2000 (226%) with 95.7% of claims submitted by dermatologists, 1.0% by plastic surgeons, 1.6% by general surgeons, 0.7% by otolaryngologists, and 1.0% by all other specialties. Specialists in areas other than dermatology had a higher percentage of claims made for the first stage with a similar percentage of claims made for multiple stages. Over the 8 year period examined, dermatologists performed 121.2 MMS procedures/surgeon while plastic surgeons performed 2.7 procedures/surgeon, otolaryngologists (1.7 procedures/surgeon), and general surgeons (0.9 procedures/surgeon). The proportion of MMS defects repaired with intermediate and complex linear closures has increased, skin grafts frequency is unchanged but that of flaps has decreased.

#### Conclusions:

MMS is a technique primarily practiced by dermatologists although this technique is practiced by other specialties. Fundamental to the Mohs technique is a knowledge of dermatopathology, an area in which dermatology residents receive extensive training. As knowledge of the technique, its effectiveness and its value become more widely known, more widespread use of MMS by other specialties can be expected.

#### 109

TITLE: Chemowraps for Diffuse Squamous Cell Carcinoma of the Extremities

AUTHORS: Jeff Petersen, MD; Margaret Mann, MD; David Birk, MD

## Purpose:

Many patients present to the Mohs surgeon with multiple or diffuse squamous cell carcinomas' on their extremities. Often the surgeon may wonder, "Where do I begin" with these patients. Treatment can require several procedures or a single extensive procedure. This can leave the patient with multiple scars and/or severe cutaneous disability due to the reconstruction. Patients also become despondent after multiple procedures have been done because they see their skin continue to worsen. Application of 'chemowraps' several weeks prior to surgical therapy eliminates or minimizes the need for surgical intervention and improves the overall quality of the integument in the areas treated.

# Design:

Over the past five years, we have used chemowraps on patients with extensive squamous cell carcinoma of the extremities. Included among these patients are several with radiation resistant squamous cell carcinomas' for whom the procedure has been successful. We will describe the process by which they are applied, the appearance of the skin during the treatment process, and the clinical follow up and treatment necessary after successful therapy.

# **Summary:**

Chemowraps can be used to successfully manage those patients with multiple and extensive squamous cell carcinoma on the extremities. It can clear the integument completely of tumors or minimize the tumor burden so that only non resolving tumors will require surgical intervention. It also allows patients to be actively engaged during their post therapy course to minimize future recurrence of their skin cancer.

# **Conclusions:**

Chemowraps are an effective alternative to reduce or eliminate the need for multiple surgical procedures in patients with diffuse squamous cell carcinomas of the extremities.

## 110

**TITLE:** Surgical Excision of Vegetative Herpes Simplex Virus Infection in Immune Suppressed Patients

**AUTHORS:** Vinh Chung, MD, MPharm Sci, MTh; Douglas C. Parker, MD, DDS; Sareeta Parker, MD

# Purpose:

The purpose of this poster is to present an atypical presentation of HSV in immune suppressed patients, the pathological findings, and the treatment options. Herpes simplex virus (HSV) infection is one of the most common sexually transmitted diseases and is often more prevalent and severe in HIV-positive patients. HSV typically presents as clustered vesicles, pustules, erosions, or ulcerations. Nodular, exophytic, or vegetative lesions of HSV have been less frequently reported. However, due to the increasing prevalence and longer lifespan of HIV positive patients, this presentation may become more common.

#### Design:

We report two HIV-seropositive patients who each presented with an exophytic eroded genital plaque that was induced by HSV. Biopsies revealed changes consistent with HSV infection, including multinucleation, chromatin margination, and molding. Immunohistochemical stains were also positive for the presence of herpes virus. In the first case, although viral culture

and skin biopsies supported the diagnosis of acyclovir sensitive herpetic infection, the patient failed to respond to oral and parenterally administered antiviral therapies. Surgical excision was performed, and the wound was closed primarily. The wound has healed with excellent cosmetic result, and the patient has been cleared of the lesion for over 1 year. In the second case, the HSV-induced lesion responded only after prolonged therapy with high dose oral acyclovir.

#### **Summary:**

HSV may present atypically as vegetative plaques or nodules in immune suppressed patients. Vegetative herpetic lesions may mimic squamous cell carcinoma, condyloma or other sexually transmitted diseases such as granuloma inguinale. The atypical presentation frequently results in delayed diagnosis and/or unnecessary therapy. Suspicion for an atypical HSV infection should be confirmed with a biopsy and immunohistochemical stain or viral culture to confirm the diagnosis and to direct treatment. Both of our patients were HIV seropositive men who presented with vegetative plaques in the genital region. Both patients had culture positive acyclovir-sensitive genital HSV, and skin biopsies confirmed herpetic infection. Despite therapy with the standard recommended dosage and schedule of oral acyclovir, neither patient responded. One patient failed to respond to all medically administered therapy. We suspect that the poor response to medical therapy in the first patient may be due to the poor tissue penetration of the administered agents, given the extensive fibrosis in the plaque. In this patient, surgical excision was effective in clearing the lesion. The other patient responded only after the acyclovir dose was given for two months, and at a dosage that far exceeded the standard recommendation for genital HS V (400 mg per day three times daily for 7 to 10 days).

# **Conclusions:**

To date, approximately 20 cases of vegetative HSV have been reported in the literature. In all cases, the affected patient was immunocompromised, with HIV being the most common cause of immune suppression. In most cases, medical therapy was effective. However, because of the lack of effective medical therapy in some cases of nodular or vegetative HSV, surgical excision may be indicated.

#### 111

TITLE: Earlier Detection of Second Primary Basal Cell Carcinomas in Mohs Surgery Patients

AUTHORS: David Lortscher, BS; Shawn B. Allen, MD; Roberta D. Sengelmann, MD

**Purpose:** Our purpose was to quantitate the success of Mohs surgeons in counseling existing basal cell carcinoma (BCC) patients about the early recognition of subsequent BCCs.

**Design:** A four-year retrospective chart review was performed of all patients treated by a dermatologic surgeon using the Mohs surgery technique for at least two separate primary BCCs between January 2001 and January 2005 at Washington University's Center for Dermatologic and Cosmetic Surgery. Our inclusion criteria required that the tumors be the patients' first and second primary BCCs. We confined the study to BCCs to help control for the large variety of growth rates among different types of cutaneous neoplasms. Excluded from the study were patients whose "second" cancer was actually a recurrent tumor, those whose charts were unavailable, and those whose "second" BCC was noted on the day of their first Mohs surgery visit. Our search revealed 510 patients who had been seen twice for Mohs surgery. Of these, 65 met our other inclusion criteria. 54% were male, 100% were Caucasian, and the median age was 64 (range 31-89). All patients were evaluated, measured, and treated by the same physician (RS or Jeffrey Petersen) for each of their two surgeries. For each patient, we recorded the biopsy and Mohs surgery dates, lesion location, clinical description of the lesion, pre and post-excision clinical dimensions, number of Mohs stages performed, whether other cancers were present, and how the diagnosis of BCC was made (i.e. shave / punch biopsy). Our primary variable for data analysis was the area (cm2) of the lesion according to pre-excision clinical measurements.

This approximates the degree of clinical visibility to the patient and physician, and thus is a good surrogate for how early the tumor was detected. The areas were approximated using the formula for the area of an ellipse (A =  $\pi^*r1^*r2$ ), which is simple and helps account for asymmetric (non-circular) lesions.

## Summary:

A paired t-test was used to compare the areas of first and second primary BCCs (see Figure 1). Areas were analyzed on a log scale to approximate a Gaussian distribution. On average, a patient's second primary BCC was 1.16 cm2 smaller than the patient's first primary BCC (p<0.0001, SEM = 0.52 cm2). The median difference was 0.28 cm2.

### **Conclusions:**

This is the first study to our knowledge that compares the difference in size of patients' first and second primary basal cell carcinomas. Studies have shown that a patient diagnosed with a primary BCC has a 33-70% chance of developing a new BCC. Our study supports the notion that treatment by Mohs surgery along with proper counseling may help patients seek treatment earlier for any subsequent BCCs. However, Figure 1 indicates that there may be room for improvement, as significant minorities of patients had second BCCs that were either larger than or equivalent to their first BCCs in respect to visible surface area. This study should provide a background for discussion in the area of skin cancer awareness and primary and secondary prevention, helping to decrease the costs and consequences of skin cancer and its treatment.

#### 112

**TITLE:** Management of Nonmelanoma Skin Cancers with Bony Invasion: Therapeutic Decision-Making

**AUTHORS:** Suneeta S. Walia, M.D.; David E. Kent, M.D.

## Purpose:

To discuss the evaluation, management and therapeutic options of nonmelanoma skin cancers with bony invasion.

## Design:

Case series of nonmelanoma skin cancers with bony involvement each highlighting different treatment modalities for managing bony invasion.

### Summary:

Nonmelanoma skin cancers rarely invade bone; however, when bony invasion is documented, it may cause significant morbidity and potentially reduce life expectancy. Squamous cell carcinoma is more likely than basal cell carcinoma to invade bone. While histologic examination of tumor in bone confirms the diagnosis, clinical supsicion is raised with evidence of bone pitting and radiologic imaging studies. We present a series of cases of nonmelanoma skin cancers with bony invasion in which different treatment modalities for managing bony involvement were used. The evaluation, management and therapeutic options of these difficult cases will be discussed, including potential signs of local recurrence other than primary cutaneous lesions.

## Conclusions:

Bony invasion of nonmelanoma skin cancer may cause significant morbidity and potential reduced life expectancy. Prompt recognition of bony invasion hopefully will improve patient outcome and survival.

#### 113

**TITLE:** An Approach to Lower Eyelid Reconstruction after Mohs Micrographic Surgery for Squamous Cell Carcinoma Involving the Lower Lid Margin

AUTHORS: Erica A. Mailler-Savage, MD; Hugh M. Gloster, MD

## Purpose:

To review orbital and periorbital anatomy, approaches to eyelid reconstruction, and principles of achieving good functional and aesthetic results after Mohs involving the eyelid.

#### **Summary:**

A 45 year-old white male presented to the University of Cincinnati Mohs Micrographic Surgery Center with a 2.5 cm invasive squamous cell carcinoma on the left lower eyelid with involvement of the left lower lid margin. The final defect after Mohs measured 4.0 x 2.5 cm and resulted in excision of the lower tarsal plate, lower lid margin, and eyelashes. We describe an approach to reconstruction of the lower lid and lid margin using a tarsal and conjunctival graft, transposition flap, and fullthickness skin graft.

#### Conclusions:

Reconstruction of the eyelid after Mohs surgery requires an in-depth knowledge of methods to achieve a good functional and aesthetic result as well as orbital and periorbital anatomy.

#### 114

TITLE: Erosive Pustular Dermatosis of the Scalp: A Mimic of SC

AUTHORS: Dori Goldberg, MD; Jeremy S. Bordeaux, MD; Mary E. Maloney, MD

#### Purpose:

Erosive pustular dermatosis of the scalp (EPDS) is an uncommon disorder of unknown etiology that can mimic SC in its clinical presentation, leading to referral to dermatologic surgeons for treatment. We present a case series and review of EPDS in order to increase awareness of this entity, its presentation and management.

## Design:

We present 4 patients who were referred to our dermatologic surgery clinic for evaluation and treatment of suspected skin cancers. Clinical examination and biopsy of their presenting lesions established a diagnosis of EPDS in each case.

#### Summarv:

EPDS presents in elderly patients with chronic erosion, crusting and pustulation of small or extensive areas of the scalp, a clinical picture that can be easily mistaken for either pyoderma or SC. The histology of EPDS is nonspecific, with erosion, atrophy, and crusting of the epidermis, and granulation tissue and chronic inflammation of the dermis. The presence of pseudoepitheliomatous hyperplasia on histology may also support an erroneous diagnosis of SC, while bacteria, thought to be a secondary phenomenon and not causative, may suggest infection. However, unlike SC and pyodermas, surgical excision and antibiotic therapies are not effective. Our four patients responded to therapy with high potency topical corticosteroids. There are also reports of therapeutic success with topical calcipotriol and tacrolimus, and oral therapy with retinoids, zinc sulfate or non-steroidal anti-inflammatory agents. In spite of therapy, EPDS often recurs and can lead to atrophic scarring and permanent alopecia.

#### **Conclusions:**

The clinical presentation of EPDS can easily lead to a mistaken diagnosis of SC and therefore performance of unnecessary Mohs or other surgical procedures. Increased awareness of this entity is needed to provide EPDS patients with correct diagnosis and treatment options. Lesions clinically consistent with EPDS should be re-biopsied if initial histology shows SC, as the presence of pseudoepithiliomatous hyperplasia can be misleading. Current evidence supports therapy with topical corticosteroids, tacrolimus and calcipotriol; however, frequent recurrence warrants long-term clinical follow-up.

#### 115

**TITLE:** Complete Histologic Margin Control for Vertical Full-Thickness Disc or Elliptical Excisions of the Skin: A Variation of the Traditional Mohs Technique

AUTHORS: Arash Kimyai-Asadi, M.D.; Leonard H. Goldberg, M.D.; Ming H. Jih, M.D., Ph.D.

## Purpose:

The basic principle of Mohs surgery is that complete histologic visualization of the surgical margin is necessary for high-risk or aggressive cutaneous tumors. The traditional technique involves debulking of the tumor using a curette or scalpelfollowed by removal of a beveled portion of skin surrounding the tumor. Beveling, however, necessitates the removal of wider surgical margins around deeper tumors. Moreover, partial thickness defects usually have to be excised through the full thickness of the dermis or at least be "de-beveled" prior to surgical repair.

### Design:

We describe methods that can be used to obtain complete histologic margin control using full-thickness vertical excisions of the skin. These excisions can be either circular disc-excisions or elliptical excisions of the skin.

#### **Summary:**

Vertical excisions specimens from the skin allow separate histologic visualization of the epidermal and dermal margin and the subcutaneous fatty tissue. This improves the quality of slides, as sectioning of specimens with epidermis, dermis and subcutaneous fat at a constant thickness results in sections that are either too thick for evaluation of the epidermis and dermis, or those with loss of the deep margin due to shearing away of the subcutaneous fat. Moreover, flattening of the tissue is much easier and reduces the potential for folding and loss of specimen edges during histologic processing. In addition, very narrow margins can be used for the excision of deeper nodular tumors. The central portion of the tumor is kept intact with this technique, so if any subsequent questions arise regarding the exact diagnosis, the tumor is maintained in its entirety. Finally, preoperative curettage as well as debeveling and deepening the excision prior to repair are generally not required, making this a more efficient process.

### **Conclusions:**

Vertical excision specimens can be processed using the Mohs technique to provide complete visualization of the entire peripheral and deep surgical margins. This technique is ideal for invasive and deep tumors, but can be used for all Mohs excisions.

## 116

**TITLE:** Eruptive Post-Operative Squamous Cell Carcinomas Exhibiting a Pathergy-Like Reaction around Sites of Cutaneous Trauma

AUTHORS: Suleman Bangash, D.O.; W. Harris Green, M.D.; Armand B. Cognetta Jr., M.D.

#### Purpose:

The isomorphic response of Koebner and the pathergy skin reaction have not classically been associated with neoplastic processes such as cutaneous squamous cell carcinoma (SC). We report 5 patients who presented with rapidly growing eruptive SCs that had arisen from sites of recent cutaneous trauma, including previously excised non-melanoma skin cancers.

# Design:

We present a case series multiple treatment centers.

## **Summary:**

We feel that pathergy may be a characteristic and a significant finding in a subgroup of SCs and we present these interesting case reports to make clinicians aware of the possibility of developing recurrent SCs in sites of trauma. By making clinicians more aware of the possibility of SC arising in sites of trauma, we feel more adequate and prompt treatment will be accomplished for these SCs, especially in high risk patients such as organ transplant patients or patients with immunosuppressive therapies.

#### Conclusions:

We report 5 cases of squamous cell carcinomas that have arisen is sites of previous cutaneous trauma, therefore exhibiting the phenomenon known as pathergy. Furthermore, this case series suggests that some individuals appear to be predisposed to this recurrent, pathergy-like reaction involving SCs.

#### 117

**TITLE:** Utility of High Frequency Ultrasound in the Pre-Operative Assessment of Margins of Basal Cell and Squamous Cell Carcinoma

**AUTHORS:** Chrysalyne D. Schmults, MD; Anokhi H. Jambusaria, MD; Christopher J. Miller, MD; Joel Gelfand, MD

### Purpose:

To evaluate the accuracy of a high frequency ultrasound to assess the margins of basal cell and squamous cell carcinomas prior to the first stage of Mohs micrographic surgery. Mohs section histology served as the gold standard for tumor extent.

## Design:

Patients with invasive squamous cell or basal cell carcinomas were enrolled in this study. 21 patients were included in the pilot phase. 100 patients are being enrolled in the formal study. A fellowship-trained academic Mohs surgeon preoperatively demarcated the surgical margin for the first stage of Mohs surgery; which included 1-2 mm of normal appearing skin beyond the clinical margin. Subsequently, a trained ultrasound technologist used an ultrasound machine (EPISCAN I-200; 20 MHz-50 MHz) to determine if tumor extended peripherally beyond the surgeon's first stage Mohs surgical margin. The area of tumor extension was documented on a grid by the ultrasound technologist, which was to the same orientation as the Mohs diagram. The Mohs surgeon was blinded to the ultrasound results when he/she excised the first Mohs stage. Histopathologic evaluation of first-stage Mohs sections stained with hematoxylin and eosin was then compared to the ultrasonographic evaluation, with histopathology serving as the gold standard of tumor extent. If tumor extension was seen on ultrasound and histology, the Mohs surgeon determined if the location of extension on histology correlated with the ultrasound.

## Summary:

Preliminary results of ultrasound-derived margins from 21 patients enrolled in the pilot phase of the study show a sensitivity of 70% and a specificity of 45% compared to Mohs section histology. Enrollment in the study is still ongoing, and to date, 41 patients have been enrolled in the study. It is expected that enrollment will be completed by the end of October, and statistical evaluation completed by the end of November. At the ACMSCO meeting, we will present our study data, including the sensitivity and specificity of ultrasound in determining tumor margins, as compared to the gold standard of Mohs section histology.

### **Conclusions:**

If ultrasound has a high sensitivity and specificity in margin determination and is more accurate than a surgeon's naked eye in margin prediction, pre-operative ultrasound may allow Mohs surgery to be carried out more efficiently with fewer stages.

## 118 Late-breaking

**TITLE:** Prospective, Investigator-Blinded, Clinical Outcome Study Comparing Post-Operative Scaring Using Superficial Tissue Scoring Versus Surgical Marker During Mohs Micrographic Surgery

AUTHORS: Daniel B. Eisen, M.D.; Thomas King, M.D.

#### Purpose:

The purpose of the study was to determine if there was any statistical difference in outcomes using superficial tissue scoring to that of surgical marker during mohs micrographic surgery for cutaneous neoplasms. Specific measured treatment outcomes were the presence of detectable hatch marks at 6 weeks following surgery, number of times hatch marks were lost during Mohs surgery, size of the surgical defect, type of reconstruction and number of times the surgical marker rubbed off during Mohs surgery.

#### Design:

This is a prospective evaluator blinded study comparing treatment outcomes between superficial tissue scoring and surgical marker use during Mohs micrographic surgery for cutaneous neoplasms. The study utilized 2 fellowship trained Mohs surgeons at a University out patient treatment facility. Patients were recruited from the 2 authors' surgery practice. After informed consent, the patient was randomized via a coin toss to either of 2 treatment arms. The first treatment arm was Mohs surgery utilizing superficial tissue scoring. If the patient was randomized to this arm then superficial nicks were made in the surrounding skin to correspond with the division of tissue into blocks for the first layer. No marker was used for this arm. Mohs surgery was then conducted in the usual way as previously described in past publications. The number of times nicks were not visible during surgery preventing localization of positive margin tissue was recorded. 6 weeks following surgery the patients returned for a post operative visit and digital photographs were taken of the operative site with a canon S70 powershot 7 megapixel digital camera. For the second treatment arm no tissue scoring was performed. Instead long lines were drawn on the surrounding skin to correspond with the division of tissue into blocks. The number of times the marker complete rubbed off preventing localization of positive margin specimens was recorded. As with the tissue scoring arm, digital photographs were obtained at the 6 week post operative visit. 8 x 10 'photographs were then printed of each surgery site from both treatment arms. The photos were then given to the surgeon who was not involved in the surgery and asked to evaluate the photos for the presence of score scars. The evaluating surgeon was blinded to which treatment arm the patient was in. Other measured treatment outcomes during the study were the number of times hatch marks or marker were lost during Mohs surgery, size of the surgical defect, and type of reconstruction.

#### Summary:

This is a prospective evaluator blinded, clinical outcome study comparing post operative scaring using superficial tissue scoring versus surgical marker during mohs micrographic surgery for cutanteous neoplasms. To date 86 patients have completed the study. No score marks have been observed in either treatment group. The surgery marker did not wear off during any of the treatments and the score marks were visible for needed positive margin specimen localization in every evaluated case. No adverse events were observed due to either tissue marking method.

## **Conclusions:**

86 patients have thus far completed the study. 43 patients had flap closures, 26 healed by second intention, 2 patients were closed primarily, and 7 had resurfacing with a cutaneous graft. No score marks have been observed in either treatment group. The surgery marker did not wear off during any of the treatments. No adverse events were observed due to either tissue marking method. Both methods appear to work well and surgeons should choose which ever method they feel most comfortable with.

#### 119

TITLE: Modified Sling Myocutaneous Island Pedicle Flap

**AUTHORS:** Andrea Willey, MD; Diamondis J. Papadopoulos, MD; Ken K. Lee, MD; Neil A. Swanson, MD

#### Purpose:

The original superiorly based myocutaneous island pedicle flap with bilevel undermining above and below the nasalis muscle is an innovative flap that produces a bilateral muscular sling with exceptional vascular supply and improved mobility for nasal tip and supratip reconstruction.1 A modification using a unilateral single sling pedicle limited to the lateral nasalis muscle was adapted with superior mobility for lateral nasal defects at or above the alar grove.2 The application of the myocutaneous island pedicle flap improved upon the limited mobility of traditional island pedicle flaps applied to the nose in which mobility is limited by a relatively thin subcutaneous pedicle,3,4 while creating a rich source of vascularity from perforating epimysial beds.1

### Design:

We introduce additional adaptation of this single sling approach with further undermining of the nasalis muscular sling and the use a medial approach when needed. This introduces greater versatility and rotational mobility to the flap while maintaining the superior vascularity of the muscular pedicle. It can now be applied to a variety of nasal defects including the medial ala and distal tip below the alar crease. The flap can be additionally modified to a fusiform shape for central tip defects that are otherwise routinely closed with a Burrow's graft or bilobed flap.

### **Summary:**

These modifications of the bileveled approach to the nasalis myocutaneous island pedicle flap can be applied to a

wide variety of nasal defects with superior cosmesis in both young and aged skin.

### Conclusions:

These results have been reproduced in over 100 cases. References: 1. Papadopoulos DJ, Trinei FA. Superiorly based nasalis myocutaneous island pedicle flap with bilevel undermining for nasal tip and supratip reconstruction. Dermatol Surg. 1999 Jul;25(7):530-6. 2. Papadopoulos DJ, Pharis DB, Munavalli GS, Trinei F, Hantzakos AG. Nasalis myocutaneous island pedicle flap with bilevel undermining for repair of lateral nasal defects. Dermatol Surg. 2002 Feb;28(2):190-4 3. Hairston BR, Nguyen TH. Innovations in the island pedicle flap for cutaneous facial reconstruction. Dermatol Surg. 2003 Apr;29(4):378-85. 4. Kimyai-Asadi A, Goldberg LH. Island pedicle flap. Dermatol Clin. 2005 Jan;23(1):113-27, vi-vii.

#### 120

**TITLE:** Double Island Pedicle Advancement Flap Repair of Defects Involving the Vermillion Border of the Lower Lip

AUTHORS: Allison Hoffman, MD; Peter K. Lee, MD, PhD

## Purpose:

Defects involving both the vermillion and cutaneous lip may be difficult to repair due to the cosmetic importance of properly recreating the vermillion border. Traditional options for repair include: wedge lip repair, mucosal advancement flap, and a bilateral full thickness lip advancement repair. We propose an alternative method to repair defects bridging the vermillion and cutaneous lip. To our knowledge, the application of double island pedicle flaps in this setting has not been described.

## Design:

Patients with single defects bridging the lower vermillion and cutaneous lip were considered. The maximum defect diameter was 2.0 cm, with partial orbicularis muscle involvement. Island pedicle flaps were designed from both the mucosal lip and the cutaneous lip. Incisions were made to create two triangular flaps. Minimal undermining was performed to allow mobilization of the flaps. The island pedicle flaps were advanced in the traditional manner towards the primary defect. The leading edge of the mucosal flap was advanced to the natural border of the cutaneous lip where it aligned with the leading edge of the cutaneous lip-based flap, thus recreating the vermillion border. Donor sites were repaired primarily.

## Summary:

Six patients in the University of Minnesota Dermatologic surgery clinic underwent this repair. Functional and cosmetic results are excellent. One patient developed a hypertrophic scar which resolved with intralesional triamcinolone; there were no complications involving the remaining five patients.

#### **Conclusions:**

A double island pedicle flap is a novel approach to repair defects involving the vermillion border of the lower lip. Advantages include: preservation of the orbicularis musculature, preservation of lip length, as well as minimal undermining and discomfort to the patient. Cosmetic outcomes are excellent.

#### 121

**TITLE:** Multiple Squamous Cell Carcinomas in the Setting of Psoriasis Treated with Etanercept: A Report of 4 Cases and Review of the Literature

**AUTHORS:** Alyssa R. Hoverson, M.D.; Jerry D. Brewer, M.D.; Gina C. Ang, M.D.; Randall K. Roenigk, M.D.

## Purpose:

Psoriasis is a common, chronic, and recurrent inflammatory and hyperproliferative disease of the skin characterized by overexpression of type-1 (TH1) cytokines such as IL-2, IL-6, IL-8, IL-12, IFN-γ and TNF-α. TNF-α, as part of the TH1 response, is felt to be important in tumor surveillance and in guarding against certain infections. Etanercept is a fusion proteinmade up of the extracellular domain of the p75 TNF receptor, and the Fc portion of human IgG1. Areas of concern regarding the use of etanercept include opportunistic infections, malignancy/lymphoma, congestive heart failure, demyelination, injection/infusion reactions, the development of autoantibodies, and lupus-like disease. It is felt that patients with rheumatoid arthritis and psoriasis have an increased risk of developing malignancies such as lymphomas, estimated to be to 2 to 3 times higher when compared to the general population. There has also been concern that anti-TNF agents may increase the incidence of other malignancies such as squamous cell carcinomas. A number of reports now exist regarding the apparent association of etanercept and the rapid development of squamous cell carcinomas. Our objective is to determine the characteristics and association of squamous cell carcinoma (SC) development in patients with psoriasis who have taken etanercept.

#### Design:

The clinic and medication databases were queried to search for patients with psoriasis and squamous cell carcinomas who were also on etanercept. Four patients were identified with psoriasis that developed SCs after the initiation of etanercept. These charts were then reviewed for data points. The rapidity of onset, aggressiveness (determined by grade of the SC), and quantity of SCs developing after the initiation of etanercept was noted. Also, the presence or absence of risk factors for the development of SCs was assessed.

### Summary:

Four patients were found to have developed squamous cell carcinomas after the initiation of etanercept. The average age of these patients was 64 years, and all four patients had a lifelong history of psoriasis. Of the four patients, three had a history of prior PUVA exposure, two had UVB exposure, two had used methotrexate in the past, two had used cyclosporine in the past, and two had been on acitretin which was discontinued. None of the patients had a family history of skin cancer, but all four had a personal history of squamous cell carcinomas even before the etanercept was initiated. The mean time of onset of the squamous cell carcinomas was 10 months after starting etanercept; the range was from 1 month to 17 months. The aggressiveness of the SCs ranged from grade 1 to grade 4. The number of squamous cell carcinomas that these patients developed ranged from 1 to greater than 30. Three of the four patients lived in the Midwest, and three of the four had indoor occupations or hobbies.

## **Conclusions:**

Currently, there are conflicting reports as to the effect of etanercept or other anti-TNF- $\alpha$  agents on the development of squamous cell carcinomas in the setting of psoriasis. We present four cases of patients that developed squamous cell carcinoma within a short time after the initiation of etanercept, consistent with past case reports. More research is needed to better characterize the effect of etanercept on the development of squamous cell carcinomas in psoriatic patients.

### 122

**TITLE:** Comparative Efficacy of Topical 5-Aminolevulinic Acid Photodynamic Therapy for Treatment of Actinic Keratoses with Using Intense Pulsed Light Versus Ambient Light: A Single-Blinded Randomized Controlled Trial

AUTHORS: Murad Alam, MD; Stephanie Liu, BA; Lucile White, MD; Simon Yoo, MD

#### Purpose:

It has been reported that a variety of light sources beyond the FDA-approved blue light (BLU-U) may be effective in activating 5-aminolevulinic acid (5-ALA) in the treatment of cutaneous carcinogenesis, specifically actinic keratosis (AK). Thus, in clinical practice, intense pulsed light (IPL) sources are frequently used to activate 5-ALA for AK treatment. However, it has been suggested by Strasswimmer and Grande that treatment with ambient light alone may be as or more effective than intense pulsed light in activating 5-ALA. The purpose of this study was to determine the clinical efficacy of 5-ALA photodynamic therapy for treatment of actinic keratosis with intense pulsed light compared to ambient light alone.

### Design:

Prospective randomized control study of at an urban academic medical center, 10 patients who had been previously diagnosed with simultaneous multiple actinic keratoses and treated by liquid nitrogen cryotherapy were enrolled in this study. For each patient, actinic keratoses were identified using standard clinical criteria separately by 2 dermatologists and marked on drawings of the head and neck; inter-rater discrepancies were reconciled. Patients with more than 6 identifiable AKs, including at least 3 of each side of the face/scalp, then underwent degreasing with acetone, followed by topical 5-ALA (Levulan Kerastick, DUSA) application to the entire face and scalp, except within 5 mm of mucosal surfaces. 2 ALA applicators were used, and 2 passes were placed with vertical and horizontal lines, respectively, to avoid linear streaking or missed areas. Both sides of the head and neck were then covered with duct tape, and the patient was instructed on sun and light avoidance. 24 hours later, one side of the face/scalp was randomly assigned to receive treatment with intense pulsed light, and the other side with ambient light. While IPL treatment was given, the contralateral side of the face remained covered with duct tape; then the treated site was covered, and the other site uncovered for treatment with ambient light. After both treatments were complete, both sides were recovered with duct tape and the patient was instructed to avoid sun and bright light for 72 hours. IPL regimen was delivered by Vasculight device (Lumenis, Inc.), with parameters popularized by Gold and colleagues: double

pulsing with 20 ms delay, 34J/cm2 fluence, and 8 x 16 mm spot size. All patients were Fitzpatrick skin types 1 to II, and 550 nm cutoff filters were used. Ambient tight exposure was delivered with the patient supine and Ritter minor surgery overhead light (Midmark) positioned 18 inches above the highest point on the face/scalp. Ambient light was provided for 30 minutes, and if upon questioning the patient reported minimal burning sensation, for an additional 15 minutes. Patients were instructed toremove the duct tape 72 hours after light treatment, and wash and emolliate their faces and scalps. Post-operative photographswere taken 1 and 4 weeks after treatment, and double-blinded raters assessed these for erythema, edema, crust, telangiectasia, smoothness, erosions, and apparent AK. Patient self-report of efficacy, comfort, and satisfaction was also elicited.

## Summary:

At one week, erythema and edema scores for sides treated with ambient light were higher (0.8 units on 7-point ordinal scale) than for sides treated with IPL, and this difference was statistically significant (p<0.05). At 4 weeks, there was no statistically significant difference in the number of AK or diffuse photodamage on the ambient light versus IPL sides.

#### **Conclusions:**

Ambient light appears at least as effective as IPL in activating 5-ALA for treatment of AK. Based on 1 week posttreatment photography, it appears ambient light may actually provide a more potent activation of the photosensitizer than IPL. These findings may suggest that topical 5-ALA PDT for AK may not require specialized light sources, but it is important that light exposure be done under close medical supervision in a physician office to avoid burns and overtreatment.

#### 123

**TITLE:** Tumors of the Eyelids: A 9 Year Look at 961 Lesions Treated with Mohs Micrographic Surgery

AUTHORS: Justin J. Vujevich, M.D.; Leonard H. Goldberg, M.D.

#### Purpose:

Eyelid tumors are commonly referred for Mohs surgery because tissue conservation is crucial for reconstruction and preservation of periorbital function.

#### Design:

A retrospective review was performed on over 27,000 skin cancers referred for MMS between 1996 and 2006. Data was obtained on tumor location, tumor type, pre-operative size, post-operative size, closure type, and closure length.

## Summary:

Eyelid tumors represented 3.6% of all tumors referred for MMS. Of the 961 eyelid lesions referred for MMS, 42.2% were located on the inferior eyelid, 31.4% were located on the medial canthus, 15.5% located on the lateral canthus, and 5.9% located on the superior eyelids. After histological determination, 76.7% were basal cell carcinomas, 14.6% were squamous cell carcinomas, 4.5% were squamous cell in-situ carcinomas, 1.5% were melanomas, 1.4% were actinic keratoses, 0.5% were sebaceous carcinomas and 0.8% were other diagnoses. Pre-operative sizes ranged from 2 square mm to 10.75 square mm. Post-operative defects ranged from 4 square mm to 15.6 square mm. Closures were characterized as complex linear or intermediate linear closure (69.5%), advancement flap (7.9%), rotation flap (5.7%), full-thickness graft (4.7%), second intention (4.6%), transposition flap (2.9%), and island pedicle flap (1.7%). For linear closures, the average length was 2.0cm. Pre- and post-operative photographs will also be presented.

#### **Conclusions:**

MMS is an effective means of treating 961 tumors of the eyelid region, while at the same time minimizing the loss of normal tissue at the tumor margins.

#### 124

**TITLE:** Are Oral Quinolones Necessary to Prevent Postoperative Infections of Auricular Second-Intention Wounds?

AUTHORS: Erica A. Mailler-Savage, MD; Hugh M. Gloster, MD

## Purpose:

To determine if postoperative quinolones are necessary to prevent postoperative infections, especially those caused by Pseudomonas aeruginosa, in auricular second-intention wounds.

## Design:

Prospective randomized trial of 84 consecutive patients who underwent Mohs micrographic surgery for an auricular neoplasm. Following surgery, patients were randomized to receive Levofloxacin 500 mg daily for one week or no treatment. Both groups were instructed to apply topical petrolatum to the wound site.

### Summary:

Overall, 85.4% of patients had no complication, 12.2% experienced chondritis, 1.2% experienced infection, and 1.2% had both infection and chondritis. No infections with Pseudomonas aeruginosa were observed. No statistical significanceswere observed between the two treatment groups.

#### **Conclusions:**

The incidence of postoperative infection with Pseudomonas aeruginosa may be overestimated. Treatment of auricular second-intention wounds with Levofloxacin is not necessary.

## 125

**TITLE:** Use of the Tympanoplasty Blade and a Novel Dressing Technique to Facilitate Auricular Surgery

AUTHORS: Deborah F. MacFarlane, MD, MPH

#### **Purpose**

Mohs surgeons are not infrequently faced with the challenge of removing tumors from the auditory canal and/or perichondrium. This may prove difficult with the traditional surgical blade. Traditionally used in Head and Neck surgery, the tympanoplasty blade is specially designed so that the blade is angled at 60 degrees, is circular with the bevel down and sharp all around, enabling the surgeon to more easily dissect delicate tissue in such instances. Its small size facilitates working in areas where visualization may be difficult, such as the external auditory canal and nasal vestibule. The disposable blade inserts into a round, knurled stainless steel handle, 5 or 7.5 x 0.5. centimeters diameter, which is ergonomically pleasing and easily autoclaved. Auricular dressings present a challenge to medical staff and patients alike. The following dressing is simple to perform, stays in place and does not distort auricular anatomy; an especially important consideration where cartilage is exposed. Once the defect has been dressed as usual with anitbiotic ointment and one's non-adhesive dressing of choice, two approximately 10 x 5 centimeter lengths of adhesive tape are cut. The first is positioned so that 3/4 of its surface adheres to the postauricular aspect, the remaining tape protrudes beyond the edge of the ear. The second piece of tape is then placed over the anterior aspect of the ear, and the two pieces of tape are sealed together so that the ear is sandwiched between them. The dressing corners can then be rounded off. The final dresing keeps the ear in its proper anatomical position, provides an occuslive environment, is aesthetic, easily performed and comfortably accomodates eyewear.

Design: Refer above

Summary: Refer above

Conclusions: Refer above

#### 126 Late-breaking

**TITLE:** Potential Complications of Surgery in the Supraclavicular Fossa

AUTHORS: Carmen D. Campanelli Jr, MD; Yehuda Eliezri, MD; Edward Desciak, MD

## Purpose:

To describe the surgical anatomy of the supraclavicular fossa and highlight important 'high risk' structures. An exhaustive search of the dermatology text and literature demonstrates no discussion of the anatomical risks of surgery in this area.

# Design:

We will use a Mohs micrographic case involving the brachial plexus to describe intraoperative surgical anatomy.

## **Summary:**

The anatomy of the supraclavicular fossa is poorly described in the dermatology literature. Accurate knowledge of supraclavicular fossa anatomy is essential to avoid serious potential complications. These include injury to the brachial plexus, paresis of the hemidiaphragm and pneumothorax. We describe a case of recurrent basal cell carcinoma in the supraclavicular fossa requiring exposure of the brachial plexus and sacrifice of the suprascapular nerve. We will review anatomy of the supraclavicular fossa including the brachial plexus that may reside as close as 1.5 cm below the skin surface.

## **Conclusions:**

The surgical anatomy of the suprclavicular fossa including surgical injuries to the brachial plexus is absent from the dermatology literature. We will present such a case and review the anatomy. Previously Presented: Columbia UniversityTumor Board

#### 127

TITLE: Surgical Complications: Beyond the "Terrible Tetrad"

AUTHORS: Ali Hendi, MD

## Purpose:

Bleeding, infection, dehiscence, and necrosis are the inter-related complications also known as the "Terrible Tetrad". Although these are the most common complications that the dermatologic surgeon may encounter, there are other less common complications worthy of review.

# Design:

Review of less common complications in dermatologic surgery.

## Summary:

Suture granuloma can be seen at 1-2 months postoperatively. It is essentially a sterile abscess formed around the buried suture material. Patients often mistake this for tumor recurrence or infection. Awareness by the surgeon and reassurance of the patient are needed. Reepithelialization arrest (REA), or epidermal arrest syndrome is an uncommon complication that can be problematic if it is not diagnosed. The hallmark of this complication is an open wound on sun-damaged skin that

fails to completely re-epithelialize. Awareness of this complication is paramount as it can be easily treated with topical corticosteroids. Neuropraxia is temporary nerve deficit that can be seen in the post operative period. The nerve function returns within 3-6 months. The dermasurgeon needs to be aware of this to avoid early corrective surgery (i.e. a direct brow lift in case of temporal nerve involvement. Alar cartilage distortion can bee seen in any large closure on the nose that involves significant tissue rearrangement. As the cartilaginous framework of the nose is not completely fixed, distortion of the lower alar cartilages can be seen in off-midline vertical closures on the nose. The risk of this complication can be minimized by using skin hooks to visualize the intranasal movement of the alar cartilages prior to reconstruction. Ectropion is a complication that can be caused by improper orientation of closures on the upper cheek. This can be avoided by assuring that the tension vector of the closure is parallel to the lid margins. The lazy-S type closure on the cheek can accomplish this effectively. Oculoplastic referral is helpful in the management of this complication. Entropion is even less common than ectropion. This can be seen in elderly patients with lax eyelids. It is caused by excess upward push on the eyelid. This can be due to a standing cone deformity on the upper cheek / lower lid or post-operative tissue edema. If this does not resolve spontaneously in 1-2 months, oculoplastic referral is warranted.

#### Conclusions:

Suture granuloma, REA, alar cartilage distortion, ectropion, and entropion are less common complications encountered in dermatologic surgery. Prevention and management of these complications is an integral component of the practice of the dermatologic surgery.

#### 128 Late-breaking

**TITLE:** Staged Excision for Lentigo Maligna (LM) and Lentigo Maligna Melanoma (LM): A Retrospective Analysis of 111 Cases

**AUTHORS:** Carole Hazan, M.D.; Steve Dusza, MPH; Ruby Delgado, MD; Klaus Busam, MD; Allan Halpern, MD; Kishwer Nehal, MD

### Purpose:

Lentigo maligna (LM) and lentigo maligna melanoma (LM) represent the most common subtype of melanoma of the head and neck in the fair-skinned elderly population. Complete surgical excision remains the treatment of choice with thehighest cure rates. The current NIH consensus guidelines for surgical margins based on clinical trial on trunk and extremity cases are 5mm for in situ disease and 1cm for thin melanomas less that 1mm in depth. Poorly defined clinical margins, unpredictable subclinical extension and location in cosmetically and functionally sensitive areas present multiple treatment dilemmas in LM and LM. Surgical treatment approaches to optimize margin control and tissue conservation and reduce risk ofrecurrence include Mohs surgery and excision with rush paraffin-embedded permanent sections. Studies have demonstrated that the current recommendations are often insufficient for complete excision. Our objectives were to study the clinical and histologic features of LM and LM; to describe method of staged technique with rush permanent sections; and to determine the average margin of excision needed to completely excise these lesions.

#### Design:

A chart review and retrospective analysis was performed on patients with a biopsy proven diagnosis of MMIS or invasive MM less than 1 mm (arising on sun damaged skin). All patients were treated with staged margin-controlled excisions with a rush permanent paraffin embedded radial sectioning technique using standard NIH margin guidelines. All cases were performed at Memorial Sloan Kettering in the department of Dermatology between July 2000 and August 2006 by a single author (KSN). Charts were reviewed retrospectively for clinical, histologic and surgical variables. Statistical analyses were subsequently performed to achieve our endpoints.

## Summary:

In total, 111 patient charts were reviewed. The mean age of the patients studied was 66.1 years. Males made up 62% of the sample. 95.5% of the lesions were located on the head and neck regions. The majority of the tumors (43.2%) were located on the cheek, followed by the nose (14.4%) and the ear (7.2%). A majority of the tumors, 94 (84.7%), were primary, 9 (8.1 %) were recurrent and 8 (7.2%) were incompletely excised. For invasive lesions the median lesion diameter was 1.3cm, while the median diameter for the in-situ lesions was 1.1cm. The majority of the lesions diagnosed prior to the staged excision were MMIS (83 or 74.8%), while 28 (25.2%) were invasive. The mean depth for invasive melanomas was 0.29mm with a SD of 0.13 (n= 26). For MMIS the mean total margin required for complete excision was 7.7mm (SD=1.6) and 9.7mm (SD =1.5) for invasive MM. A statistically significant difference between total margin size and lesion diagnosis was noted (p = 0.002). Using a univariate linear regression model with total margin as the outcome, no difference was observed between males and females (p = 0.18). In addition, older patients (> 65 years of age) trended toward having larger margins than younger patients (< 65 years of age) (p = 0.09). The mean number of stages required to completely excise a lesion was 1.64, with a range from 1 to 5. Fifty-three percent of patients required more than one stage to clear the lesion. Furthermore, 12.6% of MMIS had unsuspected invasion.

#### **Conclusions:**

Our data suggests that the standard margins of excision are often inadequate in the treatment of LM/LM in sunexposed areas. Furthermore, the management of LM/LM requires consideration of clinical and histologic parameters when assessing the margins. A surgical technique should be used to adequately and completely excise these lesions.

#### 129

**TITLE:** Use of LET (Lidocaine, Epinephrine, Tetracaine) Gel to Reduce Pain During Mohs Micrographic Surgery

**AUTHORS:** Richard P. James Jr., MD; John G. Albertini, MD; Mary F. Farley, MD; Paula S. Vogel, MD

### Purpose:

The purpose of this study is to investigate whether patients undergoing Mohs micrographic surgery will have a decrease in pain with the application of topical LET (mixture of lidocaine, epinephrine, and tetracaine in a gel vehicle) between stages of Mohs micrographic surgery.

## Design:

An IRB approved, randomized, double-blind, prospective, placebo-controlled intervention trial of topical LET gel application between stages of Mohs micrographic surgery was conducted. A sample of 65 patients were randomized and double blinded to receive either LET gel or placebo. The LET gel was prepared by the pharmacy with the following concentrations: lidocaine 4%, epinephrine 1:1000, and tetracaine 0.5%. The initial placebo was epinephrine 1:1000 in a gel vehicle and was later modified to be a true placebo of gel vehicle only. All patients received initial local injection of 0.5% buffered lidocaine asper standard of care for the first stage of the procedure. The patient's pain from injection of the 0.5% buffered lidocaine solution was measured using the visual analog scale pain score. Following the initial Mohs stage, the wound was covered with a cotton ball saturated with 1-3ml (depending on wound size) of LET gel or placebo gel according to a randomization table. The cotton ball was then covered with a gauze pad and taped over the wound with gentle pressure. After tissue processing and slide interpretation was completed, the patient's dressing and cotton ball was removed. Within 5 minutes of the removal of the anesthetic or placebo impregnated cotton ball the wound margin was probed with a 27 gauge needle. The patient's pain was measured again using a 10 cm linear visual analog scale pain score. On a 10cm linear visual analog scale 0 corresponded to no pain at all and 10 corresponded to the worst possible pain. This method of pain measurement has been previously studied and validated.

## **Summary:**

Patients and investigators were blinded and patients were randomized into a placebo gel group (N=12), an epinephrine gel group (N=27), and a LET gel group (N=26). VAS pain scores were recorded at baseline after infiltration with bufferedlidocaine solution and before the application of placebo gel (mean score 3.9), epinephrine gel (mean score 3.1), or LET gel (mean score 3.0). All patient groups then had their wounds covered with their respective placebo gel, epinephrine gel, or LET gel impregnated gauze and dressing. After slide preparation and interpretation, the patients' dressings were completely removed and the wound margin was probed with a 27 gauge needle and VAS pain scores recorded. The mean values of the VAS pain scores in the placebo group were 3.1, in the epinephrine gel group 0.5, and in the LET group 0.1. (Table 1). There was a statistically significant difference between the placebo group and the epinephrine and LET groups (Tukey test, p<0.05). There was no statistically significant difference between the epinephrine and LET groups (Tukey test, P>0.05). Although the lowest mean VAS pain score after treatment was in the LET group, it was not statistically different from the epinephrine group.

### **Conclusions:**

LET gel is more effective than placebo gel at reducing pain during Mohs micrographic surgery as measured with a Visual Analog Scale pain score. The Mohs procedure can take many hours to complete due to the tissue processing and interpretation time as well as any time delay prior to reconstruction. This study demonstrates the statistically significant benefit of LET gel at reducing patient pain during the prolonged time period of the Mohs procedure. The study also demonstrates that epinephrine only gel is superior to placebo (vehicle only) gel, also reaching statistical significance. There was no statistically that epinephrine plays a significant function. The vasoconstrictive properties of epinephrine prolong the anesthetic effects of lidocaine which is of benefit for maintaining prolonged anesthesia. LET gel has been used extensively in the emergency treatment of lacerations, particularly in the pediatric population with proven efficacy and safety. We describe an effective and safe method of improving and prolonging local anesthesia during Mohs micrographic surgery utilizing a LET (Lidocaine, Epinephrine, Tetracaine) gel.

#### 130

TITLE: Intraoperative Relaxing Incisions (IORI) in Mohs Micrographic Surgery

**AUTHORS:** Rungsima Wanitphakdeedecha, MD; Teris M. Chen, MD; Michael R. Migden, MD; Tri H. Nguyen, MD

## Purpose:

Mohs sections from anatomic locations with thicker skin may be a challenge to prepare for histologic examination by the Mohs micrographic technique. The authors describe an intraoperative in vivo technique to facilitate tissue preparation in this instance.

### Design:

After scoring and before excising the Mohs section, relaxing incisions should be made within the outlines of the Mohs section. These relaxing incisions should be angled in the direction of anticipated flattening of the tissue.

## **Summary:**

Figure 1 IORI Figure 2 Two Mohs sections from the left and right ala are compared, one with (left) and one without (right) IORI.

## **Conclusions:**

IORI facilitate tissue flattening for Mohs processing, especially for thicker specimens. Tissue that would otherwise require division into smaller sections and/or additional tissue processing may now be processed as a single section, thereby optimizing tissue and margin integrity.

#### 131

TITLE: Atypical Dermatofibromas of the Face

AUTHORS: Angela Hutcheson, MD; Katerina G. Chiller, MD

#### **Purpose**:

To discuss two patients and a review of the literature concerning atypical dermatofibromas on the face.

### Design:

Here we present the clinical presentations, histology and management of two patients with atypical facial DF/BFHs, using the Mohs micrographic technique. A relevant review of the literature will be discussed.

#### Summarv:

While dermatofibromas (DFs) are common lesions typically located on the extremities, DFs are reported to occur only rarely on the face. When DFs do present on the face, they are often unusual histologically and more clinically aggressive. For example, facial DFs tend to infiltrate subcutaneous adipose tissue and striated muscle rather than remain confined to the dermis, which is more characteristic of DFs located in more usual locations. As such, these fibrohysticytic tumors located on the face and portraying deeply infiltrating histology can be found in the literature under the nomemclature of benign fibrous histiocytomas (BFH). The first patient was a 45-year-old white woman who presented with a deeply invading and poorly defined DF of the right temple. The lesion was noted to invade the subcutaneous adipose tissue and striated muscle. Our second patient was a 60-year-old black woman who also presented with an atypical DF of the left cheek which had significant subcutaneous infiltration. Both patients were treated with Mohs micrographic surgery and repaired with local flaps.

## **Conclusions:**

Review of the literature reveals that facial DFs/BFH are relatively rare, and require wider excisional margins than expected when compared with DFs which occur on the extremities due to the infiltration of subcutis and deeper structures, poor circumscription, and an increased local recurrence rate. Extirpation of these lesions with Mohs offers the advantages that Mohs has with cutaneous malignancies such as histologic visualization of the margins, the potential for smaller defects, and will theoretically also offer lower recurrence rates.

#### 132

TITLE: Vascular Clips for Controlling Intraoperative Bleeding during Mohs Micrographic Surgery

AUTHORS: Richard Krathen, MD; Heidi Donnelly, MD

### Purpose:

Large-caliber vessels are frequently encountered during Mohs micrographic surgery on the head and neck and often must be transected to clear the tumor. Surgeons traditionally use figure-of-eight sutures to tie off bleeding vessels after they are identified. We describe the use of a stainless steel vascular clip (Ligaclip, Ethicon) to control bleeding from these vessels as an easier and faster alternative to suture.

#### Design:

The bleeding vessel is identified, clamped with a hemostat, and a vascular clip is then applied. These small metal clips may be safely left inside the patient after the procedure.

### Summary:

Patients seen for Mohs micrographic surgery with tumors on the head and neck near the path of a named largecaliber vessel are identified prior to surgery. These vessels are frequently encountered during the second stage or later if the deep margin continues to show tumor present, and may be transected during tumor extirpation. A Ligaclip may then be applied to an actively bleeding vessel after it is clamped with a hemostat. Any clips that remain on the Mohs section must be removed before processing. This vascular clip is applied more quickly than suture to a bleeding vessel. In addition, using suture to tie off a vessel may pierce the vessel again, causing further bleeding, which does not occur with the Ligaclip.

### Conclusions:

Vascular clips provide an efficient way to obtain good hemostasis when large named vessels must be sacrificed during Mohs micrographic surgery.

#### 133

TITLE: Fillers for Post-Surgical Depressed Scars After Skin Cancer Reconstruction

**AUTHORS:** Aradhna Saxena, M.D.; David Kasper, MS IV, MBA; Greg S. Morganroth, M.D.; Joel L. Cohen, MD

## Purpose:

Traditional scar revision has addressed thickness with corticosteroids, superficial contour with dermabrasion or resurfacing, and post-repair erythema with laser therapy. With the introduction of fillers to the dermatologic surgeon's armamentarium, we now can address deeper contour changes.

## Design:

A series of 6 patients underwent Mohs Micrographic Surgery (MMS) followed by reconstruction. Post-operatively, irregularities in contour were re-shaped with filler agents. The patient tolerance of the procedure, satisfaction with the outcome, and complications were evaluated on the basis of retrospective chart review, investigator observation, and digital images.

### **Summary:**

A variety of filler agents can be used to enhance post-surgical scars.

**Conclusions:** Using filler agents, we have experienced tremendous success in enhancing cosmetic outcomes after Mohs micrographic surgery and reconstruction, while increasing patient satisfaction.

## 134

TITLE: Bleeding Complications and Perioperative Anticoagulation in Cutaneous Surgery

AUTHORS: A. Yasmine Kirkorian, BA; Ellen S. Marmur, MD

# Purpose:

Our aim is to present a summary of the incidence of bleeding complications occurring in anticoagulated patients perioperatively during cutaneous surgery.

#### Design:

A questionnaire surveying physician experience of bleeding complications was sent to 700 dermasurgeons, members of the American College of Mohs Micrographic Surgery and Cutaneous Oncology. The questions investigated physicians' experience with the following: (1) number of procedures performed yearly (2) continuation or discontinuation of aspirin, clopidogrel, aspirin and clopidogrel, non-steroidal anti-inflammatory drugs (NSAIDs), warfarin, vitamin E and herbal supplements (3) bleeding complications associated with these agents (4) the influence of

the literature on physician decision-making (5) the involvement of other physicians in determining how to manage the patient.

## Summary:

Twenty-three percent of dermasurgeons responded to the questionnaire. Our results are pending both quantitative and qualitative analysis. Our quantitative data will be integrated with our data from our most recent survey entitled "Perioperative Management of Anticoagulant Therapy During Cutaneous Surgery: 2005 Survey of Mohs Surgeons." Our qualitative data will be used to explain the trends seen in the management of anticoagulation perioperatively in the context of risk for bleeding complications.

### **Conclusions:**

We expect to report a trend of minor bleeding complications that do not compromise surgical outcome and to argue for the continuation of anticoagulation perioperatively.

#### 135

**TITLE:** Photoacoustic Imaging of In-Vivo Suspected Melanoma and Ex-Vivo Pathologic Correlation

AUTHORS: Jeff Petersen, MD; Margaret Mann, MD

## Purpose:

Photoacoustic imaging is a revolutionary technology that allows three dimensional visualization into the skin. This new technology uses laser light and sound to produce in vivo images of cutaneous structures. The three dimensional resolution can produce striking images to depths of 3mm and greater.

#### Design:

Photoacoustic images are taken of clinical lesions that are felt to be melanomas. The lesions are then excised and sent to pathology. Lesion depth is compared in vivo and in vitro, as well as demonstrating three dimensionaly tumor extent.

# Summary:

Photoacoustic imaging provides a unique look into the skin. Other technologies such as confocal microscopy have been limited by their ability to penetrate into the skin. This limitation has been overcome and a new frontier of in vivo evaluation of the skin has begun as is shown with these unique images.

#### Conclusions:

Photoacoustic imaging is a new technology that allows one to see into the skin and see lesions in three dimensions. It should one day become a valuable tool in field of dermatology.

## 136

**TITLE:** Relative Risk of Nonmelanoma Skin Cancer in Patients With Multiple Simultaneous Solid Organ Transplants: A Retrospective Case-Control Study

AUTHORS: Simon Yoo, MD; Lucile White, MD; Michael Abecassis, MD MBA; Murad Alam, MD

#### Purpose:

Diabetics and patients with hepatorenal syndrome are increasingly likely to receive kidney-pancreas or kidney-liver transplants respectively. Increasingly, advances in transplantation have made it feasible to replace multiple organs at the same time. The purpose of this study was to compare the incidence of nonmelanoma skin cancer post-transplantation in patients

who simultaneously received 2 or more solid organs versus patients who received only a single transplant.

## Design:

Retrospective case-control study at academic urban medical center with large organ transplantation service. IRBauthorized chart and database review was used to identify 32 patients who had received 2 simultaneous organ transplants, predominantly either kidney-pancreas or liver-pancreas transplants. For each such case, there was selected a single ag,e and sex-, and Fitzpatrick skin-type matched control who had undergone a single transplant of one of the same organs within the same calendar year. Incidence of basal cell and squamous cell carcinoma in both case and control subjects was compared from the time of transplant to the August 2006; patient self report elicited by telephone or personal interview was verified by medical records, including chart notes, biopsy reports, and operative reports, from the Northwestern University Transplant Skin Cancer Clinic, which routinely follows all post-transplant patients from the institution who live in greater Chicago. Further, patient report of skin cancer history at the time of transplantation was compared.

### Summary:

Four of the patients in the double transplant group showed a median of at least 1 skin cancer per year following transplantation compared to only 1 patient in the single transplant group. Overall, it was difficult to ascertain the relative risk of skin cancer associated with double-transplantation as such transplants were relatively recent, and post-transplant incidence of skin cancer is known to correlate significantly with time since transplant.

#### Conclusions:

Simultaneous transplants of multiple organs do not appear to be associated with a much increased incidence of nonmelanoma skin cancer. However, it is possible that increased immunosuppression associated with multiple transplants may eventually result in increased skin cancer risk as time from transplantation

#### 137

TITLE: Recurrent Basal Cell Carcinoma of the Scalp with Bony Invasion: A Diagnostic Clinical

AUTHORS: Suneeta S. Walia, M.D.; David E. Kent, M.D.

### Purpose:

To demonstrate a diagnostic clinical hallmark of bone invasion due to a basal cell carcinoma. The clinical hallmark of bone pitting will be demonstrated and salient features discussed.

# Design:

Case report

## **Summary:**

Basal cell carcinoma is the most common type of nonmelanoma skin cancer and may present with one or more well-recognized growth patterns such as superficial, nodular, micronodular, morpheaform and basosquamous. Aggressive forms such as the morpheaform, infiltrating and basosquamous variants, and neglected recurrent lesions may pose considerable therapeutic challenges. We present a case of recurrent basal cell carcinoma of the scalp that on physical examination was fixed to deeper structures and upon subsequent Mohs micrographic surgery demonstrated classic signs of bone invasion: bone pitting. This case illustrates a diagnostic clinical hallmark for bone involvement from an overlying nonmelanoma skin cancer.

## Conclusions:

Bone pitting is a clinical hallmark suggesstive of bone invasion that every Mohs surgeon should recognize.

#### 138

TITLE: The Utility of the Bilobe Flap: Distal Nose and Beyond

AUTHORS: Joel L. Cohen, MD; Jamison Strahan, MD

## Purpose:

Traditionally, we think of the bilobe flap as a workhorse flap for distal nasal defects. This review will not only look at distal nasal defects with and without cartilage, but will primarily focus on other areas where this closure can be useful in repairing skin cancer defects.

### Design:

The mechanics of performing a bilobe flap in various areas will be reviewed. Of particular interest will be large cheek defects as well as extremity and proximal nasal defects. Photographs of each skin cancer defect, immediate closure and longterm follow-up will be shown.

#### Summary:

The bilobe flaps can provide an excellent option for repairing skin cancer defects not only on the distal nose, but also at other sites.

#### **Conclusions:**

The bilobe flap has utility beyond just the distal nose in repairing skin cancer defects.

### 139 Late-breaking

**TITLE:** Characteristics of Lentigo Maligna Treated in a Mohs Practice and Predictive Factors for Invasion

AUTHORS: Priya Zeikus, MD; Suzanne Olbricht, MD

### Purpose:

Lentigo maligna is traditionally recognized as a slow growing in situ lesion that rarely progresses to invasive melanoma. Treatment regimens for lentigo maligna vary widely from watchful waiting to Mohs surgery, as the behavior of these lesions is not well understood.

#### Design:

This study is a retrospective review of lentigo maligna treated by slow Mohs surgery. The purpose of this study is twofold: (1) To examine characteristics of lentigo maligna treated in a Mohs surgery practice and (2) to examine cases of lentigo maligna found to be invasive only after surgery was performed and to determine whether certain predictive factors exist that will help guide screening and earlier treatment of these invasive lesions.

# Summary:

Our data consists of 83 lentigo maligna cases; of which 10 patients were found to have an invasive component only after Mohs surgery was performed.

#### **Conclusions:**

In general, the invasive lesions were most often found on the cheek and forehead, and had much larger preoperative sizes as compared to other non-invasive cases. Also, postoperative defect sizes were much larger in these cases than those that which did not have an invasive component. The number of Mohs stages, anatomical side of lesions (left vs right vs center), history of prior treatment, and patient demographics were very similar to characteristics of those patients with noninvasive lentigo maligna lesions. Specific statistical analysis of this data will be presented.

## 140 Late-breaking

**TITLE:** Plaque-Type Syringomata Mimicking Microcystic Adnexal Carcinoma: A Report of Two Cases

**AUTHORS:** Matthew C. McClelland, MD; Pitiporn Suwattee, MD; Valda N. Kaye, MD; Peter K. Lee, MD, PhD

## Purpose:

Syringomata are common adnexal tumors with eccrine ductal differentiation, often presenting as multiple small skincolored papules of the lower eyelids and cheeks of women. While these tumors are easily recognized, the rare plaque-type variant may be mistaken for other cutaneous neoplasms. Clinically and histologically, this subtype may resemble morpheaform basal cell carcinoma (MBCC), desmoplastic trichoepithelioma (DTE), and microcystic adnexal carcinoma (MAC). However, because plaque-type syringomata follow a clinically benign course, differentiation from these more aggressive tumors, including MAC, is essential.

### Summary:

Two patients presented with extensive indurated skin-colored plaques of the central face. One patient, a 61-year-old Caucasian male, had plaques involving much of the face, including the upper cutaneous lip, bilateral cheeks, and lower eyelids. Similarly, a 78-year-old Caucasian female presented with an infiltrative 1.5 cm skin-colored plaque on the nasal bridge. Upon closer inspection, the plaque appeared to involve most of the forehead, the upper and lower eyelids, and the cheeks bilaterally. In addition to these findings, both patients had asymptomatic 1-3 mm skin-colored papules scattered on the face, which focally seemed to coalesce to form the plaques. The diagnosis of MAC was initially favored in both cases due to the widespread, infiltrative nature of the plaques and preliminary histopathologic evaluation. With such extensive involvement of the face, consultation was sought prior to pursuing aggressive surgical measures. Further review of the clinical and histologic features led to the final diagnosis of plaque-type syringoma in both cases.

### **Conclusions:**

Plaque-type syringomata may mimic other cutaneous tumors, including DTE, MBCC, and MAC. Clinically, the presence of multiple skin-colored papules in association with indurated plaques may be suggestive of plaque-type syringoma, while a single infiltrative plaque without individual papules is more likely to represent MAC. The superficial dermal component of syringomata may be indistinguishable from MAC; differentiating histologic features of MAC include deep dermal and subcutaneous growth and perivascular or perineural involvement. Careful clinical and histologic evaluation is crucial in order to avoid unnecessary, potentially disfiguring surgical procedures, as demonstrated in these two cases.

### 141 Late-breaking

TITLE: The Flipped Island Pedicle Flap: A New Twist on An Old Favorite

AUTHORS: Brad Kovach, M.D.; Roberta Sengelmann, M.D.

## Purpose:

Background: The island pedicle flap, also known as the V-to-Y or kite flap, is a type of advancement flap commonly used in cutaneous reconstruction. Island pedicle flaps derive their blood supply from an underlying subcutaneous pedicle. The triangular flap is freed at its 3 peripheral borders from dermal and epidermal restraints and remains attached only by its underlying pedicle. When properly designed, island pedicle flaps are hearty with a predictable blood supply. The linear motion of traditional island pedicle flaps is limited by its vascular pedicle

which acts as a "leash" connecting the overlying flap to the subcutaneous tissues at the donor site. Objective: We present a modification, which we term the "flipped island pedicle flap", that further extends the versatility of this flap.

## Design:

Technical aspects to the design and execution of the flipped island pedicle flap are discussed through presentation of examples from our practice used to reconstruct post-Mohs surgery defects in multiple locations including the nasal ala, cheek, oral commissure, and dorsal hand.

## Summary:

The triangular skin flap is freed from its lateral epidermal and dermal attachments and rotated up to 180 degrees on its underlying vascular pedicle, typically located at the leading edge of the flap. Such rotation allows re-direction of the flap in a non-linear trajectory, permitting coverage of defects oriented at oblique angles to the donor site of the flap. Similarly, by placing the pedicle at the leading edge of the flap and rotating upon that pedicle, we have found that greater extension is possible than with traditional island pedicle flaps. One potential concern when designing this flap is compromise of the vascular supply due to torque created by twisting the pedicle. Ischemia can be avoided by leaving an adequate pedicle of greater than approximately one-quarter the area of the overlying flap, and including subcutaneous vessels and muscle. Similar to traditional island pedicle flaps, fullness, or "pincushioning", of the flipped island pedicle flap can be minimized by undermining the recipient wound margins, slightly undersizing the flap, and insetting the flap slightly below the surrounding wound margins.

### **Conclusions:**

The flipped island pedicle flap is a modification of the traditional island pedicle flap that further extends its versatility and can provide excellent cosmetic and functional results.

# 142 Late-breaking

TITLE: Translational Significance of Microarray on Actinic Keratoses

**AUTHORS:** Sheldon Sebastian, M.D.; R. Steven Padilla, M.D., MBA; Gavin Pickett, PhD **Purpose:** To evaluate the molecular pathology and gene networks of actinic keratoses (AK) in the spectrum of cutaneous squamous cell carcinomas (SC).

#### Desian:

Patients were identified as having cutaneous SC, informed of the study and consented. Biopsies were performed on non-sun-exposed skin, sun-exposed skin, AK, and SC. A portion of tissue was sent for histological confirmation, and the remainder was processed for microarray analysis according to industry protocol. Microarray studies were performed on all of the RNA samples with the Affymetrix HGU133 2.0 PlusGeneChip using standard protocols as recommended by the manufacturer (Affymetrix, Santa Clara, CA, USA; starting material 1ug total RNA). Stained chips were scanned on a Gene Array Scanner (Agilent, Palo Alto, CA, USA), and data files were processed by GeneChip software (Microarray Suite, Affymetrix).

# Summary:

Non-melanoma skin cancers are on the rise worldwide. While they are generally not life-threatening, cutaneous squamous cell carcinoma (SC) can cause significant morbidity and mortality. Abnormal gene expression in SC is well known, however the question of whether actinic keratoses (AK) represent a pre-cancerous condition is unclear. To better understand the molecular pathology and gene networks of AK in the spectrum of cutaneous squamous cell carcinomas; our research measured the overall pattern of gene expression in the progression from normal skin to actinically damaged skin and ultimately to SC. We evaluated skin biopsies from 5 human patients. Each lesion was assessed clinically by a board-certified dermatologist, biopsied, and confirmed histologically by hematoxylin and eosin staining. The biopsies consisted of specimens from normal non-sun-exposed skin, normal sun-exposed skin,

actinic keratosis, and SC. High-density gene expressionmicroarrays were used to measure over 54,000 mRNAs. Using the Statistical Analysis of Microarray (SAM) algorithm we identified thousands of statistically significant genes that were differentially expressed in our AK samples. Of these, the top 258 genes (false discovery rate < 1 gene) are now being investigated. Grossly, our data reveals a direct correlation of abnormal gene expression from normal skin to AK to SC (Fig. 1), supporting previous histological observations that actinic keratoses are indeed pre-cancerous. Analytical tools will allow us to evaluate individual genes, specific gene networks (Fig. 2) and eventually detailed molecular pathways that may potentially lead to precise biomarkers of pre-cancerous skin lesions. In time, this research will help to establish gene targets for therapeutic interventions.

#### Conclusions:

Our data shows a direct correlation of abnormal gene expression as keratinocytes progress from normal skin to AK to SC. This supports the notion that actinic keratoses are pre-cancerous.

## 143 Late-breaking

**TITLE:** Full Thickness Skin Graft (FTSG) Repair for Lower-Extremity (Below Knee) Tumors Treated by Mohs Micrographic Surgery (MMS)

AUTHORS: Monika Srivastava, MD; Brian Jiang, MD

## Purpose:

The purpose of this study was to evaluate the efficacy and success of FTSGs to repair lower extremity defects following Mohs micrographic surgery.

**Design:** The study design was based on a retrospectice review of FTSGs used to repair lower extremity defects following MMS. All patients were treated in the Dermatologic Surgery unit at the Beth Israel Deaconess Medical Center between April 2002 and August 2006. Primary outcome was full versus partial, versus no take of the graft. Other data collected included graft infection, hematoma formation, graft hypertrophy, and graft contracture.

### Summary:

There were a total of 45 FTSG repairs performed on the lower extremities following MMS. Patient ages ranged from 41-97 years. Tumor types included basal and squamous cell carcinoma. Graft sizes ranged from 1 cm2 to 16.8 cm2. Of the 45 total FTSG repairs performed, 22% exhibited some level of graft failure: 6 demonstrated superficial epidemal sloughing, 3 had only partial survival, and 1 had no survival. Thirty-five (78%) demonstrated full survival. Other complications included infection (11%) and hematoma (2.2%). There was no significant graft hypertrophy or contracture. Interestingly even patients who suffered a complication did well with either subsequent full survival of the graft follwoing infection or hematoma or secondary intention healing following graft failure. No complication required additional treatment except for oral antibiotics for infections.

### **Conclusions:**

FTSGs are a good option for repairing large lower extremity defects following MMS. The complication rate is low and the most patients do well.