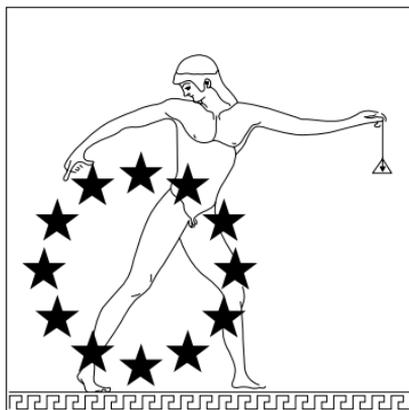


**EURAPS
EUROPEAN ASSOCIATION
OF PLASTIC SURGEONS**



**TWENTY-THIRD ANNUAL MEETING
May 24-26, 2012**

MUNICH, GERMANY

PROGRAM

UNDER THE PATRONAGE

Christian UDE, Lord Mayor of Munich

PROGRAM AT A GLANCE

THURSDAY, MAY 24, 2012

- 10.00-19.00** **REGISTRATION** at the Hotel Bayerischer Hof
- 14.00-15.30** **SCIENTIFIC SESSION, No. 1 RESEARCH**
Session Chairmen:
Angus McGROUTHER, Manchester, United Kingdom
Paul WERKER, Groningen, The Netherlands
- 14.00** **INNOVATIVE APPROACH TO ORGAN TISSUE ENGINEERING USING AUTOLOGOUS MICROCIRCULATORY BEDS AS VASCULARIZED BIOSCAFFOLDS**
Lars-Hinrich EVERS, David SIMONS, Pelu S. TRAN, Michael SORKIN, Michael T. LONGAKER, Geoffrey C. GURTNER, Stanford CA, USA
- 14.08** **ISOLATION OF NON-ADHERENT PROGENITORS FROM ADIPOSE-DERIVED STEM CELLS (NAPADSCS): CAN WE FINALLY CONFIRM ADSCS STEMNESS?**
Angelo A. LETO BARONE, Marco CARMISCIANO, Gabriele GIUNTA, Francesca TOIA, Adriana CORDOVA, Francesco MOSCHELLA, Palermo, Italy
- 14.20** **BIOMECHANICAL ANALYSIS OF THE EFFECT OF MESENCHYMAL STEM CELLS ON MANDIBULAR DISTRACTION OSTEOGENESIS; A NEW EXPERIMENTAL MODEL IN SHEEP MANDIBLE.**
Andac AYKAN, Serdar OZTURK, Ismail SAHIN, Senih GURSES, Ali Ugur URAL, Selcuk ISÖK, Ankara, Turkey
- 14.32** **TIME-POINT STUDY OF CRANIAL REGENERATION WITH HYALURONIC ACID HYDROGEL AND BMP-2 IN RATS**
Ann-Charlott DOCHERTY SKOGH, Kristoffer BERGMAN, Mats BECKMAN, Jöns HILBORN, Thomas ENGSTRAND, Stockholm, Sweden
- 14.44** **TISSUE ENGINEERING OF SKIN – TRACKING VASCULAR CHANGES AND PROTEASES IN SKIN GRAFTS OR WHAT CAN WE LEARN FROM NATURE?**
Nicole LINDENBLATT, Alicia KNAPIK, Niels HEGLAND, Martina ALTHAUS, Mauricio CALCAGNI, Pietro GIOVANOLI, Zurich, Switzerland
- 14.56** **INJECTABLE SYSTEM FOR SPATIO-TEMPORALLY CONTROLLED DELIVERY OF HYPOXIA-INDUCED ANGIO-**

GENIC SIGNALLING

Ektoras HADJIPANAYI, Umber CHEEMA, Anna-Theresa BAUER, Hans-Günther MACHENS, Arndt SCHILLING, Munich, Germany

- 15.08 THE EFFECT OF HYPERBARIC OXYGENATION ON THE EXPRESSION OF THE GROWTH FACTORS VEGF, BFGF, IGF, PDGF-BB AND MMP-9 IN AUTOLOGOUS FAT TRANSPLANTATION**
Timm WOLTER, Julia STEINBERGER, Ullrich SIEKMANN, Norbert PALLUA, Aachen Germany
- 15.16 HISTOLOGY AND HISTOMORPHOLOGY OF THE SERISCAFFOLD™ DEVICE, A UNIQUE SILK-DERIVED, BIORESORBABLE SCAFFOLD FOR SOFT TISSUE SUPPORT, EVALUATED IN A SHEEP MODEL SIMULATING HUMAN BREAST RECONSTRUCTION.**
Gregory H. ALTMAN, LD MCGILL, Kristen BIBER, Heather BOEPPLE, Kristen BARNICO, Rebecca HORAN, Medford, USA
- 15.30-16.00** Coffee break
- 16.00-16.50 BEST ECSAPS PAPERS 2011**
Session Chairmen:
Steven HOVIUS, Rotterdam, The Netherlands
Günther MACHENS, München, Germany
Introduction: Manfred FREY, EURAPS Secretary General – Vienna, Austria
- 16.02 CHARACTERIZATION AND THE RELEASE KINETICS OF SILVER FROM FOUR DIFFERENT DRESSINGS**
Warren R.L. CAIRNS, Chiara RIGO, Marco ROMAN, Ivan MUNIVRANA, Vincenzu VINDIGNI, Bruno AZZENA, Carlo BARBANTE, Venice, Padua, Italy
- 16.14 RE-INNervation OF THE SKIN FOLLOWING NERVE AUTOGRAFT RECONSTRUCTION IN A RAT MODEL**
Tim NIJHUIS, Liron DURAKU, Caroline HUNDEPOOL, Johan VAN NECK, Tom RUIGROK, Steven HOVIUS, Erik WALBEEHM, Rotterdam, The Netherlands
- 16.26 MACROPHAGE MIGRATION INHIBITORY FACTOR MIF: A NOVEL DIAGNOSTIC TOOL IN SEVERE BURN INJURIES**
Gerrit GRIEB, David SIMONS, Andrzej PIATKOWSKI, Jürgen BERNHAGEN, Guy STEFFENS, Norbert PALLUA, Aachen, Germany
- 16.38 THE USE OF BIOACTIVATED SCAFFOLDS TO IMPROVE**

TISSUE REGENERATION.

J. Tomás EGANA, Ziyang ZHANG, Thilo L. SCHENCK, Ann RECKHENRICH, Ursula HOPFNER, Hans-Günther MACHENS, Munich, Germany

16.50 THE CIGARETTE SMOKE EXTRACT AFFECTS THE DIFFERENTIATION POTENTIAL OF HUMAN MESENCHYMAL STROMAL CELLS.

Thilo L. SCHENCK, Judith SELDERS, Ursula HOPFNER, Ann K. RECKHENRICH, Manuela KIRSCH, Ziyang ZHANG, Hans-Günther MACHENS, J. Tomás EGANA, Munich, Germany

17.05-17.53 SCIENTIFIC SESSION, No. 2 RESEARCH

Session Chairmen:

Steven HOVIUS, Rotterdam, The Netherlands
Günther MACHENS, München, Germany

17.17 BLEOMYCIN-INDUCED SCLERODERMA IN NUDE MICE CAN BE REVERSED BY INJECTION OF ADIPOSE TISSUE: EVIDENCE FOR A NOVEL THERAPEUTIC INTERVENTION IN SYSTEMIC SCLEROSIS

Djaffer OULD-ALI, Aurelie HAUTIER, Lucile ANTRACMEYER, Brigitte GRANEL, Dominique CASANOVA, Guy MAGALON, Marseille, France

17.29 IMPACT OF A MECHANICAL MASSAGE ON GENE EXPRESSION PROFILE AND LIPID MOBILIZATION IN FEMALE GLUTEOFEMORAL ADIPOSE TISSUE

Max LAFONTAN, Claire THALAMAS, Nathalie VIGUERIE, Toulouse, France

17.41 A NEW FUNCTIONAL-MRI PARADIGM TO ALLOW THE EVALUATION OF BRAIN PLASTICITY FOLLOWING FACIAL REANIMATION.

Marco ROMEO, N. ANGELOO, Myrte BREUNKIK, Luca VIZIOLI, Roberto CALDARA, Stephen MORLEY, Pamplona, Spain

17.53 End of Session

19.00-20.00 OPENING CEREMONY at the Hotel Bayerischer Hof
Milomir NINKOVIC, Local Host – Munich, Germany
Andrej BANIC, EURAPS President – Bern, Switzerland

WELCOME ADDRESS

Christian UDE, Lord Mayor of Munich

INTRODUCTION OF NEW MEMBERS, WINNERS OF BEST PAPERS 2011, SCHOLARSHIPS 2012 HANS ANDERL

AWARD 2012 AND AAPS FELLOWSHIP 2012

Manfred FREY, EURAPS Secretary General – Vienna, Austria

20.00-21.00 **WELCOME RECEPTION** at Pavillion/Patio/Atelier on the top floor of the Hotel Bayerischer Hof

FRIDAY, MAY 25, 2012

08.00-10.00 **SCIENTIFIC SESSION, No. 3 *CRANIO/FACIAL***

Session Chairpersons:

Beatriz BERENGUER, Madrid, Spain

Moshe KON, Utrecht, The Netherlands

08.00 **FROM CRANIOFACIAL SURGERY TO COMPOSITE ALLOTRANSPLANTATION: INDICATIONS FOR FACIAL TRANSPLANTATION IN THE COHORT OF THE FRENCH REFERENCE CENTER FOR PEDIATRIC CRANIOFACIAL MALFORMATIONS**

Alexandre MARCHAC, Patrick DINER, Gerald FRANCHI, Mikael HIVELIN, Marie-Paule VAZQUEZ, Laurent LANTIERI, Arnaud PICARD, Paris, France

08.12 **PALPEBRAL AND LACRIMAL APPARATUS IN FACE TRANSPLANTATION. TECHNIQUE AND RESULTS AT EIGHTEEN MONTH FOLLOW UP**

Mikael HIVELIN, Marc David BENJOAR, Rapael BLANC, Jean Pascal LEFAUCHEUR, Laurent LANTIERI, Creteil, France

08.24 **THE IMPORTANCE OF 3D-MODELING IN THE PRE-OPERATIVE PLANNING OF COMPLEX FACIAL RECONSTRUCTION BY A VASCULARIZED COMPOSITE TISSUE ALLOTRANSPLANTATION (VCTA) OF THE FACE.**

Phillip BLONDEEL, Hubert VERMEERSCH, Natalie ROCHE, Filip STILLAERT, Ghent, Belgium

08.36 **UNILATERAL CRANIOFACIAL MICROSOMIA: AN UNRECOGNIZED CAUSE OF PEDIATRIC OBSTRUCTIVE SLEEP APNEA**

Caroline SZPALSKI, Meredith WETTERAU, Scott RICKERT, Oren M. TEPPER, Stephen M. WARREN, Joseph G. McCARTHY, New York, USA

08.48 **HYPERTELORISM CORRECTIONS: WHAT HAPPENS WITH GROWTH? LONGTERM OUTCOME OF 95 OPERATED CASES**

Daniel MARCHAC, Dominique RENIER, Alexandre MARCHAC, Paris, France

- 09.00** **AURICULAR RECONSTRUCTION: THE DEVELOPMENT OF A RELIABLE AESTHETIC ASSESSMENT TOOL AND A SEVEN YEAR EVALUATION OF OUR UNIT'S AESTHETIC OUTCOMES**
 Joanna MENNIE, Kerr CLAPPERTON, Ken STEWART,
 Livingston, Scotland
- 09.08** **PERMANENT SURGICAL REMOVAL OF CRANIOFACIAL NEUROFIBROMAS**
 McKay McKINNON, Chicago, USA
- 09.16** **AUTOLOGOUS FAT TRANSPLANTATION TO THE VELOPHARYNX FOR TREATING PERSISTENT VELOPHARYNGEAL INSUFFICIENCY SECONDARY TO CLEFT PALATE**
 Charles FILIP, Michael MATZEN, Ingegerd AAGENAES,
 Ragnhild AUKNER, Hans Erik HOGEVOLD, Oslo, Norway
- 09.28** **THE INJECTION/ADHESION TECHNIQUE FOR CLEFT PALATE REPAIR. A PROPOSED NEW APPROACH AS-SAYED IN DOGS WITH CONGENITAL CLEFT PALATE.**
 Beatriz BERENGUER, Beatriz GONZÁLEZ MELI, Irene PARADAS-LARA, Manuel CHAMORRO, Pablo GONZÁLEZ, Concha MARTÍNEZ-ÁLVAREZ, Madrid, Spain
- 09.40** **THE FACE-LIFT SMAS PLICATION (FLISP) FLAP FOR RECONSTRUCTION OF LARGE TEMPORAL DEFECTS. RECONSTRUCTIVE SURGERY MEETS COSMETIC SURGERY**
 Salvatore D'ARPA, Veronica DI FEDE, Sebastiano OIENI, Daniel KALBERMATTEN, Francesco MOSCHELLA, Palermo, Italy
- 09.52** **IS IT SAFER TO TREAT HEMANGIOMAS WITH ATENOLOL THAN PROPRANOLOL?**
 Corstiaan BREUGEM, Marlies DE GRAAF, Martine RAPHAEL, Moshe KON, Marjan KNOL, Suzanne PASMANS, Utrecht, The Netherlands
- 10.04-10.45** Coffee break - Visit to the Exhibitors
- 10.45-11.00** **AAPS BEST PAPER 2011**
 Introduction: William KUZON, President of AAPS – Ann Arbor, Michigan, USA
- COMPARATIVE ANALYSIS OF SINGLE STAGE DIRECT-TO-IMPLANT VS. TWO STAGE TISSUE EXPANDER-IMPLANT RECONSTRUCTION: 742 CONSECUTIVE CASES**
 Amy S. COLWELL, Branimir DAMJANOVIC, Bitu ZAHEDI, Laura MEDFORD-DAVIS, Catherine HERTL, William G. AUSTEN, Boston, MA, USA

- 11.00-13.00** **SCIENTIFIC SESSION, No. 4 *MICROSURGERY***
Session Chairpersons:
Claudia MEULI, Aarau, Switzerland
Benoit LENGELÉ, Brussels, Belgium
- 11.08** **REMOTE REAL-TIME MONITORING OF FREE FLAPS VIA SMARTPHONE PHOTOGRAPHY AND 3G WIRELESS INTERNET: A PROSPECTIVE STUDY EVIDENCING DIAGNOSTIC ACCURACY**
Holger ENGEL, JJ HUANG, Chung Kan TSAO, Chia-Yu LIN, Henry STEVEN, Ming-Huei CHENG, Ludwigshafen, Germany
- 11.20** **DIFFERENTIAL REINNERVATION IN FACIAL NERVE TERRITORY TO PREVENT SYNKINETIC MOVEMENTS.**
Grazia SALIMBENI, Antonella PUDDU, Amelia SANTORO, Pisa, Italy
- 11.32** **OLFACTORY NERVE ENSHEATHING CELLS AS AN ALTERNATIVE SOURCE FOR PERIPHERAL NERVE REPAIR**
Ahmet BOZKURT, Ronald DEUMENS, Sabien VAN NEERVEN, Dan Mon O'DEY, Gary BROOK, Norbert PALLUA, Aachen, Germany
- 11.48** **ETHYL NITRITE IN MANAGING SURGICAL VASOSPASM**
Alessio BACCARANI, Scott LEVIN, Bruce KLITZMANN, Michael ZENN, Modena, Italy
- 12.00** **A RETROSPECTIVE ANALYSIS OF RISK FACTORS FOR PARTIAL NECROSIS IN DIEP FLAP BREAST RECONSTRUCTION**
Benedetto LONGO, Rosanna LAPORTA, Michael SOROTOS, Guido PAOLINI, Fabio SANTANELLI, Rome, Italy
- 12.12** **ALTERNATIVE DONOR SITES IN BREAST RECONSTRUCTION: INTRODUCING THE PROFUNDA ARTERY PERFORATOR (PAP) AND THIGH GLUTEAL ARTERY PERFORATOR (TGAP) FLAPS.**
P. Niclas BROER, Neil TANNA, Steven M. LEVINE, Nicholas T. HADDOCK, Christina Y. AHN, Robert J. ALLEN, New York, USA
- 12.20** **MICROVASCULAR BREAST RECONSTRUCTION AND LYMPH NODE TRANSFER FOR POSTMASTECTOMY LYMPHEDEMA PATIENTS**
Anne SAARISTO, Tiina VIITANEN, Tarja NIEMI, Pauliina HARTIALA, Erkki SUOMINEN, Turku, Finland
- 12.32** **INDICATION AND OUTCOMES OF THE SUPERFICIAL**

INFERIOR EPIGASTRIC ARTERY FLAP: A TEN YEAR EXPERIENCE

Chelsea SNIDER, Steven LEVINE, Jay GRANAZOW, Neil TANNA, P. Niclas BROER, Robert ALLEN, New York, USA

12.44 EXPANSION OF MAMMARY REGION BEFORE DIEP FLAP TO IMPROVE THE OUTCOMES OF POSTMASTECTOMY BREASTRECONSTRUCTION

Mauro SCHIAVON, Eugenio FRACCALANZA, Roberto BERAZIOL, Jacopo TESEI, Giuliana GENTILE, Udine, Italy

12.56 CTA VS. MRA IN PREOPERATIVE PLANNING OF ABDOMINAL PERFORATOR FLAPS: PROSPECTIVE CONTROLLED STUDY

Adam BLACKBURN, Damir KOSUTIC, Amedeo CHIRIBIRI, Narayan KARUNANITHY, Jian FARHADI, London, United Kingdom

13.08 End of Session

13.08-14.00 Lunch - Visit to the Exhibitors

14.00-15.30 SCIENTIFIC SESSION, No. 5 *AESTHETIC*

Session Chairmen:

Bryant A. TOTH, San Francisco, USA

José Maria PALACÍN CASAL, Barcelona, Spain

14.00 POST BARIATRIC SURGERY BODY CONTOURING: IS IT WORTH IT?

Nada AL-HADITHY, Ken STEWART, Livingston, Scotland

14.12 TEN YEAR EXPERIENCE IN TREATING HIV-RELATED FACIAL LIPOATROPHY: COMPARISON STUDY OF THREE DIFFERENT INTERVENTIONS

Giorgio DE SANTIS, Alessio BACCARANI, Antonio PEDONE, Antonio SPAGGIARI, Marco PIGNATTI, Modena, Italy

14.24 DOCTOR'S PERSONAL OPINION ABOUT LABIA MINORA APPEARANCE: THE INFLUENCE ON THEIR CLINICAL DECISION MAKING

Berend VAN DER LEI, Welmoed REITSMA, Meret KONING, Astrid PASCAL, Marian J.E. MOURITS, Groningen, The Netherlands

14.48 CORRECTION OF SEQUELAE OF RHINOPLASTY BY LIPOFILLING

Pierre SA NGUYEN, Ahmad ALASLAWI, Dominique CASANOVA, Jacques BARDOT, Guy MAGALON, Marseille, France

- 15.00** **SAGITTAL PROJECTION OF THE EYEBROW VERSUS FACIAL ATTRACTIVENESS**
Eser YUKSEL, Alan BIENSTOCK, Hande YAZGAN, Houston-Texas, USA
- 15.12** **THE IMPACT OF BREAST REDUCTION SURGERY ON THE VERTEBRAL COLLUMN**
Kemal FINDIKCIOGLU, Fulya FINDIKCIOGLU, Hakan BULAM, Billur SEZGIN, Selahattin OZMEN, Ankara, Turkey
- 15.20** **TRANSVERSAL MAMMOPLASTY IN TUBEROUS BREAST**
José Maria PALACÍN CASAL, Luiz Guilherme DE MOURA LOPES, Barcelona, Spain
- 15.32-16.00** Coffee break - Visit to the Exhibitors
- 16.00-17.00** **SCIENTIFIC SESSION, No. 6 *HAND/NERVE***
Session Chairmen:
A. Lee DELLON, Towson-Maryland, USA
Pietro GIOVANOLI, Zurich, Switzerland
- 16.00** **LONGTERM RESULTS OF SOFT TISSUE DISTRACTION PRIOR TO WRIST STABILISATION IN RADIAL DYSPLASIA**
Steven HOVIUS, Teun LUIJSTERBURG, Evelyne ZWART, Christianne VAN NIEUWENHOVEN, Rotterdam, The Netherlands
- 16.12** **META-ANALYSIS : SENSORY RECOVERY OUTCOME AFTER DIGITAL NERVE REPAIR IN RELATION TO DIFFERENT RECONSTRUCTIVE TECHNIQUES**
Jörn A. LOHMEYER, Felix J. PAPROTTKA, Petra WOLF, Peter MAILÄNDER, Hans-Günther MACHENS, Munich, Germany
- 16.24** **COMPARISON OF NINE OUTCOME SYSTEMS FOR EVALUATING TREATMENT OF RADIAL POLYDACTILY**
Robert DIJKMAN, Steven HOVIUS, Christianne VAN NIEUWENHOVEN, Ruud SELLES, Rotterdam, The Netherlands
- 16.36** **A RETROSPECTIV LONGTERM EVALUATION OF MUSCULOSKELETAL OUTCOMES IN NON-DEVASCULARISING FOREARM ARTERIAL INJURIES: DEBATING THE OPTIMAL SURGICAL STRATEGY**
Franco BASETTO, Giorgio GRATSIDIS, Alex PONTINI, Cesare TIENGO, Vincenzo VINDIGNI, Padua, Italy
- 16.48** **CLITORAL/PENILE, LABIAL/SCROTAL, VAGINAL, PERINEAL AND RECTAL PAIN: AN ANATOMIC APPROACH**

TO PUDENDAL NERVE DECOMPRESSION

A. Lee DELLON, Towson-Maryland, USA

- 17.00** End of the session
- 17.15-18.30** **GENERAL ASSEMBLY**
- 19.30** **COCKTAIL RECEPTION AND VISIT** of the Exhibition at the BMW WELT
- 20.30-23.30** **GALA DINNER** at the BMW WELT

SATURDAY, MAY 26, 2012

- 08.30-10.30** **SCIENTIFIC SESSION, No. 7 *CLINICAL GENERAL***
Session Chairpersons:
Sühan AYHAN, Ankara, Turkey
Sinikka SUOMINEN, Helsinki, Finland
- 08.30** **PLASTIC SURGERY AFTER GASTRIC BYPASS IMPROVES LONGTERM WEIGHT CONTROL**
Ali MODARRESSI, Nicolas BELAGUE, Olivier HUBER, Brigitte PITTET, Geneva, Switzerland
- 08.42** **OVERWEIGHT/OBESE PATIENT REFERRALS TO PLASTIC SURGERY: TEMPERAMENTAL AND PERSONALITY TRAITS**
Vincenzo VINDIGNI, Maria Francesca AZZI, Luca LANCEROTTO, Massimo MARINI, Franco BASSETTO, Padua, Italy
- 08.54** **FAILURE TO ATTEND OUTPATIENT PLASTIC SURGERY APPOINTMENTS: RISK FACTORS AND STRATEGIES TO REDUCE WASTE.**
Ken STEWART, Edinburgh, Scotland
- 09.02** **PERIOPERATIVE ANTIBIOTIC PROPHYLAXIS IN PLASTIC SURGERY: SPECIFIC GUIDELINES FOR PATIENT SELECTION.**
Francesca TOIA, Angelo A. LETO BARONE, Adriana TUTTOLOMONDO, Salvatore D'ARPA, Adriana CORDOVA, Palermo, Italy
- 09.10** **INFECTION PREVENTION CURRENT PRACTICES IN PLASTIC SURGERY.**
Quentin FREW, Naguib EL-MUTTARDI, Chelmsford, United Kingdom

- 09.18** **IS THE SURGEON A RISK FACTOR WHEN NASAL SKIN EPITHELIOMAS ARE INADEQUATELY EXCISED?**
Fotios-Filippos KARANTONIS, Georgios DRIMOURAS, Avraam DOUNAVIS, Epaminondas KOSTOPOULOS, Grigorios CHAMPSAS, Othon PAPADOPOULOS, Athens, Greece
- 09.26** **ABDOMINAL SEROMA FORMATION FOLLOWING DIEP FLAP HARVEST: ANALYSIS OF INFLUENCING FACTORS AND DEVELOPMENT OF A PREDICTIVE FORMULA**
Katrin SEIDENSTUECKER, Lisa-Maria FISCHER, Ajay MAHAJAN, Beatrix MUNDER, Christoph ANDREE, Düsseldorf, Germany
- 09.38** **OUTCOME OF TEMPORALIS MUSCLE TRANSFER FOR EYELID REANIMATION IN LONG-STANDING FACIAL PARALYSIS: RESULTS IN 195 CASES FROM 1980 TO 2010**
Antonella PUDDU, Grazia SALIMBENI, Amelia SANTORO, Pisa, Italy
- 09.46** **EVIDENCE-BASED BURN CARE: WHERE DO WE STAND?**
Juan BARRET, Barcelona, Spain
- 10.22** **SOFT TISSUE EXPANSION IN CHILDREN. A TWENTY YEARS EXPERIENCE. EVALUATION AND EVOLUTION SINCE 2001**
Veronique DUQUENNOY, Omar ABDEL WAHAB, Marie MAILLET, Ahmad QASSEMYAR, Pierre GUERRESCHI, Lille, France
- 10.34-11.00** Coffee break - Visit to the Exhibitors
- 11.00-13.00** **SCIENTIFIC SESSION, No. 8 *CLINICAL GENERAL***
Session Chairmen:
Norbert PALLUA, Aachen, Germany
Gerhard PIERER, Innsbruck, Austria
- 11.00** **BLOOD TRANSFUSION PREDICTORS IN NF1 SURGERY: ANALYSIS OF 622 PROCEDURES IN THE FRENCH NATIONAL REFERENCE CENTER AND VALIDATION OF TUMOR SIZE AS AN INDEPENDENT PREDICTOR IN ELECTIVE NEUROFIBROMA RESECTION**
Laurent LANTIERI, Francois HEMERY, Claire BOULAT, Benoit PLAUD, Pierre WOLKENSTEIN, Mikael HIVELIN, Creteil, France
- 11.12** **RECONSTRUCTION OF LARGE SUPRA-EYEBROW AND FOREHEAD DEFECTS USING THE HATCHET FLAP PRINCIPLE AND SPARING SENSORY NERVE BRANCHES**

Raffi GURUNLUOGLU, Maziar SHAFIGHI, Susan WILLIAMS,
Mark GLASGOW, Denver, USA

- 11.24 THE USE OF ELECTROCHEMOTHERAPY IN THE MANAGEMENT OF METASTATIC SKIN DEPOSITS.**
Maria BOYCE, Amir SADRI, Graeme MOIR, London, United Kingdom
- 11.36 PELVIC FLOOR RECONSTRUCTION WITH DE-EPITHELIALISED TRANSVERSE MYOCUTANEOUS GRACILIS (TMG) FLAP**
Maija KOLEHMAINEN, Sinikka SUOMINEN, Erkki TUKIAINEN, Helsinki, Finland
- 11.44 USE OF THE BIOPATCH DRAIN DRESSING TO REDUCE INFECTION RATES IN IMPLANT-BASED BREAST RECONSTRUCTION**
Keith BLECHMAN, Patrick REAVEY, Katie WEICHMAN, Jamie LEVINE, Mihye CHOI, Nolan KARP, New York, USA
- 11.52 ROBOTIC LATISSIMUS DORSI MUSCLE HARVEST: A CASE SERIES**
Jesse SELBER, Houston-Texas, USA
- 12.04 VIDEO-ASSISTED THORACOSCOPIC SYMPATHECTOMY FOR THE TREATMENT OF HYPERHIDROSIS OF THE UPPER LIMB: OUR RESULTS FROM 2008 – 2011**
Stephan PAIER, Guenter RAINER, Matthias RAB, Klagenfurt, Austria
- 12.16 IS DIRECT SURGICAL CLOSURE OF A WOUND CONTAMINATED BY MULTIRESTANT BACTERIA SAFE IN IMMUNOCOMPROMISED PATIENTS?**
Marco PIGNATTI, Claudia VENTURELLI, Mauro CORDELUPPI, Gianluca ROMPIANESI, Giorgio Enrico GERUNDA, Giorgio DE SANTIS, Modena, Italy
- 12.24 LIPOSUCTION NORMALIZES LYMPHEDEMA INDUCED ADIPOSE TISSUE HYPERTROPHY IN ELEPHANTIASIS OF THE LEG - A PROSPECTIVE STUDY WITH AN EIGHT YEAR FOLLOW-UP**
Hakan BRORSON, Carolin FRECCERO, Henry SVENSSON, Malmö, Sweden
- 12.36 TREATMENT OF EARLY STAGE PRESSURE ULCERS BY USING AUTOLOGOUS ADIPOSE TISSUE GRAFTS**
Tiziano PALLARA, Giovanni Francesco MARANGI, Francesco GIURAZZA, Bruno Beomonte ZOBEL, Paolo PERSICHETTI, Rome, Italy

- 12.48 THE PROXIMALLY BASED PERONEUS BREVIS FLAP: THE “CHEAP” AND FAST ALTERNATIVE FOR ANTERIOR TIBIAL DEFECTS.**
Götz GIESSLER, Andreas SCHMIDT, Murnau, Germany
- 13.00-14.00** Lunch - Visit to the Exhibitors
- 14.00-15.30 PANEL: FUNCTION AND AESTHETICS IN HEAD AND NECK RECONSTRUCTION**
Moderator: Andrej BANIC, Bern, Switzerland
Participants:
Andrej BANIC, Bern, Switzerland:
GENERAL REMARKS TO THE FUNCTION AND AESTHETICS IN THE HEAD AND NECK RECONSTRUCTION
David SOUTAR, Glasgow, United Kingdom:
FUNCTIONAL RECOVERY FOLLOWING TREATMENT OF HEAD AND NECK CANCER
Milomir NINKOVIC, Munich, Germany:
RECONSTRUCTION OF THE LOWER LIP USING INNERVATED FREE MUSCLE FLAP.
Laurent LANTIERI, Mikael HIVELIN, Alexandre MARCHAC, Marc BENJOAR, Philippe GRIMBERT, Paris, France:
HOW TO SET UP A FACE TRANSPLANT PROGRAM.
Hans ANDERL, Innsbruck, Austria:
THIRTY YEARS OF SURVIVAL AFTER TOTAL RECONSTRUCTION OF THE TRACHEA AND MAJOR SURGERY AFTERWARDS
- Panel and general discussion
Remarks Manfred FREY, EURAPS Secretary General – Vienna, Austria
- 15.30-16.00** Coffee break - Visit to the Exhibitors
- 16.00-18.00 SCIENTIFIC SESSION, No. 9 BREAST SURGERY**
Session Chairpersons:
Fabio SANTANELLI, Rome, Italy
Efterpi DEMIRI, Thessaloniki, Greece
- 16.00 USEFULNESS OF 3D IMAGING IN PREOPERATIVE PLANNING FOR BREAST RECONSTRUCTION WITH IMPLANTS**
Pawel SZYCHTA, Cameron RAINE, Jan RYKALA, Ken STEWART, Lodz, Poland
- 16.12 LOCAL HEAT PRECONDITIONING IN SKIN SPARING MASTECTOMY**
Saahil MEHTA, Yves HARDER, Jian FARHADI, London, United Kingdom

- 16.24 THE ONCOLOGICAL OUTCOME AND IMMEDIATE SURGICAL COMPLICATIONS OF LIPOFILLING IN BREAST CANCER PATIENTS: A MULTICENTER STUDY – MILAN-PARIS-LYON EXPERIENCE OF 646 LIPOFILLING PROCEDURES**
Francesca DE LORENZI, Visnu LOHSIRIWAT, Jean Yves PETIT, Krishna CLOUGH, Emanuele DELAY, Milan, Italy
- 16.32 LIMITED USE OF ADM DIRECTLY CORRELATES WITH DECREASED RATE OF INFECTIOUS COMPLICATIONS IN IMMEDIATE IMPLANT BASED BREAST RECONSTRUCTION: A SINGLE INSTITUTIONAL EXPERIENCE**
Katie WEICHMAN, Stelios WILSON, Alexes HAZEN, Mihye CHOI, Nolan KARP, New York, USA
- 16.44 TISSUE EXPANDERS SECURED WITH SUTURE TABS REQUIRE FEWER REVISIONS THAN TRADITIONAL TISSUE EXPANDERS FOR BREAST RECONSTRUCTION**
Mark VILLA, Pattrick GARVEY, Joseph KRILL, Timothy KRILL, Jun LIU, Steven KRONOWITZ, Houston-Texas, USA
- 16.56 EFFICACY OF DOUBLE MIRRORED OMEGA PATTERN FOR SKIN SPARING MASTECTOMY TO REDUCE ISCHEMIC COMPLICATIONS IN THE MASTECTOMY SKIN FLAPS OF SMOKER PATIENTS**
Fabio SANTANELLI, Benedetto LONGO, Rossana LAPORTA, Marco PAGNONI, Michael SOROTOS, Rome, Italy
- 17.16 AUTOLOGOUS FAT TRANSFER FOR BREAST AUGMENTATION: A MAGNETIC RESONANCE IMAGING STUDY TO QUANTIFY LONG-TERM VOLUME MAINTANCE**
Eugenia KYRIOPOULOS, Carl VAN WAES, Filip STILLAERT, Natalie ROCHE, Geert VILLEIRS, Phillip BLONDEEL, Ghent, Belgium
- 17.36 THE EXPRESSION OF ESTROGEN RECEPTORS IN BREAST IMPLANT CAPSULES CORRELATES WITH THE NUMBER OF MYOFIBROBLASTS AND THE TIME FROM IMPLANTATION.**
Francesco SEGRETO, Giovanni Francesco MARANGI, Daniele TOSI, Simone CAROTTI, Sergio MORINI, Paolo PERSICHETTI, Rome, Italy
- 18.00 ADJOURNMENT OF THE MEETING**
- 19.30 FAREWELL PARTY** at the Restaurant “FRANZISKANER”
“Lederhose” or other national dress

ABSTRACTS

THURSDAY, MAY 24, 2012

14.00-15.30 SCIENTIFIC SESSION, No. 1 RESEARCH

Session Chairmen:

Angus McGROUTHER, Manchester, United Kingdom

Paul WERKER, Groningen, The Netherlands

14.00 INNOVATIVE APPROACH TO ORGAN TISSUE ENGINEERING USING AUTOLOGOUS MICROCIRCULATORY BEDS AS VASCULARIZED BIOSCAFFOLDS

Lars-Hinrich EVERS, David SIMONS, Pelu S. TRAN, Michael SORKIN, Michael T. LONGAKER, Geoffrey C. GURTNER, Stanford CA, USA

INTRODUCTION

Advances in tissue engineering are hampered by the inability of artificial scaffolds to recapitulate complex microvascular structures. However, functional microvascular beds exist throughout the body, they are explantable and readily re-integrated with the systemic circulation (i.e. microvascular free flaps). In the current study we utilize these explantable microvascular beds (EMBs) as scaffolds for progenitor cell seeding as a novel approach to organ-level tissue engineering.

METHODS

Superficial inferior epigastric artery flaps (SIEA) were harvested from Sprague-Dawley rats and maintained on a perfusion bioreactor. After decellularization, EMBs were seeded with human adipose-derived stem cells (hASCs). hASC seeded-EMBs were microsurgically anastomosed into the femoral vessels of nude rats. Vascular integrity was confirmed using SEM and immunohistochemical staining for matrix-specific components. Cell viability and integration were followed using bioluminescent imaging.

RESULTS

SIEA/EMB tissue flaps were effectively decellularized and maintained on the bioreactor for over 24 hours. SEM and immunohistochemical staining for collagen IV and laminin confirmed vascular integrity. Seeding of hASCs onto EMBs was successfully achieved with perfusion methods. hASCs seeded onto EMBs demonstrated excellent viability and engraftment in vitro. Transplanted EMB/hASC constructs were viably sustained in vivo based on bioluminescence imaging and histology.

CONCLUSION

Autologous vascular beds are ideal bioscaffolds that can be effectively decellularized and seeded with hASCs. Reintegration of seeded EMBs with longterm viability is feasible. Together, these successful studies suggest that progenitor cell-seeded vascularized scaffolds are a promising approach to fabricate complex organ-level constructs.

14.08 ISOLATION OF NON-ADHERENT PROGENITORS FROM ADIPOSE-DERIVED STEM CELLS (NAPADSCS): CAN WE FINALLY CONFIRM ADSCS STEMNESS?

Angelo A. LETO BARONE, Marco CARMISCIANO, Gabriele GIUNTA, Francesca TOIA, Adriana CORDOVA, Francesco MOSCHELLA, Palermo, Italy

INTRODUCTION

In recent years, isolation of Mesenchymal Stromal Cells (MSCs) from lipoaspirate, often labeled as adipose-derived stem cells (ADSCs) has been broadly investigated. Following expansion, these cells grow as adherent, fibroblast-like cell colonies, which can differentiate toward different cell lineages. However, there is an ongoing discussion on whether MSCs can be appropriately defined as stem cells. True stem cells, in fact, lack adhesion molecules and grow in suspension maintaining their stemness conditions. Here we describe for the first time an upstream stem cell entity that we have isolated from adipose tissue and that we refer to as non-adherent precursors from Adipose-derived stem cells (n.a.p.A.D.S.C.s), providing evidence of ADSCs stemness.

MATERIAL AND METHODS

Adipose tissue (20-50 cc) was extracted from lipoaspirate samples of 15 healthy donors following patients written consent. Following mechanical and enzymatic digestion, samples were plated in stem cell-specific enriched media and in no-adhesion culturing conditions. Clonal expansion and PKH26 staining were used to assess stemness.

RESULTS

NapADSCs represent an upstream line of mesenchymal precursors compared to the more differentiated, adherent, fibroblast-like MSCs. NapADSCs colonies defined as spheroids (polyclonal) and spheres (monoclonal) are visible in suspension 7-21 days after plating and display expansion patterns similar to colon, thyroid or breast stem cells. NapADSCs stemness was confirmed in vitro by stem cell-specific biological behaviors such as clonal expansion and asymmetric division.

CONCLUSIONS

We hypothesize that napADSCS may represent a more upstream form of the commonly used adherent ADSCs. As napADSCs display expansion and division patterns typical of true stem cells, we believe that the identification of napADSCs dissipates the doubts on the stem-cell origin of the more differentiated and commonly used adherent mesenchymal cells. Ongoing studies aim to assess their multipotency through differentiation toward the desired mesenchymal cell lineages for regenerative purposes.

14.20 BIOMECHANICAL ANALYSIS OF THE EFFECT OF MESCENCHYMAL STEM CELLS ON MANDIBULAR DISTRACTION OSTEOGENESIS; A NEW EXPERIMENTAL MODEL IN SHEEP MANDIBLE.

Andac AYKAN, Serdar OZTURK, Ismail SAHIN, Senih GURSES, Ali Ugur URAL, Selcuk ISÖK, Ankara, Turkey

PURPOSE

The aim of this study was to investigate the effect of bone marrow derived mesenchymal stem cells (MSCs) on consolidation period of distraction osteogenesis with a new biomechanical experimental model.

METHODS

Eight sheep underwent bilateral mandibular osteotomies. After a 5days latency period, bone distraction was activated bilaterally at a rate of 1 mm/day for 20 days. At the beginning of consolidation period, 8×10^6 MSCs transplanted to the gap of left mandibular distracted callus region in all sheep. Then sheepes were randomly divided into two groups (Group-A = 4, Group-B = 4). Group-A and Group-B animals were sacrificed on 3th and 6th weeks of consolidation respectively. Fracture pattern and localization, bone regeneration ratio and density, stress distribution and maximum strain occurred at the critical cross-section of the distraction region of 16 distracted hemimandibles were evaluated by computerized tomography and biomechanical analysis.

RESULTS

Two different fracture patterns were observed in two groups. The left halves of mandibles showed horizontal fracture out of the distraction zone and the cross-sectional area was compact bone; [H(-)C]. However, the fracture pattern of control sides were oblique, in the distraction zone with trabecular bone; [O(+)]T]. Bone regeneration ratios and regenerated bone densities were significantly higher in MSCs treated left sides ($p < 0,05$). Stress distribution at the critical cross-section of distraction region was not different in two halves of mandibles. However, the maximum strain occurred at the same cross-section was significantly higher at the right halves compared to the left halves of the mandibles ($p < 0,00001$).

CONCLUSION

The results show that transplantation of MSCs promotes maturity of the distracted callus, as observed on the third and sixth weeks after the consolidation period. The new experimental model which allowed to test the mandible as a system by simulating in vivo loading conditions, revealed differences in the mechanical behavior of the halves of mandible.

14.32

TIME-POINT STUDY OF CRANIAL REGENERATION WITH HYALURONIC ACID HYDROGEL AND BMP-2 IN RATS

Ann-Charlott DOCHERTY SKOGH, Kristoffer BERGMAN, Mats BECKMAN, Jöns HILBORN, Thomas ENGSTRAND, Stockholm, Sweden

INTRODUCTION

The different methods for reconstruction of calvarial bone defects range from autografts to biomaterials and tissue engineering applications. The objective of this study is to evaluate the early temporal aspects of bone healing of a critical size bone gap in a rat cranial defect model reconstructed with a hydrogel and BMP-2. The hydrogel consists of multifunctional hyaluronic acid (HA) and polyvinyl alcohol (PVA) derivatives mixed with hydroxyapatite nano-particles w/o BMP-2. The effect of the hydrogel is compared to type I collagen combined with BMP-2.

MATERIAL AND METHODS

The rats were divided into four groups. Group 1 (n = 12): Defect filled with 0.1 mL gel with 25 µg BMP-2; Group 2 (n = 12): Defect filled with 0.1 mL gel without BMP-2; Group 3 (n = 12): Defect filled with type I collagen sponge and 25 µg BMP-2, and Group 4 (n = 3): Defect was left empty. Three animals per group were sacrificed at one-, two-, three-, and four-week time-point for histological examination, histomorphometric analysis, immunohistochemical analysis and CT scans.

RESULTS

Histomorphometric analysis showed a significant difference in bone formation between the hydrogel-BMP group and the collagen-BMP group after 2, 3, and 4 weeks ($p < 0.001$). Histological examination revealed an extensive bone formation without cartilage at any time-point in the hydrogel-BMP group, which imply that bone was mainly formed through intramembranous ossification. In the collagen-BMP group endochondral ossification was seen with hypertrophic chondrocytes present after one week. Immunohistochemistry showed presence of CD146 positive progenitor cells after one and three weeks in the hydrogel-BMP group compared to the highest signals after one week in the collagen-BMP group, which indicates a prolonged activity of BMP-2 delivered by the hydrogel.

CONCLUSIONS

Hyaluronic acid hydrogel is superior to type I collagen as delivery vehicle for BMP-2 as assessed by the recruitment of osteoprogenitor cells and the induction of new bone.

14.44 TISSUE ENGINEERING OF SKIN – TRACKING VASCULAR CHANGES AND PROTEASES IN SKIN GRAFTS OR WHAT CAN WE LEARN FROM NATURE?

Nicole LINDENBLATT, Alicia KNAPIK, Niels HEGLAND, Martina ALTHAUS, Mauricio CALCAGNI, Pietro GIOVANOLI, Zurich, Switzerland

PURPOSE

Despite advances in tissue engineering of human skin, the exact revascularisation processes during taking still remain unclear. Therefore it was the aim of this study to investigate the vascular transformations during engraftment and to identify proteolytic activation during the revascularisation process.

MATERIALS AND METHODS

Preparation of the modified dorsal skinfold chamber was performed in C57BL/6J mice (n=5) and C57BL/6-Tg(ACTB-EGFP)1Osb/J (n=5). Crossover transplantation was carried out to identify the origin of the vascular structures in vivo. Further, the expression of proteases within wound bed and skin graft was visualized by immunohistochemistry. Results: Reperfusion according to the original vascular pattern of the skin graft was observed at day 3. After reperfusion, GFP positive wound-bed derived structures were visible in the graft finally leading to a 68% replacement of graft vasculature in the center and 100% replacement in the periphery after 10 days. MT-MMP1 was detected at the tip of in-growing vessels. Further proteolytic activity was assigned to MMP-2 associated with vascular structures in the dermis progressing into the graft, MMP-9 was associated with vascular regression.

CONCLUSION

These in vivo data show the connection of angiogenic bed vessels to the graft vasculature resulting in reperfusion of the graft and its transient angiogenic response. Furthermore we identified MT-MMP1 expression limited to the front of ingrowing host vessels, indicating its role as sprout growth “facilitator” and potentially in “lysing” the existing graft capillaries in order to undergo anastomoses. Angiogenesis was further associated with increased levels of MMP-2 and vascular regression triggered by MMP-9. These novel findings support the theory that existing vascular structures within full-thickness skin substitutes may be necessary to enable vascularization and ensure tissue regeneration.

14.56

INJECTABLE SYSTEM FOR SPATIO-TEMPORALLY CONTROLLED DELIVERY OF HYPOXIA-INDUCED ANGIOGENIC SIGNALLING

Ektoras HADJIPANAYI, Uंबर CHEEMA, Anna-Theresa BAUER, Hans-Günther MACHENS, Arndt SCHILLING, Munich, Germany

INTRODUCTION

While ischaemic tissues are exposed to hypoxia, the primary angiogenic stimulus, they have a limited ability to appropriately respond to it, as hypoxia-regulated angiogenic factor production undergoes adaptational down-regulation. We have previously reported on two strategies for delivering on demand hypoxia-induced signaling (HIS) in vivo, namely implanting living or non-viable hypoxic cell-matrix depots that actively produce factors or act as carriers of factors trapped within the matrix during in vitro pre-conditioning, respectively. This study aims to improve on this approach through the development of a novel, injectable system for delivering cell-free matrix HIS-carriers.

MATERIALS AND METHODS

3D spiral collagen constructs, comprising an inner cellular and outer acellular compartment, were cultured under hypoxia (5% O₂) for 3 weeks. The acellular matrix was mechanically fragmented into micro-fractions and added into low temperature (5° C) thermo-responsive type I collagen solution, which underwent a solution-to-gel (sol-gel) phase transition at 37° C. Proteome array was used to screen for angiogenesis-related proteins within matrix fractions, while ELISA was used to quantify levels. Factor bioactivity was tested with Matrigel angiogenesis assay in vitro.

RESULTS

A range of cell-produced angiogenic factors (e.g VEGF, FGF, PLGF, IL-8) were trapped within the nano-porous matrix of the acellular compartment, as they radially diffused through it. Levels of VEGF and IL-8, delivered from matrix fractions into media by diffusion through collagen sol-gel, were up-regulated by day 4 of hypoxic culture, peaked at day 8 (p<0.05), and gradually declined towards the baseline by day 20, while FGF levels were stable over this period. Factors captured within matrix fractions were bioactive after 3 months freeze-storage, as shown by their ability to induce endothelial cell tubule formation in vitro.

CONCLUSION

This system provides a minimally invasive, and repeatable, method for localized delivery of time-specific cell-free HIS factor mixtures, as a tool for inducing spatio-temporally controlled angiogenesis.

15.08 THE EFFECT OF HYPERBARIC OXYGENATION ON THE EXPRESSION OF THE GROWTH FACTORS VEGF, BFGF, IGF, PDGF-BB AND MMP-9 IN AUTOLOGOUS FAT TRANSPLANTATION

Timm WOLTER, Julia STEINBERGER, Ullrich SIEKMANN, Norbert PALLUA, Aachen Germany

INTRODUCTION

Despite widespread applications, the reliability of autologous fat transfer is still impeded by postsurgical volume loss. This may be caused by the hypoxic phase before the inosculation of the transferred cells. Hyperbaric oxygen therapy increases tissue oxygen tension, improves wound healing and could therefore help to reduce these effects. This study describes the effect of hyperbaric oxygen therapy on selected angiogenetic and adipogenetic growth factors in adipose tissue.

METHODS

Adipose tissue was collected from 17 patients undergoing elective plastic surgery procedures. Fat lobules were isolated and divided into three groups. Group 1 served as control and was stored at 37° C and 5% CO₂ in the incubator. Group two was treated with hyperbaric oxygen in a hyperbaric chamber for 60 minutes once. Group three received hyperbaric oxygen for 60 minutes on five consecutive days. For each group, tissue amounts from 250 mg to 1000 mg were investigated. After a total of 10 days, the growth factors VEGF, BFGF, IGF, PDGF-BB, IGF and MMP-9 were measured in the tissue and the medium of all groups.

RESULTS

Except for VEGF, the growth factor-content increased significantly after a single treatment with hyperbaric oxygen but decreased after five times of hyperbaric therapy. The effect was not dependent of the tissue amount but varied significantly between tissue and medium.

CONCLUSIONS

The increases of growth factor-content indicate that hyperbaric oxygen treatment could enhance angiogenesis and vasculogenesis in transplanted fat tissue and have a positive effect on the outcome of autologous fat transplantation. The lesser VEGF content can be attributed to the reduced hypoxia. The optimal number of treatment sessions, whether the decline of growth factors after five days is caused by the accumulation of reactive oxygen radicals which cannot compensated for in an static model and the clinical relevance needs to be investigated further.

15.16 HISTOLOGY AND HISTOMORPHOLOGY OF THE SERISCAFFOLD™ DEVICE, A UNIQUE SILK-DERIVED, BIORESORBABLE SCAFFOLD FOR SOFT TISSUE SUPPORT, EVALUATED IN A SHEEP MODEL SIMULATING HUMAN BREAST RECONSTRUCTION.

Gregory H. ALTMAN, LD McGILL, Kristen BIBER, Heather BOEPPLE, Kristen BARNICO, Rebecca HORAN, Medford, USA

INTRODUCTION/PURPOSE

The SeriScaffold™ device is a unique silk-derived, bioresorbable scaffold (SBS) developed to provide soft tissue support. Here, we present the tissue response and bioresorption profile of SBS in a novel sheep model designed to simulate 2-stage implant-based human breast reconstruction.

MATERIAL AND METHODS

12 sheep underwent bilateral implantation of tissue expanders under the latissimus dorsi muscles (LD) with SBS sutured between the LD and the chest wall to provide soft tissue support. Tissue samples were obtained at 1, 3, 6, and 12 months after implantation. Animals included in the 6- and 12-month analyses experienced a second surgery after 3 months to exchange the tissue expanders for permanent breast implants.

RESULTS

Histological examination indicated the presence of neovascularized functional tissue by 1 month within pores and at the periphery of SBS in all samples. The collagen deposited within the SBS was primarily collagen type I with collagen type III closely associated with individual silk fibrils. There was no apparent increase in tissue thickness between 3 and 12 months. A minimal to mild granulomatous inflammatory response including giant cell infiltration was observed through 12 months and correlated with the bioresorption of SBS fibrils. Bioresorption of the silk fibrils was represented by the decrease in fibril size over time. At 1 month, the average cross-sectional area of the silk fibrils along the x and y axes was $116 \pm 38 \mu\text{m}^2$ and by 12 months, the average areas were $43 \pm 31 \mu\text{m}^2$ and $90 \pm 49 \mu\text{m}^2$, respectively.

CONCLUSION

Predictable bioresorption of SBS occurred over 12 months as native, neovascularized tissue developed in its place. Normal healing in response to implantation of SBS was observed with self-limiting granulomatous inflammation which is required for bioresorption of the SBS fibrils.

16.00-16.50 BEST ECSAPS PAPERS 2011

Session Chairmen:

Steven HOVIUS, Rotterdam, The Netherlands

Günther MACHENS, München, Germany

Introduction: Manfred FREY, EURAPS Secretary General –

Vienna, Austria

16.02 CHARACTERIZATION AND THE RELEASE KINETICS OF SILVER FROM FOUR DIFFERENT DRESSINGS

Warren R.L. CAIRNS, Chiara RIGO, Marco ROMAN, Ivan MUNIVRANA, Vincenzu VINDIGNI, Bruno AZZENA, Carlo BARBANTE, Venice, Padua, Italy

INTRODUCTION

Silver in the ionic form of silver nitrate has been used for the treatment of chronic wounds, ulcers, burns and infections since mediaeval times. Recently the interest in using silver to heal wounds has increased due to the rise of antibiotic resistant bacteria. Currently several different silver dressings have been commercialized and are widely used in burns centres. The dressings are typically composed of a polymeric scaffold and metallic or ionic silver. Even though these medications are used on a large scale worldwide, studies on the effective content of silver and their release of silver into the wound are still unknown.

MATERIALS AND METHODS

In this work we have characterized the structure of four silver dressings by scanning electron microscopy (SEM) and have measured the concentration of silver in the dressings by Inductively Coupled Plasma Mass Spectrometry

After chemical characterization, we assessed the kinetics of silver release in three different matrices: ultra pure water, normal saline solution (made in house from silver free analytical grade 0.9% m/v NaCl) and a serum substitute (Hit serum substitute, STEMCELL technologies, Vancouver, Canada). The concentration of silver released in ultra pure water represents the simplest matrix for studying silver release. The saline solution chemically simulates the wound environment, in which the available ionic silver will precipitate from solution as insoluble silver chloride. The serum substitute contains human serum albumin, insulin and transferrin and reflects the protein composition and concentration observed in human serum. We used this solution to assess if these proteins, and particularly albumin, could enhance the solubility of silver by shifting the equilibrium towards more silver in solution by actively competing with chloride as a complexing agent. After the silver release experiments, the dressings were re-characterized using the SEM to spot any morphological differences.

RESULTS

Depending on the dressing considered, the silver concentrations ranged from 2.2 to 159 mg/g, our results confirm these levels. In most cases, the greatest release rate

was in serum substitute, while saline solution was shown to virtually inactivate the dressings.

CONCLUSIONS

Our results demonstrate that the current practise of carrying out release experiments in pure water has no chemical basis and should be discouraged.

16.14 RE-INNervation OF THE SKIN FOLLOWING NERVE AUTOGRAFT RECONSTRUCTION IN A RAT MODEL

Tim NIJHUIS, Liron DURAKU, Caroline HUNDEPOOL, Johan VAN NECK, Tom RUIGROK, Steven HOVIUS, Erik WALBEEHM, Rotterdam, The Netherlands

INTRODUCTION

The nerve autograft is still considered the best strategy for reconstructing large peripheral nerve injuries. To evaluate regeneration in the distal terminals of the injured nerve, visualization of the skin's epidermal sensory nerve fibers is useful. The peptidergic (visualized with CGRP and Substance P) and non-peptidergic fibers (visualized with P2X3) are responsible for signalling noxious stimuli, proprioception and thermal nociception. The A δ -fibers are the myelinated fibers -labeled with NF200- and represent a subgroup of peptidergic fibers responsible for the fastest transmission of sensory input.

This study investigates the re-innervation of these different skin neural fibers in the rat foot sole, 12 weeks after reconstructing a nerve defect with an autograft.

MATERIAL AND METHODS

In 5 animals, a 15 mm sciatic nerve defect was reconstructed using an autograft. Five healthy animals served as control. The mechanical threshold and sensibility was assessed with Von Frey Hairs. The foot sole of the operated hindpaw was excised and stained for CGRP, Substance P, P2X3 and NF200. Control staining was performed with PGP 9.5 (a pan-neuronal marker). The intra-epidermal nerve fibers (IENF) were then counted.

RESULTS

Twelve weeks after grafting, the withdrawal response of the operated paw was significantly delayed as compared to the healthy control response. Pgp 9.5 staining demonstrated 70% re-innervation of the skin sensory nerve fibers. The peptidergic fibers re-innervated the skin for 70%, and the non-peptidergic fibers regenerated up to 35%. The myelinated fibers had 80% re-innervation.

CONCLUSION

This study demonstrated that 12 weeks post operative in the foot sole 70% of the skin sensory nerve fibers had returned. The peptidergic fibers had higher number of fibers than the non-peptidergic fibers, with the myelinated fibers reaching almost normal numbers. This could lead to the conclusion that in regeneration preference is given to recovery of temperature - and sharp pain sensation.

**16.26 MACROPHAGE MIGRATION INHIBITORY FACTOR MIF:
A NOVEL DIAGNOSTIC TOOL IN SEVERE BURN INJURIES**

Gerrit GRIEB, David SIMONS, Andrzej PIATKOWSKI, Jürgen BERNHAGEN,
Guy STEFFENS, Norbert PALLUA, Aachen, Germany

INTRODUCTION

Serum macrophage migration inhibitory factor (MIF) is a pro-inflammatory cytokine and has been reported to be a useful biomarker for different clinical applications. In this study we investigated MIF and procalcitonin (PCT) concentrations as well as leucocyte numbers in a retrospective study of severe burn injuries.

MATERIAL AND METHODS

The MIF and PCT concentrations as well as the number of leucocytes (LEU) were monitored in 23 burn patients over a period of 5 days. The total body surface area (TBSA) and sepsis related organ failure assessment (SOFA) scores were also evaluated.

RESULTS

The MIF, PCT concentrations and leucocyte counts were profoundly increased in all patients with severe burn wounds. At the time of admission into the intensive care unit, no significant differences were observed for the MIF and PCT levels between patients with a TBSA < 60% (Group 1) and patients with a TBSA > 60% (Group 2). After 48 h, however, the MIF and PCT levels reached very high levels in a subgroup of the patients, whereas these levels became normal again in other subgroups. The group of patients with a TBSA > 60% was, therefore, subdivided in three groups (subgroups 2a–c). The MIF and PCT data pairs in these subgroups appeared to correlate in an inhomogeneous manner. These levels in the subgroup 2a (i.e., lethal within 5 days) were strongly elevated over those observed in Group 1 (TBSA < 60%) and highly increased concentrations of both MIF and PCT correlated with lethal outcome.

CONCLUSION

The combined determination of MIF and PCT might, therefore, be useful to discriminate between post-burn inflammation and systemic inflammatory response syndrome (SIRS) or sepsis with lethal outcome.

16.38 THE USE OF BIOACTIVATED SCAFFOLDS TO IMPROVE TISSUE REGENERATION.

J. Tomás EGANA, Ziyang ZHANG, Thilo L. SCHENCK, Ann RECKHENRICH, Ursula HOPFNER, Hans-Günther MACHENS, Munich, Germany

INTRODUCTION

Tissue engineering has promised a revolution in the field of regenerative medicine, however its clinical impact has been disappointed. In order to improve scaffold-dependent tissue regeneration, we have developed new technologies to bio-activate commercially available scaffolds. The main focus of our approach has been the creation of pro-regenerative micro-environments by the release of therapeutic molecules in the target tissue.

MATERIAL AND METHODS

Commercially available scaffolds have been activated by incorporation of stem cells, non-viral gene vectors and photosynthetic cells. Afterwards, in vitro experiments have been performed to establish the potential increase in the regenerative potential of modified scaffolds by the release of bioactive molecules. Next, in vivo experiments were performed in a full skin defect model and tissue regeneration was evaluated by transillumination and digital segmentation and immunohistology.

RESULTS

Our data shows that several stem cell populations can be seeded in scaffolds for tissue regeneration. Once there, cells are metabolically active for at least 2 weeks in vitro. As a consequence of that metabolism, seeded scaffolds constantly release bioactive molecules in vitro, including angiogenic, chemoattractant and immunomodulatory molecules. In vivo, we have shown that such cell technologies have a tremendous impact in tissue regeneration by increasing vascularization in the target area. Later we have also demonstrated that similar results can be obtained by using gene-activated scaffolds. Here non-viral vectors have been used to induce the release of VEGF in vitro and in vivo. Finally, we have developed a third approach where photosynthetic scaffolds have been created to constantly provide oxygen into the regenerating area, independently of blood perfusion.

CONCLUSION

We have developed different technologies to activate scaffolds for tissue regeneration, thus allowing a constant release of key molecules for tissue regeneration in vitro and in vivo.

16.50 THE CIGARETTE SMOKE EXTRACT AFFECTS THE DIFFERENTIATION POTENTIAL OF HUMAN MESENCHYMAL STROMAL CELLS.

Thilo L. SCHENCK, Judith SELDERS, Ursula HOPFNER, Ann K. RECKHENRICH, Manuela KIRSCH, Ziyang ZHANG, Hans-Günther MACHENS, J. Tomás EGANA, Munich, Germany

INTRODUCTION

Mesenchymal stromal cells (MSC) are known to play a key role in tissue regeneration, while cigarette smoking is described to impair it. Such problem causes a tremendous problem in clinical care. The work presented here addresses the question of how cigarette smoke affects the regeneration potential of MSC.

MATERIAL AND METHODS

MSC were isolated from human fat tissue of healthy donors who gave informed consent. Afterwards, MSC were cultured and exposed to different concentrations of cigarette smoke extract (CSE) and its effects on viability and metabolic activity were evaluated. Additionally, reactive oxygen species (ROS) were measured under different concentrations. Effects of 0.5% CSE on cell migration capacity were evaluated by a scratch assay. Next, MSC were exposed to 0.5% CSE and their differentiation potential was analyzed.

RESULTS

Exposure of MSC to high concentrations of CSE resulted in a significant decrease in cell viability ($p < 0.05$) and increase of ROS ($p < 0.05$). In contrast low concentrations (0.5%) of CSE did not affect cell viability neither metabolic activity but resulted in decreased migration activity ($p < 0.05$). Here we have also found that pretreatment of MSC with sub lethal concentrations of CSE decreases adipogenic differentiation.

CONCLUSION

Our results describe for first time a direct effect of cigarette smoke in the functionality and viability of human stem cells in vitro. Our results might partially explain the decrease in the regenerative potential of smokers. In addition, it is possible to speculate that decrease in adipogenic differentiation might be partially responsible for the weight gain after smoking. Although our results are interesting, further studies have to be performed to evaluate the functional effect of cigarette smoke in MSC in vivo.

17.05-17.53 SCIENTIFIC SESSION, No. 2 RESEARCH

Session Chairmen:

Steven HOVIUS, Rotterdam, The Netherlands

Günther MACHENS, München, Germany

17.17 BLEOMYCIN-INDUCED SCLERODERMA IN NUDE MICE CAN BE REVERSED BY INJECTION OF ADIPOSE TISSUE: EVIDENCE FOR A NOVEL THERAPEUTIC INTERVENTION IN SYSTEMIC SCLEROSIS

Djaffer OULD-ALI, Aurelie HAUTIER, Lucile ANTRAC-MEYER, Brigitte GRANEL, Dominique CASANOVA, Guy MAGALON, Marseille, France

INTRODUCTION

Systemic sclerosis is an autoimmune disease characterised by uncontrolled fibrosis and vascular insufficiency of the skin and internal organs. Unfortunately, there are no treatments that act on both fibrosis and vascular insufficiency. Subcutaneous adipose transplants have been shown to exert trophic effects on surrounding tissue. This study was performed to determine if similar anti-fibrotic and pro-angiogenic effects could be observed using human adipose tissue in a murine model that reproduces the histologic characteristics of human scleroderma.

METHODS

Scleroderma was induced in 45 nude mice by daily subcutaneous injection of bleomycin for 4 weeks. Immediately after the final bleomycin injection, human subcutaneous adipose tissue was implanted into the subcutaneous space of mice using either the Coleman method or the microinjection method. A control group received injection of saline. Epidermal and dermal thicknesses were assessed on skin biopsy specimens six weeks after fat implantation. Capillary density was assessed using immunohistochemistry with an endothelial-specific marker (CD31).

RESULTS

Control animals exhibited substantially increased dermal thickness (9%; $p < 0.01$), increased collagen network, and increased density of elastic fibres. Adipose tissue implantation reduced dermal thickness by 10% ($p < 0.01$) with the Coleman method and by 14% ($p < 0.001$) with the microinjection method. Delivery of adipose tissue by the microinjection method led to significantly greater neovascularization than the Coleman method (2.3 capillaries/HPF compared to 2 capillaries/HPF; $p < 0.001$).

CONCLUSION

Implantation of human adipose tissue resulted in significant improvement of both fibrosis and peripheral vascular sufficiency in this mouse model of systemic sclerosis. Use of a microinjection method was associated with superior outcome. We postulate that this positive effect is likely due to the activity of the stromal vascular fraction (SVF) found within adipose tissue. Thus, injection of autologous adipose tissue or SVF may be a promising novel approach in treatment of sclerodermic patients with hand or perioral functional impairment.

17.29

IMPACT OF A MECHANICAL MASSAGE ON GENE EXPRESSION PROFILE AND LIPID MOBILIZATION IN FEMALE GLUTEOFEMORAL ADIPOSE TISSUE

Max LAFONTAN, Claire THALAMAS, Nathalie VIGUERIE, Toulouse, France

BACKGROUND

Subcutaneous gluteofemoral adipose tissue (GAT) areas are known to be resistant to physical training. It is well recognized that GAT adipocytes are less metabolically reactive. A mechanical massage technique has previously been reported to possess morphological impact on this tissue. A study was carried out to delve more deeply into mechanistic considerations regarding the incidence of a mechanical massage technique on gene expression profile and beta-adrenergic-mediated lipid mobilization in female GAT. Methods: Twelve premenopausal healthy women were included and received 12 sessions of calibrated mechanical massage (Endermologie®). GAT biopsies were obtained by needle aspiration under local anesthesia after an overnight fast. Total RNA was extracted from adipose tissue biopsies for gene expression studies. Microdialysis was carried out in the GAT in order to assess lipolytic responsiveness (via glycerol determination) and changes in local blood flow (utilizing the "ethanol washout" method) following perfusion of a lipolytic agent, isoproterenol. Evaluations were performed before and after the 6-week experimental period. Results: Mechanical massage initiated important modifications in the expression profile of genes involved in metabolic pathways while having no noticeable impact on fibrosis and apoptotic pathways. The lipid-mobilizing effect induced by the lipolytic factor, isoproterenol was enhanced after the experimental period. Moreover, basal local adipose tissue blood flow was enhanced (i.e. increased drainage) and isoproterenol-induced vasodilatation was also improved. Conclusion: The protocol of mechanical massage used in the study promoted noticeable changes in the expression of genes involved in metabolic pathways. The lipolytic and local adipose tissue blood flow responses initiated by isoproterenol were significantly enhanced. Recovery of a higher lipolytic efficiency in adipose tissue (enhanced lipolysis and improved local blood flow) could be an important benefit if associated to physical activity training programs as training enhances both non-esterified fatty acid mobilization from adipose tissue and their oxidation by the skeletal muscle.

17.41 A NEW FUNCTIONAL-MRI PARADIGM TO ALLOW THE EVALUATION OF BRAIN PLASTICITY FOLLOWING FACIAL REANIMATION.

Marco ROMEO, N. ANGELOO, Myrte BREUNKIK, Luca VIZIOLI, Roberto CALDARA, Stephen MORLEY, Pamplona, Spain

INTRODUCTION

Significant controversy currently exists regarding how spontaneous smile can be created and how much brain plasticity occurs after facial palsy re-animation surgery. A specific time and task related stimuli is necessary to evaluate specific areas activation. This study presents a new functional MRI (f-MRI) paradigm to evaluate motor cortex activation and modification in facial palsy re-animation patients.

Materials and methods: The f-MRI paradigm was developed on 18 volunteers to find a sensitive localizer for the cortical areas controlling smile and teeth clenching. f-MRI was then performed on seven patients who underwent different reanimation surgical procedures.

RESULTS

All control subjects showed a consistent activation pattern with distinct cortical areas for the activities of finger tapping, teeth clenching (trigeminal) and smiling (facial) motor cortex areas, distinguishable on Tailarach coordinates. Patients' activation patterns were coherent with follow-up time and quality of clinical recovery. Two young recovered patients showed a double activation during smiling involving a larger motor cortex area. A consistent temporal activation was observed in well recovered female patients.

CONCLUSION

This paradigm was able to fine measure distinct activation areas for smiling and clenching, both in controls and patients. This will allow to measure the extent of brain plasticity in the final adaptation of facial palsy surgical patients who learn to control smiling using either the contralateral facial or trigeminal nerve. The meaning of temporal activation is not yet fully clear but is certainly related to good recovery in females.

These findings will allow greater understanding of brain plasticity to determine how natural and spontaneous a surgically created smile can be and how important donor nerve selection is.

FRIDAY, MAY 25, 2012

08.00-10.00 SCIENTIFIC SESSION, No. 3 CRANIO/FACIAL

Session Chairpersons:

Beatriz BERENGUER, Madrid, Spain

Moshe KON, Utrecht, The Netherlands

08.00 FROM CRANIOFACIAL SURGERY TO COMPOSITE ALLOTRANSPLANTATION: INDICATIONS FOR FACIAL TRANSPLANTATION IN THE COHORT OF THE FRENCH REFERENCE CENTER FOR PEDIATRIC CRANIOFACIAL MALFORMATIONS

Alexandre MARCHAC, Patrick DINER, Gerald FRANCHI, Mikael HIVELIN, Marie-Paule VAZQUEZ, Laurent LANTIERI, Arnaud PICARD, Paris, France

PURPOSE

Face transplantation has become a solution for major functional and aesthetic defects in adult patients. Surgical techniques and immunosuppression have been standardized, improving the reproducibility of these transplantations. 18 cases have been done around the world in 6 years. After completion of a clinical research study of 7 adult patients, we evaluated the indications of pediatric face transplantation.

METHODS

100 severe cases were screened from the prospectively held database of the French reference center for pediatric facial malformations. Nine patients were identified with congenital deformities, tumors or burn sequelae considered challenging to reconstruct satisfactorily with conventional techniques. Cases were discussed by a multi-disciplinary team, involving adult and pediatric surgeons, transplant surgeons and pediatric psychologists. Patients were matched with similar cases for which long-term outcome was available, from the department records, literature or other renowned experts in pediatric surgery.

RESULTS

Three patients have been considered as potential candidates for facial composite tissue allotransplantation (CTA). The first has sequelae of third degree burns to the face with loss of nose and lips. The second has an extensive plexiform neurofibroma of the face. The third patient suffers from a bilateral congenital vascular malformation involving the mid and lower face. All of them presented with a destruction of the orbicularis oris muscle. Optimal age for transplantation based on craniofacial growth was initially set at 14 y.o. and has to be refined.

CONCLUSION

When considering the risk-benefit ratio, indications for face transplantations on a wide pediatric cohort scale remained exceptional (3%). Pediatric facial CTA might be performed for orbicularis oris or oculi reconstructions as first introduced in adults.

08.12 PALPEBRAL AND LACRIMAL APPARATUS IN FACE TRANSPLANTATION. TECHNIQUE AND RESULTS AT EIGHTEEN MONTH FOLLOW UP

Mikael HIVELIN, Marc David BENJOAR, Rapael BLANC, Jean Pascal LEFAUCHEUR, Laurent LANTIERI, Creteil, France

INTRODUCTION

From 2007 to 2011 we performed 7 face transplantations. As for the 4 lower two third transplants including the orbicularis oris, the transplantation of the palpebral apparatus included in the upper two third or in the full face transplant allowed to repair complete defects of functional orbicularis muscles. We report the technique, and outcomes on a burn and neurofibromatosis 1 patients with eighteen month of maximal follow up.

PATIENTS AND METHODS

The transplantations were prepared on 5 fresh cadaver dissections. The dissection of cervical vessels was followed by a monobloc harvest of the internal canthus and the lacrimal sac with the nasal bone osteotomy. The levator muscle was harvested with its aponeurosis and steel wires were passed through the external canthus. The lacrimal ducts were catheterized with Ritleng system. A subperiosteal approach was then used at the arcus marginalis. After transplant revascularization, the nasal bones and the external canthus were fixed with plates and trans-osseous sutures respectively and the elevator sutured to the tarsus. The Ritleng tubes were passed through a dacryocystorrhinostomy (DCR). End-to-end facial nerve coaptation was performed at the trunk level. Assessment included clinical, electromyographical (EMG) and radiological exams.

RESULTS

Eyelids edema led to visual impairment post-transplantation. The first transplant dysfunction led to early eyelid necrosis. The second patient recovered a normal visual field at day 10 with a good elevator function, motor activity on the orbicularis oculi on EMG and clinically at 7 and 10 months respectively. The CT-dacryography at 8 months post transplantation objectified permeability through the nasolacrimal duct instead of the DCR. The length for axonal regrowth might explain an earlier recovery for the orbicularis oculi than for the orbicularis oris.

CONCLUSIONS

The transplantation of palpebra and lacrymal ducts can be performed with a good recovery of orbicularis oculi and a permeability of lacrimal ducts

08.24

THE IMPORTANCE OF 3D-MODELING IN THE PRE-OPERATIVE PLANNING OF COMPLEX FACIAL RECONSTRUCTION BY A VASCULARIZED COMPOSITE TISSUE ALLOTRANSPLANTATION (VCTA) OF THE FACE.

Phillip BLONDEEL, Hubert VERMEERSCH, Natalie ROCHE, Filip STILLAERT, Ghent, Belgium

INTRODUCTION

Extreme trauma to the central part of the face is difficult to reconstruct with traditional autologous pedicled or free flaps. The only way to restore vital facial functions as breathing, speech, mastication, swallowing and non-verbal communication in one single procedure is to perform a VCTA of the face.

METHOD

A 56 yrs. old man, victim of a ballistic trauma, lost his maxillo-facial bony structure from the skull base down, in addition to his left mandible. All soft tissues in the central and lower 2/3rd of the face were absent or severely damaged except for his tongue and soft palate. A temporary solution to reconstruct the nasal and oral cavity was provided by a plicated free ALT flap. Digital subtraction of the 3D-reconstruction of the skull of the son of the patient from the 3D-reconstruction of the skull of our patient, made it possible to recreate the 3D model of the missing bone and to create jigs that guided the osteotomies both for the donor and the acceptor. Multiple cadaver dissection sessions were performed to familiarize the team with the osteotomy techniques and the soft tissue dissection.

RESULTS

In a 20 hrs. surgical procedure, the largest amount of bone ever was allo-transplanted together with the soft tissues of the entire lower 2/3rd of the face. Vascular anastomosis was performed on both facial arteries and veins. Minimal adjustments needed to be done to the transplanted bony complex to achieve perfect fitting in the acceptor. Survival of the graft was complete and no acute rejection was diagnosed so far. The patient starting drinking and speaking at p.o. day 6.

CONCLUSION

The first VCTA face transplant in Belgium (#19 in the world) was successful because of a meticulous 3 year planning with a large team. 3D-modeling and preparatory cadaver dissections have proven to be essential for a fluent intra-operative course and a superb bony alignment.

08.36 UNILATERAL CRANIOFACIAL MICROSOMIA: AN UNRECOGNIZED CAUSE OF PEDIATRIC OBSTRUCTIVE SLEEP APNEA

Caroline SZPALSKI, Meredith WETTERAU, Scott RICKERT, Oren M. TEPPER, Stephen M. WARREN, Joseph G. McCARTHY, New York, USA

INTRODUCTION

Bilateral craniofacial microsomia has been shown to be a major risk factor for obstructive sleep apnea (OSA). We hypothesize that unilateral craniofacial microsomia (UCFM) can also be an unrecognized cause of OSA.

Materials and Methods: All pediatric patients diagnosed with UCFM at a tertiary level institution from 1990 to 2010 were reviewed (IRB#08-676). Only patients with complete data were included in the analysis (n=62). Patients with confirmed diagnoses of OSA (Positive Polysomnography and Apnea Hypopnea Index>1) were compared to control patients with UCFM without OSA otherwise randomly selected. Univariate Fisher and Chi2 tests were created.

RESULTS

Sixty two patients were identified as having UCFM (clinical and radiographic diagnosis). Seven patients were further diagnosed with OSA (AHI range: 2.6-20, average: 9.9 ± 6.8). The literature reports a prevalence of 2.5% of OSA in an otherwise healthy pediatric population, whereas in our population, 11.5% of the patients diagnosed with UCFM were diagnosed with OSA (p=0.01). 100% of patients with OSA presented with Pruzanski grades IIB or higher (2 patients weren't included due to missing data). Patients with OSA presented with various symptoms including snoring (71.4%), failure to thrive (FTT) (57.1%), chronic respiratory infections (42.8%), adenotonsillar hypertrophy (28.6%) or loud breathing (28.5 %). Snoring (p<0.001), presence of Goldenhaar features (p=0.001) and FTT (p=0.004) were identified as single significant predictor for OSA in patients with UCFM. Race, obesity, cleft lip or palate, upper respiratory complications, presence of adenotonsillar hypertrophy and side (laterality) of UCFM were not defined as predictors of OSA in our cohort. Three dimensional analysis of airflow is under investigation.

CONCLUSIONS

The prevalence of OSA in UCFM patients is 3.9 times greater than in the otherwise healthy population. Snoring, presence of Goldenhaar features and FTT were shown to be predictive factors for OSA in the presence of UCFM.

**08.48 HYPERTELORISM CORRECTIONS: WHAT HAPPENS
WITH GROWTH? LONGTERM OUTCOME OF 95 OPER-
ATED CASES**

Daniel MARCHAC, Dominique RENIER, Alexandre MARCHAC, Paris, France

PURPOSE

Hypertelorism denotes lateralization of the entire orbital complex, characterized by an increase in inter-orbital distance. It is not a syndrome but a physical finding in many pediatric craniofacial anomalies. Surgical correction is based on total mobilization of the orbits with a central resection. But what is the impact of growth on the facial balance after correction of hypertelorism? Does it deteriorates or does it remain well balanced?

METHODS

From 1971 to 2011, we operated on 95 hypertelorism (75% < 8 y.o; 25% > 8 yo). Mean follow-up was 9.1 years (range 27-1). Fifteen patients were lost to follow up. The Whitaker scale (grade 1: excellent, grade 4: needs redo) was used to evaluate morphological outcome. We used a novel index (HPT index) to measure the position of the orbits.

RESULTS

Seventy box osteotomies (73%) were performed. Twelve (9.5%) patients had a bipartition, six (6%) patients underwent a unilateral orbital box displacement or a three wall mobilization and seven (7%) had a medial wall osteotomy. Morphological outcomes were: 79% grade 1,18% grade 2,1% grade 3,5% grade 4. HPT index results showed that over the long term, no patients showed increased intercanthal distance. Complication rate was 4%.

CONCLUSION

The most interesting finding was that an initially good result in terms of orbital correction, whatever the severity, remains good over time.

09.00 AURICULAR RECONSTRUCTION: THE DEVELOPMENT OF A RELIABLE AESTHETIC ASSESSMENT TOOL AND A SEVEN YEAR EVALUATION OF OUR UNIT'S AESTHETIC OUTCOMES

Joanna MENNIE, Kerr CLAPPERTON, Ken STEWART, Livingston, Scotland

INTRODUCTION/PURPOSE

Our unit's auricular reconstruction service began in 2004, initially adopting Brent's technique then Nagata's. Whilst subjectively we felt aesthetic outcome was good and improving as the service progressed, there was no aesthetic assessment tool available to us to allow standardized evaluation. Evaluation of aesthetic outcome is of great importance as patient satisfaction is one of the predominant factors to determine success of plastic surgery. Outcome assessment can also provide evidence to secure funding and improve service through national audit. The purpose of our study was to develop a reliable aesthetic scoring system specific to auricular reconstruction for national use and evaluate our outcomes to date.

METHODS

A standardized structured questionnaire was designed to assess satisfaction of aesthetic outcome using a 5-point Likert scale (1=very dissatisfied; 5=very satisfied). Satisfaction with 9 different aesthetic subunits was scored along with size of the ear, position, rotation, projection, quality of skin covering the ear and scars around the ear. The questionnaire was distributed to 3 plastic surgery observers along with 62 post-operative photographs of auricular reconstruction patients from 2004-2011. Inter-rater variability was assessed using intraclass correlation coefficient with 95% confidence intervals for both absolute agreement and consistency where 0=no agreement/consistency and 1=100%. The internal consistency of the questionnaire was assessed using Cronbach's alpha. Aesthetic outcome was plotted against time and percentage difference calculated.

RESULTS

The reliability of the aesthetic scoring system was good with intraclass correlation coefficient for absolute agreement 0.838 (95% CI 0.752-0.897, $p=0.000$) and for consistency 0.847 (95% CI 0.769-0.902, $p=0.000$). The internal consistency of the questionnaire was good with Cronbach's alpha 0.847. There was 29% improvement in aesthetic outcome scores from 2004-2011.

CONCLUSION

We have developed a reliable standardized aesthetic scoring system suitable for national evaluation of auricular reconstruction. We have found an improvement in our unit's aesthetic outcomes over time.

09.08 PERMANENT SURGICAL REMOVAL OF CRANIOFACIAL NEUROFIBROMAS

McKay McKINNON, Chicago, USA

PURPOSE

There are no reports in the surgical literature of large series of patients whose craniofacial neurofibroma (NF Type I) has been permanently removed by surgery or other treatment. Current orthodoxy on this subject is commonly reflected by: (1) Delay of treatment until craniofacial function and form is permanently destroyed; (2) Surgical treatment has aimed at superficial tumor reduction (debulking) with rapid tumor regrowth; and (3) A surgical pessimism exists which inhibits further surgical therapy, or more recently an over-exuberance for non-indicated facial allo-transplantation. This report seeks to confirm that surgery can produce permanent removal of craniofacial NF (Type I). Further, it proposes a biologic mechanism by which non-recurrence is achieved.

MATERIAL AND METHOD

A consecutive group of 75 patients with plexiform craniofacial neurofibromas (type I) who underwent surgical treatment by the author over a 15 year period were studied by clinical and radiographic review. No patients were excluded from review of at least 18 months follow-up. The patients ranged in age from 15 months to 72 years.

RESULTS

Ten patients required staged procedures, including one patient who had a neurofibrosarcoma (MPNST) within a benign neurofibroma. There were no deaths or loss of visual function. No patients demonstrated tumor recurrence within 18 months of surgery by clinical and MRI exams, and most patients (90%) were followed greater than two years without recurrence.

CONCLUSIONS

The major errors of craniofacial neurofibroma treatment are: (1) Inadequate diagnosis of the disease and its pathology (2) Inadequate tumor resection; and (3) Failure to perform principled craniofacial reconstruction.

Treatment of the neurofibroma should begin prior to functional impairment. Surgery should be aggressive, even in the very young. There may be at least two biologic mechanisms to explain non-recurrence of NF tumors. Finally, surgeons should accept surveillance of these complex patients whose tumors have high risk for recurrence.

09.16 AUTOLOGOUS FAT TRANSPLANTATION TO THE VELOPHARYNX FOR TREATING PERSISTENT VELOPHARYNGEAL INSUFFICIENCY SECONDARY TO CLEFT PALATE

Charles FILIP, Michael MATZEN, Ingegerd AAGENAES, Ragnhild AUKNER, Hans Erik HOGEVOLD, Oslo, Norway

INTRODUCTION

Autologous fat transplantation to the velopharynx has been described in a few smaller studies including heterogenous groups of patients for the treatment of velopharyngeal insufficiency (VPI). The aim of this study was to assess the speech outcome in patients, who underwent autologous fat transplantation for the treatment of persistent VPI secondary to cleft palate.

MATERIAL AND METHODS

In this prospective study sixteen patients were included who had undergone cleft palate repair and subsequently developed VPI. The patients were injected with a median of 5.6 (3.8-7.6) ml autologous fat to the velopharynx.

Pre- and one year postoperative audio recordings of all patients were blinded for scoring independently by three senior speech therapists. Hypernasality, hyponasality, nasal turbulence and audible nasal emission were scored on a five-point scale.

Pre- and one year postoperative MRIs were obtained during phonation in 12 patients. Data measured were the velopharyngeal distance in sagittal plane and the velopharyngeal gap area in axial plane.

Wilcoxon signed rank test was used to compare parameters pre- and postoperatively.

RESULTS

Hypernasality improved significantly ($p=0.030$), but not audible nasal emission ($p=0.072$) or nasal turbulence ($p=0.12$). The velopharyngeal distance during phonation decreased significantly ($p=0.013$), but not the velopharyngeal gap area ($p=0.26$). There was no significant correlation between speech and MRI results (Spearman's rank correlation coefficient $\rho<0.38$; $p>0.23$). Neither was there a significant correlation between speech results and the volume fat injected ($\rho<0.43$; $p>0.099$).

CONCLUSION

Autologous fat transplantation to the velopharynx proved to improve speech (hypernasality) in patients with persistent VPI secondary to cleft palate. There was no significant correlation between the MRI and speech results, which enlightens the dynamical complexity of the speech process. Neither was there a significant correlation between the volume fat injected and speech results, which suggests that other factors than volume may play a role.

09.28 THE INJECTION/ADHESION TECHNIQUE FOR CLEFT PALATE REPAIR. A PROPOSED NEW APPROACH AS- SAYED IN DOGS WITH CONGENITAL CLEFT PALATE.

Beatriz BERENGUER, Beatriz GONZÁLEZ MELI, Irene PARADAS-LARA, Manuel CHAMORRO, Pablo GONZÁLEZ, Concha MARTÍNEZ-ÁLVAREZ, Madrid, Spain

BACKGROUND

Raising mucoperiosteal flaps in traditional palatoplasty impairs mid-facial growth. To avoid this, the authors designed a 2 phase study to investigate an alternative cleft palate (CP) repair. In vitro feasibility of this new approach was published in 2007. We herein present the phase 2, animal study.

MATERIALS AND METHODS

A veterinarian literature search retrieved that Spanish pointer dog develop CP in 15-20% of the offspring. 12 pups were included: 4 groups. A: normal palate controls (n=3), B: cleft palate controls (untreated) (n=4), C: cleft palate individuals repaired with palatoplasty (n=2) and D: cleft palate individuals repaired with the injection/adhesion technique (n=3). The experimental approach consisted in injection of a hyaluronan based hydrogel as carrier of BMP-2 in the CP medial edges of pups aged 6 weeks, followed by the removal of overlying epithelium and suture of medial edges at week 10. CT scans were obtained at weeks 5, 10, 20 and 30. We compared the 2 treatment options in terms of results of repair, difficulty, duration, and complications.

RESULTS

CT 10 revealed new bone formation at the CP medial borders. Epithelial removal and suture resulted in permanent adhesion. CTs 20 and 30 revealed overlapping of palatal shelves in the palatoplasty individuals, not in the experimental or untreated controls. Lateral scar and denuded bone were avoided with the experimental approach. The latter was easier although it required two sessions. Dogs recovered faster but small fistulas were observed.

CONCLUSION

In an experimental model of congenital cleft palate in dogs, it is possible to close the palate by the new proposed approach. The injection/adhesion technique was easier than palatoplasty, although it required two sessions for closure. Small fistulas were more frequent, although this was considered a consequence of incomplete medial edge epithelial removal. Maxillary growth was less affected.

09.40 THE FACE-LIFT SMAS PLICATION (FLISP) FLAP FOR RECONSTRUCTION OF LARGE TEMPORAL DEFECTS. RECONSTRUCTIVE SURGERY MEETS COSMETIC SURGERY

Salvatore D'ARPA, Veronica DI FEDE, Sebastiano OIENI, Daniel KALBERMATTEN, Francesco MOSCHELLA, Palermo, Italy

BACKGROUND

Reconstructive and cosmetic surgery can be mutually beneficial, particularly in body regions with high cosmetic relevance such as the face and breasts. Application of cosmetic surgery techniques to reconstructive cases, and vice versa, can consistently improve results.

Large defects in the temporal region are a reconstructive challenge because of inextensible skin, proximity to the hairline and brow and high cosmetic relevance. Current techniques like skin grafts, pedicled or free flaps are either cosmetically unsatisfactory or too complex.

The flap presented is a combination of a reconstructive technique, the cervicofacial advancement flap, with a well known cosmetic technique for face lift, the MACS lift, and allows reconstruction of large temporal defects with like tissue and excellent cosmetic results.

METHODS

The FLISP flap is a modified cervico-facial flap with a face lift incision combined with a MACS-lift-like purse-string SMAS plication that allows wide advancement without tension.

18 patients (19 flaps) have been operated between April 2006 and November 2010 with this technique after cancer resection. Follow-up ranges between 12 and 66 months.

The largest defect in this series was 8x6 cm.

RESULTS

Partial skin necrosis was observed in one case because the flap's tip was split in two to better fit the defect. There was one recurrence requiring reoperation. All other flaps healed uneventfully and no reoperation was necessary.

Results were rated by 4 independent observers and judged good to excellent in all but one case.

CONCLUSIONS

The FLISP flap described allows reconstruction of large temporal defects with like tissue and cosmetic results superior to other techniques. SMAS plication has the double advantage of maximizing flap's reach and minimizing tension. The FLISP flap provides a good example of how mixing cosmetic and reconstructive surgery can improve our results.

09.52 IS IT SAFER TO TREAT HEMANGIOMAS WITH ATENOLOL THAN PROPRANOLOL?

Corstiaan BREUGEM, Marlies DE GRAAF, Martine RAPHAEL, Moshe KON, Marjan KNOL, Suzanne PASMANS, Utrecht, The Netherlands

PURPOSE

To compare the effects and side effects of atenolol, a hydrophilic selective beta-1 blocker, in the treatment of infantile hemangioma (IH) with a cohort treated with propranolol, a lipophilic non-selective beta-blocker

METHODS

30 consecutive patients were treated with atenolol between June 2010 and May 2011 and compared with a previously described cohort of 28 patients treated with propranolol between July 2008 and December 2009. Treatment was indicated when the IH was either potentially (life-)threatening, or had functional risk, local discomfort, or cosmetic disfigurement

RESULTS

Clinical involution was present in 90% (27/30) of the IH treated with atenolol and in 100% (28/28) of the IH treated with propranolol ($p=0.09$). Quantified improvement of the IH showed a slightly better improvement in the propranolol group ($n=24$) compared to the atenolol group ($n=27$), but after adjustment for differences in baseline characteristics this difference was not statistically significant ($p=0.16$). Mild side effects occurred in 20% (6/30) of patients treated with atenolol and in 36% (10/28) of patients treated with propranolol ($p=0.18$). Severe side effects occurred in 3% (1/30) of patients treated with atenolol and in 21% (6/28) treated with propranolol ($p=0.04$).

CONCLUSIONS

Atenolol has similar effects as propranolol in the treatment of IH however it is less frequently associated with side effects. Plastic surgeons should be aware that other publications in the medical literature are emerging describing the results of propranolol treatment also demonstrate side effects (some potentially life-threatening). Atenolol is a more selective beta-blocker than propranolol and our studies suggest that it could be a good alternative.

10.45-11.00 AAPS BEST PAPER 2011

Introduction: William KUZON, President of AAPS – Ann Arbor, Michigan, USA

COMPARATIVE ANALYSIS OF SINGLE STAGE DIRECT-TO-IMPLANT VS. TWO STAGE TISSUE EXPANDER-IMPLANT RECONSTRUCTION: 742 CONSECUTIVE CASES

Amy S. COLWELL, Branimir DAMJANOVIC, Bitva ZAHEDI, Laura MEDFORD-DAVIS, Catherine HERTL, William G. AUSTEN, Boston, MA, USA

PURPOSE

Immediate direct-to-implant breast reconstruction with acellular dermal matrix (ADM) optimizes aesthetics by preserving the mastectomy skin envelope and controlling implant position. We perform a comparative analysis of single stage vs. two stage tissue expander-implant breast reconstruction focusing on complications, costs, and patient satisfaction.

METHODS

Retrospective review of three surgeons' experience from Mass General Hospital was performed for immediate direct-to-implant breast reconstruction with ADM and tissue expander reconstruction without ADM from 2006-2011.

RESULTS

Five hundred and eleven single stage implant reconstructions with Alloderm were performed in 323 patients following nipple-sparing (149) or skin-sparing (362) mastectomy for cancer treatment (335) or prophylaxis (176) (Figure 1), and 231 two stage reconstructions were performed. The number of single stage implant reconstructions increased sixteen fold from 2006 to 2011. Total complications for single stage reconstruction (11.54%) included 13 (2.54%) infections, 6 (1.17%) seromas, 5 (0.97%) hematomas, and 35 (6.8%) reconstructions with skin necrosis. Tissue expander reconstruction without ADM had a similar rate of total complications (13.9%): 9 (3.89%) infections, 3 (1.29%) seromas, 3 (1.29%) hematomas, and 17 (7.35%) reconstructions with skin necrosis ($p=0.27$). A higher total complication rate occurred in patients receiving radiation (29%) compared to patients without radiation (10.9%) and in the surgeons' combined first year performing single stage implant reconstruction (21.4%) compared to subsequent years 8.7% ($p<0.0006$). Patients had similar high scores in satisfaction with breasts (69 vs. 65) and psychosocial well-being (76 vs. 74) as measured by the Breast-Q in 125 patients with immediate implant vs. tissue expander reconstruction. There was no significant cost difference between one stage reconstruction with ADM and two stage reconstruction without ADM ($p=0.8$).

CONCLUSIONS

Immediate single-stage implant reconstruction using AlloDerm offers a safe, aesthetically pleasing reconstruction with a low rate of complications and infections and a high degree of patient satisfaction.

11.00-13.00 SCIENTIFIC SESSION, No. 4 *MICROSURGERY*

Session Chairpersons:

Claudia MEULI, Aarau, Switzerland

Benoit LENGELÉ, Brussels, Belgium

**11.08 REMOTE REAL-TIME MONITORING OF FREE FLAPS
VIA SMARTPHONE PHOTOGRAPHY AND 3G WIRELESS
INTERNET: A PROSPECTIVE STUDY EVIDENCING DI-
AGNOSTIC ACCURACY**

Holger ENGEL, JJ HUANG, Chung Kan TSAO, Chia-Yu LIN, Henry STEVEN,
Ming-Huei CHENG, Ludwigshafen, Germany

INTRODUCTION

This prospective study was to compare the accuracy rate between remote smartphone photographic assessments and in-person examinations for free flaps' monitoring.

MATERIAL AND METHODS

One hundred and three consecutive free flaps were monitored with in-person examinations and assessed remotely by three surgeons (Team A) via photographs transmitted over smartphone. The other four surgeons used the traditional in-person examinations as Team B. The response time to re-exploration was defined as the interval between when a flap was evaluated as compromised by the nurse/house officer and when the decision was made for re-exploration.

RESULTS

The accuracy rate was 98.7% and 94.2% in inperson and smartphone photographic assessments, respectively. The response time of 8 6 3 min in Team A was statistically shorter than the 180 6 104 min in Team B (P 5 0.01 by the Mann-Whitney test).

CONCLUSION

The remote smartphone photography assessment has a comparable accuracy rate and shorter response time compared with in-person examination for free flap monitoring.

**11.20 DIFFERENTIAL REINNERVATION IN FACIAL NERVE
 TERRITORY TO PREVENT SYNKINETIC MOVEMENTS.**

Grazia SALIMBENI, Antonella PUDDU, Amelia SANTORO, Pisa, Italy

INTRODUCTION

In spontaneous post-traumatic or post-surgical reinnervation of the facial nerve territory, the misdirection of facial nerve axons during regeneration often results in the development of sequelae, such as facial synkinesis, with loss of facial expression symmetry.

We present the surgical techniques we used and the results that have been obtained in the repair of facial paralysis in order to prevent ocular-oral synkinesis related to the processes of aberrant facial nerve reinnervation.

MATERIAL AND METHODS

Between 2000 and 2010, 32 patients with facial paralysis underwent a differential reinnervation to the superior half of the face (orbito-palpebral region) and to the inferior half (zigomatic-buccal region).

Surgery was performed within 18 months of the onset of paralysis, and the procedure selection was based on the side of the lesion, the patients age, the cause of the lesion and the onset of the paralysis.

The surgical procedures used were:

- Hypoglossal-facial and ipsilateral facio-facial anastomosis: 3 patients
- Hypoglossal-facial anastomosis and temporalis muscle transposition: 9 patients
- Hypoglossal-facial and masseteric-facial anastomosis: 11 patients
- Hypoglossal-facial anastomosis and cross-face: 3 patients
- Upper and lower cross-face: 4 patients
- Ipsilateral facio-facial anastomosis and temporalis muscle transposition: 2 patients

RESULTS

The patients were able to smile without a remarkable closure of their eyes and were able to close the eye on the affected side without a strong accompanying oral movement. Initial voluntary facial movements were observed after 6 months-1 year and improvement was observed after a further year of rehabilitation.

CONCLUSION

The results show the validity of the proposed techniques which allow to separate the upper from the lower portion of the face during facial expressions.

Only one reference has been found about this subject, published by UEDA et al. (2007). Our series started in 2000, therefore the method presented seems to be original.

11.32 OLFACTORY NERVE ENSHEATHING CELLS AS AN ALTERNATIVE SOURCE FOR PERIPHERAL NERVE REPAIR

Ahmet BOZKURT, Ronald DEUMENS, Sabien VAN NEERVEN, Dan Mon O'DEY, Gary BROOK, Norbert PALLUA, Aachen, Germany

INTRODUCTION

Reconstruction of peripheral nerve lesions remains a major challenge. Since the source for Schwann cells (SC) is limited, we examined the regenerative capacity of olfactory nerve ensheathing cells (OECs) as an alternative cell source. These SC-like glial cells penetrate the transition zone between the central (olfactory bulb) and the peripheral nervous system (olfactory mucosa of nasal cavity).

METHODS

OECs were isolated from isogenic Lewis rats and were loaded onto microstructured collagen scaffolds with longitudinal pore channels. In-vitro analyses included cell culture experiments combined with immunocytochemistry, scanning electron microscopy (SEM) and proliferation assays.

The rat sciatic nerve model (2cm, 12 weeks) served as an in-vivo model for the implantation of nerve guides, which were seeded with OECs or SCs. Cell-free nerve guides and autologous nerve transplants (ANT) served as controls. Regeneration was evaluated using functional tests (SSI, CatWalk, nerve stimulation etc.), histomorphometry, and electron microscopy. The fate of engrafted cells was detected by means of GFP-positive OECs from photogenetic rats.

RESULTS

In-vitro, immunocytochemistry demonstrated highly viable OECs up to 14 days after cell seeding. SEM displayed a longitudinal orientation of OECs in a columnar fashion (resembling artificial "bands of Büngners") within the nerve guide.

In-vivo, the 2cm nerve gaps could be bridged after 12 weeks by both SC and OEC seeded nerve guides. Using OECs, the nerve guides were found to be almost as supportive as ANT. Histological analyses revealed myelinated axons in a fascicular arrangement without neuroma formations. Ex-vivo, highly viable GFP-positive OECs could be detected up to 6 weeks after transplantation.

CONCLUSION

We demonstrate that OECs are effective in bridging a 2-cm rat sciatic nerve gap. It may be concluded that OECs hold great promise as an alternative cell source for bioartificial nerve guides (e.g. after nasal biopsy) in the repair of peripheral nerve defects.

Alessio BACCARANI, Scott LEVIN, Bruce KLITZMANN, Michael ZENN,
Modena, Italy

INTRODUCTION

Vasospasm leading to thrombosis is a major cause of free flap failure. Flap blood flow may improve by application of vasodilating agents to the pedicle. Historically, lidocaine or papaverine have been topically applied intraoperatively to resolve or prevent vasoconstriction, however their use has not always been effective at restoring impaired blood flow. Nitric oxide is a potent vasodilating agent. The purpose of this study was to evaluate the effect of O-ethyl-nitrite (ENO) on flap blood flow and pedicle vessels diameter in a rat model.

MATERIAL AND METHODS

Male CD rats (n=26) had abdominal flaps (3 x 3 cm) raised unilaterally based on the inferior epigastric artery and vein. Pedicle vasoconstriction was induced by topical endothelin-1 (ET-1; 3 x 10⁻⁵ M) and by pedicle clamping for 15 minutes. After 15 minutes, either saline (control, n=6 rats), 20% lidocaine (n=7 rats), 10-4M ENO (n=8 rats), or a combination of both drugs (n=5 rats) was applied topically in a single application. Over the subsequent 180-min, flap blood flow was measured with a laser Doppler flowmeter and the diameter of pedicle vessels was measured manually every 15 minutes. Data were statistically analyzed using a Mann Whitney U-test.

RESULTS

At 2-hours post operatively, the arterial diameter was significantly (p<0.05) dilated by treatment with both ENO, lidocaine, and lidocaine + ENO. None of these treatments had a statistically significant effect on blood flow or venous diameter. Twenty-four-hours following surgery, both ENO- and LID-treated groups had larger arteries than the control group (p<0.05). The ENO-treated animals also had significantly (p<0.05) elevated blood flow compared to control animals, but LID-treated animals did not demonstrate any improved flow at 24 hours. None of the treatments had any significant impact on venous diameter at 24 hours.

CONCLUSION

ENO may become clinically useful in microvascular surgical procedures.

12.00 A RETROSPECTIVE ANALYSIS OF RISK FACTORS FOR PARTIAL NECROSIS IN DIEP FLAP BREAST RECONSTRUCTION

Benedetto LONGO, Rosanna LAPORTA, Michael SOROTOS, Guido PAOLINI, Fabio SANTANELLI, Rome, Italy

INTRODUCTION

Although success rate of DIEP flap breast reconstruction has greatly improved, complications still occasionally occur; partial flap necrosis (PFN) is the most frequent one and investigation on risk factors might elucidate mechanisms responsive for it.

Material and Methods

From 2004 to 2011, 274 DIEP flap breast reconstructions were performed on 263 patients; 252 flaps, including vascular zones I to III, were selected and analyzed to assess PFN rate $>1\text{cm}^2$ at ultrasound investigation and potential risk factors. Tabagism, 48h post-operative blood pressure, nulliparity, superficial epigastric vein drainage, medial vs. lateral perforators row, standard post-operative rehydration therapy (SRT) vs. hypervolemic-antioxidant therapy (HAT) (83 ml/h of crystalloid solutions die vs. 104 ml/h of crystalloid, colloid solutions and ascorbic acid die) and learning curve (PFN between first-year group (2004-2005) and the following 6 chronological groups, one per year) were evaluated by univariate and multivariate logistic regression analyses.

RESULTS

PFN occurred 34 times (13,5%), tabagism 69 (27,3%), postoperative mean blood pressure $<75\text{mm/Hg}$ 48 (19%), nulliparity 29 (11,5%) and superficial epigastric vein drainage 171 (67,8%). Perforators arose 103 times from lateral row (40,8%), 137 medial (54,4%), 12 both (4,7%); 91 flaps received SRT (36,1%), 161 (63,9%) HAT. Univariate analysis stated significance of nulliparity ($p=0.024$) and use of medial row ($p=0.044$) to PFN. Multivariate logistic regression confirmed significance of nulliparity ($p=0.029$), whilst variable correlations to other predictors. Risk of PFN decreased 11.6% by the use of medial row perforators and 27.6% with HAT. Learning curve did not significantly affected PFN incidence, although decreasing from 2.5% to 23.6% respectively from the second to the seventh year.

CONCLUSIONS

Our study first proved nulliparity as a statistically significant PFN predictor, possibly due to perforators with lower caliber and consequent smaller abdominal angiosome. Medial row perforators and HAT might consistently reduce incidence of PFN in DIEP flap (zones I-III).

12.12 ALTERNATIVE DONOR SITES IN BREAST RECONSTRUCTION: INTRODUCING THE PROFUNDA ARTERY PERFORATOR (PAP) AND THIGH GLUTEAL ARTERY PERFORATOR (TGAP) FLAPS.

P. Niclas BROER, Neil TANNA, Steven M. LEVINE, Nicholas T. HADDOCK, Christina Y. AHN, Robert J. ALLEN, New York, USA

INTRODUCTION

Popularized alternatives to abdominally-based autologous reconstruction, include the superior or inferior gluteal artery perforator (SGAP or IGAP) flaps and transverse upper gracilis (TUG) flaps. The SGAP flap places a scar across the superior buttock and creates a possible contour deformity. The IGAP flap has been associated with sitting difficulties, secondary to loss of fat over the ischial tuberosity. The TUG flap has been criticized for its small volume, short pedicle, sacrifice of the gracilis muscle, and a visible scar anteriorly. The authors have explored the posterior thigh as a better alternative. The posterior thigh soft tissue supplies the profunda artery perforator (PAP) flap or thigh gluteal artery perforator (TGAP) flap.

METHODS

The authors review all breast reconstruction cases performed by the senior author, in which posterior thigh tissue (PAP or TGAP flaps) was utilized. Patient demographics, preoperative angiography, mastectomy specimen weight, flap dimensions and weight, and pedicle length and caliber were noted. Additionally, complications, adverse events, and aesthetic outcome were documented.

RESULTS

Sixty-five cases of breast reconstruction were identified, in which the PAP flap (n=63) or TGAP (n=2) were utilized. An elliptical skin paddle, 27 cm by 7 cm, is designed 1 cm inferior to the gluteal crease. The flap has a long (7-13 cm) & good caliber (2-3 mm) pedicle. The long elliptical shape of the flap provides a good volume of tissue (281-665 grams) and allows coning of the tissue to form a more natural breast shape. There were no cases of flap loss.

CONCLUSIONS

The PAP or TGAP flap results in a fairly well hidden scar with optimal donor site contour and minimal complications, including fat necrosis. This is an excellent option when the abdomen is not available and has become the first choice when abdominally based flaps are not available.

**12.20 MICROVASCULAR BREAST RECONSTRUCTION AND
LYMPH NODE TRANSFER FOR POSTMASTECTOMY
LYMPHEDEMA PATIENTS**

Anne SAARISTO, Tiina VIITANEN, Tarja NIEMI, Pauliina HARTIALA, Erkki SUOMINEN, Turku, Finland

INTRODUCTION

Chronic lymphedema remains a challenging clinical problem that often lacks curative treatment options. Our translational research group has previously evaluated the therapeutic effect of autologous lymph node transfer and lymphatic growth factors in experimental lymphedema models (Nat Med 2007, Circulation 2011).

METHODS

During 2007-2011 we performed free lymph node transfer from the inguinal area to axilla in 17 postmastectomy lymphedema patients. In 12 patients lymph node transfer was done simultaneously with the lower abdominal breast reconstruction. Our flap contained lymph nodes and lymphatic vessels surrounding the superficial circumflex vessel pedicle, but avoiding the lymphatic channels draining the lower limb. The effects of the surgery on the lymphatic vessel function both on the upper and lower limb were evaluated by the lymphoscintigraphy and circumference measurements.

RESULTS

Our results show that human lymph nodes express endogenous lymphatic vessel growth factors providing the rationality for the new method. Postoperative lymphoscintigraphies of the upper limb demonstrated at least some improvement in lymphatic vessels function in 83% of the lymphedema patients, but in most patients the lymphatic flow was still delayed after the surgery. Upper limb perimeter decreased in most (77%) patients. Physiotherapy and compression was no longer needed in 30% of patients. In three patient lymphoscintigraphy of the lower limbs demonstrated delay in the lymphatic flow on the donor site. Flap design was modified after these results. None of the operated patients had any symptoms in their lower limbs.

CONCLUSION

Lymph node transfer can be easily combined with the lower abdominal breast reconstruction and it is therefore an ideal choice for mastectomy patients with lymphedema symptoms. In the future our goal is to combine lymphatic growth factor therapy with the lymph node transfer to gain more efficacy for the lymphedema treatment.

12.32 INDICATION AND OUTCOMES OF THE SUPERFICIAL INFERIOR EPIGASTRIC ARTERY FLAP: A TEN YEAR EXPERIENCE

Chelsea SNIDER, Steven LEVINE, Jay GRANAZOW, Neil TANNA, P. Niclas BROER, Robert ALLEN, New York, USA

PURPOSE

In 1989, the first SIEA flap for breast reconstruction was performed in New Orleans. Initially, the SIEA flap was greeted with tempered enthusiasm because the pedicle diameter and length were small. However, the SIEA flap offers advantages over the other abdominal donor site options; both the abdominal muscle and abdominal fascia is preserved. Despite this understanding, our use of the SIEA flap has been inconsistent over the last decade. We now use the SIEA flap when preoperative imaging indicates the presence of appropriate vessels. We review our experience with the flap, to help elucidate appropriate indications and identify methods to minimize complications.

METHODS

All breast reconstructions between 2001-2011 were reviewed in our prospectively maintained database.

RESULTS

Since 2001, 263 SIEA flaps were performed on 201 patients for breast reconstruction. The patients ranged from 24 to 68 years of age (mean 48 years). 66 patients (25%) underwent immediate reconstruction after skin-sparing mastectomy, 63 (24%) underwent secondary (delayed) reconstructions and 103 (39%) underwent tertiary (failed implant) reconstructions. 101 (38%) had bilateral breast reconstructions including 41 patients with SIEA/SIEA reconstructions and 60 patients with SIEA/DIEP reconstructions. Four SIEA flaps (2%) were performed for augmentation of the contralateral breast for symmetry. In 98% of cases, the internal mammary vessels were used as recipient vessels.

15% of patients had at least one minor or major complication (9% had donor site complications and 9% had flap complications). There were 3 partial flap losses and no complete flap losses.

CONCLUSIONS

We report the largest experience to date on the SIEA flap for breast reconstruction. This adipocutaneous flap is an excellent choice for breast reconstruction patients with favorable vascular anatomy. Good aesthetic results without functional donor site morbidity can be achieved. The chief limitation of this flap is the inconsistent anatomy of the flap vessels.

12.44 EXPANSION OF MAMMARY REGION BEFORE DIEP FLAP TO IMPROVE THE OUTCOMES OF POSTMASTECTOMY BREASTRECONSTRUCTION

Mauro SCHIAVON, Eugenio FRACCALANZA, Roberto BERAZIOL, Jacopo TESEI, Giuliana GENTILE, Udine, Italy

BACKGROUND

The surgeon's aim in post-mastectomy breast reconstruction is to obtain a symmetric new breast with natural shape where scars are reduced.

Following standard mastectomy, the single stage breast reconstruction with autologous tissue leaves an obvious mark due to the abdominal skin island visible on the new breast.

The use of a tissue expander placed immediately after mastectomy creates a skin envelope filled by the de-epithelialised DIEP flap in a second stage. In this case the reconstructed breast is covered by thoracic skin without any abdominal skin island and only mastectomy scar is visible.

METHODS

All the patients who underwent the two-stage DIEP flap breast reconstruction between 2008 and 2011 were included in the study. After mastectomy the expander was inserted in a subpectoral pocket. In the second stage a capsulectomy of the expanded flap and a precise inframammary fold definition were performed before insertion of DIEP flap. Microanastomoses were always performed on Internal Mammary vessels.

RESULTS

A total of 48 patients, who underwent a unilateral non skin-sparing mastectomy, had a two-stage DIEP reconstruction. Mean age was 50.6 years (range 32-65 years). Mean follow-up time was 21 months (range 2- 46 months). Complete flap loss occurred in 1/48 case (2%), while minor fat necrosis occurred in 1/48 case (2%). Breast hematoma or seroma formation occurred in 2/48 case (4%).

DISCUSSION

This is the first report on a two-stage breast reconstruction using only de-epithelialised DIEP flaps. Advantages of this technique are: the reconstruction of a breast with skin of the same texture and colour than the contralateral one, without any "patch"; only original mastectomy scar is visible; a partial recovery of sensitivity and a better consciousness of the patient about the reconstructive technique are obtained. Disadvantages are the two procedures with a longer total reconstructive time.

12.56 CTA VS. MRA IN PREOPERATIVE PLANNING OF ABDOMINAL PERFORATOR FLAPS: PROSPECTIVE CONTROLLED STUDY

Adam BLACKBURN, Damir KOSUTIC, Amedeo CHIRIBIRI, Narayan KARUNANITHY, Jian FARHADI, London, United Kingdom

INTRODUCTION

Computed Tomography Angiography (CTA) is the standard modality for imaging perforators when planning breast reconstruction. Magnetic Resonance Angiography (MRA) is emerging as an alternative as it avoids the exposure to radiation associated with CTA. However, no study has investigated which modality is superior. This study objectively compares the quality of information obtained from a 256 slice CT with a 3T MR scanner and correlates these with intra operative findings.

METHODS

CTAs and MRAs (both with contrast) were performed preoperatively on each patient for 10 consecutive DIEAP flaps. These scans were reported by 2 independent Consultant Radiologists, each with a specific interest in CTA and MRA, who were blinded to the images and the findings of the other radiologist. The reports were then compared with intra-operative findings, whereby the dominant perforator confirmed with a Laser Doppler video.

RESULTS

MRA, CTA and intra-operative findings had 100% correlation with respect to location of dominant perforators in all 10 flaps (100% predictive value). Both techniques were able to accurately identify the branching pattern of the DIEAP vessels, length of intramuscular course of perforator and whether the deep or superficial venous systems provided dominant drainage. Subjectively, images on the MRA were easier for the plastic surgeon to interpret.

CONCLUSION

In this study MRA provided exactly the same information as CTA and the images were easier for the plastic surgeon to interpret. As there is also the benefit of no radiation exposure, especially important in non-cancer patient (e.g. in risk reducing mastectomy and reconstruction), MRA has become our preferred investigation.

In this ongoing study a new software program is being developed to render the MRA in order to visualize the intramuscular course and provide more accurate information on the venous phase.

14.00-15.30 SCIENTIFIC SESSION, No. 5 AESTHETIC

Session Chairmen:

Bryant A. TOTH, San Francisco, USA

José Maria PALACÍN CASAL, Barcelona, Spain

14.00 POST BARIATRIC SURGERY BODY CONTOURING: IS IT WORTH IT?

Nada AL-HADITHY, Ken STEWART, Livingston, Scotland

The past 20 years has seen a doubling in the worldwide prevalence of morbid obesity. NICE has recommended bariatric surgery as first line treatment for patients with a BMI of over 50kg/m². Massive weight loss in a short time can result in excess skin all over the body and may cause psychological distress for the patient. The goal of reconstructive plastic surgery is to help regain the form, function, and contour appearance of affected body parts. Body contouring post bariatric surgery is the biggest growth areas in plastic surgery at present. Yet few papers have explored the factors that motivate the decision to seek such procedures and how plastic surgery post bariatric surgery impacts on psychosocial and functional outcome.

This formative cohort study quantified psychosocial outcomes against weight, BMI, anthropometric measurements and 3D stereophotograms for better understanding of the problem

AIMS

To describe ptosis, weight loss and psychological change in bariatric patients, before and after bariatric surgery and before and after post bariatric body contouring.

METHODS

Associations between QOL, mood, anxiety and depression and weight loss, anthropometric measurements, ptosis and type of procedure were assessed with HADs, EDQ, WHOQOL BREF, DAS 24, SF36 and BAROS. Stereophotograms were taken to objectively measure ptosis and anthropometric measurements in 100 patients.

RESULTS

The point prevalence of depressive and anxiety disorders significantly decreased after bariatric surgery and made a further significant decrease after plastic surgery. Following bariatric and plastic surgery patients had a better quality of life. Assessment of quality adjusted life years and cost effectiveness analysis gives some indication that providing plastic surgery following bariatric surgery after massive weight loss in appropriately selected patients can be cost effective.

14.12 TEN YEAR EXPERIENCE IN TREATING HIV-RELATED FACIAL LIPOATROPHY: COMPARISON STUDY OF THREE DIFFERENT INTERVENTIONS

Giorgio DE SANTIS, Alessio BACCARANI, Antonio PEDONE, Antonio SPAGGIARI, Marco PIGNATTI, Modena, Italy

INTRODUCTION

Facial lipoatrophy is the reduction in concentrated buccal and orbital fat pads along with the more global loss of fat within the subcutaneous tissue and represents the most frequent and distressing sign of HIV-related lipodystrophy.

The aim of this study is to compare autologous fat transfer (AFT), injection of re-absorbable (Polylactic Acid-PLA) and non-reabsorbable (Polyacrylamide-hydrogel-PAAG) filler materials for the treatment of HIV-related facial lipoatrophy.

MATERIALS AND METHODS

Eligible individuals with enough residual subcutaneous fat were offered AFT treatment. Other individuals were blindly assigned to two different surgical teams, who administered a set of PLA or PAAG injections every four weeks, up to physician's agreement in a satisfactory result.

The primary endpoint was the standardized ultrasound measurement of Bichat's fat pad region. Secondary endpoints included body image evaluation (ABCD Questionnaire), facial aesthetic satisfaction (Visual-Analogue-Scale), and aesthetic pre and post treatment pictures comparison by independent reviewers. All variables were measured at baseline and at 24 weeks after the last treatment session. For PAAG treated patients only a long-term re-evaluation was also performed (5 years).

RESULTS

Thirty-five patients received AFT, 150 were selectively randomized to PLA (70) or PAAG (80) infiltrations. PLA and PAAG groups received a mean of 5 and 6 injections per side respectively. The mean change in dermal and subcutaneous thickness was 3.3 ± 4.1 mm; 3.5 ± 4.0 mm; 3.9 ± 3.0 mm ($P=ns$), respectively. The mean change in ABCD score results were poorer in the AFT arm, but there were no significant differences in the other parameters. Adverse events were reported in six patients on the AFT arm only. Long term follow on the PAAG-group showed 4 minor complications.

CONCLUSION

The three different treatments were highly effective in improving patients aesthetic satisfaction. Both PLA and PAAG showed a good tolerance, durability and safety within the different limits of the follow-up period.

14.24 DOCTOR'S PERSONAL OPINION ABOUT LABIA MINORA APPEARANCE: THE INFLUENCE ON THEIR CLINICAL DECISION MAKING

Berend VAN DER LEI, Welmoed REITSMA, Meret KONING, Astrid PASCAL, Marian J.E. MOURITS, Groningen, The Netherlands

INTRODUCTION

Doctors' opinion on labia minora appearance and reduction may influence the counseling, referring and willingness to perform surgical LM reduction. Therefore, this study was undertaken to elucidate whether doctor's opinion differences among specialist.

MATERIALS AND METHODS

From May 2009 to August 2009, a cross-sectional questionnaire survey was designed to elucidate doctors' opinion about labia minora appearance and reduction procedures including four pictures of a vulva with different sizes of labia minora. The questionnaires were distributed to 210 doctors: general practitioners ($n = 90$), gynaecologists ($n = 65$) and plastic surgeons ($n = 55$). In addition, gynaecologists and plastic surgeons were questioned about the size of labia minora in which they would operate a patient and how important they consider physical and aesthetic complaints.

RESULTS

164 questionnaires were completed (80%) by 96 male doctors (58.5%) and 68 female doctors (41.5%), with an average age of 44.4 years old (SD 9.65). 210/164 (80%) responded of which 80 GP's, 41 gynaecologists and 43 plastic surgeons. Plastic surgeons regard larger pictures of the largest labia minora as more distasteful and more unnatural compared to gynaecologists and GP's, and regarded such a woman sooner as a candidate for a labia minora reduction procedure. Plastic surgeons also tend to operate sooner compared to gynaecologists, despite the absence of mechanical complaints of the woman. Although very small labia minora do not seem to be doctors' personal ideal, all doctors think that society's ideal is a vulva with very small LM. Male doctors tend to operate sooner than their female colleagues.

CONCLUSIONS

Our survey demonstrates a significant difference between the opinion of general practitioners, gynaecologists and plastic surgeons, and also between male and female doctors, regarding labia minora appearance and indication for reduction procedures. Plastic surgeons and male doctors tend to refer and operate sooner.

14.48 CORRECTION OF SEQUELAE OF RHINOPLASTY BY LIPOFILLING

Pierre SA NGUYEN, Ahmad ALASLAWI, Dominique CASANOVA, Jacques BARDOT, Guy MAGALON, Marseille, France

INTRODUCTION

Revision rhinoplasty can be very challenging especially in cases of thin skin. Autologous fat graft is utilized in numerous applications in plastic surgery; however its use relative to the nasal region remains uncommon. Adipose tissue, by virtue of its volumetric qualities and its action on skin trophicity, can be considered to be a gold standard implant.

METHODS

From 2006 until 2011, we have treated 20 female patients by lipofilling in order to correct sequelae of rhinoplasty. Procedures were performed under general or local anesthesia. The quantity of adipose tissue injected varied between 1 and 6 cc, depending on the importance of the deformity and the area of injection: irregularity of the nasal dorsum, visible lateral osteotomies, saddle nose.

RESULTS

The follow-up ranged from 18 to 24 months. Eighteen Patients were satisfied after one procedure; two others required a second intervention. Following the course of our practice, we conceived micro-cannulas that allow a much greater accuracy in the placement of the graft and enable to perform interventions under local anesthesia. These non-traumatic micro-cannulas do not cause post-operative ecchymosis and swelling which shorten the recovery time for the patient.

CONCLUSION

On patients who have undergone multiple operations, lipofilling can be a simple and reliable alternative to correct imperfections that may take place after a rhinoplasty.

15.00 SAGITTAL PROJECTION OF THE EYEBROW VERSUS FACIAL ATTRACTIVENESS

Eser YUKSEL, Alan BIENSTOCK, Hande YAZGAN, Houston-Texas, USA

INTRODUCTION

The eyebrow configuration in the frontal plane has long been a major key in facial rejuvenation and contouring procedures. The two dimensional approach in defining the eyebrow complex does not adequately provide the attractiveness on this complex. Introduction of fat grafts has emphasized the third dimension in facial evaluation. Surface elevations are essential since light reflection defines the visual perception. At the proximal third of the face, most of the past efforts focused on the eyebrow positioning in frontal plane. Study investigated the correlation of oblique supraorbital fullness with the perception of attractiveness in the upper 1/3 of face.

MATERIALS AND METHODS

Part 1: Two groups of oblique periorbital pictures (N=20) that demonstrate the low (A) and high (B) oblique frames have been selected.

Oblique superior orbital surface area (OSOA) and the angle of oblique projection (AOP) were used for height classification .

Independent ten subjects interpreted the pictures in terms of attractiveness within a scale (0=unattractive, 1=no inclination, 2=attractive).

Part 2: Same methodology is used for the pictures of patients who undergone fat grafting to increase oblique supraorbital projection.

Preoperative and postoperative oblique pictures of 20 patients who have undergone lateral supraorbital fat grafting were utilized for comparison in a similar scale used in part 1.

RESULTS

Part 1: Group A: 345 points, Group B: 208 points. (+ ($p \leq 0,05$))

Part 2: Postoperative: 328, Preoperative : 193. (+ ($p \leq 0,05$))

CONCLUSION

Eyes, playing the most essential part in facial perception should be surrounded by high walls, similar to the principle of utilizing the frame for the pictures on the wall. Sagittal height of eye frame (particularly superiolateral orbital) positively correlates with the degree of attractiveness

During facial volume restoration, the supraorbital frame should be taken into consideration.

15.12 THE IMPACT OF BREAST REDUCTION SURGERY ON THE VERTEBRAL COLLUMN

Kemal FINDIKCIOGLU, Fulya FINDIKCIOGLU, Hakan BULAM, Billur SEZGIN, Selahattin OZMEN, Ankara, Turkey

BACKGROUND

Although many studies have shown that breast reduction surgery is effective in reducing neck, back and lumbar pain; most of these studies are subjective evaluations that usually provide data through pain scales. This study was undertaken to objectively evaluate the radiologic effects of breast reduction on the vertebral column.

METHODS

Thirty breast reduction patients were included in the study. A lateral thoracolumbar radiograph was taken preoperatively and three months postoperatively for each patient. The thoracic kyphosis, lumbar lordosis and sacral inclination angles were measured for each radiograph. The impact of breast reduction surgery on posture was evaluated according to the comparison of these angles preoperatively and postoperatively. Effect of the age, BMI and the total amount of removed tissue was also taken into account and the relationship between these parameters and their effects on the change in preoperative and postoperative angle measurements were evaluated.

RESULTS

There was a significant decrease in all three angles after breast reduction surgery. A significant correlation was determined between BMI and the total amount of removed tissue on the change in angle measurements while a definite relationship was not observed between the angles and the patient's age.

CONCLUSION

This study has shown the objective impact that breast reduction surgery has on the vertebral column. Even though the symptomatic relief of breast reduction surgery on the musculoskeletal system is widely accepted, the objective assessment of this relief will be beneficial in persuading health insurance companies and those who think of this surgery as a purely aesthetic procedure.

15.20 TRANSVERSAL MAMMOPLASTY IN TUBEROUS BREAST

José Maria PALACÍN CASAL, Luiz Guilherme DE MOURA LOPES, Barcelona, Spain

INTRODUCTION

Tuberous or constricted breast is a female mammary gland congenital malformation that represents a challenge for the most experienced plastic surgeon. We present a personal surgical technique based on the utilization of three transverse incisions through the whole glandular thickness and anatomic cohesive-gel mammary implants, which provide enough volume to the lower pole and achieving a better shape. (We have used this technique in the four types of tuberous breasts by Von Heimburg (2000) with appreciable results).

PATIENTS AND METHODS

We have performed a systematic review of 50 consecutive cases reconstructed with this technique between 2008 and 2010, with a minimum follow up of 12 months. The group was evaluated by age, degree of anomaly, uni or bilateral involvement and asymmetry. In all cases we used the submammary incision and anatomic implants of different types and sizes. The technique consists of three big and deep transversal incisions up to the subdermal layer. They facilitate decompression and posterior glandular translation to the inferior pole (sliding flaps). The implants enhance the pressure on the gland and favor the tissue development.

RESULTS

The operations were made in 80 breasts. Eighty of those according to the classification of Von Heimburg: 18 breasts (22.5%) corresponded to type 1, 28 breasts (35%) type 2, 21 breasts (26.25%) type 3, and 13 breasts (16.25%) type 4. Implant size ranged from 195 gr to 335 gr. Implant location was submuscular in 66% and 34% subfascial. We had 3 moderate capsular contractures (2 subfascial and 1 submuscular).

The technique allowed in all cases a redistribution of the gland that was perpetuated with the use of the breast implant. All patients graded the results from very good to excellent.

CONCLUSIONS

Among the virtues of the technique we point out the reproducible and durable results.

16.00-17.00 SCIENTIFIC SESSION, No. 6 HAND/NERVE

Session Chairmen:

A. Lee DELLON, Towson-Maryland, USA

Pietro GIOVANOLI, Zurich, Switzerland

16.00 LONGTERM RESULTS OF SOFT TISSUE DISTRACTION PRIOR TO WRIST STABILISATION IN RADIAL DYSPLASIA

Steven HOVIUS, Teun LUIJSTERBURG, Evelyne ZWART, Christianne VAN NIEUWENHOVEN, Rotterdam, The Netherlands

INTRODUCTION

Purpose: Does soft tissue distraction prior to wrist stabilization in radial dysplasia make any difference? Radial dysplasia (RD) is a rare congenital disease characterized by an absent radius, a dislocated wrist in radial deviation and an absent thumb. Direct wrist correction is cumbersome due to high tension on the soft tissues. Therefore soft tissue distraction has been introduced. The long-term results on stabilizing the wrist on the distal ulna following soft tissue distraction (STD) are compared to wrist stabilization alone.

PATIENTS AND METHODS

In 25 years 67 patients were treated with a RD type III or IV. Forty-three patients with 54 treated upper limbs were studied. Thirty-seven patients were syndromic. X-rays were evaluated before operation and at an average of 6 years follow-up.

RESULTS

Twenty one arms were corrected in the non-distraction (ND) group and 33 in the STD group. Radial deviation was -56 and -59 degrees for the non distracted (ND) and STD group, and improved to 4 and 13 respectively after stabilization. Stabilization was easier in the STD group. Ulna width increased in the STD group when compared to the normal opposite side. The growth plate was present in 22 out of 24 reviewed STD cases. In the ND group 5 growth plates fused prematurely. Long-term follow-up showed an increase in radial deviation in the ND and STD group of -18 and -19 degrees respectively after 6.7 and 5.6 years.

CONCLUSION

Soft tissue distraction facilitates positioning of the hand and wrist on the distal ulna in RD type III and IV. The distraction makes it possible to preserve the growth plate and broadens the distal ulna. Relapse occurs and may be related to the severity and tightness of the primary deformity in both groups.

16.12 META-ANALYSIS: SENSORY RECOVERY OUTCOME AFTER DIGITAL NERVE REPAIR IN RELATION TO DIFFERENT RECONSTRUCTIVE TECHNIQUES

Jörn A. LOHMEYER, Felix J. PAPROTTKA, Petra WOLF, Peter MAILÄNDER, Hans-Günther MACHENS, Munich, Germany

Good clinical outcome after digital nerve reconstruction is highly relevant for proper hand function and has significant socioeconomic impact. However, the level of evidence for competing surgical techniques is low and fundamental data on surgical outcome can hardly be found. Our aim is to give a comprehensive summary about the current status of digital nerve reconstruction, addressing end-to-end and end-to-side sutures, nerve grafting, conduit-, vein-, muscle-, muscle-in-vein-reconstructions and replantations. 89 publications were expedient for precise evaluation resulting in 3071 nerve repairs, which were obeyed during follow-up. Their sensory recovery outcomes were reviewed, using the Highet classification. For digital nerve repair there was no certain surgical technique superior over another. Only end-to-side suture seemed to have an inferior two-point discrimination in comparison to end-to-end suture or nerve grafting. Furthermore, this meta-analysis showed, that a younger age seemed to be a crucial factor for improved sensory recovery outcome in patients, who underwent digital replantation. Also after performed end-to-end sutures newer publications (1980 - today) had statistic significantly better sensory recovery outcomes than older ones (1965 - 1979). Given the minor differences in outcome, the main criteria to choose the suitable surgical technique should be the gap length and donor site morbidity caused by nerve harvesting. Data from this meta-analysis was used to provide a decision tree for digital nerve repair. However, further prospective controlled trials are mandatory to elicit additional possible advantages of any type of nerve reconstruction.

**16.24 COMPARISON OF NINE OUTCOME SYSTEMS FOR
EVALUATING TREATMENT OF RADIAL POLYDACTILY**

Robert DIJKMAN, Steven HOVIUS, Christianne VAN NIEUWENHOVEN, Ruud SELLES, Rotterdam, The Netherlands

PURPOSE

To compare various outcome systems concerning treatment of radial polydactyly. The study tries to determine which of these systems is superior based on inter-rater reliability and correlation with manual activity questionnaires.

METHODS

Patients with Wassel types 2 and 4 radial polydactyly, with a minimum age of 4 years and at least 1-year follow-up were examined. Nine outcome assessment systems were selected. Two congenital hand surgeons and one independent examiner evaluated all patients. Patients filled out the ABILHAND-kids and the Prosthetic Upper Extremity Functional Index (PUFI) questionnaires. VAS scores on function and aesthetics were used by patients and examiners. Inter-rater reliability was assessed using inter-class correlation (ICC) and Pearson's correlation coefficients with the manual activity questionnaires.

RESULTS

Thirty-six patients with 40 operated thumbs were included in this study. All patients were evaluated by at least two independent raters. Mean outcomes were fair to good depending on the scoring system evaluated. The reliability was highest for the JSSH, Larsen's and Cheng's outcome systems, with consistently good ICC's (> 0.70) and excellent validity. The ICC on VAS scores (patient vs. examiner) and on function ranged from 0.41 to 0.66; on aesthetics from 0.39 to 0.63. Thirty-five patients completed the ABILHAND-kids questionnaire, 27 patients filled out the modified PUFI. Poor correlation (range -0.33 - 0.43) was found between the outcome scores and the results of the manual activity questionnaires.

CONCLUSION

With exception of the JSSH system, the ICC between the two hand surgeons was always higher than for the independent examiner and either surgeon. This is important in a study protocol with an independent examiner. The low agreement on subjective scores on function and aesthetics underscores the fact that patients might not agree with examiners. The poor correlation between the outcome scores and manual activity questionnaires corresponds with previously published literature.

16.36**A RETROSPECTIV LONGTERM EVALUATION OF MUSCULOSKELETAL OUTCOMES IN NON-DEVASCLARISING FOREARM ARTERIAL INJURIES: DEBATING THE OPTIMAL SURGICAL STRATEGY**

Franco BASETTO, Giorgio GRATSIDIS, Alex PONTINI, Cesare TIENGO, Vincenzo VINDIGNI, Padua, Italy

INTRODUCTION

Literature is still unclear and debated regarding the most efficient management (microsurgical repair/ligation) of major non-devascularising arterial lesions of the forearm. A novel objective analysis of long-term affections regarding the muscular-skeletal compartment related to the adopted surgical procedure may provide more consistent data to support an optimal therapeutic strategy.

METHODS

Fifty-three patients, previously undergone an emergency arterial microsurgical repair of single/multiple non-devascularising vascular injuries of the forearm, have been retrospectively assessed, at a long-term follow-up (2-21 years, mean 11.2 years), in terms of patency of the anastomosis by means of arterial plethysmography, US-doppler and MR-angiography. Moreover, in a subset of forty patients, modifications in bone mineral density (BMD) and in lean mass of the injured limb have been compared with those of the healthy contra-lateral. Results have been correlated with vessel patency and severity of trauma by means of a peripheral quantitative computed tomography and a dual X-ray absorptiometry. Functional performance has been tested by means of a dynamometer (hand-grip test).

RESULTS

At reassessment, 75% of the repaired vessels have been patent. BMD has showed significant impairments at and around the site of the lesion (Delta: -6%, $P < 0.001$) and distally thereto (Delta: -3%, $P < 0.05$): these findings correlate with vessel occlusion and trauma severity. The risk of fractures, consequently, has similarly increased. There has been evidence of a significant loss of lean mass ($P < 0.01$) and of muscle strength in the affected limb, especially in cases involving the occlusion of a major vessel.

CONCLUSIONS

The satisfactory outcomes in terms of preserved bone mass, muscular mass and strength in patients who have undergone arterial microsurgical repair, suggest a surgical strategy considering anastomosis always preferable to ligation, even in emergencies. Vascular repair enables overall limb function to be more efficiently maintained proximally and distally to the injury.

16.48 CLITORAL/PENILE, LABIAL/SCROTAL, VAGINAL, PERINEAL AND RECTAL PAIN: AN ANATOMIC APPROACH TO PUDENDAL NERVE DECOMPRESSION

A. Lee DELLON, Towson-Maryland, USA

INTRODUCTION

Transgender surgery, pelvic reconstruction, childbirth, cycling or other trauma may injure the pudendal nerve. This may result in clitoral/penile, labial/scrotal, vaginal, perineal and/or rectal pain. The complexity of the pudendal nerve's anatomic course suggests that there may be multiple sites for nerve compression, yet surgery for "pudendal neuralgia" centers upon the "traditional" (Nantes) transgluteal approach, often with reported poor outcomes. A surgical approach based upon a correlation of symptoms with a current appreciation of anatomic sites of pudendal nerve compression may improve patient care.

METHOD

Historical material (Alcock's Canal) and fresh anatomic dissections were utilized to construct zones of potential entrapment of the pudendal nerve from nerve roots to the terminal branch at the glans penis/clitoris. Clinical examples were identified where the history of the injury, the symptoms and physical examination suggested the anatomic site of chronic compression. A surgical approach was developed for these hypothesized zones of compression.

RESULTS

Correlation of clinical presentation with the anatomic course and variations of the pudendal nerve permit description of six zones for potential surgical intervention. Zone I is intrapelvic, related to nerve root/plexus tumors requiring pelvic approach. Zone II is between sacrospinous and sacrotuberous ligaments, approached through a transgluteal or ischiorectal approach. Zone III is within the ischiorectal fossa, including entrance to Alcock's canal. Zone IV is within Alcock's canal itself, across the obturator internus muscle. Zone V is the inferior pubic ramus canal, including the exit of Alcock's canal, the region most commonly encountered in cyclists. Zone VI is at the pubic symphysis where direct trauma can injure the dorsal branch.

CONCLUSION

An anatomy-based, patient-oriented, surgical approach to chronic pudendal nerve compression is described. This offers a variety of surgical techniques appropriate to the hypothesized entrapment sites along the course of the pudendal nerve.

SATURDAY, MAY 26, 2012

08.30-10.30 SCIENTIFIC SESSION, No. 7 CLINICAL GENERAL

Session Chairpersons:

Sühan AYHAN, Ankara, Turkey

Sinikka SUOMINEN, Helsinki, Finland

08.30 PLASTIC SURGERY AFTER GASTRIC BYPASS IMPROVES LONGTERM WEIGHT CONTROL

Ali MODARRESSI, Nicolas BELAGUE, Olivier HUBER, Brigitte PITTET, Geneva, Switzerland

BACKGROUND

Roux-en-Y gastric bypass (RYGBP) reduces dramatically overweight and comorbidities, and improves health related quality of life (HRQoL) of morbid obese patients. However after massive weight loss, most of patients suffer from skin excess and bodycontouring procedures are generally not reimbursed by health insurances. Furthermore up to 50% of patients will regain weight after several years, losing partially the benefits previously obtained.

In a precedent study we demonstrated that bodycontouring after RYGBP further improves patient's HRQoL.

In this present study we aim to investigate if bodycontouring, through its positive psychological impact, could improve long term weight control after RYGBP.

METHODS

In a prospective study, 102 matched control patients who had RYGBP for morbid obesity without bodycontouring, were compared to 98 patients who had bodycontouring after RYGBP. To assess long term weight changes between both groups, data were collected on 1, 3, 6, 9 months and then yearly until 8 years post-RYGBP.

RESULTS

Mean weight was similar in both groups before RYGBP (125.1kg +/- 20, BMI 46) and up to 2 years post-RYGBP (80.4kg +/- 17, BMI 29), when plastic surgery were usually performed in bodycontouring group. Since this time-point, in control group, patients regain an average of 1.94 kg/year, which is significantly more than patients who had bodycontouring surgery (0.6 kg/year, $p < 0.01$). After 8 years post-RYGBP, patients with RYGBP alone reach a significant higher weight (95.6kg +/- 7, BMI 35) in comparison to patients who had bodycontouring surgery (83.2kg +/- 5, BMI 30) ($p < 0.01$).

CONCLUSION

Our study demonstrated that bodycontouring is an effective procedure which has an impact on long term weight control, probably related to an increased HRQoL. This weight stability could also contribute to maintain comorbidities' improvement and

confirms important role of plastic surgery in treatment of morbid obesity, and its necessity to be covered by health insurances.

08.42 OVERWEIGHT/OBESE PATIENT REFERRALS TO PLASTIC SURGERY: TEMPERAMENTAL AND PERSONALITY TRAITS

Vincenzo VINDIGNI, Maria Francesca AZZI, Luca LANCEROTTO, Massimo MARINI, Franco BASSETTO, Padua, Italy

INTRODUCTION/PURPOSE

Correlations between psychiatric disorders and overweight/obesity are reported in the literature. However, while the relation with Axis-I diseases is well-defined, temperamental/personality traits have been less investigated. The study aimed at detecting correlations between psychiatric disorders, temperamental traits and body image perception in overweight and obese patients who seek surgical lipostructuring treatments.

MATERIAL AND METHODS

28 overweight/obese patients (age 18-60 yrs, BMI 25 to 34.9 at recruitment) were enrolled in the period March 2008 - June 2011 between those referring to the outpatient service for Obesity-related lipodystrophisms of the Institute of Plastic Surgery. Presence of psychiatric disorders, temperamental traits and body image perception were evaluated, and compared to a control group (N=25) from general population sharing clinical/demographic features. Psychiatric evaluation was based on acquisition of clinical history, Mini-International Neuropsychiatric Interview, Beck Depression Inventory, Yale Brown Scale (YBOCS), Paykel Life Events Scale, NEO Five Factor Inventory, Tridimensional Personality Questionnaire (TPQ), Body Shape Questionnaire (BSQ).

RESULTS

The patients group presented higher scoring in lifetime depression and BSQ with moderate/mild concern with body shapes. With regard to personality traits, TPQ revealed higher score in subscale RD4 (dependence/independence) in the patients, while controls scored higher in "openness to experience" NEO-FFI sub-scale. At YBOCS obese patients presented higher prevalence of obsessive characters.

CONCLUSION

The affective sphere is a relevant feature in obese patients, but also obsessive traits, as negative body shape perception and temperamental and personality characteristics appear to be involved in leading patients to seek surgical consultation. These aspects are implicated in medical/surgical outcome and compliance to treatments. The possibility to individuate the patients who present alterations in those traits or psychic characteristics may be an instrument to avoid early post-treatment relapse and to implement the service offered to patients with appropriate psychiatric care before and after surgery.

**08.54 FAILURE TO ATTEND OUTPATIENT PLASTIC SURGERY
APPOINTMENTS: RISK FACTORS AND STRATEGIES TO
REDUCE WASTE.**

Ken STEWART, Edinburgh, Scotland

INTRODUCTION/PURPOSE

Non-attendance at the outpatient clinic ('Did Not Attend' (DNA)) is a common source of inefficiency and drain on resources in the British National Health Service (NHS). A number of interventions are being undertaken however no single approach appears to be entirely successful. This study concentrated on identifying factors that affect attendance and identifying measures which can reduce non-attendance and consequently shorten waiting times.

MATERIAL AND METHODS

Geographical mapping was carried out on all patients (n=8118) scheduled to attend an outpatient appointment within the department and travel times to the clinic were calculated. Deprivation scores were calculated for all patients using their postcodes. A telephone questionnaire of a random sample (n=100) who did not attend was carried out.

RESULTS

Patients who live in a more deprived area ($p < 0.001$, OR of DNA 2.25: 95% CI 1.83-2.76) and those who live closer to the clinic ($p < 0.004$, OR of DNA 0.79: 95% CI 0.67-0.93) are more likely to DNA. Males aged 20-29 years were the highest non-attendees in the plastic surgery department, with most patients stating they were unaware of their appointment. 92% of patients would like reminder services to be introduced stating it would increase their likelihood of attending.

CONCLUSION

These results provide a further insight into methods that can be adopted to reduce patient non-attendance in the plastic surgery department and the potential of reducing costs by implementing reminder services and targeting interventions at the groups of patients most likely not to attend.

09.02 PERIOPERATIVE ANTIBIOTIC PROPHYLAXIS IN PLASTIC SURGERY: SPECIFIC GUIDELINES FOR PATIENT SELECTION.

Francesca TOIA, Angelo A. LETO BARONE, Adriana TUTTOLOMONDO, Salvatore D'ARPA, Adriana CORDOVA, Palermo, Italy

INTRODUCTION

Lack of scientific guidelines for SSI prevention in plastic surgery often leads to indiscriminate use of antibiotics.

We have performed a prospective study on 2370 patients to establish specific guidelines for antibiotic use in plastic surgery procedures.

MATERIALS AND METHODS

Between April 2009 and April 2011, 2370 consecutive patients undergoing clean or clean-contaminated elective reconstructive or cosmetic surgical procedures were enrolled. Contaminated and dirty procedures were excluded because prophylaxis is not routinely applicable to these cases.

Perioperative antibiotics were administered intravenously in high-risk cases, based on patient-related and procedure-related criteria:

- No prophylaxis for superficial skin surgeries and simple mucosal lesions excision (regardless of patient comorbidities);
- Cefazolin 2 grams in prosthetic, osteoarticular surgery and microsurgery, and amoxicillin/clavulanate 2.2 grams in clean-contaminated procedures regardless of patient comorbidities;
- In clean surgery and rhinoplasty, cefazolin 2 grams only for operations longer than 3 hours and/or on patients with ASA score ≥ 3 .

Administration was repeated for operations longer than 3 hours.

Patients were followed for 6 months.

Data were collected and univariate and multivariate statistical analysis performed.

RESULTS

Only 545/2370 patients (23%) received prophylaxis. The overall infection rate was 1.4%, with a statistically significant difference between patients receiving and not receiving antibiotic prophylaxis (2.9% vs 0.9%, $p < 0.05$).

Length of the procedure and smoking history were statistically significant risk factors for infection.

CONCLUSIONS

Only in a minority of plastic surgical operations is antibiotic prophylaxis needed. Despite 77% of patients in this study did not receive any antibiotic, infection rate was low in this group.

The statistically significant higher infection rate in patients receiving antibiotics proves that the guidelines provided in this study are effective in identifying patients at risk of infection who can benefit from antibiotic prophylaxis.

**09.10 INFECTION PREVENTION CURRENT PRACTICES IN
 PLASTIC SURGERY.**

Quentin FREW, Naguib EL-MUTTARDI, Chelmsford, United Kingdom

AIM

To assess the current practices of Plastic surgeons in the UK regarding infection prevention.

METHOD

An online questionnaire based on recommendations from current literature was sent to consultant BAPRAS members. Questions looked at prophylactic antibiotic use, antibiotic choice, hair removal practices, showering with drains, whether smokers would be operated on, skin preparations used and hypothermia prevention.

RESULTS

We had 40 responses. 72.5 % used prophylactic antibiotics routinely for elective cases, with breast augmentation being the most frequently prescribed for (97.4%). Augmentin was the commonest prescribed (58%). 97.4% gave the antibiotics prescribed less than 30 minutes before the operation. 67.6% of antibiotics were given as a one-off dose. 59% allowed patients with drains to shower. 7.4 % knew of a patient developing MRSA with 23.4% having patients who developed diarrhoea. 50% removed hair routinely with 54.5% opting to use clippers. 10 % tested to see if elective patients were smokers, with 17.5% surgeons unwilling to electively operate on smokers. Betadine was the commonest used skin preparation. 83.9% used techniques to prevent hypothermia during surgery whilst only 23.1 % made sure their patients were preoperatively warmed.

SUMMARY

This study illustrates the variety treatment in infection prevention and the necessity for standardisation.

09.18 IS THE SURGEON A RISK FACTOR WHEN NASAL SKIN EPITHELIOMAS ARE INADEQUATELY EXCISED?

Fotios-Filippos KARANTONIS, Georgios DRIMOURAS, Avraam DOUNAVIS, Epaminondas KOSTOPOULOS, Grigorios CHAMPSAS, Othon PAPADOPOULOS, Athens, Greece

PURPOSE

Aim of the study was to identify risk factors for incomplete excision of nasal epitheliomas.

METHODS

From 2009 to 2011 all patients treated with nasal carcinomas at our department (n=238) were retrospectively studied. The analysis included the operated nasal anatomic subunit and the method of reconstruction. Moreover, surgeons were divided into 3 categories according to their experience Category I /senior (25 years practice, n=1), Category II / board certified plastic surgeons (10 years practice, n=2) and Category III / Junior (4th year trainees, n=2).

RESULTS

The senior surgeon (Category I) operated on 31.5% of the patients, the board certified plastic surgeons (Category II) operated on 21.4%, while the trainees (Category III) operated on 47.1% of the patients. The anatomic subunits mainly affected were: dorsum (38%), alae (26%), sidewalls (23%) and tip (12%). Primary closure was the main reconstructive method (43.5%), followed by loco-regional flaps (38.8%) and skin-grafts (17.7%). Basal cell carcinomas represented the most common lesions (75.6%). Gravity of disease did not affect patient selection by the surgeons as there were no statistical differences in the distributions of selected reconstructive methodologies utilized between the three groups of surgeons ($p>0.05$). Complete excisions were performed on 89.9% of the cases, marginal excision on 6.3% and incomplete excisions on 3.8%. Complete excisions were observed in 94.7%, 82.4% and 90.2% of the cases for the senior, board certified and trainees respectively, while the marginal excision rates were 1.3%, 11.8% and 7.1%. Incomplete excisions were observed in 4%, 5.9% and 2.7% of the cases, respectively.

CONCLUSIONS

This study portrays that proper training can render a junior trainee competent when excising nasal skin cancer. All three surgeon groups utilized available reconstructive techniques with comparable frequencies, indicating a strong conformance to the clinic's protocols regardless of their level of expertise.

09.26 ABDOMINAL SEROMA FORMATION FOLLOWING DIEP FLAP HARVEST: ANALYSIS OF INFLUENCING FACTORS AND DEVELOPMENT OF A PREDICTIVE FORMULA

Katrin SEIDENSTUECKER, Lisa-Maria FISCHER, Ajay MAHAJAN, Beatrix MUNDER, Christoph ANDREE, Düsseldorf, Germany

INTRODUCTION

Seroma formation following abdominal procedures such as abdominoplasty or the harvest of a DIEP or TRAM flap is a well-known problem. We routinely perform CT angiography scans to assess the abdominal vasculature to plan our DIEP flaps. This study has been aimed at analyzing the anatomy of the abdominal wall on these scans and correlating the findings and associated co-morbid factors in influencing seroma formation.

MATERIAL AND METHODS

133 consecutive DIEP flap patients over 12 months were included. Thickness of the subcutaneous fat and that of the underlying muscle was measured on the CT scans. Duration and the amount of drainage were recorded. This was co-related with patient's age, BMI, smoking status and chemotherapy. Results were statistically analysed with chi-quadrat test and kolmogorov-smirnov test.

RESULTS

Drainage of fluid ranged from 40cc to 500cc (mean 204cc) in the first 3 days. Drains were retained for minimum 4 days and maximum 49 days (mean 10 days). The mean volume after 7 days was 416cc. There was a statistically significant ($p < 0.05$) influence of BMI, patient age and the duration of drains on, the amount of fluid drained after 7 days. Smoking and the anatomy of the abdominal wall did not show any significant correlation. Based on these results we developed a formula with logistic regression analysis. The formula meets all statistical quality criteria with an Youden-index of =0.36, and a sensitivity of 0.66 and a specificity 0.69. If the score following application of the formula is > -0.4452 there is less likelihood of seroma formation.

**09.38 OUTCOME OF TEMPORALIS MUSCLE TRANSFER FOR
EYELID REANIMATION IN LONG-STANDING FACIAL
PARALYSIS: RESULTS IN 195 CASES FROM 1980 TO 2010**

Antonella PUDDU, Grazia SALIMBENI, Amelia SANTORO, Pisa, Italy

INTRODUCTION

Long-standing facial paralysis results in serious ocular problems because of the lack of protection of the noble structures of the eye due to the paralysis of the orbicularis oculi.

The purpose of this research is to investigate whether the procedure of temporalis muscle transfer has been able to provide an effective eyelid reanimation or not.

MATERIAL AND METHODS

The authors have analyzed all the cases treated by the same senior surgeon in thirty years in order to evaluate the effectiveness of temporalis muscle transfer in eye protection and in the aesthetic value of the orbito-palpebral area.

All the clinical records, photos and videos have been analysed .

Patients with incomplete records have been interviewed on the phone or have been asked to come for a clinical follow-up.

Patients have been interviewed regarding the following information:

- Year of the operation
- Side of the paralysis
- Combination with other procedures
- Additional surgery
- Ocular problems
- Orbicularis muscle function
- Degree of satisfaction.
- Patients' availability for further check-up

RESULTS

The study has produced the following data:

- Patients treated: 205
- Patient with records (photos/videos/telephone interviews/clinical follow-up): 197
- Eyelid function: 147 good; 41 satisfactory; 9 no function. (Good = capable of spontaneous eye closure; satisfactory: good closure in case of necessity).
- Additional surgery performed: 53
- Patients in need of additional surgery after this last review: 12
- Ocular problems: Patients with corneal hypoaesthesia have corneal damage from the beginning.

CONCLUSIONS

Temporalis muscle transfer remains a well-established procedure in eyelid reanimation, both for eye protection and for restoring a good aesthetic appearance. This procedure improves symmetry of the orbital rim, reduces the lagophthalmus and the scleral show.

Remaining pitfalls are the lack of blinking, the lack of tears' drainage and, sometimes, a pseudo-ptosis of the upper eyelid.

09.46 EVIDENCE-BASED BURN CARE: WHERE DO WE STAND?

Juan BARRET, Barcelona, Spain

INTRODUCTION

New models of managed care or clinical governance demand that physicians become the core of economic management of organizations. The overall goal of this new process is to make closer the economic management to clinicians. In this new situation, evidence-based health care is a must. Burn care is, by far, one of the most expensive areas of our specialty. However, cost-containment requires every-day decisions that should be based on well established knowledge. The objective of the present study is to review the current level of evidence in burn care.

MATERIAL AND METHODS

Public indexes including Medline, Pub-med, public registries of randomized-controlled trials (RCT) and the Cochrane database were used to extract all literature that included RTCs, review articles, and meta-analyses producing Type I and II evidence and allowing Grade A (very good) or B (reasonable evidence) recommendations.

RESULTS

Following an exhaustive search in different databases and engines, approximately 60.000 published articles were recovered. Among them, 358 randomized controlled trials, 128 observational studies, 113 qualitative studies, 48 economic evaluation studies and 62 meta-analyses could be identified. The former represented that 1% of burn literature produced evidence-based burn care, with only 0.6% of RCTs and 0.1% of meta-analyses. Subjects that concentrate the majority of evidence include the utilization of prophylactic antibiotics, nanocrystalline silver, procalcitonin tests, heparin treatment, pressure garment therapy, early enteral nutrition, and early excision of burns.

CONCLUSIONS

Despite the increasing (at a low rate) number of RCTs and Meta-analysis, there is little evidence that burn care is an evidence-based practice. Given the increasing complexity and costs of burn care, many of them based on expensive treatments without clear evidence; the current economic situation and future prospects in health care mandate burn centers to produce evidence and help in the clinical decision making process.

10.22 SOFT TISSUE EXPANSION IN CHILDREN. A TWENTY YEARS EXPERIENCE. EVALUATION AND EVOLUTION SINCE 2001

Veronique DUQUENNOY, Omar ABDEL WAHAB, Marie MAILLET, Ahmad QASSEMYAR, Pierre GUERRESCHI, Lille, France

INTRODUCTION

Soft tissue expansion is a very common surgical technique in plastic surgery for over 30 years. In 2001, our unit edited guidelines for succesful expansion protocol based on a thirteen years experience on adult and pediatric cases. The goal of this study is to evaluate in children the observance of these guidelines in our unit, to analyse complications and cosmetic outcome, to measure the impact of such guidelines in terms of aesthetic outcome and complications and finally to update these guidelines for pediatric cases.

MATERIAL AND METHODS

For that purpose we compared retrospectively 185 children operated since 1990 to 2010 splitting them into two groups according to the date of their first skin expansion protocole before or after 2001. 116 Children, 144 protocoles and 218 expanders were included in the first group and 69 patients, 91 protocoles and 115 expanders in the second one.

RESULTS

This study showed off significantly ($p < 0,05$) a good observation of the guidelines, a decrease of complications (28,5% vs 15,4 %), an increase of giant congenital naevi indication (47% vs 66,6%), younger operators managing the protocole (3,5% vs 18,7%), simplified reconstruction by simple advancement flap (72,9 % vs 91,2 % and the use of less expanders per protocole (1,51 vs 1,26). The cosmetic outcome was not significantly different in our 2 series.

CONCLUSION

By selecting the best indications, these guidelines were a very interesting educational support for less experienced surgeons to manage such a procedure. It decreased complications for an equivalent aesthetic result. An update appeared to be necessary to enhance children specificity in terms of skin and psychosocial impact and to integrate eventually a scar evaluation scale.

11.00-13.00 SCIENTIFIC SESSION, No. 8 CLINICAL GENERAL

Session Chairmen:

Norbert PALLUA, Aachen, Germany

Gerhard PIERER, Innsbruck, Austria

11.00 BLOOD TRANSFUSION PREDICTORS IN NF1 SURGERY: ANALYSIS OF 622 PROCEDURES IN THE FRENCH NATIONAL REFERENCE CENTER AND VALIDATION OF TUMOR SIZE AS AN INDEPENDENT PREDICTOR IN ELECTIVE NEUROFIBROMA RESECTION

Laurent LANTIERI, Francois HEMERY, Claire BOULAT, Benoit PLAUD, Pierre WOLKENSTEIN, Mikael HIVELIN, Creteil, France

INTRODUCTION

Neurofibromatosis 1 (NF1) is a genetic disease occurring in 1:3000 births. Surgical removal of neurofibromas (NF) is limited by excessive bleeding during the procedure and the skin deformity on a longer term.

We aimed to identify predictors for transfusion for NF resection in a NF1 patient cohort.

METHODS

Transfusions for 622 procedures on 390 NF1 patients in the National Reference Centre from 1995 to 2011 were studied retrospectively. The division in two patients' sets allowed assessing predictors' validity. Malignant peripheral nerve sheath tumors (MPNST), reconstructive procedures or spontaneous hemorrhage were excluded. Age, gender, preoperative hemoglobin, location, length, estimated volume, and histology of the greatest NF, the cumulated number, length or volume for multiple resected NF and the procedure duration (Set 2) were assessed through uni- and multivariate analysis. The predictors' optimal cut-off values allowing 100% sensitivity were determined on ROC curves.

RESULTS

70 reconstructive procedures, 2 spontaneous hemorrhages, and 32 MPNST resections were excluded from the predictive analysis. Among the 318 and 198 procedures selected in sets 1 and 2, only 17 blood transfusions (2,7%) were required. NF length predictors of the transfusion risk were L1 (or V1) in both sets and procedure duration in the second. Both sets had the same 13 cm optimal cutoff for L1. V1 was more discriminating than L1 when used as unique predictors, while a model combining L1 and the procedure duration (set 2) provided a higher specificity.

CONCLUSIONS

NF length was a validated predictor of the risk to be transfused. Elective resection of benign NF<13 cm on non anemic patients over 13 years old did not lead to transfusion in this cohort.

11.12 RECONSTRUCTION OF LARGE SUPRA-EYEBROW AND FOREHEAD DEFECTS USING THE HATCHET FLAP PRINCIPLE AND SPARING SENSORY NERVE BRANCHES.

Raffi GURUNLUOGLU, Maziar SHAFIGHI, Susan WILLIAMS, Mark GLASGOW, Denver, USA

BACKGROUND

To reconstruct a forehead defect, a plastic surgeon must be knowledgeable about the neural, vascular, and muscular anatomy. The position of fixed structures such as eyebrows and hairline should be respected. For the past 5 years, we have used double hatchet flaps for reconstruction of relatively large supra-eyebrow and forehead defects. Because this flap does not appear to be among the techniques used by young plastic surgeons, we thought that it would be valuable to report our experience.

METHODS

Supra-eyebrow and forehead defects ranging from 2.5×2.5 cm to 3.5×3.5 cm were reconstructed using double hatchet flaps in 10 patients. Pearls and pitfalls of the technique are discussed along with the presentation of 3 cases.

RESULTS

The reconstructions were uneventful and the flaps were viable in all patients. There was no significant distortion in the eyebrow or hairline due to reconstruction in any of the patients. All the flaps were sensate. A mild anesthesia in the distribution of supraorbital/trochlear nerve proximal to the flaps was noted only in 3 patients. This was associated with inevitable nerve damage during excision of malignant skin lesions and/or flap dissection. No recurrence was noted during the follow-up period which ranged from 6 to 36 months (mean, 13.5 months). Overall patient satisfaction score based on scar appearance and perceived degree of forehead anesthesia was 3 (neither satisfied nor dissatisfied) in 1 patient, was 4 (somewhat satisfied) in 4 patients, and was 5 (very satisfied) in 5 patients.

CONCLUSION

Hatchet flaps have similar color and texture to that of the adjacent supra-eyebrow and forehead defects. The scarring is acceptable with reliable and reproducible results. Oftentimes, sensory nerve branches can be preserved with careful planning and tedious dissection. This type of reconstruction should be considered in the armamentarium of supra-eyebrow and forehead defects.

11.24 THE USE OF ELECTROCHEMOTHERAPY IN THE MANAGEMENT OF METASTATIC SKIN DEPOSITS.

Maria BOYCE, Amir SADRI, Graeme MOIR, London, United Kingdom

INTRODUCTION

The treatment of widespread cutaneous and subcutaneous metastases of advanced melanoma is a challenge and markedly decreases patient's quality of life. In the case of unresectable metastatic lesions, the treatment of choice depends on the size, number, and location of lesions. Since the 1980s electrochemotherapy (ECT) has been utilised in the management of such cases. We present our 3yr experiences and outcomes with ECT in patients with metastatic skin malignancies.

METHODS

Outcome measures such as level of response (poor, average, good) and recurrence were prospectively collected for all patients undergoing ECT over a 3yr period. Clinical photography was used pre- and 30 days post treatment to assess effectiveness of treatment. Median follow-up was 1 year.

RESULTS

In total thirty seven patients with metastatic/widespread melanoma (22), basal cell carcinoma (9) and squamous cell carcinoma (6) have been treated with ECT. The majority of patients underwent 2 to 3 sessions of ECT with intravenous bleomycin. 33 patients had a good response, 1 had no benefit, 2 had local recurrence and 1 patient died from progression of the MM disease.

CONCLUSION

ECT is an effective palliative tool for multiple cutaneous metastases of melanoma with minimal side effects. Our results add to the growing body of evidence which demonstrate the value of ECT in local disease control of metastatic skin deposits.

11.36 PELVIC FLOOR RECONSTRUCTION WITH DE-EPITHELIALISED TRANSVERSE MYOCUTANEOUS GRACILIS (TMG) FLAP

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

INTRODUCTION

In pelvis, the anatomy and physiology of multiple organ systems, bacterial environment and pressure conditions, make the reconstruction of the defects extremely challenging, especially if the wound healing is compromised by radiation therapy, chemotherapy, infection or poor general condition. Reconstruction is currently performed with commercial mesh products or dermal substitutes reinforced by pedicular or microvascular muscle flaps.

Transverse Myocutaneous Gracilis (TMG) flap contains a pedicled muscle to fill the cavity and a rectangularly orientated dermal island reaching the levator muscle defect. The flap is quick to harvest and reliable, allowing multi-team approach.

The aim of this study was to evaluate the suitability of TMG flap to pelvic floor reconstructions.

MATERIAL AND METHODS

Since 2009, twelve patients aged 50-82 (mean 67) years underwent a reconstruction of pelvic floor with a TMG flap. Indication for the reconstruction was anorectal malignancy or colitis in 8 and urologic malignancy in 4 of the cases (3 delayed and 9 immediate reconstructions). 2/3 of the patients had previous radio(chemo)therapy, 1/3 were smokers and 2/3 had acute infection prior to the reconstruction.

TMG flap was harvested, its pedicle mobilised and nerve divided. The de-epithelialised skin was sutured to the remnants of the levator ani muscle and the cavity was filled with the muscle. A smaller part of the flap skin was left to reconstruct the perineal skin, if needed.

RESULTS

All flaps remained vital and the reconstruction was successful in all cases. One perineal hernia relapsed within next months but reoperation was performed successfully one year later with the same TMG flap. Half of the patients had secondary wound healing indicating reoperation in one case.

CONCLUSIONS

Autologous TMG flap with its vascularised dermis and minimal donor site defect offers a local option and obviates the novel methods utilising expensive dermal substitutes in pelvic floor reconstructions.

11.44 USE OF THE BIOPATCH DRAIN DRESSING TO REDUCE INFECTION RATES IN IMPLANT-BASED BREAST RECONSTRUCTION

Keith BLECHMAN, Patrick REAVEY, Katie WEICHMAN, Jamie LEVINE, Mihye CHOI, Nolan KARP, New York, USA

BACKGROUND

Infection rates for implant-based breast reconstructions are as high as 25%. Surgical drains may potentiate these complications by providing a route of entry for skin flora. To counteract this, the Biopatch (Ethicon, Somerville, NJ), a sterile foam disk impregnated with the antiseptic chlorhexidine gluconate, can be used as a drain dressing. Randomized, controlled trials demonstrate that the Biopatch reduces intravenous catheter-related bloodstream infections, but no data is published regarding its use with periprosthetic drains.

METHODS

A retrospective review of immediate breast reconstructions with either tissue expanders or implants performed at New York University Langone Medical Center from January to October 2011 was conducted. Patients were divided into two groups: (1) those who received the Biopatch drain dressing and (2) controls who did not. Univariate analysis compared infection rates, including minor infections treated with oral antibiotics, and major infections treated with intravenous antibiotics and explantation.

RESULTS

A total of 170 consecutive breasts were included: 60 in the Biopatch group and 110 in the control group. Patients had similar preoperative and intraoperative characteristics. A threefold decrease in the overall infection rate was seen in the Biopatch group versus the control group (3% vs. 10%, $p=0.14$). Interestingly, in the subgroup of patients that had an inferolateral sling placed with either AlloDerm or SeriScaffold, a dramatic reduction in the infection rate was noted (0% in the Biopatch group vs 21% in the control, $p=0.047$).

CONCLUSIONS

Although limited by its retrospective design, this study provides the first reported data suggesting that use of the Biopatch as a drain dressing reduces infection rates in implant-based breast reconstruction. Given its low cost and ease of use, the Biopatch is an important adjunct to potentially prevent infectious complications in these patients. We are currently performing a randomized, controlled trial at our institution to fully evaluate its effectiveness.

**11.52 ROBOTIC LATISSIMUS DORSI MUSCLE HARVEST:
 A CASE SERIES**

Jesse SELBER, Houston-Texas, USA

BACKGROUND

The latissimus dorsi (LD) muscle is a workhorse of reconstructive surgery. Traditional harvest technique requires a long, posterior, donor-site incision. Endoscopic harvest is limited by technical challenges. Robotic technology permits a simpler, minimally invasive harvest technique. This study presents the first ever report of robotic harvest of the LD.

METHODS

Seven consecutive robotic LD muscle harvests were performed by a single surgeon. The technique involves a 5-7 cm axillary incision for access to the pedicle, and two port sites for the robotic arms and endoscope. There is no incision on the back. Two flaps were harvested as free flaps for scalp reconstruction, and the remaining 5 as pedicled flaps for breast reconstruction; three were for immediate, implant based reconstruction in conjunction with nipple-areola complex sparing mastectomies, and 2 were used during the exchange of the tissue expander for an implant in patients with radiated breasts.

RESULTS

All 7 muscle flaps were harvested in their entirety without converting to an open technique. Both free flaps were successfully transferred. All pedicled flaps resulted in esthetically balanced breast reconstructions. Flap harvest complications included a temporary radial nerve palsy in related to positioning. There were no donor site hematomas, seromas or thermal injuries. Port sites were used as drain holes and for pedicled flaps, sentinel lymph node biopsy incisions were used for pedicle access. In these cases, there were no additional incisions beyond those required for the oncologic surgery. Robotic harvest time decreased from over 2 hours to about an hour over the study period.

CONCLUSIONS

Robotic harvest of the LD is a novel and effective method of muscle harvest. It offers technical advantages over endoscopic harvest, and aesthetic advantages over the open technique.

12.04 VIDEO-ASSISTED THORACOSCOPIC SYMPATHECTOMY FOR THE TREATMENT OF HYPERHIDROSIS OF THE UPPER LIMB: OUR RESULTS FROM 2008 – 2011

Stephan PAIER, Guenter RAINER, Matthias RAB, Klagenfurt, Austria

INTRODUCTION

Video-assisted thoracoscopic sympathectomy (VATS) is the most frequently used technique for surgical sympathectomy of the upper limb. It has proven to be effective in the treatment of hyperhidrosis of the axilla and hand. The aim of this study is to review our own results from 2008 to 2011 including technical details using a single 12mm port and endoscope with one working channel.

MATERIAL AND METHODS

Data of all 32 consecutive patients were retrospectively assessed (26 females, 6 males, mean age 32,6 years; range 15-54 years). Indication on all of the 32 patients was bilateral hyperhidrosis of the upper limb, with or without prior therapeutic attempts. Postoperative examination included chest-X-ray on the first postoperative day and a clinical examination one week after surgery. Follow up evaluation was done using a patient administered questionnaire by a telephone survey. Mean follow up time was 23,8 months, ranging from 3 to 42 months.

RESULTS

72 resections of the sympathetic chain were performed. The mean operating time was 58 minutes, the time of the surgical intervention itself was only 18 minutes, ranging from 10 to 28 minutes. The mean hospitalisation time was 2 days. No single pneumothorax that demanded intervention and no Horner syndrome was observed. In 95% of the patients hyperhidrosis improved at the time of discharge. although 40% reported the onset of reflectory sweating one week after surgery, that normally was self limited after not later than 2 days. After a mean follow up of 24 months, the quality of life and symptoms were improved in 90% of the patients.

CONCLUSION

With regards to the low risks and the high patient satisfaction in the follow up, the video-assisted thoracoscopic sympathectomy is an effective, long lasting and safe method in the treatment of the hyperhidrosis of the upper limb.

12.16 IS DIRECT SURGICAL CLOSURE OF A WOUND CONTAMINATED BY MULTIRESTANT BACTERIA SAFE IN IMMUNOCOMPROMISED PATIENTS?

Marco PIGNATTI, Claudia VENTURELLI, Mauro CORDELUPPI, Gianluca ROMPIANESI, Giorgio Enrico GERUNDA, Giorgio DE SANTIS, Modena, Italy

INTRODUCTION/PURPOSE

Critically ill, immunocompromised patients run a high risk of infection and dehiscence of surgical wounds, where bacterial growth may continue, even after prolonged antibiotic treatment. Because guidelines are not available, we aimed to investigate whether it is safe to close wounds growing multiresistant bacteria.

MATERIALS AND METHODS

Immunocompromised patients with a dehiscent and infected abdominal wound were collected from November 2008 to November 2011. Immune deficiency was due to organ transplantation, renal failure, HIV, or multiorgan failure.

Patients treated before March 2010, were treated with wound debridement and secondary intention healing. Patients presenting afterwards were treated with the following protocol: serial wound debridement, irrigation, and negative pressure dressing. Once wounds had a clinically acceptable appearance, they were primarily closed, despite positive microbiological cultures.

RESULTS

13 patients (mean age 56 years, 8 male) were included, 4 were left to heal by secondary intention, 9 were treated with the protocol mentioned above.

10 patients were transplanted (9 liver, 1 kidney), 1 HIV infected, 2 hemodialysed. All the patients had multiple systemic positive cultures.

Wounds swabs and biopsies showed growth of multiresistant *Acinetobacter Baumannii* (6), *enterococcus faecium* (3), *Staph aureus* (2), *E.coli* (1), *Klebsiella Pneumoniae* (1)

Healing was obtained in 3 of the 4 patients in the secondary intention healing group (mean healing time 81days, one death) and in all the patients of the treated group (mean 28 days).

No local or systemic complications related to the wound closure arose (minimum follow-up 6 months).

CONCLUSION

Serial debridement, negative pressure dressing, and closure seem to lead to durable healing even in a population of critically ill, immunocompromised patients and in a shorter time than secondary intention healing.

Closure of a clinically healthy wound, despite positive microbiological swabs, may be reasonable.

12.24 LIPOSUCTION NORMALIZES LYMPHEDEMA INDUCED ADIPOSE TISSUE HYPERTROPHY IN ELEPHANTIASIS OF THE LEG - A PROSPECTIVE STUDY WITH AN EIGHT YEAR FOLLOW-UP

Hakan BRORSON, Carolin FRECCERO, Henry SVENSSON, Malmö, Sweden

INTRODUCTION

Patients with long-standing pronounced non-pitting lymphedema do not respond to conservative treatment or microsurgical procedures because the slow or absent lymph flow, as well as chronic inflammation, leads to excess subcutaneous adipose tissue hypertrophy, which cannot be removed by these methods. Previous surgical techniques utilizing either total excision with skin grafting or excisional procedures seldom achieved acceptable, cosmetic and functional results.

PATIENTS AND METHODS

41 patients with an age of 52 years and a duration of leg swelling of 15 years underwent liposuction due to non-pitting, chronic lymphedema. There were 19 primary (PL), and 22 secondary lymphedemas (SL) following cancer therapy. Age at cancer treatment and interval between cancer treatment and lymphedema start were 42 and 3 years respectively. Age at onset of PL was 29 years. All patients had received conservative treatment before surgery without further reduction. All were wearing compression garments before surgery. Aspirate and leg volumes were recorded.

RESULTS

Preoperative excess volume was 4195 ml. Aspirate volume was 4116 ml with an adipose tissue concentration of 94%. Postoperative mean reduction was 84% at 3 months and 105% at 1 year, and more than 100% during 8 years' follow-up, i.e. the lymphedematous leg was somewhat smaller than the healthy one. The preoperative mean ratio between the volumes of the edematous and healthy legs was 1.4, rapidly declining to 1.0 at 6 months, and less than 1 after one year.

CONCLUSION

Liposuction is an effective method for treatment of chronic, non-pitting leg lymphedema in patients who have failed treatment due to lymphedema induced adipose tissue hypertrophy. The removal of hypertrophied adipose tissue is a prerequisite to complete reduction. The reduced volume is maintained through constant use of compression garments postoperatively.

12.36 TREATMENT OF EARLY STAGE PRESSURE ULCERS BY USING AUTOLOGOUS ADIPOSE TISSUE GRAFTS

Tiziano PALLARA, Giovanni Francesco MARANGI, Francesco GIURAZZA, Bruno Beomonte ZOBEL, Paolo PERSICHETTI, Rome, Italy

INTRODUCTION

Detecting pressure ulcers (PUs) in an early stage allow patients to receive adequate treatment and so avoid further worsening of them. At present ultrasound evaluation seems to be the most practical method to achieve this goal. Various treatments are applied to prevent ulcer progression but no one is totally effective. Furthermore, the recognition of adipose tissue regenerative properties has driven new examinations into the potential uses of fat and adipose-derived stem cells in clinical situations. With our prospective study we want to introduce a new method to cure and prevent the worsening of early stage PUs by using autologous adipose tissue grafts.

MATERIAL AND METHODS

The authors selected 13 patients who showed clinical and ultrasonographic evidence of deep tissue injury and stage I sacral and/or ischial PUs. Values of skin thickness, layered structure, fascial integrity, and subcutaneous vascularity were recorded both on the PU area and the healthy trochanteric one, which was considered control region. Average values for each parameter were calculated. Fat grafting was performed on all patients who were followed-up for three months; after which the same evaluation was accomplished.

RESULTS

Data measured before and after treatment were compared. After 3-months follow-up period the stage of PUs improved in all cases compared to the baseline. Clinical findings and the abnormal ultrasonographic signs such as reduction of cutaneous and subcutaneous thickness, uncleared layered structure, discontinuous fascia and decrease of subcutaneous vascularity compared to that of the underlying muscle, had all changed to almost those of the control region. No complications were found.

CONCLUSIONS

This study provides evidence to the clinical observation and ultrasound evaluation that autologous adipose tissue grafting is a really effective treatment in early stages PUs. Furthermore, thanks to its trademarks of being repeatable and mini-invasive, this method could be useful for chronic bedridden patients care.

**12.48 THE PROXIMALLY BASED PERONEUS BREVIS FLAP:
THE “CHEAP” AND FAST ALTERNATIVE FOR ANTE-
RIOR TIBIAL DEFECTS.**

Götz GIESSLER, Andreas SCHMIDT, Murnau, Germany

The peroneus brevis muscle flap is usually known as a distally pedicled flap around the ankle. Most publications center around this use of the flap, whereas the initial description was a proximally based flap attached at his fibular origin. With advanced dissection techniques, the proximally based pedicled peroneus brevis muscle flap isolated on its muscular pedicle is very useful flap for small to mid-sized defects around the middle and lower third of the lower leg with a surprising range.

14 patients with posttraumatic or iatrogenic defects in the distal and middle third of the lower leg were closed with a proximally based muscular peroneus brevis flap. The pearls and pitfalls of advanced dissection of this dually-vascularized muscle and its potential capability to carry a fibular bone segment are described in detail.

All flaps were covered successfully with split skin grafts. 11 flaps healed per primam whereas 3 of 14 flaps had minor tip necrosis up to 1.5 cm, which could be solved with skin grafts and/or flap advancement. All donor sites could be closed primarily without any complications. The peroneus longus could compensate for the functional loss of the brevis in all cases.

The proximally based peroneus brevis flap can either rotated on its osteomuscular origin and based on segmental perforators of the peroneal artery and its proximal supply from the anterior tibial artery as a muscle flap for the distal tibial third. If isolated on its anterior tibial vascular supply, its range can be increased considerably and the muscle can carry a small fibular bone segment into mid-tibial defects. The donor site is relatively inconspicuous. We also consider the flap advantageous to local cutaneous flaps in adipose people.

14.00-15.30 PANEL: FUNCTION AND AESTHETICS IN HEAD AND NECK RECONSTRUCTION

Moderator: Andrej BANIC, Bern, Switzerland

Participants:

Andrej BANIC, Bern, Switzerland

GENERAL REMARKS TO THE FUNCTION AND AESTHETICS IN THE HEAD AND NECK RECONSTRUCTION

David SOUTAR, Glasgow, United Kingdom

FUNCTIONAL RECOVERY FOLLOWING TREATMENT OF HEAD AND NECK CANCER

Milomir NINKOVIC, Munich, Germany

RECONSTRUCTION OF THE LOWER LIP USING INNERVATED FREE MUSCLE FLAP.

Laurent LANTIERI, Mikael HIVELIN, Alexandre MARCHAC, Marc BENJOAR, Philippe GRIMBERT, Paris, France:
HOW TO SET UP A FACE TRANSPLANT PROGRAM.

Hans ANDERL, Innsbruck, Austria:

THIRTY YEARS OF SURVIVAL AFTER TOTAL RECONSTRUCTION OF THE TRACHEA AND MAJOR SURGERY AFTERWARDS

Panel and general discussion

Remarks Manfred FREY, EURAPS Secretary General – Vienna, Austria

16.00-18.00 SCIENTIFIC SESSION, No. 9 BREAST SURGERY

Session Chairpersons:

Fabio SANTANELLI, Rome, Italy

Efterpi DEMIRI, Thessaloniki, Greece

16.00 USEFULNESS OF 3D IMAGING IN PREOPERATIVE PLANNING FOR BREAST RECONSTRUCTION WITH IMPLANTS

Pawel SZYCHTA, Cameron RAINE, Jan RYKALA, Ken STEWART, Lodz, Poland

INTRODUCTION

The presently used method of implant selection for two-stage breast reconstruction evaluates three-dimensional shape of the breast with linear parameters (width, height and projection). Therefore, the most appropriate implant is not always chosen from the wide range of available sizes and shapes. The aim was to verify the repeatability of anthropometric parameters obtained with the innovative 3D imaging device in comparison to other methods, as well as to investigate the accuracy of 3D scanner in the breast implant selection for unilateral breast reconstruction.

MATERIAL AND METHODS

In 50 patients (32 from Poland, 18 from the UK) the linear and volumetric measurements of the reconstructed and healthy breasts were taken with caliper, thermoplastic casting and with 3D imaging, the last utilized with the original algorithm Anthroposcan3D. Reliability of three methods was studied by the comparative analysis of the reproducibility of results (technical error measurement, TEM). The accuracy of the three methods was assessed by comparing the volumetric measurements of the reconstructed breast with the actual volume of the prosthesis (AVP). Accuracy of Anthroposcan3D method was examined by comparing AVP with the innovative parameter, "estimated volume of prosthesis" (EVP). Similarly, for the caliper method, AVP was compared with "anthropometrically estimated volume of the prosthesis" (aEVP).

RESULTS

Reproducibility of results was higher in the Anthroposcan3D method than caliper and thermoplastic cast (for linear measurements: TEM=2.28mm, R=0.99, TEM=6.24mm, R=0.98, no data, respectively, $p<0.0001$; for volume: TEM=5.06mm, R=0.99, TEM=48.96mm, R=0.88; TEM=19.74mm, R=0.97, respectively, $p<0.0001$). Accuracy of AVP with volumetric measurements was different for caliper, thermoplastic cast and Anthroposcan3D methods (TEM=106.8mm, R=0.25, $p<0.05$; TEM=64.51mm, R=0.78, $p>0.05$, TEM=136.4 mm, R=0.30, $p<0.0001$, respectively; comparison of all methods: $p<0.0001$). Accuracy of AVP with aEVP was: TEM=118.5mm, R=0.27, $p<0.001$. The highest accuracy was obtained for EVP (TEM=14.28mm, R=0.98, $p>0.05$).

CONCLUSIONS

3D scanning is a reliable method for the measurements of the breast shape. Anthroposcan3D determines the symmetrical prosthesis for breast reconstruction.

16.12 LOCAL HEAT PRECONDITIONING IN SKIN SPARING MASTECTOMY

Saahil MEHTA, Yves HARDER, Jian FARHADI, London, United Kingdom

INTRODUCTION & PURPOSE

Experimental data has shown a significant reduction of flap necrosis after supra-physiological local, heat application resulting in the up-regulation of heat-shock proteins (e.g. HSP-32 & 70), which maintain capillary perfusion and increase tissue tolerance to ischemia.

In this translational study we evaluated the effect of local heat pre-conditioning before skin-sparing mastectomy and immediate breast reconstruction.

METHODS

45 consecutive patients at risk of skin flap necrosis (BMI>30, sternal-to-nipple distance>26cm or breast size>C-cup) were included. Twenty patients heat-preconditioned their breast 24hrs prior to surgery using a hot water bottle (water temperature 43° C - thermometers provided), in three 30-minute cycles interrupted by spontaneous cooling to room temperature. Skin flap necrosis was defined by the need for surgical debridement.

RESULTS

No complications occurred following local heat application. 36% of women (n=25) without local heat-treatment experienced skin-flap necrosis, compared to 10% in the treatment group, (n=20; p=0.0791 (95% CI 0.03703 to 1.054)). Reconstructions: non-heated/heated; DIEP: 15/11; SGAP: 2/1; TMG: 0/1; TRAM: 4/2; implant: 4/2; expander: 0/3). Average inpatient stay for treatment group was 4 days, for controls 8.3 days.

CONCLUSIONS

In selected cases, local heat-preconditioning could be a simple, non-invasive, and cost-effective method of reducing skin-flap necrosis following skin-sparing mastectomy. Further it prevents from increased hospital attendance allowing faster progression to adjuvant therapy.

16.24 THE ONCOLOGICAL OUTCOME AND IMMEDIATE SURGICAL COMPLICATIONS OF LIPOFILLING IN BREAST CANCER PATIENTS: A MULTICENTER STUDY – MILAN-PARIS-LYON EXPERIENCE OF 646 LIPOFILLING PROCEDURES

Francesca DE LORENZI, Visnu LOHSIRIWAT, Jean Yves PETIT, Krishna CLOUGH, Emanuele DELAY, Milan, Italy

BACKGROUND

Lipofilling is now performed to improve the breast contour, after both breast-conserving surgery and breast reconstruction. However, injection of fat into a previous tumor site may create a new environment for cancer and adjacent cells. There is also no international agreement regarding lipofilling after breast cancer treatment.

METHODS

The authors included three institutions specializing in both breast cancer treatment and breast reconstruction (European Institute of Oncology, Milan, Italy; Paris Breast Center, Paris, France; and Leon Berard Centre, Lyon, France) for a multicenter study. A collective chart review of all lipofilling procedures after breast cancer treatment was performed.

RESULTS

From 2000 to 2010, the authors reviewed 646 lipofilling procedures from 513 patients. There were 370 mastectomy patients and 143 breast-conserving surgery patients. There were 405 patients (78.9 percent) with invasive carcinoma and 108 (21.1 percent) with carcinoma in situ. The average interval between oncologic surgical interventions and lipofilling was 39.7 months. Average follow-up after lipofilling was 19.2 months. The authors observed a complication rate of 2.8 percent (liponecrosis, 2.0 percent). Twelve radiologic images appeared after lipofilling in 119 breast-conserving surgery cases (10.1 percent). The overall oncologic event rate was 5.6 percent (3.6 percent per year). The locoregional event rate was 2.4 percent (1.5 percent per year).

CONCLUSIONS

Lipofilling after breast cancer treatment leads to a low complication rate and does not affect radiologic follow-up after breast-conserving surgery. A prospective clinical registry including high-volume multicenter data with a long follow-up is warranted to demonstrate the oncologic safety. Until then, lipofilling should be performed in experienced hands, and a cautious oncologic follow-up protocol is advised.

(Reference: The oncologic outcome and immediate surgical complications of lipofilling in breast cancer patients: a multicenter study--Milan-Paris-Lyon experience of 646 lipofilling procedures. Petit JY, et al. *Plast Reconstr Surg.* 2011 Aug;128(2): 341-6.)

16.32 LIMITED USE OF ADM DIRECTLY CORRELATES WITH DECREASED RATE OF INFECTIOUS COMPLICATIONS IN IMMEDIATE IMPLANT BASED BREAST RECONSTRUCTION: A SINGLE INSTITUTIONAL EXPERIENCE

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

INTRODUCTION

A recent institutional retrospective review of immediate implant based breast reconstructions revealed increases in all major postoperative complications associated with the use of Acellular dermal matrix (ADM). As a result of this investigation, strict indications for the use of ADM were instituted: need for additional soft tissue coverage and immediate permanent implant reconstruction. This study assessed the effects of these guidelines.

METHODS

264 consecutive immediate implant based breast reconstructions at a single institution over a 1-year period were prospectively gathered. The reconstructions were divided into two cohorts: reconstruction with ADM and reconstruction without ADM. Demographic information, breast size, methylene blue, lymph node dissection, breast cancer stage, use of chemotherapy and radiation, history of breast surgery, surface area of ADM, and complications were analyzed and compared. This data was then compared to our previously reported retrospective review of 747 consecutive immediate implant based breast reconstructions.

RESULTS

The use of ADM significantly decreased from 74.7% to 29.6%. The ADM and non-ADM cohorts had similar baseline characteristics. Infectious complications were significantly decreased including overall infection, major infection, and explantation (11.1% to 7.1%, 7.0 to 3.1%, 6.4% to 2.3% ($p < 0.05$)). Mastectomy skin flap necrosis was stable at 8.5% and 9.9% ($p = .255$). However, reconstructions with ADM continued to have higher rates of mastectomy skin flap necrosis (12.8% versus 8.1% $p < 0.05$), major infection 8.9% versus 0.5% $p < 0.05$), and explantation (6.4% versus 0.5% $p < 0.05$) when compared to those without ADM.

CONCLUSION

Placing limitations on the use of ADM in immediate implant based breast reconstruction resulted in decreased major postoperative infectious complications. ADM, however, continued to render an increased risk of major complications compared to reconstructions without ADM. This may be attributable to the fact that ADM is used in more demanding cases. We advise using ADM in select cases with clear indications.

16.44 TISSUE EXPANDERS SECURED WITH SUTURE TABS REQUIRE FEWER REVISIONS THAN TRADITIONAL TISSUE EXPANDERS FOR BREAST RECONSTRUCTION

Mark VILLA, Patrick GARVEY, Joseph KRILL, Timothy KRILL, Jun LIU, Steven KRONOWITZ, Houston-Texas, USA

INTRODUCTION

Tissue expanders secured to the chest wall with suture tabs (TTE) for breast reconstruction have theoretical advantages over traditional, non-tabbed tissue expanders (NTE). Few studies have demonstrated such advantages. We hypothesized that breast reconstructions with TTEs would experience similar complications and lower surgical revision rates than traditional NTEs.

METHODS

We included all consecutive first-stage TTE breast reconstruction patients at our institution between July 2008 and July 2011. Primary outcome measures included the number of complications and capsular revisions at TE/implant exchange. We compared outcomes to a control group of patients who underwent breast reconstruction with NTEs matched for age, disease stage, mastectomy type, and co-morbidities.

RESULTS

The study included 502 breast reconstructions in 336 patients (268 TTEs vs. 232 NTEs). Average follow-up was 12.4 ± 12.7 months. Patient characteristics in the two groups were similar. Both groups' intraoperative fill volumes were similar ($p=0.31$). The TTE group underwent more unilateral reconstructions ($p=0.03$), placement of bio-prosthetic mesh ($p<0.01$), and had higher final fill volume ($p=0.002$) and implant size ($p=0.04$). Surgeons employed more serratus muscle/fascia flaps in the NTE group ($p<0.01$).

The TTE and NTE groups had similar rates of overall (30.9% vs. 30.4%; $p=0.92$) and specific complications. Overall revision rates were similar in the TTE and NTE groups (30.6% vs. 28.0%; $p=0.63$); however, univariate analysis demonstrated TTEs secured with non-absorbable sutures required significantly fewer revisions (16.9%) than TTEs secured with absorbable sutures (43.1%; $p=0.004$). There was a trend towards TTEs secured with non-absorbable sutures also requiring fewer revisions than traditional NTEs (28.0%; $p=0.07$).

CONCLUSION

Although complication rates appear to be similar for both TTE and NTE breast reconstructions, TTEs secured with permanent sutures require fewer revisions than breast reconstructions with NTEs or TTEs secured with absorbable sutures. We recommend that surgeons consider TTEs with permanent sutures for breast reconstruction.

16.56 EFFICACY OF DOUBLE MIRRORED OMEGA PATTERN FOR SKIN SPARING MASTECTOMY TO REDUCE ISCHEMIC COMPLICATIONS IN THE MASTECTOMY SKIN FLAPS OF SMOKER PATIENTS

Fabio SANTANELLI, Benedetto LONGO, Rossana LAPORTA, Marco PAGNONI, Michael SOROTOS, Rome, Italy

INTRODUCTION

Excellent cosmetic results from skin-sparing mastectomy (SSM) are often impaired by skin flaps' necrosis (SFN), from 8 to 25% or worse in smokers. Macromastia patients benefit from vertical or key-hole skin reduction pattern, being the latter not indicated in smokers. We prospectively investigated efficacy of Double-Mirrored Omega Pattern (DMOP-SSM) compared to Wise Pattern SSM (WP-SSM) in immediate reconstruction of moderate/large-breasted smokers.

MATERIAL AND METHODS

From 2008 to 2010, 51 DMOP-SSM were performed on 41 smokers (mean age 49.8y) with moderate/large and ptotic breasts, in combination with immediate breast reconstructions (3 acellular matrix/implant, 39 Latissimus dorsi/implant, 9 DIEP). This active group (AG) was compared to a control group (CG) of 37 smoker-patients (mean age 51.1y) undergone to WP-SSM and immediate breast reconstructions (20 implant, 9 Latissimus dorsi/implant, 8 DIEP). Mean follow-up 37.6 months. Skin ischemic complications, surgical revisions, wound healing period and patient satisfaction, assessed (minimum follow-up 6-months) by a questionnaire on five categories (breast size, shape, symmetry, texture, and scars appearance) each with five Likert subscales (from 1 poor to 5 excellent), were analysed. Descriptive statistics were reported and comparisons of performance endpoints (outcome variables) between groups performed using Fisher's exact test and Mann-Whitney U test. A p-value <0.05 was considered significant.

RESULTS

Patients' mean age in AG and CG were not statistically different (p=0.316). Differences of ischemic complications, 11.7% DMO-SSMs and 32.4% WP-SSMs (p=0.017) and revision rates, respectively 5.8% and 24.3% (p=0.012) were significant, but not mean healing time, 16.8 and 18.4days (p=0.205). Mean patients' satisfaction was respectively 18.9 and 21.1, confirming difference significant (p=0.022).

CONCLUSIONS

Although tabagism in moderate/large breasted patients can severely impair outcomes of breast reconstruction, the DMOP-SSM approach compared to WP-SSM, allows smokers to benefit from SSM but with statistically significant reduced skin flaps ischemic complications, revision surgery and better cosmetic outcomes.

17.16 AUTOLOGOUS FAT TRANSFER FOR BREAST AUGMENTATION: A MAGNETIC RESONANCE IMAGING STUDY TO QUANTIFY LONG-TERM VOLUME MAINTANCE

Eugenia KYRIOPOULOS, Carl VAN WAES, Filip STILLAERT, Natalie ROCHE, Geert VILLEIRS, Phillip BLONDEEL, Ghent, Belgium

INTRODUCTION/PURPOSE

Breast augmentation with autologous fat grafting is gaining more acceptance, despite the lack of established standards and reported results on long-term efficacy. This study aims to quantify our clinical results with radiographic evaluation, focusing on volume maintenance, symmetry and course of effects.

MATERIAL/METHODS

This prospective study includes 8 patients (16 breasts) treated from April 2008 until April 2011 with 1 session of lipofilling for autologous breast augmentation. The fat was harvested from various sites with low-pressure vacuum assisted liposuction, purified with centrifugation (3000rpm/1min) and injected in the subcutaneous/subglandular planes of the breast. The range of fat grafted was 90 to 340cc, according to the favorable and physiologic interstitial surface-to-volume ratio of graft transplantation to the recipient breasts. All patients underwent pre-operative, 1, 3, 6-month and 1-year post-operative MRI to quantify breast volume. Volumetric data and body weight habitus were subjected to analysis.

RESULTS

Different clinical goals existed in each patient for breast augmentation. Baseline pre-operative volumes were 376cc (range, 180 to 660cc). Breast volume increased at 6 months to an average of 531cc (range, 532 to 797cc) or 41.5%, with a fat graft yield of 51%. At 1 year, the breast volume (479cc) and final fat graft yield (45.7%) had decreased compared to 6-month follow-up. In all patients volume increases were similar, suggesting reliability of the technique in terms of symmetry. There was no correlation between body weight changes and graft resorption. No cases of oil cysts, fat necrosis or masses were identified by MRI.

CONCLUSIONS

This study demonstrates the safety and reproducibility of structural fat grafting for symmetric breast augmentation. However, volume decrease at 1 year indicates the need of further investigations around long-term fat graft survival. Without expansion, the absolute volume of surviving fat is limited and multiple sessions may be required for larger volume increases.

17.36

THE EXPRESSION OF ESTROGEN RECEPTORS IN BREAST IMPLANT CAPSULES CORRELATES WITH THE NUMBER OF MYOFIBROBLASTS AND THE TIME FROM IMPLANTATION.

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INTRODUCTION

Histologically, capsular tissue presents as a three-layered structure, with the middle layer being the most important in the pathogenesis of contracture. Myofibroblasts provide a sustained force to decrease the surface area of the capsule as the collagen matrix remodels and matures, thus stabilizing contracture. Seventeen- β -estradiol increases the contraction of myofibroblasts and the production of fibronectin and Transforming Growth Factor- β which are among the main stimuli inducing myofibroblast differentiation. Moreover, pregnancy has been proved to be a risk factor for capsular contracture. The aim of the study was to investigate the expression of Estrogen Receptors α and β in capsular tissue.

MATERIAL AND METHODS

The study enrolled 16 women (17 capsules) who underwent expander or implant removal after breast reconstructive surgery. Patients were divided into: group 1, corresponding to Baker's grades 1 and 2, and group 2, corresponding to Baker's grades 3 and 4. Specimens were stained with Hematoxylin/Eosin, Masson trichrome, immunohistochemistry and immunofluorescence for Estrogen Receptor- α (ER- α), Estrogen Receptor- β (ER- β) and α -Smooth Muscle Actin (α -SMA). Mechanical tests were performed.

RESULTS

Myofibroblasts may express both receptor subtypes. The number of myofibroblasts in the middle layer correlated negatively with the number of ER- β positive cells ($P < 0,01$) and with time from implantation ($P < 0,05$); it correlated positively with the ratio ER- α positive cells/ER- β positive cells ($P < 0,01$). The number of ER- β positive cells in the middle layer correlated positively with time from implantation ($P < 0,05$). Uniaxial tensile tests showed higher values of Young's modulus in severely contracted capsules, although not statistically significant. No correlation was found with contracture severity.

CONCLUSION

ER- α expression is more associated to myofibroblast phenotype, while ER- β expression to non-contractile fibroblasts. ER- β expression is time-related and associated to the time-dependent regression of myofibroblast phenotype. This study provides evidences to the role of estrogen receptors in the pathogenesis of capsular contracture.

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