

THURSDAY 25 MAY 2017

Session 1

14:00-15:56

RESEARCH

Moderators

Francesca DE LORENZI

European Institute of Oncology, Milan, Italy

Martin HALLE

Karolinska Institutet, Stockholm, Sweden

14:00 WOUND FLUID OF FINGERTIP INJURIES AND SPLIT SKIN DONOR SITES TREATED WITH OCCLUSIVE DRESSINGS SHOW A TIME-DEPENDENT INFLUENCE ON THE MIGRATION AND PROLIFERATION OF MESENCHYMAL STEM CELLS

Michael CERNY, Ursula HOPFNER, Holger ERNE, Hans-Günther MACHENS, Arendt SCHILLING

Klinikum Rechts der Isar, Technische Universität München, Munich, Germany

Introduction

Fingertip injuries can be treated non-surgically with occlusive dressings and tend to regenerate nearly scar-free resulting in very good functional and aesthetic results. Split skin donor site wounds can be treated the same way to improve wound healing. As mesenchymal stem cells (MSC) are important modulators of the wound healing process, we hypothesized, that the wound fluid of fingertip injuries influences the proliferation and migration of MSCs compared to blood serum of the same patient.

Materials & Methods

22 Fingertip injuries (Allen stage II-III) were treated with occlusive dressings after initial wound care. Additionally we treated 5 split skin donor site wounds with occlusive dressings postoperatively. Around the 3rd to 7th day we tried to ascertain fluid samples while changing the dressings. We could collect 4 fingertip and 4 split-skin-donor site fluid samples. Parallel we took blood serum from each patient as control. The proliferation rate of MSCs and fibroblasts (HS27) were determined with the Xcelligence-system after 50 hours and the Alamarblue assay after 72 hours of sample incubation. Migration was also evaluated continuously with Xcelligence with endpoints after 5 and 10 hours.

Results

The migration of MSCs and HS27 cells under the influence of both wound fluids was faster than the control after 5 hours of incubation, which was statistically significant. After 10 hours the effect was reversed in the MSC cell population. The proliferation of MSCs and HS27 cells was significantly inhibited compared to the control after 72 hours.

Conclusions

We showed a strong, time-dependent effect of wound fluid on migration and proliferation of mesenchymal stem cells. MSCs are important modulators of the proliferation stage in wound healing and play an important role in the formation of scar tissue. The early activation of MSC migration could modulate scar tissue formation and could contribute to the good results of conservatively treated fingertip injuries.

14:08 DIFFERENTIATION OF PRE- AND POSTGANGLIONIC NERVE INJURY USING MRI OF THE SPINAL CORD

Amar KARALIJA, Liudmila NOVIKOVA, Mikael WIBERG, Lev NOVIKOV
Norrlands University Hospital, Umeå, Sweden

Introduction

Brachial plexus injury (BPI) is a devastating type of nerve injury, potentially causing loss of motor and sensory function. Principally, BPI is either categorized as preganglionic or postganglionic, with the early establishment of injury level being crucial for choosing the correct treatment strategy. Despite diagnostic advances, the need for a reliable, non-invasive method for establishing the injury level remains. We studied the usefulness of in vivo magnetic resonance imaging (MRI) of the spinal cord for determination of injury level. The findings were related to neuronal and glial changes.

Materials and Methods

A rat model of nerve injury was used. Rats underwent unilateral L4 & L5 ventral roots avulsion or sciatic nerve axotomy. The injuries served as models for pre- and postganglionic BPI, respectively. MRI of the L4/L5 spinal cord segments 4 weeks after injury, using a Bruker BioSpin 9.4T.

Results

MRI of the L4/L5 spinal cord segments following avulsion showed ventral horn (VH) shrinkage on the injured side compared to the uninjured side. Axotomy induced no change in the VH size on MRI. Following avulsion, histological sections of L4/L5 revealed shrinkage in the VH grey matter area occupied by NeuN-positive neurons, loss of microtubular-associated protein-2 positive dendritic branches (MAP2), pan-neurofilament positive axons (PanNF), synaptophysin-positive synapses (SYN) and increase in immunoreactivity for the microglial OX42 and astroglial GFAP markers. Axotomy induced no changes in NeuN-reactivity, modest decrease of MAP2 immunoreactivity, no changes in SYN and PanNF labelling, and a modest increase in OX42 and SYN labeling. Histological and radiological findings were congruent when assessing changes after axotomy, while MRI somewhat underestimated the shrinkage.

Conclusions

The study demonstrates the potential diagnostic value of spinal cord MRI following pre- and postganglionic nerve injury. Preclinically, MRI could be used to evaluate neurodegeneration and neuroprotective treatment in vivo. Clinically, a protocol adapted for patients could improve BPI diagnostics.

14:16

EXTENDED EX SITU PRESERVATION AND LIMB SPECIFIC MONITORING EVALUATION OF PERFUSION QUALITY

Edoardo DALLA POZZA, Eliana DURAES, Antonio RAMPAZZO, Frank PAPAY, Bahar BASSIRI GHARB
Cleveland Clinic Foundation, Cleveland, Ohio, USA

Introduction

In contrast with the standard cold storage, normothermic perfusion is a novel approach to prolong viability by recreating in-vivo characteristics in an ex-situ setting. This study aims to refine a protocol for physiologic prolonged perfusion evaluated by limb specific diagnostic tools.

Materials & Methods

A total of 9 swine limbs were perfused with an optimized protocol using an oxygenated colloid solution at 39°C containing washed RBCs. The first 5 limbs (Group A) were perfused for 12 hours and the following 4 (Group B) as long as muscle contractility/peripheral perfusion was present. Electrolytes were kept within physiologic ranges by partial perfusate exchanges. Limb viability was assessed and compared in the 2 groups by muscle contractility, compartment pressure, tissue oxygen saturation, Indocyanine Green (ICG)-angiography and thermography.

Results

Perfused limbs were able to maintain physiological function and parameters reaching 12 hours in group A and 44 hours (26-44) in group B. The final weight increase ($0.54\% \pm 0.07$ VS $16.25\% \pm 17.86$) ($p=0.15$) and compartment pressure (24.75 ± 7.79 VS 16.23 ± 7.10) ($p=0.175$) were lower in group A compared to group B. The average muscle temperature was $33.54 \pm 1.5^\circ\text{C}$ in group A and $35.15 \pm 1.40^\circ\text{C}$ in group B ($p=0.072$). The mean peripheral tissue oximetry was significantly higher in group B ($73.39\% \pm 7.7$) compared with group A ($59.67\% \pm 10.21$) ($p<0.001$). Average values of final myoglobin and CK were lower in group A compared with group B (875 ± 291.4 ng/mL VS 1010.6 ± 323.6 ng/mL and 53344 ± 14850.34 U/L VS 71881 ± 20475 ng/mL). Thermography and ICG-angiography showed minimal variations of peripheral limb perfusion overtime in both groups.

Conclusions

The normothermic perfusion was able to preserve limb physiology and function for up to 44 hours. Limbs in group A had lower levels of edema and weight increase but tissue oxygenation, temperature and peripheral vascularization were not statistically different in the 2 groups, encouraging the protocol optimization to increase the perfusion time.

14:24 DOES ISCHEMIC PRECONDITIONING INCREASE FLAP SURVIVAL BY ADENOSINE MEDIATED ADORA2B RECEPTOR ACTIVATION

Mehmet Can UBUR, Özlenen ÖZKAN, Pinar ULKER, Matteo AMOROSO, Mutay ASLAN, Ömer ÖZKAN
Akdeniz University, Antalya, Turkey

Introduction

Ischemic preconditioning (IPC) is defined as increased tolerance to subsequent ischemic stress via exposing tissues to sublethal ischemia. Although many candidates have been suggested, recent studies clearly demonstrated adenosine mediated ADORA2B receptor (ADORA2BR) activation is the main mechanism of IPC. While tissue protective role of this mechanism has been demonstrated on different ischemia/reperfusion (I/R) models, its role on flap surgery derived I/R damage has not been investigated yet. The aim of this study was to investigate the the role of adenosine and ADORA2BR activation on IPC mediated tissue protection in an epigastric flap model.

Materials & Methods

80 female wistar rats were divided into 5 groups and all groups were exposed to epigastric flap surgery compromising 6 hours of ischemia and 6 days of reperfusion in the presence or absence of IPC. Group1:No drugs were administered, Group2: Animals were pretreated with specific CD73-inhibitor in order to inhibit adenosine generation, Group3:Animals were pretreated with Adenosine, Group4:Animals were pretreated with specific ADORA2BR antagonist, Group5: Animals were pretreated with ADORA2BR agonist before ischemia induction. At 6 days of reperfusion tissue survival was evaluated via histologic and macroscopic analysis.

Results

IPC application significantly enhanced tissue CD73 expressions and adenosine concentrations($p<0,01$). Flap survivals were found to be increased by IPC application in Group1($p<0,05$) however, CD73 inhibition blocked this increament(Group2). Moreover at Group3 adenosine treatment improved flap survival even in the absence of IPC($p<0,01$). Similarly, while ADORA2BR antagonist attenuated tissue protective effect of IPC($p<0,01$); ADORA2BR agonist improved flap survival by mimicking IPC, in Group 4 and 5.

Conclusions

These results provide pharmacological evidence for a contribution of CD73 enzyme-dependent adenosine generation and its signaling through ADORA2BR on IPC-mediated flap tissue protection. It has been shown the first time in the literature to date that ADORA2BR agonist could be a potential preventive agent against I/R injury in flap surgeries.

14:32

THE ENHANCEMENT EFFECT OF ADIPOSE-DERIVED STEM CELLS ON FAT GRAFT SURVIVAL: IN VIVO FLUORESCENCE IMAGING EVIDENCE OF CELL SURVIVAL AND ANGIOGENIC DIFFERENTIATION POTENTIAL

Margarita MOUSTAKI, Despoina PERREA, Maria G. ROUBELAKIS, Epaminondas KOSTOPOULOS, Gregorios CHAMPSAS, Marios FRANGOULIS, Alkiviades KOSTAKIS, Othon PAPADOPOULOS
National and Kapodistrian University of Athens, Athens, Greece

Introduction

Traditional fat transplantation (fat grafting) is a well-established technique and one of the standard approaches to soft-tissue reconstruction. The isolation of stem cells from adipose tissue inevitably led research to focus on the study of the combined transplantation of autologous fat and adipose derived stem cells (cell assisted lipotransfer-CAL). This is an in vivo experimental study on cell-assisted lipotransfer with adipose derived stem cells on an animal model. The aim of this study is to prove and quantify the potential of adipose-derived stem cells to improve quality and long-term retention of fat grafts.

Materials and Methods

For the purposes of this study Green Fluorescent Protein-positive adipose-derived stem cells (ADSCs) were isolated from C57BL/6J -GFP transgenic mice. Green Fluorescent Protein-positive stem cells were mixed with minced inguinal adipose tissue harvested from C57BL / 6JolaHsd mice and then co-implanted into Hsd: Athymic Nude-Foxn1nu mice (n=15). All mice had one side of their back grafted with the mixture and the contralateral control side grafted with the same amount of inguinal adipose tissue isolated from C57BL / 6JolaHsd mice. The survival of implanted Green Fluorescent Protein-positive stem cells was tracked by in vivo fluorescence imaging for 56 days. For the comparative study of the fat grafting survival the fat grafts were harvested from each mouse, weighed and subjected to histologic examination and immunohistochemistry staining of CD34 and Ki67 at 7 and 56 days.

Results

Results showed higher survival rate of the ADSC-enriched fat grafts (63% vs. 33% , $p<0.05$). In vivo fluorescence imaging proved that 8 weeks later, ADSCs are still present at the recipient area. Microvascular density of the ADSC-enriched grafts compared to the control grafts was significantly higher ($p<0.05$).

Conclusions

ADSC-enrichment is a promising optimization technique of autologous fat grafting resulting to a significant increase of the survival rate and microvascular density of fat grafts.

14:40 FAT GRAFTING RECIPIENT SITE OPTIMIZATION USING EXTERNAL VOLUME EXPANSION (EVE) AND DECELLULARIZED ALLOGRAFT ADIPOSE MATRIX (AAM)

Giorgio GIATSIDIS, Julien SUCCAR, Anthony HADDAD, Hajime MATSUMINE, Dennis Paul ORGILL

Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts, USA

Introduction

Recipient site optimization in fat grafting aims to develop effective strategies to enhance graft take and long term graft volume retention. External Volume Expansion (EVE) has shown in murine models and clinical cases the capacity to induce angiogenesis and adipogenesis in recipient sites before grafting, improving long-term outcomes. Scaffolds, in particular allograft adipose matrices (AAMs), have also provided evidence of their structural and biochemical potential in inducing graft survival and adipocyte proliferation. In this preclinical study we combine for the first time the two strategies hypothesizing that their complementary role might further enhance recipient site optimization before structural fat grafting.

Materials & Methods

66 wild-type C57BL/6 mice were assigned to three experimental groups (n = 22 per group) undergoing continuous EVE, moderate-intensity intermittent EVE or no EVE (control) for five days. Five days after the last EVE stimulation mice underwent subcutaneous injection of 0.5cc of an AAM obtained from cadaveric tissue that was aseptically processed to remove lipid and cells remnants. On post-operative day (POD) 28 (n = 4 per group), 42 (n = 8 per group), and 84 (n = 10 per group) grafts were collected for macroscopic and histological analysis (skin/AAM graft structure, using H&E staining; angiogenesis, using immuno-histochemistry for the CD 31 marker; adipogenesis, using immuno-histochemistry for the Perilipin marker)

Results

At a long-term follow up (POD 84) density of blood vessels at the recipient site and surrounding the AAM grafts was significantly increased by EVE enhanced vascularity of AAM grafts (1.6- fold increase compared to controls). EVE also induced a peri-graft inflammatory reaction that gradually decreased over time. Clusters of proliferating adipocytes were observed along the external border of the AAM graft starting from POD 28.

Conclusions

EVE- angiogenic and adipogenic potential can be used to increase vascularity of recipient sites and AAMs. AAM enhances and optimizes these outcomes.

14:52 DEVELOPMENT OF THE FIRST BIOMIMETIC AND AND MACROFAGE SUBSTANTIATED ADIPOSE TISSUE DERIVED, 3D PHOTOLITHOGRAPHY TRANSLATED BREAST IMPLANT SURFACE

Simon BARR, Ernie HILL, Ardeshir BAYAT
University of Manchester, Manchester, UK

Introduction

On average, 320,000 breast implant based reconstructions and augmentations are performed in the US alone per annum. A considerable number of women undergoing breast implant procedures will experience capsular contracture, the irrepressible and disfiguring, tightening and hardening of the fibrous capsule that envelops breast implants. Surface texture and topography has been implicated in capsular contracture formation. Indeed, micro and Nano-topographies on implant surfaces critically influence cellular interaction, whilst extracellular matrix cues promote the production of specific tissue morphologies. We hypothesised that the accurate replication of breast tissue textures in silicone would improve implant integration and lead to an enhanced cell-surface interface.

Materials & Methods

Human derived breast adipose tissue was fixed and examined in detail using laser confocal and atomic force microscopy to define its inherent micro and nano-textures. We statistically characterised adipose tissue and generated a computer model of breast adipose texture. 3D photolithography and reactive ion etching were employed to replicate 2 surfaces in medical grade silicone: an exact replica of the original adipose tissue and a surface modelled upon the statistics of breast tissue. PCR, cytokine, immunocytochemical and SEM *in-vitro* assessment of the reaction of THP-1 human macrophages were performed.

Results

Pro-inflammatory genes IL β 1, TNF α , and IL6 were downregulated ($p < 0.001$) and anti-inflammatory gene IL-10 upregulated on the novel modelled surface. Pro-inflammatory cytokines Gro-Alpha, TNF α and neutrophil chemoattractant IL8 were produced in lower quantities and IL-10 in higher quantities ($p < 0.01$) in culture with the novel modelled surface. Immunocytochemistry and SEM imaging demonstrated that macrophages retained a round morphology with localised α V staining and that primary fibroblasts aligned to the surface geometries on the modelled surface, both having been postulated to reduce fibrosis.

Conclusions

In conclusion, we have designed, developed and manufactured the first biomimetic breast tissue derived breast implant surface. Our results attest to its potential translational ability to reduce the inflammatory phase of the implant driven foreign body reaction, which may potentially lead to a reduction in implant-related capsular contracture formation.

15:04 EVALUATION OF THE EFFECTS OF ISCHEMIA-REPERFUSION INJURY IN ISOGENIC AND ALLOGENIC SOLITARY SKIN AND MUSCLE FLAP TRANSPLANTATION MODELS IN RATS

Fatih CERAN, Salih BASAT, Idris ERSIN, Ozgur PILANCI, Mehmet BOZKURT
Bacilar Training and Research Hospital, Istanbul, Turkey

Introduction

Composite tissue transplantations(CTA) such as extremities,face are now in clinical practice. The success of CTA depends on the availability of many systemic and local factors. The long duration of operations leads to the ischemia-reperfusion injury(IR), and rejection. The aim of this study is to evaluate the effects of IR in isogenic(I) and allogeneic(A) muscle(M) and skin(S) transplantation(T) models.

Materials & Methods

1.Group:I/ST(Recipient:Lewis(n:8),Donor:Lewis(n:8)),2.Group:I/MT(Recipient:Lewis (n:8), Donor: Lewis (n:8)), 3.Group: A/ST (Recipient: Lewis (n:8), Donor: Brown-Norway (n:8)), 4.Group:A/MT (Recipient: Lewis (n:8), Donor: Brown-Norway (n: 8)). Groin flap was used for ST model, and Gastrocnemius flap for MT model. Cyclosporin was used for immunosuppression. STs circulation was followed by laser doppler. MT follow-ups with transponders. At the end, doppler blood flow rate and oxidative markers(superoxidedismutase(SOD), malondialdehyde(MDA)) levels were measured, chimerism was determined by flow cytometry in peripheralblood (day7,21,35,63,100,120) and PCR in the tissue, MiRNA 21, 205 levels were measured from plasma(day1,7,120) and tissue, and histopathological biopsies were taken.

Results

A statistically significant decrease in blood flow was observed in ATgroups. At the end of the study, there was no statistically significant difference in SOD and MDA. Significant chimerism was detected in all cell lines(mainly CD4cells) for A/ST. The chimerismformation in the A/MT cautioned. In the A/ST, chimerism was observed in the entire reticuloendothelial system by PCR. MiRNA 21, 205 levels were increased in ATgroups. Significant increase in MiRNA 205 was observed, particularly in the A/MT, tissue-related results were similar. Histopathologically significant perivascular inflammation was observed in A/ST-MT. There was no difference in the number of functional muscle units in Agroups.

Conclusions

It should be kept in mind that in AT, intense inflammation in the perivascular area may cause blood flow reduction in the anastomotic lines. Risks of rejection should be kept in mind, especially with high chimerism levels in organ transplantation with skin. We think that chimerism should be considered following the process after muscle transplantation. MiRNA 205 can be used following transplantation involving muscle tissue.

15:16 IMMUNOMODULATION OF HUMAN ADIPOSE- AND BONE MARROW DERIVED MESENCHYMAL STEM CELLS ACROSS DEFINED HLA BARRIERS

Matthias WALDNER, Wensheng ZHANG, Riccardo SCHWEIZER, Jan PLOCK, Peter RUBIN

University Hospital Zurich, Zurich, Switzerland

Introduction

Mesenchymal stem cells (MSC) derived from bone marrow (BMSC) and adipose tissues (ASC) have clinically useful immunomodulatory effects and low immunogenicity. Due to high cell yields, adipose tissue represents a promising source of cells for cytotherapy in Vascularized Composite Allotransplantation (VCA). To compare immunomodulatory capacities across defined HLA mismatches, we assessed the potency of paired MSCs isolated from 10 HLA haplotyped organ donors. This is the first study to compare cells isolated from the same individual.

Materials and Methods

Omental- and s.c. adipose tissue, and bone marrow aspirates from 10 human organ donors were retrieved and MSCs isolated and cultured. Peripheral blood mononuclear cells (PBMC) and splenocytes were isolated and cryopreserved. Using PHA stimulation full mismatched splenocytes, the immunomodulatory function of MSCs was analyzed using thymidine and flow cytometry based Carboxyfluorescein succinimidyl ester (CFSE) mixed lymphocyte reactions (MLR). MSCs were added in different ratios relative to responder PBMCs. Trans-well systems were used to exclude cell contact dependent mechanisms.

Results

After PHA stimulation, MSC deriving from all three tissue types demonstrated a dose dependent, significant ($p < 0.05$) inhibition of responder cell proliferation in thymidine assays. After specific stimulation with fully mismatched allogeneic splenocytes (6/6) a significant ($p < 0.05$) inhibition of CD3+ T-cell proliferation, and CD3+, CD4+ T-cells could be demonstrated. Trans-well MLR showed no significant difference in T-cell proliferation if compared to a direct cell contact system. A combination of BMSC and ASC showed a synergistic effect of both cell types.

Conclusions

Human ASCs and BMSCs both showed effective immunomodulation across defined HLA barriers using „donor derived“ MSC. The combination of both cell types is an exciting new possibility to modulate the immune response with increased cell numbers in VCA recipients. A strong inhibitory effect in a trans-well systems demonstrates potential systemic effects of MSC-cytotherapy via cell secretome.

**15:24 ENDOTHELIAL CELL REPAIR IN VASCULARIZED
COMPOSITE ALLOTRANSPLANTATION**

Jonathan LECKENBY, Radu OLARIU, Adriana TADDEO, Esther VÖGELIN,
Mihai COSTANTINESCU
University Hospital of Bern, Bern, Switzerland

Introduction

Organ transplantation damages donor endothelial cells (EC) however, there is a sparsity of data in vascularized composite allotransplantation (VCA) describing the reparative process. VCA grafts pose greater immunological challenges to recipients than solid organs and extrapolation of concepts established for EC repair in solid organs is inaccurate. In this study we investigated the response of endothelial progenitor cells (EPC) and EC damage/repair following VCA.

Materials & Methods

Rat hind-limb transplantations were performed and allocated to 3 groups (n=7/group): 1) Isograft; 2) Acute rejection; 3) Immunosuppressive therapy (IST) (Tacrolimus 1 mg/kg daily). Warm ischaemia time was fixed at 90 min. Blood was collected at designated time points and the number of circulating EPC (CD34+KDR+CD45^{low} cells) or mature EC (CD31+CD45⁻) was analyzed by flow-cytometry. Muscle was analyzed by immunofluorescence to characterize markers of EC damage/repair at POD30 or at rejection.

Results

Circulating EC and EPC numbers did not change significantly in isograft recipients compared to baseline, suggesting a minor EC response in absence of alloimmune activation. Conversely, the frequency of circulating EC was significantly increased during acute rejection ($p < 0.05$), indicating major EC damage. EPC numbers increased in acute rejection however, the frequency of EPC was significantly higher during the first 3 weeks of IST ($p < 0.05$) and then normalized after 4 weeks. Circulating EC numbers did not change significantly during IST, suggesting that the therapy could improve EC reparative response. Interestingly, although the majority of the circulating EPC (>90.0%) were of recipient origin, 2-0.7% of them were of donor origin which remained stable during IST.

Conclusions

The alloimmune inflammation mediated EC damage occurring in VCA could participate in the acute rejection process. IST promotes a higher EPC/EC ratio in peripheral blood, suggesting a EC reparative response during therapy is activated. Recipient EPCs are crucial to vascular repair, with support from donor bone marrow derived EPCs.

**15:36 BIOENGINEERING A HUMAN FACE GRAFT:
THE MATRIX OF IDENTITY**

Jérôme DUISIT, Louis MAISTRIAUX, Giuseppe ORLANDO, Pierre GIANELLO,
Benôit LENGELÉ

Université Catholique de Louvain, Brussels, Belgium

Introduction

In a decade, face allotransplantation has been shown to be a revolutionary reconstructive procedure for severe disfigurements. However, offer to patients remains limited due to lifelong immunosuppression and limited graft lifespan. In order to move forward in the field, a new pathway in tissue engineering is proposed. Based on promising results obtained in organ bioengineering, we extended our previously reported technique of matrix production of an auricular subunit graft, developed both in porcine and human cadavers, to a similar model enlarged to the whole human face.

Materials & Methods

Five human partial and total face grafts were procured from donors at the department of Anatomy. After cannulation of the superficial temporal and facial arteries, the specimens were perfused with a combined detergent/polar solvent decellularization protocol. Preservation of vascular patency was assessed by fluoroscopy. Cells and antigens removal was assessed by DNA quantification, HE, DAPI (nuclear labeling) and HLA class I staining. Main extracellular matrix (ECM) proteins such as collagen, SGAG and elastin were evaluated by histology. Acellular lip patches (n=8) were cultured with C2C12 progenitor cells for 14 days, and next examined with HE and MTTLive/dead vital stainings in order to evaluate survival and distribution on scaffolds.

Results

Facial grafts were successfully decellularized within 12 days, acellular scaffolds showing full preservation of facial morphology and identity. Fluoroscopy allowed to confirm the entire vascular tree patency. Removal of cells and antigens was confirmed by a mean DNA reduction of 97% ($p < 0.001$) and negativation of HLA class I at histology. Microscopic evaluation showed structural and major proteins preservation. Seeded cells were viable and homogenously distributed on all scaffolds.

Conclusions

Complex facial acellular scaffolds have been obtained, whilst preserving simultaneously a cellfriendly ECM and a perfusable vascular tree. This step will enable further engineering of postmortem facial grafts, thereby challenging new perspectives in composite tissue allotransplantation.

15:48

2016 EURAPS Research Council Best Paper

TRACHEAL TISSUE ENGINEERING: EPITHELIAL GRAFTING OF GENTLY DECELLULARIZED RABBIT TRACHEA

Margot DEN HONDT, Bart VANAUDENAERDE, Jan Jeroen VRANCKX
Katholieke Universiteit te Leuven, Leuven, Belgium

Introduction

Long-segment tracheal pathologies are associated with high morbidity and mortality. Despite a relatively straightforward anatomy of the trachea, reconstruction might be deceptive. Key elements of successful transplantation include the use of a biocompatible construct with little immune-reactivity, vascularization of the submucosal lining and creation of an inner epithelial covering. Our aim was to evaluate the in-vivo response of gently-decellularized rabbit trachea grafted with buccal mucosa, after revascularization within the lateral thoracic artery flap.

Materials & Methods

Ten allogenic rabbit tracheae underwent two cycles of detergent-enzymatic decellularization with 4% sodium deoxycholate, 50 kU/ml DNase and distilled water. Subsequently, scaffolds were implanted within the lateral thoracic artery flap of ten New Zealand White Rabbits. After revascularization, decellularized tracheae were grafted with buccal mucosa. Macroscopical, histological analysis and immunohistochemistry were performed on explants at termination.

Results

Revascularization of the inner lining was incomplete in the first two circular constructs. These tracheae showed only partial ingrowth of the graft on the edges. The following eight transplants were opened longitudinally before implantation. Consequently, the submucosal space of all constructs revascularized well within 14 days. Also graft-adherence was complete in these tracheae. Mild calcification of the cartilage was noted in three tracheae. Moderate lymphocytic infiltration within the buccal graft was detected in three specimens.

Conclusions

Gentle detergent-enzymatic treatment of rabbit tracheae efficiently removed all non-cartilaginous cells. Moreover, this technique preserved the submucosal scaffold and basement membrane, both essential to guide revascularization and reepithelialization respectively. Decellularized tracheae exhibited beneficial in-vivo properties. By opening the transplant, insufficient revascularization through intercartilaginous ligaments could be overcome successfully. The scaffold also proved to offer a suitable matrix for epithelial covering. To further enhance our results, the next step is to provide a functional epithelial covering. Therefore, we are currently focusing on respiratory epithelial cell seeding of gently-decellularized tracheae.

Session 2

16:26-18:00

AESTHETIC PANEL

Moderators

José Maria SERRA RENOM

Universitat Internacional de Catalunya, Barcelona, Spain

Zdenko STANEC

Clinical Hospital Dubrava, Zagreb, Croatia

**16:26 VALIDATING FACIAL AESTHETIC SURGERY
RESULTS WITH THE FACE-Q**

Elisabeth KAPPOS, Dirk SCHAEFER, Martin HAUG, Daniel KALBERMATTEN,
Bryant TOTH
Universitätsspital Basel, Basel, Switzerland

Introduction

In aesthetic clinical practice surgical outcome is best measured by patient satisfaction. For many years there has been a lack of validated questionnaires. Recently the FACE-Q was introduced and we present the largest series of Facelift patients evaluated by FACE-Q with the longest follow-up to date.

Materials & Methods

200 consecutive patients were identified who underwent high SMAS face lifts, with or without additional facial rejuvenation procedures, between Jan 2005, and Jan 2015. Patients were sent eight FACE-Q scales and were asked to answer questions in regards to their satisfaction with surgery and quality of life. Rank analysis of covariance was used to compare different subgroups.

Results

Response rate was 38%. Patients who underwent facelift in combination with other facial rejuvenation procedures(54) had a significantly higher satisfaction rate than patients without. This was true for overall facial appearance($p=0.00056$), aging appearance appraisal($p=0.0046$) and appraisal of nasolabial folds($p=0.00058$). Patients who underwent lipofilling as part of their facelift surgery showed higher satisfaction in three subscales, those being overall facial appearance($p=0.00013$), aging appearance appraisal($p=0.0011$) and satisfaction with cheekbones($p=0.0011$). In general patients showed a high level of satisfaction and were most happy with their overall facial appearance and less satisfied with the area under their chin. Patients who had undergone their surgery less than 5years ago had a significantly higher satisfaction rate with facial appearance overall ($p=0.0000028$), aging appearance appraisal ($p=0.00003$) and appearance of cheekbones($p=0.0014$), as well as satisfaction with cheeks($p=0.02$) and appraisal of nasolabial folds($p=0.03$), than patients who had their surgery more than 5years ago.

Conclusions

Facial rejuvenation surgery, combining a high SMAS face lift with lipofilling and/or other facial rejuvenation procedures resulted in a high level of patient satisfaction. The authors recommend the implementation of the FACE Q to physicians involved in aesthetic facial surgery to validate their clinical outcomes from a patients perspective.

16:38 THE ANATOMIC IMPLICATIONS OF UTILIZING CANNULA LIPODISSECTION AND AVOIDING PLATYSMAPLASTY IN THE TUMESCENT FACELIFT: A CLINICAL AND CADAVERIC STUDY

Michael MIRZABEIGI, Ran STARK, Jason WEISSLER, Martin CARNEY, Louis BUCKY

University of Pennsylvania, Philadelphia, Pennsylvania, USA

Introduction

The tumescent facelift utilizes Saldanha's concept of cannula lipodissection, as opposed to wide undermining, to recruit soft tissue while preserving perforating neurovascular branches. The information herein is a clinical and cadaveric study examining the senior author's technique for tumescent lipodissection in rhytidectomy.

Materials & Methods

From 2005-2016, 1,000 consecutive patients underwent rhytidectomy by the senior author (LPB). In addition to implementing cannula lipodissection, the senior author's technique avoids routine anterior platysmaplasty as it was observed to limit jowl excursion of the lower face. In an attempt to validate the abovementioned approach (developed initially from clinical observation), a cadaveric study was performed on five fresh tissue cadavers. Post-auricular skin excursion was measured following lipodissection (cannula only) and then measured again after traditional wide undermining. Next, SMAS flap and jowl excursion were measured with and without anterior platysmaplasty. A force gauge was utilized in order to ensure that equivalent force was applied during all comparisons of skin and SMAS excursion.

Results

Cannula lipodissection resulted in a mean post-auricular skin excursion of 41.9mm (range 28-53mm). There was no significant difference in skin excursion with cannula dissection when compared to wide undermining (41.9 versus 42.1mm; $p=0.785$). Jowl position, in reference to the mandibular border, was significantly lower following anterior platysmaplasty (18.3 versus -3.4mm; $p=0.005$). Anterior platysmaplasty; however, did not adversely affect the excursion at the tip of the high lateral SMAS flap (39.3 versus 37.9mm; $p=0.644$)

Conclusions

Cannula lipodissection results in equivalent skin recruitment in comparison to wide undermining. Regarding platysmaplasty - the tip of the SMAS flap may remain adequately mobile; however, anterior platysmaplasty may compromise results by inhibiting jowl excursion in the lower face.

16:50 POWER ASSISTED FACE LIFT

Saad DIBO, Marwan ABOUD
MA Clinic, Brussels, Belgium

Introduction

The authors present their experience with a new concept for facial rejuvenation, by subcutaneous undermining, SMAS tunnelisation and 'En Block' tightening of the skin/SMAS unit, and Platysmal bands tightening with a loop VLOC suture without neck undermining.

Materials & Methods

Following tumescent infiltration of the face and neck, using Power-Assisted Liposuction (PAL), wide subcutaneous and SMAS/platysma tunnelisation reaching the nasolabial folds and the lower neck. Liposuction of the submental and 'jowls' fat excess can be performed as needed.

Limited undermining and resection of the excess skin, when necessary, is achieved through a preauricular incision. Tightening is achieved via 'En Block' pulling of the skin/SMAS unit against the aging vectors without having to perform any SMAS plication or tightening. A number 0 VLOC suture is used in a loop fashion in the subcutaneous plane to tighten platysmal bands, without undermining the neck. Skin closure is performed using 3-0 VLOC running suture. Lipofilling of the face can be performed at the same stage.

Results

The technique was applied for 200 patients. Age ranged between 40 and 75. Smoking and redo face lift patient rates were 38.4 % and 23.1 % respectively. All the patients were discharged on the same day following the surgery. There were no recorded hematomas, infections nor neurological deficits. Patient satisfaction was rated as high and the follow up ranged between 2 and 5 years.

Conclusions

Traction on the SMAS is sustained by the improved laxity of the SMAS following tunnelisation, Traction on the skin/SMAS unit, and maintained by progressive fibrosis. The VLOC loop tightens and approximates platysmal bands. The technique has several advantages including reduced operative time, reduced complication rate as well as the possibility of combining it with lipofilling. It constitutes a good indication for smoking patients, and recurrent skin laxity following previous facelift.

17:02 CLINICAL EVIDENCE OF PIGMENT-REGULATING ACTIVITY OF NANOFAT ON HUMAN SKIN: 6 YEARS OF EXPERIENCE

Patrick TONNARD, Alexis VERPAELE, Pieter VERMEULEN
Coupure Centrum voor Plastische Chirurgie, Gent, Belgium

Introduction

Nanofat was introduced six years ago as a mechanical emulsification technique to reduce the size of fat particles. The initial protocol used 10 cc syringes linked to a luer-lock connector where the lipoaspirate was shifted 30 times and filtered through a nylon cloth. Due to the fibrotic nature of fat in many patients, shifting of the lipoaspirate was challenging at times and many surgeons had asked for a universal filtering device.

Materials & Methods

Fat is harvested with a multiport 2.4-mm cannula with 20 sharp 1 mm diameter holes, then washed with saline and decanted. Emulsification is achieved by shifting the micrograft between two 10 cc syringes, 30 times through a 2.4 mm diameter connector followed by a 1.2 mm diameter connector. The emulsified fat is subsequently passed through a closed strainer with 400-600 micron filter. The nanofat obtained is then injected intradermally with a 27 gauge needle.

Results

The changes to our initial protocol started in May 2014. Since then we have treated 148 areas of the face and body with nanofat, in 91 women and 14 men, aged 20-74 yo. The patients presented different skin aging conditions, scars and chronic wounds. The nanofat obtained consisted in a liquid fat emulsion that was injected superficially at approximately 1cc/cm². The areas treated were: perioral region (36), décolleté (28), lower eyelids (23), dorsal aspect of the hands (21), the cervical region (15), scars (11), wounds (7), glabella (4), full face (3). The mean follow up period was 1 year. No major complications / no reinjections. Best satisfaction scores were seen on pigmentary disorders and skin quality/turgor.

Conclusions

The modifications proposed make this technique applicable for all patients and accessible to all surgeons. By squeezing the fat progressively through 2 different sized connectors, we standardized the nanofat grafting technique and made it easier and practical.

17:26 **EFFECTS OF ORBICULARIS OCULI FLAP ANCHORAGE ON THE LOWER EYELID POSITION IN TRANS-CUTANEOUS BLEPHAROPLASTY: STATISTICAL ANALYSIS OF CLINICAL OUTCOMES**

Alessandro INNOCENTI, Francesco MORI, Dario MELITA, Francesco CIANCIO, Marco INNOCENTI
Careggi University Hospital, Florence, Italy

Introduction

The aging process affects skin, muscle, fat of the eyes in a different manner. Their individual rejuvenation would require specific surgical treatment according to their particular demands. The authors analyzed the effect of an orbicularis oculi muscle flap fixed to the superior orbital rim to prevent lower eyelid dislocation during transcutaneous blepharoplasty.

Materials & Methods

The study was conducted retrospectively comparing pre and post op images of two different groups of patients: group A (20 patients) treated with orbicularis oculi flap and group B (17 patients) without. Pre and post op distance between the center of the pupil and the upper border of the lower lid at the middle pupil line was measured in each photo and then compared and statistically analyzed.

Results

The mean age of the 37 patients was 57 years old. From the estimated Linear Mixed Model, we observe a significant effect of the presence of the flap (p -value < 0.0001). All the patients treated with the orbicularis oculi flap (group A) showed a cranial movement of the lower eyelid, even though minimally. All patients treated without muscle flap (Group B) showed a caudal movement of the lower eyelid. The 47% of eyes in group B showed a positive variation greater than 10 %.

Conclusions

The study suggests that the anchorage of the orbicularis muscle flap to the upper orbital rim reinforces the lower eyelid's anterior lamella. It works efficiently to stabilize lower eyelid position after transcutaneous blepharoplasty confirming clinical results.

**17:38 CORRECTION OF SEVERE MALAR PAD PROMINENCE
 WITH DIRECT EXCISION**

Mary MCGRATH

University of California San Francisco, San Francisco, California, USA

AAPS President 2017-2018

FRIDAY 26 MAY 2017

Session 3

8:00-9:40

TRUNK & LOWER LIMBS

Moderators

Norbert PALLUA

Aachen University Hospital, Aachen, Germany

Adriana CORDOVA

University of Palermo, Palermo, Italy

**8:00 A CRITICAL ANALYSIS OF MICROSURGICAL FREE
FLAP SALVAGE PREDICTORS AND TAKE-BACKS
FOLLOWING MICROVASCULAR COMPROMISE: A SINGLE
INSTITUTIONAL REVIEW OF 5,000 CONSECUTIVE FLAPS**

Michael TECCE, Jason WEISSLER, Martin CARNEY, Liza WU, Joseph SERLETTI
University of Pennsylvania, Philadelphia, Pennsylvania, USA

Introduction

Microvascular compromise remains a devastating complication following free tissue transfer. Understanding factors predictive of flap salvage is paramount in improving such outcomes and contributes to the microsurgions armamentarium when challenged with a microsurgical thrombotic event following free tissue transfer. This study provides a stratified risk assessment and predictive model for understanding predictive measures for flap failure and identifies preoperative risk factors and perioperative strategies predictive of successful flap salvage.

Materials & Methods

A retrospective chart review was conducted for all breast, head/neck, and lower extremity free flaps performed at a single-institution between 2005-2015. The primary endpoint, successful salvage, was defined as any flap that did not result in complete flap loss. Univariate analysis was performed using Chi-squared, Wilcoxon rank-sum, and Fisher's exact test. Lastly, a multivariate logistic regression was performed

Results

Of the first consecutive 5,000 free flaps performed by 6 surgeons, 4,847 free flaps were analyzed. 74 take-backs for delayed microvascular compromise were identified. The overall mean take-back rate was 1.53%. Fifty flaps (67.6%) were salvaged. Factors predictive of successful salvage included: no thrombotic event during index reconstruction (OR=19.6; p=0.016) and revision of index anastomosis during take-back (OR=6.48; p=0.014). Chemical thrombectomy use (OR=12.2; p=0.096) and non-existence of thrombophilic abnormalities (OR=8.2; p=0.054) trended towards significance.

Conclusions

This study represents the largest take-back series in the published literature. There is evidence to suggest that certain preoperative comorbidities and identifiable intraoperative maneuvers are predictive of flap salvage success. Effective operative strategies are available to the surgeon to mitigate thrombotic complications, arguing for a standardized approach to microvascular compromise.

8:12 ONCOLOGIC CHEST WALL RESECTION AND CHEST WALL RECONSTRUCTION – SINGLE CENTER, 18 YEAR EXPERIENCE

Erkki TUKIAINEN, Juho SALO
Helsinki University Hospital, Helsinki, Finland

Introduction

Chest wall resection and reconstruction is demanding procedure. Aim of this study was retrospective analyse chest wall reconstruction performed after oncological resections by single surgeon during 18 years.

Materials and Methods

During 1997-2015, 135 oncologic chest wall resections were performed for 135 patient. The average age was 57,8 years. There were 72 full-thickness, 63 partial-thickness resections (34 soft tissue resections only and 29 skeletal bone resections only). 118 chest wall reconstructions were performed.

Results

Indications of resections were: breast cancer (advanced, recurrent or metastatic) 44, soft tissue sarcoma 38 (including angiosarcoma 4, phylloid tumor 2), bone or chondrosarcoma 28, desmoid tumor 11, solitaries fibrous tumor 2, neuroendocrine tumor 1, basalioma 1, ca basosquamosum 1, granulocellular tumor 1, osteokondroma 1 and metastasis of other cancers 7. The location of resection was anterior-lateral 79, thoraco-abdominal 21, anterior 20, posterior-lateral 11 and extended forequarter amputation 4. Resection margins were wide 29, marginal 80 and intralesional 24. Rib resection (avarage 2,8 ribs) was performed in 95 cases, sternal resection 49, diaphragm resection 20, clavicle resection 13, lung resection 7, liver resection 1. The average size of the resection were 187cm².

Reconstruction was warranted in 118 cases: 57 chest wall stabilization + flap coverage, 36 chest wall stabilization, 25 soft tissue flap coverage. 83 soft tissue flap were done (18 free flap, 65 pedicular/local flap).

No perioperative mortality nor flap losses. Complications in 29 operations (Clavien-Dindo classifications grII 12, grIIa 4, grIIb 10, grIVa 3) including 19 re-operations. Survival were calculated by Kaplan and Meier Method.

Conclusions

With careful patient selection, skillful perioperative care, surgical technique and active post-operative care even extensive resections and reconstructions are safe. Patients operated with curative intention seem to benefit from this procedure. Also the palliative resection and reconstruction seem to be well tolerated and improve quality of life.

8:24 UTILIZING TOPICAL NEGATIVE PRESSURE BEFORE DEFINITIVE RECONSTRUCTIVE PROCEDURE IN TREATMENT OF POSTSTERNOTOMY INFECTIONS

Franjo RUDMAN, Mislav PLANINC, Zdenko STANEC, Zeljko SUTLIC
University of Zagreb, Zagreb, Croatia

Introduction

Small percentage of patients suffer from deep sternal wound infections (DSWIs) following cardiac surgery. The treatment options varies from antibiotics, closed suction and irrigation, topical negative pressure therapy (TNP), surgical debridement and final reconstruction.

Materials & Methods

From January 2013 through September 2016 total of 1690 patients were operated at our institution through median sternotomy. 36 patients (2.1%) developed sternal wound infection. 15 patients had superficial sternal wound infections (SSWIs) and 21 had DSWIs out of which four have been diagnosed with sternal chronic osteomyelitis.

Results

TNP therapy was used for mean of 14 ± 11 days, and if additional negative pressure therapy was needed after primary reconstruction it was used for another 16 ± 10 days. After preconditioning with TNP therapy all patients underwent radical debridement and reconstructive surgical procedure that included secondary wound closure, partial or total sternectomy with pectoralis muscle or omental flaps. 12 patients (33%) underwent multiple reconstructive surgeries and 3 patients (8%) were reopened for bleeding all of whom had pectoral muscle flaps. There were no perioperative or deaths within 180 days.

Conclusions

Early diagnosis of DSWI is of the utmost importance in treatment which consists of radical debridement and TNP therapy for wound conditioning and finally definitive reconstruction. For most reconstructions pectoral flaps may be used, but in deeper and larger defects omental flap has advantage.

8:36

CONCOMITANT PANNICULECTOMY INCREASES WOUND MORBIDITY BUT NOT HERNIA RECURRENCE RATES IN ABDOMINAL WALL RECONSTRUCTION: A PROPENSITY SCORE ANALYSIS

Salvatore GIORDANO, Patrick GARVEY, Jun LIU, Charles BUTLER
MD Anderson Cancer Center, Houston, Texas, USA

Introduction

Panniculectomy is often performed during abdominal wall reconstruction (AWR) to enhance the outcomes. However, studies of AWR with concurrent panniculectomy (AWR-PAN) have shown contradictory results. We hypothesized that patients undergoing AWR-PAN experience higher rates of wound-healing complications but similar rates of hernia recurrence when compared with patients undergoing AWR alone.

Materials & Methods

This retrospective study included 548 consecutive patients who underwent AWR. Three hundred five patients (52.5%) underwent AWR alone, and 243 patients (42.4%) underwent AWR-PAN; the mean follow-up was 30 months. We compared these 2 groups' postoperative complications and outcomes with and without propensity score matching analysis.

Results

When compared with patients receiving only AWR, AWR-PAN patients had a significantly higher overall complication rate (29.2% vs 38.3%; $P = 0.025$) but not surgical site occurrence rate (20.7% vs 27.6%; $P = 0.059$). AWR-PAN patients experienced significantly higher rates of skin dehiscence (19.3% vs 12.5%; $P = 0.032$), fat necrosis (10.7% vs 3.6%; $P = 0.002$), and abscess (9.5% vs 4.3%; $P = 0.023$) than did AWR patients. No significant difference was observed in hernia recurrence rates at long-term follow-up (11.1% vs 6.9%; $P = 0.095$).

Propensity score matching yielded 185 pairs of patients for comorbidities and defect size. The matched AWR-PAN and AWR groups had no significant difference in overall complication rates (31.9% vs 27.6%; $P = 0.394$), surgical site occurrence rates (25.4% vs 20.0%; $P = 0.264$), or hernia recurrence rates (8.1% vs 5.9%; $P = 0.311$). However, we observed significantly higher rates of fat necrosis (9.7% vs 3.8%; $P = 0.028$) and abscess (8.6% vs 2.7%; $P = 0.023$) in the AWR-PAN group.

Conclusions

AWR-PAN is associated with more wound-healing problems than AWR alone, but both procedures have similar hernia recurrence rates. Surgeons should discuss potential risks and benefits when counseling patients about AWR-PAN.

8:44 PRESSURE SORES AND PERFORATOR FLAPS: IS IT WORTH IT?

Matteo ORNELLI, Luca GRASSETTI, Vania RECCHI, Giovanni DI BENEDETTO
Azienda Ospedaliera Ospedali Riuniti di Ancona, Ancona, Italy

Introduction

In the last decade, perforator flaps have been introduced for the treatment of pressure ulcers as alternative to the more popular myocutaneous local flaps. We reviewed our single-team 15-years-experience in order to define whether real advantages could be achieved.

Materials & Methods

We analyzed 160 patients undergoing perforator flap surgery for a single late-stage pressure sore. All patients underwent the same protocol treatment. Data regarding associated pathologies, demographics, complications, healing and hospitalization times were collected.

Results

Of 160 stage 4 ulcers, 45% were ischial, 40% sacral, and 15% trochanteric. The most common diagnosis was traumatic paratetraplegia; no significant difference was found in diagnosis distribution and in ulcer location between recurrent and non-recurrent patients. Were performed 49 S-GAP, 88 I-GAP, 3 PFAP-am and 20 PFAP-1 flaps. Mean hospital stay was 17 days. The overall complication percentage was 20%, mostly due to suture-line dehiscence (14%) and distal flap necrosis (5%). As previously noticed, PFAP flaps had a significant higher risk of developing recurrence than I-GAP flaps. The recurrence risk was significant higher for subjects suffering from coronary artery disease.

Conclusions

Late stage pressure sores treatment with local perforator flaps can achieve reliable long-term outcomes in terms of recurrences and complications. When compared to previously published data, perforator flaps surgery decreased postoperative hospital stay (by average of nearly 1 week), re-operations (5%) and new occurrences.

**8:52 PEDICLED TRANSVERSE MYOCUTANEOUS GRACILIS
(TMG) FLAP IN PELVIC FLOOR AND PERINEOGENITAL
RECONSTRUCTIONS – REPORT OF THE FIRST 58
PATIENTS IN 2007-2016**

Maija KOLEHMAINEN, Sinikka SUOMINEN, Erkki TUKIAINEN
Helsinki University Hospital, Helsinki, Finland

Introduction

Pelvic floor reconstruction is necessary in large resections affecting multiple organ systems. Contamination by bowel flora, pressure conditions and narrow space make the reconstruction challenging. Previous radiation and chemotherapy, infection and poor general condition compromise wound healing. Various flaps and synthetic meshes or dermal grafts have been used in reconstructions. TMG flap has all the necessary components available near the defect. The aim of this study was to evaluate the versatility of Transverse Myocutaneous Gracilis (TMG) flap to pelvic floor and perineoegenital reconstructions.

Materials & Methods

From 2007 to 2016, 58 patients aged 34-87 years underwent a reconstruction of pelvic floor with one TMG flap or combined with another local flap. Indication for the reconstruction was anorectal or urologic malignancy, colitis, post-radiation ulcer or perineal hernia. 10% of the patients had no wound healing risks.

All reconstructions were performed by one surgeon partly simultaneously with the resection. De-epithelialised skin island of TMG flap was used to reconstruct the pelvic floor, gracilis muscle filling the empty space below. Perineal skin or vaginal lining were reconstructed with the skin of same or another flap, if needed.

Results

The pedicled TMG flap reached the reconstruction site in all of the cases. Additional OR time due to reconstruction was 0-180 min. There were no total flap losses. Revision due to wound edge necrosis was needed in five cases. There were two postoperative deaths not related to the reconstruction. One perineal hernia was reoperated successfully. Over the years, total OR time has shortened and one TMG flap has been sufficient to cover the defect in most of the cases after a learning curve.

Conclusions

Pedicled TMG flap offers a versatile option in pelvic floor and perineoegenital reconstructions, enabling operative treatment of patients with compromised health and obviating the use of expensive synthetic materials.

**9:00 LOTUS PETAL FLAP RECONSTRUCTION:
COMPLICATIONS FOLLOWING VULVAR AND PERINEAL
RECONSTRUCTION**

Joke HELLINGA, Patrick KHOE, Martin STENEKES, Yassir ELTAHIR
University Medical Center Groningen, Groningen, The Netherlands

Introduction

Lotus petal flaps are applied following vulvar resection since 1996 and, more recently, also following perineal resection. The vulvoperineal area is known for high rates of wound infections and delayed wound healing due to the high density of bacteria. Also neoadjuvant radiotherapy influences the rate of post-surgical complications. Large studies with objective results on complications of lotus petal flap reconstruction following vulvar or perineal resection are sparse. However, those complications have great impact on the medical and society cost and also determine the patients' wellbeing and participation in daily life.

Materials & Methods

Retrospective analysis of all 93 patients following lotus petal flap reconstruction in our hospital until August 2014 is performed. Using the worldwide applied Clavien-Dindo classification, the complications were objectively categorized based on the performed intervention.

Results

The 93 patients underwent a total of 137 flaps. The median time of follow-up was 26.3 months (5.5-119.7). In 30.1% of the patients no complications were reported. 51.7% of the patients experienced small complications (Clavien-Dindo grade I or II) which required no or minor interventions. In 18.3% of the patients interventions were required under general anaesthesia (Clavien-Dindo grade IIIb), usually (64.7%) for debridement. None of the patients experienced complications of Clavien-Dindo grade IV or V (resp. life-threatening complication and death). Outcomes did not significantly differ between vulvar and perineal defects.

Conclusions

This largest study to date presents the results of lotus petal flap reconstruction in an objective manner with a decent time of follow-up. The number of major complications (Clavien-Dindo grade IIIb and up) is acceptable considering the combined extended resection and reconstruction. The minor complications appear to be relatively high compared to earlier studies, however this might be due to underestimation of minor complications in small study populations. Besides, none of just a small intervention was performed for those complications.

9:08

A NEW TECHNIQUE FOR CORONAPLASTY IN PHALLOPLASTY

Casper SOMMELING, Stan MONSTREY, Piet HOEBEKE, Nicolas LUMEN, Salvatore D'ARPA

Universitair Ziekenhuis Gent, Gent, Belgium

Introduction

The most widely used coronoplasty technique in phalloplasty is the Norfolk technique. The skin is folded double, creating a corona that flattens within 6 months, leaving a scar, but no corona, to define the glans penis. Since the corona is of paramount importance for cosmetic of the neophallus, we have developed a new technique to achieve long lasting results.

Materials & Methods

Between September 2015 and November 2016, 35 patients, age between 18 and 53 years, were operated with the new technique: a thick flap is raised leaving a hollow coronal sulcus. The proximal flap is defatted and sutured to the wound to create a bottleneck, consequently two separate full thickness skin grafts are set in place, their contracting forces will improve the definition of the corona. Different types of phalloplasty flaps were used: 19 radial forerarm flaps, 15 anterolateral thigh flaps and 1 peroneal artery perforator flap. Coronoplasty was performed immediately for the radial forearm flaps and after one week for the perforator flaps.

Results

The result is longer lasting and the corona preserves better projection. No flattening has been observed in this series. Three revisions were performed for partial graft necrosis. There was one partial flap necrosis after the procedure.

Conclusions

This technique has become the gold standard in our institution since it improves the cosmetic outcome of the neophallus and allows lasting results.

There is a wide range of results achievable with a phalloplasty: to obtain the best results possible, the best cosmetic appearance - together with function - shall always be pursued.

9:16 REVERSE FLOW DESCENDING GENICULAR ARTERY PERFORATOR FLAP FOR RECONSTRUCTION OF MEDIAL KNEE SOFT TISSUE DEFECT

Apostolos VLACHOGIORGOS, Kshemendra SENARATH-YAPA,
Roberto MARCONATO, Damir KOSUTIC
Christie NHS Foundation Trust, Manchester, United Kingdom

Introduction

Soft tissue reconstruction around the knee is challenging from an anatomical and functional perspective due to variable vascular anatomy and paucity of local options. We present the successful use of a Reverse Flow Descending Genicular Artery Perforator Flap.

Case Report

A 46 year old woman presented with a Malignant Melanoma to her Right medial knee and underwent a Wide Local Excision and a Sentinel Lymph Node biopsy. Cutaneous perforators of the Anteromedial part of the thigh were marked with a Hand Doppler aiming for a Propeller Flap based on the Descending Genicular Artery (DGA) perforators and such a flap was designed to fit a defect of 4 x 3cm.

Intraoperatively, only one suitable septocutaneous perforator was identified on the Vastus Medialis fascia arising from the DGA. Fascial and muscular attachments were released to the exit of the DGA from the Superficial Femoral Artery. However, the proximal pedicle of DGA would not allow adequate mobilization of the skin island to reach the distal end of the medial knee defect. Therefore, we decided to divide the proximal DGA pedicle and base our flap on a reverse flow perforator in a V-Y fashion, rather than propeller and the donor's site was closed directly.

Healing was uneventful and the patient achieved an excellent aesthetic outcome with full functional recovery.

Conclusions

Reverse Flow Descending Genicular Artery Perforator Flap is a useful option for soft-tissue reconstruction of the medial knee. The flap is easy to harvest, has reliable blood supply and donor site morbidity is minimal.

9:24

RELIABILITY OF PERFORATOR FLAPS IN DIABETIC ULCERS

Alexandru GEORGESCU, Ileana MATEI, Botond JANKO, Tania AVRAM,
Maria NEDU

Spitalul Clinic de Recuperare, Cluj Napoca, Romania

Introduction

Due to the anatomical and functional characteristics of the distal lower leg, foot and ankle, the reconstruction of tissue defects exposing tendons, bones, joints continues to be very challenging. This becomes more than true in chronic lesions as result of minor trauma in patients with comorbidities such as diabetes, peripheral arterial or venous disease, which can be accompanied by infection, ischemia, neuropathy, coagulopathy. The reconstruction of such lesions is challenging because of the paucity of soft tissue resources in the region. Free skin grafting, associated or not with negative-pressure therapy or skin substitutes, local random flaps, local/regional muscle or fasciocutaneous flaps, free muscle, fasciocutaneous or perforator flaps were used more or less successfully to cover ulcerations of the foot and distal lower leg in diabetic patients. In this paper, the authors demonstrate that in patients with controlled diabetes, having at least one permeable artery in the affected lower leg, it is possible to use free and propeller perforator flaps (PPF) for reconstruction.

Materials & Methods

We analysed 93 propeller perforator flaps and 11 free perforator flaps performed in 103 diabetic patients with acute and chronic wounds involving the foot and/or lower leg admitted from 2008 to 2016: 58 based on perforators from the peroneal artery (PA), 13 from the posterior tibial artery (PTA), 3 from the anterior tibial artery (ATA), and 19 from the plantar metatarsal or common digital arteries. All the free perforator flaps were represented by the anterolateral thigh flap.

Results

We obtained a primary healing in 83 cases, after an evolution with partial superficial necroses and skin grafting in 19 cases. We completely lost one flap, in which a secondary amputation was necessary.

Conclusions

This study demonstrates that the use of both free and propeller perforator flaps can be as effective as other methods in healing ulcerations in diabetics.

9:32

ONE VERSUS TWO VENOUS ANASTOMOSES IN MICROVASCULAR LOWER EXTREMITY RECONSTRUCTION USING GRACILIS MUSCLE OR ANTEROLATERAL THIGH FLAPS

Niclas BROER, Dennis EHRL, Milomir NINKOVIC, Paul HEIDEKRÜGER
Klinikum Bogenhausen, Munich, Germany

Introduction

Free tissue transfers are a highly reliable procedure routinely performed for reconstruction of a wide range of defects. Main complication in free flap surgery is usually venous thrombosis. Many technical controversies exist regarding the technical details of the microvascular anastomosis in order to prevent occurrence of thrombosis and optimize outcomes. We therefore evaluated our results regarding the execution of one versus two venous anastomoses in a variety of free flaps (fasciocutaneous- or muscle free flap) utilized for lower limb reconstruction.

Materials & Methods

Between 2009 and 2015, 354 patients underwent 386 free ALT- or gracilis flaps for lower limb defect reconstruction after trauma, infection, or malignancies at our institution. The data was retrospectively screened for patients' demographics, perioperative details, flap survival, and surgical complications. The cases were divided into two groups regarding the number of microsurgically performed venous anastomosis: one versus two veins.

Results

Regarding the preoperative evaluation, there were no significant differences regarding comorbidities between the two groups. Overall, there was no significant difference regarding the rate of major (1 vein: 20.38% versus 2 veins: 18.78%, $p>0.05$) and minor (1 vein: 1.27% versus 2 veins: 2.18%, $p>0.05$) surgical complications during our 3-months follow-up period. Major complications included total flap losses of 5.73% (1 vein) versus 8.78% (2 veins).

Conclusions

This study analyzed a large series of microsurgical reconstructions, with a focus on the impact of the number of venous anastomosis. The findings suggest that successful free tissue transfer for lower limb reconstruction can be achieved independent of the number of venous anastomoses, however two should be performed when technically feasible.

9:44

A COMPARATIVE CLINICAL STUDY OF FLAP THICKNESSES: MEDIAL SURAL ARTERY PERFORATOR (MSAP) FLAP VS ANTEROLATERAL THIGH (ALT) FLAP

Zeynep AKDENİZ, Fatma TUNCER, Melek ÖZKAN, Bülent SAÇAK, Özhan ÇELEBİLER

Marmara University School of Medicine, Istanbul, Turkey

Introduction

Perforator flaps are increasingly favored in reconstructive microsurgery. ALT, as one of the most utilized flaps, may have a thick subcutaneous fat layer in the European population, resulting in functional and cosmetic problems. The MSAP flap has recently become popular. A major advantage of MSAP flap over ALT flap is proposed as its thinness. The purpose of this study is to measure flap thicknesses of ALT and MSAP flaps in healthy subjects by doppler ultrasonography and compare the results in relation to gender and BMI.

Materials & Methods

The perforators of ALT and MSAP flaps were marked using a hand-held doppler device and visualized by doppler ultrasonography on both lower extremities of 30 healthy subjects. The thickness of skin and subcutaneous tissue was measured in millimeters at the site of the perforator. The gender, age, weight and height of the participants were noted. The data was analyzed to determine relationship between gender, BMI and flap thicknesses.

Results

The mean age of the participants was 36.4 ± 10.5 , the mean BMI was 25.2 ± 3.9 (19.4-32.5). The mean thickness was 11.55 ± 4.38 mm for ALT flap and 8.31 ± 3.6 mm for MSAP flap ($p < 0.01$). ALT flap was significantly thicker than MSAP in both males (9.02 vs 6.11 mm) and females (14.07 vs 10.52 mm) ($p < 0.05$). The thickness of both MSAP and ALT flaps had a positive correlation with BMI. The relationship was stronger for ALT in males ($r = 0.66$ for ALT, $r = 0.59$ for MSAP) and for MSAP in females ($r = 0.70$ for ALT, $r = 0.83$ for MSAP).

Conclusions

MSAP flap is a reliable fasciocutaneous flap with low donor site morbidity. This study confirms that MSAP flap is thinner compared to ALT flap and the results correlate with BMI. Therefore MSAP flap can be considered a good alternative to ALT flap in reconstruction when bulk needs to be avoided.

10:22 **Introduction of 2016 AAPS Leonard Rubin Award Winner**
James ZINS, Cleveland, Ohio, USA
AAPS Past President

10:24 **2016 AAPS Leonard Rubin Award Winner**

**GUIDELINE-COMPLIANT ENOXAPARIN DOSES
ARE INSUFFICIENT IN THE MAJORITY OF PLASTIC
SURGERY PATIENTS: AN EXAMINATION OF
ENOXAPARIN METABOLISM**

Christopher PANNUCCI
University of Utah, Salt Lake City, Utah, USA

Introduction

Evidence-based plastic surgery guidelines support the effectiveness of once daily enoxaparin prophylaxis. Despite prophylaxis, one in 25 highest risk patients has a VTE event. We examined the pharmacodynamics of standard enoxaparin doses in plastic surgery patients to examine whether patient-level factors predict enoxaparin metabolism, whether inadequate enoxaparin dose predicts downstream VTE events, and whether a pharmacist-driven dose adjustment protocol was effective.

Materials & Methods

We recruited adult plastic surgery patients who received post-operative enoxaparin at 40mg daily. Steady state peak anti-Factor Xa (aFXa) levels, a marker of enoxaparin effectiveness and safety, were drawn. Patients with out of range aFXa levels had real-time dose adjustment based on a written protocol. Patients were followed for 90-day VTE events.

Results

94 patients were recruited, and 44% had in range peak aFXa levels in response to standard enoxaparin dosing. Patient-level factors including extent of surgical injury and gross weight were independent predictors of enoxaparin metabolism. Patients with low aFXa levels were significantly more likely to have 90-day VTE (10.2% vs. 0%, $p=0.041$). Real time dose adjustment allowed a significantly increased proportion of patients to have in range levels (67.1% vs. 44.3%, $p=0.002$).

Conclusions

Based on pharmacodynamic data, the majority of plastic surgery patients receive inadequate enoxaparin prophylaxis using fixed dosing. Patient-level factors can predict how patients will metabolize enoxaparin, and patients who receive inadequate enoxaparin prophylaxis are significantly more likely to have downstream VTE events. Individualization of enoxaparin prophylaxis may minimize peri-operative VTE risk and further improve patient safety after plastic and reconstructive surgery procedures.

Session 4

10:32-12:16

EAR & NOSE

Moderators

Moshe KON

University Medical Centre Utrecht, Utrecht, The Netherlands

Alexandre MARCHAC

Hôpital Européen Georges-Pompidou, Paris, France

10:32 ACCESSORY AURICLE: CLASSIFICATION ACCORDING TO LOCATION AND SHAPE

Jungil HWANG, Jin Sik BURM

Kyung Hee University College of Medicine, Seoul, Republic of Korea

Introduction

Accessory auricles are abnormal auricular appendages remained during the early embryologic stage. It is a common congenital anomaly of the auricle. However, there is no report about classification of location and shape, resulting in difficulty of a detailed explanation. The purpose of this study is to make the classification of the accessory auricle according to location and shape.

Materials & Methods

This study was conducted by analyzing the records of 502 patients who had received surgical excision of accessory auricle at our institution from 2013 to 2015. The location was divided into three anatomical units of intraauricle, preauricle and cheek. Intraauricular and preauricular units were divided into three subunits of helical crus, tragus and ear lobe. The shape was represented with protrusion pattern above the surrounding surface, which was classified as 'Pedunculated', 'Sessile', 'Areolar', 'Diminutive' and 'Depressed'. 'Pedunculated' and 'Sessile' patterns were classified as 'Spherical', 'Ovoid', 'Lobed' and 'Nodular', according to their body figure. Tragal deformity and cartilage root existence were also analyzed.

Results

The total number of accessory auricle of 502 patients (146 with tragal deformity) was 1022. In location, 'Pretragus' (48.6%) was the most common location followed by 'Intratragus' (24.7%). In protrusion pattern, 'Sessile' (49.3%) is the most common pattern followed by 'Pedunculated' (36.2%). In body figure, 'Ovoid' (34.9%) is the most common figure followed by 'Lobed' (19.1%). 76.9 % of the accessory auricle had cartilage root. Considering 'Pedunculated' and 'Sessile' patterns, cartilage root existence was 100% at 'Precrus' and 'Intracrus', 97.5% at superior portion of 'Pretragus', 55% at inferior portion of 'Pretragus', 2% at 'Prelobe', 0% at 'Intralobe'.

Conclusions

The most common location was 'Pretragus' (48.6%) and the most common shape was 'Pedunculated Ovoid' (21.7%). Cartilage root existence was depending on the location. We expect that this new classification could give a guideline for management of accessory auricles.

10:40 OPTIMIZING CARTILAGE DECELLULARIZATION FOR DEVELOPMENT OF A SCAFFOLD FOR EAR REGENERATION

Shafiq RAHMAN, Michelle GRIFFIN, Anish NAIK, Matthew SZARKO, Peter BUTLER

University College London, London, United Kingdom

Introduction

Ear reconstruction poses significant challenges in the field of plastic surgery. Autologous costal cartilage grafts create donor site morbidity and synthetic implants have been subject to cytotoxicity as well as extrusion. Decellularized cartilage can however induce chondrogenic differentiation with stem cell seeding. Currently, there is no clear defined protocol within the literature which can be adapted. We propose a novel method for optimizing the decellularization process to produce a scaffold for ear reconstruction.

Materials & Methods

Elastic cartilage obtained from cadaveric human ears was subjected to three different enzymatic/detergent protocols. Specimens were characterized for deoxyribonucleic acid, collagen and glycosaminoglycan content with further assessment by histology as well as scanning electron microscopy. Protocol A involved use of deoxyribonuclease and sodium deoxycholate. Protocol B and C were modifications of this employing trypsin and ethylenediaminetetraacetic acid respectively as additional steps. Characterization was conducted at day 0, 7, 14, 21, 28 and day 35.

Results

The use of trypsin in protocol B showed that it can accelerate the rate of decellularization. Deoxyribonucleic acid content was significantly reduced after 14 days in comparison to native ($P < 0.05$). Histological stains using 4,6-diamidino-2-phenylindole as well as with haematoxylin and eosin showed depletion of cells. The three dimensional structure of the extracellular matrix was shown to have been preserved with scanning electron microscopy. There was significantly less reduction of glycosaminoglycans at the end of protocol B when compared to protocol A at day 35. No significant difference in collagen content was identified between the different protocols after application of analysis of variance ($P > 0.05$).

Conclusions

The use of trypsin in protocol B can accelerate decellularization of ear cartilage after 14 days. This pathway can be adapted in development of a native scaffold for stem cell seeding.

**10:48 THREE-DIMENSIONAL VIDEO SCANNING AND
PRINTING AS AN ADJUNCT TO AUTOLOGOUS EAR
RECONSTRUCTION**

Li Yenn YONG, Luca LANCEROTTO, Ken STEWART
NHS Lothian, Edinburgh, Scotland, United Kingdom

Introduction

Reconstruction of the external auricle remains a technical challenge due to its three-dimensional (3D) morphology. We propose the use of a 3D template using 3D video scanning as a reference for fabrication of the framework, producing a better cosmetic result and patient satisfaction. The aim of the study was to assess results in patients who underwent ear reconstruction using autologous costal cartilage with 3D video scanning and printing as an adjunct.

Materials & Methods

Patients were recruited prospectively over a 6 month period. Patients with unilateral deformities had their contralateral ear scanned pre-operatively. This was mirrored and printed using a 3D printer. For patients with bilateral microtia, the siblings' ear was utilised as a template. The 3D templates were then sterilised and used in conjunction with the pre-existing X-ray film templates to guide carving of the framework intraoperatively. Patients were given previously validated questionnaires that recorded outcome on a 5 point ordinal scale at least 2 months post-operatively.

Results

All patients underwent autologous cartilage ear reconstruction. 7 patients had microtia of whom 2 were bilateral and 2 had acquired defects. 6 patients returned fully completed questionnaires. All patients were satisfied with the appearance of their new ear with a median satisfaction score of 4.5. High patient satisfaction scores were obtained for all aesthetic subunits and facial integration of the ear. The maximum score of 5 was obtained for all categories except for the helical rim (4.5), scaphoid fossa (4) and skin covering (4). Projection of the ear was excluded from this analysis.

Conclusions

3D video scanning and printing is a useful adjunct to autologous ear reconstruction. Furthermore, we propose that the production of individual components of the framework can further improve the technical accuracy of the cartilage implant and we are looking to implement this in our current practice.

10:56 CLASSIFICATION AND CORRECTION OF MINOR CONGENITAL EAR ANOMALIES

Françoise FIRMIN

*Clinique Georges Bizet, Paris, France***Introduction**

Having gained expertise in the field of ear reconstructions over three decades, I have had the opportunity of also being involved in the correction of minor congenital ear anomalies. These should be differentiated from aesthetic variations. Many different ear anomalies can be observed. Anomalies of the upper part of the ear are the most frequent and have been described in many different ways over the years (lop, cup, constricted ear) and classified by Tanzer into different degrees. We have found this classification unhelpful in guiding the surgical approach and propose a subunit classification for precise reconstructive planning.

Materials & Methods

We have performed corrections of minor anomalies in 325 patients. The upper part of the ear was involved in 273 cases and our aim is to focus on these cases including the anomaly described by Stahl which concerns the posterior root of the antihelix (25 cases). In our series the anomaly of the upper part of the ear was unilateral in 161 cases and less frequently, bilateral (112 cases). We classify these anomalies into three typical subunit configurations: the helix, the helix-scapha and the helix-scapha-antihelix. We will demonstrate how important it is to precisely analyze these anomalies to be able to choose the best surgical approach: either a simple skin approach to reshape the deformed fibrocartilage, use of a fibrocartilagenous graft or an autologous rib cartilage graft.

Results

Even though it may be considered as minor compared to microtia, congenital anomalies of the ear must be considered as a challenge to obtain a satisfactory result. It is essential to perfectly analyze the deformed contours to then be able to select the best surgical approach. This will be clearly demonstrated through clinical cases.

Conclusions

Minor congenital ear anomalies are best classified by typical subunits to aid in planning surgical reconstruction.

11:08 MORE THAN JUST THE HELIX: A SERIES OF FREE FLAPS FROM THE EAR

Andrew LINDFORD, Jyrki VUOLA, Patrik LASSUS
Spitalul Clinic de Recuperare, Cluj Napoca, Romania

Introduction

There is a limited availability of suitable microvascular free flap options for the reconstruction of small to medium-sized facial and intraoral defects. The purpose of this report is to present our experience using free flaps harvested from the ear region in facial, nasal and intraoral reconstruction.

Materials & Methods

Between 2011-2016 24 patients underwent microvascular reconstruction using 26 free flaps raised from the ear region based on the superficial temporal vessels. There were 14 males and 10 females with a mean age of 57 years (range 21-81 years). Defect aetiology consisted of post-tumour ablation (n=16), post-traumatic (n=4), late burn scar reconstruction (n=2), defect after radiotherapy (n=1) and defect following excision of a vascular malformation. Defect location involved the nose (n=15), floor of mouth (n=4), tongue (n=3), lower eyelid (n=1) and lower lip (n=1).

Results

Free flaps comprised of 13 helical flaps (including 1 combined helical and hair-bearing scalp flap), 9 Temporal Artery Posterior Auricular Skin (TAPAS) flaps (including 1 combined TAPAS and conchal flap) and 4 hemiauricular flaps. Post-operatively, total flap necrosis occurred in one TAPAS and one helical flap. The latter case later underwent successful reconstruction with the contralateral helical flap. Partial necrosis of the nasal tip occurred in one hemiauricular flap case and this patient also underwent later successful reconstruction with the contralateral hemiauricular flap. Overall flap survival was 92%. Follow-up time ranged from 1-60 months. Although a good aesthetic and functional outcome was achieved in all cases, most (20/24) patients later underwent minor surgery for further aesthetic refinement.

Conclusions

The ear region can provide a variety of small-to-medium size free flap options with unique qualities that may be useful additions to the armamentarium of free flaps in facial, nasal and oral reconstructions.

11:16

SAFETY AND PERFORMANCE OF EARFOLD (NITINOL) IMPLANT FOR CORRECTION OF PROMINENT EARS - A CASE SERIES

Norbert KANG

*Royal Free Hospital, London, United Kingdom***Introduction**

The earFold implant is a new treatment for prominent ears, described previously in a first-in-human pilot study published in 2015. We now describe some aspects of the performance and safety of the earFold implant in routine clinical use.

Materials & Methods

This is a retrospective case series of patients treated with the earFold implant between February 2013 and September 2014. Outcomes were assessed using the helical-mastoid (H-M) distance and adverse event (AE) reports. Aesthetic outcomes and patient satisfaction were not formally assessed in this study. Follow-up is on-going.

Results

Seven surgeons used 1200 earFold implants to treat 403 patients (ages 7-70 years, 62% male, mean H-M distance: 27 mm/ear [range: 15-40 mm]). Most patients needed 2 implants per ear. All patients were invited to return for follow-up but only 145 patients (36%) returned for follow-up at a mean of 7.7 months [range: 1-34 months]). The mean H-M distance immediately after treatment was 18 mm per ear (range: 10-29 mm; mean change from baseline: -9 mm [-33%]), which was maintained at the final follow-up visit (-9.5 mm [-35%]). All patients experienced post-operative pain, swelling, and bruising that resolved within 7 to 14 days without intervention. AEs requiring intervention affected 39 (9.7%) patients; these included implant revisions (n=17 [4.2%]; most often due to implant visibility), skin erosion over the implant (n=15 [3.7%]), and infection (n=7 [1.7%]). AEs such as bleeding, recurrence of prominence, hematoma, or keloid scarring did not occur.

Conclusions

Treatment with earFold led to effective and stable correction of ear prominence. In routine use, AEs requiring intervention were relatively infrequent and easily resolved; most were the result of technical errors at implantation. Further studies are planned.

11:24

THE 'WIFI OTOPLASTY' A TOTALLY NEW CONCEPT FOR POSTERIOR APPROACH OTOPLASTY

Benoît HENDRICKX, Andrew GREENSMITH, Assaf ZELTZER,
Moustapha HAMDJ
Universitair Ziekenhuis Brussels, Brussels, Belgium

Introduction

Prominent ears are by far the most common congenital ear deformity. Many techniques have been described using one or a combination of 3 basic methods: cartilage cutting, cartilage weakening and cartilage sparing techniques. The ideal otoplasty technique should yield a natural correction of the deformity, with low recurrence rates and with little risk of complications.

Materials & Methods

A new cartilage weakening technique using closing wedge concentric microchondrectomies through an entirely posterior approach is presented. By concentrically scooping out partial thickness wedges of cartilage at the posterior surface in the pattern of the WiFi symbol (Fig. 1). In combination with Mustadé stitches using non-resorbable braided sutures, very thick cartilage can be shaped into a well-formed athihelix (Fig.2). A posteriorly based desepithelialized skin flap prevents suture palpability.

Results

200 patients were operated for bilateral otoplasty using this 'WiFi' technique. There were no major complications such as anterior skin necrosis and no returns to theatre for infections or haematomas. 3 patients (1,5%) had complete recurrence of the deformity and 10 patients (5%) had to undergo a minor revision for recurrence at the upper pole. 5 patients (2,5%) have had exposure of the end of the permanent upper pole schapho-temporal suture more than 3 months after surgery requiring simple outpatient suture trimming/removal without any recurrence of results. Palpable or bridging sutures were present upon clinical examination in 10 patients (5%) but did not require revision surgery.

Conclusions

Here, we describe a straightforward, safe and reliable technique for otoplasty with no need for extensive dissection, which is applicable to various degrees of deformity. Completely opposite to the Stenström principle, we describe a technique that makes cartilage warp towards the injured side. This entirely posterior technique yields natural results as well as very low recurrence rates even in patients with extremely thick cartilage.

**11:32 THE KEYSTONE PERFORATOR ISLAND FLAP (KPIF)
AS AN ALTERNATIVE RECONSTRUCTIVE OPTION FOR
PARTIAL THICKNESS ALAR DEFECTS UP TO 1.5 CM.**

Epameinondas KOSTOPOULOS, Christos AGIANNIDIS,
Petros KONOFAOS, Grigorios CHAMPSAS, Vincent CASOLI
Athens University Medical School, Athens, Greece

Introduction

The ala is a unique landmark of the nose disposing aesthetic and functional properties. The head and neck area is the main site of appearance of nonmelanoma skin cancer. One third of them are located in the nose with an alar preponderance compared to other nasal subunits. Correction of alar defects is a challenging reconstructive task. The keystone island perforator flap (KPIF) was introduced as an alternative in nasal reconstruction by senior authors. In the present case series KPIF application is introduced into the alar subunit as an alternative, versatile and reproducible reconstructive option, even for the novice Plastic Surgeon.

Materials & Methods

From December 2014 to October 2016 patients presenting partial thickness alar defects (≤ 1.5 cm) secondary to tumor extirpation, sustained reconstruction with different types of KPIF.

Results

A total of 64 patients (mean age of 72 years) were treated with various types of KPIF. A male preponderance was noted (34/64 or 53.1%). The mean diameter of the defect was 1.52 cm. The vast majority of reconstructions concerned a type I KPIF (30/64 or 46.9%), followed by a type IV (24/64 or 37.5%). Sometimes an upward alar retraction was noted. A minimal rim wedge excision was performed (≤ 3 mm) using counterbalancing correcting sutures. All flaps survived without any sign of venous congestion, while the rim healed uneventfully. The mean follow-up period was 8 months.

Conclusions

KPIF was introduced as a single stage alternative reconstructive option for partial thickness alar defects, completing author's experience with this flap into such a challenging and aesthetically critical anatomic area.

**11:40 OUR EXPERIENCE OF TOTAL NASAL RECONSTRUCTION
IN A MULTI STAGE PROCEDURE WITH A RADIAL
FOREARM FLAP/ RIB CARTILAGE GRAFTS AND A
PARAMEDIAN FOREHEAD FLAP**

Sebastian HAACK, Jens NEUMANN, Helmut FISCHER, Wolfgang GUBISCH *Marienhospital Stuttgart, Stuttgart, Germany*

Introduction

Total nasal reconstruction is one of the most challenging surgical procedures in plastic surgery. The goal is to reconstruct a natural and inconspicuous appearance as well as a good functioning nose.

The reconstruction includes the restoration of the lining, the framework and the cover. This article will demonstrate our experience with a multistage reconstructive concept. Thereby the radial forearm flap is used in 21 cases to restore lining. For framework reconstruction rib cartilage/bone grafts are used. The cover is restored with the paramedian forehead flap with or without forehead expansion.

Materials & Methods

We will demonstrate our philosophy for the design of the forearm flap. Actually we are using two different designs and the specific indications are discussed. Different aspects of framework reconstruction will be demonstrated and explained. This includes modifications of the central framework as well as the reconstruction of the sidewalls. Concerning the cover we will explain the advantages and disadvantages of expansion of the forehead.

We also will discuss the observed complications such as lining loss, framework infection and cover problems. Our salvage strategies are demonstrated.

Results

Our results will show that natural looking and sufficiently breathing noses can be reconstructed with autologous tissue. In general we had to perform 5-8 operations to achieve a satisfying result. None of our patients regretted the reconstruction, although in some cases the overall process took more than 6 months.

Conclusions

Total nasal reconstruction is a very challenging and sometimes frustrating surgical task. But it is the core idea of plastic surgery: to restore natural appearance as well as function. The thankfulness of the patients is the motor to keep on performing this demanding surgical procedure. One goal of the future must be to reduce complication rates and thereby gain more safety for the patients.

11:48 THE IMPORTANCE OF SUBCUTANEOUS FAT AND FASCIA EXCISION IN TIP CONTOURING

Mariam ISMAIL, Taher ISMAIL, Ahmed ISMAIL, Karima ISMAIL
Kasr El-Aini Hospitals, Cairo University, Cairo, Egypt

Introduction

Tip contouring in cases of fatty, bulbous, and boxy tips is a challenge. Occasionally, the skin of the tip may not follow the underlying corrected cartilaginous framework. Accordingly, we conceived the idea of excising fatty layer and/ or fibrous tissue layer from under-surface of skin covering the tip, thus leading to a softer resilient skin delineating the underlying corrected framework.

The aim of this study is to prove clinically and histologically the importance of excision of tissue underlying the tip for better tip contouring.

Materials & Methods

20 cases with ill- defined, asymmetrical bulbous or boxy tips were studied. Closed rhinoplasty was used in all patients. The tip cartilaginous framework was addressed by either; lower lateral cartilage excision, tip contouring sutures and/or tip grafts.

Excision of fatty tissue and/or fibrous tissue layer from underlying surface of skin covering the tip, down to the dermis leaving a thin areolar tissue layer on its under-surface, starting with the right side. Both sides were compared, then followed by excision of the same layer to the same depth on the left side. Proper adequate hemostasis was done. Excised specimens were sent for histological examination.

Results

Intra-operatively, excision of subcutaneous fat and fascia: tip becomes resilient and soft accepting the new cartilaginous framework.

Histologically, cases with boxy tips and bulbous tips with strong cartilage: higher content of fibrous tissue than fatty tissue (pseudo capsule like). While cases with fatty bulbous tips and weak cartilages: higher content of fatty tissue than fibrous tissue.

Failure of excision renders attempts of tip contouring and refinements difficult.

Conclusions

Tip contouring and definition is not merely achieved by attacking cartilaginous framework but also by excision of soft tissue underlying the skin covering the tip as proved clinically and histologically.

11:56 TIP-ORIENTED CLOSED RHINOPLASTY BUILT ON SEPTOCOLUMELLAR SUTURE AND A NEW CAUDAL SEPTAL GRAFT TECHNIQUE

Erdem TEZEL, Burak ERSOY
Marmara University School of Medicine, Istanbul, Turkey

Introduction

In achieving the desired shape and position of the nasal tip during closed rhinoplasty the septocolumellar suture functions as the major determinant together with the caudal portion of the septal cartilage, which has a significant influence on the versatility of the septocolumellar suture. The purpose of this study is to present the analysis of the indications, the technical steps and the advantages of caudal septal graft and septocolumellar suture utilization in closed rhinoplasty.

Materials & Methods

The septocolumellar suture with or without the caudal septal graft combination procedure has been performed in 2286 patients via a closed rhinoplasty approach. Intraoperatively, the septal cartilage at hand was thoroughly evaluated and one of the 5 types of caudal septal grafts was utilized when necessary. Following the establishment of a strong and straight septal cartilage with sufficient height and length, four different septocolumellar sutures in a specific order were used to modify the relationship between the lower lateral cartilages and the nasal septum.

Results

Of the 2286 cases 1837 (80.3%) were primary and 449 (19.7%) secondary rhinoplasties, which have been followed up for 9 to 48 months. The caudal septal graft was combined to the septocolumellar suture in 621 patients (27.1%). Of the caudal septal grafts, 69.7% were used for primary rhinoplasty cases, and 30.3% for secondary rhinoplasties. At the 18th month postoperatively, tip projection was found to be satisfactory for 98% of the patients.

Conclusions

The septocolumellar suture combined with caudal septal graft in closed rhinoplasty substantially facilitates the achievement of a cosmetically and functionally pleasing end-result, bringing the solution for a wide array of problems such as short nose, supratip deformity, nasolabial angle change, or columellar bowing.

12:08

A PREDICTABLE APPROACH FOR OSTEOTOMY IN RHINOPLASTY: AN INNOVATIVE CONCEPT OF OPEN EXTERNAL OSTEOTOMY

Jesus OLIVAS, Alvaro CABELLO, Bernardo HONTANILLA
Clinica Universidad de Navarra, Pamplona, Spain

Introduction

Nasal osteotomies are a cornerstone step for closing an open roof deformity after dorsal hump surgery. Notwithstanding, the optimal method of nasal osteotomy remains controversial, as evidenced by the variety of approaches with no consensus between authors. We proposed a new way to perform both medial and lateral osteotomies under direct vision.

Materials & Methods

The procedure begins as a standard open rhinoplasty, elevating the cutaneous flap in a supraperichondrial plane, and it continues with an extra dissection from the nasal hump to the lateral borders in a subperiosteal plane by means of direct visualization. Thereafter, cartilaginous and bony hump can be reduced. Finally, under direct vision, osteotomies can be performed to close the open roof deformity. Normally, a low-to-low lateral osteotomy is carried out combined with a medial oblique osteotomy. The nasal packing is maintained for 24 hours while pad for 20 days.

Results

After cadaveric studies and once reporting the new technique clinically with successful results in 16 patients, our team has observed important advantages. By elevating the superficial periosteum under direct vision, it remains integral, diminishing the soft tissue injury and postoperative bleeding and blood collection. Furthermore, preservation of periosteum ensures stabilization of the mobilized nasal bones and it also can camouflage any minor bony irregularities. Other important benefits include conservation of nasal muscle, angular vasculature, and nasal mucosa, which allow less postoperative ecchymosis and less risk of synechia and lacrimal sac injury. No nasal bone alterations have been reported for 1 year after the intervention. All patients were highly satisfied with the aesthetic result.

Conclusions

Osteotomies under direct vision provide more predictable control and precision than blind procedures, making this procedure more reliable and easier for both novel and experienced surgeons. This technique is safe, easily reproduced, and provides excellent results, thus it could be a new valuable tool for rhinoplasty.

Session 5

13:46-15:22

BREAST

Moderators

Mauro SCHIAVON

Azienda Sanitaria Universitaria Integrata di Udine, Udine, Italy

Thomas SCHOELLER

Marienhospital Stuttgart, Stuttgart, Germany

13:46 BREAST-IMPLANT ASSOCIATED ANAPLASTIC LARGE CELL LYMPHOMA (BIA-ALCL): RELATIVE AND ABSOLUTE RISK ASSESSMENT BASED ON 100% OF ALL NATIONAL CASES OF BIA-ALCL IN THE NETHERLANDS

Mintsje DE BOER, René DAN DER HULST, Floor VAN LEEUWEN, Daphne DE JONG, Hinne RAKHORST
Maastricht University Medical Centre, Maastricht, The Netherlands

Introduction

BIA-ALCL is a rare, but serious complication of breast implant surgery. Over the past decade, a rapidly increasing incidence is reported in patients with breast implants both for cosmetic and reconstructive purposes after breast cancer surgery. Based on the unique national-covering pathology registration system, we could retrieve all Dutch BIA-ALCL patients over a 26-year period allowing optimized clinic-pathological evaluation and unbiased risk-assessments.

Materials & Methods

All BIA-ALCL cases from 1990-2016 were identified in the Dutch National Pathology Registry (PALGA). Complete clinical information was retrieved and detailed pathological review was performed. Using a case-control design, relative risk could be assessed. Absolute risk estimates were based on comprehensive sales data (2000-2016) and on the prevalence of breast implants in the Dutch Breast Cancer Screening Program.

Results

In this case-control study, 32 BIA-ALCL cases were identified (19 seroma-associated, 13 infiltrating-type). Median age at diagnosis was 55 years (29-73), median interval after implantation 12 years (1-34 years).

The relative risk for development of BIA-ALCL was 77,5 (95%-CI: 10,4-578, $P < 0.001$), while the absolute risk for BIA-ALCL was estimated at 1:25.000 in patients with breast implants.

26 patients presented with BIA-ALCL stage I/II and all remained in complete remission after explantation and capsulectomy. 6 patient presented with disseminated disease and were treated with multiple agent chemotherapy. Two patients died due to aggressive disease progression. All patients had textured implants. Implants of various manufacturers were proportionally observed in relation to their market share without specific associations.

Conclusions

Based on a long-term, national-covering cohort, we could refine the risk estimates of BIA-ALCL to 1:25.000 patients with implants. The 77.5-times increased relative risk, supports the strong associative relation between breast implants and the development of BIA-ALCL. No preferential associations with specific implant products were noted. A pro-active attitude of national regulatory authorities regarding registration of use and complications of breast implants is urgently needed.

13:54 RELIABILITY OF POSITIONING ALGORITHM OF DIEP FLAP SENTINEL SKIN PADDLE COMBINED TO STANDARDIZED MONITORING PROTOCOL FOR EARLY DETECTION OF VASCULAR IMPAIRMENTS

Michail SOROTOS, Rosaria LAPORTA, Benedetto LONGO,
Fabio SANTANELLI DI POMPEO
Sapienza University of Rome, Rome, Italy

Introduction

Clinical examination for flap monitoring becomes problematic in buried free-tissue transfer. The reliability of a positioning algorithm of DIEP flap sentinel skin paddle (SSP) combined to standardized monitoring protocol including bedside-assessment of capillary refill, temperature, swelling, bleeding, flap color and hand-held Doppler examination, is presented.

Materials & Methods

Monitoring personnel attended a training course organized by hospital management and plastic surgery unit. Skin paddle (SP) position was preoperatively drawn according to incision pattern, to avoid additional scar. SSP was positioned along the scar in radicalization of previous upper-quadrant lumpectomy/quadrantectomy; replaced nipple-areola complex (NAC) in skin-sparing mastectomy (SSM) type I-II-III; was positioned between wise-pattern branches in SSM-IV; between upper/lower branches in SSM-V; at the inframammary fold in nipple-sparing mastectomy, and in upper/lower branches in the omega/inverted omega incision. 347 consecutive DIEP flaps breast reconstructions were retrospectively stratified according to SP-size into Group-A, including 131 SSP (i.e. =4cm) used for monitoring only, and small-SP (i.e. >4cm) used also for NAC reconstruction, and Group-B, including 216 large-SP comprising the whole flap. Microvascular complication and flap-salvage rates were analyzed as categorical variables while time until take-back as continuous variable using respectively Chi-squared and Mann-Whitney U tests. P-value ≤ 0.05 was deemed as statistically significant.

Results

Sixteen take-backs (4.6%) were identified, 3 in Group-A (2.29%) and 13 in Group-B (5.5%). There were no significant differences between the groups concerning microvascular complication rate ($p=0.108$) and time until take-back ($p=0.521$). Thirteen flaps were salvaged (81.25%), 2 among 3 (66.7%) from Group-A and 11 among 13 (84.6%) from Group-B. Flap-salvage rate resulted independent on SP-type ($p=0.473$). Neither false positive nor negative were observed.

Conclusions

DIEP flap SSP positioning algorithm combined with standardized monitoring, without need of adjunctive expensive monitoring tests, resulted reliable for early detection of perfusion impairment with successful free-flaps salvage-rate, independently of SP size.

14:06 PRIOR ABDOMINAL SURGERY AND BILATERAL FREE FLAP BREAST RECONSTRUCTION OUTCOMES: DO ABDOMINAL SCARS AFFECT BILATERAL FLAPS MORE THAN UNILATERAL FLAPS?

Dmytro UNUKOVYCH, Edward J. CATERSON, Matthew J. CARTY, Stephany A. CATERSON

Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts, USA

Introduction

The incidence of bilateral mastectomies is increasing along with the rates of breast reconstructions. A substantial number of patients will present with abdominal scars after Cesarean section, laparoscopy etc. The aim of this study was to evaluate the impact of prior abdominal scars on complication rates in abdominal bilateral free flap breast reconstruction.

Materials & Methods

All consecutive patients with autologous free flap breast reconstruction between 2007 and 2014 were eligible. The relevant demographic and clinical data was prospectively collected into a study-specific database. Complications and reoperations were prospectively registered after postoperative outpatient visits.

Results

Overall, 493 patients underwent abdominally based breast reconstruction during the study period: unilateral (n=250, 50.7%), or bilateral (n=243, 49.3%). In the bilateral group, the abdominal scar locations were Pfannenstiel (n=73, 30.1%), midline (n=16, 6.6%), lower oblique (n=17, 7.0%), upper oblique (n=5, 2.1%), and laparoscopic (n=69, 28.4%). Four (1.7%) flap failures (including one converted to pedicled TRAM flap) were registered, all occurring in patients from the scar group: three with Pfannenstiel incision and one patient with prior laparoscopy. Fat necrosis/partial flap necrosis, infection and seroma occurred in 14 (5.9%), 8 (3.4%) and 5 (2.1%) patients, respectively, and no differences between the scar groups were identified. The presence of Pfannenstiel scar was associated with higher risk of hematoma at the recipient site when compared to no scar group (13.7% vs. 2.2%, p=0.006).

Conclusions

Surgical outcomes of bilateral reconstructions in patients with abdominal scars are generally comparable to ones in patients without prior surgery, however some problems have been identified.

14:14 TIME-DEPENDENT FACTORS IN DIEP FLAP BREAST RECONSTRUCTION

Fabio SANTANELLI DI POMPEO, Rosaria LAPORTA, Benedetto LONGO, Michail SOROTOS, Vittoria AMOROSI
Sapienza University of Rome, Rome, Italy

Introduction

Total length of breast reconstruction with DIEP flap transfer, from skin-incision to closure, was recorded looking for the impact of the different variables on the operative-time (OT).

Materials & Methods

Four-hundred-four unilateral reconstruction (336 immediate, 68 delayed) performed by a single surgeon between 2004 and 2016 were retrospectively analyzed from a prospective data base. Age, weight, height, body mass index (BMI), nulliparity or pluriparity condition, flap weight, mastectomy type, flap angiosomes, number of perforators and of venous anastomoses, recipient vessels selection, reconstruction timing, contralateral symmetrization and a dedicated anesthesiologist were evaluated as possible predictors on OT. A p-value <0.05 was considered as significant.

Results

Mean OT was 289-minute (range, 150-550 minutes). At univariate-analysis, for each increment of BMI-value and patient weight the OT increased respectively of 3.5- and 1.4-minute ($p<0.001$). Skin-sparing mastectomy (SSM) ($p=0.025$), number of perforator and of venous anastomoses ($p<0.001$) negatively influenced the OT while nipple-sparing-mastectomy (NSM) reduced the OT of 22.7-minute ($p=0.012$). Circumflex scapular vessels as recipient reduced the OT of 75.4-minute while the internal mammary vessels (IMV) increased the OT of 55.8-minute ($p<0.001$). Anesthesiologist and surgeon learning-curves (LC) reduced OT respectively of 39.63-minute and of 13-minute for every year ($p<0.001$).

At multivariate-regression, surgeon learning-curve was a negative predictor while SSM, number of perforators, the superficial epigastric vein, IMV and flap weight were positive predictors ($p<0.001$).

Conclusions

In DIEP flap surgery efficiency is optimized by LC meaning systematic approach for surgery, while the increase of flap weight, number of perforators and number of vein anastomosis negatively influence the OT.

14:26 THE INTERNAL MAMMARY ARTERY PERFORATORS - SAFE AND RELIABLE USAGE AS RECIPIENT VESSELS IN MICROVASCULAR BREAST RECONSTRUCTION

Felix Hubertus VOLLBACH, Christoph HEITMANN, Hisham FANSA
Gemeinschaftspraxis Heitmann Fansa

Introduction

The usage of internal mammary artery perforators (IMAPs) has already been described in autologous breast reconstruction, however they are not yet considered standard recipient vessels. It remains unclear if these vessels can be safely used in large flaps after radiation therapy or in delayed breast reconstruction.

Materials & Methods

Over a 2,5 year period (January 2014 ? July 2016), 640 free flaps for autologous breast reconstruction were performed on 522 patients by 2 surgeons (S1 and S2). In a retrospective analysis, time of reconstruction, ischemia time, flap weight, diameter of couplers and complications were analyzed. All 640 flaps were compared in a subset with regard to the 2 surgeons: S1 who always used the IMA as a recipient vessel and S2 who attempted IMAP use if possible.

Results

Of all 640 flaps, 528 were abdominal flaps and 112 flaps were from the upper thigh. Three hundred eighty two cases were immediate reconstructions, and 130 were delayed procedures. In 128 cases, implants were converted to autologous tissue. In 141 cases, the IMAPs were used; of these, 105 were immediate and 19 were delayed reconstructions, and in 17 cases, implants were removed. Thirty percent of all anastomoses to IMAPs had previous radiation therapy. The overall flap failure rate was 2.3%. In only one of these cases, the IMAP was used. S1 never used the IMAP, and S2 used the IMAP in 38% of all of his flaps. IMAPs were used in 22% of all 640 free flaps.

Conclusions

The IMAPs were safely used in all kinds of reconstructions including after radiation therapy, with no negative effects on mastectomy skin flap perfusion. Using the IMAPs as recipient vessels is a further step towards simplifying microsurgical breast reconstruction.

**14:34 EVALUATING THE SAFETY OF ABDOMINALLY BASED
BREAST RECONSTRUCTION FOLLOWING ABDOMINAL
SURGERY**

Rachel LENTZ, Merisa PIPER, William HOFFMAN, Hani SBITANY
University of California San Francisco, San Francisco, USA

Introduction

The popularity of abdominally based free flap breast reconstruction has grown tremendously over the past decade. However, controversy persists regarding the safety and efficacy of performing these operations in individuals with a prior history of abdominal surgery.

Materials & Methods

We performed a retrospective review of all patients who underwent autologous abdominally based free flap breast reconstruction between 2008-2016. Patient demographics, operative details, and postoperative complications were assessed. All patients were required to have at least 3 months of follow up for study inclusion.

Results

We identified 132 patients who underwent 186 abdominally based free flaps. Our study group comprised of 70 patients (104 breast reconstructions) with a prior history of abdominal surgery. We compared their outcomes to our control group of 57 patients (73 breast reconstructions) with no prior history of abdominal surgery. Of note, five patients (9 breast reconstructions) underwent simultaneous gynecologic surgery at the time of their free flap harvest, and these patients were excluded from analysis. The groups were appropriately matched with respect to BMI, race/ethnicity, smoking status, and comorbidities. Most common prior surgeries included: cesarean section (25), tubal ligation (18), open TAH-BSO (16), and lap BSO (15). We found no difference in overall abdominal complications requiring surgical intervention (14.5% vs 15.8%, $p=0.84$). Incidence of abdominal bulge was greater in the study group (11.4% vs 3.5%, $p=0.099$), however this was not statistically significant. Breast related complications were also similar between the two groups. There were no total flap losses in either group. Rates of fat necrosis requiring excision were 15.4% vs 15.1%, $p=0.954$.

Conclusions

Prior history of abdominal surgery does not significantly increase complications in abdominally based free flap breast reconstruction. These patients should still be considered candidates for reconstruction.

14:46 INCREASED RISK OF RECURRENCE ASSOCIATED WITH TUMOR DEPENDENT RISK FACTORS FOR BREAST CANCER PATIENTS AFTER DIEP FLAP RECONSTRUCTION AND LIPOFILLING. A MATCHED COHORT STUDY WITH 200 PATIENTS

Sonia FERTSCH, Mazen HAGOUAN, Oliver THAMM, Katrin SEIDENSTÜCKER, Christoph ANDREE

SANA Hospital Düsseldorf Gerresheim, Düsseldorf, Germany

Introduction

The Deep Inferior Epigastric Perforator (DIEP)-flap is nowadays a common approach for breast reconstruction in breast cancer patients after mastectomy. Afterwards, a lipofilling is often performed to optimize the aesthetic outcome. Despite its usage worldwide, there is not yet a clear consensus on its oncological safety. In addition, certain patients might carry individual risk factors that could potentially work in synergy with the lipoaspirate and increase the risk of cancer recurrence. This study identifies potential risk factors in order to improve patient selection for lipofilling procedures.

Materials & Methods

Matched cohort study- The survival rate of 100 patients that underwent lipofilling after their DIEP-flap reconstruction was compared retrospectively with 100 matched control patients that did not undergo lipofilling after their flap surgery. Further patients were subdivided according to their risk factors, which were categorized as Patient-Dependent Factors (PDFs) and Tumor-Dependent Factors (TDFs). For all groups, disease-free survival and hazard ratios were compared by the means of the log-rank test and the univariate Cox proportional hazard regression models respectively, to identify potential risk factors that may increase the recurrence rate.

Results

Median follow-up was 76.5 months from the mastectomy, and 31 months from the startpoint to the end of follow-up. Seven and eleven patients had a recurrence in the lipofilling and control group, respectively, presenting with comparable disease-free survival rates and an insignificant Hazard Ratio [HR=0.57 (95% confidence interval: 0.22-1.47, $p=0.24$)]. According to subgroup survival analysis, lipofilling increased the risk of recurrence in women with a positive nodal status ($p=0.035$) or a high-grade neoplasia ($p=0.049$).

Conclusions

No general increased recurrence risk was observed between the lipofilling and control group, yet the subgroup analysis showed that patients with a positive nodal status or a high-grade neoplasia were negatively influenced by the usage of lipofilling. Further studies with larger number of cases are required to validate our conclusions, yet patients belonging to the risk profile should be handled with special attention.

**14:54 INFERIOR GLUTEAL ARTERY PERFORATOR (IGAP)
FLAP VERSUS PROFUNDA ARTERY PERFORATOR (PAP)
FLAP AS A SECOND CHOICE PERFORATOR FLAP FOR
BREAST RECONSTRUCTION**

Andrea FIGUS, Sergio RAZZANO, Declan MURPHY, Elaine SASSOON
Norfolk and Norwich University Hospital, Norwich, United Kingdom

Introduction

IGAP flap is a well known flap used in autologous breast reconstruction. Difficult dissection, short pedicle, small caliber of vessels, change of patient position in theatre and very firm fat were the most reported drawbacks. PAP flap is increasing popularity as a second-choice flap. The aim of the study was to compare and analyze indications, outcomes and complications of IGAP and PAP flaps in order to evaluate which is the most suitable second choice perforator flap for breast reconstruction.

Materials & Methods

Over a period of 10 years, 70 second choice autologous breast reconstructions (IGAP and PAP) were performed by two senior breast reconstruction consultants. Patient demographics, perioperative and post-operative patients' data were retrospectively collected. Patients were divided in two groups for comparison. Continuous variables were skewed and compared with the Mann-Whitney U-Test. Categorical variables were compared with Chi Square or Fisher's Exact test.

Results

Forty-three IGAP reconstructions (61.4%) and 27 PAP flap breast reconstructions (38.6%) were performed. There were no notable baseline differences including cup size.

The mean difference in operative time was not significantly different. Two cases of intra-operative venous congestion in IGAP flaps were reported. One partial and 4 total IGAP flap necrosis occurred. No flap complications were noticed in the PAP group.

Ten women in total returned to theatre for postoperative complications, all in the IGAP group. No differences in the rates of revision surgery between the two groups were noted. Significant lesser ischemia time, better flap outcomes, less number of complications was calculated in favour of PAP flap group.

Conclusions

PAP flap breast reconstruction showed less peri and post-operative complications, shorter flap ischaemia time and reduced incidence of flap failure. PAP flap is a better second-choice perforator flap breast reconstruction compared to IGAP flap.

15:06 SF-36 SHOWS INCREASED QUALITY OF LIFE FOLLOWING COMPLETE REDUCTION OF POSTMASTECTOMY LYMPHEDEMA WITH LIPOSUCTION

Matthias HOFFNER, Emma HANSSON, Jonas MANJER, Thomas TROËNG, Hakan BRORSON

Blekinge Hospital, Karlskrona, Sweden

Introduction

Arm lymphedema after breast cancer surgery affects women both from physical and psychological points of view. Lymphedema leads to adipose tissue deposition. Liposuction and controlled compression therapy (CCT) reduces the lymphedema completely. Evaluation of health-related quality of life (HRQoL) following surgery using the SF-36 questionnaire has previously not been investigated.

Materials & Methods

Sixty female patients with arm lymphedema were followed for a 1-year period after surgery. Excess arm volumes were measured using water plethysmography. Aspirate volumes were calculated. The 36-item short-form health survey (SF-36) was used to assess health-related quality of life (HRQoL). Patients completed the SF-36 questionnaire before liposuction, and after 1, 3, 6, and 12 months.

Results

Preoperative excess arm volume was $1365 \pm 73\text{mL}$. Complete reduction was achieved after 3 months and was sustained during follow-up. The adipose tissue volume removed at surgery was $1373 \pm 56\text{mL}$. SF-36-scores: One month after liposuction, better scores were found in mental health. After 3 months, an increase in physical functioning, bodily pain, and vitality was detected. After 1 year, an increase was also seen for social functioning. The physical component score was higher at 3 months and thereafter, while the mental component score was improved at 3 and 12 months. Compared with SF-36 norm data for the Swedish population, only physical functioning showed lower values than the norm at baseline. After liposuction, general health, bodily pain, vitality, mental health, and social functioning showed higher values at various time points.

Conclusions

Liposuction of arm lymphedema in combination with CCT improves patients HRQoL as measured with SF-36. The treatment seems to target and improve both the physical and mental health domains.

15:14 THE IMPACT OF AUTOLOGOUS BREAST RECONSTRUCTION ON PAIN, LYMPHEDEMA, ADL, ANXIETY AND DEPRESSION

Christian BONDE, Jens HOEJVIG, Signe STANN THORUP, Niels KROMAN, Kenneth GEVING ANDERSEN

Copenhagen University Hospital, Copenhagen, Denmark

Introduction

Mastectomy can cause persistent pain, lymphedema and negative psychological impact. Autologous breast reconstruction (ABR) is a complex reconstructive procedure and it is well known that extensive surgery can cause long-term negative side effects such as pain. ABR offers the most cosmetically satisfying and natural looking reconstructions and previous literature has suggested an added beneficial effect of ABR on both pain, lymphedema and activity of daily living. The aim was to examine the effect of ABR on the above parameters in a matched case-control questionnaire study.

Materials & Methods

Patients included were treated with or without reconstruction after mastectomy for primary breast cancer (2004-2012). Patients treated with a delayed unilateral free abdominal flap (DIEP or MS2-TRAM) were extracted from the microsurgical database. Matching controls were identified in the Danish Breast Cancer Cooperative Group database.

Controls were randomly selected by the following criteria: age at surgery +/-3 years, same mastectomy year, same adjuvant treatment and same lymph node status. Patients with previous cancer or metastases/recurrence were excluded. The response rate was 76% (554/731) for mastectomy and 84% (214/256) for ABR. Using logistic regression unadjusted odds ratios (OR) and 95% confidence intervals (CI) were calculated. Significance was set at 5%. Possible selection bias between cases and controls was assessed.

Results

We found no significant difference in pain between patients who had undergone ABR (OR 0.77, CI 0.52-1.14, P= 0.18) and no significant difference regarding lymphedema (OR 1.23, CI 0.84-1.82, P=0.28). ABR does not reduce patient anxiety (OR 0.70, CI 0.46-1.07, P=0.1) nor does it affect depression (OR 0.46, CI 0.19-1.14, P=0.08) and activity of daily living (ADL) (OR 0.93, CI 0.67-1.31, P=0.70)

Conclusions

Contrary to previous reports, we find that ABR offers no beneficial effect on pain lymphedema anxiety depression and ADL. Neither does it increase the prevalence of these symptoms.

Session 6

15:52-17:28

FACE

Moderators

Benoît LENGELÉ

Cliniques Universitaires Saint Luc, Brussels, Belgium

Nicole LINDENBLATT

Zurich University Hospital, Zurich, Switzerland

15:52 PLATYSMA MOTOR NERVE TRANSFER FOR RESTORING MARGINAL MANDIBULAR NERVE FUNCTION

Andrés RODRIGUEZ, David JENSSON, Wolfgang WENINGER,
Chie-Han John TZOU
Uppsala University Hospital, Uppsala, Sweden

Introduction

Injuries of the marginal mandibular branch (MMN) of the facial nerve result in paralysis of the lower lip muscle depressors and an asymmetrical smile. Herein we investigate the anatomical technical feasibility of a new nerve transfer, the transfer of the platysma motor nerve (PMN) to the MMN for restoration of lower lip function, and we present a clinical case where this nerve transfer was successfully performed.

Materials & Methods

Ten adult fresh cadavers were dissected. Measurements included the number of MMN and PMN branches, the maximal length of dissection of the PMN from the parotid and the distance from the anterior border of the parotid to the facial artery. PMN reach for direct coaptation to the MMN at the level of the crossing with the facial artery was assessed. We performed histomorphometric analysis of the MMN and PMN branches.

Results

The anatomy of the MMN and PMN was consistent in all dissections, with an average number of sub-branches of 1.5 for the MMN and 1.2 for the PMN. The average maximal length of dissection of the PMN was 46.5 mm, and in every case tension-free coaptation with the MMN was possible. Histomorphometric analysis demonstrated that the MMN contained an average of 3866 myelinated fiber counts per mm, and the PMN contained 5025. After a 3-year follow-up of the clinical case, complete recovery of MMN function was observed, without the need of central relearning and without functional or aesthetic impairment resulting from denervation of the platysma muscle.

Conclusions

PMN to MMN nerve transfer is an anatomically feasible procedure for reconstruction of isolated MMN injuries. In our patient, by direct nerve coaptation a faster and fully recovery of lower lip muscle depressors was achieved without the need of central relearning because of the synergistic functions of the PMN and MMN functions and minimal donor site morbidity.

16:04 CLINICAL OUTCOME COMPARISON OF THE CROSS-FACE NERVE GRAFT WITHIN ITS INDICATIONS FOR USE

Martinus VAN VEEN, Pieter DIJKSTRA, Paul WERKER
University Medical Centre Groningen, Groningen, The Netherlands

Introduction

A cross-face nerve graft (CFNG) is used in facial reanimation, either as a solitary procedure or in combination with muscle transplantation or cranial to facial nerve anastomosis. We studied outcomes of CFNGs to analyse clinically observed differences in CFNG outcomes with different indications for use and to assess whether the addition of a CFNG to another cranial to facial nerve anastomosis is of benefit.

Materials & Methods

All patients treated with a CFNG or hypoglossal-to-facial nerve anastomosis in our region between 1995 and 2015 were initially included. Pre- and postoperative photographs were analysed with the FACE-gram software and the May classification. Patients treated with a hypoglossal-to-facial nerve anastomosis, with or without a concurrent CFNG, were also analysed based on the presence of a spontaneous smile and asked to complete a valid disease-specific quality-of-life questionnaire (the Facial Clinimetric Evaluation scale).

Results

Forty patients were included, from an initial inclusion of 64 patients. Twenty-four patients were excluded due to a lack of pre- and postoperative data. In all patients combined, postoperative improvement of facial movement was seen. Gracilis muscle transplantation demonstrated a trend towards better results compared to a solitary CFNG or a CFNG concurrent to a hypoglossal-to-facial nerve anastomosis. When comparing hypoglossal-to-facial anastomosis with and without a concurrent CFNG, no statistically significant difference was found. However, a marked difference in median quality-of-life scores (18.3 points) was found in favour of the addition of a CFNG.

Conclusions

This is the first study that demonstrates the differences in outcomes of CFNG depending on the type of reanimation procedure, with best results with gracilis muscle transplantation. Additionally, it shows a positive trend in disease-specific quality-of-life with the addition of a CFNG to a hypoglossal-to-facial nerve anastomosis.

16:12 THE HELSINKI FACE TRANSPLANTATION

Patrik LASSUS, Andrew LINDFORD, Jyrki TÖRNWALL, Jyrki VUOLA
Helsinki University Hospital, Helsinki, Finland

Introduction

We herein present the results of a 5-year programme: the face transplantation performed in Helsinki in February 2016, and the first in Scandinavia.

Materials & Methods

The patient had previously suffered a major lower and midfacial injury several years ago. He had earlier undergone 28 surgical procedures including 5 microvascular reconstructions. Following these conventional reconstructive attempts, the patient still had severe midfacial collapse, the neomaxilla and neomandible were not suitable for dental implants, and he had severe intraoral scarring. In addition, the patient had problems with drooling, speaking, swallowing, and breathing.

The face transplant included a LeFort II maxilla, angle-to-angle central mandible, anterior tongue and the floor of the mouth muscles, extensive oral mucosa, nose, midfacial muscles and the lower 2/3 of the facial and upper neck skin. Bilaterally, 3 branches of the facial nerve, hypoglossal nerves, and buccal nerves were coapted.

Results

The patient spent 9 days in Intensive Care, was decannulated after 17 days, resumed a full oral diet after 25 days, and spent 5 weeks in the ward. Motor recovery was first observed in the muscles innervated by the hypoglossal nerve at 3 months and facial nerve at 4 months. At 10 months, the patient has gained lip occlusion, can move all his mimic muscles and has partial sensory recovery.

Immunosuppression comprised induction with Thymoglobulin and a Tacrolimus-based triple therapy for maintenance. Immunosuppression side effects have consisted of elevated serum creatinine and mild hypertension. Surgical complications include a palatal fistula and partial maxillary bone loss. There have been no signs of rejection. The patient has coped well psychologically post transplantation.

Conclusions

We report promising preliminary outcomes following face transplantation in a patient for whom conventional reconstructive options were no longer feasible.

16:24 FACIAL CTA ANALYSIS: IS THERE A BETTER ALTERNATIVE?

McKay MCKINNON

University of Chicago Medical Centre, Chicago, Illinois, USA

Introduction

For ten years CTA has been aggressively promoted as an improvement in facial reconstruction for serious facial injuries, congenital defects and tumor sequelae. Partial loss of the nose and lip resulted in the first CTA in 2005 by a French team led by an oral surgeon and a hand surgeon. The patient died this year of complications of cancer and graft rejection. Has CTA proven to be a better option for most of these patients or is there a safer, more dependable reconstructive alternative to severe facial deformity? Also, who can best determine a patient's suitability for CTA?

Materials & Methods

A review of the approximately 35 facial allotransplantations performed worldwide since 2005 and their overall morbidity and mortality results, and the involvement, if any, of craniofacial trained specialists in their care are reviewed. A group of similar but unmatched facially disfigured patients treated by craniomaxillofacial surgery is reviewed.

Results

Craniofacial trained surgeons did not apparently participate in most decisions about prior facial CTA patients. In a similar craniofacial treated patient group, there were no deaths, no tissue rejections and no occurrence of cancer. Cost comparisons about CTA and craniofacial treated groups are not yet available.

Conclusions

Facial CTA over ten years has a mortality rate of approximately one in seven and high morbidity. A similar but unmatched cohort of patients treated by craniofacial surgery appear to fare better in terms of morbidity, mortality, costs and perhaps in their permanent aesthetic result. There is a need for re-examination of CTA as a 'standard' of care and of the selection of CTA candidates by non-craniofacial trained surgeons.

16:32 MR IMAGING AND VIA ORAL APPROACH FOR SURGICAL TREATMENT OF AN UNRECOGNIZED RETICULAR PERINEURIOMA IN TYPE 1 NEUROFIBROMATOSIS: AN UNIQUE CASE REPORT AND A REVIEW OF LITERATURE

Matteo ATZENI, Benedetto LONGO, Rosaria LAPORTA, Michail SOROTOS, Fabio SANTANELLI DI POMPEO
Sapienza University of Rome, Rome, Italy

Introduction

Reticular perineuromas (RPN) are a clinicopathologic subgroup of soft tissue perineuromas (STPN) with a benign course. Although chromosomal aberrations affecting the neurofibromatosis (NF) type 2 locus at chromosome 22 have been reported in many cases of STPN, perineuromas (PN) were to date associated with NF1 or NF2 only in three single cases. To our knowledge this is the first report of RPN occurring in a patient affected by NF1 and including pre operative MR imaging.

Case Report

A 29 year old male affected by NF1 was admitted to our Plastic Surgery Unit because of cutaneous and subcutaneous right lower eyelid, soft tissue left cheek and subcutaneous left metacarpal masses. His medical history included multiple neurofibromas resected two years ago. MR images confirmed an oval, smoothly marginated and well defined soft tissue mass of the left cheek with no adhesion to muscles and nerves and oral vestibular approach was performed to remove it. Excision of the left metacarpal mass as well as a full thickness resection and reconstruction by Dupuy-Detemps flap for the right lower eyelid mass were performed. Pathology report revealed that eyelid and metacarpal tumors were neurofibromatosis nodules, while the cheek mass was defined as RPN.

Conclusions

RPN is a rare benign lesion and surgical resection with margins free of neoplasm is typically curative. Compared to the other cases reported showing association between NF and STPN, our patient is the first under 30 years, he is the only to show a RPN developed into the cheek and no radiological imaging of RPN has been ever previously reported. Our case report suggests to pay attention in the case of subcutaneous tumors in patient affected by NF1, because a RPN could be diagnosed. An accurate histological and immunohistochemically analysis to discriminate it from malignant perineurioma can avoid more invasive surgery.

16:40 ANTERIOR RETROGRADE APPROACH TO THE MYOFASCIAL TEMPORALIS MUSCLE FOR ORBITAL RECONSTRUCTION

Daniele CERVELLI, Marzia SALGARELLO, Alessandro MORO
Policlinico Universitario Agostino Gemelli, Rome, Italy

Introduction

Orbital exenteration is a functionally and aesthetically disabling procedure. Several reconstructive options have been proposed through the years, ranging from prosthetic devices to local transposition flaps, to pedicled and free flaps. The Temporalis Myofascial Flap (TMF) is often considered the ideal solution for the reconstruction of the empty orbital cavity. In order to minimize psychological and aesthetic traumas on patients submitted to orbital exenteration, we developed a less invasive approach to harvest the TMF, avoiding the hemicoronal access: the 'anterior retrograde approach'. We used the same surgical incision done for the orbital exenteration, combined with releasing incisions. Our experience has shown that this approach has several advantages: rapid learning curve, reliability and reproducibility, reduction of intra-operative time and blood loss.

Materials & Methods

From March 2008 to April 2016 18 patients with malignant tumors involving the orbit underwent orbital exenteration and immediate reconstruction with TMF harvested with the anterior retrograde approach. Comparison of average blood loss and intra-operative time between the hemicoronal approach and the anterior retrograde approach was carried out by two tailed t-Student tests.

Results

The mean follow-up was 55.2 months (from 8 to 97 months). None of the patients experienced local or regional tumor recurrence. No partial or total flap failure was recorded. Comparison of the hemicoronal approach with the anterior retrograde approach showed a significant reduction of blood loss (from an average of 120 ml to 75 ml, $p < 0.05$) and operative time (from 55 to 32 min, $p < 0.05$).

Conclusions

This approach showed some favorable features over the traditional hemicoronal technique: significantly reduced blood loss and operative time, improved acceptance by patients, limited morbidity and hospitalization. It should be considered an alternative to the traditional approach in case of orbital reconstruction with TMF following exenteration.

16:48 CTA FOR PREOPERATIVE DETERMINATION OF LYMPH NODES IN THE SUBMENTAL FLAP FOR VASCULARIZED LYMPH NODE TRANSFER

Vera PAULUS, Stephan HUMMELINK, Sascha SCHULTEN, Dietmar ULRICH, Dalibor VASILIC

Radboud Universitair Medisch Centrum, Nijmegen, The Netherlands

Introduction

In recent years, vascularized lymph node transfers (VLNT) have gained in popularity to treat lymphedema. Amongst the various options, the submental flap has the least risk for iatrogenic lymphedema. The aim of this study was to investigate if the submental and submandibular lymph nodes were randomly distributed along the mandibula. This is of importance whether or not a preoperative computed tomography angiography (CTA) scan should be performed prior to submental VLNT.

Materials & Methods

Between November 2015 and February 2016, in total 52 CTA scans (n=100 sides; 23 male, 29 female patients) were evaluated. In each side, the origin of the submental artery was used as a center coordinate. All lymph nodes in regions IA and IB were recorded using a three dimensional coordinate system. These coordinates were standardized using an iterative closest point algorithm. Results were analyzed for sex, location, size, and amount.

Results

The mean number and size of lymph nodes was 5.30 ± 2.00 (range 1 - 10) and 5.28 ± 1.29 mm per side, respectively. The mean distance of the lymph nodes to the origin of the submental artery was 25.53 ± 15.27 mm. There was no significant difference between both sides when comparing size, amount, and distance. Furthermore, no significance was found between males and females.

Conclusions

There is a high variety in location of the lymph nodes along the jaw. CTA scan should be performed prior to planning of a submental flap as a VLNT, to determine the location of the nodes and to define the best side to be transplanted.

**16:56 MICROVASCULAR TONGUE RECONSTRUCTION USING
ALT FLAP: EVALUATION OF VOLUME LOSS AFTER
RADIOTHERAPY, A CLINICAL STUDY**

Chiara GELATI, Achille TARSITANO, Federico CONTEDINI, Riccardo Cipriani,
Claudio MARCHETTI

Ospedale Sant'Orsola Malpighi, Bologna, Italy

Introduction

The aim of our study is to find out the volume loss percentage of alt flap after radiotherapy of oral cavity.

We all know that every free flap has a shrinking due to oedema reduction and individual healing processes, but for patients that need adjuvant radiotherapy the shrinking is even worse than for those ones who do not need radiation. Which is the exact percentage of alt overcorrection you need in order to preserve speech and swallowing?

Materials and Methods

Our protocol is the following: an initial MRI scan was acquired between 3 and 8 weeks after primary reconstruction, a second after 6 months, a third after one year. The Alt volume was calculated using a dedicated software. The study included 20 patients; 11 of these patients underwent adjuvant radiotherapy. After 12 months, patients reconstructed with alt flap had an average volume loss of 44.2% if they were submitted to radiotherapy and a 19.8% volume loss if they were not.

Results

Alt flap is nowadays considered the gold standard for tongue reconstruction with or without radiotherapy. It can be useful to know that, to avoid complications due to volume loss and shrinking, it is recommended an overcorrection by a factor of 1.4 in radiotherapy treated patients, and it is recommended a correction factor of 1.2 in patients not undergoing radiotherapy.

Conclusions

As the goal of tongue alt reconstruction is to maximize the oral function and to preserve swallowing and speech functions, we think that a precise evaluation of the flap dimension in the pre operative stage can be useful to guarantee to our patients a good quality of life after cancer and radiotherapy of such a particular district.

17:04 FATAL FACIAL FAT GRAFTING

Nicolas DOOGHE, Stan MONSTREY, Michel PIETTE, Bela KUBAT
Universitair Ziekhuis Gent, Gent, Belgium

Introduction

Autologous fat grafting has become an indispensable surgical tool for any plastic surgeon. Although it is claimed to be a safe procedure, several cases of acute visual loss, cerebral infarction and even death have been reported.

Case Report

We present the case of a patient who died 24 hours after facial feminization surgery. Autopsy showed massive cerebral fat embolism, most likely due to intravasation of fat during facial fat grafting.

Conclusions

Fat can enter the arterial circulation of the face and the brain in a retrograde manner, causing severe visual and cerebral problems or enter the venous system and cause cardiorespiratory dysfunction. The fat particles can cause a significant obstruction with immediate symptoms as well as an insignificant obstruction which can initiate an inflammatory reaction causing delayed symptoms. Patients should be instructed accordingly. Multiple preventive measures for fat intravasation should be used.

17:12 HANDLING OF BONY ANKYLOSIS IN NOMA PATIENTS

Eva RÜEGG, Denise BARATTI-MAYER, Alexandre JAQUINET, Ali MODARRESSI, Brigitte PITTET-CUÉNOD

Hôpitaux Universitaires de Genève, Geneva, Switzerland

Introduction

Bony ankylosis between the mandible and the zygoma often occurs in survivors of noma disease as sequela of severe facial scarring after large necrosis. In the last twenty years of treating noma sequelae, we observed recurrence of mouth opening limitation in many cases. We therefore progressively changed our surgical strategy of mouth opening and of soft tissue reconstruction. This study compares the impact of different surgical approaches on long-term mouth opening.

Materials & Methods

This retrospective study includes 65 patients with bony ankylosis due to noma sequelae, operated between 1992 and 2008. Different techniques of mouth opening were performed associated with postoperative physiotherapy and close follow-up from the local humanitarian association. Methods for soft tissue reconstruction evolved from local flaps in the beginning to large free flaps nowadays. Mouth opening was measured before and regularly after operation and different surgical techniques are compared.

Results

Patients had a mean follow-up of 6.5 years, 11 patients were excluded for a follow-up shorter than two years. Mean postoperative gain of mouth opening was 19 mm. Follow-up showed a trend of diminution of mouth opening for most patients. Complete recurrent loss of mouth opening occurred in 10 patients after 5.2 [2-10] years, additional 15 patients had mouth opening below 11mm after 5.4 [3-10] years, and overall recurrence rate was 46.3%. These patients had local and pedicled flaps (15 patients) or free flaps (10 patients). Bilateral coronidectomy and free flap soft tissue reconstruction seem to provide better results.

Conclusions

Recurrence of mouth constriction is high, even after adequate physiotherapy. If no follow-up can be offered, these patients should not be operated, as oral feeding may get impossible with a facial defect reconstructed. The importance of long-term physiotherapy is mandatory after this kind of surgery.

17:20 CUTANEOUS CARCINOGENETIC FIELD AND INFILTRATIVE NON-MELANOMA SKIN CANCER OF THE HEAD AND NECK. WHICH THERAPY COMES FIRST?

Alexandros SARAFIS, Antonios TSIMPONIS, Olga PIKOU, Antonios PAPACONSTANTINO, Efterpi DEMIRI

Aristotle University of Thessaloniki, Thessaloniki, Greece

Introduction

The development of infiltrative non-melanoma skin cancer (NMSC) over a wide-spread carcinogenetic field may lead to incomplete excision and inadequate surgical treatment. Even when the excision is complete, the emergence of a new NMSC may be misinterpreted as a local recurrence. The purpose of our study is to ascertain the necessity of field cancerization treatment prior to surgical treatment of the cancer.

Materials & Methods

Our series consists of 64 patients who received surgical treatment of infiltrative NMSC in a cutaneous carcinogenetic field of the head and neck from 2011 to 2015. Thirty-three patients (Group A) underwent surgical excision followed by dermatologic treatment with imiquimod, ingenol mebutate or photodynamic therapy; thirty-one patients (Group B) were initially treated conservatively and, one month later, received surgical treatment. Demographic data, skin type, tumor size and resection margins were recorded for each patient. All patients were followed up and assessed every three months for one year. Local recurrences, emergence of new primary tumors, as well as regional metastases were also recorded.

Results

Patients' age and skin type were equally distributed in the two groups. Inadequate resection margins were found almost equally in Group A and B (6% and 5%, respectively). A reduction in size of the excised skin tumor was observed when the conservative treatment preceded. Local recurrence rates were statistically higher ($p=0.042$) in Group A, although there was no definite diagnosis whether these were local recurrences or new primary tumors. Regional metastases rates were not statistically different in the two groups.

Conclusions

Field cancerization may lead to microscopically mistreated NMSC. Lower recurrence rates justify the decision to start with the conservative treatment; although delay of surgical treatment is inevitable, this has not been shown to compromise the tumor's prognostic features.

SATURDAY 27 MAY 2017

Session 7

8:30-10:10

CLEFT-CRANIOFACIAL

Moderators

Giorgio DE SANTIS

Università degli Studi di Modena e Reggio Emilia, Modena, Italy

Neil BULSTRODE

Great Ormond Street Hospital, London, United Kingdom

8:30

LATE DEFORMITY FOLLOWING FRONTO-ORBITAL REMODELLING: WHAT CAN WE LEARN FROM 3D SKULL BONE THICKNESS STUDIES?

Richard HAYWARD, Naiara RODRIGUEZ-FLOREZ, Arantza FLOREZ-TAPIA, Roxana GUNNY, David DUNAWAY

Great Ormond Street Hospital, London, United Kingdom

Introduction

It is well recognised that there is considerable incidence of late deformity- commonly referred to as 'temporal hollowing'- following fronto-orbital remodeling (FOR) surgery for correction of trigonocephaly in metopic synostosis. Although its cause remains unclear, theories suggest that the inappropriate attachment of the temporal muscle to the bone might be responsible for the late deformity. We hypothesise that if temporalis muscle is indeed damaged or detached, weakened muscles would decrease the osteogenic stimulus of that attachment, resulting in a thinning of the affected bone.

Materials and Methods

Skulls were segmented from computed tomography head scans of metopic patients who had previously undergone FOR (n=8; operated at 16±2 months old; age: 2-18 years), as well as age-matched non-craniosynostotic controls (n=8; age: 0.5-18 years). Skull bone thickness was assessed by computing the distance between the inner and outer skull surfaces and visualising skull thickness maps in 3D. Average skull thickness and thickness of the triangular area above the lateral part of the supra orbital ridge- where deformity is usually seen- were computed for each patient.

Results

Average skull thickness increased with age both for post-FOR metopic patients (logarithmic fit $R^2=0.82$) and controls ($R^2=0.76$). In metopic patients, the indented area had a thickness of 85% of the average skull thickness immediately after FOR, but decreased linearly to 28% 16 years after surgery (Pearson's $r=0.87$, $p=0.005$). However, in controls, the thickness of the triangular area did not vary with age and remained at 81±4% of average skull thickness.

Conclusions

Results demonstrate that, in metopic patients, skull thickness where the deformity is observed decreases gradually after surgery. This strengthens the hypothesis that aberrant reattachment of the temporalis muscle contributes to late deformity. Future studies of our group will focus on analysing the 3D morphological evolution of the temporalis muscle, which will help understand how to improve reconstructive surgery.

8:38 FIRST STEP INVASIVE METHOD AT TEMPOROMANDIBULAR JOINT DISEASE TREATMENT: ARTHROCENTESIS

Tugba Gun KOPLAY, Osman AKDAG, Mehtap KARAMESE, Zekeriya TOSUN
Selçuk University Medical Faculty, Konya, Turkey

Introduction

There are a few literature to guide surgical temporomandibular joint (TMJ) therapy. Also, options are limited and there is no consensus about what to do for which patients. In this study, we aimed to share our indications, technics and results about arthrocentesis.

Materials & Methods

Study includes 77 patients and 116 joints that we did arthrocentesis between 2011-2016. Mean age was 25 (16-54) of 57 female and 20 male patients. MRI were taken from all patients while mouth is opened and closed. Questionnaire consisting of 41 questions about etiology was answered by all patients. There was reduced disc dislocation at 26, irreducible disc dislocation at 20 patients and degeneration was detected at 32 patients. We did irrigation of the joint with arthroscopy at 25 patients and with only needles at 52 patients. We injected platelet rich plasma (PRP) to 6 patients and hyaluronic acid to 22 patients whom there was a degeneration at MRI. Results were evaluated by MRI, VAS for pain, MMO for jaw opening and click sound.

Results

Postoperative disc position or degeneration did not change at MRI. Because we did only irrigation, removed inflammatory mediators, opened adhesions with pressure. There were no complications except of bleeding and edema. Pain evaluated by VAS decreased 20%. Detected click with reduced disc dislocation patients click was lower at postoperative controls ($p < 0.05$). MMO was also increased dramatically.

Conclusions

Arthrocentesis is used at close locked jaw, disc dislocation, jaw hypomobilities due to disc adhesions, acute and degenerative rheumatoid arthritis and obtained positive results. Complications of disc replacement, condylar shave and condylectomy are hard and serious and the second operation is difficult due to fibrosis, adhesions. Arthrocentesis is a simple, harmless, minimal invasive, 70 to 90 percent successful method at the beginning especially for young patients.

8:46

EFFECTS ON THE TEMPOROMANDIBULAR JOINT SYMPTOMS OF ORTHOGNATHIC SURGERY IN PROGNATHIC PATIENTS AND STRUCTURAL FACTORS MANAGING THESE EFFECTS

Seyda EVIN, Osman AKDAG, Mehtap KARAMESE, Zekeriya TOSUN
Selçuk University Medical Faculty, Konya, Turkey

Introduction

Changes in temporomandibular joint symptoms after orthognathic surgery are still a controversial issue. The aim of this study was to investigate changes in temporomandibular joint symptoms (TMJS) after orthognathic surgery in patients with mandibular prognathism.

Materials & Methods

Between 2010 and 2016, patients were operated with mandibular prognathism were included in this study. Symptoms and examination findings related to TMJ were recorded in preoperative and late postoperative period. Patients were divided into 3 groups as unchanged, improved and worsened TMJS and the effect of type of occlusal discrepancy in pre-operation, mandibular plane angle, gender, and the surgical plan on this change were examined.

Results

The 28 patient with retrognathia were evaluated. Preop symptoms were 35.7%. Of these, 50% had the anterior open bite(AOB) and 30% had cross bite (CB) in high angle female patients. Patients who developed new symptoms postoperatively was 17.8%. Of these patients, 60% was in high angle AOB group and 20% was in low angle CB group. All of the AOB patients who developed new symptoms underwent maxillomandibular surgery (MMS). Patients with CB had better tolerance of this surgery compared to the AOB. In high angle patients, SSRO alone was better tolerated than MMS. All of the patients whose symptoms worsened were female group, in males there was no change in symptoms, usually in good or bad sense was observed. 68.2% of patients without any change in their symptoms (19 patients) had occlusal disorder other than AOB. 31.5% of these were low-angle. It was found that the low angle group could tolerate MMS, and the high angle group could better tolerate both MMS and SSRO alone.

Conclusions

Preoperative symptoms are mostly in the CB and AOB groups. Symptoms increased in postoperative period in female patients. These findings were consistent with the literature. Findings in high angle patients are not compatible with the literature.

**8:54 FUNCTIONAL AND SOCIAL IMPACT OF DIFFERENT
AUTOLOGOUS FAT GRAFTING PROCESSING IN
VELOPHARYNGEAL INCOMPETENCE (VPI)**

Valentina PINTO, Paola MALUCELLI, Monica GUIDOTTI, Riccardo CIPRIANI,
Paolo MORSELLI

Ospedale Sant'Orsola Malpighi, Bologna, Italy

Introduction

VPI is a multifactorial deficit of resonant speech control and nasalance leading to marked relationship disorders, especially in scholar age.

The aim of this study is to evaluate the functional and social impact of the different processing systems on the efficacy of autologous fat grafting to correct mild VPI in cleft patients.

Materials & Methods

We enrolled 30 patients affected by mild VPI, aged 4 to 7 years old, referred to our centre between 2010 and 2015.

-n10 cleft patients underwent to a single lipofilling using traditional Coleman processing;

-n10 cleft patients treated with a single injection of autologous fat transplantation processed by washing and decantation closed technique, without centrifugation (lull technique);

-n10 non CLP patients (control group), affected by mild VPI after common childhood surgeries, as tonsillectomy, adenoidectomy, or congenital short palate or non pathological hypernasality and rhinolalia. The surgical procedures were performed by a senior surgeon alone. The speech therapy was directed by the same senior speech therapist. All the enrolled patients underwent to functional and speech evaluation (acoustic rhinomanometry, CSL spectrometry and related audio recordings). To evaluate the functional results, a group of 20 non physician individuals was involved for rating the audio recorded speech sample of treated and non treated children, to assess whether they were able to recognize CLP group.

Results

All the treated patients reported significant improvement in hypernasality and in nasal emission. None of the subjects investigated recognized CLP patients treated with no centrifugated fat transplantation. Two patients affected by mild VPI after adenoidectomy were confused with cleft patient.

Conclusions

Autologous fat transplantation without centrifugation processing, preserving a higher amount of stem cells, permits to obtain better objectives results in speech ability in term of functional and social outcomes in comparison with traditional Coleman technique, further improvable by logopedics therapy.

9:02 **VELOPHARYNGEAL INSUFFICIENCY TREATED WITH LEVATOR MUSCLE REPOSITIONING, A PALATAL Z-PLASTY AND UNILATERAL BUCCINATOR MYOMUCOSAL FLAP**

Corstiaan BREUGEM, Bob LOGJES, Maaïke VAN AARDWEG, Marise VAN DER HEUL

Wilhelmina Children's Hospital, Utrecht, The Netherlands

Introduction

Velopharyngeal insufficiency is not uncommon (20-30%) after cleft palate closure and often secondary surgery is necessary. The myomucosal buccinator flap has become an important treatment option for velopharyngeal insufficiency, however published studies all use a bilateral buccal flap. However patients often need a bite block postoperatively, and secondary surgery to divide the buccal flap is mandatory. A unilateral flap with an oral mucosa Z-plasty could result in less operating time, might prevent the need of a bite block and no extra procedure to divide the flap pedicle at a later stage.

Materials & Methods

Forty-two consecutive patients that underwent a unilateral myomucosal buccinator flap procedure were retrospectively reviewed. The median time of follow-up of 40 patients after surgery was 1,2 years (169-783 days range). Clinical speech outcome, level of understandability, level of resonance/hypernasality and velopharyngeal closure assessed by nasopharyngoscopy were evaluated by a multidisciplinary cleft-palate-team and reviewed.

Results

In 83% (n=34/41) optimal speech outcome was obtained. In 6 patients secondary surgery (cranially based pharyngeal flap), was necessary. Fifty percent (3/6) of the patients in need of secondary surgery had bilateral cleft-lip-palate. The level of understandability improved in 79% (26/33) and 80% (32/40) respectively according to the parents and speech pathologists postoperatively. Median level of understandability improved significantly evaluated by speech pathologists (2,5 vs 3,5; $P < 0,0001$) and by parents (2,1 vs 3,2; $P < 0,0001$) postoperatively. Velopharyngeal closure assessed with nasopharyngoscopy improved in 83% (n=24/29) after surgery.

Conclusions

Patients with velopharyngeal insufficiency can be treated with levator muscle repositioning and an oral Z-plasty with subsequent palatal lengthening, in combination with a unilateral myomucosal buccinator flap. This is an effective and safe procedure and should become part of the armamentarium of the cleft surgeon. This has become a routinely practiced procedure for velopharyngeal insufficiency in the cleft population in Utrecht, the Netherlands.

**9:10 COMPARISON OF SPEECH RESULTS OF FURLOW
VS PHARYNGEAL FLAP PROCEDURES FOR THE
CORRECTION OF SUBMUCOUS CLEFT PALATE**

Mert ÇALIS, Mehtap OZTURK, Riza Onder GUNAYDIN,
Mavis Emel KULAK KAYIKCI, Figen OZGUR
Hacettepe University Faculty of Medicine, Ankara, Turkey

Introduction

Submucous cleft palate is a unique type of cleft, diagnosed difficultly until speech pathology develops. Studies related with this aspect is limited and the ideal surgical treatment option is still a controversy. In this study, the speech results of the most popular two options for surgical treatment of submucous cleft palate, furlow palatoplasty and pharyngeal flap procedure combined with intravelar veloplasty are compared.

Materials & Methods

29 patients operated at our institution between years 2005-2011 were retrospectively reviewed. The speech results are evaluated using nasometer and nasopharyngoscopy.

Results

Of the 29 patients included in the study 14 (48.3%) of them were operated using Furlow Palatoplasty whereas 15 of them were operated using Pharyngeal Flap and Intravelar Veloplasty. The results of nasopharyngoscopic evaluation of soft palate motility and velopharyngeal closure revealed were found to be comparable ($p=0.201$). Nasometric evaluation revealed significantly better results in /şa/ and /ka/ syllables in pharyngeal flap and intravelar veloplasty group than furlow group ($p=0.026$).

Conclusions

Both approaches appear to be effective in the treatment of submucous cleft palate whereas in patients with significant hypernasality pharyngeal flap combined with intravelar veloplasty should be the first option.

9:18

USE OF EARLY HARD PALATE CLOSURE USING A VOMER FLAP IN CLEFT LIP AND PALATE PATIENTS

Bram SMARIUS, Corstiaan BREUGEM

*Utrecht University Medical Centre, Utrecht, The Netherlands***Introduction**

Management of children born with a cleft palate deserves special attention because, despite being the most common craniofacial birth defect, there is still no universally accepted treatment approach. The primary objective in the surgical repair of a cleft palate is the development of normal speech, hearing, and feeding with minimal maxillary outgrowth restriction. Numerous approaches for cleft palate repair have been published, but each technique has inherent benefits and disadvantages. The purpose of this study was to determine the short-term advantages and disadvantage of early hard palate closure using the vomer flap in unilateral and bilateral cleft lip palate patients.

Materials & Methods

A retrospective review was performed of all consecutive unilateral/bilateral complete cleft lip and palate (Veau III en IV) children who were treated by a simultaneous lip and hard palate closure using a vomer flap. Data were collected for sex, date of birth, syndrome, adoption, cleft palate type, type of repair, date of cleft repair, cleft width, lateral incisions, fistula and location of fistula.

Results

Ninety-one children (M = 62, F 29) were operated. Mean age at time of lip closure and vomer flap was 5.8 months (range 2.9 months to 49.2 months, SD 7.1) and the mean age at palate closure was 13.6 months (range 6.3 months to 79.9 months, SD 10.8). The mean cleft width at first assessment was 13.0 mm (range 7-22 mm) compared to 8.8 mm (range 4-15 mm) at second assessment (mean difference 4.6 mm, 95% CI 3.93-5.35, $p < 0.01$). One patient developed a fistula (1.1%) and required secondary surgery for closure.

Conclusions

The vomer flap leads to a substantial decrease in cleft width, subsequently leading to a low fistula incidence (1.1%).

9:26

THE COMPARISON OF MANAGEMENT AND OUTCOMES BETWEEN PIERRE ROBIN SEQUENCE AND NON-SENDROMIC CLEFT PALATE ON CLEFT PALATE REPAIR

Zafer KAYA, Nihal KOCAASLAN, Samet SENDUR, Betül TUNCER, Ozhan CELEBILER

Marmara University School of Medicine, Istanbul, Turkey

Introduction

The Pierre Robin Sequence is a congenital genetic anomaly described by Pierre Robin in 1923. The reason of defining as a 'sequence' is one structural deformity (developmental arrest of mandible) leads to the other deformities relatively big tongue causes respiratory obstruction and also prevents fusion of the palatal shelves results in cleft palates in 90%. The definition of sequence, presence of the wether cleft palate or the lower jaw deformity (retro / micrognathia) is contradictory. Thus, PRS constitutes the triad of respiratory obstruction, glossoptosis and mandibular hypoplasia.

Materials & Methods

This study was established to assess differences between patients with Pierre Robin Sequence (PRS) and nonsyndromic isolated cleft palate (ICP) through the preoperative and postoperative outcomes. Alimentation problems, operative and postoperative follow-up of patients were examined. From 1995 to 2015, nonsyndromic isolated CP and PR sequence patients were evaluated along with anomalies or syndromes, cleft palate types, nutrition status, age at the operation, additional anomalies, pregnancy problems, post operative speech abnormalities and postoperative outcomes.

Results

One hundred thirty six patients with ICP (not accompanied any syndrome) and sixty patients with the PR sequence were enrolled. The problems in pregnancy, the support for alimentation, the incomplete cleft incidence, the additional anomalies were statistically significant in PRS group. (p value < 0.001) But there was no statistically significance in postoperative outcomes as fistula and velopharyngeal insufficiency between two groups.

Conclusions

PRS simply should not be perceived as mandible hypoplasia or cleft palate; kept in mind that preoperative care, treatment and rehabilitation process is more difficult and requires more attention than ICP.

9:34

DO ADULTS WITH 22Q11.2 DELETION SYNDROME HAVE A DIFFERENT VELOPHARYNGEAL ANATOMY?

Charles FILIP, Davide IMPIERI, Ingegærd AAGENÆS, Kim TØNSETH, Hans Erik HØGEVOLD
Oslo University Hospital, Oslo, Norway

Introduction

The incidence of velopharyngeal insufficiency (VPI) in 22q11.2 deletion syndrome (DS) varies between 27 to 80% (McDonald-McGinn et al., 1999; Goldmuntz, 2005). The aim of the study was to find out if subjects with 22q11.2 DS have a different velopharyngeal anatomy which could cause VPI.

Materials & Methods

A prospective study included 16 subjects >16 years of age with 22q11.2 DS, without overt cleft palate and without previous VPI surgery. In addition, 48 healthy controls >18 years of age were included in the study. Speech was recorded and scored blindly by two independent senior speech therapists. MRI was performed and analyzed blindly by a consultant radiologist.

Results

Subjects with 22q11.2 DS had a mild degree of weak pressure consonants; borderline to mild degree of hypernasality and audible nasal emission (mean score). All controls had normal speech.

When comparing subjects (22q11.2 DS) to controls, we found the subjects to have the following: A shorter distance between the left and right points of origin of the levator veli palatine muscle (LVP) ($p < 0.0001$); a more obtuse angle of origin of the LVP (bilaterally) ($p < 0.009$); a thinner LVP bilaterally and in the midline ($p < 0.0001$); a shorter LVP muscle bilaterally ($p < 0.0001$); a shorter velum ($p = 0.007$); a larger osseous pharyngeal depth:velar length ratio ($p = 0.01$); a more obtuse anterior cranial base angle (nasion to sella to basion) ($p < 0.0001$) and posterior cranial base angle (sella to basion to foramen magnum) ($p < 0.0001$); a wider velopharyngeal width ($p = 0.002$) and a larger pharyngeal airway volume ($p = 0.0007$).

Conclusions

Compared with healthy controls, adults with 22q11.2 DS showed a different velopharyngeal anatomy, which will make these individuals more prone to VPI. Our results suggest that surgical treatment of VPI in patients with 22q11.2 DS should not only correct the positioning of the LVP, but also produce lengthening of a shorter velum.

9:46

THE TONGUE FLAP FOR LARGE PALATAL FISTULAE

Samet SENDUR, Nihal KOCAASLAN, Betül TUNCER, Bülent SAÇAK,
Ozhan CELEBILER

Marmara University School of Medicine, Istanbul, Turkey

Introduction

Large palatal fistulae after cleft palate surgery is difficult to treat by local mucoperiosteal flaps alone. It's been documented that speech intelligibility and hypernasality are improved after the operation due to reduction in nasal eminence. The most common complications of tongue flaps are detachment and bleeding. In this study, 32 patients treated with tongue flaps are reviewed and discussed in detail.

Materials & Methods

32 consecutive patients who had undergone tongue flap surgery at our department between 2000 and 2015 are included in this study. The indication for procedure was anteriorly localized large palatal fistula larger than 5mm that can't be treated with local mucoperiosteal flaps solely. For all the patients; nasal layer was closed with mucosal flaps and oral layer was closed with anterior based tongue flap. Demographic data and post-operative course were obtained from the patient charts in retrospective fashion and evaluated.

Results

The majority of patients were male (66%, n=21). The mean age of the patients was 11.7 (4-29). Ten patients (%31) had at least one previous attempt to close their fistulae. The mean time between two stages was 29 days (7-46 days). Nine patients (%28) had detachment of their flaps. There were 7 patients with detachments who were six years old or younger and 2 detachments in patient, who were older than age of six ($p:0.049$). The remaining 23 patients had no complications regarding tongue or palate.

Conclusions

In our study; male sex and age less than 6, seems to be risk factors for flap detachment. Limited exposure and excessive tongue movements may account for higher detachment rate. Data obtained in this study suggests that tongue flap is a successful tool for challenging palatal fistulae, where young age is a strong predictive factor for failure on tongue flap procedures.

9:54

RECONSTRUCTION OF ALVEOLAR DEFECT IN CLEFT PATIENTS WITH FREE MEDIAL FEMORAL CONDYLE CORTICOCANCELLOUS FLAP

Osman AKDAG, Tugba Gun KOPLAY, Nuh EVIN, Mehtap KARAMESE, Zekeriya TOSUN
Selçuk University Medical Faculty, Konya, Turkey

Introduction

Although the gold standard method for alveolar cleft repair is the secondary alveolar bone grafting performed during mixed dentition, 20-30% failure has been reported after this procedure. In each bone grafting procedure failure rate gradually increase due to local tissue problems.

In this study, free medial femoral condyle (MFC) corticocancellous flap was used to break this vicious circle for reconstruction of alveolar defects. We want to share our results and technical details of this flap.

Materials & Methods

7 patients were treated with MFC flap between November 2015 and May 2016. Preoperative size of the defects and their shapes were determined on the computerized tomography (CT) images by using 3D surgical planning software program. During surgery pedicle length was measured. The flap viability was observed with hand doppler (7 days), scintigraphy, (21st day) CT (po 3rd 6th month). Morbidity at donor area was observed with walking, pain, sensory scores (6th month).

Results

One female and six male patients (13-26 yo) who had previous conventional treatment of cleft with bone graft. The mean pedicle length was 10.6 cm (8.3-12.4) and the flap size was 2.1 cm³. The viability of all flaps was confirmed via CT scans and scintigraphy images for six months. Patients had no donor area morbidity at end of the six months.

Conclusions

Despite obtaining best regard of alveolar bone grafting at mixed dentition period, risk of graft loss progressively increases in each application. MFC flap is a good option in cases of repeated failures because it is known that biological and mechanical superiority of vascularized bone transfer to nonvascularized bone grafts. MFC flap can be preferred for small size defect in alveolar bone account of harvesting with a small size, providing enough bone support with minimal donor site morbidity.

10:02 THE CLINICAL EXPERIENCES WITH INTRAOSSEOUS VASCULAR MALFORMATIONS RELATED WITH ELMO2 MUTATIONS

Ibrahim VARGEL, Mert ÇALIS, Halil Ibrahim CANTER, Nurten AKARSU
Hacettepe University Faculty of Medicine, Ankara, Turkey

Introduction

Intraosseous vascular malformations are rare abnormalities that account for <0.2% of all bony tumors. Although they are known to be associated with multiple anomalies of skull and vertebral column, recently by our study group, two autosomal recessive families having ELMO2 mutation with primary intraosseous vascular malformation of severely affecting cranial bones have identified (VMOS). The aim of this study was to share the clinical follow up and prognosis of eight VMOS patients.

Materials & Methods

Study included eight children born from five different consanguineous families. Detailed demographical, clinical and radiological follow up of these patients were recorded.

Results

They were appeared to be non symptomatic at birth whereas the first sign of the event had been painless swelling at mandible at the early childhood. Affected bones were included maxilla, mandible, nasal bones, calvaria, sphenoid and clivus. Maxillae and mandibulae were affected in all patients. Despite radiotherapy, systemic interferon alpha administration and associated surgical interventions such as partial bone resections follow up of three of the patients ended up with exitus.

Conclusions

In conclusion, VMOS is a clinical entity with extremely poor prognosis and based upon our experience, early tooth distraction on cases involving mandibula may affect survival.

Session 8

10:40-12:40

HAND & NERVE

Moderators

Outi KAARELA

University of Oulu, Oulu, Finland

Matthias RAB

Klinikum Klagenfurt, Klagenfurt, Austria

10:40 CHIMERIC POSTERIOR INTEROSSEUS FLAP FOR THE TREATMENT OF HAND ACUTE OSTEOMYELITIS

Alberto FRANCHI, Maurizio CALCAGNI, Pietro GIOVANOLI,
Thomas GIESEN
Zurich University Hospital, Zurich, Switzerland

Introduction

Destructive acute osteomyelitis of the hand is a challenge to the Hand Surgeon because of the lack of small muscular flap to use as fillers for the intramedullary cavity of the affected long bones of the hand.

Materials & Methods

From 2012 to 2014 we treated 4 patients with acute osteomyelitis of the long bones of the hand. In all cases acute osteomyelitis was the consequence of surgical treatment of a fracture of the hand, for a total of 4 metacarpal bones and one proximal phalanx. In all cases the osteomyelitis became evident after healing of the treated fracture and in 3 cases shortly after removal of the osteosynthesis material.

All patients were treated initially by debridement of the soft tissues and affected bones. In all cases the extrarticular cortical bone on one side of the infected bone was removed.

After histological and bacteriological confirmation of the diagnosis and after starting an appropriate antibiotic therapy, we performed in all patient a chimeric posterior interosseous flap including part of the Extensor Carpi Ulnaris and/or part of the Extensor Digiti Minimi.

The muscles included in the flaps were used as a filler of the infected intramedullary cavity and the wounds closed with the skin paddle of the flap.

Results

All patients were followed clinically and radiologically for at least 6 months. All flaps survived with no complications. Three of the 4 patients recovered an adequate function.

All patients showed at the SPECT-CT at 6 months no further infection

All patients were showing at the last follow up adequate function except one patient that developed a flexion deficit but refused any further treatment.

Conclusions

The posterior interosseous flap can be harvested as a chimeric flap including the ECU and/or the EDM muscle for the treatment of acute destructive osteomyelitis of the long bones of the hand

10:48 LOCAL INFILTRATION ANESTHESIA IN TENOLYSIS SURGERY

Mehtap KARAMESE, Gökçe YILDIRAN, Osman AKDAG, Zekeriya TOSUN
Selçuk University Medical Faculty, Konya, Turkey

Introduction

Flexor tendon adhesions are problems which often require secondary surgeries. The most common problem in secondary surgeries is inadequate and useless tenolysis. The effectiveness of tenolysis surgeries in flexor zone 1 and 2 was presented in this study.

Materials & Methods

Between 2013 and 2016, 22 tenolysis surgeries were performed for 27 tendons in our plastic surgery and hand surgery clinics by using local infiltration anesthesia, starting from the proximal extremity with 1% lidocain and 1:100000 adrenaline anesthetic solution via a 26-gauge needle.

Tourniquet wasn't applied, if we had enough hemostasis. Tenolysis was performed until there's enough releasing. Patient was encouraged for active flexion of finger. If there wasn't enough flexion motion, we continued for tenolysis until we saw enough active flexion motion of the finger. Then we removed the veil between the surgical area and patient; so the patient was allowed to see his/her own movement.

We evaluated if the tendon is functional or not, if there's adhesion or not, received physiotherapy and tendon function of patients who have minimum 3 months-follow-ups with a scale.

Results

We had none conversion from local anesthesia to regional or general anesthesia. We have no complications belong to local anesthesia. No tourniquet was used in 9 patients, all of the patients could be started early physiotherapy. There were no relapse. Tendon functions were excellent in 5 patients (22,7%) and good in 16 patients (72,7%).

Conclusions

Preserving the motor function in tendon surgery is crucial for evaluating the sufficiency of tenolysis procedure and tendon movements. Due to the local anesthesia it can be possible to evaluate the adequacy of tenolysis procedure intraoperatively. Local infiltration anesthesia in tenolysis surgery saves patient from a possible general anesthesia load, gives rise to a more confident surgery without motor blockage and tourniquet. Wide-awake tendon surgery is a safe technique, it increases patient comfort and decreases cost.

10:56 RECONSTRUCTION OF OPPOSING DIGITS USING A FREE AUTOLOGOUS MICROVASCULAR COMPOSITE GRAFT FROM AN AMPUTATED LEG. A CASE REPORT

Trude WOLD, Louis DE WEERD
University Hospital of North Norway, Tromsø, Norway

Introduction

Peripheral gangrene secondary to disseminated intravascular coagulation (DIC) is a feared complication in the course of sepsis.

Case Report

In the summer of 2014 a 45 year-old male was admitted to his local hospital with pneumococcal septicemia. He developed peripheral gangrene in all four extremities secondary to DIC. After 19 days he was transferred to the regional University Hospital for amputation and further treatment of the extremity defects. The left hand was the most severely affected hand with dry gangrene from the metacarpophalangeal joints and distally in all five digits, as well as the volar thenar- and hypothenar regions. His right foot was the most severely affected foot and had gangrene from the ankle joint and distally, and soft tissue on the anterior part of the leg was also affected.

A free microvascular composite graft consisting of bone, muscle, subcutaneous tissue and skin was harvested from the amputated right leg and used to reconstruct two opposing digits on the left hand. The superficial peroneal nerve was anastomosed to the superficial radial nerve. The peroneal artery and its commitant vein were anastomosed to the radial artery and its commitant vein. The fibula bone graft was divided at the centre and the proximal end was fixated to the first metacarpal bone while the distal end was fixated to the second metacarpal bone. Using osteogenesis distraction a webspace was created between the fibula bone segments and the wound surfaces were covered with full thickness skin grafts.

The postoperative course was uncomplicated. The patient developed a powerful grip function and obtained protective sensibility in the reconstructed digits.

Conclusions

In selected patients with peripheral gangrene of all extremities due to DIC an amputated part may be used as a donor site for a composite graft to reconstruct a functional unit at another extremity.

**11:04 PAINFUL THUMB CARPO-METACARPAL JOINT
OSTEOARTHRITIS: RESULTS OF A NOVEL TREATMENT
APPROACH**

Holger ERNE, Dennis EHRL, Paul HEIDEKRÜGER, Niclas BROER,
Milomir NINKOVIC, Hans-Günther MACHENS
Klinikum Rechts der Isar, Technische Universität München, Munich, Germany

Introduction

Pain reduction as well as preservation and improvement in range of motion remain the main aims in the treatment of thumb carpometacarpal (CMC) osteoarthritis (OA). We performed a retrospective outcome analysis of patients with symptomatic stage II-III thumb CMC joint arthritis treated with denervation, joint lavage and capsular imbrication.

Materials & Methods

73 patients with stage II to III OA of the thumb CMC-joint underwent the described technique. A total of 42 patients complied with follow-up assessment and were included in this study. Mean follow-up was 41.2 (range 12-81) months.

Results

Mean operative time was 28.4 (± 6.5) minutes. The follow-up assessments showed a significant decrease in pain (preoperative Numerical Rating Scale (NRS): 7.5 - postoperative NRS: 1.1) ($p < 0.0001$) and a significant improvement in function of the thumb (preoperative DASH-Score: 46.8; Cooney-Wrist-Score: 35.4; Krimmer-Wrist-Score: 38.3 - postoperative DASH-Score: 18.1; Cooney-Wrist-Score: 73.7; Krimmer-Wrist-Score: 80.0) ($p < 0.0001$).

Conclusions

The findings of our study indicate that the presented treatment approach could be a good alternative to more invasive surgical options in patients with stage II-III CMC OA of the thumb, without impairing more invasive surgical options like trapeziectomy or arthroplasty for the future.

11:12 THE ROLE OF ULTRASOUND IN THE EVALUATION OF PERIPHERAL NERVE INJURIES

Francesca TOIA, Andrea GAGLIARDO, Salvatore D'ARPA, Cesare GAGLIARDO, Adriana CORDOVA
University of Palermo, Palermo, Italy

Introduction

The purpose of this study was to evaluate the usefulness of ultrasound in the pre-operative evaluation of peripheral nerve lesions, and illustrate how nerve ultrasound can be integrated in routine clinical and neurophysiological evaluation and in the management of focal peripheral nerve injuries.

Materials & Methods

Between 2013 and 2014, 119 entrapment, tumoral, post-traumatic or post-surgical nerve injuries of the limbs in 108 patients, candidates to surgery, were analyzed. For all patients, the evaluation included clinical examination, electrodiagnostic studies (nerve conduction study and electromyography) and ultrasound nerve study.

Ultrasound was used to explore the nerve fascicular echo-texture, continuity, and surrounding tissues. The maximal cross sectional area (CSA), the presence of epineural hyperechogenicity or intraneural hyper or hypoechogenicity, of anatomic anomalies, dynamic nerve dislocations or compressions were recorded.

The concordance rate of neurophysiological and ultrasonographic data was analyzed, classifying ultrasound findings as confirming, contributive or non-confirming with respect to electrodiagnostic data. The correlation between maximal nerve CSA and neurophysiological severity degree in entrapment syndromes was statistically analyzed.

Results

Ultrasound confirmed electrodiagnostic findings in 36.1% of cases, and showed a contributive role in the diagnosis and surgical strategy in 53.8% of all cases; only in 10.1% of the patients, ultrasound examination was negative ('non-confirming'). In 16% of cases, ultrasound was not only contributive, but had a key diagnostic role in the presence of doubtful electrodiagnostic findings. The contributive role was different according to etiology, being higher for tumors (100%) and for post-traumatic or post-surgical neuropathies (72.2%) than for entrapment neuropathies (43.8%).

Conclusions

Ultrasound is a powerful, non-invasive tool for examination of peripheral nerve injuries, which can orient diagnosis and surgical strategy of focal peripheral nerve injuries. We recommend it as a complement to routine clinical and neurophysiological evaluation and as first line imaging modality for masses of suspected nerve origin.

11:24 PARTIAL ANKLE DENERVATION: A PLASTIC SURGERY SOLUTION FOR REFRACTORY JOINT PAIN WITHOUT ORTHOPEDIC ORIGIN

Saja SCHERER, Ryan BAALBAKI, Xavier CREVOISIER, Giorgio PIETRAMAGGIORI
University of Padua, Padua, Italy & Global Plastic & Migraine Surgery, Lausanne, Switzerland

Introduction

The aim of our study is to find out the volume loss percentage of alt flap after radiotherapy of oral cavity.

We all know that every free flap has a shrinking due to oedema reduction and individual healing processes, but for patients that need adjuvant radiotherapy the shrinking is even worse than for those ones who do not need radiation. Which is the exact percentage of alt overcorrection you need in order to preserve speech and swallowing?

Materials and Methods

Our protocol is the following: an initial MRI scan was acquired between 3 and 8 weeks after primary reconstruction, a second after 6 months, a third after one year. The Alt volume was calculated using a dedicated software. The study included 20 patients; 11 of these patients underwent adjuvant radiotherapy. After 12 months, patients reconstructed with alt flap had an average volume loss of 44.2% if they were submitted to radiotherapy and a 19.8% volume loss if they were not.

Results

Alt flap is nowadays considered the gold standard for tongue reconstruction with or without radiotherapy. It can be useful to know that, to avoid complications due to volume loss and shrinking, it is recommended an overcorrection by a factor of 1.4 in radiotherapy treated patients, and it is recommended a correction factor of 1.2 in patients not undergoing radiotherapy.

Conclusions

As the goal of tongue alt reconstruction is to maximize the oral function and to preserve swallowing and speech functions, we think that a precise evaluation of the flap dimension in the pre operative stage can be useful to guarantee to our patients a good quality of life after cancer and radiotherapy of such a particular district.

**11:36 RECONSTRUCTION OF UPPER EXTREMITY
NEUROVASCULAR DEFECTS WITH
FLOW-THROUGH ARTERIALIZED VENOUS SURAL
NERVE FLAP**

Gökçe YILIDIRAN, Nebil SELIMOGLU, Osman AKDAG, Mehtap KARAMESE,
Zekeriya TOSUN

Selçuk University Medical Faculty, Konya, Turkey

Introduction

For serious neurovascular defects in upper extremity, both vein and nerve grafts are required. In this study we compared the flow through arterialized venous sural nerve flap and conventional sural nerve grafts. Due to this method it is aimed to obtain better nerve regeneration results via a vascularized nerve tissue.

Materials & Methods

Between 2013 January and 2014 February 12 patients who have nerve defects in their upper extremities were included in our study. 6 of the 12 patient had both nerve and vein defect and the were reconstructed with flow through arterialized venous sural nerve flap. The other 6 patients had nerve defect only and were reconstructed with sural nerve graft.

Via longitudinal incision, sural nerve and saphena parva vein were dissected together and the flap was harvested with vein, nerve and the microenvironment of the nerve. The connections between nerve, vein and microenvironment were preserved. Vein was used for arterial defect and nerve was used for nerve defect. All patients were evaluated with nerve conduction velocity, amplitude and latance in electromyography(EMG) in 6th and 12th month. All EMGs were performed by the same neurologist. The graft group and flap group were compared with EMG, 2-point discrimination, donor site morbidity.

Results

Mean postoperative follow-up period was 14 months (12-17 months). EMG nerve conduction values in flap group were significantly better than the graft group in 6th month ($p < 0.05$). 2-point discrimination values in flap group were significantly better than the graft group in 6th month ($p < 0.05$). EMG and 2-point discrimination tests were not different in 12th month between two groups.

Conclusions

This results indicate that nerve flaps which supplies rapid regeneration may be used instead of conventional nerve grafts to prevent distal muscles' atrophy in the trauma patients who had motor nerve damage. Flow through arterialized venous sural nerve flaps are good options for patients who had neurovascular defect.

11:44 IS THERE A BENEFIT IN BIOPSIES OF NERVE RELATED TUMORS?

Esther VÖGELIN, Rahel MEIER, Ivo BAYARD, Carsten SURKE, Luzian HAUG
University Hospital of Bern, Bern, Switzerland

Introduction

In nerve related tumors, functional impairment after unnecessary incisional biopsies may be devastating. We wanted to determine the rate of accurate diagnosis and complications after performed incisional biopsies.

Materials & Methods

Patient charts with surgical treatment for nerve related tumors between January 2007 and November 2016 were reviewed. Tumor location, pre- and postoperative pain and sensomotoric deficit was recorded. The number of preoperative performed biopsies was recorded. Excision of all nerve related tumors was performed and histopathological analysis was carried out. Suspected MRI findings as well as biopsy findings were compared with the definite histopathological report.

Results

54 patients with 58 nerve related tumors were included. 9% of the tumors were malignant and 76% were diagnosed as schwannomas. Of 49 (91%) performed MRI images, 40 (82%) were suspect for a benign and 7 (14%) for a malignant tumor. Two (5%) of the MRI suspected benign tumors were malignant and 5 (71%) of the suspected malignant tumors were benign in the definite histopathology. Of 12 (22%) preoperative biopsies, 7 diagnosed a benign and 2 a malignant tumor. 3 biopsies were inconclusive (25%). In 58% cases of the biopsies the definite histopathological diagnosis was confirmed. None (0%) of the diagnosed benign but both (100%) of the malignant biopsies were wrong compared to the definite histopathology. Two (17%) patients suffered from a nerve lesion after biopsy. In both cases, definite histopathology showed a benign tumor but one had preoperative suspected malignancy in MRI images.

Conclusions

9% of suspected nerve related tumors were malignant. Suspected MRI diagnosis was confirmed in 75%, but biopsy diagnosis was only confirmed in 58%. There were 100% false positive biopsy results. Two patients showed nerve lesions after biopsy. These findings suggest excisional but no incisional biopsy in nerve related tumors with clear relation to the involved nerve by MRI or Sonography.

11:56 **LONG-TIME EVALUATION OF MINIMALLY
INVASIVE VIDEO-ASSISTED THORACOSCOPIC
THORACIC SYMPATHICOTOMY FOR UPPER LIMBS
HYPERHIDROSIS**

Elisa BELLINI, Nicolò BERTOZZI, Francesco SIMONACCI, Edoardo RAPOSIO
Parma University Hospital, Parma, Italy

Introduction

Palmar and axillary hyperhidrosis are conditions with a relatively high prevalence. Moreover, it is a pathology which has a massive impact on life and social activities, potentially leading to anxiety, depression, and difficulties in emotional management. Surgical treatment is an effective solution in order to improve quality of life of these patients: it consists in an interruption of the cholinergic sympathetic innervation to the eccrine glands. Several surgical techniques are present in literature, but most of them require multiple trocar insertion or carbon dioxide insufflation, with the additional related complications. In 1998, we described a single-entry, minimally invasive video-assisted thoracic sympathectomy technique. The aim of the study was to evaluate the long-term results of this approach.

Materials & Methods

In order to assess the improvements over time in the quality of life, a questionnaire was submitted to a randomized group of the 720 patients (1440 thoracic sympathectomies) treated with this minimally invasive technique between 1995 and 2013. The questionnaire included specific questions concerning several psychological and clinical features.

Results

With a mean follow-up of 9.5 years, 98% of the patients reported a satisfied change in the quality of life, 1.4% showed recurrences and only 0.6% reported severe compensatory sweating. According to Wilcoxon test, the comparison between presurgical and postsurgical data showed a statistically significant difference ($p < 0.001$).

Conclusions

In our experience, minimally invasive video-assisted thoracic sympathectomy has showed to be a reliable technique for the treatment of upper limb hyperhidrosis.

12:04

THE OBLIQUUS CAPITIS INFERIOR MUSCLE: A KEY ANATOMICAL STRUCTURE ALONG THE COURSE OF THE GREATER OCCIPITAL NERVE – IMPLICATIONS FOR MIGRAINE HEADACHE SURGERY

Luigi SCHIRALDI, Robert HAGAN, Gianluca SAPINO, Saja SCHERER, Giorgio PIETRAMAGGIORI

University of Padua, Padua, Italy & Global Plastic & Migraine Surgery, Lausanne, Switzerland

Introduction

Palmar and axillary hyperhidrosis are conditions with a relatively high prevalence. Moreover, it is a pathology which has a massive impact on life and social activities, potentially leading to anxiety, depression, and difficulties in emotional management. Surgical treatment is an effective solution in order to improve quality of life of these patients: it consists in an interruption of the cholinergic sympathetic innervation to the eccrine glands. Several surgical techniques are present in literature, but most of them require multiple trocar insertion or carbon dioxide insufflation, with the additional related complications. In 1998, we described a single-entry, minimally invasive video-assisted thoracic sympathectomy technique. The aim of the study was to evaluate the long-term results of this approach.

Materials & Methods

In order to assess the improvements over time in the quality of life, a questionnaire was submitted to a randomized group of the 720 patients (1440 thoracic sympathectomies) treated with this minimally invasive technique between 1995 and 2013. The questionnaire included specific questions concerning several psychological and clinical features.

Results

With a mean follow-up of 9.5 years, 98% of the patients reported a satisfied change in the quality of life, 1.4% showed recurrences and only 0.6% reported severe compensatory sweating. According to Wilcoxon test, the comparison between presurgical and postsurgical data showed a statistically significant difference ($p < 0.001$)

Conclusions

In our experience, minimally invasive video-assisted thoracic sympathectomy has showed to be a reliable technique for the treatment of upper limb hyperhidrosis.

12:12 MIGRAINE HEADACHE SURGERY IN EUROPE: LONG TERM OUTCOMES AND CHALLENGES FROM OUR FIRST 75 PATIENTS

Giorgio PIETRAMAGGIORI, Saja SCHERER, Luigi SCHIRALDI, Gianluca SAPINO, Robert HAGAN

University of Padua, Padua, Italy & Global Plastic & Migraine Surgery, Lausanne, Switzerland

Introduction

Migraine headache (MH) surgery was first reported by Dr. Guyron in Cleveland (US) in the year 2000 and since then it spread across the United States to become a recognized method of treatment for refractory MH.

Materials & Methods

Results from deactivation of migraine headaches trigger sites from our first 75 patients are analyzed. Trigger site distribution, numbers of trigger per patient and long term (> 12 months) outcome are described. Main outcomes in this review were improvements in MH index (combination of frequency, intensity and duration of MH attacks) and migraine headaches disability assessment (MIDAS) scores.

Results

Supra-orbital and temporal triggers were mainly identified with botulinum toxin screening, while occipital triggers were identified by injection in the trigger site or direct referral from pain clinics or neurologists. Triggers among patients population were distributed as follows: 54% presented with supra-orbital and temporal triggers, and 46% with occipital triggers. Patients presented with an average of 2.5 triggers. All surgeries were performed in an outpatient setting. Long-term outcome shows a correspondence of significant improvement in MH index and MIDAS score with the positive response to diagnostic tests, with 37.8% patients showing complete remission of MH and 46% showing >50% improvement. 16.2% of patients did not show any change in MH.

Conclusions

Results demonstrate the efficacy of trigger deactivation in treating MH. Careful patient selection and surgical technique are requirements for successful outcome in MH surgery. A multidisciplinary approach (neurologist, pain doctor, general practitioner, plastic surgeon) is mandatory for a correct identification of surgical candidates and for establishing a correct follow up.

12:20 MIGRAINE SURGERY OUTCOMES: AN ALL OR NOTHING PHENOMENON?

Lisa GFRERER, William Gerald AUSTEN Jr
Harvard Medical School, Boston, Massachusetts, USA

Introduction

Traditionally, success/failure after migraine surgery is defined as improvement of migraine headache index (MHI) $\geq 50\%$, and $\leq 50\%$, respectively. However, our prospective data demonstrates more binary outcomes. Patients either did not respond or improved completely. This study presents a detailed analysis of this surprising finding.

Materials and Methods

42 subjects prospectively completed migraine questionnaires including MHI preoperatively, and 12 months postoperatively.

Results

All variables improved significantly from baseline. At 12 months, migraine headache frequency (21 ± 8.8 to 7.5 ± 9.6 days per month), duration (16.6 ± 9.9 to 7.5 ± 9.6 hours) and pain (8.1 ± 1.5 to 4.6 ± 3.1) decreased significantly from baseline ($p < 0.00001$). MHI (frequency \times duration $1/24 \times$ pain) decreased from 122.3 ± 97.4 at baseline to 32.2 ± 57.5 postoperatively (-74%), $p < 0.00001$. Outcomes were similar to prior studies with a success rate of 81%. Interestingly, 86% of patients improved MHI $\geq 80\%$ or $\leq 5\%$. Only 14% fell between 5 and 80% (Figure 1). 69% of patients improved their MHI $\geq 80\%$ with mean improvement of 97.1%. 16% of patients improved their MHI $\leq 5\%$, with an average improvement of 0%.

Conclusions

Migraine surgery remains controversial. Others have argued that the etiology of migraine is more complex than nerve compression. This study again prospectively demonstrates the efficacy of surgical trigger site deactivation in migraine patients. It further shows that patients either fail or improve after surgery, with few intermediate outcomes. Such a binary distribution of outcome may point to a less complex etiology of pain such as peripheral nerve compression in these select patients.

Session 9

14:10-15:20

PRESIDENTIAL PANEL

**SIGNIFICANT ADVANCES IN PAEDIATRIC
AND ADULT RECONSTRUCTIVE SURGERY:
VASCULAR ANOMALIES, CLEFTS, LIMBS**

Chair

Beatriz BERENGUER
2016-2017 EURAPS President

- 14:10** **Introduction**
Beatriz BERENGUER
Hospital General Gregorio Marañón, Madrid, Spain
- 14:15** **Vascular Anomalies: where do we stand?**
Laurence BOON
UC Louvain, Brussels, Belgium
- 14:35** **Repair of Bilateral Cleft Lip: 3rd & 4th dimensions**
John MULLIKEN
Boston Children's Hospital, Boston, Massachusetts, USA
- 14:55** **Advances in Limb Reconstruction**
Pedro CAVADAS
Hospital de Manises, Valencia, Spain
- 15:15** **Panel Discussion**

Session 10

16:00-17:32

AESTHETICS

Moderators

Efterpi DEMIRI

Aristotle University of Thessaloniki, Thessaloniki, Greece

Kjartan ARCTANDER

Ullevål University Hospital, Oslo, Norway

**16:00 INFECTION-LIKE COMPLICATIONS AFTER FACIAL
HYALURONIC ACID INJECTIONS**

Antoine HOMSY, Eva RÜEGG, Peter JANDUS, Brigitte PITTET-CUÉNOD,
Ali MODARRESSI

University Hospital of Geneva, Geneva, Switzerland

Introduction

The number of severe complications requiring aggressive treatment after hyaluronic acid (HA) injection is currently growing. Here we report 2 rare and unusual inflammatory reactions after HA injections, and we expose their management.

Case Report

During a 3 months period, 2 patients (30 and 60 year old women) were addressed to our consultation because of swelling and inflammatory reaction of the face after HA injection with Vycross® range products. The day following HA injection, both patients received co-amoxicillin treatment because they presented a sore throat. After 72h of treatment, both patients presented multiple small pustules over the entire body. Subcutaneous painful facial collections and skin redness appeared at different injection sites at day 16 in both cases. Patients were afebrile and presented a very mild systemic inflammatory syndrome. Despite continuing intravenous antibiotic treatment, the evolution was unfavourable. MRI confirming multiple subcutaneous collections, surgical drainage was performed to extrude haemorrhagic viscous liquid. Microbiology analysis results were negative. After daily bedside collection drainage up to 9 days, and 4 weeks of antibiotic treatment the evolution was favourable.

In both patients an acute generalized exanthematous pustulosis hypersensitivity reaction was suspected to aminopenicillins or to HA. Allergologic work-up in one patient showed a negative patch skin and intradermal testing to aminopenicillins and negative patch skin testing to HA. In-vitro lymphoproliferation test was not interpretable due to unspecific immunological reaction against HA.

Conclusions

The aetiology of this new type of complications to recent products is unclear. According to our analysis, among other diagnosis (e.g. infection, granulomatous reaction), an immune-mediated delayed hypersensitivity reaction is the most probable cause of these complications. With growing number of complications after HA injection, case reporting and data collects are essential to achieve a better understanding of their mechanism, to identify risk factors and to implement management guidelines.

16:08 IS THE SUPERFICIAL FASCIA A SINGLE LAYER?

Hyun Gu KANG

Naju Community Health Center, Naju, Republic of Korea

Introduction

The superficial facial fascia, consisting of both the superficial musculoaponeurotic system (SMAS) and the temporoparietal fascia (TPF), has been described as a single tissue layer in the face. However, several studies have demonstrated that the superficial facial fascia is not a single layer in particular regions. We performed an anatomical investigation using cadavers to determine if the superficial facial fascia (SMAS and TPF) could be surgically divided into two layers, and to subsequently identify the location of the bilayered structure.

Materials & Methods

Forty hemifaces of 20 fresh cadavers were dissected from the temporal to lower face, with the orbicularis oculi muscle, superficial temporal artery, zygomaticus muscle, and the platysma muscle used as landmarks to determine the plane of the superficial facial fascia.

Results

Superficial and deep layers of the SMAS and TPF were dissected into two layers through the loose areolar tissue. The deep TPF was found in the same plane as the deep SMAS inferiorly and the subgalea anteriorly. The orbicularis oculi muscle is invested in the superficial SMAS, while the platysma muscle is invested in the deep SMAS. Thus, these two key muscles for facial rejuvenation are situated in different layers.

Conclusions

Our results clarify the bilayered anatomy of the superficial facial fascia and provide a more comprehensive understanding of the anatomy between the orbicularis oculi and platysma. Using this concept, facial rejuvenation techniques can be advanced.

16:20 **COMPARATIVE STUDY USING AUTOLOGOUS FAT GRAFTS PLUS PLATELET RICH PLASMA WITH OR WITHOUT FRACTIONAL CO₂ LASER RESURFACING IN TREATMENT OF ACNE SCARS: ANALYSIS OF OUTCOMES AND SATISFACTION WITH FACE-Q**

Mauro BARONE, Stefania TENNA, Annalisa COGLIANDRO, Paolo PERSICHETTI
Policlinico Universitario Campus Biomedico, Rome, Italy

Introduction

The aim of this study was to evaluate the efficacy of nanofat and PRP infiltration alone and combined with fractional CO₂ laser resurfacing to improve atrophic scars of the face.

Materials & Methods

30 patients with atrophic acne scars on the cheeks were selected for this study. Patients were evaluated pre- and postoperatively by physical examination, photographs and ultrasound with a 22 MHz probe to measure subcutaneous tissue thickness. All patients were treated with infiltration of nanofat plus PRP. The production of PRP was achieved using the RegenLab THT tube® method. In 15 randomly chosen patients, a fractional CO₂ laser resurfacing at 15 W was also performed right after the infiltration. An Italian version of the FACE-Q postoperative module was administered to analyze each patient's satisfaction and aesthetic perception of the result.

Results

The average preoperative thickness of subcutaneous tissue of patients from group A was 0.532 mm, while the average preoperative thickness of subcutaneous tissue of patients from group B was 0.737 mm. The average postoperative thickness of subcutaneous tissue was 1.201 mm in group A and 1.367 mm in group B. The improvement of thickness of subcutaneous tissue was 0.668 mm in group A and 0.63 mm in group B. We applied a t test on unpaired data, comparing the difference in thickness obtained with the treatment in both group A and in group B, with a p value = 0.7289 (not significant). All patients in both groups had a treatment benefit, confirmed with FACE-Q postoperative module, but without a significant difference between the two groups.

Conclusions

Subcutaneous infiltration with nanofat and PRP seems to be effective to improve atrophic scars, either alone or combined with fractional CO₂ laser resurfacing. The FACE-Q module confirmed the impact of treatment of facial acne scars in social life and relationships.

**16:32 FIRST AESTHETIC ORTHOPEDICS: PELVIC
AUGMENTATION FOR IDEAL WAIST HIP RATIO
(HOURGLASS BODY) FOR FEMALE ATTRACTIVENESS**

Yougun WON, Kyu-Hyun YANG, Michael WEAVER, Ara NAZARIAN
Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts, USA

Introduction

Waist Hip Ratio (WHR) and Body Mass Index (BMI) was thought be the main factor of female attractiveness. 0.6 to 0.7 of WHR has been reported as an ideal female attractiveness. Surgical procedures including a liposuction and chemical agents altering appetite and absorption of calories are introduced to get better body contouring. However, an attempt for ideal WHR was insufficient. Because, up to this study, there were no genuine skeletal approaches to achieve the fundamental pelvic bone alteration for the achievement of ideal WHR.

Materials & Methods

A volumetric CT scanning was performed in pelvic bone of cadavers, and a three-dimensional reconstruction model was generated. By using computer software, a mirror image of iliac crest of pelvic bone was obtained and a plate was created from the mirror images by using a rapid prototyping machine. Using a minimally invasive plate augmentation technique, which is minimizing soft tissue injury and scars, the plate was inserted through posterior iliac crest and the incision size was less than 2cm size.

Results

We could obtain ideal WHR by increasing the pelvic width as much as we designed. The neurovascular complication was not reported.

Conclusions

Pelvic osteoplasty with patient specific prototype plate idealizing waist-hip ratio is promising.

16:40 TRANSVERSE AND VERTICAL APPROACH IN ABDOMINAL SURGICAL CONTOURING AFTER MASSIVE WEIGHT LOSS: WHICH IS THE PROCEDURE WITH THE BEST AESTHETIC OUTCOME?

Francesco RUSSO, Andrea REHO, Alessandro FERRARIO, Dominic TAIBI
Istituto Clinico Sant'Ambrogio, Milan, Italy & Policlinico San Pietro, Bergamo, Italy

Introduction

Tummy tuck is one of the most frequent procedures performed in aesthetic plastic surgery. Massive weight loss and pregnancy are likely to induce an excess of fat and skin on the abdominal region. The amount and distribution of redundancy relate to the volume lost and each patient's pattern of fat deposition. In nonobese patients, where pannus and skin laxity are mainly localized in the peri-umbelical and hypogastric regions, a conventional abdominoplasty is the preferred treatment. Massive weight loss patients often have significant epigastric midline abdominal fullness or laxity. This region is not adequately treated with conventional abdominoplasty techniques. In such cases, a 'fleur de lys' approach, with a vertical scar, could be more indicated.

Materials & Methods

A series of 200 patients undergoing abdominoplasty has been examined from february 2014 to november 2015, including both vertical and transverse approach and collecting all data concerning patients' clinical hystory, type of surgery performed, complications, eventual surgical re-operations. After data collection an outcome rating score, evaluated either by the surgeon and by the patient, has been assigned to each patient. The degree of patient satisfaction was assessed through a subjective scale, with scores ranging from 1 to 5.

Results

Our investigation did not show relevant differences in terms of complications between patients treated by vertical approach and patients treated by transverse classical incision. Fifteen percent of the patients had minor complications (minor dehiscences and hypertrophic scars), which were all treated on an outpatient basis. Almost all patients reported high satisfaction rate and considered their results as good or very good (grades 3 or 4) or excellent (grade 5).

Conclusions

The patient undergoing abdominoplasty should be carefully evaluated, in order to well select all the cases in which a vertical scar can be considered the right 'sacrifice' for a better aesthetic remodeling of the abdominal area.

16:48

ORAL CONTRACEPTIVE MANAGEMENT IN AESTHETIC SURGERY: A SURVEY OF CURRENT PRACTICE TRENDS

Anmol CHATTHA, Emile BROWN, Emily CLARKE-PEARSON, Sumner SLAVIN, Samuel LIN

Beth Israel Deaconess, Harvard Medical School, Boston, Massachusetts, USA

Introduction

Oral contraceptive pill (OCP) use is an established risk factor for venous thromboembolism (VTE) and is included in the Caprini Risk Assessment Model. There are no guidelines regarding discontinuation of OCP therapy before or after elective cosmetic surgery. The aim of this study is to establish current practices regarding perioperative OCP management in aesthetic surgery.

Materials & Methods

An eight-item online survey was distributed to Plastic Surgeons who were members of the American Society of Plastic Surgeons (ASPS). Survey results were analyzed to determine if surgeons' practice setting, years of experience, annual cosmetic volume, or types of cosmetic procedures performed affected their perioperative management of OCPs.

Results

Two hundred and forty-seven ASPS members responded to the survey. 85.8% of respondents were in private practice and 14.2% academic. 68.2% of respondents did not discontinue OCPs pre-operatively, 75.5% of surgeons did not discontinue OCPs postoperatively. No significant differences were seen between private and academic surgeons. The total number of cosmetic procedures performed annually was predictive of postoperative OCP discontinuation (OR=1.03, $p=0.026$), but not for pre-operative. Type of cosmetic procedure performed and years in practice was not significantly associated with either pre- or post-operative OCP discontinuation.

Conclusions

Despite OCP therapy being a known risk factor for VTE, the majority of surgeons performing cosmetic surgery do not routinely discontinue the OCP perioperatively. Our study suggests that surgeons who perform more procedures annually are more likely to discontinue OCPs postoperatively. This may reflect an increased recognition of VTE risk among high volume aesthetic surgeons. OCPs are currently used by 16% of women aged 15-44; this demographic represents many of the patients presenting for cosmetic surgery. Since the risks associated with short-term discontinuation of OCPs are relatively low as compared to the potentially fatal risks of VTE, the authors recommend that more practitioners consider discontinuation of OCPs perioperatively.

16:56

SUTURELESS INCISIONLESS MASTOPEXY: A 10 YEARS EXPERIENCE REFINING A TISSUE MOLDING PROCEDURE

Roger KHOURI, Kimberly KHOURI, Eufemiano CARDOSO, Tom BIGGS
Miami Breast Center, Miami, Florida, USA

Introduction

Tissues contract, much of plastic surgery is fighting contractures. Could we turn this foe into a friend in order to tighten the breast envelope? Could we then perform mastopexies without any incision or suture? We present our 10 years experience developing and refining this new minimally invasive surgical procedure.

Materials & Methods

The procedure is performed after tight tumescence of the subdermal plane with physiologic saline with epinephrine and lidocaine. We then percutaneously dissect the skin envelope from the breast parenchyma with windshield wiper and seesaw motions of a rod-like rasp dissector inserted through 4 circumareolar needle punctures. To re-drape the dissected envelope in the preferred position, we place the patient in extreme Trendelenburg. Then to hold the shape in place, instead of inserting sutures or mesh, we apply an external conforming adhesive and shaping bra. The patient wears the bra for 6 weeks post operatively till the dissected interface tissues heals to maintain the uplifted ideal breast shape.

Results

We performed sutureless incisionless mastopexies on 85 breasts. We initially only offered the procedure unilaterally to achieve symmetry with the contralateral reconstruction (45 breasts), then as our results became more predictable, we expanded our indication for our cosmetic mastopexies (40 breasts). The heavier and more pendulous breasts (24) required a repeat procedure to achieve optimal results (28%). 60 breasts remained uplifted and nicely shaped beyond 6 months follow up (71%). Failures included 12 patients who did not keep the adhesive bra for the entire 6 weeks period and 3 full thickness ulcerations that healed by secondary intention. Follow up MRI confirmed the presence of a brassiere like subdermal scar layer.

Conclusions

This experience suggests we can control the normal scarring process and avoid traditional incisions and sutures. By molding instead of tailoring we can realize the “plastikos” of plastic surgery.

**17:04 TUBEROUS BREAST: PAST, PRESENT AND FUTURE.
PERSONAL EXPERIENCE, CLASSIFICATION, TREATMENT
AND SURGICAL OUTCOMES**

Dario MELITA, Francesco MORI, Marco INNOCENTI, Adriana CORDOVA,
Alessandro INNOCENTI
Careggi University Hospital, Florence, Italy

Introduction

Tuberous breast is a rare congenital deformity which may appear in different clinical forms representing various degrees of a single pathological entity. In this paper the authors propose a new classification, with the aim of summarizing and simplifying a more intuitive categorization of the malformation, allowing an immediate diagnosis and surgical planning.

Materials & Methods

Between September 2006 and December 2015, 78 patients with tuberous breasts underwent surgical procedures (145 tuberous breasts). Patients' mean age was 18.6 years, ranging between 17 and 26 years. The authors present a personal classification including all the forms of the deformity, plus the minor forms based on the two principal categories: hypoplastic and normoplastic tuberous breasts, taking into account all the clinical aspects of the malformation (as morphology and consistency). A periareolar approach, adipo-glandular flaps and dual-plane breast implant placements were performed.

Results

Our long-term result is 6 years with a minimum follow-up of 6 months. No particular differences have been noticed between anatomical and round implants in the long run. Anatomical implants become more natural faster, otherwise implant rotations should be considered. No serious complications have been reported. Few cases of NAC temporary hypoesthesia resolved spontaneously. No hematoma requiring surgical revision, no NAC necrosis and no necrosis of the adipo-glandular flaps; their vitality was not disturbed by rotational movement and the pedicles have been demonstrated valid and reliable. Aesthetically pleasing results were ranked as high as 98% by the use of a multiple-choice questionnaire survey.

Conclusions

Preoperative identification of the type of the deformity is essential to obtain satisfactory results and a complete and intuitive classification, including all the possible variants of the deformity, even the minor forms, and fundamental in diagnosing and resolving the problem. In this paper the authors propose a personal classification and surgical procedure to resolve the malformation.

17:12 HIGH-DEFINITION FAT GRAFTING BREAST AUGMENTATION

Giuseppe VISCONTI, Marzia SALGARELLO
Polliclinico Universitario Agostino Gemelli, Rome, Italy

Introduction

Cosmetic breast augmentation with fat grafting is considered an established scarless surgical alternative to augmentation with implant. Lowering of IMF in fat grafting can be achieved by weakening it with both blunt and sharp instruments. Filling this space with fat and the subsequent edema will push down the old IMF contributing to obtain a lower new IMF. Similarly, fat grafting lateral breast pole weakens lateral ligamentous IMF components, favoring an increase in breast width. The purpose of this paper is to report a new technique which allows to obtain a high-definition, lower new inframammary fold and high control of final breast width.

Materials & Methods

From September 2015 to April 2016, we applied this new technique on eleven consecutive patients undergoing fat grafting breast augmentation where IMF lowering was needed. After fat grafting, two polydioxanone anchor thread sutures were percutaneously passed along the designed new IMF and tight up to the desired effect. A high-definition new IMF was immediately achieved along with a high-definition of the new breast width. No postoperative external bandages were used to improve the new IMF definition.

Results

Patients' average age was 26 years old, ranging from 17 to 35 years old. Average follow-up time was 8 months, ranging from 6 to 14 months. A high-definition new IMF and breast width were achieved in all cases, which remains stable at follow-up. No postoperative complications were experienced such as thread infection, extrusion or inflammation.

Conclusions

The dual anchor thread suture technique is a new, effective, simple, reliable, safe and scarless method to control and high-define the new IMF and breast width in fat grafting breast augmentation. By allowing an upward redirection of interstitial pressure on the lower pole rather than on the new IMF, a further benefit is achieved due to an enhanced shaping effect on lower pole convexity.

17:24 TRIPLE PLANE AUGMENTATION MASTOPEXY

Karima ISMAIL, Mariam ISMAIL, Taher ISMAIL, Ahmed ISMAIL
Kasr El-Aini Hospitals, Cairo University, Egypt

Introduction

Dual plane augmentation mastopexy has gained wide popularity in overcoming the problem of ptosed small breasts. However in our hands it failed to treat severe cases of ptosis (grade 3) and glandular ptosis.

Therefore, we conceived a method to manage these patients efficiently. The aim is to achieve a harmonious, natural upper and medial pole fullness, better projection and appropriate size with limited scar. We call this technique triple plane augmentation mastopexy as we go through three planes 1. Sub-mammary 2. Sub-pectoral 3. Subcutaneous planes.

Materials & Methods

From 2010 to 2015, 75 consecutive cases of grade 3 or glandular ptosis were done in a single clinic by 3 separate surgeons adopting the same principle using peri-areolar incision.

First, undermining of the breast tissue through a tunnel till the second rib in sub-mammary plane. Dissection of sub-pectoral pocket for implant with release of lower border of pectoralis major. Suspension of the breast tissue to the lower border of the second rib; insertion of the implant followed by either crescent or Benelli mastopexy.

Results

Surgical follow up varied from a minimum of 6 months to a maximum of 5 years, with an average of 3 years. 85.3% complied to follow up. 76.5% of the followed-up cases were satisfied. Early complications: 7.8% tenderness and redness; 4.8% severe pain; 3.1% seroma; 1.5% hematoma. Delayed complications: 12.5% loss of nipple sensation; 10.9% recurrent ptosis; 9.3% capsular contraction; 7.8% poor scarring; 3.1% areolar asymmetry; 3.1% breast asymmetry; 1.5% delayed hematoma after 5 years, discovered by MRI.

Conclusions

Grade 3 and glandular ptosis represents a challenge to plastic surgeons. This technique achieves suspension of ptosed breasts by sutures, creating an appealing superior fullness and good coverage for implants. It's a safe reliable procedure that ensures long term desired aesthetic outcome with limited scar.

17:32

A GRADED APPROACH TO LOWERLID BLEPHAROPLASTY

James ZINS

Cleveland Clinic, Cleveland, Ohio, USA

AAPS President 2016-2017

Objectives

After studying this article, the participant should be able to: 1. Define the anatomy of the lower eyelid tarsoligamentous framework and the related periorbital retaining ligaments, and cite their surgical relevance. 2. Perform a systematic functional and aesthetic evaluation of the lower eyelid focusing on the lid-cheek junction, and clinical tests that predict the need for lateral canthal tightening. 3. Enumerate the different approaches to lower eyelid rejuvenation and discuss their merits/limitations. 4. Describe surgical strategies to blend the lid-cheek junction and tighten the lateral canthal retinaculum.

Summary

Modern lower lid blepharoplasty requires a thorough understanding of periorbital anatomy, age-related changes of the lid-cheek junction, and the variables controlling lower lid tone and position. The surgical strategies are best used in a graded fashion. The patient with isolated lower lid bags may be treated by transconjunctival fat resection alone. Additional mild skin laxity can be improved with skin pinch or skin-only undermining. Skin resurfacing using chemical peeling or laser can further address fine lines. In these patients with an abnormality of the lid-cheek junction, release of the medial orbicularis oculi muscle and variable amounts of the orbicularis retaining ligament is essential. This is combined with orbital fat resection or repositioning through a transconjunctival or transcutaneous skin-muscle flap. The transcutaneous approach most often necessitates lateral canthal tightening to optimize lid margin control. Generally, the degree of laxity dictates whether a canthopexy or a canthoplasty is most appropriate. Lateral canthal procedures can be applied to patients displaying clinical signs predictive of lid malposition and to those presenting with varying degrees of established lid descent.