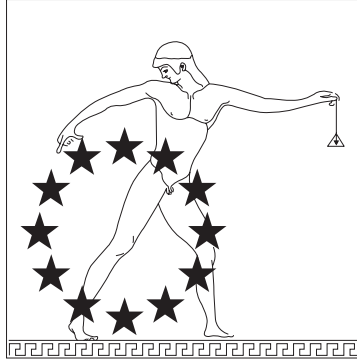


**EURAPS
EUROPEAN ASSOCIATION
OF PLASTIC SURGEONS**



**TWENTY-FOURTH ANNUAL MEETING
May 23-25, 2013**

ANTALYA, TURKEY

PROGRAM

*UNDER THE PATRONAGE
of the
Turkish Society of Plastic , Reconstructive and Aesthetic Surgeons*

THURSDAY, MAY 23, 2013

- 14.00-15.40** **SCIENTIFIC SESSION, No. 1 *TRANSLATIONAL RESEARCH I***
Session Chairpersons:
Nikolaos PAPADOPULOS, Munich, Germany
Håkan BRORSON, Malmö, Sweden
- 14.00** **THE SUPERFICIAL AND DEEP GROIN LYMPH NODES IN AUTOLOGOUS LYMPH NODE TRANSFER: AN ANATOMICAL STUDY**
Gerd FABRE, Pauline GIRISCH, Marc VANDERVOORT, Leuven, Belgium
- 14.08** **LYMPHATIC DRAINAGE OF MAMMARY GLAND AND UPPER EXTREMITIES: FROM ANATOMY TO SURGERY TO MICROSURGERY**
Corrado Cesare CAMPISI, Miguel AMORE, Rosalia LAVAGNO, Pierluigi SANTI, Franco MIGLIORI, Genova, Italy
- 14.20** **ADJUNCTS TO AUTOLOGOUS BREAST RECONSTRUCTION IN ECTOMORPH PATIENTS: VOLUMETRIC ANALYSIS OF THE GREATER OMENTUM**
David WESTBROEK, Razmara NIZAK, Narayan KARUNANITHY, James GOSSAGE, Michael DOUEK, London, United Kingdom
- 14.32** **DOES PARTIAL EXPANDER DEFLATION EXACERBATE THE ADVERSE EFFECTS OF RADIOTHERAPY IN TWO-STAGE BREAST RECONSTRUCTION?**
Burcu CELET OZDEN, Erdem GUVEN, Isik ASLAY, Gonul KEMIKLER, Vakur OLGAC, Istanbul, Turkey
- 14.44** **CAPSULAR CONTRACTURE: ANGIOGENESIS AND ROLE OF ESTROGEN RECEPTOR IN PERIPROSTHETIC TISSUE REMODELLING**
Daniele TOSI, Francesco SEGRETO, Giovanni Francesco MARANGI, Alfonso Luca PENDOLINO, Paolo PERSICHETTI, Rome, Italy
- 14.56** **BREAST TISSUE ENGINEERING: DECELLULARIZED SCAFFOLDS DERIVED FROM PORCINE MAMMARY GLANDS**
Giorgio GIATSIDIS, Erica DALLA VENEZIA, Eva KOHLSCHEN, Vincenzo VINDIGNI, Franco BASSETTO, Padua, Italy

- 15.04** **EXPLORATION OF FASCICULAR SHIFT PROCEDURE IN PERIPHERAL NERVE RECONSTRUCTION**
Marie HAHN, Robert WAKOLBINGER, Bernhard GESSLBAUER, Tessa GORDON, Oskar ASZMANN, Vienna, Austria
- 15.16** **EXPANSION OF SURVIVING SKIN PADDLE OF NEUROGENIC ISLAND FLAPS IN RATS BY VEGF**
Gülsüm TETİK, Kemal ISLAMOĞLU, Halil Ege OZGENTAS, Antalya, Turkey
- 15.28** **ANATOMICAL PARTITIONS AND SEGMENTAL HARVESTING OF MUSCLE SPARING VASTUS LATERALIS FLAPS: A CADAVERIC AND CLINICAL STUDY**
Francesca TOIA, Salvatore D'ARPA, Adriana CORDOVA, Francesco MOSCHELLA, Palermo, Italy
- 16.10-17.34** **SCIENTIFIC SESSION, NO. 2 *TRANSLATIONAL RESEARCH II***
Session Chairpersons:
Bernardo HONTANILLA, Pamplona, Spain
Selahattin ÖZMEN, Ankara, Turkey
- Presentation of the Best Papers: EURAPS Research Council Meeting Munich 2012**
- 16.10** **PREVENTION OF BURN PROGRESSION: THE ROLE OF WARM WATER AND ERYTHROPOIETIN**
Yves HARDER, Mikael TOBALEM, Brigitte PITTET-CUÉNOD, Farid REZAEIAN, Reto WETTSTEIN, Munich, Germany; Geneva, Basel, Switzerland
- 16.22** **TISSUE PRECONDITIONING USING ENDOGENOUSLY PRODUCED HORMONES TO PREVENT ISCHEMIC NECROSIS IN MUSCULOCUTANEOUS FLAP TISSUE**
Farid REZAEIAN, Reto WETTSTEIN, Michael D. MENGER, Hans-Günther MACHENS, Yves HARDER, Munich, Germany
- 16.46** **IN-VIVO IMAGING OF FACIAL NERVE REGENERATION AFTER CRUSH INJURY, CUT-AND-REPAIR AND CROSS-FACE NERVE GRAFTING IN THE THY1-GFP RAT**
Eva PLACHETA, Christine LAFONTAINE, Tessa GORDON, Gregory BORSCHER, Manfred FREY, Vienna, Austria; Toronto, Canada

- 08.00-09.56** **SCIENTIFIC SESSION, No. 3 *CRANIO/MAXILLO/FACIAL***
Session Chairpersons:
Eric ARNAUD, Paris, France
Nathalie ROCHE, Ghent, Belgium
- 08.00** **SYSTEMATIC EVALUATION OF THE RESULTS OF SUR-
GERY FOR METOPIC SYNOSTOSIS: RESULTS FROM A
LARGE SINGLE CENTER**
Lars KÖLBY, Giovanni MALTESE, Gennaro SELVAGGI, Peter
TARNOW, Göteborg, Sweden
- 08.12** **MUTATIONS IN TCF12 ARE A FREQUENT CAUSE OF
CORONAL SUTURE SYNOSTOSIS**
Irene MATHIJSEN, Vikram SHARMA, Aimee FENWICK,
Jacqueline GOOS, Andrew WILKIE, Rotterdam, The Netherlands
- 08.24** **HEMIFACIAL RECONSTRUCTION IN NOMA SEQUELAE**
Brigitte PITTET-CUÉNOD, Denys MONTANDON, Denise
BARATTI-MEYER, Benoît JENNY, Benedict RILLIET, Geneva,
Switzerland
- 08.36** **DISTRACTION – A NEW METHOD FOR TRISMUS RE-
LEASE IN THE THIRD WORLD**
Jürgen HOLLE, Anton SCHWABEGGER, Vienna, Innsbruck,
Austria
- 08.44** **THE COMPLICATIONS OF FRONTOFACIAL DISTRAC-
TION. AN ELEVEN YEAR REVIEW.**
David DUNAWAY, Jonathan BRITTO, Christopher ABELA,
Robert EVANS, Owase JEELANI, London, United Kingdom
- 08.56** **SECONDARY EAR RECONSTRUCTION: A COMPREHEN-
SIVE APPROACH TO THIS CHALLENGING SITUATION**
Françoise FIRMIN, Alexandre MARCHAC, Paris, France
- 09.08** **ANATOMIC STUDY AND CLINICAL SIGNIFICANCE OF
INTRAMUSCULAR INNERVATION IN MIMETIC MUS-
CLES**
Jiang HUA, Zhu LIE, Liu AN-TANG, Chen GANG, Yu DA-ZHI,
Shanghai, People's Republic of China
- 09.20** **COMPARING CONVENTIONAL MANDIBULAR RECON-
STRUCTION WITH A COMPUTER AIDED DESIGN AND
MANUFACTURING TECHNIQUE.**
Rossella SGARZANI, Simona MAZZONI, Colin MORRISON,
Claudio MARCHETTI, Riccardo CIPRIANI, Bologna, Italy

- 10.30-12.54** **SCIENTIFIC SESSION, NO. 4 *MICROSURGERY/NERVE***
Session Chairpersons:
Laurent LANTIERI, Paris, France
Salvatore D'ARPA, Palermo, Italy
- 10.30** **INTRAOPERATIVE VASOPRESSOR THERAPY DOES NOT AFFECT FREE FLAP VIABILITY: A MYTH BUSTED**
Tahsin Oguz ACARTURK, Nick VIAL, Vincent CHAVANON, Lauren ZAMMERILLA, Bonnie LU, Pittsburgh, PA, USA
- 10.54** **THE USE OF REVERSE FLOW FASCIOCUTANEOUS FLAPS FOR THE RECONSTRUCTION OF SEVERE POST-BURN LOWER EXTREMITY CONTRACTURES**
Fatih UYGUR, Haluk DUMAN, Ersin ULKUR, Bahattin CELIKOZ, Istanbul, Turkey
- 11.02** **LONG TERM FUNCTIONAL OUTCOMES OF THE CAPPANNA TECHNIQUE FOR PEDIATRIC LIMB SALVAGE**
Utku Can DÖLEN, Steven MORAN, Ankara, Turkey
- 11.14** **NEW RECONSTRUCTION OPTIONS WITH THE ANTERIOR SUPRACLAVICULAR ARTERY PERFORATOR (ASAP) PROPELLER FLAP: EXPERIENCE AND CLINICAL RESULTS**
Norbert PALLUA, Aachen, Germany
- 11.26** **USE OF CHIMERIC ANTEROLATERAL THIGH FLAP WITH BOTH FUNCTIONAL MOTOR AND SENSORY INNERVATION FOR SUBTOTAL AND TOTAL GLOSSECTOMY DEFECTS**
Ozlenen OZKAN, Omer OZKAN, Alper Tunga DERIN, Ahmet DUYZMAZ, Gamze BEKTAS, Antalya, Turkey
- 11.34** **ADIPOFASCIAL ANTEROLATERAL THIGH FLAP TO ORAL CAVITY RECONSTRUCTION**
Tommaso AGOSTINI, Davide LAZZERI, Florence, Italy
- 11.46** **FUNCTIONAL RECONSTRUCTION OF TOTAL LOWER LIP DEFECTS USING INNERVATED GRACILIS FLAP IN THE SETTING OF HIGH-ENERGY BALLISTIC INJURY TO THE LOWER FACE.**
Raffi GURUNLUOGLU, Bulent SACAĞ, Mark GLASGOW, Denver, Colorado, USA
- 11.58** **MR-ANGIOGRAPHY FOR PREOPERATIVE PERFORATOR MAPPING: ACCURACY AND COMPARISON OF IMAGE QUALITY OF TWO DIFFERENT MR SEQUENCES**
Hakan BULAM, Murat UCAR, Serhan TUNCER, Yusuf ONER, Suhan AYHAN, Ankara, Turkey

- 12.06** **VENOUS COUPLER SIZE IN AUTOLOGOUS BREAST RECONSTRUCTION – DOES IT MATTER?**
Caroline SZPALSKI, Katie WEICHMAN, Niclas BROER, Jamie LEVINE, Robert ALLEN, New York, NY, USA
- 12.18** **SUPERIOR EPIGASTRIC ARTERY PERFORATOR FLAP FOR STERNAL DEFECT RECONSTRUCTION**
Reto WETTSTEIN, Philipp HONIGMANN, Dirk J SCHAEFER, Daniel KALBERMATTEN, Basel, Switzerland
- 12.30** **COMPLEX REGIONAL PAIN: PERIPHERAL NERVE APPROACHES FOR SUCCESS IN THE UPPER OR LOWER EXTREMITY**
A. Lee DELLON, Gedge D. ROSSON, Towson, USA
- 12.42** **ADOLF STOFFEL (1880-1937) – PIONEER OF NERVE FASCICLE ANATOMY, SELECTIVE NEUROTOMY AND NERVE TRANSFER**
Andreas GOHRITZ, A. Lee DELLON, Hannover, Germany; Towson, USA
- 14.00-14.56** **SCIENTIFIC SESSION, NO. 5 HAND**
Session Chairpersons:
Pietro GIOVANOLI, Zurich, Switzerland
Koray COSKUNFIRAT, Antalya, Turkey
- 14.00** **SENSORY REINNERVATION OF THE PALM BY TRANSFER OF THE SUPERFICIAL BRANCH OF THE RADIAL NERVE TO THE MEDIAN AND ULNAR NERVE.**
Thilo Ludwig SCHENCK, Shenyu LIN, Jessica STEWART, Hans-Günther MACHENS, Riccardo GIUNTA, Munich, Germany
- 14.12** **MINI-PROPELLER FLAPS IN FINGERS RECONSTRUCTION**
Alexandru Valentin GEORGESCU, Ileana MATEI, Irina CAPOTA, Cluj Napoca, Romania
- 14.24** **FINGERTIP RECONSTRUCTION WITH REVERSE ADIPOFASCIAL HOMODIGITAL FLAP**
Mehtap KARAMESE, Malik ABACI, Ahmet AKATEKIN, Tugba GÜN, Zekeriya TOSUN, Konya, Turkey
- 14.32** **ADVANTAGES OF THE USE OF INJECTABLE COLLAGENASE IN THE TREATMENT OF DUPUYTREN'S CONTRACTURE**
Ingrid SCHLENZ, Stefan GÄRNER, Marion DIETL, Rupert KOLLER, Vienna, Austria
- 14.44** **IMPROVEMENTS OF THE BIOTECHNOLOGICAL**

INTERFACE IN TRANSHUMERAL AMPUTEES

Stefan SALMINGER, Manfred FREY, Christian HOFER, Oskar ASZMANN, Vienna, Austria

- 15.30-17.18** **SCIENTIFIC SESSION, NO. 6 *GENERAL AESTHETICS***
Session Chairpersons:
Bryant A. TOTH, San Francisco, CA, USA
Wolfgang MÜHLBAUER, Munich, Germany
- 15.30** **DO WE HAVE TO USE GRAFTS IN RHINOPLASTY?**
Ismail KÜCÜKER, Selahattin ÖZMEN, Basar KAYA, Fatma Betül AK, Ahmet DEMIR, Samsun, Turkey
- 15.42** **QUANTITATIVE PLANNING IN ENDONASAL RHINOPLASTY USING THE CROSS CARTILAGINOUS APPROACH**
Kuen Yeow CHIN, Rajan UPPAL, Slough, United Kingdom
- 15.50** **DEFINING BEAUTY: HOGARTH'S SERPENTINE LINE REVISITED.**
Rachel ROLPH, James TAYLOR, Jian FARHADI, London, United Kingdom
- 15.58** **SIMULTANEOUS LIPOFILLING AND HIGH SMAS FACELIFT: A MORE EFFECTIVE WAY TO ADDRESS THE EFFECTS OF AGING**
Ina A. NEVDAKH, Bryant A. TOTH, San Francisco, CA, USA
- 16.10** **BREAST AUTOAUGMENTATION FOR VOLUME RESTORATION FOLLOWING IMPLANT REMOVAL**
Bulent SACAĞ, Raffi GURUNLUOĞLU, Istanbul, Turkey
- 16.18** **PSYCHOLOGICAL ASPECTS OF THE PIP BREAST IMPLANTS CRISIS: THE PATIENT PERSPECTIVE**
Nikolaos ARKOULIS, Carol SUTHERLAND, Zoe CHOULIARA, Livingston, United Kingdom
- 16.30** **PREOPERATIVE BREAST INVESTIGATION AND HISTOPATHOLOGICAL ANALYSIS: IT'S WORTH IT FOR REDUCTION MAMMOPLASTY?**
Ali MODARESSI, Marlene TADLER, Georges VLASTOS, Marie-Françoise PELTE, Brigitte PITTET-CUÉNOD, Geneva, Switzerland
- 16.42** **POWER ASSISTED LIPOSUCTION MAMMAPLASTY (PALM): MAXIMIZING BLOOD SUPPLY TO NIPPLE-AREOLA COMPLEX IN GIGANTOMASTIA REDUCTION.**
Marwan ABBOUD, Saad DIBO, Brussels, Belgium

- 16.54** **COMPUTER ASSISTED EVALUATION OF NAC SENSIBILITY IN SMALL TO LARGE UNOPERATED FEMALE BREASTS**
Rosaria LAPORTA, Benedetto LONGO, Matteo AMOROSO, Antonella FIORILLO, Fabio SANTANELLI, Rome, Italy
- 17.06** **A PROSPECTIVE CONTROL STUDY OF LONG-TERM NAC'S SENSORY RECOVERY FOLLOWING SUPEROLATERAL PEDICLED REDUCTION MAMMAPLASTY.**
Fabio SANTANELLI, Benedetto LONGO, Alessio FARCOMENI, Rosaria LAPORTA, Marco PAGNONI, Rome, Italy

SATURDAY, MAY 25, 2013

- 08.30-10.30** **SCIENTIFIC SESSION, No. 7 *CLINICAL GENERAL***
Session Chairpersons:
Ken STEWART, Edinburgh, United Kingdom
- 08.30** **HYDROFIBER SILVER VERSUS NANOCRYSTALLINE SILVER DRESSINGS IN PARTIAL THICKNESS BURNS: A PROSPECTIVE, RANDOMIZED, CONTROLLED STUDY IN 100 PATIENTS**
Stan MONSTREY, Henk HOEKSEMA, Jos VERBELEN, Alexander HEYNEMAN, Ali PIRAYESH, Ghent, Belgium
- 08.42** **PERMEABILITY OF SALINE-FILLED TISSUE EXPANDERS TO ELECTROLYTES AND MACROMOLECULES: AN IN VIVO STUDY**
Aydin SARAY, Ücler KISA, Dilek KILIÇ, Ali Teoman TELLIOGLU, Istanbul, Turkey
- 08.54** **INTRAOPERATIVE LASER FLUORESCENT ANGIOGRAPHY FACILITATES OPTIMAL TISSUE EXPANDER/ADM BREAST RECONSTRUCTION OUTCOMES**
Patrick GARVEY, Jesse SELBER, Christopher HOBAUGH, Donald BAUMANN, Charles BUTLER, Houston, TX, USA
- 09.06** **DYNAMIC RECONSTRUCTION OF THE ABDOMINAL WALL WITH THE PEDICLED INNERVATED VASTUS LATERALIS AND ANTEROLATERAL THIGH (PIVA) FLAP.**
Lore BUDHIHARTO, Jan Jeroen VRANCKX, Katarina SEGERS, Anne-Marie STOEL, Lloyd NANHEKHAN, Leuven, Belgium
- 09.18** **ABDOMINAL WALL RECONSTRUCTIONS WITH PRIMARY FASCIAL CLOSURE AND MESH REINFORCEMENT EXPERIENCE SUPERIOR OUTCOMES TO BRIDGED MESH REPAIRS**
Justin BOOTH, Patrick GARVEY, Donald BAUMANN, Jesse

- 09.30** **DEMAND FOR BODY CONTOURING SURGERY IN POST BARIATRIC PATIENTS**
Anna ELANDER, Trude STAALESEN, Monika FAGEVIK
OLSÉN, Gothenburg, Sweden
- 09.54** **PERFORATOR FLAPS IN LATE STAGE PRESSURE SORES TREATMENT: OUTCOME ANALYSIS OF 11-YEAR-LONG-EXPERIENCE WITH 143 PATIENTS**
Luca GRASSETTI, Alessandro SCALISE, Matteo TORRESETTI,
Mateo GIOACCHINI, Giovanni DI BENEDETTO, Ancona, Italy
- 10.06** **SENTINEL NODE MICROMETASTASIS IN MALIGNANT MELANOMA: IS IT A RELIABLE PROGNOSTIC INDEX?**
Edoardo DALLA POZZA, Enrico VIGATO, Leonardo ROSSATI,
Federica BOSCO, Maurizio GOVERNA, Verona, Italy
- 10.18** **TRACHEA ALLOTRANSPLANTATION AND PREFABRI-CATION FOR LONG TRACHEA STENOSIS WITH WITH-DRAWAL OF IMMUNOSUPPRESSION. UPDATE AFTER 6 CASES.**
Jan Jeroen VRANCKX, Katarina SEGERS, Pierre DELAERE,
Leuven, Belgium
- 11.10-11.30** **AAPS BEST PAPER 2012**
Introduction: John A Persing, AAPS-President – New Haven,
CT, USA
- ASSESSING POST-OPERATIVE VENOUS THROMBO-EMBO-LISM RISK IN PLASTIC SURGERY PATIENTS: A HEAD TO HEAD COMPARISON OF THE 2005 AND 2010 CAPRINI RISK SCORE**
Christopher J. PANNUCCI, Ruth J. BARTA, Pamela R.
PORTSCHY, George DRESZER, Ronald E. HOXWORTH,
Loree K.KALLAINEN, Edwin G. WILKINS, Ann ARBOR, MI,
Minneapolis, MN, Dallas, TX, USA
- 11.30-13.00** **SCIENTIFIC SESSION, NO. 8**
PANEL *GENITAL PLASTIC SURGERY- WHAT IS NEW?*
Moderator: Stan Monstrey, EURAPS President – Ghent, Belgium
Co-Moderator: Gürhan ÖZCAN, Istanbul, Turkey
- Participants:
Massimo BRAMBILLA, Milan, Italy
 AESTHETIC PLASTIC SURGERY IN THE GENITAL AREA
Kensuke TASHIRO, Isao KOSHIMA, Tokyo, Japan
 ACHIEVING NORMAL IN PENILE RECONSTRUCTION
Refaat KARIM, Amsterdam, The Netherlands

FROM FEMALE MUTILATION TO FEMALE GENITAL RE-
CONSTRUCTION

Niri NIRANJAN, Chemsford and Colchester, United Kingdom

PERFORATOR FLAPS IN THE GENITAL AREA

Christine RADTKE, Hannover, Germany

MAJOR RECONSTRUCTIONS IN THE PERINEAL AREA

- 14.00-15.44** **SCIENTIFIC SESSION, NO. 9 FAT GRAFTING FOR EVERYTHING?**
Session Chairpersons:
Gino RIGOTTI, Verona, Italy
Riccardo MAZZOLA, Milan, Italy
- 14.00** **“NANOFAT” GRAFTING: BASIC RESEARCH AND CLINICAL APPLICATIONS**
Geert PEETERS, Patrick TONNARD, Alexis VERPAELE,
Moustapha HAMDI, Heidi DECLERCQ, Brussels, Belgium
- 14.12** **A SCANNING ELECTRON MICROSCOPE (SEM) STUDY AND STATISTICAL ANALYSIS OF ADIPOCYTE MORPHOLOGY IN LIPOFILLING, COMPARING THE EFFECTS OF HARVESTING AND PURIFICATION PROCEDURES WITH TWO DIFFERENT TECHNIQUES.**
Mario FAENZA, Francesco FARACE, Vittorio Mazzarello, Fabio Santanelli, Corrado Rubino, Bologna, Italy
- 14.24** **FAT GRAFTS ENRICHED WITH ADIPOSE-DERIVED MESENCHYMAL STEM CELLS: A SUSTAINABLE AUTOLOGOUS FILLER?**
Stig-Frederik TROJAHN KØLLE, Anne FISCHER-NIELSEN,
Jens Jørgen ELBERG, Roberto S. OLIVERI, Krzysztof Tadeusz DRZEWIECKI, Copenhagen, Denmark
- 14.48** **IS FAT GRAFTING TO THE BREAST SAFE? RECOMMENDATIONS FOR PATIENT SELECTION BASED ON EXPERIMENTAL AND CLINICAL DATA**
Anna KRUMBÖCK, Pranitha KAMAT, Riccardo SCHWEIZER,
Souzan SALEMI, Maurizio CALCAGNI, Anne-Catherine ANDRES, Daniel EBERLI, Pietro GIOVANOLI, Jan PLOCK,
Zurich, Switzerland
- 15.00** **MEGA VOLUME FAT GRAFTING IN THE MATRIX: APPLICATIONS FOR THE BREAST AND BUTTOCK.**
Saad DIBO, Marwan ABOUD, Brussels, Belgium
- 15.12** **THE PLACE OF MICRO FAT GRAFTING IN NOSE SURGERY**
Murat PENCE, O. Onur EROL, Istanbul, Turkey

- 15.24** **ADIPOSE-DERIVED STEM CELLS IN RODENTS ENHANCE EARLY PERIPHERAL NERVE REGENERATION**
 Mathias TREMP, Moritz MEYER ZU SCHWABEDISSEN, Elisabeth A. KAPPOS, Patricia E. ENGELS, Arne FISCHMANN, Arnaud SCHERBERICH, Dirk J. SCHAEFER, Daniel F. KALBERMATTEN, Basel, Switzerland
- 15.36** **AUTOLOGOUS FAT TRANSPLANTATION: AN ADJUVANT AND NEW TREATMENT FOR SCLERODERMA-INDUCED DIGITAL ULCERS**
 Isabella MAZZOLA, Antonio PERI, Luca ROVATI, Massimo DEL BENE, Milan, Italy
- 16.15-18.15** **SCIENTIFIC SESSION, NO. 10 *BREAST SURGERY***
 Session Chairpersons:
 Moustapha HAMDI, Brussels, Belgium
 Henri A. H. WINTERS, Amsterdam, The Netherlands
- 16.15** **COMPOSITE BREAST AUGMENTATION**
 Eric AUCLAIR, Phillip BLONDEEL, Daniel DEL VECCIO, Paris, France
- 16.27** **BREAST AUGMENTATION WITH SUPERFICIAL AND DEEP FAT: ENHANCING THE FAT GRAFT TAKE WITH THE BENEFIT OF SUBDERMAL LIPOSUCTION.**
 Marzia SALGARELLO, Giuseppe VISCONTI, Rome, Italy
- 16.39** **THE BREAST-V: A UNIFYING PREDICTIVE FORMULA FOR VOLUME ASSESSMENT IN SMALL, MEDIUM AND LARGE BREASTS.**
 Benedetto LONGO, Alessio FARCOMENI, Germano FERRI, Michail SOROTOS, Fabio SANTANELLI, Rome, Italy
- 16.51** **POSTMASTECTOMY BREAST RECONSTRUCTION IN PATIENTS WITH LOW BODY MASS INDICES: A COMPARATIVE STUDY OF MICROVASCULAR FREE FLAPS VERSUS IMPLANT BASED OUTCOMES**
 Katie WEICHMAN, Stelios WILSON, Mihye CHOI, Nolan KARP, Alexes HAZEN, New York, NY, USA
- 17.03** **ONE STAGE IMMEDIATE BREAST RECONSTRUCTION WITH IMPLANT AND ACELLULAR BOVINE PERICARDIUM VERSUS TWO-STAGE RECONSTRUCTION IN SKIN-SPARING MASTECTOMY: COMPARISON OF COST-EFFECTIVENESS AND OUTCOMES.**
 Eugenia Jenny KYRIOPOULOS, Dimosthenis TSOUTSOS, Athens, Greece

- 17.11** **ADVERSE OUTCOMES IN UNILATERAL VERSUS BILATERAL DEEP INFERIOR EPIGASTRIC ARTERY PERFORATOR FLAP BREAST RECONSTRUCTION: OUR EXPERIENCE WITH 373 CONSECUTIVE FLAPS AND A SYSTEMATIC REVIEW AND META-ANALYSIS OF THE LITERATURE.**
Andrea FIGUS, Ryckie G. WADE, Justin C R WORMALD,
Norwich, United Kingdom
- 17.23** **A HEAD-TO-HEAD COMPARISON BETWEEN THE DEEP INFERIOR EPIGASTRIC ARTERY PERFORATOR (DIEP-) FLAP AND THE TRANSVERSE MYOCUTANEOUS GRACILIS (TMG-) FLAP IN BREAST RECONSTRUCTION.**
Georg HUEMER, Thomas BAUER, Linz, Austria
- 17.31** **THE IMPACT OF AGE ON BREAST RECONSTRUCTION ISSUES: YOUNG VERSUS OLDER PATIENTS**
Guido PAOLINI, Benedetto LONGO, Marco PAGNONI, Federico CATTÀ, Fabio SANTANELLI, Rome, Italy
- 17.43** **PERI-OPERATIVE NEUROPATHY IN PATIENTS UNDERGOING FREE ABDOMINAL TISSUE BREAST RECONSTRUCTION - A PROSPECTIVE STUDY**
Adam BLACKBURN, Angelo BIRAIMA, Jian FARHADI,
London, United Kingdom
- 17.55** **THE IMPACT OF FAST TRACK SURGERY ON AUTOLOGOUS BREAST RECONSTRUCTION**
Christian BONDE, Hoda KHORASANI, Kirsten ERIKSEN,
Henrik KEHLET, Mette WOLTERS, Jens ELBERG,
Copenhagen, Denmark

ABSTRACTS

THURSDAY, MAY 23, 2013

14.00-15.40 SCIENTIFIC SESSION, No. 1 *TRANSLATIONAL RESEARCH I*

Session Chairpersons:

Nikolaos PAPADOPULOS, Munich, Germany

Håkan BRORSON, Malmö, Sweden

14.00 THE SUPERFICIAL AND DEEP GROIN LYMPH NODES IN AUTOLOGOUS LYMPH NODE TRANSFER: AN ANATOMICAL STUDY

Gerd FABRE, Pauline GIRISCH, Marc VANDERVOORT, Leuven, Belgium

PURPOSE

Lymphedema of the upper limb is one of the main sequelae after mastectomy and axillary clearance resulting in important morbidity. The method of microvascular autologous lymph node transplantation from the groin to the axilla to reduce this lymphedema is gaining in popularity. To investigate the anatomical details and numbers of the transplanted and residual lymph nodes at the inguinal side, an anatomical injection study is performed

MATERIAL AND METHODS

Ten fresh Caucasian cadavers (7 female; 3 male) were studied. Mean age was 81.7 years. Blue dye was injected in the superficial circumflex iliac artery (SCIA) and a groin flap was then dissected including the superficial lymph nodes. Then a classic inguinal lymphadenectomy to evaluate the number of the remaining (deep) lymph nodes was performed. Anatomopathological investigation on all flaps and adenectomy specimens was performed to objectify the number and location of the lymph nodes.

RESULTS

Mean BMI was 28.4. The average weight of the flap was 199.4 grams. The average number of lymph nodes found in the flap was 4.8 (range 2-8). The average number of lymph nodes that remained after prelevation of the flap was 5.1 (range 2-8). All lymph nodes found in the groin flap were located next to the SCIA and bordered by the sartorius muscle laterally.

CONCLUSIONS

An important amount of lymph nodes can be harvested around the SCIA for microvascular lymph node autotransplantation, leaving a significant number of lymph nodes in the inguinal region to theoretically prevent lymphedema of the leg after the procedure. There is no need for a wide flap as all the nodes are located in close proximity of the SCIA.

14.08

LYMPHATIC DRAINAGE OF MAMMARY GLAND AND UPPER EXTREMITIES: FROM ANATOMY TO SURGERY TO MICROSURGERY

Corrado Cesare CAMPISI, Miguel AMORE, Rosalia LAVAGNO, Pierluigi SANTI, Franco MIGLIORI, Genova, Italy

INTRODUCTION

The incidence of secondary arm lymphedema varies from 7 to 77% in patients following axillary lymph nodal dissection (ALND). Secondary arm lymphedema after axillary sentinel lymph node biopsy (SLNB) varies from 0 to 13%. The purpose of this study is to develop a detailed description of breast lymphatic drainage, remarking the correlation between upper limb derivative lymphatic pathways and the onset of lymphedema after ALND/SLNB, underlining the role of lymphatic microsurgery regarding primary prevention of secondary lymphedema following breast cancer treatment.

MATERIAL AND METHODS

In this study, 350 mammary glands and upper limbs together with 80 sections of anterior pectoral skin of deceased fetuses and of 20 adults were injected. The injection was performed with the modified Gerota's mass. Dissection was carried out after appropriate fixation of the specimens in 40% formaldehyde for 6 days, then immersed in a 100-volume hydrogen peroxide solution for 24 hours. In 90 fetus specimens the Spalteholz technique for diaphanization was performed.

RESULTS

Breast lymph flows through the perilobular lymphatics and the interlobular spaces which initiate the lymphatic capillaries and thus give origin to secondary pedicles. These lymphatic vessels exit the mammary gland at specific sites (external, internal and posterior), constituting the following draining pedicles: external or axillary pedicle (95.33%), internal or mediastinal pedicle (36.6%) and posterior or retro-mammary pedicle (17.1%). Regarding breast skin lymphatic drainage, there are two main lymphatic pathways, the ipsilateral and the contralateral. In addition, we can observe three different derivative lymphatic pathways of the upper limb: anterior external superficial pathway, posterior external superficial pathway and anterior internal deep pathway.

CONCLUSIONS

Lymphatic microsurgery at the same time of ALND/SLNB has a key role regarding primary prevention of secondary lymphedema. Planning breast cancer surgery, patients should undergo an appropriate clinical assessment together with lymphoscintigraphy to evaluate their lymphedema low-moderate-high risk.

14.20

ADJUNCTS TO AUTOLOGOUS BREAST RECONSTRUCTION IN ECTOMORPH PATIENTS: VOLUMETRIC ANALYSIS OF THE GREATER OMENTUM

David WESTBROEK, Razmara NIZAK, Narayan KARUNANITHY, James GOSSAGE, Michael DOUEK, London, United Kingdom

INTRODUCTION

There are over 2,000 reported, outcome cases of reconstruction using the greater omentum (GO) since its inception [Kiricuta, 1963]. Laparoscopic, dissection of the GO, obviates the need for an open approach (laparotomy) with minimal donor site morbidity. Skin- sparing mastectomy preserves the breast envelope. Routine staging CT imaging enables GO volume and dimension assessment. GO transposition to the breast mound, pedicled or free- style has been described previously [Zaha, 2012]. There are no published, quantitative studies of the GO. Primary endpoint: CT volume estimation of the GO (validated against fresh omentectomy specimen weights); Secondary endpoints are to correlate GO volume with body mass index (BMI) and subcutaneous adipose tissue.

METHODS

Prospective accrual of twenty consecutive patients undergoing en-bloc gastrectomy and omentectomy in accordance with our institution's R&D guidelines. Histology specimen weights and anthropomorphic measures were correlated against matched staging CT scans (128- MD Row Philips CT scanner, 2mm slice thickness with dual phase, contrast enhanced, image acquisition - Omnipaque 350, GE Healthcare, US). Open source, Insight Toolkit Seg-3D® (v. 2.1.4, NIH- University of Utah, SCI Institute) volume segmentation software, facilitates post acquisition rendering and volume analysis.

RESULTS (PRELIMINARY)

Patients' mean body mass index: 25.2 (range 22.4-28.0); mean weight of the GO (dissected off the fresh en-bloc specimen) was 270 gm [range 256-283 gm]; the mean estimated GO volume: 220 cc ~ 213 gm, [range 218-223 cc]; and a post- acquisition processing and analysis time of 44 minutes per patient (40-48 mins). The GO was clearly delineated all accrued cases to date.

CONCLUSIONS

This is the first report on non- invasive, quantitative evaluation of the GO to our knowledge. Valid pre-operative volume estimation facilitates surgical planning and may be of unique clinical utility in delineating potential, secondary donor sites for autologous breast reconstruction in slim patients.

14.32 DOES PARTIAL EXPANDER DEFLATION EXACERBATE THE ADVERSE EFFECTS OF RADIOTHERAPY IN TWO-STAGE BREAST RECONSTRUCTION?

Burcu CELET OZDEN, Erdem GUVEN, Isik ASLAY, Gonul KEMIKLER, Vakur OLGAC, Istanbul, Turkey

BACKGROUND

The optimum protocol for expander volume adjustment with respect to the timing and application of radiotherapy remains controversial.

METHODS

Eighteen New Zealand rabbits were divided into three groups. Metallic port integrated anatomic breast expanders of 250cc were implanted on the back of each animal and controlled expansion was performed. Group I underwent radiotherapy with full expanders while in Group II, expanders were partially deflated immediately prior to radiotherapy. Control group did not receive radiotherapy.

The changes in blood flow at different volume adjustments were investigated in Group II by laser doppler flowmetry. Variations in the histopathologic properties of the irradiated tissues including the skin, capsule and the pocket floor, were compared in the biopsy specimens taken from different locations in each group.

RESULTS

A significant increase in skin blood flow was detected in Group II with partial expander deflation. Overall, histopathologic exam revealed aggravated findings of chronic radiodermatitis (epidermal atrophy, dermal inflammation and fibrosis, neo-vascularisation and vascular changes as well as increased capsule thickness) especially around the lower expander pole, in Group II.

CONCLUSIONS

Expander deflation immediately prior to radiotherapy, may augment the adverse effects, especially in the lower expander pole, possibly via enhanced radiosensitization due to a relative increase in the blood flow and tissue oxygenation.

14.44 CAPSULAR CONTRACTURE: ANGIOGENESIS AND ROLE OF ESTROGEN RECEPTOR IN PERIPROSTHETIC TISSUE REMODELLING

Daniele TOSI, Francesco SEGRETO, Giovanni Francesco MARANGI, Alfonso Luca PENDOLINO, Paolo PERSICHETTI, Rome, Italy

PURPOSE

Capsular contracture is the most common complication of breast heterologous reconstruction and augmentation; pregnancy has been reported to be a risk factor. The aim of the study was to investigate the the expression of Estrogen Receptors α (ER- α) and β (ER- β) and angiogenesis in periprosthetic capsular tissue.

METHODS

The study enrolled 30 patients (32 capsules) who underwent expander removal. Specimens were stained with Hematoxylin and Eosin, Masson trichrome, immunohistochemistry and immunofluorescence for α -Smooth Muscle Actin (α -SMA), ER- α , ER- β , Collagen type I and type III, CD31 (as angiogenic marker) and evaluated at light and transmission electron microscopy. Contracture severity was graded with Baker's score. A retrospective analysis of 233 cases of breast reconstruction was performed to assess any relationship between anti-estrogenic therapy and contracture severity

RESULTS

Myofibroblasts (α -SMA positive cells), expressed ER- α , ER- β or both. ER- β positively correlated with collagen type I expression ($P=0.025$) and with the number of by myofibroblasts ($P=0.037$). There was a positive correlation between CD31 positive vessels and the presence of collagen type I ($P=0.009$). CD31 positivity also correlated with the degree of inflammatory infiltrate ($P=0.006$). Retrospective analysis of 233 cases showed that the intake of anti-estrogenic therapy was associated to lower contracture severity ($p<0.0001$) (tamoxifen $p<0.0001$, aromatase inhibitors $p=0.001$, combination of tamoxifen and GnRH-analogues $p=0.001$).

CONCLUSION

This study demonstrates the expression of estrogen receptors in myofibroblasts of capsular tissue and a lower contracture severity in patients undergoing anti-estrogenic therapy. ER- β expression may be involved in the modulation of myofibroblasts activation, collagen production, inflammatory response and vascular remodeling.

14.56 BREAST TISSUE ENGINEERING: DECELLULARIZED SCAFFOLDS DERIVED FROM PORCINE MAMMARY GLANDS

Giorgio GIATSIDIS, Erica DALLA VENEZIA, Eva KOHLSCHEEN, Vincenzo VINDIGNI, Franco BASSETTO, Padua, Italy

INTRODUCTION/PURPOSE

Decellularization of xenologous tissues provides inductive extra-cellular matrices (ECM) for effective organ reconstruction: this promising approach has not been translated to breast reconstruction yet. We investigated effectiveness of different decellularization protocols of porcine mammary glands with the purpose of prospective breast tissue engineering.

MATERIAL AND METHODS

Porcine mammary glands underwent preliminary macroscopic (anatomical) and microscopic (histological) comparative analysis to assess suitability for in vivo application. Frozen glands were cut in homogeneous samples (10 x 10 x 2 cm) and processed according to three different decellularization protocols (A, B, C) via multiple chemical treatments (A: 0.02% trypsin, 0.05% ethylenediaminetetraacetic acid-EDTA, 3% Triton X-100, 4% deoxycholic acid; B: collagenase 3 mg/g, 0.02% trypsin, 0.05% EDTA, 10 U/mL, 10 U/mL lipase; C: collagenase 3 mg/g, 0.05% EDTA, 4% sodium deoxycholate, 1% sodium dodecyl sulfate, 0.9% NaCl in TRIS-HCl containing protease inhibitors). Obtained specimens were analyzed by macroscopic (morphologic) and microscopic methods (hematoxylin and eosin-H&E, immunofluorescent labeling with 4',6-diamidino-2-phenylindole-DAPI, quantitative measurement of DNA and DNA fragment size).

RESULTS

Histological structure of porcine glands resembled human glands. Glands could be molded to required shape and adjacent glands could be harvested together (up to 700 grams). Size varied (average: 20 x 40 cm in length and 3 cm in height). Blood supply was based on reliable vascular pedicles (caliber: 1,5-2 mm). Decellularization protocols had variable effectiveness: all samples showed macroscopic evidence of decellularization preserving original morphology. DAPI, quantitative measurement of DNA (below 50 ng/mg dry tissue weight) and of DNA fragment size (below 200 base-pairs) showed effective reduction of immunogenic components in each protocol. At histological analysis (H&E) protocol A preserved a morphology more closely resembling native architecture of ECM and preserving vascular/ductal networks. Protocols B and C slightly damaged and altered histological structure.

CONCLUSIONS

Decellularization of porcine mammary tissue represents a novel and reliable preliminary approach for breast tissue engineering by prospective combined recellularization and in vivo implant.

**15.04 EXPLORATION OF FASCICULAR SHIFT PROCEDURE IN
PERIPHERAL NERVE RECONSTRUCTION**

Marie HAHN, Robert WAKOLBINGER, Bernhard GESSLBAUER, Tessa GORDON, Oskar ASZMANN, Vienna, Austria

INTRODUCTION

Over the last decade, a number of models have investigated the usefulness of different biologic and synthetic matrices as alternatives to conventional nerve grafts. Still the autologous nerve graft is the gold standard, even though here a pure sensory nerve is often used to reconstruct a mixed nerve. In recent experiments it has become evident that mixed nerves have a higher functional outcome when reconstructed with like nerve grafts. We present a new concept in the reconstruction of large proximal nerve defects that overcomes this problem: the fascicular shift. Here a fascicle group of the nerve segment distal to the injury site is harvested in appropriate length to bridge the injury site.

MATERIAL AND METHODS

The method of fascicular shifting was tested at the rat's sciatic nerve using 45 Lewis rats. In the experimental group, a 15 mm nerve defect was created and reconstructed with a fascicular group, harvested directly distal of the gap. This group was compared to one negative control group (defect without reconstruction) and three positive control groups (sensory, motor, mixed graft). The outcome of nerve regeneration was measured using retrograde labeling with fluoro-gold and fluoro-ruby, histomorphometric analysis and electrophysiological investigations.

RESULTS

The investigation of the tibial and the common peroneal nerve indicates an enhanced regeneration of the tibial nerve compared to the common peroneal nerve. The results show that our proposed method achieves superior regeneration than the gold standard technique of sensory grafting.

CONCLUSION

By harvesting the transplant from the nerve segment distal of the injury site, it is possible to use a transplant without causing donor-site morbidity. This fact in combination with the benefit of using a mixed graft makes this novel method immensely attractive for large proximal nerve defects, such as is necessary in brachial plexus reconstruction and other large nerve defects.

15.16 EXPANSION OF SURVIVING SKIN PADDLE OF NEURO-CUTANEOUS ISLAND FLAPS IN RATS BY VEGF

Gülsüm TETİK, Kemal ISLAMOĞLU, Halil Ege OZGENTAS, Antalya, Turkey

INTRODUCTION

Neurocutaneous flaps are elevated on a nerve pedicle without using any major artery. The skin paddle of neurocutaneous flaps is restricted as in other cutaneous flap. When a neurocutaneous flap is elevated larger than its original size for closing large defects, flap necrosis will be inevitable. Vascular endothelial growth factor (VEGF) is one of the most powerful angiogenetic factors. It increases vascular permeability, builds up growth of endothelial cells, and induces angiogenesis. The purpose of this study was to investigate whether vascular endothelial growth factor (VEGF) can enlarge the skin paddles of neurocutaneous flaps in rats and compare the effects of VEGF with the surgical delay phenomenon.

MATERIALS/METHODS

Wistar albino rats were used in four groups: Group 1, (n=10): neurocutaneous island flap; Group 2, (n=10): neurocutaneous island flap, surgical delay; Group 3, (n=10): neurocutaneous island flap, VEGF; Group 4, (n=10): graft. A 3 x 3 cm, neurocutaneous island flap was elevated on the anterolateral skin of the thigh of the rats. We used the VEGF subdermally, a 2 microgram single dose. Surviving flap areas measurement, histopathologic examination, microangiography were performed. Statistical analyses were done.

RESULTS

The surviving flap areas were 29.7 +/- 1.43 percent in Group 1, 41.3 +/- 3.24 percent in Group 2, 94.2 +/- 1.46 percent in Group 3. There were no surviving areas in Group 4. The vascular networks of Group 3 animals were more intensive and diffused on microangiography and the histopathologic findings were better in this group. The surviving flap areas in Group 3 animals were enlarged approximately three times over the original size.

CONCLUSION

In the future, if VEGF can be used in patients, enlarged flaps will be available for closing larger defects, without sacrificing any major artery or using complicated reconstructive techniques.

15.28

ANATOMICAL PARTITIONS AND SEGMENTAL HARVESTING OF MUSCLE SPARING VASTUS LATERALIS FLAPS: A CADAVERIC AND CLINICAL STUDY

Francesca TOIA, Salvatore D'ARPA, Adriana CORDOVA, Francesco MOSCHELLA, Palermo, Italy

PURPOSE

The aim of this study was to investigate the presence of anatomical partitioning within the vastus lateralis (VL) muscle, in order to provide guidelines for a minimally invasive harvesting of segmental flaps.

MATERIALS AND METHODS

Ten embalmed cadaveric lower limbs were investigated through dissection techniques. Muscular insertions and orientation, and branching pattern of vascular and nerve supply were analyzed. Muscular partitions were identified according to morphological architecture and vascular and nerve distribution.

A free segmental VL or chimeric ALT/segmental VL flaps was performed in 20 patients, with the aid of intraoperative electromyography, harvesting a single anatomic partition.

RESULTS

Three distinct anatomic partitions were clearly identified in all specimens, separated by a proximal and a distal intramuscular aponeurosis. Three primary divisions of VL branch of femoral nerve were identified. Each muscular partition constantly received a segmental nerve supply, whose distribution followed the vascular branching pattern. The superficial partition was judged to be the best for flap harvesting, based on its superficial position, adequate length and width and maximal pedicle length. Selective harvesting of a part or of the entire superficial partition of VL muscle was possible in all muscular and chimeric flaps. Intraoperative electromyography confirmed segmental innervation and functional integrity of the flap and of residual muscular partitions.

CONCLUSION

Anatomical basis for segmental raising of VL flaps are provided in this study. Harvesting of flaps from the superficial partition fits most reconstructive needs, and allows for flexibility in flap design and size, while respecting anatomical and functional integrity of residual muscle.

16.10-17.34 SCIENTIFIC SESSION, No. 2 TRANSLATIONAL RESEARCH II

Session Chairpersons:

Bernardo HONTANILLA, Pamplona, Spain

Selahattin ÖZMEN, Ankara, Turkey

Presentation of the Best Papers: EURAPS Research Council Meeting Munich 2012

16.10 PREVENTION OF BURN PROGRESSION: THE ROLE OF WARM WATER AND ERYTHROPOIETIN

Yves HARDER, Mikael TOBALEM, Brigitte PITTET-CUÉNOD, Farid REZAEIAN, Reto WETTSTEIN, Munich, Germany; Geneva, Basel, Switzerland

INTRODUCTION

Cooling has been considered the treatment of choice to prevent secondary burn progression, a well known phenomenon which will aggravate superficial burns that may heal spontaneously with minimal morbidity into deep lesions that require surgical treatment and result in burn sequelae. However cold-induced vasoconstriction could worsen ischemia and promote secondary burn progression. The study aim was therefore to analyze the effect of two vasodilators, i.e. warm water-application and systemic Erythropoietin (Epo)-administration after experimental burn. Material and Methods: The comb burn model creates 4 rectangular burned surfaces intercalated by 3 unburned areas. 48 Wistar rats were randomized to 6 experimental groups: 1. untreated animals (sham); 2. cooling with water (CW: 17° for 20 min); 3. warming with water (WW: 37° C for 20 min); 4. cooling and intraperitoneal administration of 500 (Epo500) respectively 5. 2500 IU Epo/kg body weight (bw) (Epo2500), starting 45 min after burn induction, and 6. cooling and 500 IU Epo/kg bw first administered 6 hrs after burn. Animals were followed until complete healing for burn surface (% of interspace necrosis) and depth progression (depth score). Microcirculation was measured using laser Doppler flowmetry. Histologic analyses were performed for vasodilative, angiogenic and inflammatory response. Statistics were performed using a two-way ANOVA-test followed by a post hoc test (Bonferroni). Values are expressed as mean \pm standard deviation (SD).

RESULTS

Progression from superficial to deep dermal burns was observed within 24 hrs in sham animals. Both CW- and WW-treatment significantly delayed secondary burn progression without reducing final burn depth after 7 days. WW-treatment ($62 \pm 4\%$) however reduced surface necrosis ($p < 0.05$ vs sham ($82 \pm 3\%$) and CW ($69 \pm 5\%$)). Epo significantly decreased burn progression both in surface and depth, only if administered 45 min after burn at a dosage of 500 IU/kg bw ($45 \pm 8\%$ /intermediate dermis vs Epo2500: $68 \pm 4\%$ /deep dermis and Epo 6 hrs: $65 \pm 4\%$ /deep dermis; day 7). Decreased secondary burn progression was paralleled by up-regulation of nitric-

oxide (NO)-synthase and increased interspace perfusion only with WW ($81 \pm 2\%$; d1) and Epo500 (45 min: $86 \pm 3\%$; $p < 0.01$ vs sham: $63 \pm 1\%$) and. Increased angiogenesis, reduced ischemia-induced inflammation, as well as total healing time conversely correlated with total burn extension.

CONCLUSION

WW improved dermal perfusion and delayed burn progression without altering ultimate burn depth. Only Epo500 administered 45 min after burn-infliction significantly limited skin necrosis in depth, preserving skin appendages needed for regeneration, which results from a NO-mediated maintenance of the microcirculation. Warm water creates a therapeutic window for targeted non-surgical treatment of burn progression, whereas Epo constitutes an effective approach to improve outcomes after thermal injury.

16.22

TISSUE PRECONDITIONING USING ENDOGENOUSLY PRODUCED HORMONES TO PREVENT ISCHEMIC NECROSIS IN MUSCULOCUTANEOUS FLAP TISSUE

Farid REZAEIAN, Reto WETTSTEIN, Michael D. MENGER, Hans-Günther MACHENS, Yves HARDER, Munich, Germany

INTRODUCTION

Persistent ischemia may lead to wound healing problems and to extensive tissue necrosis especially in reconstructive flap surgery. Endogenously produced substances such as erythropoietin (EPO) and ghrelin have been attributed vasodilative, anti-inflammatory and angiogenic properties. Consequently, pharmacological tissue preconditioning could be an effective and non-invasive approach to prevent ischemic complications in flap surgery.

OBJECTIVE

The aim of the study was to analyse the effect and underlying mechanisms of EPO and ghrelin on ischemic musculocutaneous tissue using a mouse flap model.

METHODEN

A randomly perfused musculocutaneous flap integrated in a dorsal skinfold chamber of C57BL/6-mice. 56 mice were assigned to seven experimental groups of eight animals each: 1. Ghrelin (40 µg/kg body weight (bw) before and after flap elevation); 2. N-Nitro-L-Arginine-Methylester (L-Name: unspecific nitric oxide synthase (NOS) blocker; 50 mg/kg bw); 3. Ghrelin+L-Name (40 µg Ghrelin/kg bw+50 mg L-Name/kg bw); 4. EPO-Preconditioning (500U/kg bw before flap elevation (EPO-PRE)); 5. EPO-Postconditioning (500U/kg bw after flap elevation (EPO-POST)); 6. EPO+Bevacizumab (monoclonal VEGF-antibody; 5 mg/kg bw); 7. Control (NaCl). Arteriolar diameter, functional capillary density (FCD), angiogenesis (mean vessel density; MVD) and flap necrosis were assessed with repetitive epi-fluorescence microscopy over a 10-day period. Ischemia-induced inflammatory response was determined by leukocyte-endothelial cell interaction and apoptotic cell death. The expression of inducible and endothelial NOS (iNOS and eNOS) and vascular endothelial growth factor (VEGF) was analyzed with Western blot experiments. Hematocrit after EPO administration was measured in a separate group of animals (n=8).

RESULTATS

A significantly increased expression of iNOS and eNOS in the critically perfused flap area both in ghrelin and EPO preconditioned animals was associated with a significantly increased arteriolar diameter and hyperperfusion resulting in the maintenance of FCD over 10 days. When ghrelin and EPO were administered before flap elevation (i.e. induction of ischemia) both the amount of apoptotic cells and adhering leukocytes were found significantly decreased. Also, we observed an early VEGF-upregulation leading to the formation of new functional capillaries from day 3 on ($p < 0.05$). Consequently, preconditioning with both substances significantly decreased flap necrosis (Control: $52 \pm 2\%$; Ghrelin: $14 \pm 2\%$; EPO-PRE: $26 \pm 3\%$;

d10; $p < 0.05$). Interestingly, EPO administration after flap elevation was not tissue-protective (EPO-POST: $46 \pm 3\%$). Combined administration of ghrelin and l-name completely abolished the protective effect on tissue survival by counteracting arteriolar dilation. Accordingly we observed a significantly reduced FCD and increased tissue necrosis (L-Name: $63 \pm 7\%$; Ghrelin+L-Name: $49 \pm 6\%$) without counteracting angiogenesis. Co-administration of EPO and bevacizumab resulted in a complete absence of the angiogenic response. EPO administration did not show any significant change in hematocrit values over 20 days.

CONCLUSION

Preconditioning with endogenously produced substances ghrelin and EPO induced an arteriolar dilation and hyperperfusion resulting in the maintenance of the nutritive capillary perfusion in the critically perfused flap area. In contrast, anti-apoptotic, anti-inflammatory and angiogenic effects do not contribute to improved flap survival. Preconditioning with autologous substances seems to be a promising non-invasive measure to reduce ischemia-induced complications in elective flap surgery.

16.46

IN-VIVO IMAGING OF FACIAL NERVE REGENERATION AFTER CRUSH INJURY, CUT-AND-REPAIR AND CROSS-FACE NERVE GRAFTING IN THE THY1-GFP RAT

Eva PLACHETA, Christine LAFONTAINE, Tessa GORDON, Gregory BORSCHHEL, Manfred FREY, Vienna, Austria; Toronto, Canada

INTRODUCTION

The Thy-1 GFP rat expresses green fluorescent protein (GFP) in neural tissue. Axon regeneration was imaged in-vivo after crush-injury and cut-and-repair of the facial nerve, as well as after cross-face nerve grafting, thereby characterizing the main paradigms of facial nerve injury and reconstruction, using the GFP-MDS-96/BN excitation stand (BLS Ltd).

MATERIAL AND METHODS

15 male Thy-1 GFP rats (300-400 g) were divided into 3 experimental groups: crush-injury, cut-and-repair, and cross-face nerve grafting. The distal part of the facial nerve, or the nerve graft, respectively, was pre-degenerated for 2 weeks. The left buccal and marginal mandibular branches of the facial nerve were crushed or cut 10 mm distal to the main nerve trunk. In the cross-face nerve graft group, the common peroneal nerve was used as the graft (recipient nerve: left buccal and marginal mandibular branches; donor nerve: right buccal branch).

The facial nerve (or common peroneal nerve in the cross-face nerve graft group) was imaged at the time of pre-degeneration, as well as at the time of crush injury, direct repair and nerve grafting. Subsequently, the axonal regeneration was imaged at 2, 4, and 8 weeks postoperatively. After 8 weeks, the facial nerves and Mm. levator labii superiores were harvested for immunohistochemistry and motor endplate staining.

RESULTS

The facial nerve regeneration was macroscopically imaged in-vivo in all three experimental groups using the GFP-MDS-96/BN excitation stand (BLS Ltd). The pre-degeneration of the distal part of the facial nerve, or the nerve graft, was necessary for the visualization of axon regeneration. The movement of the regeneration-front through the 30 mm cross-face nerve graft was visualized: the axons crossed the first suture line after 2 weeks and reached across the nerve graft within 4 to 8 weeks.

CONCLUSIONS

The Thy1-GFP rat is a valuable model for facial nerve injury and reconstruction research.

FRIDAY, MAY 24, 2013

08.00-09.56 SCIENTIFIC SESSION, No. 3 CRANIO/MAXILLO/FACIAL

Session Chairpersons:

Eric ARNAUD, Paris, France

Nathalie ROCHE, Ghent, Belgium

08.00 SYSTEMATIC EVALUATION OF THE RESULTS OF SURGERY FOR METOPIC SYNOSTOSIS: RESULTS FROM A LARGE SINGLE CENTER

Lars KÖLBY, Giovanni MALTESE, Gennaro SELVAGGI, Peter TARNOW, Göteborg, Sweden

INTRODUCTION

Evaluation of the results of surgery for craniosynostoses is moving away from more subjective, towards more objective methods. In Sweden, surgery for craniosynostosis has recently undergone centralisation resulting in a pronounced overweight at Sahlgrenska University Hospital in Göteborg. The Göteborg Craniofacial register contains data on more than 2000 craniofacial operations. From this source, large patient materials can be extracted and evaluated.

MATERIAL AND METHODS

From the register patients operated for isolated metopic synostosis between 2002-2008 at Sahlgrenska University Hospital who underwent pre- and/or postoperative (at three years of age) CT examination were identified. Sex and age matched controls were identified from patients undergoing CT for other reasons. A previously developed MATLAB computer program measured the frontal and total intracranial volumes.

RESULTS

Sixty patients and 198 controls were included. Two operation methods were used: 1) forehead remodeling in combination with a bone graft or 2) in combination with a spring. Preoperatively, patients with metopic synostosis had significantly smaller frontal volumes ($p < 0.001$) but equal total intracranial volumes compared to controls. The operations redistributed the intracranial volume and resulted in an improved, but not normalised, frontal/total intracranial volume ratio. However, at three years of age, the frontal volume ($p < 0.001$), total intracranial volume ($p \leq 0.002$) as well as ratio ($p < 0.001$), were significantly smaller in patients than in controls. The two operation methods were equally efficient in creating an improved frontal/total ratio.

CONCLUSION

Since both techniques result in improved, but not normalized, distribution of the intracranial volume - and skulls were smaller than in normal children -, surgical

techniques need to be improved to render these children normal skulls. The centralisation enables a systematical evaluation of large patient materials, an objective comparison of the available surgical techniques, and it reveals important epidemiological information.

**08.12 MUTATIONS IN TCF12 ARE A FREQUENT CAUSE OF
CORONAL SUTURE SYNOSTOSIS**

Irene MATHIJSEN, Vikram SHARMA, Aimee FENWICK, Jacqueline GOOS,
Andrew WILKIE, Rotterdam, The Netherlands

Patients with syndromic coronal suture synostosis based on changes in the FGFR2, FGFR3 and TWIST1 gene are easily recognized clinically. There remains a vast number of patient with unilateral or bilateral coronal suture synostosis that appear to be non-syndromic, as they do not present with obvious other congenital anomalies. For most of these patients, the cause of their craniosynostosis remains unknown.

In a combined research project with professor Wilkie from the Weatherall Institute of Molecular Medicine in Oxford, mutations in TCF12 were identified in 39 unrelated individuals. These included 23/72 (32%) with bicoronal synostosis, 14/141 (10%) with unicoronal synostosis, and 2 with multisutural synostosis, but none with synostosis of only the metopic, sagittal or lambdoid sutures. Surprisingly, one of the parents were shown to be affected too in 18 cases, while most of them were clinically normal. Of the 66 tested individuals, 6 demonstrated autism or learning disabilities.

The TCF12 gene is a frequent cause of unilateral and bilateral coronal suture synostosis. Given the impact on genetic counselling and prognosis, genetic testing is indicated.

08.24 HEMIFACIAL RECONSTRUCTION IN NOMA SEQUELAE

Brigitte PITTET-CUÉNOD, Denys MONTANDON, Denise BARATTI-MEYER, Benoît JENNY, Benedict RILLIET, Geneva, Switzerland

Noma is a gangrenous disease that causes severe destruction of the face in children of developing countries with dramatic functional and aesthetic repercussions. Our service has been active in the treatment of noma sequelae for more than 20 years. Specific surgical challenges include mouth constriction due to scar retraction, maxillary destruction and large tissue defect involving complex structures like lips, eyelids and the nose.

MATERIAL AND METHODS

We present a series of 29 patients (10,7 years old; 4-23) treated in our hospital during the past 20 years after hemifacial destruction due to noma. Bone reconstruction was performed by prefabricated vascularised calvarium flap. Large soft tissue defects required the use of free flaps, and nose and lips reconstructions were then achieved by local flaps restoring the subunits. Surgical strategies and complications are analyzed. Follow up where performed either by ourselves during missions or by the local staffs of NGO.

RESULTS

Hemifacial reconstructions were achieved through staged procedures (5,67 operations; 2-18) during transfers of several months (7,36 months; 3-12), Surgical procedures included 22 vascularized bone reconstructions, and 20 free flaps. Nasal reconstruction was performed in 14 cases. Complications included recurrence of mouths retraction in many cases, immediate infections of nasal bone grafts, and partial flap lost in 3 cases. Four patients where reoperated during surgical mission for corrections and 3 had to come back in Switzerland for long term complications.

CONCLUSIONS

The surgical management of these children has an obvious impact on their quality of life and social integration. Observation of high recurrence of mouth contraction makes us switch from local or pedicled flaps to large free flaps for cheek and intraoral lining reconstruction. Total nasal reconstruction remains challenging particularly in children under 12 years. Long term follow up with physiotherapy is the only way to maintain functional results for mouth constriction.

08.36 DISTRACTION – A NEW METHOD FOR TRISMUS RELEASE IN THE THIRD WORLD

Jürgen HOLLE, Anton SCHWABEGGER, Vienna, Innsbruck, Austria

INTRODUCTION

An often-occurring consequence of NOMA-disease is a contraction of connective scar formation replacing the missing soft tissue and mucosa lining between the remaining maxilla and mandible. Surgical correction of the restricted mouth opening is of special difficulty within third world conditions. Multiple free flap reconstructions to replace the missing oral mucosa lining is demanding and postoperative rehabilitation is difficult to control. In literature the long lasting results of trismus release in NOMA-patients is reported to be extremely poor.

MATERIAL AND METHOD

Performing surgical reconstruction of facial defects in NOMA-patients in Africa we examined the possibility of distracting the scar formation between the jaws without surgical release. The questions were if the scar tissue is capable to be distracted a few mm day by day to achieve a sufficient long lasting mouth opening.

Under local anesthesia a simple distractor was fixed with two pins between the zygoma and the mandible, each on both sides in thirty patients. The distraction was started at the first postoperative day, slowly 1 mm by 1 mm. This was continued day by day until sufficient opening of the mouth was achieved. 30 patients were treated in that way and were controlled 1 and 6 month after distraction.

RESULTS

The trismus release with a mouth opening of 30 mm was achieved in most cases after 3-4 weeks of distraction. The control examination at 1 and 6 month postoperative demonstrated only little relaps with a mean mouth opening of 25 mm after 1 month and 26 mm after 6 month.

CONCLUSION

A distraction therapy of the scar contracture between the maxilla and the mandible in 30 NOMA-cases was extremely effective even after a follow-up period of 1 and 6 month. The treatment is simple and safe and can be performed under local anesthesia.

08.44 THE COMPLICATIONS OF FRONTOFACIAL DISTRACTION. AN ELEVEN YEAR REVIEW.

David DUNAWAY, Jonathan BRITTO, Christopher ABELA, Robert EVANS, Owase JEELANI, London, United Kingdom

PURPOSE

To document the complications of frontofacial distraction and determine the significant risk factors.

METHOD

A review 80 consecutive patients undergoing frontofacial distraction at Great Ormond Street Hospital. Information was collected prospectively from a standardised assessment and a retrospective review of case records.

All patients underwent assessment preoperatively, 1, 6 months and 12 months post-operatively.

RESULTS

There was one postoperative death; one case was abandoned due to haemorrhage. 65 patients suffered one or more complications (81%). There were 13 major complications (16%). Major perioperative complications were most frequently due to haemorrhage (9%). 13 (11.9%) suffered CSF leaks. 6.3% of patients suffered post-operative infections delaying discharge from hospital. There were two cases of post operative airway compromise. Late complications included frontal bone flap necrosis and mucocoele formation.

CONCLUSIONS

Major complications generally arise from excessive blood loss or are related to the anterior skull base osteotomy needed to mobilise the frontofacial segment. This osteotomy creates a communication between the nasal cavities and the anterior cranial fossa creating a path for ascending infection or CSF rhinorrhea. Reducing the risk associated with frontofacial advancement therefore is principally centred on reducing blood loss and protecting the communication between the nose and anterior cranial fossa.

The benefits of frontofacial distraction are well documented, but need to be carefully weighed against the potential complications when deciding to recommend surgery.

08.56 SECONDARY EAR RECONSTRUCTION: A COMPREHENSIVE APPROACH TO THIS CHALLENGING SITUATION

Françoise FIRMIN, Alexandre MARCHAC, Paris, France

INTRODUCTION

Getting experience in ear reconstructions requires a learning curve which may be limited by the number of patients referred. In cases of unsatisfactory results, it is important to appreciate if a secondary reconstruction is indicated. We present here a comprehensive approach to secondary ear reconstruction.

MATERIAL AND METHOD

From 1984 to 2012, 1670 ear reconstructions were performed (microtia (n=1090) and trauma (n=580)), of which 397 where secondary reconstructions (24%). Unsatisfactory results were secondary to: 1) inadequate cartilagenous framework, 2) inadequate skin approach and 3) post-operative complications (i. e. infection, framework exposure).

RESULTS

Improvement with autologous tissue was possible in 94,5% of cases (n=375). An auricular prosthesis was indicated in 22 patients (5,5%). If we exclude cases where rib cartilage had been harvested on both sides, the problem was not to carve a new cartilage framework but to appreciate the skin potential to cover this new framework.

A secondary reconstruction was indicated when:

- elevation of the reconstructed ear has not yet been performed, preserving the vascularisation of the skin in the auricular area
- creation the retroauricular sulcus has been performed but the skin pocket can still be used to cover a new cartilagenous framework
- the superficial temporal artery has been preserved allowing the use of temporal fascia to cover the framework

CONCLUSION

In 94,5% of cases, a secondary autologous reconstruction was possible after a failed primary reconstruction. A secondary reconstruction may give very satisfactory results when local conditions have been correctly analysed. If they are not clearly favorable, it is reasonable to offer the patient a prosthetic solution.

09.08

ANATOMIC STUDY AND CLINICAL SIGNIFICANCE OF INTRAMUSCULAR INNERVATION IN MIMETIC MUSCLES

Jiang HUA, Zhu LIE, Liu AN-TANG, Chen GANG, Yu DA-ZHI, Shanghai, People's Republic of China

PURPOSE

There has been no previous report on the intramuscular innervation patterns of the facial nerve. In this study, we sought to adapt the modified Sihler's technique to delineate the intramuscular innervation patterns of human mimetic muscles using donated fresh human cadavers.

METHODS

Six fresh specimens were harvested within 48 h after death, comprised 4 male and 2 female. After the removal of facial skin, subcutaneous fat and superficial musculoaponeurotic system, the block of mimetic muscles was turned over and then labeled for modified Sihler's stain. The stained specimen was then dissected to remove unnecessary soft tissue so that the nerve supply can be clearly seen.

RESULTS

After staining, muscles appeared semi-transparent with their shapes intact. An original 3-dimensional purple-black intramuscular facial nerve was visible up to the fine terminals. Each group of the facial nerve branches divided into many secondary rami and formed a mesh-like plexus before entered the target muscles. Details were focused on the plexus lateral to the zygomaticus major, which was formed by the buccal branches of the facial nerve. The midfacial mimetic muscles, which draw the angle of the mouth superiorly and posteriorly, were all innervated by the terminal rami originating from this plexus.

CONCLUSIONS

Our human facial nerve map has demonstrated the formation of mesh-like nerve plexuses, which helps to explain the complexity of human facial expressions. The other potential benefit of the nerve plexus is that it can enlarge the innervation spectrum and enhance the compensation ability of the buccal branches in the event of injury or cut-off (recipient nerve in facial reanimation surgeries). Our clinical follow-up found that there was no long-term secondary dysfunction even when one of these branches was injured in facial paralysis reanimation surgeries, indicating that the BBFN is the most suitable recipient nerve.

09.20 COMPARING CONVENTIONAL MANDIBULAR RECONSTRUCTION WITH A COMPUTER AIDED DESIGN AND MANUFACTURING TECHNIQUE.

Rossella SGARZANI, Simona MAZZONI, Colin MORRISON, Claudio MARCHETTI, Riccardo CIPRIANI, Bologna, Italy

INTRODUCTION

Mandibular reconstruction is commonly performed using a free fibula flap. The conventional (indirect) method involves preoperative plating, in which a standard osteosynthesis plate is manually shaped on a stereolithographic model of the mandible. A new computer aided design and computer aided manufacturing (direct or CAD/CAM) technique includes: 1) a virtual surgical plan 2) computer aided design of the mandibular cuts, the fibular cuts and the osteosynthesis plate and 3) computer aided manufacturing of the customized surgical device. Our study compares outcomes of these two approaches.

MATERIAL AND METHODS

20 mandibular reconstructions were performed between September 2010 and May 2012. Patients were divided into two groups: Group A, the direct or CAD/CAM method and Group B, the indirect method. Patients were evaluated using a preoperative CT scan and a 1 month postoperative CT scan.

4 factors were examined: 1) midline deviation; 2) mandibular angle shift; 3) angular deviation of the mandibular body and 4) condyle position.

RESULTS

There was no significant difference in midline deviation between the two groups. The differences between mandibular angle shift were not statistically significant, except left angle shift on the lateral plane ($p=0.006$). The difference in angular deviation of the mandibular body was statistically significant on the right side ($p=0.05$). The difference in condyle position was statistically significant on the right side ($p=0.035$).

CONCLUSION

The computer aided design and computer aided manufacturing technique facilitates accurate mandibular reconstruction and is a statistically significant improvement on the conventional method.

10.30-12.54 SCIENTIFIC SESSION, No. 4 MICROSURGERY/NERVE

Session Chairpersons:

Laurent LANTIERI, Paris, France

Salvatore D'ARPA, Palermo, Italy

10.30 INTRAOPERATIVE VASOPRESSOR THERAPY DOES NOT AFFECT FREE FLAP VIABILITY: A MYTH BUSTED

Tahsin Oguz ACARTURK, Nick VIAL, Vincent CHAVANON, Lauren ZAMMERILLA, Bonnie LU, Pittsburgh, PA, USA

INTRODUCTION/PURPOSE

The microvascular free flap is a powerful tool for tissue reconstruction developed over decades of surgical experience and outcomes. As medicine moves towards evidence based approaches to dictate therapy, the dogma that once dominated microsurgical technique is now being revisited. One such principle is the contraindication of intraoperative vasopressor therapy use. Despite multiple animal models demonstrating that systemic vasoconstriction does not lead to diminished flap oxygenation, there is scarce evidence of actual clinical data supporting the safe use of vasopressors intraoperatively. Here we evaluate the effect intraoperative vasopressors therapy use on microvascular free flap viability.

MATERIALS AND METHODS

A retrospective review of 400 hundred microvascular free flap recipients were divided between patients receiving vasopressor therapy to maintain adequate blood pressure and those who did not. Anesthesia records divided patients between those receiving any vasopressors and those not receiving any medication. Patients' clinical records were then reviewed for intraoperative and post-operative flap specific complications (ischemia, take back, partial flap loss and total flap loss). Patients receiving vasopressors were also subdivided into the duration and dose they were receiving.

RESULTS

Equivalent rates of flap specific complications were found between both patient populations. The use of vasopressors for any duration or dose did not increase the rate of flap related complications.

CONCLUSION

The use of extended intraoperative vasopressor therapy in microvascular free flap surgery does not lead to increased post-operative complication rates. This work opens the foundation to future studies focusing on the use of vasopressors, instead of volume which is shown to increase thrombotic complications, to maintain optimal mean arterial pressures.

10.54 THE USE OF REVERSE FLOW FASCIOCUTANEOUS FLAPS FOR THE RECONSTRUCTION OF SEVERE POST-BURN LOWER EXTREMITY CONTRACTURES

Fatih UYGUR, Haluk DUMAN, Ersin ULKUR, Bahattin CELIKOZ, Istanbul, Turkey

INTRODUCTION

Full thickness burns involving the lower extremity can result in severe contractures, which impair extremity functions if they are not managed with proper treatment and rehabilitation. After release of postburn contracture of the knee, ankle, and metatarsophalangeal joints, defects often require coverage by flaps.

METHODS

Twelve distally based reverse flow flaps were performed for lower-extremity reconstruction after release of postburn flexion contractures. All of the patients were male and their age ranged from 20 to 23 years, with a mean age of 21. After the release of the contractures, 3 flaps were used based on the location of the contractures. The reverse flow anterolateral thigh flap was used for knee reconstruction (n=4, 33%). The reverse flow sural flap was used for ankle reconstruction (n=4, 33%), and the reverse flow medial plantar flap was used for metatarsophalangeal reconstruction (n=4, 33%). The sizes of the flap varied from 2 to 17 cm wide and 3 to 18 cm in length.

RESULTS

All defects were covered successfully.

CONCLUSION

Reverse fasciocutaneous tissue transfer to reconstruct the soft tissue defects provide early motion. Sufficient contracture release is achieved without displacement of anatomic landmarks. The reverse-flow flap is a reasonable and reliable choice for each joint level in the lower extremity.

11.02 LONG TERM FUNCTIONAL OUTCOMES OF THE CAPANNA TECHNIQUE FOR PEDIATRIC LIMB SALVAGE

Utku Can DÖLEN, Steven MORAN, Ankara, Turkey

AIM

Large intercalary bone defects have historically been reconstructed with massive cadaveric allograft, however this practice is associated with multiple complications including infection, fracture and nonunion. In contrast, the Capanna technique combines the use of large cadaveric allograft with an intermedullary vascularized fibular flap to allow for immediate rigid fixation of the allograft, but allow for the potential of accelerated bony union through the fibula flap.

PATIENTS AND METHODS

Between 1997-2012, we operated the lower limb of 17 children with Capanna technique. Average age was 11.05 ± 4.02 years at the time of operation. All the patients were skeletally immature. We collected data retrospectively and our follow up ranged between 20 and 135 months (Mean 71.46 ± 37.14).

RESULTS

8 were femur (47%) and 9 were tibia (53%). According to the pathology reports, 45% of the tumors (8 patients) were osteosarcoma; 35% (6 patients) were Ewing's sarcoma. Mean excised tumor volume was 120.62 ± 205.05 cm³. The mean bone defect was 14.34 ± 4.71 cm. Mean length of harvested free fibula was 18.56 ± 3.69 . All the patients healed well except one patient whose graft was replaced by bone allograft 31 months after the limb salvage surgery. We excluded this patient and last two patients from union time analysis because their follow-up hasn't reached to one year. Mean union time for the allograft was 13.57 ± 5.94 months and for the fibula flap 7.25 ± 2.59 months. 7 patients re-operated because of the allograft non-union. We did not encounter any wound or bone infection. All limbs were salvaged.

DISCUSSION

Compared to other long bone reconstruction methods, the Capanna technique is a single step, effective and durable limb salvage surgery that has earlier bone union time.

11.14 NEW RECONSTRUCTION OPTIONS WITH THE ANTERIOR SUPRACLAVICULAR ARTERY PERFORATOR (ASAP) PROPELLER FLAP: EXPERIENCE AND CLINICAL RESULTS

Norbert PALLUA, Aachen, Germany

INTRODUCTION/PURPOSE

The aSAP-flap, as an alternative to the Supraclavicular Island (SIF) flap, is a sensate flap with a soft and pliable tissue and with an excellent colour match to the face. We present an improvement of the SIF-flap using an anterior Supraclavicular Artery (aSA) perforator pedicle.

MATERIAL AND METHODS AND RESULTS

In a fresh cadaver study (n=19), we found the “original” Supraclavicular Artery (SCA) as a branch of the transverse cervical artery (TCA). In an additional dissection study, an anterior branch (anterior Supraclavicular Artery - ASA) could also be found constantly raising from the TCA. The aSA emerged from above the clavicle directly laterally to the sternocleidomastoideus muscle and pierced the platysma as a perforator vessel running toward the delto-pectoral fossa. This places the skin island into a region with a very thin tissue and an excellent color match to the face and neck.

The reliability of the aSA and its concomitant vein could be demonstrated clinically. We successfully used 127 Supraclavicular Artery Perforator (SAP) flaps in 84 patients. 73 flaps were based on the aSA as a-SAP flap, while 54 flaps were based on the previously described SCA. Indications included head and neck reconstruction (hemifacial reconstruction, release of postburn mentosternal contracture and as osteocutaneous flap for the closure of tracheocutaneous fistulas). In two cases the a-SAP flaps (vessel diameter: approximately 1.5 mm) were transferred as free flaps to the hand and foot, respectively.

CONCLUSION

Harvesting this perforator propeller flap from the very thin and pliable deltoideo-pectoral donor site, the aSAP-flap provides a new option for reconstruction of head and neck and also as a free flap.

11.26 USE OF CHIMERIC ANTEROLATERAL THIGH FLAP WITH BOTH FUNCTIONAL MOTOR AND SENSORY INNERVATION FOR SUBTOTAL AND TOTAL GLOSSECTOMY DEFECTS

Ozlenen OZKAN, Omer OZKAN, Alper Tunga DERIN, Ahmet DUYMAZ, Gamze BEKTAS, Antalya, Turkey

The purpose of this study was to report the motor functional outcomes and sensitive recovery of patients who had undergone total or subtotal glossectomy for oral squamous cell carcinomas reconstructed with chimeric anterolateral thigh flaps (ALT).

METHODS

Six patients, with a mean age of 49.5 years were included in the study. All patients were treated with chimeric ALT including vastus lateralis muscle (VLM) with its motor nerve and skin paddle with its innervating nerve. All patients were submitted to functional test involving sensory recovery, intelligibility and swallowing. Flap sensibility was evaluated using light touch sensation with a Semmes-Weinstein monofilament test, two-point discrimination, warm and cold temperature sensations, pain sensation. The intelligibility was scored on a scale ranging from 1 to 5 by a speech therapist. Swallowing was assessed by Electromyography, deglutition scores and through the use of a modified barium swallow procedures.

RESULTS

The mean follow-up was 26.6 months. The flaps were successful in all patients. No complications were seen in follow-up period. Speech intelligibility was good (4) in 3 patients, acceptable (3) in 3 patients. Deglutition scores were 6 in two patients, 5 in two patients, and 4 in the rest. The MBS studies assessed that four patients experienced bolus transit, but two patients required a liquid swallow to promote bolus transit. EMG recordings showed innervations of the VLM with active generation of motor unit potentials in four patients when patients try to elevate the tongue. It wasn't performed in one patient, and one patient had macroscopic muscle contractions. All sensorial tests were satisfactory in all parameters.

CONCLUSIONS

The results of this reconstructive option were satisfactory in terms of motor function and sensitive assessment of neotongue. This technique is strongly suggested for the patients who had total or subtotal glossectomy.

11.34 ADIPOFASCIAL ANTEROLATERAL THIGH FLAP TO ORAL CAVITY RECONSTRUCTION

Tommaso AGOSTINI, Davide LAZZERI, Florence, Italy

INTRODUCTION

The restoration of the buccal mucosa is the main challenge for the plastic surgeon. In the past 15 years the free radial forearm flap has been widely used, due to its thickness and pliability. More recently, the anterolateral thigh free flap has become the customary flap in oral cavity reconstruction.

MATERIALS AND METHODS

Twelve patients underwent reconstruction with the adipofascial ALT flap after squamous cell carcinoma resection of the oral cavity between December 2005 and August 2010. All patients underwent postoperative radiotherapy with flap volume and function maintenance. To limit wound contraction and impaired function, we always dissected more fascia compared with soft tissue.

RESULTS

Thinning was uneventful, without partial or marginal necrosis, and we did not experience fascial slough that required debridement. One patient presented a scarring bridle without functional loss after reconstruction of the entire mobile tongue and one patient had an orocutaneous fistula with spontaneous healing. One flap failed as the result of venous thrombosis. All underwent comparative biopsies (colored with hematoxylin and eosin stain) between the neomucosa and the native mucosa, showing a squamous epithelial lining and a mild inflammatory infiltrate charged to the lamina propria. The hot, cold, and touch sensitivities of the neomucosa do not differ from those of the native. Small stromal nerve structures are detectable in biopsy specimens using an immunohistochemical staining for S-100 protein. Both tissues were clinically unnoticeable, with excellent aesthetic outcome in tongue and floor of mouth reconstructions.

CONCLUSION

The A-ALT flap represents a valid alternative to oral cavity reconstruction, supplying a functional, hairless tissue 45 days later, observing the principle of “replace tissue with like tissue” and avoiding the “patch effect” of fasciocutaneous flaps. The histologic results proved the flap was covered with a thin layer of squamous mucosa not influenced by postoperative radiotherapy.

11.46 FUNCTIONAL RECONSTRUCTION OF TOTAL LOWER LIP DEFECTS USING INNERVATED GRACILIS FLAP IN THE SETTING OF HIGH-ENERGY BALLISTIC INJURY TO THE LOWER FACE.

Raffi GURUNLUOGLU, Bulent SAKAK, Mark GLASGOW, Denver, Colorado, USA

INTRODUCTION

Reconstruction of total full-thickness lower lip defects combined with extensive composite mandibular defects particularly in the setting of close-range high-energy ballistic injury presents a formidable challenge for the reconstructive plastic surgeon. While the fibular flap has been widely accepted for its usefulness in the reconstruction of composite mandibular defects, to date, there is no definitive widely established method of total lower lip reconstruction. Authors' present their approach using innervated gracilis muscle flap for total lower lip reconstruction in the setting of high-energy gunshot injuries to the face.

PATIENTS AND METHODS

Three patients underwent composite mandibular defect reconstruction using fibular osteocutaneous flap and functional lower lip reconstruction using innervated gracilis muscle flaps. Lip lining was reconstructed using the skin paddle of the fibular flap. The external surface of the gracilis muscle was skin-grafted. Facial artery myomucosal flap provided vermilion reconstruction in two patients.

RESULTS

No significant complications were observed except for an orocutaneous fistula which was treated with excision and primary closure. All patients exhibited lip movements and oral competence starting at 2 months postoperatively. All patients achieved enhanced voluntary movement of the lip, near-normal speech and satisfactory appearance. EMG studies revealed satisfactory evidence of re-innervation of the gracilis muscle along with clinical observation of voluntary movement of the reconstructed lip at 1 year. 10-g monofilament testing demonstrated adequate deep pressure sensation. The mean follow-up was 16.1 months.

CONCLUSION

Despite the complexity of gun-shot injuries, innervated gracilis muscle transfer provides ability to eat without drooling and to have voluntarily controlled lip movements together with a satisfactory appearance.

11.58 MR-ANGIOGRAPHY FOR PREOPERATIVE PERFORATOR MAPPING: ACCURACY AND COMPARISON OF IMAGE QUALITY OF TWO DIFFERENT MR SEQUENCES

Hakan BULAM, Murat UCAR, Serhan TUNCER, Yusuf ONER, Suhan AYHAN, Ankara, Turkey

INTRODUCTION

Magnetic Resonance Angiography (MRA) is used in an increasing manner for obtaining vascular information about the abdominal donor site for microsurgical breast reconstruction. It has two main advantages over CT angiography: no radiation and lower nephrotoxicity risk. The purpose of this study is to evaluate accuracy of MR-A protocols that we used in our clinic before microsurgical breast reconstruction and to evaluate the image qualities of two different MRA sequences.

METHODS

A total of 15 patients preparing for autologous breast reconstruction with deep inferior epigastric artery perforator (DIEP) flaps were included. All patients were evaluated with abdominal MRA and the following sequences were acquired: i) Postcontrast breath-holding coronal plane FLASH 3D MRA ii) T1 weighted axial plane 3D VIBE-MRA. Clinical data was collected during the operation (DIEA pattern, muscular segment, place and caliber of perforators). The results of radiological evaluation and clinical data was compared. And also MRA images were assessed with 5-point scale for image quality (contrast, background homogeneity, continuity and clearness). Two image groups with different sequences were compared.

RESULTS

Operation and ischemia time was recorded as 312 min and 73 min. Thirty DIEA was evaluated and their mean radius was 2.3 mm. 109 perforator artery was localized. MRA showed all the main perforator vessels later observed during the surgical procedure with a perfect location and caliber concordance. FLASH 3D MRA was more efficient to show DIEA course up to muscle segment (3.67 ± 0.5 vs. 2.87 ± 0.4 , $p=0.001$, Wilcoxon test). Intermuscular segment and perforators were seen in 3D VIBE-MRA (3.87 ± 0.4 vs. 3.0 ± 0.7 , $p=0.002$, Wilcoxon test)

CONCLUSIONS

High-quality MR angiograms of DIEA and perforators can be obtained using 3D VIBE-MRA in combination with FLASH 3D MRA sequence. MRA is a preferable method of perforator mapping with the advantages of no radiation and low nephrotoxicity risk as well as high accuracy.

**12.06 VENOUS COUPLER SIZE IN AUTOLOGOUS BREAST RE-
CONSTRUCTION – DOES IT MATTER?**

Caroline SZPALSKI, Katie WEICHMAN, Niclas BROER, Jamie LEVINE,
Robert ALLEN, New York, NY, USA

BACKGROUND

Autologous microvascular breast reconstruction has become an increasingly common reconstructive procedure. While the arterial anastomoses are traditionally being hand-sewn, the venous anastomoses are commonly completed with the aid of a coupler device. While its efficacy has been shown using 3.0 mm size and greater couplers, there is little data on couplers less than or equal to 2.5 mm. The purpose of this investigation is to assess patient outcomes based on coupler size.

METHODS

A retrospective chart review of all patients undergoing microvascular breast reconstruction at a single institution between November 2007 and November 2011 was conducted. Flaps were divided into cohorts based on coupler size used: 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, and 3.5 mm. Outcomes were measured by incidence of arterial insufficiency, venous insufficiency, hematoma, fat necrosis, partial flap loss, full flap loss, and need for future fat grafting.

RESULTS

One-hundred ninety-seven patients underwent 392 flaps during the study period. Patients were similar in age, type of flap, smoking status, and radiation history. Coupler size less than or equal to 2.0 mm was found to be a significant risk factor for venous insufficiency ($p=.038$; risk reduction with coupler size greater than or equal to 2.5 mm 87%) as well as for development of fat necrosis ($p=.041$; 73% risk reduction) and need future need for fat grafting (45% reduction). Interestingly, in multivariate analysis, BMI was found to be an independent risk factor for skin flap necrosis ($p=.01$) and full flap loss ($p=.035$).

CONCLUSIONS

Postoperative complications are significantly increased in patients requiring the use of 2.0 mm venous coupler and therefore it should be avoided. Vessel modification including beveling or fish-mouthing, as well as more aggressive vessel exposure through rib harvest should be considered. Additionally, the use of thoracodorsal vessels or hand-sewn anastomosis should be considered in cases of IMV caliber of 2.0 mm or less.

12.18 SUPERIOR EPIGASTRIC ARTERY PERFORATOR FLAP FOR STERNAL DEFECT RECONSTRUCTION

Reto WETTSTEIN, Philipp HONIGMANN, Dirk J SCHAEFER, Daniel KALBERMATTEN, Basel, Switzerland

Sternal osteitis after median sternotomy is associated with considerable morbidity and mortality. Combined with a radical debridement, the use of muscle and omentum flaps are mainly used to reconstruct the resulting defect. In this study we present our experience with the superior epigastric artery perforator (SEAP) flap for defect closure.

After resection of the entire sternum, including the costochondral arches and the sternoclavicular joints, the repair of the defect was performed with the perforator flap without any restabilization of the thoracic wall.

A consecutive series of 9 patients with a mean age of 69 ± 6 years were reconstructed with the SEAP flap. Mortality was 0. One patient developed a mediastinal hematoma and required 5 reinterventions by the cardiothoracic surgeons and at last revision to close a small wound dehiscence at the tip of the flap. Another two patients developed a partial necrosis of the flap that could be managed conservatively. One patient had a revision for a seroma on the donor site, resulting in a 100% closure rate of the defect and revisions in 2 out of 9 patients. The infection was controlled by debridement, antibiotic therapy and flap closure in all cases.

The overall success of the procedure was satisfactory, however the local complication rate was relatively high with 3 out of 9 patients on the flap side and 1 of 9 on the donor site. Major advantages of the perforator flap in this highly morbid patient cohort are that the operation is quick, muscle tissue is spared and re-education facilitated.

12.30 COMPLEX REGIONAL PAIN: PERIPHERAL NERVE APPROACHES FOR SUCCESS IN THE UPPER OR LOWER EXTREMITY

A. Lee DELLON, Gedge D. ROSSON, Towson, USA

INTRODUCTION

The hypothesis is explored that complex regional pain syndrome (CRPS I, the “new” RSD) persists due to undiagnosed injured joint afferents, and/or cutaneous neuromas, and/or nerve compressions, and is, therefore, a misdiagnosed form of CRPS II (the “new” causalgia).

METHODS & MATERIALS

An IRB-approved, retrospective chart review of a series of 100 consecutive patients with “RSD” identified 40 upper and 30 lower extremity patients for surgery based upon their history, physical examination, neurosensory testing, and peripheral nerve blocks.

The surgical approach included a combination of partial joint denervation, neurolysis of compressed nerve(s), and resection of neuroma(s) with muscle implantation, depending upon the clinical findings and results of the nerve blocks.

RESULTS

Based upon decreased pain medication usage and recovery of function, outcome in the upper extremity, at a mean of 27.9 months follow-up (range of 9 to 81 months), gave results that were excellent in 40% (16 of 40 patients), good in 40% (16 of 40 patients) and failure 20% (8 of 40 patients). In the lower extremity, at a mean of 23.0 months follow-up (range of 9 to 69 months) the results were excellent in 47% (14 of 30 patients), good in 33% (10 of 30 patients) and failure 20% (6 of 30 patients). Long-term outcomes obtained in a subgroup of 13 lower extremity patients (followed up for a minimum of 24 months, mean, 47.8 months; range, 25-90 months), were excellent in 7 (55%), good in 4 (30%), and poor (failure) in 2 (15%).

CONCLUSIONS

It is concluded that most patients referred with a diagnosis of CRPS I have continuing pain input from injured joint or cutaneous afferents, and/or nerve compressions, and, therefore, similar to a patient with CRPS II, they can be treated successfully with an appropriate peripheral nerve surgical strategy.

12.42 ADOLF STOFFEL (1880-1937) – PIONEER OF NERVE FASCICLE ANATOMY, SELECTIVE NEUROTOMY AND NERVE TRANSFER

Andreas GOHRITZ, A. Lee DELLON, Hannover, Germany; Towson, USA

INTRODUCTION

Whole nerve or fascicle transfers have revolutionized functional reconstruction after peripheral nerve injuries, while selective neurotomy can reduce muscle spasticity.

OBJECTIVE

This paper is dedicated to the widely unknown anatomist and orthopaedic surgeon Adolf Stoffel (1880-1937) who pioneered selective neurotomy and nerve transfer in the upper and lower extremity after cross-sectional nerve studies more than 100 years ago.

RESULTS

Stoffel studied at the University Institute of Anatomy in Heidelberg before entering his orthopaedic surgical training with Oskar Vulpius (1867-1936) who supported his cross-sectional studies on motor and sensory fiber distribution in peripheral nerves. Stoffel devised a selective neurotomy operation used in spastic upper and lower limbs which until today bears his name (Stoffel operation) in 1911. He described multiple selective nerve transfer operations as early as 1910, such as transfer of radial nerve fascicles to the long or medial triceps head to reanimate the paralyzed axillary nerve. He co-authored a book on “Orthopaedic Operations” with Vulpius (3 editions 1913, 1920 and 1924) which presents selective transfers of redundant radial nerve fascicles to the paralyzed musculocutaneous nerve or median nerve, transfer of the subscapularis nerve (branch to teres major) to the axillary nerve and transfer of median nerve fascicles to restore intrinsic ulnar nerve function. In the lower extremity, he described neurotization of the gluteal nerves by sciatic nerve fibres to restore function of the paralyzed glutei maximus, medius and minimi, neurotization of the femoral nerve by the obturator nerve and of the superficial and deep peroneal nerves by tibial nerve fascicles. Notably, Stoffel used intraoperative electrical nerve stimulation to identify the right donor fascicles at the level of the recipient nerve damage or below.

CONCLUSIONS

Adolf Stoffel appears as eminent protagonist of peripheral nerve anatomy, selective neurotomy and nerve transfer whose work deserves a thorough reconsideration.

14.00-14.56 SCIENTIFIC SESSION, No. 5 HAND

Session Chairpersons:

Pietro GIOVANOLI, Zurich, Switzerland

Koray COSKUNFIRAT, Antalya, Turkey

14.00 SENSORY REINNERVATION OF THE PALM BY TRANSFER OF THE SUPERFICIAL BRANCH OF THE RADIAL NERVE TO THE MEDIAN AND ULNAR NERVE.

Thilo Ludwig SCHENCK, Shenyu LIN, Jessica STEWART, Hans-Günther MACHENS, Riccardo GIUNTA, Munich, Germany

BACKGROUND

Treatment of high-grade nerve injuries of the upper extremity remains a surgical challenge. In the last decades extra-anatomic reconstructions by transferring peripheral motor nerves have gained clinical importance. Although tactile information is also crucial, fewer attempts of sensory nerve transfers are known. This contribution describes the anatomic and histomorphometric basis for the transfer of the superficial branch of the radial nerve (SBRN) to the median nerve (MN) and the superficial branch of the ulnar nerve (SBUN).

METHODS

The SBRN, MN and SBUN were identified in 15 cadavers and the nerve transfer performed. A favourable site for coaptation was chosen and its location described using relevant anatomical landmarks. Histomorphometric characteristics of donor and recipients were compared to evaluate feasibility of clinical success.

RESULTS

The SBRN was dissected at the height of its diversion into two smaller branches which was found 217 ± 7 mm distally to the lateral epicondyle of the humerus. It could be tension-free coaptated to the MN and SBUN when they are dissected from their accompanying motor fibres at a length of 82 ± 6 mm and 49 ± 6 mm, respectively. Donor to recipient ratios revealed that the SBRN has a slightly lower axon number (SBRN:MN=1:1.1 and SBRN:SBUN=1:1.4). The axon density of the SBRN was found to be higher than in the recipients (SBRN:MN=1:0.7 and SBRN:SBUN=1:0.9).

CONCLUSION

Our results indicate that the SBRN is a suitable donor for the MN and SBUN at the wrist level. Our measurements show feasibility of this procedure and shall help in planning this sensory nerve transfer. Identification of comparable high axon density in the SBRN identifies it or its branches as an optimal candidate for reanimation of the palmar hand.

14.12 MINI-PROPELLER FLAPS IN FINGERS RECONSTRUCTION

Alexandru Valentin GEORGESCU, Ileana MATEI, Irina CAPOTA, Cluj Napoca, Romania

PURPOSE

The possibility of harvesting flaps based on digital perforators located at DIPJ was described by Koshima, for covering very distal finger defects. We will demonstrate that it is possible to harvest such flap also more proximal. More, in those cases when the direct closure of the donor site is not possible, a bilobed flap blood supplied by the same perforator vessels can be used.

METHODS

We will present the advantages of using these mini flaps based on perforators emerging from the digital arteries, at any level of the fingers, including the thumb. In our service were practiced 25 transposition island perforator flaps for covering tissue defects in fingers, from which 4 were for the thumb. In 2 cases we used the perforator flap as a cross-finger flap, to cover a defect on an adjacent finger. The transposition flaps have an oval shape, are harvested from one side of the finger, without sacrificing the digital artery. After the subfascial undermining of the flap on its entire surface and identification of the vascular pedicle represented only by the perforator, the flap can be rotated 90-180° and can cover dorsal and volar finger defects. The flap's donor site is generally directly closed; if its direct suture is not possible, a free skin graft from the forearm can be used. In the attempt to avoid this disadvantage, we developed a bilobed pedicled flap blood supplied by the same perforator vessels, which allows the donor site closure without any morbidity. This flap was used in 13 cases.

RESULTS

These transposition flaps had an uneventful evolution, with complete integration of the flap and good quality functional recovery. In 2 cases we registered a minute partial superficial necrosis, which spontaneously healed. The bilobed flaps had also an uneventful evolution. The recovery for all the patients was between 14-21 days.

CONCLUSION

We consider that the perforator island transposition flaps have the advantages of using similar tissues in reconstruction, not damaging another area, they do not require main vessels sacrifice, can be sensate, and the donor site can be generally directly closed. When the direct closure of the donor site cannot be realised, this one can be achieved by using a free skin graft or the bilobed flap as a variant of the perforator flap.

14.24 FINGERTIP RECONSTRUCTION WITH REVERSE ADIPOFASCIAL HOMODIGITAL FLAP

Mehtap KARAMESE, Malik ABACI, Ahmet AKATEKIN, Tugba GÜN, Zekeriya TOSUN, Konya, Turkey

INTRODUCTION

Fingertip injuries are challenging procedures due to difficulties in reconstruction procedures. If the fingers are shortened, hand functions can not be saved. Reverse homodigital adipofascial flap serves us many advantages in terms of this point. Classical homodigital flap which includes skin has many donor site problems; reverse adipofascial flap has been chosen in order to prevent these complications. Here in 14 reverse homodigital adipofascial flaps which are used for fingertip reconstruction following traumatic amputations are reported to emphasise efficacy of this flap.

MATERIALS AND METHODS

From May 2010 to November 2012, 14 fingertip amputations with reverse adipofascial homodigital flaps have been achieved. Size of defects was measured after the debridement. The flap was designed based on collateral digital arteries on the lateral surface of digit. The skin was cautiously cut with S shape incision, the incised skin, without the adipose tissue, is undermined adequately and is held to both sides with the aid of hooks. The adipofascial flap was then dissected free from the underlying tissue. Digital artery was ligated. The flap was then moved to the defect by flipping via skin incision. Full-thickness skin graft was applied over it. The donor site of skin flaps were closed with 4/0 polypropylene sutures.

RESULTS

All flaps survived completely except a partial graft lost in one case. Partial graft lost healed spontaneously. The donor site was closed primarily in all cases. None of the patients had hypersensitive fingertips postoperatively.

CONCLUSIONS

Reverse homodigital adipofascial flap is superior to classical reverse homodigital flap which includes skin, because of less donor site problem, huge rotation arch, less skin graft necessity over the flap pedicle and no contracture on donor site as primary closure was used.

14.32

ADVANTAGES OF THE USE OF INJECTABLE COLLAGENASE IN THE TREATMENT OF DUPUYTREN'S CONTRACTURE

Ingrid SCHLENZ, Stefan GÄRNER, Marion DIETL, Rupert KOLLER, Vienna, Austria

INTRODUCTION

Surgical treatment of Dupuytren's contracture is associated with high complication rates up to 67% and prolonged disability to return to work (average 59 days according to the literature). The use of injectable collagenase has been reported as an alternative treatment for Dupuytren's contracture with few complications. In order to evaluate its efficacy and its potential to shorten the recovery period we performed a prospective study.

METHOD AND MATERIAL

Between 5/11 and 10/12 80 patients with Dupuytren's contracture were treated with injectable collagenase (Xiapex®). Initially it was only used for a single joint contracture in a single digit (33 MCP joint and 21 PIP joints). However, due to the great efficacy of the method indications were extended to simultaneous treatment of PIP and MCP joint in a single digit (37). Patients had to wear a night splint for four months after the treatment and came for follow-up examinations at 1, 4, 12, 24, 52 and 114 weeks.

RESULTS

91 hands of 79 patients were successively treated with one Xiapex® injection. One patient required two treatments. Average age of the patients was 68,5a (47-82a). Metacarpophalangeal joint contractures improved from a mean of 46° (10-90°) to 2° (0-25°) while proximal interphalangeal joint contractures improved from 61° (20-90°) to 4,6° (0-35°). 86,1% of the MCP and 69,6% of the PIP contractures were corrected to normal range of motion (0°). Patients resumed daily activities and returned to their job within 24 hours after treatment. Side effects included skin tears (8%), blood blisters (6%), edema (4%), ecchymosis (4%) and local lymph node swelling (0,7%). Mean follow-up is 14,1 months (2-24 months). So far there are no recurrences.

SUMMARY

Injectable collagenase treatment of Dupuytren's contracture is effective, well tolerated and a safe alternative to surgery. It benefits patients by rendering a hospital stay unnecessary and significantly reducing the recovery period.

14.44 IMPROVEMENTS OF THE BIOTECHNOLOGICAL INTERFACE IN TRANSHUMERAL AMPUTEES

Stefan SALMINGER, Manfred FREY, Christian HOFER, Oskar ASZMANN, Vienna, Austria

PURPOSE

Amputation of an upper extremity results in severe functional and also psychological changes. Even though vascularized homologous tissue transfer is possible at this level, classic treatment options consisted of body-powered prosthesis or in the recent years myoelectrical prosthesis with only two linear signals. These systems are not able to move multiple prosthetic joints simultaneously or intuitively. Furthermore skeletal-attachment has been difficult due to poor soft tissue management at the amputation site and results in rotational instability.

Here we present our concepts to improve both skeletal-attachment and intuitive prosthesis control via multiple selective nerve transfers.

MATERIAL

We present 5 male transhumeral amputees. Referrals were either due to multiple neuroma pain, soft tissue problems at the stump with subsequent prosthetic problems. Solutions included bone lengthening with homo- and autologous bone reconstruction, implantation of artificial custom made titanium condyles, enlargement of soft tissue envelope with regional myocutaneous flaps and multiple nerve transfers for neuroma treatment and creation of intuitive control matrix. In some patients additional free functional muscle transfers have been performed to gain additional myosignals.

RESULTS

Due to reafferentiation and progressive prosthetic use after selective nerve transfers, neuroma pain and phantom limb pain is reduced or even abolished. The possibility of intuitive and concurrent control of different functions, stable skeletal attachment and improved range of motion of the shoulder joint, allows a more natural cognitive and mechanical translation of arm/hand movements which results in an overall improvement of prosthetic use.

CONCLUSIONS

Targeted Muscle Reinnervation together with the above described improvements of the skeletal-attachment provide numerous benefits for this special group of patients that are otherwise difficult to treat from a reconstructive surgeon's perspective. The described benefits are intrinsic due to improvements at the amputation site itself (scar/neuroma/soft tissue problems) and have far reaching consequences for intuitive and reliable prosthetic use.

15.30-17.18 SCIENTIFIC SESSION, No. 6 GENERAL AESTHETICS

Session Chairpersons:

Bryant A. TOTH, San Francisco, CA, USA

Wolfgang MÜHLBAUER, Munich, Germany

15.30 DO WE HAVE TO USE GRAFTS IN RHINOPLASTY?

Ismail KÜCÜKER, Selahattin ÖZMEN, Basar KAYA, Fatma Betül AK, Ahmet DEMIR, Samsun, Turkey

Cartilage grafts are routinely used in rhinoplasty. But, do we have to use grafts in rhinoplasty? Can we support the normal anatomy just by preserving and transposing the adjacent tissues?

In this study we hypothesized that during rhinoplasty, cartilage flaps can give adequate support to cartilaginous structures and may decrease the need of cartilage grafts.

Between January-2010 and May-2012 147 patients operated under general anesthesia with open rhinoplasty technique was included in this study. Mean operation time was 73 minutes (44-120 minutes). After dissection and septoplasty (if needed), dorsal bone and septal reductions were done. Following reduction, upper lateral cartilages' superior segments were preserved and turned inwards as cartilage flaps to replace the spreader grafts. Lower lateral cartilages cranial part wasn't excised and slid over the caudal part to replace the alar strut grafts. Instead of excising cartilage from the caudal of nasal septum, lower lateral cartilages were slid cranially with tongue in groove technique to support the nasal tip.

Mean follow up was 19.6 months (6-30 months). All patients but 12 were satisfied or completely satisfied with the results. Among 12 unsatisfied patients; 4 complained about one sided inverted-v deformity (secondarily spreader grafts were added), 3 had supratip deformity (second additional dorsal septal excisions), 2 demanded extra tip definition (second tip-plasty), 2 were unhappy with the bone symmetry (second osteotomies), and 1 was complaining about hanging columella (second excision from the caudal septum).

Cartilage flaps have some advantages over cartilage grafts. First you don't need a graft harvest and second as flaps are a part of the normal anatomy they serve a good tissue match and fixation becomes easier. Besides advantages, tongue in groove technique can't be used in patients that don't need caudal excision and cartilage flaps can be inadequate in some patients, which may need additional grafts.

**15.42 QUANTITATIVE PLANNING IN ENDONASAL RHINO-
PLASTY USING THE CROSS CARTILAGINOUS AP-
PROACH**

Kuen Yeow CHIN, Rajan UPPAL, Slough, United Kingdom

INTRODUCTION

The popularity of open rhinoplasty has increased such that it is the first choice approach for many surgeons undertaking primary rhinoplasty. Despite the benefits of this approach, the drawbacks are often not emphasized. We present a review, with quantitative assessment of 24 rhinoplasty patients using the cross-cartilaginous incision. This new approach optimizes access without an external scar and the ligament disruption that ensues after the open approach.

METHODS

24 consecutive patients underwent primary rhinoplasty from March 2009 to April 2011 using the cross-cartilaginous approach. Preoperative measurements of defined anatomical sites of the nose were taken. Independent assessment of the postoperative results was undertaken by a surgical resident and a senior nurse using pre and postoperative photographs. Evaluation of patient satisfaction and a survey on postoperative swelling, bruising, irregularities, asymmetry and airway issues were carried out.

RESULTS

The range of pre-operative measurements were: radix (13-19 mm), keystone (21-29 mm), alar base (14-20 mm), nose length (48-52 mm), tip width (11-25 mm), and tip projection (21-37 mm). The patient satisfaction scores at 3-months after operation were 63% rated good to excellent, 24% felt the results were acceptable and 13% were dissatisfied. At 3-months, 17% of patients reported swelling, 0% bruising, 8% irregularities, 8% asymmetry and 4% airway issues. 83% of patients perceived their results to be better when compared to the grading made by the medical staff assessors.

CONCLUSION

Direct preoperative anatomical measurement carried out preoperatively allows reliable assessment of nasal characteristics and allows comparison with postoperative outcomes. Our simple grading system for outcome assessment in rhinoplasty allows assessment to be reliable and easily performed. The cross-cartilaginous approach is suitable for the majority of primary rhinoplasty patients providing good access and visibility. Open rhinoplasty however is still required for selected complex revision cases.

**15.50 DEFINING BEAUTY: HOGARTH'S SERPENTINE LINE
REVISITED.**

Rachel ROLPH, James TAYLOR, Jian FARHADI, London, United Kingdom

INTRODUCTION

The study of aesthetics has preoccupied society for centuries. The term “aesthetics” is derived from the eighteenth century German philosopher Alexander Baumgarten in his publication “Aesthetica” in 1750. The first scientific study on aesthetics was performed by William Hogarth in his published work “The analysis of beauty” in 1753. Hogarth drew a number of women’s corsets, each incrementally altered in shape. A survey was conducted to establish public consensus on the image most pleasing to the eye. The aim of this study is to replicate Hogarths’ original work and establish if the modern tastes of beauty correlate with Hogarths’ conclusions.

METHODS

The original images from Hogarths’ publication were copied and a survey was conducted on 50 plastic surgeons and 50 members of the public. Participants were asked to order the seven images from least to most attractive.

RESULTS

There were 87 respondents to the survey, 42 plastic surgeons and 45 members of the public; 94% of surgeons and 86% of the public agreed with Hogarth’s ranking of images.

CONCLUSION

The replication of Hogarths’ seminar work in aesthetics in the present day has validated the gentle “serpentine-S” as an aesthetic ideal, both for the human body and objets d’art. Interestingly there are universally held principles on beauty which cross cultural and it seems, historical boundaries.

**15.58 SIMULTANEOUS LIPOFILLING AND HIGH SMAS
FACELIFT: A MORE EFFECTIVE WAY TO ADDRESS THE
EFFECTS OF AGING**

Ina A. NEVDAKH, Bryant A. TOTH, San Francisco, CA, USA

PURPOSE

Lipofill has radically changed the plastic surgical approach to many reconstructive as well as aesthetic challenges. The purpose of our study is to critically look at the procedure of lipofilling when simultaneously combined with a high SMAS facelift in the treatment of the aging face. In 2008 (EURAPS, Madeira) we presented our five year personal experience using the high SMAS technique for facial rejuvenation. We plan to show that the high SMAS facelift combined with simultaneous lipofilling has additional advantages over traditional rhytidectomy.

METHOD

A series of 25 consecutive patients who underwent simultaneous facial lipofilling and high SMAS facelift have been critically evaluated. A review of the literature reveals a paucity of information addressing outcomes and techniques used in simultaneous facial surgery with lipofilling. Outcomes in this consecutive series, mean follow-up time, volume of fat injections and serial photography have been critically compared to earlier results. Patient satisfaction has also been assessed by an independent observer.

RESULTS

We feel as though the only way to evaluate a surgical outcome is to look at a series of consecutive cases. It is now possible and preferable to treat atrophy of the facial tissues with this combination of techniques and have found there to be minimal additional surgical morbidity, improved outcomes and shorter recovery times than previously anticipated. Patient satisfaction is high with safe, predictable outcomes.

CONCLUSION

In our hands the high SMAS facelift simultaneously with lipofilling is shown to improve outcomes in a series of consecutive patients. The result is a restoration of mid-facial youth with volume, a tightening of the entire musculo-fascial corset of the face and improved skin quality. This combined technique has been shown to be a safe and effective method for restoring a youthful facial appearance.

16.10 BREAST AUTOAUGMENTATION FOR VOLUME RESTORATION FOLLOWING IMPLANT REMOVAL

Bulent SACAk, Raffi GURUNLUOGLU, Istanbul, Turkey

INTRODUCTION

Revisional breast surgery following capsular contracture, implant rupture, bleeding, discomfort and tenderness associated with breast augmentation is not uncommon. A new technique of breast auto-augmentation using an inferiorly pedicled dermoglandular flap following implant removal is described in patients who previously underwent breast augmentation.

METHODS

Twenty consecutive female patients were included. Inclusion criteria: History of breast augmentation, symptomatic breast, no desire to preserve breast implant, financial constraints to afford a new set of breast implants, clear indication for implant removal. 39 breasts (38 breasts bilateral, one breast unilateral) were operated with the defined technique. Age ranged between 38 and 66. The size of the breast implants removed was between 300 and 525 cc. 45% of the implants were saline and 55% was silicone filled. 60% of the implants were removed from the subglandular plane, whereas 40% were in the submuscular plane. All patients had submammary incision scars. Reasons for implant removal were rupture-bleeding (30%), Baker grade 3-4 capsule formation (50%), recent onset hematoma/ tenderness (15%) and fear of implants (5%). Following implant removal, a de-epithelialized inferiorly based dermoglandular flap was used over the chest wall to maintain breast volume along with superomedial pedicle mastopexy. Restoration of volume ranged between 225 and 375 cm³. Outcome measures were Breast-Q questionnaire, evaluation of clinical appearance and ultrasound screening for fat necrosis.

RESULTS

Autoaugmentation using inferiorly based dermaglandular breast tissue resulted in an aesthetically pleasing outcome as indicated by Breast-Q. There was no evidence of fat necrosis.

CONCLUSION

This technique along with mastopexy seems safe and reliable method of restoring breast volume in patients for whom explantation of breast implant is indicated and replacement is not an option secondary to financial constraints or concern with re-implantation.

16.18 PSYCHOLOGICAL ASPECTS OF THE PIP BREAST IMPLANTS CRISIS: THE PATIENT PERSPECTIVE

Nikolaos ARKOULIS, Carol SUTHERLAND, Zoe CHOULIARA, Livingston, United Kingdom

INTRODUCTION

In 2010 the Medical and Healthcare products Regulatory Agency (MHRA) in the UK published a warning concerning all silicone breast implants manufactured by the French company Poly Implant Prothse (PIP), advising surgeons not to use them. With an estimated 30,000-40,000 women in the UK having had received PIP implants, concern quickly turned to the moral obligation of their removal and replacement. The issue attracted a lot of media attention. Spire Healthcare Group offered free consultation, removal and exchange. In Spire Edinburgh's Hospital, an excess of 800 patients have been identified, providing a unique insight of this crisis. This study assesses the psychological sequelae of this health scare from a patient perspective. This is the largest study of its kind to date, in terms of cohort size.

MATERIAL AND METHODS

An online survey on psychological distress, challenges and coping associated with the PIP crisis was created and 800 eligible patients of Spire Edinburgh Hospital were invited to participate; 110 completed the survey. Qualitative results were analysed and are presented here.

RESULTS

Most participants were happy with the care and support they received. Many maintained positive views about cosmetic procedures in general. Key themes included: an array of emotions, effects on quality of life, issues of trust, blame and responsibility, living under threat and perceived 'toxicity', regulation and safety, after care support, media mishandling and scaremongering, information and awareness.

CONCLUSIONS

The findings raise important issues on the effects of the PIP crisis on the psychological wellbeing of patients and their families, the needs for pre- and post operative psychological support, and issues around regulation, media handling, timely and accurate information provision and trust with the medical profession. The importance of psychological assessment prior to cosmetic procedures and effective patient-surgeon communication in maximising patient safety and satisfaction are also highlighted.

16.30**PREOPERATIVE BREAST INVESTIGATION AND HISTOPATHOLOGICAL ANALYSIS: IT'S WORTH IT FOR REDUCTION MAMMOPLASTY?**

Ali MODARESSI, Marlene TADLER, Georges VLASTOS, Marie-Françoise PELTE, Brigitte PITTET-CUÉNOD, Geneva, Switzerland

PURPOSE

We aimed to determine the prevalence of occult breast lesions discovered incidentally during reduction mammoplasty (RM). We assessed the efficiency of preoperative breast investigation to reduce incidental malignant lesions rate; and the usefulness of histopathology analysis of RM specimens for future management of patients presenting cancer, pre-cancerous tumours or lesions increasing the risk of cancer.

METHODS

Personal and histopathology data were collected from medical charts of 534 consecutive female patients who underwent RM after a negative preoperative breast investigation, according to breast examination, patient's age and personal/family history of breast cancer. In addition, we calculated the ratio of breast cancer in our cohort to the expected number of breast cancers in a comparable general population. Statistical significance was set at a two-sided value of $p < 0.05$.

RESULTS

479 patients (89.7%) were operated on for symptomatic mammary hypertrophy without prior personal breast cancer history and 55 cases (10.3%) for breast asymmetry after contralateral breast cancer surgery. Benign and/or malignant lesions were observed in 76.2% of all patients, among which 5,9% of precancerous tumours or lesions increasing cancer risk. Total incidental breast cancer rate was 0.9% (5 carcinoma in situ, none invasive lesion): 0.4% in patients without breast cancer history and 5.5% with contralateral breast cancer. In comparison to number of lesions expected in a corresponding general population, in situ breast cancer was 12-fold higher in our cohort (0.89 vs 5, $p = 0.002$). However no invasive breast cancer was found in contrary to 7.93 lesions expected ($p = 0$)

CONCLUSION

To reduce incidental lesions during RM, adequate preoperative breast investigation is primordial. Moreover, up to 75% of RM specimens present benign lesions, some of them associated with a relative high risk for breast cancer needing a specific follow-up. Therefore, the collaboration between plastic surgeons, breast oncologists, pathologists and radiologists is still of utmost importance.

16.42 POWER ASSISTED LIPOSUCTION MAMMAPLASTY (PALM): MAXIMIZING BLOOD SUPPLY TO NIPPLE-AREOLA COMPLEX IN GIGANTOMASTIA REDUCTION.

Marwan ABOUD, Saad DIBO, Brussels, Belgium

INTRODUCTION

Breast reduction in patients with large breasts is a challenging procedure. We describe a new concept of breast reduction that provides a safe and quick procedure with a good aesthetic outcome.

MATERIAL AND METHODS

A retrospective review of all patients who underwent breast reduction by the senior author between 2008 and 2012 was conducted, using the Power-Assisted Liposuction Mammoplasty (PALM) technique. The PALM surgical technique consists of:

- Extensive liposuction of the breast tissue using power assisted liposuction technique.
- Gland resection of the inferior pole only.
- Preservation of the maximal blood supply to the breast by maintaining the superior, lateral and central pedicles.
- Creation of a large upper medial pocket to contain the elevated gland.
- 180 degrees counter clockwise rotation and elevation of the nipple-areola complex (NAC).
- Breast fixation to upper thoracic wall by suturing the dermal flap to chest wall within the pocket as well as to the inferior pole of the breast at the inframammary fold using a single barbed suture.
- Skin closure with short inverted-T scar.

RESULTS

138 patients underwent breast reduction using the PALM. BMI was 32 on average (range 25-43). The nipple elevation ranged between 8-27 cm, liposuction per breast in ml 100-2800 and glandular resection per breast in grams 50-600. Complications included 2.17% wound infection, and 3.62% seroma rate. No total areola necrosis was recorded, though partial areola necrosis occurred in 1.42% of the cases. Revision surgery rate was 6.52%. Breast projection and upper pole fullness were maintained on average follow ups of 18 months.

CONCLUSION

PALM is a safe and reliable option in gigantomastia reduction thanks to the preservation of maximal blood supply to the breast tissue.

16.54 COMPUTER ASSISTED EVALUATION OF NAC SENSIBILITY IN SMALL TO LARGE UNOPERATED FEMALE BREASTS

Rosaria LAPORTA, Benedetto LONGO, Matteo AMOROSO, Antonella FIORILLO, Fabio SANTANELLI, Rome, Italy

INTRODUCTION

Defining normal breast sensibility is essential to evaluate sensation outcomes in reduction and reconstructive mammoplasty. A prospective study to determine the normal breast sensibility values and to investigate volume and ptosis influence on nipple-areola complex (NAC) sensation was performed. BREAST-V[®] was used to objectively stratify breast size.

MATERIAL AND METHODS

Sixty women were evaluated using Pressure-Specified Sensory Device (PSSD) to measure static and moving one and two-point (1&2pd) NAC discrimination. Nipple and four areola quadrants were tested and results averaged. Three groups of 20 women, with similar age's distribution, were built according to breast volume. Group-I included small breast volume ≤ 400 cc, Group-II moderate volume (from 401 cc-600 cc) and Group-III large volume (from 601 cc-800 cc). Multi-regression Analysis was performed considering significant a p-values < 0.05 .

RESULTS

There were no significant threshold differences between areolar quadrants in all groups. An inverse sensibility-volume relationship was found, with Group-I significantly more sensitive than Group-III, in respect to NAC static and moving 1&2pd. Moving 1-pd for nipple and areola were respectively 1.07 ± 0.25 and 0.97 ± 0.34 in Group-I, 1.12 ± 1.02 and 1.77 ± 3.32 in Group-II, 2.02 ± 1.01 and 2.98 ± 1.33 in Group-III. Moving 2-pd for nipple and areola were respectively 0.83 ± 0.25 and 0.87 ± 0.26 in Group-I, 1.45 ± 0.47 and 1.48 ± 0.64 in Group-II, 1.89 ± 0.65 and 1.91 ± 0.34 in Group-III. Thresholds in Group-III were 2 folds significantly higher than Group-I. A direct sensibility-ptosis relationship was found in all groups.

CONCLUSION

BREAST-V[®] combined with PSSD resulted as objective and accurate method to define normal sensibility in each different breast volume group, significantly demonstrating a linear-inverse relationship between breast volume/ptosis and NAC sensitivity, possibly related to decreased nerve density from a larger skin surface relative to a constant number of nerve fibers. The present study is the first to use the authentic breast volume to generate sensation data with respect to static and moving one and two-point discrimination.

17.06 A PROSPECTIVE CONTROL STUDY OF LONG-TERM NAC'S SENSORY RECOVERY FOLLOWING SUPERO-LATERAL PEDICLED REDUCTION MAMMAPLASTY.

Fabio SANTANELLI, Benedetto LONGO, Alessio FARCOMENI, Rosaria LAPORTA, Marco PAGNONI, Rome, Italy

INTRODUCTION

Stable sensory recovery of nipple-areola complex (NAC) is reported to occur two years after surgery, and is important to define outcomes quality in breast reduction. Our aim was to investigate NAC sensation at 4-years follow-up after supero-lateral pedicled reduction mammoplasty (SLPRM).

MATERIALS AND METHODS

NAC sensation was investigated using Pressure-Specified Sensory Device in 60 women: static and moving 1&2-point discrimination were collected and averaged preoperatively (T0), at 6 months (T6) and 4-year (T48) in the active group of 30 large volume breasted women undergoing SLPRM, and in a control group of 30 unoperated medium breasted women, calculated with BREAST-V®. Mean age of both groups was 46.03 ± 10.50 and 41.42 ± 7.19 , mean BMI was 25.63 ± 4.06 and 23.31 ± 2.94 , and mean breast volume in active group, postoperatively, and in control group were respectively 1236 ± 220 cc (range, 876-1550 cc) and 553 ± 101 cc (range, 401-600 cc), with no significant differences. Statistical analyses using mixed effect model were performed to compare pressure thresholds.

RESULTS

The mean nipple threshold in the active group at T6 was 1.32 times higher than T0 even if not significantly, while T48 was 2.92 times higher than T0 ($p < 0.05$). Furthermore, thresholds T0 and T48 were 2.25 ($p < 0.05$) and 4.18 ($p < 0.05$) times higher than control group respectively. The mean areola threshold in the active group at T6 was 1.13 times lower than T0 even if not significantly, while T48 was 3.41 times higher than T0 ($p < 0.05$). Moreover, thresholds T0 and T48 were 1.56 ($p < 0.05$) and 4.75 ($p < 0.05$) times higher than control group respectively.

CONCLUSIONS

Despite an early not significantly worsening at 6 months after surgery, patients undergone SLPRM presented a significant NAC sensibility reduction at 48-month follow-up, and both pre and postoperative NAC sensibility from macromastia patients showed a significant reduction compared to control not hypertrophic breasts.

SATURDAY, MAY 25, 2013

08.30-10.30 SCIENTIFIC SESSION, No. 7 CLINICAL GENERAL

Session Chairpersons:

Ken STEWART, Edinburgh, United Kingdom

08.30 HYDROFIBER SILVER VERSUS NANOCRYSTALLINE SILVER DRESSINGS IN PARTIAL THICKNESS BURNS: A PROSPECTIVE, RANDOMIZED, CONTROLLED STUDY IN 100 PATIENTS

Stan MONSTREY, Henk HOEKSEMA, Jos VERBELEN, Alexander HEYNEMAN, Ali PIRAYESH, Ghent, Belgium

Silver containing dressings recently have become increasingly popular in the conservative treatment of partial thickness burns with reports of faster wound closure with better functional and aesthetic outcomes.

In this prospective, randomized study we compared the application of two frequently used silver dressings for burn wounds: a nanocrystalline silver dressing (Acticoat) and a hydrofiber silver dressing (Aquacel Ag).

Prior to objective burn depth assessment by laser Doppler imaging (48-72 hours post burn), the wounds were treated with a hydrocolloid paste. Only burns with a predicted healing time of 7-21 days were enrolled and after obtaining informed consent each patient was randomized into the hydrofiber silver group or into the nanocrystalline silver group (50 patients/group). The hydrofiber silver dressing was left in place until wound healing. The nanocrystalline silver dressing was moistened daily and changed every 3 days conform existing guidelines.

Variables investigated were related to: research group consistency, wound healing, bacteriology, economics, nurse and patient experience.

All 100 patients were enrolled between January 2007 and August 2010.

Statistical analysis of the results demonstrated no significant difference for: research group consistency, time to complete wound healing, signs of infection, bacterial burden, baseline pain and itching.

A statistically significant difference in the advantage of hydrofiber silver was found for: average ease of use ($p < 0.001$), average ease of application ($p = 0.001$), pain experienced by the patient ($p < 0.001$), patient comfort with the dressing ($p = 0.017$), silver staining ($p < 0.001$) and cost effectiveness ($p < 0.001$).

CONCLUSION

Laser Doppler imaging is an invaluable tool for patient selection in comparative burn wound research. In this randomized controlled study similar results were obtained as to healing time and bacterial control with both silver dressings. However, hydrofiber silver dressing (Aquacel Ag) proved significantly better than nanocrystalline silver dressing (Acticoat) as to increased comfort for patients and nurses experience. Moreover, hydrofiber silver proved significantly more cost effective.

08.42

PERMEABILITY OF SALINE-FILLED TISSUE EXPANDERS TO ELECTROLYTES AND MACROMOLECULES: AN IN VIVO STUDY

Aydin SARAY, Üçler KISA, Dilek KILIÇ, Ali Teoman TELLIOGLU, Istanbul, Turkey

INTRODUCTION

Saline-filled implants are frequently used in reconstructive and aesthetic surgery. Several recent studies have attracted attention to the permeability and diffusion properties of these devices. The goal of this in vivo study was to investigate the permeability properties of saline-filled tissue expanders during the 6-month inflation period.

MATERIALS AND METHODS

This is a two-year study of 10 patients who underwent episodes of tissue expansion for various indications. All expanders were inflated with 0.9% sterile saline and every saline solution was evaluated for concentrations of sodium and chloride. Intraluminal fluid was sampled four times during the inflation, and levels of electrolytes (sodium, chloride, calcium, magnesium, phosphorus), lipids (triglyceride, cholesterol), bilirubin, uric acid, protein and glucose were investigated in 14 tissue expanders.

RESULTS

Initially, sodium increased, and then gradually declined until six months but showed a second peak at the end. Chloride decreased slowly and remained at lower levels. Small levels of glucose, proteins, calcium, magnesium, lipids, phosphorus and urea were detectable within the implant from the beginning and all these molecules increased significantly throughout the study. Sodium and chloride content of every filling solution showed deviations from the standard level, which is declared as 154 mEq of NaCl on the label.

CONCLUSIONS

Silicone elastomer is permeable to water and many other chemical substances with relatively high permeability coefficient. Intraluminal contents of all implants displayed significant derangements from the original saline used for filling, and diffusion of new molecules such as glucose, proteins, calcium, magnesium, phosphorus, urea and lipids were detected. The diffusion of these electrolytes does not conform to the classical diffusion patterns, and we hypothesize that molecular jumps (hop diffusion) through the silicone polymer may be responsible for the penetration of electrolytes and larger molecules into the implant.

08.54 INTRAOPERATIVE LASER FLUORESCENT ANGIOGRAPHY FACILITATES OPTIMAL TISSUE EXPANDER/ADM BREAST RECONSTRUCTION OUTCOMES

Patrick GARVEY, Jesse SELBER, Christopher HOBAUGH, Donald BAUMANN, Charles BUTLER, Houston, TX, USA

BACKGROUND

Vascular compromise of mastectomy skin flaps following skin-sparing mastectomy (SSM) results in adverse outcomes for tissue expander and acellular dermal matrix (TE-ADM) breast reconstruction. Intra-operative laser fluorescent angiography (LFA) has been shown to accurately predict mastectomy skin flap necrosis. However, it is unknown whether it improves clinical outcomes vs. clinical assessment alone. We hypothesized that LFA evaluation of skin flap perfusion in TE-ADM breast reconstructions would result in fewer overall complications and less skin flap necrosis than clinical assessment alone.

METHODS

We reviewed all consecutive immediate SSM/TE-ADM breast reconstructions at a single center over 5 years. We compared the outcomes of reconstructions for which LFA was used for skin flap assessment with those for which clinical judgment alone was used prior to the availability of LFA. Primary outcome measures included mastectomy skin flap necrosis (partial or full-thickness) and overall complications. Univariate and multivariate regression analysis controlled for differences between the two groups and analyzed the relationship between patient and reconstruction characteristics and overall complications and necrosis.

RESULTS

A total of 152 patients underwent 207 TE-ADM breast reconstructions (92 with LFA and 115 without LFA). Patient characteristics were similar between the two groups. LFA reconstructions had a significantly lower incidence of overall complications (30.4% vs. 47.8%; $p=0.01$) and mastectomy skin flap necrosis (17.4% vs. 29.6%; $p=0.01$) than the no-LFA reconstructions. Multivariate regression analysis demonstrated LFA to be protective and associated with an almost 3-fold reduction in the likelihood of developing both skin flap necrosis (OR=0.36, $p=0.02$) and a postoperative complication (OR=0.36, $p=0.005$.)

CONCLUSIONS

We believe that the additional information provided by LFA positively affected surgeons' intraoperative decisions, resulting in improved clinical outcomes. This is the largest study evaluating the effect of LFA use on surgical outcomes of TE-ADM breast reconstructions.

09.06

DYNAMIC RECONSTRUCTION OF THE ABDOMINAL WALL WITH THE PEDICLED INNERVATED VASTUS LATERALIS AND ANTEROLATERAL THIGH (PIVA) FLAP.

Lore BUDHIHARTO, Jan Jeroen VRANCKX, Katarina SEGERS, Anne-Marie STOEL, Lloyd NANHEKHAN, Leuven, Belgium

BACKGROUND

Most abdominal wall defects can be restored using a mesh and a perforator-saving component release. This strategy may not be recommended for large defects in an infected environment, after locoregional radiotherapy, or in presence of a colostomy and urostents. Pedicled tensor fascia lata flaps have long been reported as the standard approach in such environment but their reach, bulk and vascularity distally is poor. Innervated free flaps may add a dynamic component but the temporary denervation following neurovascular suturing requires a long recovery time and further weakening occurs during the interim.

METHODS

We used a Pedicled Innervated Vastus lateralis and Anterolateral thigh (PIVA) flap, innervated by its femoral nerve branches, in 12 patients with large abdominal wall defects in severe conditions. We analyzed the reconstructive and donor site outcome using a patient questionnaire and determined the dynamic impact on abdominal wall function and morbidity on the thigh donor site with dynamometric analysis on PIVA flaps larger than 20 x 10 cm and were donor site was skin grafted.

RESULTS

The PIVA flap covered defects up to the upper abdomen. None of the patients reported subjective functional loss at the donor thigh that required a modification of lifestyle. Dynamometric data between 3 and 12 months after the intervention showed increasing dynamic strength in the abdominal wall ($p=0.016$) and in quadriceps function ($p=0.023$).

CONCLUSIONS

The PIVA flap reaches the upper abdomen and restores full-thickness abdominal wall defects in a dynamic fashion with limited donor site morbidity.

09.18 ABDOMINAL WALL RECONSTRUCTIONS WITH PRIMARY FASCIAL CLOSURE AND MESH REINFORCEMENT EXPERIENCE SUPERIOR OUTCOMES TO BRIDGED MESH REPAIRS

Justin BOOTH, Patrick GARVEY, Donald BAUMANN, Jesse SELBER, Charles BUTLER, Houston, TX, USA

INTRODUCTION

Recent literature suggests that primary fascial closure with mesh reinforcement should be the goal of abdominal wall reconstruction (AWR); however, some have reported that mesh can be used to bridge the fascial edges with acceptable outcomes. We hypothesized that in AWR, bridged repairs result in higher hernia recurrence rates than non-bridged, mesh-reinforced repairs that achieve fascial coaptation.

METHODS

We retrospectively reviewed data from consecutive patients who underwent AWR between 2/2000 and 10/2011 at The University of Texas MD Anderson Cancer Center. All patients who underwent AWR with inlay mesh with at least 1 year of follow-up were included. We compared surgical outcomes between patients with bridged and mesh-reinforced fascial repairs. Univariate and multivariate logistic regression analysis identified potential associations.

RESULTS

A total of 241 patients were included in the study (mesh-reinforced, N=206). Mean follow-up was 30.2 ± 14.5 months and was similar between groups. Patient characteristics were similar between groups as was the use of component separation. The mean defect width was greater in the bridged group (16.0 cm vs. 13.4 cm; $p=0.028$). The bridged repair group experienced a higher overall complication rate (65.7% vs. 33%; $OR=3.89$; $p<0.001$) as well as a markedly higher risk of hernia recurrence (45.7% vs. 8.3%; $OR=9.36$; $p<0.001$). Among patients who developed hernia recurrence, the interval to recurrence was 7 times shorter in the bridged group ($HR=7.02$; $p<0.001$). Multivariate Cox proportional hazard regression analysis showed bridged repair and defect with ≥ 15 cm to be independent predictors of hernia recurrence ($HR=5.78$; $p<0.001$ and $HR=2.75$; $p=0.007$, respectively) while bridged repair and $BMI>30$ were predictive of overall complications ($OR=4.34$; $p<0.001$ and $OR=3.05$; $p<0.001$, respectively).

CONCLUSION

Patients who underwent AWR with mesh-reinforced, primary fascial coaptation experienced fewer hernia recurrences and complications than those who underwent bridged repair. Surgeons should employ all means necessary, including component separation, if indicated, to achieve primary fascial coaptation.

09.30 DEMAND FOR BODY CONTOURING SURGERY IN POST BARIATRIC PATIENTS

Anna ELANDER, Trude STAALESEN, Monika FAGEVIK OLSÉN, Gothenburg, Sweden

INTRODUCTION

This study was initiated in order to analyze the problems of post bariatric patients from skin excess, and their interest for body contouring surgery by using the self-administered questionnaire, the Sahlgreńska Excess Skin Questionnaire (SESQ) together with a study specific questionnaire.

MATERIAL AND METHODS

All patients operated with bariatric surgery at Sahlgreńska University Hospital 1999-2008 were identified. The 807 patients were mailed SESQ and a study specific questionnaire asking whether the patients had already undergone any type of body contouring surgery or had requests for the same.

RESULTS

The response rate was 60% (27% men). The most common problem was the feeling that the body was unattractive (84.5%). The most frequently reported local for skin excess was upper arms (83.7%), followed by abdomen (83.3%), inner thighs (82.5%) and breasts (66.8%). Skin excess localized on the abdomen was reported to cause most discomfort with a mean of 5.3 (0-10 grade scale). In second place came the inside of the thighs (mean 4.9), followed by upper arms (mean 4.2) and breasts (mean 3.9). There was a strong correlation ($p < 0,0001$) between amount of skin excess and discomfort of the same for all body parts. Women reported a significant higher amount of skin excess and discomfort compared to men. Seventeen percent of the respondents had been operated with body contouring surgery on one body part, while 5.2% had been operated on two or more body parts. Fourteen percent desired body contouring surgery on one body part while 61,4% desired body contouring surgery on two or more body parts.

CONCLUSION

A majority of post bariatric patients experience significant problems of skin excess and request body contouring surgery, with a predominance for women. Though there is a great discrepancy between performed and requested surgery in this material.

09.54

PERFORATOR FLAPS IN LATE STAGE PRESSURE SORES TREATMENT: OUTCOME ANALYSIS OF 11-YEAR-LONG-EXPERIENCE WITH 143 PATIENTS

Luca GRASSETTI, Alessandro SCALISE, Matteo TORRESETTI, Mateo GIOACCHINI, Giovanni DI BENEDETTO, Ancona, Italy

BACKGROUND

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 11-years-experience in order to define whether real advantages could be achieved.

METHODS

We analyzed 143 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

Ninety-three percent of 143 patients were white caucasian, 61% were men, with median age of 51 years. Of 143 stage 4 ulcers, 46.2% were ischial, 42.7% sacral, and 11.2% trochanteric. The most common diagnosis was traumatic paratetraplegia (74.9%); no significant difference was found in diagnosis distribution and in ulcer location between recurrent and non-recurrent patients. Were performed 44 S-GAP, 78 I-GAP, 3 PFAP-am and 18 PFAP-1 flaps. At two years follow up, the overall recurrence was 22.4% and new ulcer occurrence was 4.2%. Mean hospital stay was 16 days. The overall complication percentage was 22.4%, mostly due to suture-line dehiscence (14%) and distal flap necrosis (6.3%). 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 an average of nearly 1 week), re-operations (5.6%) and occurrences.

10.06**SENTINEL NODE MICROMETASTASIS IN MALIGNANT MELANOMA: IS IT A RELIABLE PROGNOSTIC INDEX?**

Edoardo DALLA POZZA, Enrico VIGATO, Leonardo ROSSATI, Federica BOSCO, Maurizio GOVERNA, Verona, Italy

INTRODUCTION

Sentinel lymph node biopsy (SLNB) is widely accepted to be a minimally invasive, accurate staging procedure in patients with cutaneous malignant melanoma. Our study focuses on the correlation between sentinel node status and rates of recurrent/metastatic disease, mortality and additional nodal metastases in the completion lymph node dissection (CLND).

MATERIALS AND METHODS

We retrospectively reviewed 368 SLNB performed from 2000 to 2010. Follow-up was performed every three/four months for two to eleven years. According to SLN status three groups were made: Group A (Negative SLNB), Group B (Micrometastasis > 2 mm) and Group C (Metastasis > 2 mm). Chi-square test was used to compare the incidence of recurrent/metastatic disease and mortality among SLNB positive and negative patients.

Primary melanoma Breslow index and mitotic rate were compared in these Groups.

RESULTS

SLNB resulted negative in 248/368 (67.4%) patients (Group A); mortality and recurrent or metastatic disease was significantly lower ($p < 0.001$) in this group (respectively 11/248; 4.4% and 36/248 14.5%).

Patients of Group C had an higher incidence of positive CLND (22/86; 25.56%) compared with Group B (4/34; 11.7%) ($p < 0.001$). However, the incidence of recurrences (43% vs 38.2%, $p = 0.58$) and the mortality (23.3% vs 26.5%, $p = 0.22$) is not significantly different in two groups.

CONCLUSION

This study confirms the positive correlation between metastatic involvement of SLNB and higher incidence of recurrent or metastatic disease and mortality. Moreover it shows that CLND is more likely to be positive if a metastasis > 2 mm is found in the SLNB.

Notwithstanding, data in our series suggest no significant difference between Micro and "Macrometastasis" in the SLNB as a prognostic index for recurrent or metastatic disease and mortality. According to our experience more reliable prognostic factors proved to be primary melanoma's Breslow index and mitotic rate ($p < 0.05$).

**10.18 TRACHEA ALLOTRANSPLANTATION AND PREFABRI-
CATION FOR LONG TRACHEA STENOSIS WITH WITH-
DRAWAL OF IMMUNOSUPPRESSION. UPDATE AFTER 6
CASES.**

Jan Jeroen VRANCKX, Katarina SEGERS, Pierre DELAERE, Leuven, Belgium

INTRODUCTION

There are few therapeutic options for repairing trachea defects longer than 5 cm since no autologous donor fibrocartilagenous framework is available for reconstruction and trachea lacks an identifiable vascular pedicle that would enable direct vascular anastomosis to vessels of the recipient.

MATERIAL AND METHODS

Based on our experimental and clinical experience with tracheal auto- and allotransplantation, we reconstructed 6 long-segment tracheal defects using an allograft that was revascularized by heterotopic wrapping in vascularized forearm fascia.

The patients received immunosuppressive therapy before the operation. After revascularization, the mucosal lining was replaced progressively using recipient buccal mucosa.

A fully remucosalized tracheal chimera was obtained 4 months after implantation in the first patient; the mucosal lining consisted of donor respiratory epithelium and of recipient buccal mucosa. The chimera allowed for gradual withdrawal of immunosuppressive therapy. Ten months after implantation, the tracheal allograft was dissected with its new vascular pedicle from the forearm.

The time points in this protocol were modified based on the internal mucosal healing of the allo trachea.

RESULTS

In all patients immunosuppressive therapy was withdrawn. However, in one patient longterm vascularization problems occurred in the transplant. Shortening the time span for the orthotopic transplantation in 2nd stage, limits the quality of outcome. There is a precious balance between the immunologic parameters and the vascularization of the internal lining of the trachea.

CONCLUSION

We report the world's first 6 trachea allotransplantations following initial indirect revascularization of the graft in a heterotopic position. Tracheal allotransplantation after initial revascularization can be used to treat long, non-malignant tracheal stenoses. Importantly, tracheal allotransplantation can occur without lifelong immunosuppression. The vascularization process of the mucosal lining of the trachea determines the quality of outcome and time of treatment.

11.10-11.30 AAPS BEST PAPER 2012

Introduction: John A Persing, AAPS-President – New Haven, CT, USA

ASSESSING POST-OPERATIVE VENOUS THROMBO-EMBOISM RISK IN PLASTIC SURGERY PATIENTS: A HEAD TO HEAD COMPARISON OF THE 2005 AND 2010 CAPRINI RISK SCORE

Christopher J. PANNUCCI, Ruth J. BARTA, Pamela R. PORTSCHY, George DRESZER, Ronald E. HOXWORTH, Loree K.KALLAINEN, Edwin G. WILKINS, Ann ARBOR, MI, Minneapolis, MN, Dallas, TX, USA

BACKGROUND

The 2005 Caprini Risk Assessment Model (RAM) is a weighted risk stratification tool that has previously been validated to predict 60-day venous thromboembolism (VTE) risk in plastic surgery patients. The 2010 Caprini RAM proposed notable alterations in risk factor weighting for operative time, body mass index, and cancer, and added superficial venous thrombophlebitis as a new risk factor. However, the recently published 2010 Caprini RAM has not previously been validated. The objective of this study was to compare risk scores derived from the 2005 and 2010 Caprini RAM and examine their ability to predict 60-day VTE risk.

METHODS

The Venous Thromboembolism Prevention Study (VTEPS) was conducted over a three-year period at four tertiary care facilities. The VTEPS database contains data for peri-operative risk factors and 60-day VTE events. We performed a matched observational cohort study using the existing VTEPS database. Individual patients were risk-stratified using both the 2005 and 2010 Caprini RAMs. Each patient served as their own control, resulting in perfect matching for identified and non-identified confounders. Differences in VTE rate by stratified risk score were examined using Pearson's chi-square test.

RESULTS

The VTEPS database contained data for 3,334 patients. When compared to 2005 Caprini scores, 2010 Caprini scores were lower in 17.6% of patients, unchanged in 23.3%, and higher in 59.2%. Using the 2005 Caprini score, 6% of patients were considered "super-high" risk (Caprini scores of >8). Among this group, 60-day VTE rate was 5.85%. Using the 2010 Caprini scores, the number of patients risk-stratified as "super-high" risk increased three-fold to 19% of all patients. Observed VTE rates among this group decreased to 2.52% due to increased number of patients in the denominator without a corresponding increase in number of observed VTE events. Patients classified as "super-high" risk (Caprini score >8) using the 2005 Caprini RAM were significantly more likely to have a 60-day VTE event when compared to patients classified as "super-high" risk using the 2010 guidelines (5.85% vs. 2.52%, P=.021).

CONCLUSIONS

When compared to the 2010 Caprini RAM, the 2005 Caprini RAM provides superior risk stratification. The 2005 Caprini RAM should be used to risk-stratify plastic surgery patients and guide prophylaxis decisions.

11.30-13.00 SCIENTIFIC SESSION, No. 8

PANEL *GENITAL PLASTIC SURGERY- WHAT IS NEW?*

Moderator: Stan MONSTREY, EURAPS President –
Ghent, Belgium

Co-Moderator: Gürhan ÖZCAN, Istanbul, Turkey

Participants:

Massimo BRAMBILLA, Milan, Italy

AESTHETIC PLASTIC SURGERY IN THE GENITAL AREA

Kensuke TASHIRO, Isao KOSHIMA, Tokyo, Japan

ACHIEVING NORMAL IN PENILE RECONSTRUCTION

Refaat KARIM, Amsterdam, The Netherlands

**FROM FEMALE MUTILATION TO FEMALE GENITAL RE-
CONSTRUCTION**

Niri NIRANJAN, Chemsford and Colchester, United Kingdom

PERFORATOR FLAPS IN THE GENITAL AREA

Christine RADTKE, Hannover, Germany

MAJOR RECONSTRUCTIONS IN THE PERINEAL AREA

14.00-15.44 SCIENTIFIC SESSION, No. 9 FAT GRAFTING FOR EVERYTHING?

Session Chairpersons:

Gino RIGOTTI, Verona, Italy

Riccardo MAZZOLA, Milan, Italy

14.00 “NANOFAT” GRAFTING: BASIC RESEARCH AND CLINICAL APPLICATIONS

Geert PEETERS, Patrick TONNARD, Alexis VERPAELE, Moustapha HAMDI, Heidi DECLERCQ, Brussels, Belgium

INTRODUCTION

The indications for fat grafting are steadily increasing. Microfat grafting is typically carried out with thinner injection cannulas or needles up to 23 Gauge. We describe our experience of fat injection with even thinner injection needles up to 27 Gauge. The fat used for this purpose is processed into what we call ‘nanofat’. The cellular contents of nanofat are investigated, and clinical applications are described.

MATERIAL AND METHODS

Three fat samples are analyzed. The first fat sample is a classical lipoaspirate. The second sample is microfat, harvested with a multiport small-holed cannula. The third sample is microfat processed into nanofat. Processing consists of emulsification and filtering of the lipoaspirate. Emulsification is performed by repeated shifting between two connected 10cc Luer-lok syringes. Fat samples are analyzed for adipocyte viability. Adipose derived stem cells are quantified using a CD34+ cell count. Stem cell quality is investigated by culturing the cells from the stromal vascular fraction and the CD34+ subfraction in standard and adipogenic media.

Between May 2010 and September 2012, nanofat grafting has been performed in 67 cases. Nanofat grafting was used for the correction of perioral and glabellar rhytids (81%), rhytids in the décolletage (11%), scars (6%) and dark lower eyelids (2%).

RESULTS

Hardly any viable adipocytes are visible in the nanofat. Mesenchymal stem cells are still richly present in the nanofat. Cell cultures show an equal proliferation and differentiation capacity of the stem cells from the three samples.

Clinical applications show remarkable improvements in skin quality 6 months post-operatively. There were no major complications in this series. Infections, fat cysts, granulomas, or other unwanted side effects were not observed.

CONCLUSION

Nanofat still contains a large amount of mesenchymal stem cells, which have kept their differentiation capacity. In clinical situations, nanofat seems suitable for skin rejuvenation purposes.

14.12 A SCANNING ELECTRON MICROSCOPE (SEM) STUDY AND STATISTICAL ANALYSIS OF ADIPOCYTE MORPHOLOGY IN LIPOFILLING, COMPARING THE EFFECTS OF HARVESTING AND PURIFICATION PROCEDURES WITH TWO DIFFERENT TECHNIQUES.

Mario FAENZA, Francesco FARACE, Vittorio MAZZARELLO, Fabio SANTANELLI, Corrado RUBINO, Bologna, Italy

INTRODUCTION

The aim of the study was to evaluate the effects on adipocyte morphology of two techniques of fat harvesting and of fat purification in lipofilling considering that the number of viable healthy adipocytes is important in fat survival in recipient areas of lipofilling.

MATERIALS AND METHODS

Fat harvesting was performed in 10 female patients from flanks, on one side with a 2 mm Coleman cannula and on the other side with a 3 mm. 30 cc of fat tissue from each side were collected and divided it into three 10 ml syringes, A, B and C. The fat inside syringe A was left untreated, the fat in syringe B underwent simple sedimentation and the fat inside syringe C underwent centrifugation at 3000 rpm for 3 minutes. Each fat graft specimen was processed for examination under low vacuum SEM. Diameter (μ) and number of adipocytes per mm^2 and number of altered adipocytes per mm^2 were evaluated. Untreated specimens harvested with the two different techniques were first compared, then sedimented versus centrifuged specimens harvested with the same technique were compared. Statistical analysis was performed using Wilcoxon signed-rank test.

RESULTS

The number of adipocytes per mm^2 was statistically higher in specimens harvested with the 3 mm Mercedes cannula ($p=0.0310$). the number of altered cells was statistically higher in centrifuged specimens than in sedimented ones using both methods of fat harvesting ($p=0.0080$) with a 2 mm Coleman cannula and ($p=0.0050$) with a 3 mm Mercedes cannula. Alterations in adipocytes morphology consisted in: wrinkling of the membrane, opening of pore with leakage of oily material, reduction of cellular diameter and total collapse of the cellular membrane.

CONCLUSION

Fat harvesting by a 3 mm cannula results in a higher number of adipocytes and centrifugation of the harvested fat results in a higher number of morphologic altered cells than sedimentation.

14.24 FAT GRAFTS ENRICHED WITH ADIPOSE-DERIVED MESENCHYMAL STEM CELLS: A SUSTAINABLE AUTOLOGOUS FILLER?

Stig-Frederik TROJAHN KØLLE, Anne FISCHER-NIELSEN, Jens Jørgen ELBERG, Roberto S. OLIVERI, Krzysztof Tadeusz DRZEWIECKI, Copenhagen, Denmark

INTRODUCTION

Autologous fat grafting is increasingly used in both aesthetic and reconstructive surgery. However, fat grafts often have an unpredictable survival with resorption rates ranging from 25-80%. Therefore, procedures increasing the viability of the grafts are required. We report the results of a randomised study comparing fat grafts enriched with high dose autologous adipose-derived mesenchymal stem cells (ASCs) versus fat grafts alone.

METHODS

Ten healthy participants underwent a liposuction and ASCs were isolated and ex vivo expanded. After two weeks a new liposuction procedure was performed. Two purified fat grafts (30 mL each) with or without ASC enrichment were prepared. Grafts were injected subcutaneously as a bolus to the posterior part of the right and left upper arm, respectively. The ASC concentration was approximately 2.000 times higher (2×10^7 ASC/mL) than physiological levels. Volumes of the injected fat grafts were measured by magnetic resonance imaging (MRI) immediately after injection (compared with a baseline MRI) and after 121 days prior to surgical removal for histo-pathological examination. Participants, surgeons and outcome assessors were blinded to treatment allocation.

RESULTS

MRI analysis showed significantly higher residual volumes in ASC-enriched fat grafts ($80.89 \pm 6.04\%$ [SD] of the initial volume) compared to non-enriched fat grafts ($16.26 \pm 7.25\%$ [SD] of the initial volume) ($p < 0.0001$). No treatment related adverse events were observed. Histo-pathological examination is pending, including capillary density, amount of necrosis, fibrosis, connective and fat tissue.

CONCLUSIONS

This is the first randomised clinical study reporting the safety and efficacy of fat grafts enriched with high dose ex vivo expanded autologous ASCs.

Despite being injected as a bolus, ASC-enriched fat grafts retained more than 80% of the initial injected volume 4 months following grafting procedure, this emphasizes that ASC graft enrichment can contribute to make lipofilling a more reliable procedure.

14.48 **IS FAT GRAFTING TO THE BREAST SAFE? RECOMMENDATIONS FOR PATIENT SELECTION BASED ON EXPERIMENTAL AND CLINICAL DATA**

Anna KRUMBÖCK, Pranitha KAMAT, Riccardo SCHWEIZER, Souzan SALEMI, Maurizio CALCAGNI, Anne-Catherine ANDRES, Daniel EBERLI, Pietro GIOVANOLI, Jan PLOCK, Zurich, Switzerland

Recently the concept of fatgrafting has been further developed to stem-cell-enhanced-fatgrafting on the breast level. Our aim was to investigate the oncological safety of these procedures reviewing the present literature based on own experimental data.

Human AD-MSCs (CD34-CD73+CD90+CD105+) were co-cultured with MDA (human breast cancer cell line). The immunosuppressive function of AD-MSCs was reflected through reduced expression of proinflammatory cytokines (IL-6, 5.4-fold; GM-CSF, 50-fold) and tumor related angiogenesis (VEGF, 2.4-fold) in the presence of high AD-MSC levels. In addition AD-MSChigh/MDA_{low} ratio coincided with an increased metastasis potential, as shown by Eotaxin (7.5-fold) and RANTES (5.7-fold) expression. In vivo data from a mouse breast cancer model exhibited significantly promoted tumor growth after receiving AD-MSChigh/MDA_{low} fraction (tumor size median: 176 mg, range 10-1574 mg) and balanced AD-MSC/MDA ratio (tumor size median: 130 mg, range 15-761 mg) compared to a MDA group (tumor size median: 0 mg, range 0-301 mg). In the AD-MSChigh/MDA_{low} group 80% of the animals developed distant metastases. This was seen in 30% of the balanced AD-MSC/MDA group and in none of the MDA animals.

In own in vitro and in vivo experiments we can therefore demonstrate that human AD-MSCs are capable of promoting breast cancer growth and metastasis under special circumstances. Whereas experimental data is discouraging, so far no clinical adverse outcomes have been reported. Only one prospective multicenter study concerning fatgrafting was evaluated on an oncological basis. An increased rate of breast cancer recurrency was found in patients, who had been diagnosed for intraepithelial malignancies. All so far performed studies on stem-cell-enhanced-fatgrafting have been limited to a one-year follow-up. Including MRI examinations no adverse effects were reported.

In conclusion we suggest clinical criteria for patient selection undergoing aesthetic or reconstructive fatgrafting based on the individual breast cancer risk. Stem cell enhanced fatgrafting should be strictly limited to prospective studies with close oncological follow-up.

15.00 MEGA VOLUME FAT GRAFTING IN THE MATRIX: APPLICATIONS FOR THE BREAST AND BUTTOCK.

Saad DIBO, Marwan ABBOUD, Brussels, Belgium

INTRODUCTION

The purpose is to report a new conception in fat grafting to the breast and buttock by exploiting the recipient site as a matrix in order to optimize and facilitate mega volume fat grafting.

MATERIAL AND METHODS

First, the recipient site is expanded by infiltration. This is followed by harvesting and preparation of the fat. Using the Vibroliposuction machine, multidirectional and multilayered tunneling is performed in the recipient site, in a way to fashion a matrix for fat grafting. Injection is then carried out with a small caliber cannula. The procedure is ended by a vibrational step, using the same vibroliposuction machine detached from its suction system, the aim of which is to improve diffusion of the injected fat in the created tunnels of the matrix.

RESULTS

The technique was applied for 71 patients following autologous breast reconstruction, 65 bilateral aesthetic breast augmentations, and 54 bilateral buttock augmentations. The injected volumes per session ranged from 100 to 450 ml for the breast groups and 300 to 650 ml for the buttock group. The operative time ranged between 45 to 90 min. One to two injection sessions were required depending on the desired volumes, performed at 6 months intervals. The follow up period ranged between 12 and 40 months. The resorption rate was lower for the buttock group. Complications included liponecrotic cysts in 5.9% of the Breasts.

CONCLUSION

The recipient site is exploited as a matrix for large volume fat grafting. Multidirectional, multilayered tunneling of the recipient site followed by the vibrational phase optimizes diffusion and survival of the grafted fat. The technique remains a reliable option to achieve mega volume fat grafting to the breast and buttock while maintaining a reduced operative time.

15.12 THE PLACE OF MICRO FAT GRAFTING IN NOSE SURGERY

Murat PENCE, O. Onur EROL, Istanbul, Turkey

INTRODUCTION

In nose surgery there are instances the need of correction of slight skin irregularities with fillers. Advantage of autogenous tissue grafts over alloplastic materials and heterogeneous transplants is well known. In the face the nose skin is more fragile and prone to complications and many necrosis after injection of alloplastic materials and heterogeneous transplants are reported. In spite of these realities we always use autologous micro fat grafts on the face and especially on the nose.

MATERIAL AND METHOD

During the last five years 331 secondary nasal deformities with slight or marked skin irregularities and or noses with severe skin damages are treated with micro fat grafting. For injection 22 or 24 gauge angio cut needle is used. To correct minor irregularities a 0.3-0.8 cc, and for major irregularities or defects a 1-6 cc of micro fat graft is injected. If needed the repeated injections of cryopreserved micro fat graft is performed every 2 months.

RESULTS

For slight irregularities 1 to 3 injection of micro fat graft gave very satisfactory results in all patients. In the group showing multiple and severe irregularities 3 to 6 repeated injections was required with the result of good patient satisfaction. In 16 patients with severe traumatic skin damage after 6 to 16 repeated injections safe secondary rhinoplasty and reconstruction was possible.

CONCLUSION

The utilization of micro fat graft for correction of small or severe irregularities of the nose skin is very easy procedure without the need of cartilage graft and should be always preferred to alloplastic. This technique is a salvage procedure for cripple noses with damaged skin. The disadvantage of requiring repeated injections may be diminishing by cryopreservation of fat grafts for further utilization as we do routinely.

15.24 ADIPOSE-DERIVED STEM CELLS IN RODENTS ENHANCE EARLY PERIPHERAL NERVE REGENERATION

Mathias TREMP, Moritz MEYER ZU SCHWABEDISSEN, Elisabeth A. KAPPOS, Patricia E. ENGELS, Arne FISCHMANN, Arnaud SCHERBERICH, Dirk J. SCHAEFER, Daniel F. KALBERMATTEN, Basel, Switzerland

INTRODUCTION

Tissue engineering using a combination of nerve conduits and cell based therapies represents a new but as yet unproven approach to nerve repair. In this study, we investigated fibrin conduits seeded with different cell types for the treatment of peripheral nerve injury.

MATERIAL AND METHODS

The sciatic nerve injury model in female Sprague Dawley rats (7 groups of 7 animals, 8 weeks old) was applied and a 10mm gap created by using a fibrin conduit seeded with the following cell types: rat adipose-derived stem cells (rASCs), Schwann cell (SC)-like cells from rASC, rat SCs (rSCs), hASCs from the superficial and deep abdominal layer as well as human stromal vascular fraction (SVF) (1 x 10⁶ cells). As a negative control group culture medium only was used. After two weeks, nerve regeneration was assessed by immunohistochemistry. Furthermore, imaging analysis (MRI) was performed to monitor enhanced nerve regeneration.

RESULTS

HASCs and rASCs similarly improved nerve regeneration whereas the group with SC-like cells resembled the rASCs group with a longer but not significant regenerative distance in comparison with the negative control group. By contrast, human SVF does not improve nerve regeneration. By using a clinical 3T MRI scanner with human wrist coils, we were able to visualize the graft as a small black outline, distal and proximal sutures and small hyperintensity indicating the growth cone.

CONCLUSIONS

Positive trends could be demonstrated for the hASCs groups. Furthermore, we visualized the growth cone by MRI for all cell types, which can be a valuable clinical tool to measure nerve regrowth.

15.36 AUTOLOGOUS FAT TRANSPLANTATION: AN ADJUVANT AND NEW TREATMENT FOR SCLERODERMA-INDUCED DIGITAL ULCERS

Isabella MAZZOLA, Antonio PERI, Luca ROVATI, Massimo DEL BENE, Milan, Italy

INTRODUCTION

Systemic sclerosis (scleroderma SSc) is a chronic multifactorial systemic disease of the connective tissue, characterized by fibrosis and widespread vasculopathy. It affects primarily extremities causing digital ulcers and necrotic lesions. Digital ulcers, typical feature of the hand's cutaneous manifestations, occur either at the distal aspect of digits or over the bony prominences in 50% of patients with limited or diffuse cutaneous SSc. The aim of this paper is to report our experience by treating these wounds with autologous fat transplantation.

MATERIAL AND METHODS

The procedure consists of an extensive debridement of the digital ulcers and concurrent fat grafting of the area with autologous adipocytes previously centrifugated. 1-2ml of pure adipose tissue is injected in the dorsal surface of the finger with 18G blunt cannulas. Patients are allowed normal hand use from the first postoperative day. From 2010 to 2012, 15 patients (14 women and 1 man, mean age 65 years) for a total of 37 digital ulcers have been treated.

RESULTS

Improvement of scleroderma with fat grafting was particularly significant with a total healing of 19 digit ulcers at 3 months after one procedure. The remaining 18 ulcers showed a noteworthy decrease of their diameter and accelerated rates of wound healing. All patients referred a considerable reduction of the local pain caused by digit ulcers and Raynaud's phenomenon. No complications were observed.

CONCLUSIONS

Current treatments (systemic and local) are only moderately effective in reducing the severity of the vascular manifestations caused by Scleroderma. Autologous fat transplantation leads to substantial benefit in terms of healing or prevention of digital ulcers. This safe and minimally invasive technique, as additional therapy, facilitates wound healing without the use of approved wound care and shortens drastically recovery time.

16.15-18.15 SCIENTIFIC SESSION, No. 10 BREAST SURGERY

Session Chairpersons:

Moustapha HAMDI, Brussels, Belgium

Henri A. H. WINTERS, Amsterdam, The Netherlands

16.15 COMPOSITE BREAST AUGMENTATION

Eric AUCLAIR, Phillip BLONDEEL, Daniel DEL VECCIO, Paris, France

BACKGROUND

Fat has been used as a material for breast augmentation since the beginning of the 20th century variable results. After many controversies, fat grafting is now routinely used to fill secondary deformities after breast reconstruction, to augment breast volume in addition after reconstruction or as an alternative to breast implants. The purpose of this presentation is to introduce a new paradigm in breast surgery - a combination of classic implant teachings and simultaneous management of the overlying soft tissue by lipofilling - a concept that now is defined as composite breast augmentation.

METHODS

This study retrospectively reviewed 3 surgeon's from 2006 to 2011. A total of 197 patients (394 breasts) are included in the study: 140 primary breast augmentations and 57 breast augmentation revisions. Patients had a minimum of one year follow up. Three main approaches for composite breast surgery evolved from the treatment of different recipient site pathologies, 1) Primary sub-fascial breast implant augmentation using fat overlay; 2) Primary sub-muscular breast implant augmentation using with fat overlay, and 3) revision breast augmentation using implant exchange and fat overlay.

RESULTS

There were no infections, hematomas or donor site deformities. In no cases was there a clinical rupture of an implant due to any cause, including the injection cannula. Late complications includes 2 recurrent capsular contractures in breast implant revision patients. In primary cases, no capsular contractures were noted. There were 18 cases of revision fat grafting for insufficient soft tissue coverage and no cases of asymmetry of graft take. 88 mammograms were prescribed after 1 to 4 years, none of them did find any anomaly such as calcifications.

CONCLUSIONS

Using Composite Breast Augmentation, one may achieve the core volume projection of an implant complemented by the natural look and feel of a fat overlay.

16.27 BREAST AUGMENTATION WITH SUPERFICIAL AND DEEP FAT: ENHANCING THE FAT GRAFT TAKE WITH THE BENEFIT OF SUBDERMAL LIPOSUCTION.

Marzia SALGARELLO, Giuseppe VISCONTI, Rome, Italy

INTRODUCTION/PURPOSE

Adipose tissue is anatomically divided into two layers, superficial (SF) and deep (DF) fat (i.e. above and below the superficialis fascia). SF is the “true” structural fat, more fibrous and not much influenced by metabolism such as DF. In fat grafting (FG), the level of harvesting has never been a matter of interest, being generally the DF. The preliminary data of our in-vitro study show that SF presents higher stromal-vascular fraction (SVF): adypocytes ratio when compared to DF.

We report our clinical experience on eight patients undergoing breast augmentation (BA) using both SF and DF.

MATERIAL AND METHODS

Between July 2011 and August 2012, eight women with hypomastia and/or breast asymmetry underwent BA with two sessions of superficial and deep FG. The mean age was 26.5 years old (range 17 to 35). All patient were of normal weight, healthy and did not smoke. Cosmetic evaluation methods were clinical, photography-based assessments and BREAST-Q score. Fat was harvested from the flanks, outer and inner thighs and inner knees. SF was aspirated using a three-hole 2-mm Mercedes-type cannula. DF was aspirated with a 2.5-mm two-hole cannula. Fat was then spun at 3000rpm for 2.5 minutes and purified from oil and crystalloids. FG was performed in the peri-glandular and intra-muscular (Pectoralis Major) spaces according to Coleman technique.

RESULTS

The average FG volume per session was of 175 cc (range 165 to 200 cc). Patients and surgeons satisfaction were very high. Clinically, the FG take was around 90%, with a follow-up up to 12 months. No complications were experienced.

CONCLUSIONS

From our preliminary observation, SF harvesting allows to transfer natural SVF-enhanced fat without sophisticated tissue manipulation and to obtain the advantages of superficial lipoplasty. This expands the indication for FG even to slim patients with small fat depots, representing a true full-body lipo-contouring surgery.

16.39 THE BREAST-V: A UNIFYING PREDICTIVE FORMULA FOR VOLUME ASSESSMENT IN SMALL, MEDIUM AND LARGE BREASTS.

Benedetto LONGO, Alessio FARCOMENI, Germano FERRI, Michail SOROTOS, Fabio SANTANELLI, Rome, Italy

INTRODUCTION

Preoperative breast volume assessment helps the surgeon in the intraoperative decisional process of breast shaping, enhancing both aesthetic and reconstructive outcomes. Numerous methods of breast size determination are currently reported but limited by methodological flaws and variability of volume estimations. Our aim was to develop a unifying predictive formula to assess volume of small to large breasts based on anthropomorphic values.

MATERIALS AND METHODS

Ten anthropomorphic breast measurements from 108 breasts undergoing mastectomies according to Madden and direct measurement of specimen volumes were prospectively collected in a blind study. A multivariate polynomial regression in order to build the optimal model for the development of a predictive formula was used. The final model was then internally validated through cross-validation randomly splitting the data to estimate the average absolute and relative errors, and confidence intervals. As a comparison we used a previously published formula as a reference.

RESULTS

The mean breast weight was 527.9 g, with a standard deviation of 227.6 g. The minimum weight was 150 g and the largest was 1250. After model selection, sternal notch-to-nipple, inframammary fold-to-nipple and inframammary fold-to-fold projection distances emerged as the most important predictors. The resulting formula showed an adjusted R² of 0.73. Cross-validation showed an expected absolute error on new breasts of 89.7 g (95% CI: 62.4 g-119.1 g), while an expected relative error of 18.4% (95% CI: 12.9%-24.3%). Application of reference formula on our sample did yield significant worse predictions than those derived by our formula showing an R² of 0.55.

CONCLUSIONS

The BREAST-V formula is a statistically reliable tool to accurately predict small to large breast volumes, useful as a complement device to surgeons' expertise. To enhance its application, the BREAST-V "App" was released for iPhone, iPad and iPad mini and is currently available for free download on Apple App Store.

16.51 POSTMASTECTOMY BREAST RECONSTRUCTION IN PATIENTS WITH LOW BODY MASS INDICES: A COMPARATIVE STUDY OF MICROVASCULAR FREE FLAPS VERSUS IMPLANT BASED OUTCOMES

Katie WEICHMAN, Stelios WILSON, Mihye CHOI, Nolan KARP, Alexes HAZEN, New York, NY, USA

INTRODUCTION

Patients undergoing autologous breast reconstruction have higher overall satisfaction rates when compared to those undergoing prosthetic reconstructions. However, due to a limited abdominal donor site in patients with low body mass indices (BMI), as defined as BMI less than or equal to 22 kg/m^2 , autologous reconstruction is often not offered to these patients. The purpose of this investigation was to compare the outcomes of autologous free tissue transfer to prosthetic reconstruction in the low BMI population.

METHODS

A review of a prospectively maintained database of all patients undergoing breast reconstruction at a single institution from November 2007 to May 2012 was conducted. Patient were included for analysis if they had preoperative documented body mass index less than or equal to 22 kg/m^2 . Patients were divided into two cohorts: autologous free tissue transfer and tissue expander/implant reconstruction and mailed a BREAST-Q survey for response.

RESULTS

273 patients met inclusion criteria. 18.3% ($n=50$) of patients underwent autologous free tissue transfer while 81.6% ($n=223$) underwent tissue expander/implant reconstruction. Patients undergoing autologous free tissue transfers were more likely to undergo secondary revisionary surgeries (46% ($n=23$) versus 26.4% ($n=59$)), autologous fat grafting (30% ($n=15$) versus 16.9% ($n=38$)), and a greater volume of autologous fat per injection (147.85 mL versus 63.9 mL ($p<0.001$)) as compared to tissue expander implant reconstructions. Additionally, autologous free tissue transfer patients were more satisfied with their breasts at 71.1 versus 64.9 ($p=0.004$). However, both cohorts had similar satisfaction in overall outcome (73.0 versus 74.8).

CONCLUSIONS

Autologous microvascular breast reconstruction should be considered in all patients with BMI less than or equal to 22 kg/m^2 . When compared to patients with tissue expander/implant reconstructions, patients undergoing microvascular breast reconstruction display higher overall breast satisfaction. However, they require greater secondary revisionary surgery and the common use of autologous fat grafting as an adjunct.

17.03

ONE STAGE IMMEDIATE BREAST RECONSTRUCTION WITH IMPLANT AND ACELLULAR BOVINE PERICARDIUM VERSUS TWO-STAGE RECONSTRUCTION IN SKIN-SPARING MASTECTOMY: COMPARISON OF COST-EFFECTIVENESS AND OUTCOMES.

Eugenia Jenny KYRIOPOULOS, Dimosthenis TSOUTSOS, Athens, Greece

PURPOSE

In skin-sparing mastectomy, immediate reconstruction with expander and implant has the drawback of 2 operations with several month intervals. To overcome this, one-stage reconstruction with acellular bovine pericardium and implant is performed. We compare the outcomes and costs of these methods.

METHODS

A retrospective study of 32 patients classified in two groups:

Group A: 15 patients with 1-stage reconstruction of 22 breasts. Pectoralis major was detached from inferomedial insertions for pocket dissection. Acellular matrix was onlayed and secured between the inferior muscle free edge and inframammary fold. Group B: 17 consecutive patients with 2-stage reconstruction of 22 breasts underwent typical 2-stage breast reconstruction.

Aesthetic results were evaluated by 3 independent surgeons who examined the breasts regarding the position, size, softness and inframammary fold definition and a patient's satisfaction survey.

Three cost strata were considered: (1) acellular matrix, expander and implant acquisition; (2) procedure costs; and (3) hospitalization costs. Cost-effectiveness ratios were analyzed (Fisher's exact t test).

RESULTS

Patients' satisfaction were high in both methods. Surgeons' evaluations regarding position and size were similar in both groups. Breast softness was acceptable, even in one-stage reconstruction because the matrix increased the thickness between implant and skin, softening the surface discrepancy. The matrix held the muscle in place, enlarged implants' inferior pole projection, preserved natural breast ptosis and optimized inframammary fold definition. Total median costs were 4902€ and 5066€ for group A and B respectively.

In group A, one patient experienced partial nipple necrosis and another had inflammation, treated conservatively. In group B, 3 seromas occurred, treated with U/S assisted aspiration.

CONCLUSIONS

Cost-effectiveness of immediate one and two-stage reconstructions are similar. The cost of acellular matrix is worth the benefit, as it is a safe and valuable tool for sufficient implant coverage and offers pleasing aesthetic outcomes.

**17.11 ADVERSE OUTCOMES IN UNILATERAL VERSUS BI-
LATERAL DEEP INFERIOR EPIGASTRIC ARTERY PER-
FORATOR FLAP BREAST RECONSTRUCTION: OUR
EXPERIENCE WITH 373 CONSECUTIVE FLAPS AND A
SYSTEMATIC REVIEW AND META-ANALYSIS OF THE
LITERATURE.**

Andrea FIGUS, Ryckie G. WADE, Justin C R WORMALD, Norwich, United Kingdom

BACKGROUND

The rate of bilateral mastectomy and bilateral breast reconstruction is rising. Bilateral DIEP flap breast reconstruction is an ideal method but potential higher rate of complications compared to unilateral DIEP flap breast reconstruction is a common concern. To date, the literature is lacking data on comparison of complication rates for unilateral and bilateral DIEP flap reconstruction.

METHODS

Over a 5-year period, the details of all consecutive DIEP flap breast reconstructions were prospectively recorded and categorised as unilateral or bilateral reconstruction for comparative analysis. Additionally, we independently and systematically reviewed the literature for adverse outcomes related to DIEP flap breast reconstruction. Chi Square or Fisher Exact tests compared categorical data to generate odds ratios (OR). We performed a meta-analysis of direct comparisons to generate relative risk (RR) ratios with 95% confidence intervals (CI) using a random-effects model.

RESULTS

In our institution, 251 patients underwent unilateral DIEP flap breast reconstruction (80.4%) and 61 patients underwent bilateral reconstruction (19.6%) with 122 DIEP flaps. The risk of peri-operative complications requiring return to theatre was significantly higher in bilateral reconstruction (OR 2.68 [95% CI 1.24, 5.81], $p=0.010$) as was the risk of total flap failure (OR 22.2 [95% CI 2.55, 194.0], $p=0.001$). A meta-analysis on 562 women, out of a total sample of 2398 women, confirmed that bilateral DIEP flap breast reconstruction was associated with a significantly higher risk of total flap failure [OR 0.30 (95% CI 0.14, 0.67)], as compared to unilateral DIEP flap breast reconstruction.

CONCLUSIONS

Adverse events in DIEP flap breast reconstruction demonstrated a low incidence however, bilateral DIEP flap breast reconstruction appears to be associated with a significantly higher risk of peri-operative complications and flap failure. These findings may be useful to develop a more comprehensive and informed consent process for patients opting for DIEP flap breast reconstruction.

17.23

A HEAD-TO-HEAD COMPARISON BETWEEN THE DEEP INFERIOR EPIGASTRIC ARTERY PERFORATOR (DIEP-) FLAP AND THE TRANSVERSE MYOCUTANEOUS GRACILIS (TMG-) FLAP IN BREAST RECONSTRUCTION.

Georg HUEMER, Thomas BAUER, Linz, Austria

INTRODUCTION

The DIEP-flap is considered the gold standard in microvascular breast reconstruction. The TMG-flap nowadays emerged as a valuable alternative. The goal of this report is to present a head-to-head comparison between these two flaps in prospective study.

PATIENTS AND METHODS

A prospective study was conducted in order to compare the DIEP-flap with the TMG-flap in autologous breast reconstruction at two institutions between January and December 2010. 33 women with DIEP reconstructions were compared to 25 women with TMG reconstructions. Information recorded included demographic data, intraoperative data relevant to flap surgery and postoperative results including complications and patient satisfaction.

RESULTS

A total of 70 flaps were performed in the study period. There were 40 DIEP flaps (26 unilateral) and 30 TMG flaps (20 unilateral). We had 1 complete (DIEP) and 1 partial (TMG) flap losses. No significant differences existed between groups with regard to age or preoperative risk factors. Average flap harvesting time was 125 minutes in the DIEP group and 75 minutes in the TMG group. Average flap weight was 384 g in the TMG group and 663 g in the DIEP group. Wound complications at the donor site were slightly higher in the TMG group with 2 operative revisions.

CONCLUSIONS

This study demonstrates that both flaps may be reliably performed with an extremely low risk of complications. The DIEP flap provides with more volume and a significantly longer pedicle whereas the TMG flap is quicker and easier to harvest. Thus, flap choice should be made on an individual basis and should be harmonized with the patient's anatomic characteristics and expectations.

17.31 THE IMPACT OF AGE ON BREAST RECONSTRUCTION ISSUES: YOUNG VERSUS OLDER PATIENTS

Guido PAOLINI, Benedetto LONGO, Marco PAGNONI, Federico CATTÀ, Fabio SANTANELLI, Rome, Italy

INTRODUCTION

The attention to breast cancer prophylaxis has lately increased the number of young women (≤ 35 years) diagnosed/at risk for breast cancer requesting mastectomy and breast reconstruction. This subset of patients presents unique characteristics and differs from older breast cancer population. Identification of the reconstructive trends in these subgroups of patients is imperative to optimize care.

MATERIALS AND METHODS

A retrospective review of the charts of women aged ≤ 35 and aged > 65 years who underwent mastectomy and breast reconstruction between 2004 and 2012, was performed. Data regarding patients, therapies, reconstructive options, and complications were compared and analysed for significance with Chi-squared test.

RESULTS

Sevenhundred-fortyfour women underwent a total of 780 mastectomies and breast reconstructions over a 8-year period. Forty-eight patients (6,4%) aged ≤ 35 (range 21-35 yy) with mean BMI of 21,8 underwent 66 (8,46%) procedures while seventy-two (9,6%) aged > 65 (range 65-78 yy) and with mean BMI of 26 underwent 83 (10,64%) procedures.

The younger presented a significant lower incidence of modified radical mastectomy (MRM) compared to the older (31,8% vs 60,2%) ($p < 0,0369$), while a greater incidence of immediate (97,9% vs 84,7%) ($p < 0,0304$), and bilateral (37,5% vs 15,2%) ($p < 0,0318$), procedures. Implant based reconstruction was more frequent in the younger (65,15% vs 34,8%) ($p < 0,0433$). Latissimus dorsi (LD) flap plus implant was the main option in the younger (33,3%) while the DIEP flap in the older (42,1%), though their incidence was not significant. Incidence of complications was significantly lower in the younger group (14,5% vs 36,1%) ($p < 0,0464$).

CONCLUSION

Young women seeking mastectomy for breast cancer, usually ask for immediate reconstruction. Even though ideal candidates for autologous free transfer, they more often undergo implant based reconstruction because of slim body, limited abdominal donor area, and frequent bilateral surgery, with contained morbidity.

17.43

PERI-OPERATIVE NEUROPATHY IN PATIENTS UNDERGOING FREE ABDOMINAL TISSUE BREAST RECONSTRUCTION - A PROSPECTIVE STUDY

Adam BLACKBURN, Angelo BIRAIMA, Jian FARHADI, London, United Kingdom

PURPOSE

Peri-operative neuropathy is the second most common cause of liability for anaesthetists. Patients undergoing free abdominal flap breast reconstruction are particularly at risk of this serious complication. Retrospective reviews estimate the incidence at 3-6.5%. This is the first prospective study to describe the true incidence and risk factors.

METHOD

60 consecutive patients were questioned pre-operatively about prior peripheral neuropathies, neo-adjuvant chemotherapy and other risk factors for developing a peri-operative neuropathy. All patients were positioned supine for free flap harvest and then put into a deck chair position for abdominal wound closure and microsurgery. Arms were placed on well-padded armboards abducted to 80 degrees throughout the operation. Post-operatively patients were questioned about neuropathy and joint pains.

RESULTS

12 patients (20%) had experienced symptoms of a peripheral compression neuropathy prior to their surgery or neo-adjuvant treatment for breast cancer. Two of these patients were symptomatic at the time of the surgery. Both these patients (100%) had a worsening of their symptoms and 3/10 (30%) patients had a recurrence of their symptoms.

27 patients (45%) had had Chemotherapy prior to their reconstructive surgery. Chemotherapy produced a neuropathy in 15 patients (56%) of which 12 (80%) were still symptomatic at the time of surgery. None of the symptomatic neuropathies worsened but 2 of the 3 (66%) resolved chemotherapy induced neuropathies recurred.

33 patients had not experienced a neuropathy prior to their surgery. 12 of these developed a perioperative neuropathy (36%).

In total 19 (32%) patients developed a peri-operative neuropathy of which 17 resolved prior to discharge (90%).

8 patients had painful joints.

CONCLUSION

All types of neuropathy are common in breast reconstruction patients. If patients are positioned with arms abducted and not given intra-operative physiotherapy, one third of patients will develop a peri-operative neuropathy which persists in 3.3% of patients overall.

17.55 THE IMPACT OF FAST TRACK SURGERY ON AUTOLOGOUS BREAST RECONSTRUCTION

Christian BONDE, Hoda KHORASANI, Kirsten ERIKSEN, Henrik KEHLET, Mette WOLTERS, Jens ELBERG, Copenhagen, Denmark

INTRODUCTION

The concept of fast-track surgery or enhanced recovery after surgery (ERAS) is a peri- and post-operative care concept developed to reduce length of hospital stay (LOS) and morbidity after surgery. ERAS programmes have been reported from other surgical specialities but this is the first report of ERAS in microsurgery.

MATERIAL AND METHODS

We have performed autologous breast reconstructions since 1994. In 2006 we introduced an ERAS program. Important changes in procedure were: early mobilization, fewer and faster removal of drains and urinary catheters, discontinuation of epidural analgesia, planned early discharge and multinodal opiate-sparing analgesia with paracetamol, specific COX-2 inhibitor in 2006 and later an NSAID, and gabapentin. The results, from all unilateral autologous breast reconstructions, with free abdominal flaps in the first 5 years after the implementation of the ERAS (n=177), was compared to our results prior to the ERAS (n=292). Flap type, operating time, blood loss, and ischaemic time, LOS, early flap related and systemic complications (<30 days) were analyzed.

RESULTS

The implementation of the ERAS reduced mean LOS from 7.4 days to 6.2 days. When compared to our pre-ERAS results, we found similar flap types, operating time, blood loss and ischaemic time. LOS >7 days were due to complications, the most common being recipient area hematoma. No significant change in complication rates (6.5% vs 7.9%) or flap loss (2% vs 2%) were found but hematomas were more frequent with the use of NSAID than COX-2 inhibitors (9% vs 4%).

CONCLUSION

Using a simple, peri- and post-operative care concept it is possible to reduce LOS after microsurgery by at least one day without increasing complication rates or flap loss. More work is needed to reduce LOS further and in the optimisation of the multinodal analgesia. Our considerations on how to achieve this is presented.

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