Canadian Society of Plastic Surgeons
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Dr Donald Lalonde: President / Président
Dr Gordon Wilkes: Vice-President / Vice-Président
President, Scientific Program / Président, Programme scientifique
Dr Thomas Sinclair: Chair, Local Arrangements / Président, Intendance générale

Eye Opener, Thursday, May 31, 2007, 0700-0800 am

EVIDENCE-BASED PLASTIC SURGERY – THE BASICS IN SIMPLE ENGLISH, HOW DO WE FIND THE TRUTH?

Achilleas Thoma

Evidence-Based Medicine has been hailed this past year by the prestigious British Medical Journal as one of the 15 greatest medical breakthroughs in the last 166 years. In Plastic Surgery we have been slow in adopting the concepts espoused by this new development. In this presentation the phrase and the approach to Evidence-Based Plastic surgery will be explained.

The introduction of new techniques in Plastic surgery is seductive for patients and sadly for plastic surgeons alike. Plastic surgeons in particular do a poor job in appraising the evidence for the adoption of new techniques.

The appraisal of new techniques/technologies will be explained by using principles from Health Research Methodology. The following concepts will be explained: a) How to ask a clinical relevant question: the difference between a "background" and "foreground question" b) the hierarchy of evidence for treatment decisions, c) Where to find the evidence d) identifying who benefits from the new technique e) explanation of the different perspectives taken in a study and the implication in the conclusions e) what sort of outcomes we should be looking for in a study f) the importance of the "time horizon" in outcomes g) the inappropriate use of the term "cost-effective" in the plastic surgery literature h) making rational decisions to accept new techniques based on proper economic analysis; cost-effectiveness and its variant, cost -utility analysis.

LEARNING OBJECTIVES:

1. To explain the Hierarchy of Evidence for Clinical Decisions in Plastic surgery
2. To explain the principles behind valid clinical plastic surgery research for the "Users" and "Doers" (of such clinical research)
3. To help you organize your strategies in finding the "truth" in an overwhelming biomedical literature with conflicting recommendations.

01
MECHANISMS OF TOLERANCE IN COMPOSITE TISSUE ALLOGRAFT TRANSPLANTATION

T Zhong, CLF Temple, DC Ross, Y Lieu, J Jiang, H Wang, H Sun, B Garcia, R Zhong

PURPOSE: To demonstrate that transplant tolerance is donor specific and to illustrate the mechanisms whereby this might occur.

METHODS: All limb transplants were from C57BL/6 to BALB/c mice and all received 14 days of monoclonalAB, LF, and rapamycin. Group 1 (n=11) received drugs alone. In Group 2 (n=3), graft bone marrow (BM) was eradicated prior to transplantation using 750 cGy γ-irradiation. Recipients were sacrificed if demonstrating signs of rejection or >day 100 post-transplantation when they were deemed to be tolerant. Donor specific tolerance was assessed by skin grafting with grafts from C57BL/6 and third-party (C3H) mice. Flow cytometry was used to detect donor cell chimerism in limb recipients, repopulation of recipient cells in the graft BM, and serum anti-donor antibodies in recipients.

RESULTS: Mean survival time in Group 1 was >100 days. In the radiated group, mean survival was 17 days ($p<0.05$ vs group 1) suggesting that donor bone marrow cells are important for inducing recipient immune hyporesponsiveness. Long-term allograft survivors demonstrated a time-dependent increase in donor cell chimerism as well as low anti-donor antibodies in the serum and in the graft, suggesting that B lymphocyte activity was down-regulated. Significant levels of recipient B, T and myeloid cells were found to have re-populated graft BM. In long-term survivors, skin grafts from donor strain mice were accepted whereas grafts from a third strain were rejected demonstrating that tolerance is donor specific.

CONCLUSIONS: In this model, induction of tolerance appears to be dependent upon intact donor bone marrow cells. Tolerance is associated with re-population of the grafted bone marrow with recipient cells and low levels of anti-donor antibodies. This may suggest that tolerance is achieved by down-regulating B lymphocyte activity in recipients.

LEARNING OBJECTIVES:

Participants will learn that transplant survival without long-term immunosuppression is possible and the possible mechanisms by which it occurs.

02
THE ASSOCIATION BETWEEN MELANOMA RECURRENCE AND RT-PCR SENTINEL NODE STATUS: A SYSTEMATIC REVIEW AND META-ANALYSIS

G Landes, PG Harris, I Perreault, L Lessard, C Cordoba, C Bernier, JP Brutus, A Nikolis

PURPOSE: The clinical significance of RT-PCR positive sentinel lymph node in patients with melanoma is uncertain. There are conflicting results from observational cohort studies. Our aim was to conduct a meta-analysis to examine the association between melanoma recurrence/mortality and RT-PCR sentinel node status in patients with a histologically negative sentinel node.

METHODS: Studies published in English, French, German, and Spanish-language journals were retrieved by searching MedLine, Embase, Cochrane Library and Google Scholar (1995-2006) using Medical Subject Headings melanoma and sentinel lymph node biopsy and reverse transcriptase polymerase chain reaction. A random-effects model using the Peto Odds Ratio (OR) was used to pool data. Heterogeneity was explored using sensitivity analyses and meta-regression. Two independent reviewers extracted data and assigned quality scores.

RESULTS: From the 2874 potential relevant articles, 17 observational cohort studies were identified. An RT-PCR positive sentinel node was associated with an increased risk for melanoma recurrence (Peto OR = 4.4, 95% CI: 2.3 to 8.3; $p<0.001$). There was evidence for heterogeneity: $Q = 73.1$; $p<0.001$; $I^2 = 79\%$. Part of this was explained by the influence of study quality and the number of RT-PCR markers used; however, the relationship between melanoma recurrence and RT-PCR status remained statistically significant in the high quality study subgroup. Pooling data of the five studies addressing melanoma-specific mortality revealed that an

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RT-PCR positive sentinel node did not predict death (Peto OR = 3.3, 95% CI: 0.7-14.6; p = 0.1).
CONCLUSION: An RT-PCR positive sentinel node in patients with a histologically negative node increases the risk for recurrence but does not impact survival.
LEARNING OBJECTIVES:
Participants will
1. Understand the systematic search strategy for the meta-analysis.
2. Understand the Pooled Odds Ratio for recurrence and survival.
3. Understand sources of the heterogeneity found in studies.

03

Canadian Expert Series

CANADIAN PLASTIC SURGICAL WAIT TIME BENCHMARKS

L Sigurdson

LEARNING OBJECTIVES:
1. To understand the methodologies used to develop wait time benchmarks
2. Become aware of Canadian derived wait time benchmarks for different plastic surgery procedures
3. Understand the controversies surrounding wait time benchmarks

04

Canadian Expert Series

OPTIMIZING EVERYONE'S SATISFACTION WITH THE OFFICE VISIT

CL Kerrigan MD

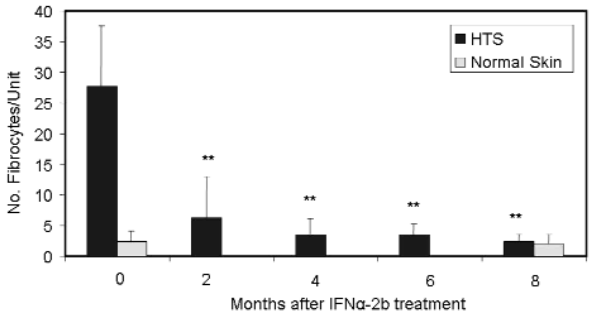
LEARNING OBJECTIVE:
Following this presentation the learner will successfully describe at least 3 strategies for re-designing the office visit

05

THE EFFECTS OF INTERFERON ALPHA-2B ON FIBROCYTE FUNCTION IN HUMAN HYPERTROPHIC SCAR AFTER BURN INJURY

TL Stewart, JF Wang, H Jiao, HA Shankowsky, PG Scott, EE Tredget

INTRODUCTION: Wound healing is a naturally occurring process that involves an important balance between specific cellular and molecular mechanisms. When the wound healing process remains unchecked, fibrotic wound healing may occur with the overproduction of extracellular matrix (ECM) and the development of hypertrophic scar (HSc) or keloids. Fibrocytes are a unique leukocyte subpopulation that traffic through blood and migrate into cutaneous sites where they appear to contribute to the development of HSc and other fibrotic conditions by producing ECM and regulating the functions of dermal fibroblasts. Recently, clinical trials using subcutaneous interferon alpha 2b (IFNα-2b) have shown to induce resolution of HSc in burn patients. It is our hypothesis that one function of IFNα-2b in HSc is antagonism of the profibrotic effects of fibrocytes.
METHOD: The effects of IFNα-2b on fibrocyte differentiation, proliferation, and expression of alpha-smooth muscle actin (α-SMA) were studied in vitro using thymidine incorporation, FACS analysis, and confocal microscopy. Using MetaMorph™ imaging software, we used confocal microscopy to identify and quantitate fibrocytes in vivo from serial biopsies of HSc obtained from HSc patients treated with IFNα-2b 2×10^6U 3×/week subcutaneously for 20 weeks (Figure 1).



RESULTS: Using the fibrocyte specific markers LSP-1 and procollagen-I, we show that IFNα-2b inhibits differentiation, proliferation, and expression α-SMA of fibrocytes in vitro. Our results show a significant reduction in the numbers of fibrocytes in HSc tissue from burn patients undergoing systemic IFNα-2b therapy.
CONCLUSIONS: IFNα-2b may be a potential therapeutic treatment for HSc in part, by directly suppressing the profibrotic functions of fibrocytes directly and by decreasing their paracrine effects on wound fibroblasts.
LEARNING OBJECTIVES:
At the end of this presentation the learner will be able to:
1. Describe important cellular and molecular mechanisms involved in wound healing.
2. Consider using INFα-2b as a potential therapeutic treatment for HSc.

06

REDUCED POST-OPERATIVE HOSPITAL STAY IN CLEFT PALATE REPAIR IN MANITOBA

LL Ross, K Bjorklund

PURPOSE: Necessary length of stay following cleft palate surgery is mixed, ranging from 24 hours to 5 days. We review our series of cleft palate repairs to determine whether 24 hour post-operative hospital stay is safe.
METHODS: All patients < 2 years old undergoing primary cleft palate repair by 3 surgeons at the Children's Hospital of Winnipeg from January 2002 to October 2006. One surgeon utilized postoperative continuous oximetry to help plan safe discharge at 24 hours.
RESULTS: 148 patients underwent cleft palate repair over a 4 year period with 94 patients meeting our criteria. The average age was 11 months (range 8mos-2yr). 17 patients had Pierre Robin Sequence (average stay 2.1 days), while 3 patients were syndromic (average stay 9.7 days). These patients were included as separate groups. There were 51 non-monitored patients with an average hospital stay of 2.0 days (24h-4 days). 22 patients had post-operative monitoring and remained in hospital for 24 hours. There were no documented cases of complications including desaturations in monitored non-syndromic patients. Complications were noted in 3 syndromic and 1 Pierre Robin sequence patient increasing their stay.
CONCLUSIONS: In our small sample over 4 years non-syndromic patients undergoing cleft palate repair with 24h post-op monitoring and subsequent discharge did not demonstrate an increase in complication rate compared to those patients with a longer hospitalization. Thus, as has been suggested in previous literature, this study supports the safe and cost-effective 24 hour stay post palatoplasty for otherwise well non-syndromic patients with grossly normal mandibular growth patterns. Postoperative costs at our center would seem to be halved by adopting a 24 hour stay.
LEARNING OBJECTIVES:
To examine the safety of 24 hr hospital stay following primary cleft palate repair.

07

UNILATERAL CLEFT LIP – SURGICAL MARKINGS FOR ANATOMIC SUBUNIT REPAIR

D Fisher

PURPOSE: The anatomic subunit repair has recently been described (Fisher, PRS 2005). The purpose of this podium presentation is to review the technique with specific emphasis on the presurgical markings of the repair.

METHOD: Two consecutive patients, one with incomplete unilateral cleft lip only and one with complete unilateral cleft lip and palate, were filmed undergoing primary cleft lip repair.
RESULTS: 198 consecutive patients with unilateral cleft lip have undergone anatomic subunit repair by the author. To date, only two of the surgeries have been filmed. The footage of the presurgical markings for each of the repairs is presented accompanied by preoperative and postoperative still photographs.
CONCLUSIONS: Appropriate presurgical planning is essential for satisfactory results. Surgical marking with adherence to the principles of anatomic subunit repair is reviewed.
LEARNING OBJECTIVES:
1. The principles of anatomic subunit repair for unilateral cleft lip will be reviewed.
2. Videotaped presurgical markings for anatomic subunit repair of both incomplete and complete unilateral cleft lip will be demonstrated.

08
THE IMPACT OF GINGIVOPERIOSTEOPLASTY ON MIDFACIAL GROWTH IN PATIENTS WITH UNILATERAL CLEFTS

SM Power, DB Matic

PURPOSE: Previously we have shown that gingivoperiosteoplasty (GPP) results in less bone production and poorer bone location within the alveolar cleft compared to secondary bone grafting (SBG). Currently, it is unknown whether GPP affects midfacial growth since previous studies are limited in size and follow-up. The purpose of this study is to evaluate the impact of GPP on midfacial growth and compare it to SBG.
METHOD: Patients born with complete unilateral alveolar clefts, past eruption of the permanent maxillary canine, were included. Following consent, lateral cephalograms were taken. Radiographs were digitized and cephalometric landmarks were analyzed using Dolphin 8.0. Exclusion criteria were orthognathic surgery or palatal closure of unknown technique. Patients were then divided into whether they had a successful GPP (GPP), a GPP that failed and required a rescue bone graft (GPP-BG), or a secondary bone graft (SBG). All groups were age-matched. Statistical analysis applied ANOVA for group comparisons, followed by Tukey's t-test if ANOVA identified a difference.
RESULTS: Average age was 14.4 years. Radiographs were available for 53 (16 GPP, 21 GPP-BG, 16 SBG) patients. SNA angle was significantly different between groups ($p=0.006$). The SBG group had a significantly greater SNA than the GPP-BG group ($p<0.05$). Similarly, N-A, N-ANS, and PNS-ANS were all significantly greater in the SBG vs. GPP-BG group ($p<0.05$).
CONCLUSIONS: GPP results in decreased hard palate length compared to SBG. Failed GPP salvaged by bone graft also results in reduced anterior maxillary height and projection. This occurs irrespective of the type of palatal repair and may be due to additional surgery at the alveolar cleft site.
LEARNING OBJECTIVES:
1. To identify advantages and disadvantages of GPP and SBG.
2. To understand cephalometric measurements of midfacial growth, particularly maxillary height and projection.
3. To recognize differences in midfacial growth following GPP vs. SBG after skeletal development.

09
OPTIMISING CRANIOFACIAL OSTEOTOMIES: APPLICATIONS OF HAPTIC AND RAPID PROTOTYPING TECHNOLOGY

DJ Murray, G Edwards, JG Mainprize, O Antonyshyn

INTRODUCTION: Craniofacial reconstruction frequently relies on the osteotomy and transposition of skeletal segments. Preplanning of the osteotomies has been greatly simplified with the development of more accurate imaging techniques including three dimensional computed tomographic (CT) scans and recently the use of rapid prototyping (RP). Despite the increased sophistication of preoperative planning, accurate intraoperative implementation of the osteotomy design remains problematic. Precise determination of the optimal spatial position and orientation of the osteotomy segment is difficult, particularly when visualization is restricted or when adjacent anatomical landmarks are unreliable.
METHOD: This paper introduces a simple reliable, system used to guide the intraoperative positioning and fixation of osteotomy segments in the upper craniofacial skeleton in three patients who presented with a malposition of the orbitozygomatic complex. It requires initial haptic simulation of the desired reconstruction based on 3D CT images, followed by the fabrication of a custom made resorbable polylactic-co-glycolic acid (PLGA) template to guide osteotomy segment transfer and positioning. This template is constructed on a physical model produced by RP using a 3D printing system.
RESULTS: Photographic and CT analysis shows a symmetrical skeletal reconstruction on which to drape the soft tissues.
CONCLUSION: Accurate placement and fixation of craniofacial osteotomies can be achieved using the technique described. This has minimized the operating time and removed much of the ambiguity involved in the accurate placement of osteotomy segments.
LEARNING OBJECTIVES:
Following this presentation the learner will be able to
1. identify the difficulties involved in positioning osteotomies of the craniofacial skeleton
2. describe the steps involved in this technique to simplify the accurate placement and fixation of the osteotomy
3. describe the advantages and disadvantages of this technique

10
MODIFIED VON LANGENBECK CLEFT PALATE REPAIR USING AN ANTERIOR TRIANGULAR FLAP: DECREASED INCIDENCE OF ORONASAL FISTULAS

TL Stewart, DM Fisher, JL Olson

PURPOSE: A complication following cleft palate surgery is the development of oronasal fistulas. Despite recent advances in cleft palate surgery, the rates of post-operative fistulas have remained unchanged and are reported between 3-60%. Oronasal fistulas commonly occur at the junction of the hard and soft palate as well as at the anterior portion of the cleft. These fistulas lead to functional problems with nasal emissions, hypernasal speech and food discharge through the nose. Avoidance of fistulas must therefore be a goal of palatoplasty. Based on the high incidence of anterior oronasal fistulas and the lack of intervention, we developed a modified Von Langenbeck technique using an anterior triangular flap aimed to decrease the incidence of postoperative fistulas.
METHOD: A triangular flap composed of oromucosa was designed anterior to the cleft. It is based posteriorly and used as a turn over flap to allow closure of the often very tight anterior nasal side. A Retrospective chart analysis was performed from 2000-2006. All patients receiving the modified Von Langenbeck for treatment of cleft palate, including those patients where the flap was removed, were included in the study. Patients were evaluated 4-8 weeks postoperatively for the presence of oronasal fistulas.
RESULTS: With the introduction of the anterior triangular flap we show that 0 of 164 patients developed a postoperative oronasal fistula.
CONCLUSIONS: Modification of the standard Von Langenbeck using an anterior triangular flap has the advantages of assisting in nasal side closure of the anterior margin of the cleft and in doing so reduces the rate of fistula formation.
LEARNING OBJECTIVE:
At the end of this presentation, the audience will gain technical knowledge used to facilitate a Von Langenbeck cleft palate repair that provides adequate closure of the anterior portion of the hard palate ultimately reducing the rate of oronasal fistulas.

11
PSYCHOLOGICAL ASPECTS OF PATIENT SELECTION

N Rumsey

The increase in numbers of people seeking cosmetic surgery has been fuelled by several factors including the emphasis on an attractive appearance and physical perfection prevalent in the media, increasing levels of

dissatisfaction with appearance in the general population and increasing social acceptance of interventions to change appearance. Psychological processes are involved in every stage of treatment, yet are widely overlooked in current care provision. The factors motivating people to seek appearance enhancing surgery have a large psychosocial component, including body image dissatisfaction, self consciousness, social anxiety and negative self-perceptions. Although more data are needed, it would seem unrealistic expectations of outcome relating both to the aesthetic result and to anticipated psychological benefits are surprisingly common. As a result, a proportion of patients experience disappointment and depression about the actual outcomes which can manifest in dissatisfaction with the care provided. The potential advantages of assessing psychological factors in the decision to seek cosmetic surgery and methods of implementing appropriate assessments in the context of practice will be outlined.

LEARNING OBJECTIVES:

At the end of this lecture

1. attendees will have an enhanced awareness of the psychological factors which motivate clients to seek cosmetic procedures and of the factors which can contribute to or detract from post-operative satisfaction.
2. attendees will be better able to appreciate the advantages of assessing psychological factors in the decision to seek cosmetic surgery and will be able to consider methods of implementing appropriate assessments in the context of their own practice.

12
EARLY SURGICAL MANAGEMENT OF AMBLYOGENIC PERIORBITAL HEMANGIOMAS: INDICATIONS AND OUTCOMES

JS Arneja, JB Mulliken

PURPOSE: Hemangiomas are benign vascular proliferative tumors of infancy, characterized by a defined, although unpredictable natural history. Hemangiomas in the periorbital region can result in irreversible amblyopia secondary to visual axis obstruction, optic nerve compression, strabismus, or most commonly, astigmatism and anisometropia. A variety of nonsurgical and surgical methods to manage these lesions have been proposed. We performed analysis of our cumulative two-institution data, present representative cases, outline indications, and review outcomes.

METHODS: All cases of periorbital hemangiomas managed by surgical excision were retrospectively reviewed. Indications for surgical excision included obstruction of the visual axis by the hemangioma, greater than two diopters of astigmatism, and a well-localized lesion. Surgical technique involved excision or debulking of the hemangioma and/or levator palpebrae superioris reinsertion or advancement. Inclusion criteria for review included patients treated surgically with a minimum six-month follow-up interval, and complete pre-operative and post-operative ophthalmologic assessments.

RESULTS: Twenty-six patients met the inclusion criteria, with a mean age at surgery of 5.9 months. The majority of hemangiomas were subcutaneous lesions located in the upper lid, causing astigmatism (mean 2.3 diopters) or causing ptosis with visual axis obstruction (12%). Preoperative treatment in 54% of patients included either oral steroids, intralesional steroids and/or patching. Surgical excision was performed without intraoperative complication in all patients, with a statistically significant improvement in the degree of astigmatism (0.93 diopters). Levator palpebrae superioris reinsertion or advancement was required in 31% of patients given involvement of the levator apparatus. The mean follow-up interval was 31 months, with one patient having lesion recurrence, not significant to warrant re-excision, one patient having residual astigmatism, and two patients having residual ptosis.

CONCLUSIONS: To prevent potentially irreversible amblyopia in infants with periorbital hemangiomas, our results suggest early surgical excision to be efficacious, with infrequent complications, and improved degree of astigmatism. We advocate this approach for well-localized periorbital hemangiomas, preferring to avoid in the majority of instances, intralesional steroid injection, with its well-documented complication profile.

LEARNING OBJECTIVES:

1. To understand the natural history of hemangiomas.
2. To describe the complications of periorbital hemangiomas.
3. To outline the treatment options for periorbital hemangiomas.

13
DENTO-SKELETAL OCCLUSION IN PATIENTS WITH METOPIC SUTURE SYNOSTOSIS

M Martin, H El-Khatib, C Remise, P Rompré, P Bortoluzzi

INTRODUCTION: Dento-alveolar and skeletal malocclusions are well established stigmata in patients with certain craniosynostosis. There have to date been no studies assessing the occlusion in patients with metopic suture synostosis.

HYPOTHESIS: Our working hypothesis is that patients with trigonocephaly present a higher incidence of class II malocclusion.

MATERIAL AND METHODS: The clinical, orthodontic and radiographic charts of patients treated and followed for metopic suture synostosis at the craniofacial clinic of Saint Justine Hospital were retrospectively reviewed. Inclusion criteria included: patients between 6 to 18 years of age, no orthodontic treatment and no dental extractions performed prior to taking panoramic and cephalometric radiographs, and assessment by the craniofacial team orthodontist. A total of 39 measurements for lateral and postero-anterior values were assessed and compared to age matched controls. Statistical comparisons were made using the Two-Sample t-test (separate variance with Bonferroni correction); the significance level was set at $p \leq 0.05$.

RESULTS: A total of 25 patients met the inclusion criteria. Values for both maxillary length (ANS-PNS) and mandibular length (Ar-Pg, Go-Ar, Pg-Go) showed a significant increase in comparison to aged matched controls. Other significant differences were observed in measurements for mandibular and maxillary width with patients presenting with increased values of bicondylar distance, bigonial distance, and bimaxillary distance. Hence the presence of increased antero-posterior and transverse dimensions for both maxilla and mandible in these patients.

CONCLUSION: Patients with trigonocephaly do not present an increased incidence of class II malocclusion but rather a normal skeletal relationship between the maxilla and the mandible. They do however have an increased A-P and transverse dimension of the maxilla and the mandible when compared to normal aged matched children.

LEARNING OBJECTIVE:

Assess occlusion in patients with metopic suture synostosis.

14
METOPIC SYNOSTOSIS IN INFANTS: CT BASED MORPHOMETRIC AND OUTCOME ANALYSIS OF 17 CASES

CR Forrest, JK Mansfield

PURPOSE: Metopic synostosis occurs in 1 in 15,000 infants and results in forehead ridging, orbital hypotelorism, lateral orbital recession and a triangular shape to the cranial vault. The objective of this study is to review a 7 year experience in the management of infants with metopic synostosis at the Hospital for Sick Children, Toronto and present a CT-based morphometric analysis pre and 1 year post-operatively.

METHODS: Infants presenting to the Centre for Craniofacial Care and Research from 1999 to the present with metopic synostosis underwent a multi-disciplinary assessment followed by cranio-orbital reshaping. CT scans were obtained pre and 1 year post-operatively and analyzed using a ray analysis technique previously described by us.

RESULTS: 17 patients (12 M, 5 F, mean age 12.5 ± 4.4 mos, range 9-26 mos) underwent anterior cranial vault reshaping with bilateral frontal-orbital advancement using bioresorbable fixation by a single surgeon. No mortalities or significant morbidities were encountered. CT-based ray analysis in the axial plane at the level of the supra-orbital rim pre-op, immediately post-op and 1 year post-op demonstrated significant ($p<0.05$) advancements of the lateral supra-orbital rim with replacement of the characteristic triangular shape of the cranial vault with an ellipse. Comparison with 23 age-matched CT controls showed no significant differences from normal infants.

CONCLUSIONS: Cranio-orbital reshaping for infants with metopic synostosis results in improvement in frontal-orbital form and these improvements

are maintained over time. Complications and technical details will be presented.

LEARNING OBJECTIVES:

1. To understand features of metopic synostosis in infants
2. To become familiar surgical techniques in the management of infants with metopic synostosis.
3. To become aware of objective outcome measures in analysis of the surgical treatment of infants with metopic synostosis.

15

AN EARLY AND COMPREHENSIVE APPROACH TO SAGITTAL SYNOSTOSIS: EXTENDED STRIP CRANIECTOMY

DJ Murray, DR Chong, CR Forrest

INTRODUCTION: Achieving a normal head shape is the ultimate goal in the management of sagittal synostosis. We believe that this can be predictably achieved by addressing all the components of the scaphocephalic head shape including dolicocephaly, biparietal narrowing, bitemporal pinching, increased forehead length and frontal as well as occipital bossing. The subtotal cranial vault remodelling (SubTCVR), before the age of six months, is the procedure of choice at the Hospital for Sick Children, because it targets all stigmata of scaphocephaly at an early age when the bone is soft and pliable and bony regeneration will ensure complete closure of the residual gaps.

METHODS AND MATERIALS: We describe the procedure and review the results in 42 cases carried out during 1999 and 2003. Outcome measures included cranial index, multivector sagittal analysis (MVSA) and photographic assessment as well as complications, hospital and ICU length of stay and transfusion rates.

RESULTS: The mean age at surgery was 4.7 months. Total operative time ranged from 3 to 6 hours (mean 4 hours 25 minutes). All but one patient were transfused with mean volume of 362.75 mls. All patients had an overnight stay in ICU and average length of stay in the hospital was 4.2 days. 3 patients (7%) were returned to the operating room for post operative bleeding. The preoperative cephalic index (CI) ranged from 59.2 to 76.1 (mean 67.4). The mean postoperative CI was 76.8. The mean increase in CI was 9.4. MVSA and photographic assessment by experts and lay people showed a significant normalisation of head shapes.

CONCLUSION: This is a safe procedure addressing all aspects of the scaphocephalic cranial vault. The three outcome measures used show that this procedure can achieve a cranial index comparable if not better than other more extensive procedures. Using MVSA and photographic assessment we have shown that the SubTCVR can produce predictable normalisation of head shape in over 90% of cases.

LEARNING OBJECTIVES:

At the end of this talk, the learner will be able to:

1. Describe the steps involved in the Subtotal cranial vault remodeling procedure
2. Understand the stigmata of the scaphocephalic head shape and how the SubTCVR procedure aims to address these individually
3. appreciate the results achieved with the SubTCVR in the context of the 3 outcome measures described.

16

OBJECTIVE ASSESSMENT OF PEDIATRIC CRANIAL SHAPE ABNORMALITIES BY TOPOGRAPHIC LASER SCANNER

L Ross

PURPOSE: Previously cranial shape abnormalities in children were assessed with tape measure, 2-D calipers, radiographic examination or simply examined subjectively and helmeted after cumbersome plaster casting of an infant's head.

A descriptive introduction to a laser head scanner and benefits in clinical practice is provided.

METHODS: The scanner is compact, has four eye safe lasers and six cameras that creates a 3-D image of an infant's head in 1.5 seconds. Landmarks are placed on the patient and recognized by the scanner for consistent comparison with future scans. The analysis software gives the clinician immediate access to multiple measurements for a complete 3-D understanding of the problem.

From December 1, 2004 to February 7, 2007 all pediatric patients presenting with synostosis and most presenting with deformational plagiocephaly were scanned.

RESULTS: More than 300 scans were done. 55 helmets were ordered. Of those 42 were used to treat deformational plagiocephaly and 13 to treat synostosis postoperatively.

The device measures shape, symmetry and volume and requires very little training or skill to operate.

Current applications for this equipment at our facility include quantifying:

1) degree of asymmetry
2) effectiveness of conservative (non-helmet) treatment measures
3) effectiveness of helmet therapy
4) preop and postop synostosis correction and growth

A definite learning curve is in communicating the desires of our orthotist to the company was quickly overcome by involving the orthotist in every clinic.

CONCLUSIONS: The Star Scanner allows quick, benign, and objective documentation of 3-D head shape, cranial orthosis ordering by secure internet transfer, and resident and patient family education and has become an invaluable tool at the Manitoba Center for Craniofacial Difference. As the Canadian health care system becomes more cost conscious objective measures and asymmetry thresholds may be required to justify the costs of regional health authority payment for helmet therapy.

LEARNING OBJECTIVES:

To familiarize the participant with a relatively new head shape laser scanner and clinical applications in a University craniofacial practice.

17

ROUNDING OF THE INFERIOR RECTUS MUSCLE AS A PREDICTOR OF ENOPHTHALMOS IN ORBITAL BLOWOUT FRACTURES

R Tse, K Slywynska, A Banerjee, C Moore, D Matic

PURPOSE: In patients with orbital blow-out fractures, the inferior rectus sometimes takes on a rounded appearance on coronal CT. The purpose of this study was to determine the mechanism of this rounding and was to determine if rounding of the inferior rectus was predictive of late enophthalmos.

METHODS: A cadaver model was used to study the mechanism of inferior rectus muscle rounding. Progressively larger orbital floor defects, with and without periorbital soft tissue disruption, were created. The height-to-width ratio of the inferior rectus was measured on coronal CT scan and correlated to the created injury.

A late clinical follow-up study identified patients with isolated orbital floor fractures that did not undergo surgical repair. Enophthalmos was measured with a Hertel exophthalmometer and diplopia was measured with a Goldman perimeter. A blinded observer measured the height-to-width ratio of the inferior rectus muscle in patients with and without enophthalmos.

RESULTS: In the cadaver model, there was a significant increase in the height-to-width ratio of the inferior rectus muscle with increasing orbital floor defects and periorbital disruption.

On clinical follow-up, there was a significantly increased height-to-width ratio of 1 or more in patients with late enophthalmos from orbital blow-out fractures. None of the patients with a ratio less than 1 had enopthlamos.

CONCLUSIONS: Rounding of the inferior rectus muscle occurs as a result of a loss of bony and soft tissue support. Progressive rounding of the inferior rectus muscle occurs with progressively larger bony defects and soft tissue disruption. Rounding of the inferior rectus to a height-to-width ratio of 1 or greater is associated with late enophthalmos.

LEARNING OBJECTIVES:

Indications for surgical repair of orbital blow out fractures will be reviewed. Data to support the use of rounding of the inferior rectus muscle on coronal CT as an additional indication to prevent late enophthalmos will be reviewed.

18

Canadian Expert Series

RECENT ADVANCES IN WOUND HEALING AND MANAGEMENT

EE Tredget

1. Participants will be able to develop a practical approach to wound healing problems.
2. Participants will gain insight into new types of materials used for wound care and the regulatory process for introduction of novel products.
3. Participants will gain insight into potential new therapies for wound closure including tissue engineering, recombinant growth factors and stem cells.

19

EXTENDING THE INDICATIONS FOR PRIMARY NERVE SURGERY IN OBSTETRICAL BRACHIAL PLEXUS PALSY

JC Lin, CG Curtis, HM Clarke

Many patients with obstetrical brachial plexus palsy recover well spontaneously, while others require surgical intervention to achieve the best outcome. Several criteria have been published to identify surgical candidates, including Horner's sign or poor biceps recovery at three months. Using the Active Movement Scale, we have shown that failure to obtain a Test Score of 3.5/10 at three months, or the failure to obtain adequate elbow flexion to pass the cookie test at nine months, are indications for surgery. However, some patients do not meet any published criteria for nerve surgery, but have deficient shoulder external rotation, an important functional limitation. We report the operative management of five such patients. All patients seen at three months had elbow flexion (2-5/7) and passed the Test Score. All passed the cookie test at nine months, but lacked active external rotation (0/7) despite good passive range of motion. The surgery occurred at a mean age of 10.2 months. In four patients, spinal accessory to suprascapular nerve transfer was performed, in one case with concomitant Botox injection of internal rotator muscles. At post-operative visits between six months to one year, active external rotation (2-3/7) was present. A fifth patient underwent anatomical upper trunk reconstruction with sural nerve grafts. By six months post-operatively, she had regained her pre-operative scores for elbow flexion and hand function, and had achieved active external rotation (2/7). In conclusion, we believe that a small subset of patients with obstetrical brachial plexus palsy recover sufficient elbow and hand function, but have persistent poor shoulder function. All criteria that are currently used to designate patients for surgical intervention would exclude these children. An additional sign, lack of active external rotation with good passive range of motion, can be used to identify these patients, who can obtain improved shoulder movement following surgery.

LEARNING OJECTIVES:

We believe that a small subset of patients with OBPP recover sufficient elbow and hand function, but have persistent poor shoulder function.

1. Participants will be able to describe currently used criteria for nerve surgery in OBPP, which would exclude these patients. We propose an additional sign, lack of active external rotation with good passive range of motion, to identify these patients, who can obtain improved shoulder movement following surgery.
2. Participants will also gain an understanding of functional issues in patients with OBPP

20

COMPLETE SPONTANEOUS RECOVERY? REALISTIC POTENTIAL FOLLOWING OBSTETRICAL BRACHIAL PLEXUS INJURY

J Bain, C DeMatteo, D Agro

Obstetrical brachial plexus injury is a relatively common neurologic injury in the macrosomic newborn affecting between 1.5 and 5 per 1000 live births. It has a widely varying reported recovery rate from approximately 10 - 95 % without intervention.

PURPOSE: To evaluate the rate of complete recovery in a tertiary care prospective cohort.

METHODOLOGY: We reviewed the injury pattern, severity, obstetrical and newborn factors associated with children with OBPI referred to McMaster Children's Hospital OBPI Clinic. A prospective inception cohort identified 125 babies and 76 had adequate follow-up for inclusion. Outcome measures defining full recovery was the Active Motion Scale (AMS). Narakas classification was also analyzed. Stepwise regression of factors predicting full recovery was calculated.

RESULTS: 46% of children present with a Narakas I injury, the remaining children 32% had Narakas II, 14 % level III and 6% had level IV. The recovery pattern was worse than predicted in the literature. Only 10/76 (13.2%) had full spontaneous recovery early (by 1 month). By 18 months only 49% had full recovery based on the AMS scale. Elbow flexion , shoulder external rotation, shoulder abduction, and forearm supination scores ($p<0.05$) at 3 months all predicted for incomplete recovery.

CONCLUSION: Full spontaneous recovery occurred in only 49% of children. Estimates from the literature are overly optimistic.

LEARNING OJECTIVES:

1. To learn the difficulty in interpretation of outcomes of obstetrical brachial plexus injury (OBPI) in the literature.
2. To understand the reliable outcome measures in OBPI.
3. To learn the complete recovery rate of OBPI in a tertiary hospital cohort.

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OUTCOMES ANALYSIS OF HEPATIC ARTERY MICROVASCULAR ANASTOMOSIS IN LIVE DONOR LIVER TRANSPLANTS IN A PEDIATRIC POPULATION

A Panossian, I Diamond, R Zuker, A Fecteau, D Grant

BACKGROUND: The introduction of microvascular surgery for hepatic artery anastomosis in live donor liver transplants has reduced the incidence of hepatic artery thrombosis (HAT). We report our 6-year experience with this technique.

METHODS: A retrospective review was conducted of all patients at our institution between March 2000 and September 2006 who underwent live donor liver transplantation, with hepatic artery anastomosis performed by a single plastic surgeon using an operating microscope. The outcomes of these patients were evaluated.

RESULTS: A total of 28 patients met inclusion criteria. Median age at transplantation was 14.8 months, and 57% were transplanted for biliary atresia. Hepatic artery caliber ranged from 1.2 to 3.0 mm, using only end-to-end anastomosis. One patient, with a large size mismatch, underwent revision, and there was one re-transplantation for HAT, which was associated with both portal vein thrombosis and Budd-Chiari. Biliary complications occurred in 6 patients. Average length of hospital stay was 35 days. With median post-transplant follow-up of 28 months, there were 3 deaths: one patient with a systemic thrombophilia died immediately following re-transplantation for HAT, one expired 8 months following transplantation due to recurrent TPN-associated cholestatic liver disease, and one died at 72 months from an adhesive bowel obstruction. One-year graft and patient survival was 91%.

CONCLUSION: Medical advances including microsurgical techniques, have improved survival above 90% in most large series of pediatric liver transplantation. Our current results are in keeping with this. It is postulated that biliary complications, specifically strictures, may be a direct result of hepatic artery insufficiency. In our series, there was one biliary stricture, at 4 months post-transplant, which resolved with stenting.

LEARNING OBJECTIVES:

1. participants will be able to recognize potential of microvascular surgery in liver transplantation.
2. participants will be able to conceptualize possible applications of microsurgery to improve biliary complications.

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Canadian Expert Series

CONGENITAL HAND SURGERY

H Clarke

The evaluation of a child with a congenital hand anomaly is paramount in appropriate management. The emphasis must be on function rather than anatomical structure. An understanding of the expected developmental status of the child coupled with an assessment of functional capacity is necessary. Specific technical details, appropriate to syndactyly surgery, include minimizing the size of the flaps to reduce the final visible scarring, avoiding problematic scar contracture and covering exposed bone and joint efficiently. The evaluation of the stiff finger in a child can be most challenging and multiple diagnoses must always be considered including congenital anomaly, triggering, trauma and arthritis.

LEARNING OBJECTIVES:

1. Participants will describe a practical approach to the assessment of children with congenital hand anomalies.
2. Participants will identify the key technical details in syndactyly surgery.
3. Participants will outline the assessment of the stiff finger in a child.

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AW FARMER LECTURE

"FLESH AND BLOOD TO NASAL FORM": THE MOST IMPORTANT ASPECTS OF NASAL RECONSTRUCTION

FJ Menick MD

LEARNING OBJECTIVES:

The participant will be able to:

1. Identify the essential aesthetic and anatomic requirements of nasal reconstruction.
2. Create an operative plan to re-create the "Normal" in stages.
3. Discuss recent advances in the restoration of cover, lining, and support that can improve the overall result, simplify reconstruction, and minimize the need and number of revisions.

Eye Opener, Friday, June 1, 2007, 07.00-08.00 a.m.

THE WIDE-AWAKE APPROACH TO HAND SURGERY – PRACTICAL DETAILS

Donald Lalonde

The wide awake approach to hand surgery means no tourniquet, no sedation and no general anesthesia for most hand surgery operations The main advantages include being able to make changes to tendon repairs, tendon transfers, and bone repairs while watching the comfortable tourniquet free sedation free patient take his fingers through a full range of motion before the skin is closed. In addition, the risks, expenses, and inconveniences of general anesthesia are avoided. Also most of these operations are now performed in the convenient location of the minor operating rooms adjacent to the hand clinic in the hospital.

This course will provide practical details on performing most common hand operations such as carpal tunnel release, trigger finger release, tendon repair, tendon grafting, tendon transfers, palmar fasciectomy, finger fusion, trapeziectomy, and operative reduction of finger and hand fractures using the wide awake approach. Innovative approaches to flexor tendon repair with the tendon ends inside intact sheath segments brought about with use of the wide awake approach will also be demonstrated.

The safety issues and method of injection of lidocaine and adrenaline into the fingers and hand to provide adequate surgical hemostasis will be covered in detail,

LEARNING OBJECTIVES:

1. To provide the practical details which safely allow the hand surgeon to perform most hand operations using the wide awake approach with pure local anesthesia in totally unsedated patients without a tourniquet.
2. Advantages of this approach include observing the pain-free patient actively move the reconstructed structures so the surgeon can make repair adjustments before closing the skin. The risks, expenses and inconveniences of the tourniquet and systemic anesthesia are avoided.
3. New concepts such as flexor tendon repair inside intact segments of pulleys will be introduced.

24

THE ROLE OF PLATELET GEL AND CALCIUM COATED LACTOSORB™ MEMBRANES IN HEALING CRITICAL CALVARIAL DEFECTS

DA Peters, DJ Courtemanche

PURPOSE: 1. To evaluate the efficacy of coating Lactosorb™ membranes with calcium hydroxyapatite in critical sized defects in rabbits. 2. To assess whether platelet gel affects calvarial bone healing.

METHODS: 25 adult New Zealand white rabbits were divided into 5 groups. Each animal underwent a surgical procedure in which 2 critical sized (15 mm) calvarial defects were created in the parietal bones. Group 1 was control. Group 2 was a control in one defect and Lactosorb™ in the other defect. Group 3 was treated with Lactosorb™ in one defect and Lactosorb™ coated with calcium hydroxyapatite in the other defect. Group 4 was treated with Lactosorb™ in one defect and coated Lactosorb™ without calcium hydroxyapatite in the other defect. Group 5 was treated with platelet gel in one defect and control in the other. The animals were sacrificed at 1, 3 and 6 months. The bones were excised and evaluated by clinical observation, radiography and histology.

RESULTS: None of the defects were closed at 6 months. Defects treated with Lactosorb™ showed clinical and radiographic evidence of increased healing compared with control. Defects treated with Lactosorb™ coated with calcium hydroxyapatite showed clinical and radiographic evidence of increased healing compared with control and compared with Lactosorb™ alone. Defects treated with platelet gel healed in a similar fashion as control.

CONCLUSIONS: Critical sized defects in rabbits can be augmented by the addition of calcium hydroxyapatite to Lactosorb™ membranes. There is no evidence that platelet gel augments the healing of critical defects in rabbits.

LEARNING OBJECTIVES:

1. To understand the theory of guided tissue regeneration as it relates to calvarial defects.
2. To appreciate the utility of Lactosorb™ membranes in facilitating healing of calvarial defects.

25

SUBFASCIAL VERSUS SUBPECTORAL BREAST AUGMENTATION: IS THERE A DIFFERENCE IN THE RATE OF CAPSULAR CONTRACTURE?

SA Macadam, AL Ho, PA Lennox, DJ Courtemanche, RR Warren

PURPOSE: Capsular contracture is a common complication associated with breast augmentation. Numerous causal factors have been studied. Variables that may be regulated by the surgeon include incision site, implant type and implant location. The purpose of this study was to compare the rate of capsular contracture after placement of implants in the subfascial (SF) versus the subpectoral (SP) plane.

METHODS: This study retrospectively reviews 403 patients that underwent breast augmentation between January 2000 and April 2006. 148 patients were excluded due to inadequate follow-up or secondary augmentation. Patients that underwent SP augmentation (n=139) were compared to those undergoing SF implantation (n=116). Follow up was 1.24 years (SD 1.24) [3 months - 6 years] in the SF group and 1.11 years (SD 1.3) [3 months - 5 years] in the SP group (p = 0.419).

RESULTS: The rate of Baker Grade II/III capsular contracture was 15.5% in the SF patient group and 12.9% in the SP patient group (p = 0.558). The rate of revisional surgery was 7.8% and 7.9% respectively (p = 0.963). Eight patients had bilateral capsular contracture. The rate of capsular contracture for saline prostheses was 9.5% and for silicone was 9.2% (p = 0.936). When patients were matched for implant type, the capsular contracture rate for patients with saline implants in the SF plane was 8.3%

and in the SP plane was 10.2% (p = 0.639). The capsular contracture rate for silicone implants in the SF plane was 15.2% and in the SP plane was 1.4% (p = 0.003). The rates of hematoma and rippling were not significantly different.
CONCLUSIONS: In this study the rate of capsular contracture was significantly higher for silicone implants placed in the subfascial pocket. There was no difference between pockets for saline implants. In addition there was no difference in overall capsular contracture between saline and silicone implants.
LEARNING OBJECTIVES:
After the presentation the viewer will be able to:
1. Discuss the advantages and disadvantages of the subfascial plane for breast augmentation.
2. Compare the subfascial plane to the subpectoral plane in terms of rates of capsular contracture and revisional surgery for capsular contracture.
3. Compare the capsular contracture rates for saline versus silicone implants in each plane.

26
ONE STAGE AUGMENTATION/MASTOPEXY NOT WITHOUT RISK

R Levine, Z Al-Fardan

PURPOSE: There have been reports in the literature of high complication rate of one stage Augmentation/Mastopexy. This study was completed to evaluate the short and long term complications of one stage Augmentation/Mastopexy and possible risk factors in our patient population.
METHODS: A retrospective study of all patients who underwent one stage Augmentation/Mastopexy by the senior author between January 2000 and November 2006 was conducted. Patient populations were obtained through the database of the senior author. Health records were reviewed and data including, demographic info, history of previous children, smoking, previous surgery, degree of ptosis, type and size of implant, pocket selection, complications and corrective surgical procedures were obtained.
RESULTS: 29 women were identified. Average age of 34 years (range 19-59 years). There were 11 smokers and 18 non-smokers. The average preoperative distance from sternal notch to nipple distance 28cm. 43% had previous breast augmentation and 11% had previous mastopexy. All patients had wise pattern McKissock bipedicle mastopexy with augmentation and drains were inserted. The average implant size was 256cc (range175-400cc), of which, 72% saline and 28% silicone. The complication rates were hematoma 31% (9/29), infected Seroma 14% (4/29), cellulitis 17% (5/29), open T incision site with drainage 7% (2/29), capsule contracture 14% (4/29), breast asymmetry/unhappy with size 21% (6/29), corrective surgical procedure 44% (15/29). No nipple areola or skin necrosis was documented. We compared the complications between smoking and non-smoking patients.
CONCLUSIONS: One stage Augmentation/Mastopexy procedure has a high rate of complications. Early complications with one stage approach are higher in comparison to each individual procedure, mastopexy and breast Augmentation. The long-term complication rate is also high. In conclusion, due to high complications the surgeon might want to consider two stage procedure.
LEARNING OBJECTIVE:
1. To determine the complications of one stage Augmentation/Mastopexy
2. To demonstrate complexity of this cosmetic procedure

27
ARTHROSCOPIC SHAVER RESECTION OF GYNECOMASTIA

Q Chivers, E Buchel, T Hayakawa

PURPOSE: Gynecomastia is a common problem with a reported overall incidence of 32 to 36 percent. Traditional approaches involve the use of periareolar incisions combined with either simple or ultrasonic assisted liposuction. While liposuction alone allows for fine contouring of the chest wall, it is unable to remove significant amounts of fibrous breast tissue which requires resection through the use of a visible periareolar scar. Resection of this fibrous breast tissue can be performed easily by using an arthroscopic shaver, and the same incisions used for liposuction of the chest wall.
METHODS: All patients with benign gynecomastia treated were reviewed retrospectively since the development of this new technique. Complications and overall aesthetic results were recorded as the technique was developed.
RESULTS: Thirty patients underwent treatment for gynecomastia using the arthroscopic shaver in addition to liposuction. Complications included two hematomas requiring re-operation for evacuation, and one patient requiring secondary liposuction for recontouring of the chest walls.
CONCLUSIONS: The use of the arthroscopic shaver allows for resection of fibrous breast tissue without the creation of areolar scars. The only incisions on the chest wall are those created for the liposuction cannula. It is an easy technique to learn with minimal complications that improves the treatment of benign gynecomastia.
LEARNING OBJECTIVES:
To learn the technique of utilizing an arthroscopic shaver as opposed to a periareolar incision in conjunction with liposuction for the removal of fibrous tissues in the treatment of benign gynecomastia.

28
FULL THICKNESS GENITAL SKIN GRAFTS FOR EYELID RECONSTRUCTION IN MASSIVE BURN INJURIES

A Allazzam, EE Tredget

INTRODUCTION: Burn scar ectropion is common complication of severe facial burns in patients with massive injuries, where eye exposure can lead to infectious keratitis, corneal perforation and blindness. The availability of full thickness skin is limited in patients with large burn injuries. Thus, genital skin from the scrotum, penis and labia which is commonly not injured, but can not be easily harvested as a donor site for split thickness skin grafts. Genital skin can act as an alternative full thickness donor site for eyelid reconstruction that provides good quality skin with a thin dermis, reasonable color match and supple texture. Our experience with this donor site for ectropion reconstruction is described as well as the long term functional, esthetic and psychologic results in this challenging patient population.
METHODS: A retrospective review of patients who underwent release of eyelid contractures with full thickness genital skin grafts from either the penis, scrotum or labia was conducted and a patient satisfaction survey undertaken.
RESULTS: From 1995 to 2006, seven patients (6 male, 1 female) were identified with ectropion secondary to external skin contractures, where genital full thickness skin grafts were used for reconstruction. The mean age was 33 years (range 23-45 years) and total burn surface area (TBSA) was 69.3% (range 35 - 90%). Flame burns were the most common etiology. Graft take at the initial procedure was very high (>94%) and few secondary procedures were required. All patients experienced salvage of their eye sight and no permanent corneal injuries occurred.
CONCLUSIONS: In patients with massive burn injuries requiring full thickness skin for eyelid release after ectropion due to burn scar contractures, full thickness skin graft from the genital region can preserve eyesight to preinjury levels and provide a unique alternative full thickness donor site that provides good quality tissue with a thin dermis and reasonable color and texture match similar to eyelid skin.
LEARNING OJECTIVES:
At the end of this lecture the learner will be able to
1. Provide an additional option for the management of ectropion in major burn injuries.

29
FIRST CLINICAL SERIES AND ANALYSIS OF THE CONE FLAP

M Steiner, W Calderon, P Leniz

PURPOSE: Previously, we reported a novel procedure the Cone Flap, a combined technique with a rotation flap and classic V-Y advancement for preservation of local tissue characteristics. The purpose of this report is to analyse our clinical series.

METHODS: Descriptive retrospective study of consecutive cases in which the Cone Flap was used. Considered variables include gender, age and pre-existing co-morbidity; wound etiology, condition, location, peri-wound mobility, side and size. Antibiotic prophylaxis, surgeons experience and complications were also evaluated. Statistical analysis was done with Stata 8.0®.

RESULTS: 58 flaps in 56 patients who were 95% male with a mean age of 39 years. 19.3% of wounds were contaminated, 55% were on extremities (28% hands or feet) and the mean wound size 15cm^2 (4 > 50cm^2). There was a trend toward increased complications with advancing age, diabetes and wounds at a joint surface, but no relation to location and condition of the wound, antibiotic prophylaxis or surgeon experience. Wound condition and surgeon experience did not affect the complication rate. Complication rates related to etiology were 20%, 40%, 50% and 57% for patients with trauma, post-infection, burn and pressure ulcer, respectively. 22.4% required a second procedure, 5.2% a second flap. The larger wounds (>50cm^2) had more complications (75%). As wound size increased the risk of a secondary surgery became significant ($p<0.05$).

CONCLUSIONS: The initial description of the Cone Flap was for defects smaller than 10cms^2, in the present series it was used in 17 cases on defects larger than 10cms^2. There is an increased risk of complications in larger wounds with a significant risk of another operation as wounds size increases.

LEARNING OBJECTIVES:

Participants will learn technical aspects of the Cone Flap its use for closure of defects preserving local tissue characteristics and the associated risks and complications inherent with this technique.

30

DO ANTIMICROBIAL-COATED CATHETERS DECREASE BLOOD STREAM INFECTIONS IN THE BURN UNIT? A RANDOMIZED, CONTROLLED TRIAL

J Toy, J McKee, A Duggal, T Riegel, EE Tredget, S Logsetty

PURPOSE: Catheter-related sepsis is a significant contributor to morbidity and mortality in burn patients. Randomized controlled trials comparing septic events related to central venous catheters (CVCs) in ICU patients and non-ICU patients have shown that catheter-related sepsis rates decreased when antibiotic coated catheters were used.

It is hypothesized that the use of antimicrobial coated CVCs in burn patients will not increase the rate of clinically significant infection.

METHODS: This is a randomized, controlled trial in burn patients requiring CVC as part of their standard care.

Following institutional ethics board approval, eligible adult burn patients requiring central lines were approached and consented to participate in the study. Randomization using block stratification by age and burn size to receive either an antimicrobial or standard line catheter was undertaken, which was followed for subsequent line changes. Upon catheter removal, line tips were sent for semi-quantitative culture. Cultures were categorized as gram positive, gram negative, multi-drug resistant organism (including MRSA, Acinetobacter, Stenotrophomonas, VRE and multi-drug resistant Pseudomonas), other (including Candida) and no growth.

In this pilot study, 25 CVCs of each type will be assessed.

RESULTS: A total of 41 lines have been inserted thus far, 24 standard and 17 study lines. Statistics were analyzed using Chi-squared analysis.

Semi-Quantitative Culture Results

	Gram +	Gram –	Multi-Resistant	Other
Study	2	0	0	2
Control	4	2	4	0
p value	0.512	0.337	0.105	0.166

CONCLUSION: There is a trend toward less frequent colonization in the study group at this interim evaluation. We anticipate presenting our final data.

LEARNING OBJECTIVES:

1. To appraise the role of antimicrobial-coated catheters in critically burned patients.
2. To evaluate the rate of clinically significant infection with the use of antimicrobial-coated catheters in critically burned patients.

31

TOPICAL IMIQUIMOD THERAPY FOR LENTIGO MALIGNA

MH Mahoney, CLF Temple, M Joseph

PURPOSE: Lentigo maligna (LM) presents a challenge for complete surgical excision because of its extensive subclinical spread and predilection for the face. Imiquimod is a topical immune-response modifier that acts on both the innate and acquired immune systems and induces a predominantly cytotoxic T-cell-mediated response. We report our experience using imiquimod 5% cream as a surgical alternative for treatment of LM.

METHODS: Consecutive patients between December 2004 and February 2006 with LM were treated with topical imiquimod therapy. Data on patient and lesion characteristics, side effects of therapy, post-treatment biopsy results and follow-up was collected.

RESULTS: Seven patients were treated with topical imiquimod 5 nights/week for an average of 12.4 weeks. Complete histologic and clinical resolution was seen in six of seven patients, for a mean follow-up of 16.0 months. Treatment was generally well tolerated; side effects included erythema (86 %) and crusting (71%), resulting in dose alteration in 71% of patients.

CONCLUSIONS: Topical imiquimod therapy demonstrates a high response rate for treatment of LM, with tolerable side effects. Further investigation into its efficacy in the treatment of LM in controlled clinical trials is warranted.

LEARNING OBJECTIVES:

Participants will understand the challenges in treatment of lentigo maligna, the mechanism of action of topical imiquimod, and the expected side effects and success rates using topical imiquimod.

32

THE EFFECT OF PSC 833 (VALSPODAR), A POTENT INHIBITOR OF P-GLYCOPROTEIN ON HUMAN BASAL CELL CARCINOMA

A Yusuf, J Kankesan, AL Venugopal, D Sarma

INTRODUCTION: Skin cancer is the most common malignancy worldwide. Basal cell carcinoma (BCC) represents up to 95% of skin cancers. The increasing incidence of BCC has prompted the development of new modalities to compliment current therapies. Our recent studies in skin cancer using human melanoma cells showed inhibition of growth using PSC833 (Valspodar, Novartis), a potent inhibitor of P-glycoprotein and an effective multi-tumour inhibitor in several different cancer cells both in vitro, and in experimental liver, colon and mammary cancers in vivo.

PURPOSE: The current study was designed to determine whether PSC833 can also inhibit the growth of human BCC.

METHODS: Using one human BCC cell line and its own surrounding non-cancerous control cell line, the effect of PSC833 on growth was determined To monitor the effect of PSC833, 5×10^3 cells/cm^2 were plated in 6-well dishes and 24 hours later exposed to different concentrations of PSC833, or 1% dimethylsulfoxide, the vehicle. At 96 and 120 hours after treatment, cells were harvested and the growth inhibitory effect of PSC833 was determined by various techniques.

RESULTS: Preliminary results indicate that PSC833 induces cell cycle arrest in the BCC cell lines. Interestingly, the control cells from the non-cancerous surrounding tissue were less sensitive to the effects of PSC833.

CONCLUSIONS: These preliminary data are the first to suggest that PSC833 differentially inhibits BCC cell growth compared to surrounding non-cancerous cells.

LEARNING OBJECTIVES:

1. Participants will have a better understanding of the role of p-glycoprotein in Basal Cell Carcinoma development
2. Participants will appreciate new avenues to treat Basal Cell Carcinoma through inhibition of p-glycoprotein

33
EPIDEMIOLOGY AND PROGNOSTIC FACTORS OF CUTANEOUS HEAD AND NECK MELANOMA: POPULATION-BASED STUDY

A Golger, DS Young, D Ghazarian, PC Neligan

PURPOSE: Study objective was to describe the epidemiology of cutaneous head and neck melanoma (CHNM), and to identify factors associated with mortality from this disease.

METHOD: Patients treated for CHNM in Ontario between 1994 and 2002 were identified through a provincial cancer registry. A Cox proportional-hazards regression model was used to analyze the data. The main outcome of the study was patients' vital status (dead/alive)

RESULTS: A total of 2218 patients with CHNM were identified, constituting 16% of all melanomas in Ontario. The average age of the cohort was 66 (SD, 16) years; 61% (n=1363) were males. The incidence of CHNM increased from 2 in 100 000 in 1996 to 2.7 in 100 000 in 2001, while mortality remained stable. The proportional hazards model showed that increased age (hazard ratio [HR], 1.06; 95% confidence interval [CI], 1.04-1.06) and male gender (HR, 1.31; 95% CI, 1.03-1.66) had significantly higher risk of death. Patients with lesions of the scalp and neck had 53% higher risk of death than those with lesions of the face. Nodular melanoma (HR, 1.61; 95% CI, 1.17-2.24) had the worst prognosis compared with other morphologic types. Increased tumor thickness (HR, 1.05; 95% CI, 1.03-1.07) and a Clark level of V (HR, 1.52; 95% CI, 1.01-2.22) compared with level I/II were significantly associated with increased mortality.

CONCLUSIONS: Our study demonstrated an increase in incidence in CHNM. Advanced age, male gender, lesions of scalp/neck, nodular morphology, tumour thickness, and a Clark's level of invasion V carried significant risk of death.

LEARNING OBJECTIVES:

1. Participants will learn about the epidemiology of cutaneous head and neck melanoma in Ontario
2. Participants will learn about demographic factors associated with increased mortality
3. Participants will be able to name pathologic features of melanoma that

34
A RELIABLE FROZEN SECTION TECHNIQUE FOR BASAL CELL CARCINOMA OF THE HEAD AND NECK

W Menesi, E Buchel, T Hayakawa

PURPOSE: Mohs surgery is considered the gold standard for achieving maximal tissue preservation during the excision of basal cell carcinoma in the Head and Neck. We evaluate the effectiveness of a surgeon directed frozen section technique that appears to offer an alternative to Mohs.

METHODS: The technique is as follows; a 1mm margin is marked beyond the visible and palpable limits of the tumor; an additional 1mm margin is marked beyond this; the resulting margin is divided up into labeled units that will fit on a standard frozen section mounting block. With the pathologist present, the surgeon mounts each labeled unit with its surgical margin facing the cutting surface of the block. We reviewed 53 consecutive BCC's excised over a 5 year period (2002-2006) using this technique.

RESULTS: Fifty three BCC's were treated. Two were recurrent tumors following radiation. Mean follow-up was 2.5 years. Tumors ranged in size from 0.5 × 0.4cm to 4 × 4 cm. Mean OR time was 01:70hr. Histological subtypes were recorded in 21 tumors; (3) superficial, (9) nodular, (7) Morpheaform, (1) sebaceous variant, (1) sclerosing. There was a single recurrence (1.8%) identified at 13 months which was treated with a minor re-excision.

CONCLUSION: Frozen section control in BCC has been notoriously frustrating and likely inaccurate due the traditional methods of evaluating margins. Typically one or two transverse sections through the specimen are examined thus excluding the majority of the margins from evaluation. With this technique the entire circumferential margin is evaluated. It may offer a reasonable, simpler, and quicker alternative to Mohs.

LEARNING OBJECTIVES:

The physician will be able to apply a frozen section technique that appears to be more reliable than traditional techniques.

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RESULTS OF SECONDARY ALVEOLAR BONE GRAFTING IN CHILDREN WITH PREVIOUS PRIMARY PALATE CLOSURE

C Medawar, P Bortoluzzi, EP Egerszegi, H ElKhatib, L Caouette-Laberge

LEARNING OBJECTIVE:

Participants will be able to evaluate the results of secondary alveolar bone grafting in children with primary palate closure at the time of cleft lip repair.

DESIGN: The charts of children with cleft lip and palate who had a primary palate repair at the time of cleft lip closure and secondary alveolar bone graft between 1990-2005 were reviewed to document the type of cleft, age at surgery, presence of a fistula and the need for a second alveolar bone graft. Children grafted after 15 years of age were excluded. Occlusal radiographs were classified according to Bergland scale after the initial bone graft.

RESULTS: 315 children with unilateral UCLP(177)or bilateral BCLP(83)cleft lip and palate, and (55)cleft lip and primary palate (CLPP) presented 390 grafted clefts. A small fistula at the junction of primary and secondary palate noted in 41.2% of children was closed during bone grafting. A second bone graft was done in 27 clefts (6.9%). Occlusal radiographs were assessed an average of 3.6 years (0.5-10.8y) after initial bone graft. Bilateral CLP with unilateral alveolar defects were classified with the Unilateral CLP for graft height assessment.

Occlusal Xray Cleft sites	Bergland I	Bergland II	Bergland III	Bergland IV	Non-erupted canine
UCLP 160	111 (72.5%)	27 (17.6%)	15 (9.8 %)	0	7
BCLP 118	67 (68.4%)	18 (18.4%)	12 (12.2%)	1 (1.0%)	20
CLPP 58	53 (91.3%)	3 (5.2%)	2 (3.4%)	0	
Total 336	231 (74.8%)	48 (15.5%)	29 (9.4%)	1 (0.3%)	27

CONCLUSION: Clefts limited to the primary palate had better overall results. Unilateral CLP results were slightly better than the BCLP. The overall success rate (Bergland I an II : 90.3%) compares favourably with previously published reports. The absence of a palate fistula before grafting in the majority of the children may have a positive impact.

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THE LATERAL BULGE DEFORMITY AFTER CLEFT LIP REPAIR: AN ANATOMIC STUDY USING HIGH RESOLUTION ULTRASOUND

T Zhong, A Lao, A Spouge, D Matic

PURPOSE: To delineate the anatomic abnormalities associated with a lateral bulge deformity in patients with previously repaired unilateral cleft lips using real-time high resolution ultrasound.

METHODS: Eight patients with lateral bulge deformities following unilateral cleft lip repair and five control patients without cleft lips were prospectively recruited into the study. Real time high-resolution ultrasound was used to dynamically measure changes in orbicularis oris muscle anatomy and function during rest, smile, and pucker in all patients.

RESULTS: Two distinct muscle bellies of the orbicularis oris muscle (superficial and deep) were identified in all patients. These two muscles had differing echogenicities, occupied different anatomic locations, and had different orientations. In controls, the superficial belly consisted of a thin continuous layer that was more cephalad and superficial than the deep. In contrast, none of the study patients had continuity of the superficial belly across the repair site. Instead, the superficial belly on the non-cleft side was attached to the deep belly on the cleft side. Due to this mal-position, the deep belly on the cleft side contracted abnormally during function accentuating the lateral bulge deformity. The deep belly was significantly thicker on the cleft side compared to the non-cleft side ($P = 0.015$).

CONCLUSION: This is the first study to document orbicularis oris anatomy dynamically. The lateral bulge deformity is a result of a mal-alignment of superficial and deep bellies of this muscle across the cleft site. Specifically it is due to mal-position of the deep belly on the cleft side and

is worsened with function. Since the bulge is secondary to an anatomic mal-alignment, total lip revision with re-alignment of the muscle bellies should eliminate the deformity.

LEARNING OBJECTIVES:

Participants should understand: 1) the abnormal anatomy of the lateral bulge deformity 2) the anatomy and function of the orbicularis oris muscle.

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DEVELOPMENTAL, BEHAVIORAL AND SPEECH ASSESSMENTS IN CHILDREN WITH TRIGONOCEPHALY

J Bou-Merhi, P Bortoluzzi

PURPOSE: To evaluate developmental, behavioral and speech anomalies in children with trigonocephaly.

INTRODUCTION: Trigonocephaly results from premature closure of the metopic suture. Recently, there has been increasing interest in cognitive, behavioral and speech problems associated with trigonocephaly. To date, there have been no prospective multidisciplinary evaluations to assess these issues in this patient population.

PURPOSE: Establish the incidence of associated developmental, behavioral and speech anomalies in patients presenting with trigonocephaly.

METHODS: Between 1990 and 2006 all patients presenting with trigonocephaly at Saint Justine Hospital Craniofacial Center, were prospectively assessed by a qualified specialized psychologist and speech therapist at 2 years of age, 5-6 years of age and 8-10 years of age. Medical charts of all these patients were reviewed.

RESULTS: Ninety two children with trigonocephaly were followed between 1990 and 2006. Of these, 27 were excluded from the study because of incomplete assessments. Among the sixty five patients included (49 M, 16 F), 44 were operated on and 21 were observed. The average age of patients at time of the last assessment was 6.7 years (ranging from 2 - 17 years). Twenty-nine percent of patients (19/65) had normal assessments, whilst 70.8 % (46/65) had documented developmental, behavioral or speech anomalies. This incidence is significantly above that seen in the general population. Among the 44 operated children, normal assessments were seen in 11(25%), and abnormal in 33(75%). Among the 21 not operated children, 8 (38%) had normal assessments and 13 (62%) had abnormal assessments.

CONCLUSIONS: Trigonocephaly is associated with a higher incidence of developmental, behavioral and speech anomalies. Surgery does not seem to be a significant contributing factor. Early recognition, follow up, and appropriate specialized treatment is warranted in order to optimize long term development.

LEARNING OBJECTIVES:

1. To familiarize plastic surgeons with the functional issues in patients with trigonocephaly.
2. To emphasize the importance of team assessment and follow-up for these patients.

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A PROSPECTIVE RANDOMIZED CONTROL TRIAL COMPARING MODEL-ASSISTED TO TRADITIONAL OPEN REDUCTION AND INTERNAL FIXATION OF ZYGOMATICO-MAXILLARY COMPLEX FRACTURES

V Chahal, D Matic

PURPOSE: The purpose of this pilot study is to develop a new technique for the repair of zygomatico-maxillary complex (ZMC) fractures using 3D-models fabricated from CT data.

METHODS: Ten consecutive patients with pure ZMC fractures were randomized into two groups. The Model Group (n=5) had open reduction and internal fixation (ORIF) of their fractures. Pre-operatively, titanium plates were shaped on a fabricated 3D-model and then used to obtain 3-point fixation of the fractures. The Control Group had traditional ORIF with 3-point fixation. Comparison parameters included OR time, hospital stay, complications, and overall cost. In addition, the accuracy of bony reduction as compared to the unaffected side was assessed using cephalometric measurements.

RESULTS: The Model Group had shorter operative times (99min vs 120mins) and lesser costs ($1580 vs $1810) associated with the procedure. Time to operative intervention was shorter in the Model Group. Differences in malar eminence and lateral orbital wall position and 3D orbital width measurements were seen. In each case smaller differences between fracture and non-fracture sides were seen in the Model Group compared to controls. No complications were seen in either group.

CONCLUSIONS: The creation of a model did not delay treatment. The cost of the model was offset by the cost-savings incurred by shorter operative times. Bony reduction of fractures was accurate in both groups; however, better accuracy was achieved in the Model Group. This technique may be a viable option for all surgeons that treat ZMC fractures in their practice.

LEARNING OBJECTIVES:

1. To understand the anatomy of ZMC fractures.
2. To understand CT generated modeling and its application to plastic surgery.
3. To review the management of ZMC fractures.

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CRANIOFACIAL TRAUMA PATIENTS AND HEPATITIS C: A PROSPECTIVE COHORT STUDY

A Anzarut, G Cook, T Brooks, T Tredget, J Olson, M Joffe

PURPOSE: Hepatitis C viral (HCV) infection is a leading cause of hepatic failure, liver transplantation and liver-related death in North America. The rates of, and risk factors for, HCV among craniofacial trauma patients in Alberta are currently unknown. Our objectives were to (1) determine the prevalence HCV infection among facial fracture patients (2) compare this to the HCV seroprevalence rate of all surgical patients presenting to the emergency room (3) determine independent risk factors for HCV seropositivity (4) and determine the proportion of patients whose diagnosis was previously unknown.

METHODS: A prospective cohort study was conducted to determine HCV status among all patients presenting with facial fractures requiring operative treatment. Patients were interviewed by a research assistant to assess risk factors, and underwent serological testing to determine HCV status.

RESULTS: 286 patients were enrolled over one year period. The prevalence of HCV seropositivity was 11%. This was significantly higher than the 6% seropositivity rate among all surgical patients presenting to the emergency room [Chi-square=5.614,p<0.018]. 53% of seropositive patients were aware of their status. Bivariate analysis revealed several statistically significant risk factors for HCV. These included: (1) patients who were under the influence of drugs or alcohol at the time of injury [OR=4.5;p=0.003], (2) assault as the cause of the injury [OR=2.3;p=0.037], (3) tattoos [OR=3.8;p=0.002], (4) ear piercing [OR=2.7;p=0.019], and (5) aboriginal status [OR=7.3;p< 0.001].

CONCLUSIONS: This information will help quantify the potential risk of occupational infection in this surgical setting. It will aid in decisions regarding patient screening, surgical staff screening, and the use of precautionary instrumentation.

LEARNING OBJECTIVES:

1. Determine the prevalence HCV among craniofacial patients
2. Compare this rate among the emergency room patients
3. Determine independent risk factors for HCV
4. Determine the proportion of patients whose diagnosis was previously unknown
5. Understand the treatment options for HCV after occupational exposure

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PERCUTANEOUS K-WIRE FIXATION FOLLOWING GILLIES ELEVATION IN THE TREATMENT OF SIMPLE ZYGOMA FRACTURES

M Bezuhly, J Lalonde, G Sparkes, D Lalonde

PURPOSE: Is Kirschner wire fixation "rigid enough" to maintain the reduction obtained with Gillies elevation in simple zygoma fractures? The two senior authors have over 50 surgical years of experience with this technique. Their results have been analyzed.

METHODS: Fifty patients of one of the surgeons were eligible for review after treatment for simple zygoma fractures using Gillies elevation and K-wire fixation between 1992 and 2003. Fourteen of these patients were available for examination at a mean follow-up of 8.7 years. Quantifiable parameters, including orbitozygomatic complex position, ocular globe projection, and infraorbital nerve function, were measured. All patients underwent qualitative and quantitative assessment by independent, blinded observers. All complications were recorded.
RESULTS: The mean differences between injured and uninjured sides of the face for malar eminence projection, height and lateral position were 2.5 mm, 2.7 mm, and 2.3 mm, respectively. The mean difference in ocular globe projection was 1.23 mm. When these results were compared to those previously published for open reduction and plate fixation, no statistically significant difference was noted. Independent observers were only able to identify the affected side 12% of the time in the K-wire patients. Other than a punctate skin scar seen in one patient at the K-wire insertion site, no cutaneous or eyelid sequelae were found.
CONCLUSIONS: This study provides objective evidence that Gillies elevation and K-wire fixation provides facial contour restoration that is not significantly different to that of plate fixation with much less skin and eyelid morbidity.
LEARNING OBJECTIVES:
1. To share the knowledge that plate fixation is not superior to K-wire fixation in maintaining an acceptable reduction of zygoma fractures.
2. To show the long term minimal morbidity of K wire fixation in zygoma reduction
3. To show films of the technique so it can be used by participants.

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RESIDENT INVOLVEMENT ON A MEDICAL MISSION, IS THERE VALUE IN THEIR PARTICIPATION?

A Brown, K Rai, D Naysmith

PURPOSE: The CSPS had never funded a resident to attend a medical mission. This year, through the educational fund, a resident received funding to go with Operation Rainbow Canada to assist and learn on a medical mission. We will review the experience the resident was exposed to and recommend if further CSPS funding should be available.
METHODS: Review of all cases the resident was involved with during the mission. As well as an assessment of ORC pre-operative and post-operative care will be assessed with a view to the educational benefit.
RESULTS: Over 250 patients were screened by ORC mission to Cambodia. Of these patients 122 were treated in either a major, intubation/sedation required, or minor operative theater. The resident was exposed to eight primary cleft lip repairs, seven primary palate repairs, 12 cleft lip revisions, three scar revision/z-plasty releases, two rhinoplasties, and one otoplasty, anterior fistula repair and composite graft. In minor OR's the resident was responsible for assessing, determining and, after review with a surgeon, implementing a plan. Minor OR's included scar revision, burn scar contracture releases, Z-plasty's, lesion removals, and scar injections. Long term follow up was not possible. Only one major complication occurred, that being a dehisced palate repair which needed re-operation.
CONCLUSION: This was an invaluable experience for the resident giving a great opportunity for concentrated operative experience while working in a third world environment. This should be a program that the CSPS Educational fund continues to support.
LEARNING OBJECTIVES:
To highlight the benefits of bringing a resident on a medical mission and how they can be of value.
Funding was provided by the CSPS Educational fund for the resident to attend the Medical Mission

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MORPHOLOGICAL OUTCOMES OF SLIDING ADVANCEMENT GENIOPLASTY: AN OBJECTIVE ANALYSIS OF RESULTS USING GEOMETRIC MORPHOMETRIC TECHNIQUES

G Martou, R Backstein, M Pahuta, S Smith, O Antonyshyn

PURPOSE: Sliding advancement genioplasty is a procedure which relies on an osteotomy and transposition of the chin to produce a change in facial proportions. Morphological outcomes have defied objective analysis due to the small number of discreet anatomical landmarks and the difficulty in quantitatively describing smooth curves. Geometric morphometrics is a novel technique which addresses this issue. The purpose of this study was to evaluate the morphological results of sliding advancement genioplasty using geometric morphometric techniques.
METHODS: The study series consisted of 19 consecutive adult patients who underwent a sliding advancement genioplasty as an isolated procedure, performed by a single surgeon (OA), between 1996 and 2006. Cephalometric analysis was routinely employed in planning surgery. Standardized pre- and 3 month post-operative frontal and lateral photographs were employed in capturing pre- and postoperative morphology.
A geometric morphometric protocol was applied in standard fashion to each photograph. Anatomic landmarks and semilandmarks were first interactively identified. Previously developed thin-plate-spline (TPS) software was utilized to process the data. Landmark configurations describing facial features of interest were unwarped to a Procrustes (average) configuration, and then cross-dissolved to generate an average morph image for the population.
RESULTS: The average morph images provided an objective rendering of facial morphology before and after genioplasty. Morphological results were analyzed according to degree and direction of chin segment movement in terms of alteration in both anatomical landmark and facial contour configuration.
CONCLUSIONS: Advancement genioplasty produces a predictable and defined change not only in the projection and height of the lower third of the face, but also in the contour of the chin, labiomental fold, cervicomental angle and margin of the mandible. These morphological results are analyzed objectively and represented graphically.
LEARNING OBJECTIVES:
Participants will: i) gain knowledge of the indications, planning and execution of sliding advancement genioplasty, ii) recognize the morphological outcomes and ii) familiarize themselves with the applications of geometric morphometric techniques in the analysis of facial surgery results.

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QUANTITATIVE ASSESSMENT OF ORBITAL FLOOR DEFECT POST GILLIE'S ZYGOMA REPAIR

M Czerwinski

PURPOSE: Moderate energy zygoma fractures frequently result in a postero-medially displaced bone fragment. Closed reduction using a force vector directed in an antero-lateral direction (Gillies technique) frequently produces stable repair of these injuries. Exploration of the orbital floor is not routinely undertaken. However, as the zygoma forms a significant portion of the orbital floor, realignment may create an unrecognized floor defect. Uncorrected, enophthalmos and globe dystopia may result with difficult secondary reconstruction. Routine orbital floor exploration may be unnecessary and carries the risks of eyelid malposition, scarring and extraocular muscle injury. Our goal was to quantitatively describe the effect of Gillie's reduction on orbital floor defect size and identify predictors for floor exploration.
METHODS: Retrospectively, patients with moderate energy zygoma fractures treated using the Gillie's procedure were identified. Fractures inadequately reduced on the post-operative CT scan or those in which orbital floor exploration was performed were excluded. The sizes of pre-operative and post-operative floor defects were measured using computer software directly from CT scan images. Ocular globe projection was measured using the Naugle exophthalmometer. Statistical analysis was performed using student's t-test.

RESULTS: In total 80 patients were identified. 20 patients satisfied the inclusion criteria and were available for further analysis. The average pre-operative orbital floor defect measured .8 cm^2. Post-operatively it was found to equal 1.2 cm^2. This difference was not significant. Ocular globe projection did not differ from the unaffected side. Factors which tended to affect orbital floor enlargement included large displacement of the zygoma and floor comminution.
CONCLUSION: Moderate energy zygoma fractures treated using the Gillie's technique do not significantly increase orbital floor defect size or produce enophthalmos. Thus, if no pre-operative indications exist, floor exploration is unnecessary and may lead to unwarranted sequelae.
LEARNING OBJECTIVES:
The audience will understand factors which necessitate orbital floor exploration in facial trauma. As well, the audience will appreciate why accurate Gillie's repair does not increase the risk post-operative globe malposition.

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THE CRITICAL SIZE DEFECT IN THE HUMAN PAEDIATRIC CRANIAL VAULT

J Stein, D Matic, C Gilles

PURPOSE: Cranial vault expansion (CVE) is performed for the treatment of craniosynostosis. Since the vault is expanded, full-thickness skull defects are created that often show variable ossification post-operatively. The largest cranial defect that ossifies completely is called a critical size defect (CSD). CSDs are known for various species and appear to be species specific. In pediatric humans, this information is unknown and therefore a clinical dilemma exists as to which defects warrant primary bone grafting and which do not. The purpose of this study is to quantify the CSD in the pediatric human and begin to address this dilemma.
METHOD: Twenty consecutive patients treated for non-syndromic single suture synostosis with CVE were enrolled. Four full thickness skull defects were chosen from immediate post-operative CT scans and were compared to spatially registered CT scans taken one year post-operatively to measure the degree of defect ossification. A combination of commercially available software and custom analysis modules were used to characterize the defects' sizes and shapes.
RESULTS: The majority of skull defects decreased in surface area; however, some increased in size. Post hoc analysis revealed that skull osteogenesis is influenced not only by the dimensions of the defect but also shape, position, and proximity to the synostosed suture.
CONCLUSION: The CSD in the paediatric human following CVE is variable. Further work is required to establish an algorithm that can account for brain growth, pathology, and defect characteristics such as shape, size, and position on the skull.
LEARNING OBJECTIVES:
The participants will be able to
1. identify factors that affect skull defect healing and
2. understand techniques used to measure complex shapes from CT images using commercially available software.

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COST-EFFECTIVENESS ANALYSES IN THE PLASTIC SURGERY LITERATURE: A REVIEW

O Reid, C Doherty, R Harrop

PURPOSE: The purpose of this study is to review the components of study design as they apply to economic evaluations, and to evaluate relevant articles in the plastic surgery literature based on their inclusion of these principles.
METHOD: The MEDLINE database was used to search eleven plastic surgery journals for "cost and cost analysis" exploded, from 1996 to September 2006. To be included in the methodology review each citation was scrutinized for: the words cost, cost-effectiveness, cost-utility, cost-benefit or an equivalent term; and any wording suggestive of a comparison of two or more clinical alternatives. The remaining manuscripts were evaluated independently by two reviewers to determine if they incorporated the basic principles of economic analysis: a clearly stated perspective, a description of the clinical benefits, a detailed list of costs, a sensitivity analysis, a summary measurement, and the appropriate use of discounting.
RESULTS: Our search yielded 150 citations; 29 met the inclusion criteria. There were 11 cost-analyses, 14 cost-effectiveness studies, 4 cost-utility studies and no cost-benefit analyses. Discounting was indicated and included in only one study. The mean number of principles adhered to was 3.38. A clear statement of perspective was given in 48%, a clinical benefit was reported in 66%, a detailed list of costs was provided in 100%, a sensitivity analysis was performed in 21% and a summary measurement was utilized in 100% of manuscripts.
CONCLUSIONS: There are some exemplary economic evaluations in the plastic surgery literature. However, a clearly stated perspective with a description of the related costs, followed by a sensitivity analysis, would add to the reproducibility and robustness of many papers.
LEARNING OBJECTIVES:
1. Participants will be aware of trends in cost-effectiveness research within our specialty.
2. Participants will be able to identify the basic principles of study design as they pertain to cost-effectiveness analyses.

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FUNCTIONAL RESULTS OF BLOW-OUT ORBITAL FLOOR FRACTURES IN CHILDREN

H St. Amand, P Bortoluzzi

OBJECTIVE: Determine factors influencing functional outcomes in pediatric patients operated for blow-out orbital floor fractures.
METHODS: Retrospective chart review of patients operated for blow-out fracture of the orbit. Preoperative assessments included demographics, mechanism of injury, initial clinical presentation and delay to treatment. Clinical postoperative evaluation included ophthalmologic exam.
RESULTS: Twenty one patients (15 males, 6 females) aged 1-17 years (mean 10.73) were included. Mechanism of injury was related to sports 61.9%(13/21), falls 14.3 %(3/21), motor vehicle accident 14.3 % (3/21), assault 4.8%(1/21) and other 4.8%(1/21). Mean delay between injury and consultation was 7.6 days [range 0 - 49], whilst between consultation and surgery was 0.76 days [range 0 - 3]. Entrapment was initially documented in 71.4% (15/21) of patients. Orbital content herniation of fat and/or muscle within maxillary sinus was documented in 76.1%(16/21). Surgery consisted of reducing herniated orbital contents and restoring floor integrity with nylon sheet (N=20) and bone graft (N=1). Mean follow-up was 17.6 months in plastic surgery and 9,1 months in ophthalmology. Regarding timing of surgery, patients were grouped according to whether they were operated within 2 days of injury (10/21, 47.6%), or later (11/21, 52.3%). For both groups, 4 patients had extreme upward gaze restriction postoperatively. They were all (N=8) patients with initial entrapment. From those 8 patients, five had herniation of orbital fat and muscle within fracture line and 3 had herniated fat only. Despite the postoperative ophthalmologic restrictive findings in extreme upper gaze, no functional repercussion was noted in daily activities in all but one patient.
CONCLUSION: Timing of surgery does not appear to be determinant on the functional outcome. Orbital fat herniation alone may result in ocular motility restrictions. Entrapment is the most important factor influencing postoperative upward gaze restriction. However, this rarely has any repercussion on patient's daily activities.
LEARNING OBJECTIVE:
The participant will be able to determine factors influencing functional outcomes in pediatric patients operated for blow-out orbital floor fractures.

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IN VITRO ENDOTHELIALIZED RECONSTRUCTED SKIN; A POTENTIAL STRATEGY TO TREAT FULL-THICKNESS CUTANEOUS WOUNDS

O Boa, F Berthod, T Galbraith, FA Auger

PURPOSE: Plastic surgeons have to deal with all kind of pathologies which often result in major skin defects. Autologous split-thickness skin grafts are often the best way to cover these wounds, but sometimes, the lack of healthy donor sites compromised the functional and esthetical results of the procedures. The endothelialized reconstructed skin model

(ERS) which is produced by the in vitro culture of human cells could be an excellent alternative in order to palliate this problem because it promotes the spontaneous formation of a functional microvascular network. The purpose of this work was to study the functional results of the ERS once it has been grafted on mice.

METHOD: Human keratinocytes and fibroblasts were isolated from human skin biopsies and human umbilical vein endothelial cells (HUVEC) were obtained from healthy newborns umbilical cords. These cells were seeded on collagen sponges and cultured in vitro for 31 days. The ERS were then grafted on nude mice to cover a full thickness cutaneous wound on the dorsal surface of the animal. Immunohistochemical staining was performed for the microscopic characterization of the ERS microvascular network remodeling in the weeks following the graft procedure.

RESULTS: Analyses revealed that the ERS was remodeled in the weeks following the transplantation, even after 105 days post-op. It was thereby promoting the host neovascularization at the wounded site. Immunohistochemical assays showed that the human network of our ERS connected with the mice capillaries in the first days after graft through an inosculation process, and was progressively replaced by the host murine endothelial cells.

CONCLUSION: The ERS model was rapidly revascularized in less than 4 days. The human capillary network of the graft was progressively remodeled through a substitution of the human endothelial cells by the endothelial host cells. These results demonstrated a functional integration of the ERS within the host environment. This model therefore could be an excellent approach to treat full-thickness cutaneous wounds and avoid morbidity associated with donor site harvesting.

OBJECTIVES: At the end of my presentation, the audience will be able to understand the role that tissue engineering could play in a plastic surgery setting.

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SURGICAL OUTCOMES OF CONGENITAL SIMPLE SYNDACTYLY

MJ Cooper, J Bain

PURPOSE: The purpose of our study was to evaluate the surgical outcomes of patients who had simple syndactyly repair at our institution.

METHODS: The charts of patients who had simple syndactyly repair between 1998 and 2005 were retrospectively reviewed and specific data was collected for analysis. Complex and syndrome-associated syndactyly was excluded.

RESULTS: (pending further data analysis): Sixteen patients and 36 syndactylous webs underwent primary reconstruction in 21 operations between March 1998 and June 2005. Average post-operative follow up time was 22 months. There was a slight male predominance of 56%. The third web space was most commonly affected (41%). Fifty percent of patients had other congenital anomalies and 19% had a positive family history. Full thickness skin grafts from groin were used in 94% of web reconstructions. Regarding complications, there were no infections or loss of skin graft observed. Web creep was noted in 10 webs (28%) and scar contracture in 3 webs (8%). Repeat operations were required for 3 patients (19%) and 10 webs (19%).

CONCLUSIONS: Reducing the occurrence of web creep remains a challenge in successful syndactyly repair. Future studies in these patients that evaluates hand function with standardized testing may provide another important surgical outcome measure.

LEARNING OBJECTIVES:

The participant will learn the classification of syndactyly. The participant will gain knowledge of a common surgical technique used in syndactyly reconstruction. The participant will have a greater appreciation of the challenges and potential complications of this surgery.

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THE ROLE OF END-TO-SIDE NERVE GRAFTS IN PERIPHERAL NERVE REPAIR: CAN WE BRIDGE THE GAP?

P Schembri, A Ladak, N Tyreman, H Hsu, J Olson, T Gordon

PURPOSE: The aim of this study was to determine the potential for axonal growth through an end-to-side nerve graft distal to the site of primary repair of a transected nerve.

METHODS: This study consisted of 36 Sprague Dawley rats divided into 3 groups. All three groups were subject to excision of a 6mm segment of the common peroneal (CP) nerve. In the first group, a 17mm nerve graft was harvested from the contralateral CP nerve which was anastomosed end-to-end to bridge the defect. In the second group, the excised 6mm segment of CP nerve was anastomosed end-to-side joining the tibial and CP nerves distal to the defect. In addition, the original defect was grafted end-to-end with a contralateral CP nerve graft. In the third group, the excised 6mm segment of CP nerve was again anastomosed end-to-side, joining the tibial and CP nerves. The original nerve defect was left un-grafted in this group. All anastomoses were performed using Tisseel fibrin glue.

RESULTS: Groups 2 and 3 showed no significant regeneration through the end-to-side nerve bridge. Axonal regeneration through the contralateral CP nerve graft in Groups 1 and 2 showed exceptional recovery (~90%) compared to an intact CP nerve.

CONCLUSIONS: The results of this study demonstrated no appreciable nerve regeneration through a single end-to-side nerve graft distal to the site of primary repair. This suggests, in the context of a single nerve bridge using Tisseel, that there is a limited role for the use of end-to-side repair in addition to the primary repair. Studies are currently underway to evaluate the effectiveness of using multiple end-to-side nerve bridges.

LEARNING OBJECTIVES:

1. To evaluate novel approaches for peripheral nerve surgery
2. To review techniques used in assessing axonal regeneration

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AXONAL REGENERATION IN THE COMMON PERONEAL NERVE OF THE RAT: A COMPARISON OF SUTURE VERSUS FIBRIN GLUE

A Ladak, P Schembri, N Tyreman, H Hsu, J Olson, T Gordon

PURPOSE: The purpose of the following study was to determine the efficacy of fibrin glue versus that of conventional suture for peripheral nerve anastomoses.

METHOD: Peripheral nerve injury of the common peroneal (CP) nerve was simulated in 12 Sprague Dawley rats which were subsequently divided into two groups of six animals. In one group the nerve anastomosis was performed with two 9-0 silk sutures one hundred and eighty degrees to one another. In a second group of animals, the anastomosis was performed using fibrin glue (Tisseel). To determine the extent of axonal regeneration, the axons were labeled 15 mm from the repair site with fluororuby, a fluorescent retrograde dye, 7 days after nerve repair. The contralateral intact CP nerve was labeled using similar techniques to establish reliability of the labeling technique and to provide a baseline for motor neuron regeneration.

RESULTS: In the suture group, the mean regeneration (± SE) was 358 ± 61 motorneurons compared to 540 ± 62 motorneurons in the contralateral intact CP nerve. In the Tisseel group the mean regeneration was 313 ± 102 motorneurons in comparison to 529 ± 123 motorneurons in the contralateral intact CP nerve.

CONCLUSIONS: This study shows that there is no statistically significant difference in using fibrin glue for a peripheral nerve anastomosis in comparison to the traditional method of primary repair utilizing sutures. To improve axonal regeneration through the injury site and into the distal nerve stump, additional experiments examining the potential benefit of electrical stimulation are currently being investigated.

LEARNING OBJECTIVES:

1. To evaluate the efficacy of nerve repair using fibrin glue versus the traditional method of primary repair using suture
2. To evaluate the efficacy of electrical stimulation on axonal regeneration through the distal nerve stump

51
WOUND COMPLICATIONS IN PATIENTS WITH MALARIA UNDERGOING PLASTIC SURGERY PROCEDURES

KB Osei-Tutu, JL Semple, A Pantsil, KC Kain

BACKGROUND: Malaria is a common and potential deadly disease with a high prevalence in tropical Africa. Recent reports suggest a possible relationship between surgery and malaria-associated morbidity and mortality (Husum et al. 2002).

PURPOSE: 1) To screen for asymptomatic malaria in patients undergoing plastic surgical procedures, 2) To evaluate the relationship between Malaria parasitemia and surgical wound complications.

METHODS: We prospectively studied all patients aged 6 months to 80 years, admitted to the Korle-Bu Teaching Hospital, Ghana, West Africa, for a plastic surgical procedure under general or regional anesthesia between May 1 and June 15, 2006. Local REB approval was obtained in addition to informed consent for each patient. Data collected included: pre- & post-operative thick and thin malaria smears, patient demographics, co-morbidities, history of malaria, blood transfusion history, type of operation, duration of operation, intra-operative complications, post-operative complications, and length of stay. Data was analyzed descriptively and by way of Pearson correlation coefficients were applicable.

RESULTS: Thirty-three samples (pre & post op smears) were collected. Forty-eight percent (13/27) of the patients, 6 females and 7 males, admitted a history of malaria within the past 6 months. Of these patients, 31% (4/13) demonstrated asymptomatic pre-op parasitemia on peripheral blood smears. 100% of these patients showed significant increases in parasitemia within 12 hours post-operatively and all suffered significant wound complications compared to non-carriers. Overall, thirty-three percent (9/27) patients experienced wound complications. Each patient, except one, admitted a known history of recent malarial infection.

CONCLUSIONS: This study supports the concept that Malaria is a form of sepsis that can impact the outcomes of patients undergoing Plastic Surgery procedures. Such findings may be of relevance to plastic surgeons operating in malaria endemic regions of the world, in terms of patient selection and potential complications of surgery.

LEARNING OBJECTIVES:

At the end of this presentation, the audience will be able to:

1. Review the relationship between surgery and malaria as a form of sepsis.
2. Appreciate malaria as risk factor for wound complications.
3. Highlight the importance of screening for malaria when visiting as a plastic surgeon in malaria endemic regions of the world.

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DIABETIC WOUND HEALING IS ALTERED BY THE TOPICAL APPLICATION OF GENETICALLY MODIFIED, VEGF-RELEASING FIBROBLASTS

D Martin, D Cheng, M Sefton, J Semple

PURPOSE: Diabetic wound healing is characterized by impaired neovascularization and abnormal granulation tissue formation. Previous research in our lab has shown that polymeric beads containing a methacrylic acid (MAA) copolymer stimulate angiogenesis and promote wound healing in diabetic mice. In this study we investigated the effect of sustained release vascular endothelial growth factor (VEGF) on neovascularization and wound healing in diabetic mice.

METHODS: Bilateral 8mm full thickness punch wounds were created in genetically diabetic db/db mice. Two treatment groups were compared: wounds treated with VEGF-transfected fibroblasts and wounds treated with control fibroblasts. Fibroblast viability was assessed at day 7 using a luminescence detection technique. Wound images were recorded at day 0 and day 12, and percentage wound closure was measured. At day 12, tissue was harvested for histological examination of granulation tissue and vascular density (CD31).

RESULTS: At day 7, topically applied fibroblasts remained viable on the wound bed, emitting a strong luminescent signal. Percentage wound closure was greater in the VEGF treatment group compared with the control group.

CONCLUSION: Topically applied fibroblasts remain viable on diabetic mouse wounds for at least 7 days after wounding. Sustained release of VEGF from these transfected fibroblasts has a positive impact on diabetic wound healing in this mouse model. This technique has implications for a variety of clinical scenarios involving impaired wound healing.

LEARNING OBJECTIVES:

At the conclusion of this presentation, the participant will understand the utility of transfected cells for sustained growth factor release in a wound bed, and the effect that topically applied vascular endothelial growth factor has on diabetic wound healing.

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THE EFFECTS OF BOTULINUM TOXIN A ON CALCITONIN GENE-RELATED PEPTIDE RELEASE

RJ Evans, DB Matic, D O'Gorman, Y Wu, BS Gan

PURPOSE: It is known that Botulinum toxin A (BTX) blocks acetylcholine release at the neuromuscular junction. However, BTX can also alter the release of various neuropeptides. Previous work by our lab has shown increases in muscle metabolism and blood perfusion parameters after BTX induced paralysis. Calcitonin gene-related peptide (CGRP) is a potent vasodilator that may be responsible for these unexpected muscle findings. The purpose of the present study is to investigate the effects of BTX on levels of CGRP in muscle and the surrounding subcutaneous tissues.

METHOD: Five New Zealand white rabbits were divided into two groups; a BTX and Control group. Four animals underwent injection of either the right or left masseter muscle with 25mu of BTX. One animal was not injected and served as control. One week after injection, one BTX animal was sacrificed weekly and tissue biopsies were taken. Tissue biopsies from the control animal were taken at the beginning of the study. Quantitative immunohistochemistry as well as Surface-Enhanced Laser Desorption/Ionization Time-of-Flight (SELDI-TOF) mass spectrometry were performed to determine CGRP levels in all tissues.

RESULTS: CGRP levels were significantly increased in BTX injected masseter muscles compared to contralateral and control muscles. Levels of CGRP were variable in the overlying subcutaneous tissues. No consistent changes were seen in these tissues compared to controls.

CONCLUSIONS: CGRP levels rise significantly in rabbit masseter muscles after BTX injection. This increase in CGRP can be used to explain the increases in blood perfusion parameters and increases in glucose uptake previously reported in BTX paralyzed muscles.

LEARNING OBJECTIVES:

1. Describe methods for quantifying small peptides in tissue
2. Explain the effects of BTX on CGRP release in muscle and subcutaneous tissue

54
PRACTICE PROFILES IN REDUCTION MAMMAPLASTY: A SURVEY OF CANADIAN PLASTIC SURGEONS INCLUDING COST DIFFERENCES IN DAY SURGERY VS. IN-PATIENT BREAST REDUCTION IN CANADA

R Nelson, S Colohan, D Lalonde, L Sigurdson

PURPOSE: The goal of this study was to assess trends in breast reduction surgery among Canadian surgeons, including patient selection criteria, surgical techniques, costs and outcomes.

METHOD: Surveys were distributed to 350 plastic surgeons at the Canadian Society for Plastic Surgery meetings in 2005 and 2006. Data was analyzed with Excel and SAS software. The difference in cost of day surgery vs. in-patient breast reduction was calculated.

RESULTS: The inferior pedicle/Wise pattern technique is used by 83% (116/140) of Canadian plastic surgeons most of the time, and the majority of surgeons use more than one technique (75%). Individuals who use other techniques perform more cases per year than Wise pattern surgeons (70 ± 46 cases per year vs. 50 ± 32 cases per year, p=0.01). Among these surgeons, the Hall-Findlay technique is most common. Most surgeons experience complication rates less than 5% of the time (59%). Wound dehiscense was the most common complication of reduction

mammaplasty (42%). The majority of surgeons (54%) conduct reduction mammaplasty as day surgery exclusively, while 46% admit patients post-op. The cost savings of day surgery versus admitting is $873 per patient ($300 vs. $1173).

CONCLUSIONS: Similar to the United States, the classic inferior pedicle/Wise pattern is the most common breast reduction technique used by Canadian plastic surgeons. Reduction mammaplasty is performed in a variety of clinical settings with low complication rates. Although 54% of Canadian plastic surgeons use the less expensive day surgery route, 46% use the more expensive patient admission route.

LEARNING OBJECTIVES:

1. To create awareness of differences in Canadian practice patterns in breast reduction.
2. To indicate to surgeons that there is a dichotomy in Canadian resource utilization for breast reduction in day surgery (54%) vs. in patient (46%), and to make them aware of the cost differences to the taxpayer.

55
EVALUATION OF SURVEILLANCE MAMMOGRAPHY FOLLOWING BREAST RECONSTRUCTION: A POPULATION BASED COHORT STUDY

GP Barnsley, E Grunfeld, D Coyle, L Paszat

PURPOSE: There are currently no recommendations on the use of surveillance mammography for women who have undergone breast reconstruction. Previous research has demonstrated through a systematic review that there is little evidence guiding the clinician in the role of surveillance mammography for women with breast reconstruction. The objective of this study is to assess the current practice of ipsilateral surveillance mammography in the regular surveillance of these patients.

METHOD: A cohort was assembled from a subset of a larger population based cohort of women with breast cancer in Ontario, derived from cancer registries. The cohort included women diagnosed with invasive breast cancer between 1991 and 1996 and they were followed until 2002 or death. The subset was enriched with chart and mammographic review. All women in the enriched component of this cohort with a history of mastectomy and breast reconstruction were included.

RESULTS: The cohort consisted of 55 women with a history of breast reconstruction following mastectomy for primary breast cancer. Mammographic information was available for 38 of these women. All had at least one mammogram of their contralateral breast, with an average frequency of 1 mammogram per 1.60 years. 39% of women with breast reconstruction underwent at least one surveillance mammogram of their reconstructed breast, with an average frequency of 1 per 3.18 years. There was no consistent or identifiable regimen for mammography of the reconstructed breast.

CONCLUSIONS: This cohort study demonstrated that in Ontario, there is significant variation in practice, indicating uncertainty surrounding the use of surveillance mammography for women who have undergone breast reconstruction following the treatment of primary breast cancer.

LEARNING OBJECTIVES:

Following this presentation, the learner will understand the current state of evidence surrounding surveillance mammography for women with breast reconstruction and appreciate the variation in practice that exists surrounding its use.

56
THE ROLE OF INTRA-LESIONAL INTERLEUKIN-2 INJECTION IN THE TREATMENT OF IN-TRANSIT METASTATIC MELANOMA

K Boyd, B Wehrli, C Temple

PURPOSE: This study investigates the role of intra-lesional interleukin-2 injection in the treatment of melanoma in-transit metastases.

METHODS: Thirteen consecutive patients treated with intra-lesional interleukin-2 (IL-2) injections for in-transit metastases between 2004 and 2006 were enrolled in the study. Response to treatment using the RECIST criteria was evaluated by two independent observers. Base line pathology was compared to post-treatment biopsy by a blinded pathologist.

RESULTS: Thirteen patients comprised the study population. The mean patient age was 66 years. The average Breslow thickness of their original melanoma was 4.43 mm (range 0.59 to 10 mm). Patients received an average of 5.23 biweekly IL-2 injections. At each treatment session, a mean of 2.08 mL (5 mu/mL) of IL-2 was distributed evenly amongst a mean of 18.5 in-transit lesions. Patients were followed for 216 days (range 49 to 475 days).

Overall response rate was 77%. A complete response was obtained in 5 patients (38%), a partial response in 5 (38%), and no response in 3 patients (23%). Of the 236 in-transit metastases identified in the study, 175 experienced complete resolution (74%). Eighty-five percent of patients had minor side effects associated with interleukin-2 injections, including fever, nausea, limb swelling or flu-like illness.

CONCLUSIONS: The treatment of in-transit metastatic melanoma with intra-lesional IL-2 resulted in a 74% percent clearance of lesions. A complete response was seen in 38% and a partial response in 38% of patients treated.

LEARNING OBJECTIVES:

At the end of this presentation, the participant will understand the role of intra-lesional IL-2 in the treatment of in-transit metastatic melanoma, the expected response rates, and the usual side-effects associated with this treatment modality.

57
VALIDITY AND RELIABILITY OF CRANIOFACIAL ANTHROPOMETRIC MEASUREMENTS USING 3D DIGITAL PHOTOGRAMMETRY

JY Wong, AK Oh, E Ohta, AT Hunt, GF Rogers, JB Mulliken, CK Deutsch

PURPOSE: Craniofacial anthropometry allows for identification of clinical features, surgical planning, monitoring of treatment outcomes, and evaluation of long-term changes of craniofacial disorders. Direct anthropometric techniques described by Professor Leslie G. Farkas, are reliable, inexpensive, and have an extensive normative database. Recently, several new technologies have been designed to computerize anthropometric measurements, including three-dimensional (3D) digital photogrammetry. These digital systems have the advantage of acquiring patient craniofacial surface images quickly and non-invasively. Before 3D digital photogrammetry can be applied in clinical and research practice, it must be assessed against the gold standard of direct anthropometry. The purpose of this study is to evaluate the validity, reliability, and correction factors of facial anthropometric linear distances imaged by 3D digital photogrammetry with respect to direct anthropometry.

METHOD: Standard craniofacial distances were directly measured twice on 20 normal adult volunteers. Craniofacial surfaces were also imaged using the 3dMDfaceTM digital photogrammetry system, and distances were digitally measured twice for each subject. Validity measures of accuracy and bias (for direct versus digital measurements), reproducibility measures of precision and test-retest reliability (for repeated sets of digital measurements), and conversion factors (for digital to direct measurements) were computed.

RESULTS: Seventeen of the eighteen direct measurements highly correlated with digital values (mean r = 0.88). The overall precision of all seventeen digital measurements was less than 1 mm, and the reliability was high (mean r = 0.91). Correction factors were statistically significant for fourteen digital measurements.

CONCLUSIONS: Craniofacial anthropometry using the 3dMDface system is valid and reliable. Most measurements in this study can be compared to Farkas' established direct anthropometric norms.

LEARNING OBJECTIVES:

1. At the end of this presentation, the learner will be able to describe the advantages and disadvantages of direct and digital anthropometry.
2. At the end of this presentation, the learner will be able to evaluate the validity and reliability of 3D digital photogrammetry.

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Royal College of Physicians and Surgeons of Canada Lecture

AESTHETIC (ASPECTS IN) BREAST RECONSTRUCTION

P Blondeel

ABSTRACT

Our scientific literature is filled with papers on surgical techniques for reconstructing a breast. Generally, this addresses the optimal way on how to restore the volume of the breast and not the shape. It is exceptional to find a paper on the artistic aspects of shaping a new breast just because it doesn't fit into our modern way of "evidence based" scientific thinking. Nevertheless, to obtain a pleasing result, one will have to combine common "artistic" sense and insights with his/her own "surgical sculpturing" experience (two aspects very hard to define in writing).

Besides a short overview of today's perforator flaps available for different types of breast reconstruction, this presentation will explain a few easy steps one can follow to obtain a decent basic shape out of a flat piece of autologous tissue (DIEAP or SGAP). Additionally, some small tricks available to optimize the volume and shape during this first step of an autologous breast reconstruction will be shown. Also, different surgical techniques (flap translocation, lipofilling, liposuction, nipple reconstruction techniques, contralateral corrections, etc…) will be presented to improve the aesthetical appearance even more during the second step, 6 months after the tissue transfer. Finally, the importance of levelling the patient's and surgeon's expectations will be discussed.

LEARNING OBJECTIVES:

1. to provide an update on modern perforator flap techniques for different types of autologous breast reconstruction
2. to acquire an easy and simple technique to shape the tissue of an autologous tissue transplant for breast reconstruction
3. to define the aesthetic and artistic proportions and dimensions of an autologous breast reconstruction

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Canadian Expert Series

REPAIR OF THE CROOKED NOSE

B Neu MD

This presentation examines how the bone and cartilage components of the nose interconnect and contribute to the crooked nose deformity. These components need to be separated from one another, re-aligned, and then reconnected again to try to correct this difficult deformity. The emphasis of this presentation is on surgical technique.

LEARNING OBJECTIVES:

Participants will:

1. Acquire an understanding of how each anatomical component of the nose (nasal bones, septum, upper lateral cartilages, alar cartilages) can, and unfortunately usually do, contribute to the crooked nose.
2. Learn how to separate and then realign each of these anatomical units using basic and advanced techniques.

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IMMEDIATE POST-MASTECTOMY RECONSTRUCTION WITH PROSTHESIS USING THE "TOTAL PEDICLE" MAMMAPLASTY INCISION

R Moufarrège, V Lemaine

Reconstruction mammaire immédiate par prothèse avec l'incision de la mammoplastie à « Pédicule Total »

PURPOSE: Skin-sparing mastectomy with immediate breast reconstruction with implant is an accepted approach in breast cancer treatment. We present a method of immediate reconstruction using the "Total Pedicle" mammaplasty incision.

METHOD: The senior author first described the "Total Pedicle" mammaplasty in 1979. Since 1995, this concept has been extended to immediate breast reconstruction with prosthesis, using the same type of incision. The incisions are first drawn by the plastic surgeon, followed by performance of the skin-sparing mastectomy by the oncologic surgeon. This particular type of incision gives free access to the axilla as needed. The implant is inserted in the sub-muscular plane. Skin closure is completed by approximation of the lateral and medial flaps on the vertical axis. The incision will be transformed in an inverted T incision with a very short horizontal limb, as seen with the vertical incision of Moufarrège's "Total Pedicle" mammaplasty.

RESULTS: Used in breast reconstruction, the "Total Pedicle" mammaplasty incision provides complete and easy access to the breast tissue and axilla, while at the same time limiting scar deformation of the breast. This type of incision precludes the use of the Halsted incision, whose main disadvantage includes deformation of the central area of the breast, where maximal projection is needed. This technique also avoids using the Wise pattern and its extensive inverted T incision.

CONCLUSION: The final appearance of the reconstructed breast mainly depends on the shape of the excised skin during mastectomy, and on the location of the incision. Using the Moufarrège's "Total Pedicle" mammaplasty incision provides a conical breast shape with minimal and concealed scars.

LEARNING OBJECTIVES:

1. Describe a different approach to incisions in immediate breast reconstruction with implants.
2. Demonstrate the importance of the collaboration between surgical teams in order to improve the final appearance of the reconstructed breast.

62

140 CONSECUTIVE ATTEMPTS AT AUTOLOGOUS TISSUE SINGLE STAGE BREAST CANCER RECONSTRUCTION

C Bernier, S Haydal, N Guay

OBJECTIVE: The analysis of a single surgeon's 5 year attempt at performing Autologous Tissue Breast Cancer Reconstruction, with one general anesthesia.

METHOD: A Single Stage Breast Cancer Reconstruction is successful if after the original reconstruction, no correction for complications, revision of breast mound or contra-lateral breast procedures were performed, under general anesthesia, to complete the reconstruction. This is a review of a single surgeon's breast reconstruction practice.

RESULTS: 356 Breast Cancer Reconstructions patients were operated in 5 years. 140/356 (39.3%) were consecutive attempts at Single Stage Autologous Tissue Reconstruction: 105/140 (75%) free flaps versus 35/140 (25%) pedicled flaps and; 36/140 (25.7%) immediate versus 104/140 (74.3%)delayed.

111 of the 140 patients (79.2%) had their autologous tissue reconstruction successfully performed in one general anesthesia.

Reconstructions requiring more then one general anesthesia were due to 16/140 (11.4%) post-operative complications, 8/140 (5.7%) revision of breast mound and 5/140 (3.6%) contralateral breast procedures.

CONCLUSION: Since only 13/140 (9.3%) of autologous tissue breast cancer reconstructions required revisions for symmetry, Single Stage Breast Cancer Reconstruction is feasible and should be attempted to decrease the morbidity of breast cancer thrivers.

LEARNING OBJECTIVE:

To introduce plastic and reconstructive surgeons to the feasibility of a new approach, Autologous Tissue Single Stage Breast Cancer Reconstruction.

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100 CONSECUTIVE ATTEMPTS AT DELAYED IMPLANT SINGLE STAGE BREAST CANCER RECONSTRUCTION

S Haykal, C Bernier, N Guay

OBJECTIVE: The analysis of a single surgeon's 5 year attempt at performing Delayed Implant Breast Cancer Reconstruction, with one general anesthesia.

METHOD: A Single Stage Breast Cancer Reconstruction is successful if after the original reconstruction, no correction for complications, change from expander to implant, revision of breast mound or contra-lateral breast procedures were performed, under general anesthesia, to complete the reconstruction. This is a review of a single surgeon's breast reconstruction practice.

RESULTS: 356 Breast Cancer Reconstruction patients were operated in 5 years. 100/356 (28.1%) were consecutive attempts at Delayed Implant Single Stage Reconstruction. 80/100 (80%) Implant-based reconstruction was performed with Siltex Contour Profile Saline Implant-Expander and 20/100 (20%) with Siltex Contour Profile Becker 35 Gel filled Implant-Expander.
71 of the 100 patients (71%) had their Delayed Implant-based reconstruction successfully performed in one general anesthesia.
Reconstructions requiring more then one general anesthesia were due to 21/100 (21%) post-operative complications, 8/100 (8%) revision of breast mound or contra-lateral breast procedures.
CONCLUSION: Since only 8/100 (8%) of delayed implant breast cancer reconstructions required revisions for symmetry, Delayed Implant Single Stage Breast Cancer Reconstruction is feasible and should be attempted to decrease the morbidity of breast cancer thrivers.
LEARNING OBJECTIVE:
To introduce plastic and reconstructive surgeons to the feasibility of a new approach, Single Stage Breast Cancer Reconstruction with Implant-Expanders.

64
THE EFFICACY OF ARTECOLL INJECTIONS FOR THE AUGMENTATION OF NIPPLE PROJECTION IN BREAST RECONSTRUCTION: A PROSPECTIVE EVALUATION

CM McCarthy, N Van Laeken, PA Lennox, A Scott, AL Pusic

PURPOSE: Various techniques have been used in an attempt to achieve long-term nipple projection for breast reconstruction patients. Irrespective of the technique used, a common disappointment is loss of projection over time. The purpose of this study is thus to prospectively evaluate the efficacy of Artecoll (an inert, non-biodegradable, injectable substance) in augmenting and maintaining nipple projection in the setting of postmastectomy, implant reconstruction.
METHODS: A prospective, clinical trial was performed. Patients deemed to have inadequate nipple projection following 'C-V flap' or 'modified-skate flap' reconstruction were identified. Skin testing for collagen sensitivity was performed prior to study initiation. Artecoll was injected under the nipple at two time points: baseline and 3 months. Calipers were used to measure projection at: baseline, 3 and 6 months. Pairwise differences in projection were calculated using the Wilcoxon signed rank test.
RESULTS: Thirty-three nipples were injected in 23 patients. There were no adverse events. Prior to injection, mean nipple projection was 1.33 ± 1.0 mm (range 0.0-4.0 mm). At 3 months post-injection, mean projection was 2.78 ± 1.8 mm (range 0.0-6.0 mm). At 6 months, mean projection was 3.09 ± 1.6 mm (range 0.0-6.0 mm). The mean increase in projection over the 6 month study period was both clinically and statistically significant (p=0.001). Mean final projection was significantly lower in the subset of patients who had a history of chest wall irradiation (p <0.001).
CONCLUSIONS: The subcutaneous injection of Artecoll results in a significant and sustained increase in nipple projection following implant-based breast reconstruction.
LEARNING OBJECTIVES:
1. Participants will be able to describe the indications for and efficacy of Artecoll injections in augmenting nipple projection following reconstruction.

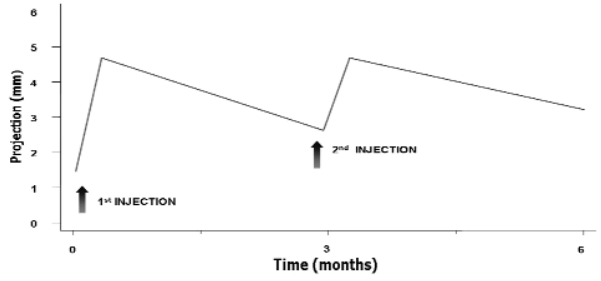

Figure 1) *Mean Nipple Projection over Time*

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THE BREAST-Q: DEVELOPMENT OF A NEW PATIENT-REPORTED OUTCOME MEASURE FOR BREAST SURGERY

A Pusic, A Klassen, S Cano, N Carr, P Lennox, N Van Laeken, CL Kerrigan, ED Collins, P Cordeiro

PURPOSE: Patient-reported outcomes have become increasingly important to clinical research endeavors. While many questionnaires have been used in cosmetic and reconstructive breast surgery, few have undergone adequate development and validation. The objective of this study was to rigorously develop a new questionnaire that could be used to measure satisfaction and quality of life following breast surgery.
METHODS: This questionnaire was developed with strict adherence to internationally recognized guidelines. In Phase I (Content Generation), an exhaustive list of all issues relevant to the topic is developed. These issues are then converted into questions that are easily understood and unambiguous. In Phase II (Item Reduction), the preliminary measure is field-tested in a large heterogeneous population to select the best indicators to form the final instrument. In Phase III (Psychometric Evaluation), the final measure is examined to determine its acceptability, reliability, validity, and responsiveness.
RESULTS: Preliminary versions of the questionnaires were developed from in-depth patient interviews (n=48), expert panels and literature review. Preliminary versions of the questionnaire were pre-tested to clarify ambiguities, confirm acceptability and completion time (n=45). This process led to the development of 3 procedure-specific modules for 1) breast augmentation, 2) reconstruction and 3) reduction patients. These modules were based on a common conceptual model. In Phase II (Item reduction), BREAST-Q is now being testing in a heterogeneous patient population (n=1300).
CONCLUSIONS: In order to demonstrate the benefits of cosmetic and reconstructive breast surgery, valid, reliable and responsive questionnaires are essential. The BREAST-Q has a modular, procedure-specific structure and addresses multiple aspects of the patient's experience. This new measure will provide essential information about the impact and effectiveness of breast surgery from the patients' perspective.
LEARNING OBJECTIVES:
1. Participant will learn the phases of questionnaire development
2. Participant will be able to describe the content and conceptual model of the BREAST-Q

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LIMITING COMPLICATIONS AND COMPLEXITY OF THE TRANSVERSE UPPER GRACILIS FLAP IN BREAST RECONSTRUCTION

E Buchel, T Hayakawa

PURPOSE: The Transverse Upper Gracilis (TUG) flap has become a reliable second choice for autologous breast reconstruction. Complications associated with the TUG flap still limit it's routine use. Our institution has evolved it's technique over the past several months. The purpose is to highlight the complications associated with the Transverse Upper Gracilis (TUG) flap in breast reconstruction and suggest changes in technique to limit the complications and complexity of the operation.
METHODS: A retrospective review of the microsurgical data base over the past 12 months was completed on all patients having a TUG flap for breast reconstruction. Video documentation of the harvesting technique and patient positioning was also completed.
RESULTS: 27 Free TUG flaps in 21 patients were performed for immediate and delayed breast reconstruction. All patients did not have abdominal tissue available for autologous tissue transfer. One complete failure occurred secondary to a harvesting error. All other flaps survived. Fat necrosis was noted in 11 flaps of whom 3 underwent secondary revision of small superior contour irregularities. Donor site complications occurred in 8 patients with 1 requiring a return to the operating room for closure her wounds.
CONCLUSION: The TUG flap is quickly becoming an excellent second choice for autologous tissue breast reconstruction. While fat necrosis and donor occurred frequently, changes in technique have limited these com-

plications while decreasing the complexity of the operation.
LEARNING OBJECTIVES:
Review the harvesting techniques of the TUG flap. Highlight complications specific to the TUG flap and technique changes to decrease these complications.

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Canadian Expert Series

ONE-STAGE BAM MASTOPEXY

BD Peterson

Single stage breast augmentation and coinciding mastopexy is a difficult procedure to perform, and carries a significant revision rate.
With a traditional single stage breast augmentation and mastopexy procedure there are significant problems with recurrent later ptosis of the breast tissue.
This paper will identify the correct placement and type of breast implants, and go through a detailed description of preoperative markings to correctly place the nipple areolar complex, and mark the appropriate amount and location of breast tissue to be resected.
With resection of ptotic breast tissue at the time of single stage breast augmentation and mastopexy, recurrent ptosis of breast tissue can be avoided, and superior long-term results achieved.
After this presentation on single stage breast augmentation and coinciding mastopexy, attendees should be able to identify:
1. Appropriate patients to be selected for breast augmentation and coinciding mastopexy.
2. The correct placement and type of implant to be used for the augmentation component of the procedure.
3. Proper measurement and positioning of the final location of the nipple areolar complex.
4. Reasoning for the necessity of breast tissue resectioning, and appropriate amount of breast tissue resectioning.
5. Indications for vertical mastopexy, and full inverted "T" incision mastopexy.
6. Post-operative treatment course, and identification of potential post-operative complications.

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THE TRANSVERSE CERVICAL VESSELS AS RECIPIENTS IN DIFFICULT HEAD AND NECK MICROSURGICAL RECONSTRUCTIONS

MS Gilardino, T Dionisopoulos, B Rhodes-Mizerny, L Lessard

PURPOSE: The transverse cervical vessels (TCVs) have been described as alternate recipient vessels in head and neck microsurgical reconstructions when conventional options are unavailable. The literature, however, contains little clinical information describing their use. The purpose of this study was to describe the anatomic characteristics of the TCVs and summarize our clinical experience with their use.
METHODS: Vessel characteristics including reliability, length, diameter, lumen quality and anatomic landmarks were measured in 72 cadaver neck sides. Clinically, all microsurgical reconstructions using the TCVs over a ten year period at the McGill University Head and Neck Cancer Center were reviewed.
RESULTS: The transverse cervical artery (TCA) was present in 100 percent of the dissections, and the vein (TCvn) in 85 percent. Usable pedicle length was between 4-7cm with an average diameter of 2.65mm (TCA) and 2.9mm (TCvn). The origin of the TCA can be found on average 12 mm deep to the lateral border of the sternocleidomastoid muscle, 33 mm from the midline and 17mm superior to the clavicle. Histologic analysis of the vessels revealed that lumenal disease was significantly less in the TCA specimens compared to external carotid specimens. Clinically, the TCVs were utilized in seventeen reconstructions (seven percent of total cases). All patients had prior surgery and radiotherapy. No vein grafts were utilized and there were no flap failures.
CONCLUSION: The TCVs are reliably present, possess suitable recipient vessel characteristics, and are readily identified using the provided landmarks. In our clinical experience, their use obviated the need for vein grafts and served as a useful alternate recipient vessel option in difficult head and neck microsurgical reconstructions.
LEARNING OBJECTIVES:
The participant will be able to
1. identify TCA vessel characteristics and its anatomic course;
2. locate the TCA with specific anatomic landmarks; and
3. evaluate the usefulness of the TCVs as recipients in difficult head and neck microsurgical reconstructions.

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THE VERSATILITY OF THE ANTEROLATERAL THIGH (ALT) ADIPOFASCIAL FLAP

T Hayakawa, E Buchel

PURPOSE: The ALT skin flap has become a standard for head and neck, and more recently extremity reconstruction. Limitations of this flap can include its thickness, and that on average a flap width of only 7-9cm will allow primary closure. Our purpose is to demonstrate how the adipofascial component of this flap can be utilized to overcome these inherent limitations.
METHODS: Our microsurgical database identified 19 ALT flaps in which the adipofascial component was used.
RESULTS: 19 flaps were performed in 16 patients. An adipofascial flap with skin graft was used in 9 patients for thin pliable cover, and without a graft for abdominal wall reconstruction in 2. An adipofascial extension beyond the standard skin paddle was used in 8. This extension was used to expand coverage; wrap tendon grafts, nerve grafts and bone grafts; provide dead space obliteration; and reinforce the suture lines in ALT esophageal reconstructions. There were no thromboses. There was one minor partial flap necrosis due to an acute crease in a web space. There was one total skin graft loss due to shear. The largest flap was 16cm × 20 cm. There was one donor site dehiscence due to infection.
CONCLUSION: The ALT adipofascial flap alone or as an extension beyond the standard ALT skin paddle can be used to solve a wide variety of reconstructive problems. It is also useful in burn patients where the traditional skin flap sites are not available. A large flap can be harvested yet still allow primary closure.
LEARNING OBJECTIVES:
The physician will know the technique of harvesting an ALT adipofascial flap and its versatility in solving a wide range of reconstructive problems.

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THE PLASTIC SURGEON AS A COMMUNICATOR

DH Lalonde, MD

LEARNING OBJECTIVES:
The participant will learn:
1. tips and techniques to improve patient communication;
2. medico-legal reasons for the importance of patient communication.

72

A COMPREHENSIVE REVIEW OF THE MANAGEMENT OF EXTRAVASATION INJURIES

P-O Gagnon, L Bergeron, P Harris, A Nikolis

Extravasation injuries are not infrequent, but recent literature guiding their management is lacking leaving physicians to rely on publications over a decade old. Guidelines for such injuries caused by newer oncological medications is scarce, and scientific rational for treatment is often absent.
GOAL: The primary goal of this study is to provide a systematic review of the literature evaluating extravasation of medication and radiocontrast materials administered through peripheral IVs, as well as their antidotes. Secondary goals include, providing a classification for these substances, their mechanism of toxicity, as well as that of their antidote, and to propose a general management algorithm for these patients.
METHODS: A complete review of the literature was conducted using indexed and non-indexed articles. Results were compiled, and a level of evidence was assigned to each report.

RESULTS: Fourteen substance categories were identified. Four antidotes were reported. Mechanisms of toxicity and antidote role were elucidated. A treatment algorithm was suggested.
CONCLUSION: This paper provides a comprehensive review for the management of extravasation injuries including recent chemotherapeutic regiments.
LEARNING OBJECTIVES:
At the end of this presentation, the participant will be able to
1. recognize the importance and consequences of extravasation injuries,
2. understand the scientific basis of various treatments,
3. adequately manage extravasation injuries.

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USE OF INTEGRA™ IN PLACE OF A FLAP FOR COMPLEX WOUND COVERAGE

J McMann, OG Reid, CD McKenzie, DA Nickerson, JS Fish

PURPOSE: To understand the benefits and limitations of Integra™ Dermal Regeneration Template in reconstruction of defects that would be traditionally be considered "non-graftable" and to discuss some practical issues regarding technique and wound selection.
METHOD: A retrospective review of 16 cases from two centers was used to evaluate the use of Integra™ Dermal Regeneration Template in reconstructive procedures, particularly in wounds with poor vascular supply. The observations from this case series are analyzed to determine the type of wound for which Integra™ may be appropriate and to understand the limitations of Integra™ based on failed cases.
RESULTS: All 16 of the wounds had exposure of structures traditionally considered "non-graftable" and would classically have been considered for flap coverage. 13 cases were successful and 3 cases failed. Integra™ failure occurred in a shoulder wound that had received previous radiotherapy, a scalp wound in a patient on systemic antineoplastic medication, and a distal finger wound with poor vascularity.
CONCLUSIONS: Failed cases allow a better understanding of practical limits of Integra™ use for covering traditionally "non-graftable" wound beds. Even in these cases, the failed procedure does not incur donor site morbidity. Successful cases elucidate the benefits of Integra™ which include potential avoidance of more complex reconstructive procedures, early rehabilitation, and effectiveness in covering defects where the base is relatively avascular but which retain vascularized margins. We have also identified and discussed several practical technical points that we feel are key to success with Integra™.
LEARNING OBJECTIVES:
1. To describe what Integra is and how it is used
2. To consider newer indications for Integra™, particularly in reconstructive procedures and relatively avascular wounds
3. To evaluate Integra as an option for coverage of selected wounds

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DECLARATION OF EXPERT ADVISORY PANEL MEMBERS' CONFLICT OF INTEREST: A CASE STUDY OF THE HEALTH CANADA ADVISORY PANEL ON SILICONE BREAST IMPLANTS

GM Rockwell

PURPOSE: An expert advisory panel was selected by Health Canada in order to clarify its stance on the safety of silicone gel breast implants. The panel was made up of 12 members with backgrounds in chemistry, toxicology, epidemiology, oncology, rheumatology, epidemiology, plastic surgery, psychiatry, ethics and 3 patient experts. Three members of the panel: experts in plastic surgery, chemistry and toxicology had conflicts of interest (COI) to disclose. Can experts be used if they have declared a significant conflict and what impact do waivers of conflict have on the conclusions of these panels?
METHODS: This case study includes an extensive review of the literature on COI and expert advisory panels, and the Health Canada and the FDA findings on silicone breast implants. The Tri-Council Policy Statement on Ethical Conduct for research involving humans was also reviewed.
RESULTS: I will present evidence that justifies my stance that declaration of conflicts of interest by members of an expert advisory committee is in itself sufficient to fulfill their fiduciary duty, and moral obligation to the Board and to the people impacted by the recommendations. I will also address the need for balance in requiring expert opinion with potential for conflicts.
CONCLUSIONS: I believe it would be a much more level playing field if advisory panel and committee members as well as all public speakers and experts communicating at public forums were required to declare all financial and significant non financial conflicts of interest. Biases in the design of clinical trials and studies will not be captured in the declarations of conflicts of advisory panel members and yet may have a much greater impact on the creation of practice guidelines and the recommendations of these advisory panels.
LEARNING OBJECTIVES:
1. Participants will learn about primary and secondary forms of Conflict of Interest
2. Participants will learn means of declaring conflicts of interest
3. Participants will learn how conflict of interest impacts on advisory panels as well as clinical research.

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Ross Tilley Lecture

A ONE-YEAR MICROSURGERY FELLOWSHIP AT THE CHANG GUNG MEMORIAL HOSPITAL, TAIWAN

C Schrag MD

LEARNING OBJECTIVE:
At the end of this presentation the listener will be able to describe the salient features of the Chang Gung Memorial Hospital Microsurgery Fellowship.

76
POWER-ASSISTED LIPOSUCTION AND THE PULL-THROUGH TECHNIQUE FOR THE TREATMENT OF GYNECOMASTIA

F Lista, J Ahmad

BACKGROUND: Gynecomastia is a common condition affecting many adolescent and adult males. Surgical techniques utilizing a variety of incisions, excisions, suction-assisted lipectomy, ultrasound-assisted liposuction, power-assisted liposuction, or some combination of these methods have been used in the treatment of gynecomastia. This article describes our technique using power-assisted liposuction and the pull-through technique for the treatment of gynecomastia.
METHODS: This technique involves the use of power-assisted liposuction to remove fatty breast tissue. Following this, the pull-through technique is performed utilizing several instruments to sever the subdermal attachments of fibroglandular breast tissue and the connections of the lactiferous ducts to the overlying nipple. This tissue is then removed through the incision used for liposuction. Finally, power-assisted liposuction is again performed to contour the remaining breast tissue. A chart review of 99 consecutive patients (197 breasts) treated between January 2003 and November 2006 was performed.
RESULTS: 96 patients (192 breasts) were successfully treated using this technique. Power-assisted liposuction was performed in all cases and the average volume aspirated per breast was 459 ml (range 25 to 1400 ml). Using the pull-through technique, we were able to remove between 5 and 70 g of tissue per breast. Complications were minimal (1.0 percent of breasts) and no revisions were required.
CONCLUSIONS: Since January 2003, we have used this technique to successfully treat 97 percent of our patients with gynecomastia. Combining power-assisted liposuction and the pull-through technique has proven to be a versatile approach for the treatment of gynecomastia and consistently produces a naturally contoured male breast while resulting in a single inconspicuous scar.
LEARNING OBJECTIVE:
The participant will understand the utility of combining power-assisted liposuction and the pull-through technique in the treatment of gynecomastia.

77
OUTPATIENT ABDOMINAL LIPECTOMY WITHOUT THE USE OF DRAINS

BR Neu

PURPOSE: Outpatient abdominal lipectomy is facilitated significantly by the avoidance of drains. Patients are more mobile, thereby reducing the risk of DVT, are not put at risk of drain site infection, and are also not burdened with the problems of drain-tube after care. This study examines the altered technique and complication rate of abdominoplasty when not using drains.

METHOD: All patients are managed with general anaesthesia, plus tissue infiltration using dilute marcaine and adrenaline. In the lower abdomen, a 5 to 10cm strip of scarpas fascia is left attached to the deep fascia and is pulled taut superiorly with sutures. A single line of quilting sutures extends vertically from the xiphoid to the umbilicus, with a second line going transversely across the abdomen, halfway between the pubis and umbilicus. The quilt points are widely spaced and securely knotted to avoid tissue strangulation. Sixty seven patients are reviewed retrospectively.

RESULTS: Five patients developed seromas, one of whom required more than one drainage. One patient, in spite of cessation of smoking, had a moderate (7 × 4 cm) skin loss, and three had a minor (less than 2cm) skin loss. No patient had a wound infection (all received perioperative antibiotics). No patient developed a DVT (all had intraoperative compression stockings, plus sequential compression device). The quilting technique added approximately 15 minutes to the OR time.

CONCLUSION: The improved mobility, low morbidity, and high degree of patient satisfaction outweigh the modest increase in surgical time when performing an abdominoplasty without drains.

LEARNING OBJECTIVES:

Participants will learn the technique of fat quilting in abdominal lipectomy, and will develop an understanding of the low morbidity associated with the use of no drains.

78
THE PERFECT UMBILICUS

DK Rai

Umbilicoplasty is a component of abdominoplasty to achieve a nice, natural looking umbilicus with minimal scarring. Various techniques have been attempted to achieve the natural looking umbilicus.

One hundred cases of umbilicoplasty have been done and are presented with good and pleasing results.

SURGICAL PROCEDURE: A 10 to 12 cm. position is maintained from the suprapubic area to the umbilicus. At that level, an inverted u-shaped incision is made for the desired umbilicus. The original umbilicus, in the meantime, is tacked to the abdominal fascia to shorten the pedicle. The abdominoplasty flap is secured to the suprapubic incision to stabilize the skin. After the u-shaped incision is made in the abdominal flap, defattening of the umbilicus and u-flap is done. The original umbilicus is sutured onto this flap, burying the suture, securing the umbilicus. This u-shaped flap becomes a tongue which is sutured to the inferior component of the original umbilicus to give a natural hood. This completes the repair and steri-strips and compressive dressings are applied. The rest of the body contouring procedure is then completed.

One hundred cases have been done. Complications seen: 2 inferior separations, closed by secondary closures. Infections - nil. Keloid formation and hypertrophic scar formation less than 1% - treated by Kenalog injection. Revisional procedures - nil. Overall satisfaction over 99%.

SUMMARY: This technique has shown predictably good and very natural looking umbilicus, complimenting the abdominoplasty procedure for aesthetic body contouring surgery.

LEARNING OBJECTIVES:

1. To show a satisfactory result and a normal looking umbilicus.
2. Technique shown to achieve an umbilicus with minimal scarring.
3. Umbilicoplasty is part of body contouring surgery.

79

Canadian Expert Series

DETAILS THAT MAKE EYELID RECONSTRUCTION EASIER AND BETTER IN MY HANDS

DH Lalonde

LEARNING OBJECTIVES:

1. To provide technical details and operative tips on how to facilitate and improve results in eyelid reconstruction.
2. To provide film, images and illustrations to show these techniques in partial and subtotal upper and lower eyelid reconstruction, dacryocystoconjunctivostomy, ptosis and entropion/ectropion repair.

80
RECONSTRUCTION OF ACQUIRED PARTIAL EAR DEFECTS

L Kasrai, D Fisher

PURPOSE: Historically, acquired subtotal ear defects have been treated by a variety of techniques. Nagata's methods have proven to be very reliable for reconstruction of congenital microtia. We have extended the indications for Nagata's three dimensional costal cartilage framework to include acquired partial ear deformities. The purpose of this presentation is to share our experience utilizing Nagata's techniques in a series of consecutive patients with partial ear deformities resulting from a variety of etiologies.

METHOD: A consecutive case series of patients treated with Nagata's methods is reviewed and presented.

RESULTS: Over a 4 year period, 7 cases of subtotal ear defects have been reconstructed utilizing a Nagata 3D framework. Etiologies include suppurative perichondritis (1), avulsion (2), human bite (2), dog bite (1), and burn (1). Satisfactory results have been achieved in 5 cases. Hypertrophic scar in one case and skin graft hyperpigmentation in another represent the complications of the series.

CONCLUSIONS: Presurgical models assist preoperative planning. The costal cartilage framework should extend beyond the limits of the defect and should articulate with the native auricular cartilage. The extent of the soft tissue defect will influence the choice soft tissue coverage.

LEARNING OBJECTIVES:

3. Presenters will provide recommendations for initial management of acquired auricular defects so to preserve secondary reconstruction options.
4. Attendees will review Nagata's techniques of auricular reconstruction as they apply to acquired partial ear defects.

81
BOTOX FOR CHRONIC PAIN

M Neumeister, C Chambers, L Premkumar, J Gillespie

INTRODUCTION: Millions of people suffer from chronic pain of various etiologies. Such pain often leads to dysfunction and depression. Botox has recently been identified as an injectable chemical that can eradicate pain syndromes of various causes including neuromas, trauma, arthritis and even RSD. We present our series of patients treated with Botox for chronic pain syndromes.

METHODS: Following IRB approval, a retrospective chart review was performed to evaluate patients treated with Botox injections for chronic pain. The demographics of all patients treated between January 2004 and January 2007 were reviewed and analysed and tabulated. Pain scales were documented and photographs reviewed when applicable.

RESULTS: 30 Patients were injected with Botox in the 3 year time period. Conditions treated included RSD, neuromas, MTP arthritis, chronic back pain, Raynaud's ischemia, lateral epicondylitis, post operative incisional pain (CTS), knee arthritis, crush injury chronic pain. 24 out of the 30 had pain relief. The definitive pain relief ranged from immediate to within 2 months. All of the 24 patients had some element of immediate pain relief. The dose of Botox injected ranged from 20 to 200 units.

CONCLUSION: Botox appears to have a positive effect on relieving chronic pain. The mechanism and dosing requires further study.

Preliminary mechanisms of action studied in the lab will be discussed during the presentation.

LEARNING OBJECTIVES:

1. the participants will be able to identify chronic conditions (indications) where Botox will eradicate the pain
2. the participants learn the mechanisms by which Botox blocks chronic pain
3. the participants will become familiar with the current treatments of chronic pain

82

A RANDOMIZED CLINICAL TRIAL COMPARING A NEW COAPTIVE FILM DEVICE VERSUS SUBCUTICULAR SUTURE CLOSURE OF LINEAR INCISIONS

CL Kerrigan, T Walsh

PURPOSE: To compare two closure methods for linear incisions: subcuticular suture (SCS) versus a new coaptive film device (SteriStrip-S = SSS).

METHODS: Study design: Paired incisions were randomly assigned to SCS or SSS closure. Main outcome measures were time taken to complete closure, patient comfort, and scar cosmesis (to be reported in a separate paper). Level of surgeon training was documented as a potential confounder. Closure time was recorded intraoperatively in minutes and seconds. Patient self-assessment of comfort was assessed, at 7-12 days postoperatively using a 10 cm visual analog scale where 0 is "Very Uncomfortable" and 10 is "Very Comfortable".

PATIENT SAMPLE: Patients undergoing bilateral Wise pattern breast reduction (BBR) or an abdominal procedure, TRAM or abdominoplasty (ABD), were eligible for participation. From February 2006 until December 2006 13 patients consented to participate, enrolled and completed the comfort survey. Enrollment is ongoing. BBR produced 3 incision segments per breast (6 incisions per patient) and ABD produced 2 incision segments per patient.

STATISTICAL ANALYSIS: Student T-tests were used to compare closure time and patient comfort scores between the two closure techniques.

RESULTS: Time: Thirty eight incisions segments were closed by SCS and 33 incisions by SSS. Mean time for closure was 5:59 min (sd = 3:01) and 2:28 (sd = 1:53) respectively. This difference was statistically significant, $p<0.001$.

PATIENT COMFORT: The mean comfort scores for SCS and SSS were 6.7 (sd = 2.0) and 6.8 (sd = 2.6) out of 10 on the VAS. This difference was not statistically significant, $p = 0.918$.

CONCLUSIONS: SSS permits faster wound closure than SCS and patients find both approaches equally comfortable.

LEARNING OBJECTIVE:

1. Learners can discuss the pros and cons of incision closure with SSS compared to SCS.

83

LIFESTYLE OUTCOME STUDY FOLLOWING BODY CONTOURING IN MASSIVE WEIGHT LOSS PATIENTS

C Heinrich, A Gabriel, D Miles, S Gupta

INTRODUCTION: Body contouring operations following massive weight loss are being performed at an exponentially increasing rate. Traditionally, body contouring procedures are considered an aesthetic procedure. However, due to disproportionate excess skin distribution, massive weight loss (MWL) patients often have a functional disability, which adversely affects their quality of life. The purpose of our study was to analyze the outcome benefit in patients undergoing body contouring following massive weight loss.

METHODS: This single-center, multi-surgeon body contouring outcome study was designed to assess the overall outcome and life changing events occurring post-surgery. Twenty-five consecutive patients with an average age of 38 years who underwent body contouring surgery were followed for 8 months. Postoperative evaluations were standardized and quantified with a validated series of short questionnaires which assessed measures in an objective and subjective manner. Questionnaires were designed to address specific lifestyle benefits attributed to body contouring.

RESULTS: The mean BMI was 45 and 84% of the patients were female. The majority of patients experienced positive lifestyle outcomes: 96% reported increases confidence and self esteem and 92% felt more comfortable in clothes. Eighty-eight percent had increased their annual income. In addition, 100% of patients indicated that their overall health had improved due to their ability to be more involved in society, improved ability to ambulate, and exercise.

DISCUSSION: This data provides an assessment of outcomes associated with weight loss procedure. Body contouring is an essential procedure for MWL patients, we believe that our study demonstrates both objective and subjective improvements in quality of life and health. Body contouring represents the final stage in the surgical transformation of obese patients and provides a method to increase the productivity of these patients.

LEARNING OBJECTIVES:

1. Identify lifestyle improvements in MWL patients.
2. Increase ability to counsel MWL patients.
3. Identify method to increase patient satisfaction and contributions to society.

84

THE IMPACT OF CURRENT VENOTHROMBOEMBOLISM GUIDELINES IN A PLASTIC SURGERY PATIENT POPULATION

K Miszkiewicz, I Perreault, G Landes, PG Harris, JP Brutus, JS Sampalis, A Nikolis

PURPOSE: Venous Thromboembolic Events (VTE) are an important concern due to their frequently asymptomatic presentation and significant morbidity and/or mortality. The true incidence of this disease process is unknown as i) screening procedures and ii) prophylaxis protocols, are frequently lacking in this patient population.

The purpose is to identify published thromboprophylactic recommendations established in the plastic surgery literature, and assess their application in a plastic surgery patient population.

METHODS: 1) Systematic evaluation of all published guidelines for thromboembolism prophylaxis in plastic surgery. 2) Assessment of preoperative prophylactic measures in one university centre over a 6-month period.

RESULTS: Twenty-three studies were in favor, while 3 studies were not in favor of mechanical and pharmacological prophylaxis. Thromboprophylactic recommendations were put forward by 1 small randomized trial (Grade B, Level 2), 6 retrospective studies (Grade C, Level IV), 2 literature reviews (Grade C, Level V), 2 surveys (Grade C, Level V), 3 Continuing Medical Education (Grade C, Level V) and 9 expert recommendations (Grade C, Level V). The 3 studies against prophylaxis were composed of 1 retrospective study (Grade C, level IV) and 2 case series with no control (Grade C, Level V). Evaluation of physician prescribing habits and established VTE demonstrates a hit or miss strategy in VTE prophylaxis.

CONCLUSION: The evidence demonstrates a lack of category A or B evidence for thrombophylaxis in the plastic surgery patient population and reveals several inconsistencies in surgeon prescribing habits.

LEARNING OBJECTIVES:

Participants will be able to:

1. Recognize the limited amount of published thromboembolic guidelines available to the plastic surgeon
2. Be aware of current prescribing habits among plastic surgeons
3. Understand the pressing need for an established working algorithm with appropriate thromboembolic prophylaxis in plastic surgery patients.

85

EFFECTS OF AGMATINE AND L-ARGININE IN ISCHEMIA REPERFUSION INJURY IN SKELETAL MUSCLE

G Allen, C Heinrich, J Chrisler, S Gupta

INTRODUCTION: Nitric oxide donor, L-arginine, has been reported to be beneficial in preserving tissue viability following ischemia-reperfusion (IR) The homeostasis of L-arginine is regulated through 2 enzyme systems

which are important in understanding the cytoprotective effects of L-arginine. It's believed that the beneficial effects may be from the conversion of L-arginine to nitric oxide (NO) through NOS (nitric oxide synthase). The second important pathway in L-arginine metabolism is through arginine decarboxylase to agmatine. The purpose of this project was to evaluate the role of agmatine in IR injury.

METHODS: 80 rats were randomly assigned to each of the following eight groups (1) sham, no ischemia, no treatment; (2) sham, no ischemia+L-arginine; (3) sham, no ischemia+1400W; (4) sham, no ischemia + Agmatine; (5) 4 hours of ischemia + saline; (6) 4 hours of ischemia + L-arginine; (7) 4 hours of ischemia + 1400W; (8) 4 hours of ischemia + Agmatine. The gracilis muscle of 80 was elevated on its vascular pedicle. The animals receiving intravenous infusions (groups 1, 2 ,5, 6), had the contralateral femoral vein exposed, and received either 0.2 ml of saline or L-arginine beginning 5 minutes before reperfusion and during the following 40 minutes. The animals receiving subcutaneous injections (groups 3, 4, 7, 8), received either 1400w (3mg/kg), or agmatine (100mg/kg) 10 minutes prior to reperfusion. At 24 hours after reperfusion, the gracilis muscles were harvested and stained with nitroblue tetrazolium. Percentage of muscle necrosis was measured by using computer planimetry. Groups were compared by repeated-measures analysis of variance.

RESULTS: There was a significant decrease in muscle necrosis in groups 6,7,and 8 versus group 5. In addition, there was a significant decrease in muscle necrosis between groups 7 and 8 as compared to group 6.

CONCLUSION: These results indicate that agmatine plays a cytoprotective role in IR injury. In addition, the lack of statistical significance between groups 7 and 8 indicate that agmatine may be having a direct effect on iNOS inhibition.

86
VIRTUAL CLASSROOM: APPLICATIONS IN THE PLASTIC SURGERY CLERKSHIP

SP Salsman, L Publicover, SF Morris

PURPOSE: The Plastic Surgery Clerkship Website is designed to be a modern learning resource for medical students. Its implementation responded to the need for a comprehensive interactive resource for clerkship learning and preparation for end of unit examination and OSCE. It seeks to complement and expand clinical learning at the pace of the student and provides all medical students with a chance to participate in plastic surgery teaching. It is an ongoing project aimed at maintaining an up to date resource for students as plastic surgery advances.

METHODS: Creation of the website moved through six stages of website design: Needs Analysis & Objectives, Determining Technical Requirements, Content Compilation, Page Design, Accessibility, and Peer Evaluation. The latter involved distribution of a survey to third year clerks.

RESULTS: With the help of MedIT and the Common Currency Program at Dalhousie University, the website has developed into a collective source of computer-based multimedia. Information is presented in a series of modules pertaining to major objectives in the clerkship rotation, with access to general background information, rounds presentations, case studies, tutorials and exam-type questions. Photographs, animations, and video complement factual text. Overall, 61% of students surveyed found information on the website facilitated their learning, particularly in the areas of anatomy review, hand injuries, hand infections, skin cancer, and burns.

CONCLUSIONS: As a computer-based learning resource, this website has developed into an interactive program capable of presenting large amounts of factual knowledge and evaluating knowledge acquisition. As it continues to expand, further study into its use by students will measure its facilitation of student preparedness for multiple-choice and oral exam.

LEARNING OBJECTIVES:

1. To identify the benefits of computer-based learning.
2. To understand the steps involved in implementation of a web-based learning resource.

87
A NEW TECHNIQUE OF INTERNAL SUTURE MASTOPEXY

RC Mahabir, WA Zamboni

INTRODUCTION: Current mastopexy techniques rely on incisions on the breast essentially trading ptosis for a visibly scarred breast. We present a technique of internal mastopexy for the correction of mild to moderate ptosis that does not leave a scar on the breast.

METHODS: With the aid of a lighted retractor, internal mastopexy sutures (2-0 vicryl) are placed in the superficial fascia off the breast from the deep surface through a subglandular pocket. The first bite is taken at the superior aspect of the nipple-areola complex and the second is taken cephalad to this. The distance between the bites needs to be approximately 2cm for each centimetre of desired correction in nipple-areola position. The sutures effectively plicate the superficial fascia from the deep surface taking care not to dimple the skin. Two to three sutures are placed depending on the base diameter of the breast.

RESULTS: The senior author has performed this procedure on over 50 patients with a mean follow-up of 2 years. Patients and surgeon have expressed satisfaction with the procedure. There has been no increase in infections, implant ruptures, hematomas, seromas, capsule rate or skin loss from the sutures.

CONCLUSION: Based on this experience, we feel that internal suture mastopexy is a safe and effective alternative in selected patients.

LEARNING OBJECTIVES:

At the end of this presentation, the participant should be able to recognize the appropriate patient for internal mastopexy and describe the operative technique.

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HOW TO STAY OUT OF TROUBLE USING THE STYLE 410 COHESIVE GEL IMPLANT: WHAT'S THE SAME, WHAT'S DIFFERENT?

B Bengston

PURPOSE: The objective of this study is to present results and complications of my first 300 primary breast augmentation patients using the Style 410 Cohesive Gel (CG) Implant, and to focus on the 8 patients (2.6%) requiring revision. Patient selection, implant selection and pocket formation are all more critical when using the 410 device, and some keys to avoiding these complications and pitfalls will be presented.

METHODS: In my cohort of 420 patients receiving the Style 410 CG implants since the studies began in the US in March of 2001, data and follow-up from the first 300 primary breast augmentation patients will be presented. Clues on how to avoid complications and lower revision rates will be emphasized.

RESULTS: Outcomes of patients receiving the Style 410 CG Implant reveals extremely consistent and stable results up to 6 years with the lowest complication rate of any implant I have used in my practice with a 3 year average follow-up. Outside of a 2% Baker II capsular contraction rate, the remaining 287 patients have very good consistent results with minimal lower pole stretch and no implant rotation. There were no infections or hematomas. There was a 4.5% total re-operation rate, 13 of 300 patients. Excluded are 5 patients electing size changes which results in 8 remaining patients or 2.6% having complications that required re-operation for an actual complication. Two patients had recurrent ptosis requiring one or more mastopexies, 2 patients had asymmetry, 2 patients had small lateral skin dehiscence requiring revision, 1 augmentation mastopexy patient had an implant rotation, and 1patient had prominent eccymosis and subsequently developed a unilateral capsular contracture.

CONCLUSIONS: The Style 410 Cohesive Gel implant is more difficult and demanding to use initially and should be looked at as a brand new procedure or technique with many aspects being counterintuitive verses using a round smooth device. Two patients required repeat mastopexy. Because these implants with the heavy Biocell^{TM} surface, stay in position, I no longer use them in patients requiring a vertical or full mastopexy (>3cm nipple elevation). Two patients had revisions for asymmetry, so I now take full advantage of the Matrix of options and do not hesitate to put varying sizes or projections primarily. Two patients had lateral skin dehiscence due

to very tight skin envelopes. I now place a very lateral deep-dermal suture and run the subcuticular suture to the very end of the incision. My only rotation occurred in a mastopexy patient with very stretchy skin. Care must be taken in selection in these patients. One patient had marked eccymosis and very well may have had a hematoma. She subsequently developed a capsular contracture, so I am much more aggressive in re-exploring any patient with prominent swelling or eccymosis.

LEARNING OBJECTIVES:

1. Recognize the importance of proper patient selection in patients who will receive the Style 410 CG implant: stretchy, lax skin, patients with ptosis, etc.
2. Take advantage of the Matrix of options and use differing implants of width and projections to improve or correct preoperative asymmetry.
3. Beware when using this implant in patients with significant ptosis greater than 3cm from the transposed inframammary fold.
4. Pay particular attention to skin closures and any degree of swelling or eccymosis as 410 patients may not present as a typical breast augmentation hematoma.

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VERTICAL SCAR REDUCTION MAMMAPLASTY: POSITION OF NIPPLE-AREOLA COMPLEX AND LENGTH OF VERTICAL SCAR AT EARLY AND LONG-TERM FOLLOW-UP

J Ahmad, F Lista

PURPOSE: One of the major advantages of vertical scar reduction mammaplasty is the improved long-term projection of the breasts following the procedure. In our experience of over 1700 cases, we have observed several important trends. The first trend is that the nipple-areola complex is located higher postoperatively when compared to preoperative skin markings. The second trend is that the vertical scar does not lengthen over time and that pseudoptosis does not occur following this procedure. This study was performed to provide objective measurements to confirm these observations.

METHOD: 49 consecutive women had the following measurements taken of their right breast preoperatively and on postoperative day 5: clavicle to superior border of areola, clavicle to nipple, and inframammary crease to inferior border of areola. 46 women were available for follow-up at 4 years and these measurements were repeated.

RESULTS: Compared to preoperative skin markings, the superior border of the areola is located on average 1.3 cm higher on postoperative day 5. At 4 years, the distance from the clavicle to the nipple had increased 0.5 cm and the distance from the inframammary crease to the inferior border of the areola had decreased 0.4 cm.

CONCLUSIONS: Compared to preoperative skin markings, the nipple-areola complex is located significantly higher in the postoperative period. To account for this change, we adjusted our skin marking technique so that the superior border of the new areola is marked at the level of the anterior projection of the inframammary crease. At 4 years, the vertical scar is significantly shorter. We feel that gathering the vertical wound using box stitches provides long-term support for the vertical scar and prevents the occurrence of pseudoptosis after vertical scar reduction mammaplasty.

LEARNING OBJECTIVE:

The participant will understand the early and long-term changes in nipple location and breast shape following vertical scar reduction mammaplasty.

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BEYOND THE KNIFE
"A MILE HIGH EXPERIENCE" – 25 YEARS SKIING EXPERIENCE AT WHISTLER, BC

K Rai

91

A PLASTIC SURGEON'S SURGICAL SAFARI TO UGANDA AND KENYA

LM Waters

PURPOSE: To investigate the current healthcare and surgical challenges that face the plastic surgeon and patient, and to determine how a plastic surgeon is trained in Uganda and Kenya.

METHOD: Site visits to four hospitals in Uganda and Kenya, September 2006. Information was obtained through informal interviews with surgical house officers, general surgeons, anesthetists, surgical nurses, and personally performing surgery in these four hospitals.

RESULTS: After malaria, AIDS is the second most important health issue in East Africa, with associated opportunistic infections, limb loss and cancer. The latter two sequelae are especially relevant to the plastic surgeon. Congenital deformities are typically treated by visiting plastic surgeons. Burn wound management may involve honey and ghee dressings, or simply no dressings. Patients do not usually receive either primary or secondary burn reconstruction. Before undergoing elective surgery, patients must purchase their own surgical supplies, dressings, and drugs from the local pharmacy. In the Operating Theatre, there are functional challenges of intermittent or no electricity, water, suction, Bovie cautery, as well as limited sutures and surgical draping. Anesthesia is often ketamine-induced or spinal anesthesia, since general anesthesia is dangerous.

Plastic surgical training consists of general surgery training, followed by plastic surgical training elsewhere. Of the three Ugandan plastic surgeons, training has been in Canada, India and Italy.

CONCLUSIONS: Uganda and Kenya face many health care challenges. Canadian plastic surgeons may consider participating in the training of East African plastic surgeons by visiting East African hospitals, providing medical literature, offering training opportunities, and sending surgical supplies.

LEARNING OBJECTIVES:

1. Participants will have a better understanding of the challenges of performing surgery in East Africa.
2. Participants will learn of the need to help with surgical education and providing medical supplies for Ugandan and Kenyan hospitals.

P01

OPTIMAL POSITIONING FOR FREE FIBULA HARVEST

R Ives, T Hayakawa, E Buchel

PURPOSE: Patient positioning has long been recognized as a major component in any successful operation. Inadequate positioning or positioning that cannot be easily maintained leads to increased surgeon mental and physical fatigue. This stress translates into increased operative times. We have developed a very effective way of positioning and stabilizing the leg during fibula harvest.

METHOD: A foot and ankle platform is fabricated from a standard metal right angle arm guard (typically used to "tuck" the arms beside the patient). With the knee bent to approximately 40-45 degrees, the foot platform is taped to the bed at the level of the maleolus. Distal to the platform a 5lb sandbag is secured to prevent sliding due to the weight of the patient's foot. A large round gel bolster is placed at the base of the foot platform which acts as a "trap" for the heel and as pressure protection. The vertical limb of the foot platform stabilizes the ankle and is padded with a small flat gel pad. For larger patients we use a small bolster under the ipislateral hip. Positioning the patient closer to the nonoperative side of the table allows cautery instruments to rest on the table close at hand. After closure, draped pillows are used to prevent hyperextension of the knee.

RESULTS: This positioning method has made significant contributions to harvest speed, ease of teaching and has eliminated the struggle to maintain leg position. It also enables single surgeon or assistant to close.

CONCLUSIONS: We have developed a cost effective, rapid, simple and easily reproducible method for optimally positioning patients for free fibular flap harvest.

LEARNING OBJECTIVES:

The physician will be able to fabricate and utilize a foot and ankle support system to facilitate fibula flap harvest and closure

P02
EPIDEMIOLOGY OF PILOMATRICOMA AT THE HOSPITAL FOR SICK CHILDREN

TKS Cypel, V Vijayasekaran, GR Somers, RM Zuker

PURPOSE: Pilomatricoma is characterized as a benign cutaneous tumor that arises from the hair follicle matrix cells. Pilomatricoma is a common skin neoplasm in the pediatric population that is often misdiagnosed with other skin conditions or tumors. The objective of this retrospective study was to review the clinical and histopathological presentation of this neoplasm in children.

METHODS: The records of the Pathology Department at The Hospital for Sick Children, were searched for all cases of pilomatricoma between 2001 and 2006. The records of these patients were reviewed to determine sex, age, location, size of the tumor, pathological features and recurrence rate. All patients underwent surgical excision of the lesions.

RESULTS: A total of 93 lesions in 85 patients were identified. The median age was 8.7 years. Of the 85 patients diagnosed with pilomatricoma, 44 (52%) were female. In all cases, the initial presentation was an asymptomatic, slow growing, superficial hard mass with bluish discoloration. The most common sites of occurrence were the face (48%), neck (21%), upper limbs (18%), trunk (9%) and lower limb (4%). The size of the surgical specimens collected ranged from 0.1 to 2.6 cm, with average of 1.7 cm. The diagnosis was confirmed by histopathologic examination in all cases. Ghost cells and basaloid cells were described in most of the cases (83%). There were no recurrences in this series.

CONCLUSIONS: This entity should be considered with other benign or malignant conditions in the clinical differential diagnosis of solitary firm skin nodules, especially those on the face, neck and upper limbs. The diagnosis can generally be made by clinical examination. The treatment of choice is surgical excision, and the recurrence rate is very low.

LEARNING OBJECTIVES:

At the end of this lecture, the learner will be able to diagnose and adequately threat the pilomatricoma.

P03
TREATMENT OF DIABETIC FOOT ULCERS USING BLOOD BANK PLATELET CONCENTRATES

SK Han, BI Lee, WK Kim

PURPOSE: Many clinical trials have shown the effectiveness of platelet releasate on chronic wound healing, but large volumes of blood must be aspirated from patients and a platelet separator is required. In authors' previous in vitro study, 5.2±1.2 pg of PDGF-BB was found to be released by one million platelets in fresh blood bank platelet concentrate (BBPC), and adding thrombin to BBPC significantly increased the levels of PDGF-BB released. Our in vivo study in diabetic mice revealed that BBPC treatment greatly accelerated wound healing. This study was undertaken to assess the clinical effect of BBPC for the treatment of diabetic foot ulcers.

METHODS: Thirty-seven patients with diabetic foot ulcers were treated using BBPC; control treatment was performed in 11 patients, and at 12 weeks, percentages of complete healing, mean healing times, and patient satisfactions were compared.

RESULTS: Our clinical study showed that 76% of the BBPC treated group and 36% of the control group experienced complete healing. Moreover, the times required for complete healing were 7.3±1.9 and 9.0±2.2 weeks in the BBPC treated and control groups, respectively. Patients' satisfactions for BBPC treatment also showed better result than those for the conventional method (mean scores of 7.2±1.6 and 4.8±1.4, respectively).

CONCLUSION: BBPC was found to offer a simple and effective treatment for diabetic foot ulcers.

LEARNING OBJECTIVES:

At the end of this presentation, the participants will be able to describe effect of BBPC on healing of diabetic ulcers. In addition, the participants will be able to use BBPC to accelerate wound healing of diabetic foot ulcers.

P04
QUANTIFICATION OF LYMPHATIC FUNCTION FOLLOWING LYMPHATIC VESSEL INJURY OR LYMPH NODE EXCISION – THE DEVELOPMENT OF A LYMPHEDEMA MODEL IN SHEEP

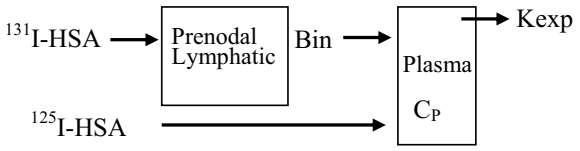
D Tobbia, J Semple, M Johnston

PURPOSE: To be able to devise more effective methods to regenerate effective lymphatic networks in breast cancer patients with post-surgical lymphedema. One of the impediments to understanding the functional properties of newly regenerated lymphatic vessels is the lack of methods to measure lymphatic transport parameters. The purpose of this study was to develop an approach to quantify lymphatic transport in a given vessel network.

Development of lymphedema Model in sheep

A similar method was previously established and used successfully by our group for the measurement of lymphatic function in the central nervous system.

By measuring the mass transport rate of the tracer to plasma in sheep, we can obtain an index of the performance properties of the site of regeneration. The popliteal lymphatics in sheep are best suited for this purpose as the drainage basin of this system is well defined. The method relies on an accurate determination of the plasma recoveries of the tracer using a mass balance equation with corrections for tracer filtration out of the vascular compartment. At the beginning of the experiment, 131I-Human Serum Albumin (HSA) is injected into one of the prenodal popliteal lymphatic vessels. At the same time a 2nd tracer (125I-HSA) is injected into the venous system to permit estimation of the volume of distribution of the tracer and the coefficient of elimination of the tracer from plasma (Kexp). CP is the concentration of 131-HSA in plasma at a given time after intralymphatic injection. A mass balance around the plasma yields an equation where Blood in (Bin) equals the time-averaged rate of mass transport of radioactive albumin into the plasma.



LEARNING OBJECTIVE:

1. Inform audience on the importance of lymphatic obstruction.
2. To review lymphatic transport parameters and its contribution to lymphedema in a sheep model.

P05
TRIGGER FINGER AT THE WRIST DUE TO ANOMALOUS MUSCLE INSERTION TO FLEXOR TENDON IN THE CARPAL TUNNEL: A CASE REPORT AND REVIEW OF THE LITERATURE

K Sayegh, J Bou-Merhi, PG Harris, J-P Brutus

ABSTRACT: Triggering of the fingers at the wrist is a relatively uncommon pathology. It consists in a triggering at the wrist produced by finger motion. It usually occurs in adults and the manifestations and etiology can vary.

We report an unusual case of trigger finger at the wrist caused by an anomalous striated muscle originating from the flexor tendon at the carpal tunnel. The triggering occurred at the wrist but only on finger flexion and extension and not on wrist movement.

Carpal tunnel decompression with complete excision of the anomalous muscle completely relieved the symptoms and led to the disappearance of the triggering.

LEARNING OBJECTIVES:

At the end of this presentation, the participant will be able:

1. To define and differentiate trigger finger at the wrist from trigger wrist
2. To classify all the reported causes of triggering at the level of the wrist

P06
DESMOID TUMORS OF THE PEDIATRIC MANDIBLE: CASE REPORT AND REVIEW

H Sinno, T Zadeh

Desmoid tumors are benign fibrous neoplasms originating from the musculoaponeurotic structures throughout the body. These rare neoplasms have been shown to account for 0.03% of all cancers. Twenty-five percent of all desmoid tumors occur in children under 15 years of age. The infrequency of these tumors has limited studies to case reports and retrospective reviews dictating the authors recommended treatments and management. We present a case report of desmoid tumor involving the left mandible in a 14 month old boy. His treatment course included two excisions, removal of the free rib graft secondary to recurrence of the tumor, and later a free fibular osteomyocutaneous flap for reconstruction. We then retrospectively reviewed all published data of desmoid tumor involving the pediatric mandible since 1950 to 2007 in the PubMed database. Forty cases have been reported which were M:F ratio of 1:1 with an average age 5.3 (SD ± 4.5) years. There appeared to be left sided predominance of desmoid tumors in the pediatric mandible with a ratio of 3:1. The mean size of the tumors was 4.6 (SD ± 2.1) cm at the largest diameter. We have tabulated the relevant data of all the cases including the methods of treatment and recurrence. It is found that when compared to conservative management, radiation therapy, chemotherapy, and curettage or surgical local excisions as treatment options the most efficient treatment was partial mandiblectomy which resulted in complete tumor dissipation with no tumor recurrence. We have further summarized the reconstruction modalities utilized in the cases reported since 1950 for desmoid tumors in the pediatric mandible. The most used modality was rib grafting. Other autogenous methods for reconstruction as well as prosthetics have been reported. In summary, this is the largest review of the pediatric desmoid tumor of the mandible to date. We provide an evidence based algorithm to the management and treatment of the pediatric desmoid tumor of the mandible.

LEARNING OBJECTIVES:

At the end of the presentation, the learner/participant will be able to:

1. identify and correctly diagnose pediatric desmoid tumors of the mandible
2. clinically manage problematic desmoid tumors of the mandible in the pediatric population according to the presented algorithm
3. demonstrate the most appropriate treatment and reconstruction options available for pediatric desmoid tumors of the mandible

P07
OUTCOME OF TONGUE-LIP ADHESION IN TREATMENT OF AIRWAY OBSTRUCTION IN PATIENTS WITH CONGENITAL CRANIOFACIAL ANOMALIES

M Alkahtani, D Young, S Hundert, J Olson, G Wilkes

BACKGROUND: Infants with craniofacial anomalies such as Pierre Robin Sequence(PRS), Crouzon's(CS) or Down Syndrome(DS) may present with airway obstruction which may respond to prone positioning, however sometimes requires surgical intervention using tongue-lip adhesion (TLA), tracheostomy, genioglossus release and/or mandibular distraction osteogenesis. The role of TLA to treat airway obstruction in patients with PRS has been investigated and is most effective in the management of Type One obstruction (1).

OBJECTIVE: Determine the outcome of TLA in the treatment of airway obstruction in infants with craniofacial anomalies.

METHODS: Retrospective chart review of 52 patients who underwent TLA from 1994-2006. Data included: primary craniofacial anomality/diagnosis, type of obstruction present, age at TLA, treatment outcome, need for airway management and length of follow up.

PRELIMINARY RESULTS: Of 15 patients investigated to date, 8 were male and 7 female. The primary diagnosis was PRS (13), DS (1), and CS (1). 12 patients had Type One airway obstruction, 2 had Type Two and 1 had mixed Type One/Two. The mean age at TLA was 25 days. The primary treatments were TLA (14) and nasal trumpet (1). 8 patients required a second procedure, including tracheostomy (4), nasal trumpet (2), stenting nasal cavities (1) and 1 TLA. 2 patients required a third airway procedure; NPA(1) and BiPAP ventilation (1). One patient required a tracheostomy (fourth procedure). Treatment outcome was measured by success of extubation and the need for further airway management. The mean time to extubation was 7 days. 4 patients failed extubation and required further airway management.

LEARNING OBJECTIVES:

1. to identify different types of air way obstruction in congenital craniofacial anomalies
2. role of tongue lip adhesion in airway obstruction management in those patients
3. measure the outcome TLA in those patients

Reference:

1. Sher AE. Mechanisms of airway obstruction in Robin sequence: Implications for treatment. The Cleft Palate-Craniofacial Journal 29(3):225-31.

P08
NEUROCUTANEOUS MELANOSIS IN ASSOCIATION WITH BULKY TUMORS OF NEURALLY DIFFERENTIATED TISSUE: A RARE INDICATION FOR EARLY INTERVENTION

JE Chuback, LL Ross

PURPOSE: Approximately 100 cases of neurocutaneous melanosis (NCM), ie giant congenital melanocytic nevus (GCMN) with brain involvement, have been reported. Current wisdom suggests deferral of debulking procedures until the second year of life due to early presentation and deadly prognosis of neurologically symptomatic disease.

Only three cases of GCMN have been reported with bulky perineal tumors of neurally differentiated tissue. We describe the only case associated with NCM and the largest of its kind. We propose an early operative treatment plan and a terminology clarification.

METHOD: Medline was used to search for similar presentations. Included: "neurocutaneous melanosis", "neurocutaneous melanocytosis", "leptomeningeal melanosis", "neurocutaneous melanomatosis", "neural differentiation", "giant congenital melanocytic nevus" and "bulky naevocytoma". A unique case description and treatment plan is followed to twenty-six months of age.

RESULTS: We present an infant with very bulky perineal tumors and GCMN in bathing trunk distribution, with leptomeningeal, cerebellar, and midbrain involvement identified on MRI consistent with NCM. Incisional biopsies identified the tumors histologically as benign neurally differentiated tissue. Due to the patient's functional impairments (toileting, bathing, movement) created by these tumors, and the patient's neurologically asymptomatic status a massive debulking procedure (10% total body weight) and reconstruction was conducted at three months of age. To date, the patient has remained neurologically asymptomatic and developmentally intact, with normal milestones (including gait).

CONCLUSIONS: Early intervention is indicated even with melanocytic CNS involvement to decrease functional impairment, encourage milestone achievement, parental care, and bonding.

Based on our literature review and current experience we suggest classifying these lesions as "giant congenital neuroectodermal neoplasms" with further sub-classification based on the background lesion (GCMN vs NCM) and histology.

LEARNING OBJECTIVES:

1. To become familiar with terminology and treatment implications for this unique presentation of neurocutaneous melanosis.

P09
CASE REPORT: RECELL IN THE TREATMENT HYPERTROPHIC HYPOPIGMENTED SCAR

A Gelidan

BACKGROUND: Treatment of skin scarring and color mismatch is still a challenging problem to plastic surgeons. Several treatment options are available with preference to autologous technique. Surgeons are all too often faced with cutaneous defects from many etiologies and the current techniques are limited by the availability of suitable donor sites. Tissue

engineering and cell culture are the most advanced techniques gaining popularity. Clonal expansion concept was described for epidermal culture preparation. Recell (Autologous Cell Harvest) was developed as an off the shelf kit that enable a thin split thickness biopsy, taken at the time of the procedure, to be processed into an immediate cell population for delivery on to the wound surface.
METHODS: A clinical review and follow-up of a 20 Y/O Afro-American male with hypopigmented patches and irregular textured scar on the dorsum of the hand was treated with the Recell technique.
RESULTS: Dorsum of the hand burn contracture treated surgically, complicated by the development of patches of hypopigmentation and scar texture irregularity, required secondary intervention with the Recell technique. Early promising results occurred in the form of repigmentation (secondary to melanocytes repopulation) and scar texture improvement.
CONCLUSION: Recell is a new and quick "30 - 60 min" surgical technique used to treat both adult and children skin scarring which have been caused by burns, hypopigmentation, epidermal skin defects, and prophylactic use in cosmetic skin resurfacing. Extracorporal tissue expansion is possible from small donor site areas. Keratinocyte suspension can potentially treat a variety of epidermal defects and color mismatches over large areas. Potential use with Integra in large burns has also shown promising results.
LEARNING OBJECTIVE:
This is a new method to treat hypopigmentation and irregular scars.

P10
KNOWLEDGE AND PERCEPTION OF PLASTIC SURGERY COMPARED TO OTHER SURGICAL SPECIALTIES

R Ahmadzadeh, SF Morris

PURPOSE: The purpose of this study is to evaluate the general public and professional's knowledge of plastic surgery and compare their perception of plastic surgeons to other surgical specialists.
METHODS: Closed-ended format questions were designed. Respondents were asked to identify which surgical specialist, amongst six provided, would be more likely to treat the 13 conditions presented. Respondents were also asked in separate questions to select among 8 surgical specialists the one who was the most/least needed in the community, had the highest/lowest income, and worked the hardest/least.
RESULTS: Completed questionnaire from 70 members of the general public, 121 medical students, and 118 family physicians were collected. Significant differences existed between the three respondent groups. The public perception of plastic surgery was shown to be considerably limited. Medical students and family physicians had a better understanding of the variety of procedure done by plastic surgeons.
CONCLUSION: Although medical students and family physicians have a better understanding of plastic surgery, public perception of plastic surgeons is merely as cosmetic surgeons. They are not seen as hardworking as other surgical specialists, moreover they are perceived as to have higher income despite working less. Much work is needed to change these misconceptions.
LEARNING OBJECTIVES:
At the end of this presentation, the learner will appreciate the need to educate the public regarding the role of plastic surgeons as reconstructive surgeons and as hardworking as any other surgical specialist.

P11
DEEP INFERIOR EPIGASTRIC PERFORATOR (DIEP) FLAP: ALTERNATIVE USES.

CD Goldie

PURPOSE: To broadly and superficially review documented experience with deep inferior epigastric perforator (DIEP) tissue flaps when employed for purposes unrelated to breast reconstruction. This project aimed to feature applications of the flap type that might not otherwise be considered.
METHOD: All journal articles released prior to the year 2007 were sought. Medline and EMBASE databases were initially consulted to obtain relevant publications. Searches were performed using Ovid Web Gateway, directed towards articles relating to the non-MeSH keywords "diep not breast" using the multi-purpose search tool. Searches were also conducted within each database involving the keyword term "perforator", in combination with the term "flap not breast."
RESULTS: Results are incomplete at the time of abstract submission. In total, without accounting for overlap, 473 and 581 titles were retrieved from the Medline and EMBASE databases respectively. Authors have discussed numerous uses of the DIEP flap, including repairs near to and far from the donor sight. Flap placements have been attempted in areas ranging from the perineum to the foot, among others.
CONCLUSIONS: Conclusions are unformed at the time of abstract submission, however DIEP flaps clearly represent a versatile method for repairing defects in diverse regions of the body.
LEARNING OBJECTIVES:
At the end of this presentation, the learner will be able to identify several applications of the DIEP flap. The learner will also be aware, in general terms, of the relative success experienced in using this technique for purposes other than breast reconstruction.

RP01
ARE CHEST COMPRESSIONS SAFE FOR THE PATIENT WITH STERNAL PLATES? INVESTIGATION USING A HUMAN CADAVERIC MODEL

D McKay

BACKGROUND: Plate and screw fixation is a recent addition to the sternal wound treatment armamentarium. Patients receiving sternotomy are at a higher risk for postoperative arrest than are other elective patients. Sternal plate design may allow for quick access to the mediastinum facilitating open cardiac massage, but chest compressions are the mainstay of rapidly re-establishing cardiac output in the event of arrest. The use of sternal plates and chest wall response to compressions when plated has not been studied. The safety of performing this maneuver is not known.
METHODS: We investigated the effect of chest compressions on the plated sternum using a human cadaveric model, examining the hardware for failure and the bony thorax and viscera for trauma. Intrathoracic pressure was monitored during the simulated resuscitation to ensure that the plates encountered adequate and expected force.
RESULTS: No hardware failure or obvious visceral trauma was observed. Rib fractures beyond the boundaries of the plates were noted but the incidence was comparable to control and only slightly higher than that cited in the literature. This fracture incidence may be exaggerated by the cadaveric model
CONCLUSIONS: From this work we conclude that external cardiac massage in the sternal-plated patient is safe when proper plating technique is used and advocate the use of this life-saving maneuver in the event of arrest.
LEARNING OBJECTIVES:
1. Review proper screw length selection technique for sternal plating.
2. Review importance of early chest compressions in the event of cardiac arrest.
3. Review data that supports the safety of performing chest compressions on a patient with a plated sternum.

RP02
A DETAILED COST AND EFFICIENCY ANALYSIS OF PERFORMING CARPAL TUNNEL SURGERY IN THE MAIN OPERATING ROOM VERSUS THE AMBULATORY SETTING IN CANADA

MR Leblanc, J Lalonde, DH Lalonde

PURPOSE: Our goals were to analyze the cost and efficiency of performing carpal tunnel release (CTR) in the main operating room (OR) versus the ambulatory setting, and document the venue of carpal tunnel surgery practices by Plastic Surgeons in Canada.
METHOD: Cost Analysis of the salaries of non-physician personnel and materials involved in CTR performed in the main OR versus the ambulatory setting was performed. Hospital statistical records were used to calculate our efficiency analysis. A survey was emailed to practicing plastic

surgeons in Canada to determine the venue of CTR performed by most surgeons.

RESULTS: In a 3 hour surgical block, we are able to perform 9 CTR in the ambulatory setting versus 4 operations in the main OR. The cost of performing CTR in the ambulatory setting is $36/case and $137/case in the main OR, in the same hospital. Only 18% of Canadian respondents use the main OR exclusively for CTR, while 63% used it for some cases. The ambulatory setting was used exclusively by 37%, while 69% used it for greater than 95% of their cases. The majority of CTR cases (>95%) were done without an anaesthesia provider by 73% of surgeons. 43% use epinephrine routinely with their local anaesthesia and 43% avoid use of a tourniquet for at least some cases.

CONCLUSIONS: Use of the main OR for CTR is almost 4 times as expensive, and less than half as efficient as the ambulatory setting. In spite of this, many surgeons in Canada continue to use the more expensive, less efficient venue of the main OR for CTR.

LEARNING OBJECTIVES:

1. Appreciate the performance efficiency of CTR in the main OR VS ambulatory setting.
2. Awareness of cost differences between different venues used for CTR.
3. Insight into potential advantages of using ambulatory setting for CTR.

RP03

THE EFFECTS OF TRASTUZUMAB (HERCEPTIN) ON SURGICAL COMPLICATIONS IN BREAST CANCER PATIENTS

AA Eckhaus, JE Lipa

BACKGROUND: Since 2005, Herceptin has been approved and indicated as neoadjuvant or adjuvant therapy for the treatment of Her2/neu overexpression breast cancer. Consequently, patients are now presenting for surgery (either ablative breast surgery or reconstructive breast surgery) while concurrently receiving Herceptin therapy. As an epidermal growth factor receptor inhibitor, there exists a potential for interference with wound healing. There is no data in the literature on the safety of its administration in the perioperative period. The objective of this study is to determine if there are any adverse effects of Herceptin on surgical complications.

METHODS: This retrospective review used our cancer registry database to identify patients who have received neoadjuvant or adjuvant Herceptin. All patients who had a surgical procedure during the course of their Herceptin treatments were included. There were no exclusion criteria. Data regarding demographics, diagnosis, treatment, surgical procedures, and post-operative complications were recorded.

RESULTS: A total of 17 surgical procedures were performed in 15 patients who were concurrently receiving Herceptin therapy. The range of procedures included mastectomy, axillary node dissection, DIEP flap breast reconstruction and subsequent balancing breast surgery, and craniotomy for the removal of brain metastases. There were three patients with post-operative complications (3/17, 18%). All three patients developed seromas at the site of their axillary lymph node dissection (3/8, 38%) that resolved after aspiration in the clinic. This seroma rate is comparable to that reported in the literature. There were no post-operative infections or wound healing complications.

CONCLUSIONS: It appears safe to operate on patients who are concurrently being treated with Herceptin. Although Herceptin is an epidermal growth factor receptor inhibitor, there does not seem to be any inhibitory effects on wound healing.

LEARNING OBJECTIVES:

1. To understand the current use of Herceptin in breast cancer patients
2. Participants will be able to evaluate the safety of performing surgery on patients who are concurrently taking Herceptin
3. To understand the implications of Herceptin therapy on the timing of breast reconstruction surgery

RP04

FULL-THICKNESS SKIN GRAFTING AFTER EXCISION OF MELANOMA OF THE HEEL: A CASE SERIES

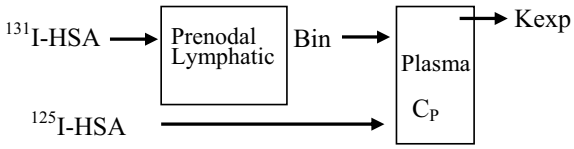
B Ayeni, B Heller, S Wong, A Thoma

BACKGROUND: The coverage of heel defects after wide local excision of a primary lesion is a challenge due to poor blood supply and the limited amount of surrounding soft tissue. In the past, various options have been used to cover heel defects including musculocutaneous flaps, vacuum-assisted wound closure, and delayed skin grafting. Full-thickness skin grafts have been reserved for non-weight bearing areas of the foot and the literature reports a high rate of failure when these grafts are used on the heel. In addition, there is little evidence and limited follow-up of patients that are managed using split thickness skin grafts on weight-bearing areas of the foot.

PURPOSE: The purpose of this case series is to document two surgeons' experiences with immediate split-thickness skin grafting after excision of melanoma of the heel.

METHODS: Patients that were diagnosed with melanoma of the heel were enrolled in this study. Each patient underwent a sentinel lymph node biopsy and wide local excision of the lesion on the heel. The defect was then covered with a meshed split-thickness skin graft. Photographs of the excision and donor sites were taken at follow up. The patients were reviewed for cosmesis, weight-bearing status, and donor site morbidity.

RESULTS: This case series reveals that split-thickness skin grafting represents a practical option in successfully managing defects of the heel after the excision of melanoma.



LEARNING OBJECTIVES:

1. Participants will be able to list at least two coverage options for heel defects.
2. Participants will be able to list a benefit and complication of using split-thickness skin grafts to cover heel defects.

RP05

RATES OF CAPSULAR CONTRACTURE IN SILICONE VERSUS SALINE IMPLANT PRIMARY AUGMENTATION MAMMOPLASTY: A SYSTEMATIC REVIEW

Y El-Sheikh, F Farrokhyar, C Knight, R Tutino, N Hynes

PURPOSE: Capsular contracture after augmentation mammoplasty occurs at a rate of 15-45%. On November 17th 2006, silicone implants received FDA approval.

The purpose of this study was to determine the effect of implant core type (silicone vs. saline) on the rate of capsular contracture in augmentation mammoplasty.

METHODS: A systematic review was conducted through a search of three electronic databases. Two reviewers independently scanned titles yielded by the search and identified potentially relevant papers. Inter-reviewer variability was assessed using the Kappa statistic. Scientific quality of the articles was assessed.

RESULTS: 88 titles of potential relevance were selected from the 393 articles yielded by the search. Inter-rater agreement for selection of potentially relevant articles was 84% (k=0.54). Four comparative studies were included in our analysis, but results could not be pooled because of high clinical heterogeneity. Scientific quality scores of the included studies ranged from 5/14 to 8.75/14. Three of the four included studies found a higher rate of capsular contracture in patients with silicone implants.

Eight series of patients who received cohesive gel silicone implants reported relatively low rates of capsular contracture (0 to 13.2%).

CONCLUSIONS: The scientific quality of the literature on the effect of implant core type on capsular contracture in augmentation mammoplasty is poor.

Recent series evaluating cohesive gel implants report low rates of capsular

contracture. We recommend a randomized controlled trial comparing capsular contracture in cohesive gel and saline implants to provide a clear and more relevant answer to our study question.

LEARNING OBJECTIVES:

At the end of this presentation, audience members will:

1. Know the reported rates of capsular contracture in traditional silicone, saline and cohesive gel implant augmentation mammoplasty.
2. Know the quality of studies reporting these rates.

RP06

IS THERE A RELATION BETWEEN THE INCISIONS AND THE FINAL SHAPE OF A BREAST?

J Sauvageau, R Moufarrège

PURPOSE: The results of mammaplasties reveal a significant variety of forms related to the characteristics of each technique used. More precisely, it appeared to us that the use of an abnormally long vertical scar results in a sub-optimal form of breast with a projection too large in relation to its height.

With the enthusiasm towards a reduced scar, the literature shows a flowering of plasty propositions with a single vertical incision; but too long... The multiplication of these publications exposes us to an increasingly repeated observation: reconstructed breasts with a longer vertical incision all show the same problem : banana or grapefruit-shaped breasts.

METHOD: We studied publications of mammaplasties with vertical incision from the past 15 years and realized that they present an abnormally low height/projection ratio. These numbers were confronted to the Golden Breast Ratio established by Moufarrège.

RESULTS: Moufarrège's Golden Breast Ratio privileges a number equal, close or superior to 2. Results between 1,5 and 2 are ruled acceptable. All height/projection ratios inferior to 1,5 correspond to sub-optimal breast shapes.

In fact, the results studied with a non-harmonious form present a height/projection ratio inferior to 1,5.

CONCLUSION: The promotors of the vertical incision have the great merit of educating the plastician population about the advantages of abandoning the mutilating anchor-shaped incision. However, they must keep in mind the deforming effect of the exaggerated vertical incision, by shortening and transforming it into a reversed T with short horizontal branches, a small price to pay for aesthetically more attractive results.

LEARNING OBJECTIVES:

Being able to use the Golden Breast Ratio to compare results of vertical incision mammaplasties.

Becoming conscious of the deforming effect seen in the vertical mammaplasties with an exaggerated vertical incision.

RP07

RATE OF REOPERATION FOLLOWING REPLANTATION AND REVASCULARIZATION SURGERY IN THE QUEBEC PROVINCIAL REPLANTATION PROGRAM

V Lemaine, P Harris, G Landes, J Sampalis, L Lessard, A Chollet, J-P Brutus, Y Tahiri, A Nicolis

Taux de réopération suite à une réimplantation ou une revascularisation dans le Programme Universitaire Provincial de Réimplantation

PURPOSE: Secondary procedures following upper extremity replantation and/or revascularization are frequently necessary to improve function, in addition to intense rehabilitation. The goal of this study is to describe the incidence and type of secondary procedures performed in such patients.

METHOD: The study population included all patients operated on over a 12 month period within the provincial program, with a minimum of 18 months of follow-up. Telephone interviews were used to confirm their surgical history following the initial hand trauma, while operative protocols were used for description of procedure.

RESULTS: The study population included ninety patients. The combined success rate for replantation and revascularization in the study period was 88,9%. Of these, twenty-nine subjects (32,2%) had one or more secondary procedures. Eight patients (27,6%) and two patients (6,9%) had a salvage procedure for vascular and infectious complications respectively. The elective secondary procedures were divided into two groups: early (less than two months) and late (more than two months). In the early group, half of the procedures were amputation revisions and 25% were related to soft tissue coverage. As for the late group, bony system procedures occurred in 37,1% of cases; 20% of reoperations were done for either skin contracture or joint problems; nevroma excision was undertaken in 14,3% of patients, while tendon-related procedures accounted for 8,6% of reoperations.

CONCLUSION: Emergency reoperations for vascular complications occurred within two weeks of the initial surgery. Reoperations within the initial two months were primarily amputation revisions for failed microsurgery, closely followed by soft tissue coverage procedures. Late procedures mainly concern, in decreasing order of importance, bone, joint and skin for functional improvement.

LEARNING OBJECTIVES:

1. Identify the most common secondary procedures after replantation or revascularization of the upper limb.
2. Identify the differences in the secondary procedures performed at an early and late period.

RP08

PATIENT VERSUS SURGICAL PREDICTORS IN CRANIOPLASTY RECONSTRUCTION

A Dumas, PG Harris, G Landes, A Gagnon, C Bélanger, C Cordoba, H Ciaburro, J-P Brutus, A Nikolis

OBJECTIVE: Over the years, multiple materials have been proposed in cranioplasty reconstruction. The most frequently used materials include autologous bone and polymethylmethacrylate (PMMA). Results from studies comparing these materials and factors influencing the final outcome are lacking. The aim of this study was to evaluate predictors in cranioplasty outcomes.

METHOD: A retrospective chart review of all cranioplasties was conducted in one university center from 1998 to 2006.

RESULTS: A total of 319 reconstructions were performed on 243 patients. The population mean age was 46,5 (±15.1) years. Three groups were created based on material used: bone (group 1) (74,6%), PMMA (group 2) (19,4%) and PMMA with antibiotic (group 3) (6,0%). Although patients in group 3 had the highest rate of co-morbidity, the overall success rate was greatest in this group at 90%, with an overall success rate of 82,8% across all groups. No significant relationship was found between the reconstructive material and outcome. Infection was the most frequent complication with an incidence of 15,0% (n=48) being responsible for 87,0% of failures. Considering surgery-related factors, immediate reconstruction, longer operative time and intracranial electrodes were related to a significantly higher rate of failure ($p < 0,05$).

CONCLUSION: This study reviewed patient and surgery-related predictors with respect to reconstructive materials used. Despite the presence of significant co-morbidity, the PMMA with antibiotic group had the greatest success rate. Infection prevention is paramount in the success of cranioplasty procedures.

LEARNING OBJECTIVES:

1. To compare the outcome between autologous bone and PMMA cranioplasties;
2. to outline the main cause of failure;
3. to reveal predictors associated with less favourable postoperative evolution.

RP09

USE OF A CHIMERIC SCAPULAR-LATISSIMUS FREE FLAP TO MANAGE IMPENDING MANDIBLE PLATE EXTRUSION

M Choi, TEJ Hayakawa

BACKGROUND/PURPOSE: Prior to the popularization of using osteocutaneous free flaps for mandible reconstructions, plate only reconstructions were more common. Plate extrusions through the cheek and jawline can present as late complications in these patients, requiring plate removal. A challenging situation arises when a reconstruction plate is about to extrude and is covered by irradiated poorly vascularized and poorly

contoured soft tissue. No publication to date has described a method of approaching this problem. We present two patients in whom we performed a chimeric scapular-latissimus free flap to manage this.

METHODS: Our flap utilizes scapular bone to replace the mandibular defect as well as the latissimus muscle to provide vascularized coverage of hardware and a vascularized bed for the overlying skin. The flap's skin paddle can replace irradiated native skin should the native skin declare itself unviable intra-operatively; alternatively it can be de-epithelialized to correct contour deficiencies or discarded. We performed a retrospective review of outcomes and complications.

RESULTS: Both patients were reconstructed without complications intra-operatively or post-operatively, and without suffering the consequence of extruded hardware in follow-up of over 2 years. Both patients maintained good bony healing and vascularized coverage of hardware. The patients also enjoyed improved aesthetic contouring of the irradiated tissue bed. One patient had a late scar revision for a bulky neck contour. Donor site morbidity was minimal.

CONCLUSIONS: We believe the chimeric scapular-latissimus flap is a novel and versatile reconstructive option that addresses the multifaceted challenges of surviving mandibulectomy patients with plate only reconstructions and impending plate extrusions.

LEARNING OBJECTIVES:

1. Understand the reconstructive challenges of impending plate extrusions in plate-only mandible reconstructions.
2. Describe the use of the scapular-latissimus flap for this problem.
3. Understand the versatility of using the various tissues available in this flap.

RP10

ANALYSIS OF EMPIRIC ANTIBIOTIC THERAPY FOR SOFT TISSUE WOUNDS

R Shortt, A Thoma

PURPOSE: Various antibiotics are available to treat soft-tissue infections. However, it is not clear if the empirical antibiotic is always appropriate or the most economical. The purpose of this study is:

1. To determine the percentage of empirically treated wounds susceptible to the antibiotic therapy prescribed.
2. To determine the percentage of wounds treated with the most economical antibiotic therapy.

METHODS: A retrospective chart review was performed on all charts with a diagnosis of "soft-tissue infection" between 1/1/05 and 6/30/05, at St. Joseph's Hospital, Hamilton. Eligible charts were identified using the medical diagnosis coding system. The following diagnosis (including subheadings) were included: cellulitis, lymphangitis, abscess, carbuncle or furuncle. The following was extracted: patient demographics; soft-tissue diagnosis; name, dose and duration of antibiotics used; culture and Gram-stain results. A comparison between the empiric antibiotic prescribed and the microbiology result was made.

An assessment was performed on the cost of the initial empiric antibiotic treatment compared to less expensive effective alternatives.

RESULTS: 1. For soft-tissue infections with positive culture growth, empiric antibiotic treatment was appropriate in all abscess cases, 50% of ulcer cases, and 83% of cellulitis cases.

2. For cellulitis patients receiving a single empiric antibiotic, it was appropriate in 89% of cases.

3. Only 42% of patients overall with positive culture results were treated with the most economical regimen; multiple antibiotic regimens being the most common fault.

CONCLUSIONS: Due to the high probability of appropriate treatment, a single empiric antibiotic should be used to treat cellulitis. Culture results should be used to guide changes or additional antibiotics.

LEARNING OBJECTIVES:

1. The appropriateness of the antibiotic prescribing practises for soft tissue infections at a tertiary care centre.
2. The antibiotic prescribing practises that lead to excess costs.

RP11

SYSTEMATIC REVIEW OF TREATMENT OPTIONS FOR MEDIASTINITIS FOLLOWING CARDIAC SURGERY: COMPARING MUSCLE FLAPS, VACUUM-ASSISTED CLOSURE AND PLATING TREATMENTS

SKF Seal, A Dal Cin, F Farrohyar

PURPOSE: To systematically review the current literature for surgical treatment of post-operative sternal infections.

METHODS: An EMBASE and MEDLINE search (1997-2007) was undertaken with MeSH headings 'surgical infection', 'sternum', 'mediastinitis', 'muscle flap', 'vacuum-assisted closure', 'bone plate', and 'plate fixation'. Two reviewers independently reviewed articles to identify relevant papers. The level of agreement was high. These searches yielded 112 articles. Further exclusion criteria left 27 articles. Eleven additional articles were found by reviewing the references of a recent review paper and by performing a citation search on included studies using the Web of Science database. Thirty-eight articles were included in this review. Data was obtained on the percentage of healed stable sternums, and length of stay [median (range) or mean (SD)] for each treatment.

RESULTS: There were no randomized trials. Sample size varied from 10 to 440. The literature is comprised mostly of retrospective reviews of patient data at single institutions or longitudinal studies without comparison groups. In addition, patient factors are inconsistently reported across the literature. Results are shown below.

Treatment (# of studies)	Healed at Discharge (%)	Healed at Follow-up (%)
Muscle Flaps (20)	100	62-100
Vacuum-Assisted Closure (11)	82-100	55.2-100
Plating (4)		90.4-100
Vacuum-assisted Closure with Flaps (8)	92.8-100	69.2-100

CONCLUSIONS: The current literature makes it difficult to generate substantive conclusions on the most effective reconstructive surgery for sternal infections. Due to the lack of direct comparative data, surgeons continue to face the difficult choice for the best treatment. A prospective comparative study in a randomized fashion using muscle flaps, vacuum-assisted closure and sternal plating is proposed to guide surgeons in this decision-making process.

LEARNING OBJECTIVES:

1. Participants will learn about new developments for treating post-operative sternal infections.
2. Participants will learn about the most recent evidence on treating post-operative sternal infections with different treatment modalities.

RP12

CULTURED EPITHELIAL AUTOGRAFT ON SKIN GRAFT DONOR SITES IN ACUTE BURN SURGERY

GE Salib, S Nicolaidis, G Beauregard, L Germain, F Auger, A Armour

PURPOSE: Cultured epithelial autograft (CEA) has had limited success in the treatment of deep wounds. The aim of this study is to re-evaluate CEA's applicability to acute burn care as a graft for split thickness donor sites, as opposed to burn wounds.

METHODS: We retrospectively reviewed 218 acute admissions at our institution between January 2002 and October 2004. Thirty-six patients were identified as likely to require multiple harvests from the same donor sites. CEA was produced for these patients using a skin biopsy performed shortly after admission. Demographic, surgical and CEA technical data were retrospectively obtained from patient charts and from the CEA academic laboratory.

RESULTS: Eight of the 36 patients died before receiving CEA, leaving 28 cases or 12% of our acute admissions for data analysis. Mean age was 52.2 ± 3.9 years*, 60.7% were male, mean TBSA was 44.7 ± 3.3%*. The

median time from skin biopsy to CEA use was 12 (12, 15.5) days#. More importantly, the same donor was used a median of 3 (2,4) times# and the median time between re-harvests of a donor site was 12.8 (10.7, 14) days#. All surgically debrided burn wounds were covered with sheet autografts.
CONCLUSION: CEA was used in a significant number of patients in whom sizeable burns were completely covered with sheet autografts. Clinical indications for CEA donor site coverage included a predicted need to re-harvest donor sites, the need for thick skin grafts, high risk of donor site infection and predicted lengthy donor site healing time. A prospective controlled trial is proposed to control for skin graft thickness, assess early donor site healing and evaluate scar quality of grafted wounds among CEA-treated patients.
*Mean ± SEM.
#Median (25th, 75th percentile).
LEARNING OBJECTIVE:
The participant will learn some of the clinical implications of a novel application of CEA in acute burn patients.

RP13
COMPARISON OF TITANIUM VS. ABSORBABLE PLATING SYSTEMS IN THE TREATMENT OF ZYGOMA FRACTURES: DECISION BOARD DEVELOPMENT FOR COST BENEFIT ANALYSIS

N Strumas, A Kattan

BACKGROUND AND PURPOSE: Titanium plates and screws are the gold standard for fixation of facial fractures. These plates have potential complications such as infection, extrusion, visibility and plate fracture which may necessitate a second operation for removal of the plates. Over the last 10 years, biodegradable plates and screws have been used more frequently. These plates, although not as rigid as the titanium plates, give equivalent results. The complication rate of the biodegradable plates is also less than the titanium plates but at the expense of a higher cost.
The first objective of this study is to test the reliability and validity of a decision board developed to help potential patients make an informed decision about treatment options for zygoma fractures. The second objective is to conduct a coast benefit analysis to compare the titanium versus biodegradable plates and screws for fixation of zygoma fractures from a third payer perspective to help recourse allocation decision.
METHODS: A cost benefit analysis to compare the two methods of treatment after calculating the outcomes based on a systematic literature review will be performed. We will conduct taxation based contingent valuation study using a decision board and willingness to pay elicited by bidding games to evaluate the outcomes of the two methods of treatment.
RESULTS: Results of developing and testing the validity and reliability of the decision board will be presented as well as the study design for the cost benefit analysis that will be conducted after that.
CONCLUSION: The developed decision board is both a valid and reliable tool that can be used in conducting our cost benefit analysis
LEARNING OBJECTIVES:
1. To understand the steps and methodology of developing a decision board.
2. To give a general overview on Cost Benefit Analysis and its role in decision-making.

RP14
BEAR MAULINGS TREATED IN CALGARY, ALBERTA: THEIR MANAGEMENT AND SEQUELAE

RC Frank, RC Mahabir, E Magi, R Lindsay, W de Haas

PURPOSE: Between 1994 and 2005, seven patients underwent surgery at the Foothills Medical Center for injuries sustained in bear maulings. The purpose of the study was to document the above cases and add to the literature on the management and the potential complications of bear attacks.
METHODS: Data was collected retrospectively from charts.
RESULTS: Seven patients were treated for injuries ranging from lacerations and puncture wounds to fractures and avulsed tissue. On average, patients underwent three operations and spent 22 days in hospital. Mean time from attack to arrival at the trauma center was 19 hours. Irrigation, debridement and IV antibiotics did not prevent wound infections in two patients. Six out of seven patients developed acute stress disorder and one of these patients went on to suffer from post-traumatic stress disorder. Complications ranged from infection to pulmonary embolism.
CONCLUSIONS: Bear attacks result in a spectrum of injuries. Infections and psychiatric disorders are common sequelae.
LEARNING OBJECTIVES:
1. To gain an understanding of the spectrum of injuries and complications resulting from Grizzly and Black bear attacks.

RP15
THE SURGICAL MANAGEMENT OF GRANULOMATOUS MASTITIS INCLUDING RECONSTRUCTIVE OPTIONS

FM Yau, SA Macadam, U Kuusk, N Van Laeken

PURPOSE: Granulomatous Mastitis (GM) is a rare inflammatory breast condition of unknown etiology. The aim of this case series was to identify the clinical, radiologic and histologic characteristics of GM. Surgical management and reconstructive options are reviewed.
METHOD: A retrospective chart review was conducted at the University of British Columbia from 1992-2006. Clinical history, physical findings and treatment modalities were documented.
RESULTS: Eight patients were identified over the fourteen year time period. The mean patient age was 36. All patients were pregnant at presentation or within the six years prior to presentation. Seven patients presented with a breast lump or abscess. One patient presented with pain and erythema only. Draining sinuses developed in six patients. All cases had histological and/or cytological evidence of granulomas. All specimens were negative for Mycobacteria via staining or culture. One case was culture-positive for coagulase negative staphylococci and another for corynebacterium species. All patients underwent surgical treatment via excisional biopsy (n=3), partial mastectomy (n = 2), partial mastectomy with reduction mammaplasty (n = 2) or mastectomy with TRAM flap reconstruction (n= 1). Surgical treatment modalities in conjunction with steroids and/or antibiotics were successful in all but one case, in which recurrence is suspected.
CONCLUSIONS: A greater awareness of this uncommon entity is required in order to ensure prompt diagnosis and management. Surgical excision combined with reduction mammaplasty or TRAM flap reconstruction are suitable treatment modalities from both a functional and cosmetic perspective. Antibiotics and steroids may be helpful adjuncts. Corynebacterium has been reported as a possible etiologic agent in the literature and has been identified in one of our patients here.
LEARNING OBJECTIVES:
1. Describe the clinical presentation of Granulomatous Mastitis (GM).
2. Describe possible etiologic factors.
3. Describe the management of GM and reconstructive options.

RP16
FLEXOR TENDON RECONSTRUCTION WITHOUT DONOR TENDON GRAFT

D Mok, PG Harris, D Guberman, A Nikolis

INTRODUCTION: Current repair techniques for late flexor tendon injury require the harvesting of donor graft from a separate donor site. This is necessary to achieve adequate length of the tendon-graft. Biomechanical studies demonstrate that profondus tendons cut to 25% of their original thickness can withstand tensile forces of strong active motion. A tendon of 50% thickness would then have more than adequate resistance to strong stress forces. In flexor tendon reconstruction, the profondus tendon is often shortened from the palm to the distal forearm to perform a zone V to zone I repair. Instead of discarding this tendon segment, it could be longitudinally split, therefore nearly doubled in length, and used as a tendon

graft, eliminating the need to identify and harvest a tendon graft from a separate donor site. This study aims to identify and report the surgical steps necessary in performing this novel procedure in a cadaveric model. This serves as a pilot to a clinical study currently underway.

MATERIALS AND METHODS: The surgical procedure was carried out on two human cadaver hands at the McGill University Anatomy laboratory.

RESULTS: The profondus tendon was shortened to Zone III mimicking late tendon injury. The segment from zone III to the distal forearm was longitudinally split 50/50. This free segment was advanced to perform a zone III to V repair. The stages of the procedure are outlined within the presentation. Photographs and schematic diagrams are included.

CONCLUSIONS: Earlier work on tendon strengths after partial lacerations provide the biomechanical evidence to allow this repair. The procedures performed in this pilot study were technically straight forward and should be easily reproducible.

LEARNING OBJECTIVES:

At the end of this presentation, the learner will have been made aware of an experimental surgical technique.

CSPS AUTHOR INDEX (BY ABSTRACT NUMBER)

P=Poster; RP=Resident Poster