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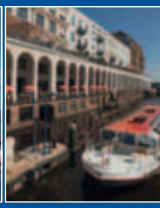
3rd European Plastic Surgery Research Council

August 25–28, 2011
Hamburg/Germany





PROGRAM

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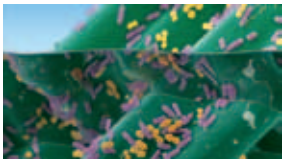

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Date
August 25–28, 2011

Venue
MS Cap San Diego*
Luke 3
Überseebrücke
20459 Hamburg/Germany

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ANNOUNCEMENT
4th European Plastic Surgery Research Council
MS Cap San Diego
August 23–26, 2012 • Hamburg/Germany

Mark your calendar!

Conference Organization
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* Please find detailed information concerning arrival on page 25.

Welcome Note President of the EPSRC

Welcome Shipmates,

It seems it was just yesterday that the European Plastic Surgery Research Council (EPSRC) was founded. Since its 2009 establishment, EPSRC looks back on two tremendously successful Annual Meetings thanks to compelling support from Europe, North America and Asia. The continuously rising number of members contributes as well to our success.

I am happy to announce the 3rd Annual Meeting to take place once again on the MS Cap San Diego in Hamburg, Germany. As a platform for surgeons, researchers and scientists, it offers an excellent opportunity for discussion of clinical research and future challenges in basic science in an atmosphere that is informal and friendly. Meant to provide a valuable means of disseminating information and ideas through uncommon means of communication, the EPSRC meeting provides high quality interaction on evidence-based studies and translational research in all technical disciplines of plastic and reconstructive surgery and related fields. Characteristic of the EPSRC meeting is the opportunity to network with scientists from around the world, to make new friends in addition to discussing unpublished research from leaders in the field.

Attending the conference is distinguished faculty from the American Plastic Surgery Research Council (PSRC), the American Society of Plastic Surgeons (ASPS), American Association of Plastic Surgeons (AAPS) and the European Association of Plastic Surgeons (EURAPS). Last year Ardeshir Bayat from the University of Manchester was elected chairman of this year's meeting. As president of the EPSRC, I do not want to miss out on thanking Ardy for his commitment and strong efforts to organize the scientific program with the highest quality and for supporting the aims of EPSRC.

This year's meeting will kick off on Thursday, August 25, 2011 with a welcome reception on the "Achterdeck" of the MS Cap San Diego. The scientific meeting will formally begin on Friday, August 26, 2011 with a brief local program. There will be no concurrent sessions at any stage of this meeting. Short oral presentations will be presented in the evenings of August 26th and 27th; allowing the presenter the opportunity to discuss his work in a casual atmosphere.

Over 60 different departments from more than 50 cities worldwide will contribute to the exchange of information and material. 14 keynote lectures, a sarcoma panel and 13 scientific sessions should broaden your expertise. Important to the continuous development of EPSRC are those who have assisted me every step of the way: Sammy Al-Benna, Hans-Ulrich Steinau and Isabelle Lärz together with her team from Conventus. Last but not least, I want to thank our sponsors and exhibitors who also contribute to the success of this meeting and enable us to meet for the 3rd time on board the MS Cap San Diego.

Hamburg, Germany's 'gateway to the world', is a city that never sleeps. It and the MS Cap San Diego encompass the atmosphere of the EPSRC Annual Meeting perfectly. We hope there will be an intensive exchange and many fruitful conversations.

I am looking forward to an exceptional meeting and enjoyable stay onboard the MS Cap San Diego.

All board!

Lars Steinstraesser, MD
President EPSRC

Welcome Note Chair of the EPSRC

Dear Colleagues,

Founded as a non-profit organization in the interests of the academic European plastic and reconstructive surgery community in 2009, the *European Plastic Surgery Research Council* has been privileged by the *Plastic and Reconstructive Surgery journal* and its editor Rod Rohrich who will, as previously, publish the presented abstracts of this year's EPSRC 2011 meeting as a supplement. The abstracts will then become available not only for our members but for all readers of the white journal.

The program committee has worked diligently to arrange a broad spectrum of innovative and cutting edge research topics for presentation at this year's meeting. Additionally, once again this year, the EPSRC meeting promises a novel and enthusiastic marriage of both basic science and clinical research. The EPSRC has already succeeded in disseminating results and progress from many excellent plastic surgery research groups from all over Europe across the European arena. This work has been supported by representative group leaders and research team members from North America, South America as well as Asia. The increasing support for the EPSRC has allowed it to become a widely recognised and respected European forum for plastic and reconstructive surgery research in Europe. The enthusiasm from many members of the American Plastic Surgery Research Council, the American Society of Plastic Surgeons and EURAPS contributes to this success and we are especially grateful for this. Equally important are contributions from our keynote speakers who are well known leaders in their fields, some of whom will be coming for the first time and some will be returning to the 3rd Annual EPSRC meeting on their own personal expense.

The expansion of membership and the encouragement of young researchers to join and share their research projects at EPSRC with leaders in our field have been the main goals of my chairmanship during this past year. During which time, the EPSRC has been able to encourage both a pan-European and international perspective on emerging plastic surgery research through the organization of carefully selected scientific sessions. The EPSRC organization supports the presentation and discussion of breakthrough scientific findings and progress where young researchers and senior group leaders are able to exchange ideas within an amicable, friendly and open atmosphere. This unique environment is essential for engaging and harnessing the enthusiasm of young plastic surgery researchers who will be tomorrow's leaders of our specialty. The scope for topics of in depth discussions can range from exploration of the role of stem cells in wound healing to development of novel strategies and techniques in the reconstruction of complex defects caused by ablative cancer surgery, radiotherapy, trauma, burns or aggressive infections – this will, in the end, we hope change clinical practice and improve patient care. For this year's meeting, the EPSRC has organised another panel of leading experts in the field of sarcoma ablation and reconstruction to illustrate current advances and visions with relevance to clinical practice in this arena of evolving clinical research.

Akin to a lighthouse, shining the light for those searching to find their way at sea, the EPSRC provides a focused forum for the dissemination of new research in plastic, reconstructive and aesthetic surgery which aims to guide young academic plastic surgeons in finding their way in the sea of knowledge.

I would like to specially acknowledge the support of Isabelle Lärz, Sammy Al-Benna and especially Lars Steinstraesser for their tireless effort in the organisation and preparation of this year's meeting. For the 3rd Annual EPSRC Meeting, I would expect a great combination of thought-provoking keynote speakers on
a range of emerging topics, our unique sarcoma panel and scientific paper presentations from around the world. I wish everyone a thoroughly enjoyable and stimulating 4 days aboard the MS Cap San Diego in Hamburg.

Let's set sail and journey through the ocean of knowledge in our innovative specialty and let us discover new opportunities in research and clinical practice. Let us learn, not only from those who have journeyed before us but also from those pioneers surging ahead. And finally let us meet and make new friends as well as form new pan-European and transatlantic collaborations aboard MS Cap San Diego!

Ardeshir Bayat
Chair, European Plastic Surgery Research Council 2011

Thursday, August 25, 2011

17:00	**Registration**	
19:00	**Welcome Reception** Captain's Salon	

Friday, August 26, 2011

8:15	**Opening Ceremony**	p. 10
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9:05	**Scientific Session 1** Stem cell biology	p. 10
9:35	**Keynote Lecture 2**	p. 10
9:55	Coffee break • Industrial exhibition	
10:25	**Scientific Session 2** Clinical outcome I	p. 10
10:55	**Keynote Lecture 3**	p. 11
11:15	**Scientific Session 3** Reconstruction I	p. 11
11:45	Lunch break • Industrial exhibition	
13:15	**Panel** Soft tissue sarcoma therapy	p. 11

Friday, August 26, 2011

14:15	**Scientific Session 4** Wound healing	p. 12
14:45	**Keynote Lecture 4**	p. 12
15:05	**Scientific Session 5** Hand/tissue engineering	p. 12
15:35	Coffee break • Industrial exhibition	
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16:25	**Scientific Session 6** Ischaemia & angionesis I	p. 13
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20:15	**Social Evening** Luke 3	p. 13

- Registration
- Opening Ceremony
- Scientific Session
- Keynote Lecture
- Electronic Posters
- Panel
- General Assembly
- Highlight Session
- Social Event
- Social Program
- Coffee and Lunch Breaks

Saturday, August 27, 2011

8:00	**Scientific Session 8** Ischaemia & angionesis II	p. 14
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8:50	**Scientific Session 9** Clinical outcome II	p. 14
9:20	**Keynote Lecture 8**	p. 14
9:40	Coffee break • Industrial exhibition	
10:10	**Keynote Lecture 9**	p. 14
10:30	**Scientific Session 10** Head & neck/craniofacial	p. 15
11:00	**Keynote Lecture 10**	p. 15
11:20	**PSRC Highlight Session**	p. 15
11:50	Lunch break • Industrial exhibition	
13:10	**Keynote Lecture 11**	p. 15
13:30	**Scientific Session 11** Regeneration	p. 15

Saturday, August 27, 2011

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15:20	**Keynote Lecture 13**	p. 16
15:40	**Scientific Session 13** Transplantation	p. 16
16:10	**Keynote Lecture 14**	p. 16
16:30	**General Assembly EPSRC**	p. 16
17:00	**Sightseeing Tour**	p. 24
19:00	**Electronic Posters**	p. 19
20:15	**Social Evening** Luke 3	p. 16

Sunday, August 28, 2011

5:30	**Hamburg Fish Market**	p. 24
9:00	**Farewell Brunch** Captain's Salon	

08^{15}–08^{45} **Opening Ceremony**
Ardeshir Bayat (Boat Captain)
Peter Vogt (DGPRÄC President)
Bill Kuzon (AAPS President)
Paul Cederna (PSRC President)
Lars Steinstraesser (EPSRC President)

08^{45}–09^{05} **Keynote Lecture 1**
Stem Cells and Beyond
W. Futrell (Pittsburgh, PA/US)

09^{05}–09^{35} **Scientific Session 1**
Stem cell biology
Chair W. Futrell (Pittsburgh, PA/US), A. Bayat (Manchester/GB), R. Lull (Mallorca/ES)

09^{05}
LOP01* Single cell gene expression analysis identifies a subpopulation of mesenchymal stem cells diminished in diabetic bone marrow and adipose tissue
M. Sorkin, J. Glotzbach, M. Januszyk, J. Chen, V. Wong, K. Rustad
M.T. Longaker, G.C. Gurtner (Stanford, CA/US)

09^{15}
LOP02 Optimizing biomaterials for tissue engineering human bone using mesenchymal stem cells
C. Weinand (Cologne/DE), C. Neville (Boston, MA/US)
E. Weinberg (Cambridge, MA/US), T.Q.V. Phan, P. Theodorou (Cologne/DE)
Y. Tabata (Kyoto/JP), G. Spilker (Cologne/DE, Kyoto/JP)
J.P. Vacanti (Boston, MA/US)

09^{25}
LOP03 In search of the ideal nerve conduit, supplementation of decellularized nerve allografts with stem cells derived from two different sources
R. Kapaj, D. Alhan, M. Nisanci, C. Uysal, A.U. Ural, H. Akgun, S. Isik (Ankara/TR)

09^{35} **Keynote Lecture 2**
Adipose Tissue: Stem Cells and Beyond
R. Llull (Mallorca/ES)

09^{55}–10^{25} Coffee break • Industrial exhibition

10^{25}–10^{55} **Scientific Session 2**
Clinical outcome I
Chair S. Khan (Stony Brook, NY/US), S. D'Arpa (Palermo/IT), J. Selber (Houston, TX/US)

10^{25}
LOP04 Evaluation of clinical outcomes and aesthetic results after autologous fat grafting for contour deformities of the reconstructed breast
C. de Blacam, A.O. Momoh, S. Colakoglu, A.M. Tobias, B.T. Lee (Boston, MA/US)

* LOP – Long oral presentation (7 minutes + 3 minutes discussion)

10[35] LOP05 — Impact of systemic injury on free flap outcomes in trauma patients
J. Kiefer (Heidelberg/DE), S. Hollenbeck, S. Woo, S. Earle
D. Erdmann (Durham, NC/US), L.S. Levin (Philadelphia, PA/US)

10[45] LOP06 — Violation of the rectus complex is not a contraindication to component separation for abdominal wall reconstruction
P. Garvey, C. Bailey, D. Baumann, J. Liu, C. Butler (Houston, TX/US)

10[55] Keynote Lecture 3
Propeller perforator flaps: What do we really know?
A. Georgescu (Cluj-Napoca/RO)

11[15]–11[45] Scientific Session 3
Reconstruction I
Chair: P. Cederna (Ann Arbor, MI/US), M.-H. Cheng (Taipei/TW)
M. Innocenti (Florence/IT)

11[15] LOP07 — Immunological characterization of allogenic and autofetal transplantation of porcine amniotic membrane in a pig model
R.J. Hasler, U. Halfmann, K.-D. Wolff (Munich/DE)
L. Steinstraesser (Bochum/DE), M. Stoeckelhuber, L. Barthel, N. Rohleder
M. Kesting (Munich/DE)

11[25] LOP08 — The effects of ischemia-reperfusion (I/R) injury and epidural/spinal anaesthesia on transvers rectus abdominis musculocutaneous (TRAM) flap: experimental study
Y. Acar, M. Bozkurt, P. Karakol (Diyarbakir/TR), E. Kapi (Sirnak/TR)
U. Firat (Diyarbakir/TR)

11[35] LOP09 — Dynamic reconstruction of the abdominal wall with pedicled innervated flaps from the anterolateral thigh: dynamometric studies of recipient and donor site
J.J. Vranckx, M. Miserez, A. D'Hoore, G. Fabre, M. Vandevoort, L. Nanhekhan
K. Segers, M. Van Brussel (Leuven/BE)

11[45]–13[15] Lunch break • Industrial exhibition

13[15]–14[15] Panel
Soft tissue sarcoma therapy
H.-U. Steinau (Bochum/DE)
E. Tukiainen (Helsinki/FI)
M. Innocenti (Florence/IT)

14^{15}–14^{45} **Scientific Session 4**
Wound healing
Chair A. Bayat (Manchester/GB), D.J. Schaefer (Basel/CH)
L. Steinstraesser (Bochum/DE)

14^{15}
LOP10 Vascularized composite allograft transplantation and mixed hematopoietic chimerism across a full MHC barrier in swine: preliminary results
A.A. Leto Barone, R. Torabi, M.A. Randolph, D.A. Leonard, C. Mallard
A. Albritton, R. Duran-Struuck, A. Matar, R. Crepeau, Y. Tang, J.R. Scalea
Z. Wang, A. Tena, R.J. Hawley, J.M. Kurtz, C.A. Huang, D.H. Sachs
C.L. Cetrulo, Jr. (Boston, MA/US)

14^{25}
LOP11 Collagen degradation of human skin is mediated by TNF-alpha through p38 MAPK signaling and MMP induction
U. Mirastschijski, R. Schnabel (Hannover/DE), M.S. Agren (Copenhagen/DK)

14^{35}
LOP12 Fibroblast aggregate-derived paracrine factors promote cell proliferation and migration in a porcine model of epidermal wound healing
M. Peura (Helsinki/FI), I. Kaartinen (Tampere/FI), S. Suomela (Helsinki/FI)
J. Bizik (Bratislava/SK), A. Harjula, E. Kankuri, J. Vuola (Helsinki/FI)

14^{45} **Keynote Lecture 4**
Hand surgery: basic science
G. Deune (Baltimore, MD/US)

15^{05}–15^{35} **Scientific Session 5**
Hand/tissue engineering
Chair G. Deune (Baltimore, MD/US), M. Neumeister (Springfield, IL/US)
D. Brown (Ann Arbor, MI/US)

15^{05}
LOP13 In vitro assessment of novel collagenase (XIAFLEX®) on Dupuytren's disease fibroblasts displays unique drug related properties
F. Syed, A. Thomas, S. Singh, V. Kolluru (Manchester/GB)
S. Emeigh Hart (Malvern, PA/US), A. Bayat (Manchester/GB)

15^{15}
LOP14 Development of dermal bilayered scaffold with new generation of nanocomposite polymer
R. Chawla (London/GB), N. Moieman (Birmingham/GB), P.E. Butler
A.M. Seifalian (London/GB)

15^{25}
LOP15 Cellular interaction between endothelial progenitor cells and preadipocytes for the purposes of tissue engineering
H. Nienhueser, N. Torio-Padron, G.B. Stark, S. Strassburg (Freiburg/DE)

15^{35}–16^{05} Coffee break • Industrial exhibition

16^{05} **Keynote Lecture 5**
Hand surgery: What's new?
M. Neumeister (Springfield, IL/US)

16^{25}–16^{55} **Scientific Session 6**
Ischaemia & angionesis I
Chair W. Kuzon (Ann Arbor, MI/US), E. Tukiainen (Helsinki/FI), D.J. Schaefer (Basel/CH)

16^{25} LOP16 Atorvastatin alleviated viability of rat ischaemic flap dependent of VEGF mRNA expression
S.-C. Yang, P.-K. Shih (Taichung/TW)

16^{35} LOP17 First implantable device for hypoxia-mediated angiogenic induction
E. Hadjipanayi (Munich/DE), U. Cheema, V. Mudera (London/GB)
D. Deng, W. Liu (Shanghai/CN), R. Brown (London/GB)

16^{45} LOP18 Ischemia reperfusion injury in human free muscle flaps induces a molecular switch in CRP (C-reactive protein) aggravating inflammatory tissue injury: Therapeutical implications for free flap surgery
J.R. Thiele, G. Karaxha, E. v. Dobschütz, O. Sommer, H. Bannasch, G.B. Stark
S.U. Eisenhardt (Freiburg/DE)

16^{55} **Keynote Lecture 6**
Microsurgery: tips and tricks
M.-H. Cheng (Taipei/TW)

17^{15}–17^{45} **Scientific Session 7**
Tissue biology
Chair A. Bayat (Manchester/GB), J. Beier (Erlangen/DE)
P. Cederna (Ann Arbor, MI/US)

17^{15} LOP19 Function of an implantable bioartificial hemofilter is dramatically increased via VEGF- and PDGF-induced small vessel angiogenesis
D.L. Brown, I.F. Lytle (Ann Arbor, MI/US), V. Dhawan (Lexington, KY/US)
K. Tiranathanagul, L. Lou (Ann Arbor, MI/US), G.H. Borschel (Toronto, CA)
W.X. Zhang, E. Tziampazis, D. Buffington, H.D. Humes (Ann Arbor, MI/US)

17^{25} LOP20 Role of the innate immune system in idiopathic inflammatory myopathies
F. Jacobsen, A.-K. Guettsches, C. Theiss, M. Tegenthoff, M. Vorgerd
L. Steinstraesser (Bochum/DE)

17^{35} LOP21 A new collagen conduit for the regeneration of the peripheral nerves using tissue engineering techniques – preliminary results
I. Zegrea, D. Zamfirescu, M. Albu, M. Popescu, I. Lascar (Bucharest/RO)

19^{00} Electronic posters (see page 17)

20^{15} Social evening
Luke 3, MS Cap San Diego

08^{00}–08^{30} **Scientific Session 8**
Ischaemia & angionesis II
Chair R.D. Largo (Basel/CH), B. Hendrickx (Leuven/BE), S. D'Arpa (Palermo/IT)

08^{00} LOP22 Improved regeneration of an ischemic rat flap model after local preconditioning with implantation of non-viral transfected fibroblasts
C. Hartog, A. Slobodianski, A. Kathöfer, J. Frenz (Luebeck/DE)
H.G. Machens (Munich/DE), P. Mailänder (Luebeck/DE)

08^{10} LOP23 Tissue engineering of axially vascularized bone using mesenchymal stem cells and rhBMP-2 in the sheep AV-loop model
J.P. Beier, A.M. Boos, A. Weigand, G. Deschler, U. Kneser, R.E. Horch (Erlangen/DE)

08^{20} LOP24 Microsurgical teaching program after eleven years of experience in Victor Babes University of Medicine and Pharmacy, Timisoara
T. Hoinoiu, L. Jiga, B. Hoinoiu, V. Dornean, A. Nistor, M. Ionac (Timisoara/RO)

08^{30} **Keynote Lecture 7**
Muscle reinnervation: the fantastic voyage
P. Cederna (Ann Arbor, MI/US)

08^{50}–09^{20} **Scientific Session 9**
Clinical outcome II
Chair S. Monstrey (Ghent/BE), S. Al-Benna (Bochum/DE), E. Tukiainen (Helsinki/FI)

08^{50} LOP25 Anesthesia duration as a marker for surgical complications in office-based plastic surgery
B. Phillips, A. Rodman (Stony Brook, NY/US), M. Beasley (Charlotte, NC/US)
S. Khan (Stony Brook, NY/US)

09^{00} LOP26 Novel approach to closed treatment of prominent ear without skin resection (endotoplasty)
O. Pereira, J. Bins-Ely, E. Machado Paulo (Florianópolis, Itajaí, SC/BR)

09^{10} LOP27 Risk factors for cutaneous squamous cell carcinoma metastasis
N. Brougham, R. Cameron, E. Dennett (New Plymouth/NZ), S. Tan (Wellington/NZ)

09^{20} **Keynote Lecture 8**
Peripheral nerve research: limits of regeneration
G. Borschel (Toronto/CA)

09^{40}–10^{10} Coffee break • Industrial exhibition

10^{10} **Keynote Lecture 9**
Facial microsurgery: Quo vadis?
K.-D. Wolff (Munich/DE)

10^{30}–11^{00} **Scientific Session 10**
Head & neck/craniofacial
Chair K.-D. Wolff (Munich/DE), U. Rieger (Innsbruck/AT), R. Reid (Chicago, IL/US)

10^{30} Robotic assisted reconstruction of the Oropharynx
LOP28 J. Selber (Houston, TX/US)

10^{40} The osteogenic characteristics of immortalized calvarial cells
LOP29 D. Shenaq, C. Teven, T.C. He, R. Reid (Chicago, IL/US)

10^{50} Free flap mandible reconstruction after bisphosphonate-related osteonecrosis of the jaw (BRONJ)
LOP30 R.-D. Bader, C. Wolf, G. Raschke, C. Dietze, S. Schultze-Mosgau (Jena/DE)

11^{00} **Keynote Lecture 10**
Crazy perforator flaps
U. Kneser (Erlangen/DE)

11^{20}–11^{50} **PSRC Highlight Session**
P. Cederna (Ann Arbor, MI/US)

11^{50}–13^{10} Lunch break • Industrial exhibition

13^{10} **Keynote Lecture 11**
Application of nanotechnology to nerve regeneration
A. Mosahebi (London/GB)

13^{30}–14^{00} **Scientific Session 11**
Regeneration
Chair A. Bayat (Manchester/GB), A. Mosahebi (London/GB), L. Steinstraesser (Bochum/DE)

13^{30} Role of Ephrin-B4 in wound repair
LOP31 R.L. Tsoukas, M. Becerikli, F. Jacobsen, B.D. Mikhail, M. Schulte, I. Stricker
A. Rittig, H.-U. Steinau, L. Steinstraesser (Bochum/DE)

13^{40} Hypoxia preconditioned ASCs improve flap viability
LOP32 S. Hollenbeck, A. Senghaas, I. Kumatsu, Y. Zhang, J. Yang (Durham, NC/US)
L.S. Levin (Pennsylvania, PA/US), B. Klitzman (Durham, NC/US)

13^{50} Keratinocytes induce extreme sensory neuronal hyperexcitability and chronic pain
LOP33 C. Radtke (Hannover/DE; New Haven, CT/US) J, D. Kocsis
P.M. Vogt (New Haven, CT/US)

14^{00} **Keynote Lecture 12**
Penile reconstruction
S. Monstrey (Ghent/BE)

14^{20}–14^{40} **Scientific Session 12**
Reconstruction II
Chair A. Georgescu (Cluj-Napoca/RO), J. Selber (Houston, TX/US)
S. Khan (Stony Brook, NY/US)

LOP34 has been withdrawn.

14^{20} Local heat preconditioning in skin-sparing mastectomy
LOP35 S. Mehta (London/GB), Y. Harder (Munich/DE), J. Farhadi (London/GB)

14^{30} Evaluation of the use of cyanoacrylate glue in microvascular anastomosis
LOP36 C.G. Neves, J. Sbalchiero, P. Leal (Goiania/BR)

14^{40}–15^{20} Coffee break • Industrial exhibition

15^{20} **Keynote Lecture 13**
Oncology research: Achieving the impossible?
C. Butler (Houston, TX/US)

15^{40}–16^{10} **Scientific Session 13**
Transplantation
Chair K.-D. Wolff (Munich/DE), R. Lull (Barcelona/ES), J.J. Vranckx (Leuven/BE)

15^{40} Expanding the envelope: the PORSH-liver vascular composite allograft
LOP37 J.C. Lee, O. Olaitan, R. Lopez-Soler, M. Miller, P. Witkowski, J. Renz, J.M. Millis
L.J. Gottlieb (Chicago, IL/US)

15^{50} Vascularized bone marrow transplantation induce partial tolerance to hemiface
LOP38 transplantation in rats
D. Zamfirescu (Bucharest/RO), M. Climov (Boston, MA/US) , A. Bulardal
I. Zegrea, M. Popescu, C. Popoviciu, A. Stefanescu , A. Lupu (Bucharest/RO)
M. Simionescu (Milan/IT), M. Lanzetta (Milan/IT; Canberra/AU)
I. Lascar (Bucharest/RO)

16^{00} Learning curve in hemifacial transplantation in rats
LOP39 M. Climov (Boston, MA/US), D. Zamfirescu, A. Stefanescu
B. Maciuceanu-Zarnescu, I. Lascar (Bucharest/RO)

16^{10} **Keynote Lecture 14**
Liposculpture
L. Habbema (Bussum/NL)

16^{30} General assembly EPSRC

17^{00}–18^{30} Sightseeing tour (see page 24)

19^{00} Electronic posters (see page 19)

20^{15} Social evening
Pooldeck, MS Cap San Diego

SOP01* Longterm morphometric analysis of the eyebrow position following endoscopic browlift and transpalpebral brow lift
S. Manegold, N. Iblher, G.B. Stark (Freiburg/DE)

SOP02 Capsular contracture after cosmetic breast augmentation: Do topical antibiotics matter?
S. Giordano (Turku/FI), A. Salmi (Helsiniki/FI)

SOP03 Subjective rating of cosmetic treatment with Botulinum Toxin Type A: Do existing measures demonstrate inter-observer validity?
N. Conkling, B. Phillips, M. Bishawi, D. Bui, S. Khan
A. Dagum (Stony Brook, NY/US)

SOP04 Chronic postoperative pain and sensory changes following reduction mammaplasty
M.L. von Sperling, H. Høimyr, K. Finnerup (Aalborg/DK), T.S. Jensen
N.S.B. Finnerup (Aarhus/DK)

SOP05 Novel method to generate allo-specific regulatory T cells for skin transplantation
T.-A. Curran, R. Jalili, A. Ghahary (Vancouver/CA)

SOP06 Reconstruction of plantar heel defects with plantaris medialis neurovascular island flaps
S. Al-Benna, B. Merwart, N. Spindler, D. Tilkorn, A. Ring, J. Hauser, S. Langer
H.-U. Steinau, L. Steinstraesser (Bochum/DE)

SOP07 Macrostomia: a spectrum of deformity
S. Buonocore, N. Broer, M. Walker, A. Patel (New Haven, CT/US)

SOP08 Mandibular fracture repair: three-year outcomes from a high-risk patient population
C. Carpenter, A. Walters, V. Tsirline, K. Dacey, A. Lincourt
S. Getz (Charlotte, NC/US)

SOP09 Financial viability of outpatient wound care centers in the US
C. Fisahn (Ann Arbor, MI/US; Bochum/DE), L. Steinstraesser (Bochum/DE)
W. Kuzon (Ann Arbor, MI/US)

SOP10 Microsurgery training: students vs. surgeons
A. Borgmann, K.-D. Wolff, F. Hölzle, M. Kesting, T. Mücke (Munich/DE)

SOP11 Reliability of near-infrared angiography evaluating microvascular anastomoses
T. Mücke, K.-D. Wolff, A. Borgmann, A. Fichter, M. Kesting (Munich/DE)

*SOP – Short oral presentation (3 minutes, no discussion)

SOP12 Standardized procedure of harvesting murine adipose-derived stem cells either from visceral or subcutaneous fat or both
J. Kuhbier, C.-T. Peck, P.M. Vogt, B. Menger, C. Radtke, M. Lochner
K. Reimers, C. Klemann (Hannover/DE)

SOP13 Functional anconeus free flap for thenar reconstruction: a cadaveric study
Z.Y. Ng, J. Mitchell (Glasgow/GB), J. Chang (Tuledo, OH/US), Q. Fogg
A. Hart (Glasgow/GB)

SOP14 Radiological outcomes of distal radius extra-articular fragility fractures treated with extra-focal kirschner wires
N. Bandorf (Tullamore/IE), C. Kennedy (Galway/IE), M. Kennedy (Tullamore/IE)
A. Devitt (Galway/IE)

SOP15 Mesenchymal stem cells in dupuytren's disease
C. Manning, S.A. Iqbal, F. Syed, V. Kolluru, M. Hayton, S. Watson
A. Bayat (Manchester/GB)

SOP16 Staircase technique: a valuable approach to reconstruction of the lower lip
F. Lembo, M.G. Colucci, D. Parisi, A. Porincasa (Foggia/IT)

SOP17 Significance of double venous anastomoses in secondary maxillofacial reconstructions with the radial forearm free flap
N. Rohleder, K.-D. Wolff, A. Kolk (Munich/DE), L. Steinstraesser (Bochum/DE)
M. Stoeckelhuber, R. Hasler, M. Kesting (Munich/DE)

SOP18 Soft tissue sarcoma: the north of Scotland experience
A. Wilson (London/GB)

SOP19 Fat grafting in face lift (integral procedure for facial rejuvenation)
E. Sabri, A. Paraskevas (Paris/FR)

SOP20 Neuroregeneration of the spinal cord in rats following local thoracic lesion demonstrated by retrograde tracing
T. von Wild (Luebeck/DE), C. Catoi, D. Muresanu (Cluj-Napoca/RO)
P. Trillenberg, M. Heidbreder (Luebeck/DE), G. Brunelli (Brescia/IT)
K. von Wild (Muenster/DE), F. Siemers, P. Mailänder (Luebeck/DE)

SOP21 Three-dimensional evaluation of oxygen gradients and distribution of hypoxia in an axially vascularized bioartificial construct in vivo
O. Bleiziffer, Q. Yuan, H. Seuss, M. Wiesener, A. Arkudas, J.P. Beier, R.E. Horch
U. Kneser (Erlangen/DE)

SOP22 Cell quality and composition dependency on donor parameters and surgical harvesting technique in autologous fat grafting
R.D. Largo, S. Gueven, A. Kämpfen, M. Haug, A. Scherberich
D.J. Schaefer (Basel/CH)

SOP23 Multifocal necrotising fasciitis: tentative steps towards a unique management pathway
U. El-khani, J. Nehme (Portsmouth/GB), A. Darwish (Manchester/GB)

SOP24 Impact of continuous controlled temperature application on microcirculatory parameters in free tissue transfer
S. Lorenz, U. Dornseifer, S. Stergioula, M. Ninkovic (Munich/DE)

SOP25 has been withdrawn.

SOP26 Signaling of human beta-defensin-3 on the human skin
S. Pfaffe, B.D. Mikhail, F. Jacobsen, M. Schulte, A.-K. Guettsches, A. Rittig
H.-U. Steinau, L. Steinstraesser (Bochum/DE)

SOP27 Medicinal leech therapy in reconstructive surgery
R. Schmelzle, P. Pohlenz, J. Klatt (Hamburg/DE), D. Koeppen (Biebertal/DE)

SOP28 Tailoring the sequence and duration of conventional immunosuppressive drugs and its effects on tolerance and immunoregulatory mechanism
M. Weinstock (São Paulo/BR; Pittsburgh, PA/US), W. Zhang, Y. Wang
R. Jindal (Pittsburgh, PA/US), R. Sucher (Pittsburgh, PA/US; Innsbruck/AT)
M. Solari, D. Zhang (Pittsburgh, PA/US), L. Ferreira (São Paulo/BR)
V. Gorantla, G. Brandacher, W.A. Lee, X.X. Zheng (Pittsburgh, PA/US)

SOP29 Complex total reconstruction of the nose following severe neonatal burn of the face
V. Jurk, H. Bannasch, N. Iblher, G.B. Stark (Freiburg/DE)

SOP30 Reverse tissue expansion: a new rung on the reconstructive ladder
I. Teo, S. Cairns, A. Stephenson (Sheffield/GB)

SOP31 Investigation of dermis derived hydrogels for wound healing applications
H. Engel (Ludwigshafen/DE), S. Uriel, B. Jiang, J. Larson (Chicago, IL/US)
J.-J. Huang, B. Yang, C.-Y. Yang, S.-W. Kao (Taipei/TW), E. Brey (Chicago, IL/US)
M.-H. Cheng (Taipei/TW)

SOP32 Non-invasive imaging and DNA microarray of acute and chronic wounds in a sequential biopsy model
K.T. Tan, M.J. Sultan, K. Johal, B. Shih, I. Chaudhry, M. Baguneid
A. Bayat (Manchester/GB)

SOP33 Immunmodulating activity of host defense peptides in infected porcine wounds
B.D. Mikhail, U. Kraneburg, F. Jacobsen, A. Rittig, L. Steinstraesser (Bochum/DE)

SOP34 Prediction of resection weights for reduction mammaplasty
T. Shafiei Tabar, S. Allert (Hameln/DE)

SOP35 Breast augmentation with implants following previous enhancement with Macrolanetm filler injections
W. Bhat, S. Akhtar, A. Akali (Oxford/GB)

SOP36 Post-operative analgesia following minor surgical excision of cutaneous lesions: How much is necessary?
S. Ray (Northampton/GB), K. Rao, I. Teo (Sheffield/GB)

SOP37 STT Fusion: indication; learning curve, functional results
D. Tilkorn, J. Hauser, S. Fiala, A. Schaffran, A. Ring (Bochum/DE)
M. Lehnhardt (Ludwigshafen/DE), H.-U. Steinau (Bochum/DE)

SOP38 Management of keratoacanthoma and squamous cell carcinoma: Early excision versus watch and wait?
N. Breitenfeldt, C. Defty, D. Jordan, B. Booth, S.K. Dhital
A.M. Juma (Chester, Cheshire/GB)

SOP39 A new design for in-vivo-tissue engineering of musculoskeletal tissue using the inferior epigastric artery as central anastomosable vessel of a 3-dimensional construct
S.E. Dunda, T. Schriever, C. Rosen, S. Diamantouros, S. Jockenhövel
N. Pallua (Aachen/DE)

SOP40 Deepithelialized flap closure: a novel approach to complex ventral hernia repair
D. Hoang, N. Abitbol, N. Broer, M. Walker, D. Narayan (New Haven, CT/US)

SOP41 A novel strategy for reconstruction of the musculotendinous junction
B. Hendrickx (Leuven/BE; East Grinstead/GB), T. Teo (East Grinstead/GB)

SOP42 Do the new UK 2010 guidelines regarding computered tomography in stage IIb and IIc melanoma patients concur with regional findings: a six year study
G. Orfaniotis, J. Mennie, N. Fairbairn, M. Butterworth (Livingston/GB)

The missions of the EPSRC Lighthouse Endowment Fund are the delivery of high-quality patient care through the contribution to innovations in medicine through basic and translational research and clinical outcome studies, and the education of medical students, postgraduate trainees, residents and consultants to insure an adequate supply of academic plastic surgeons for the future.

This Society is a non-profit organization managed by and for the benefit of the young plastic, reconstructive and aesthetic surgery research community. The annual EPSRC meeting will offer an exciting opportunity for young plastic surgery researchers to discuss their latest work and future challenges in a uniquely informal, interactive format for basic science and clinical outcome research. The EPSRC meeting will provide a valuable means of disseminating information and ideas in a way that cannot be achieved through the usual channels of communication - publications and presentations at large scientific meetings.

This year we are starting off with securing the financial stability of the European Plastic Surgery Research Council with the help of the EPSRC Lighthouse Endowment Fund. EPSRC Lighthouse Fund Donors have committed themselves to the ongoing support of your new generation of Plastic Surgeon Scientists in Europe.

The Executive Board of the EPSRC hereby asks professionals, industrial partners and patients for financial support of this research organization to translate innovation from the bench to the bedside for the patients' benefit.
EPSRC is very grateful to the EPSRC Lighthouse Fund Donors for their active support to keep this research endeavor going.

Level of Contribution

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EPSRC Lighthouse Patron	5.000 EUR+

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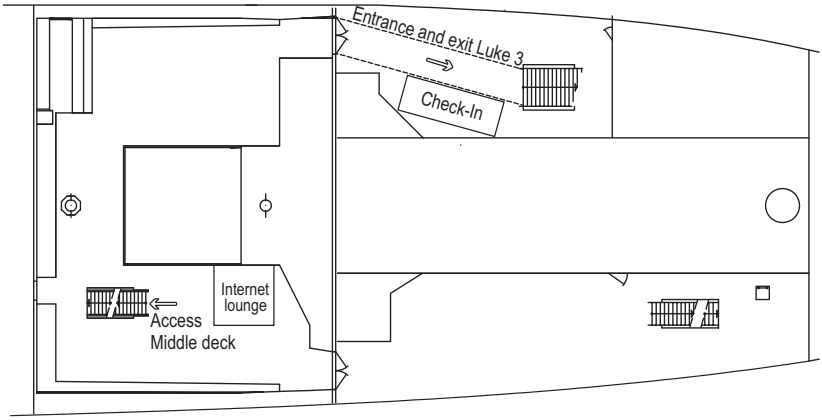
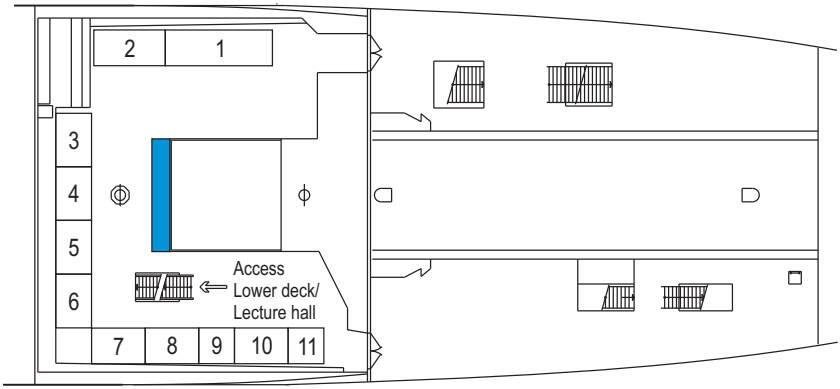
MS Cap San Diego • Upper deck



MS Cap San Diego • Middle deck

Catering



Sightseeing Tour

Explore the city of Hamburg during a ride on a double decker bus. Hop on and get to know the fascinating Free and Hanseatic City of Hamburg. The route takes in Hamburg's most famous sights: Landungsbrücken, Office Building Quarter, Blue Mosque, St. George district, and main shopping mile... and much more.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Date Saturday, August 27, 2011
Time 17^{00}–18^{30}
Boarding will be arranged at the "Überseebrücke" close to the MS Cap San Diego.
Fee included

Insider Tip
Hamburg Fish Market

Hamburg's traditional open-air market on Sunday mornings is an absolute must for every visitor! Every Sunday morning customers come from near and far to bargain with vendors praising wares of virtually every type at Hamburg's oldest, most traditional open-air market, dating back to 1703.
Let's enjoy the spontaneous amusement on the street. You can watch the fishermen trade their catch while listening to music and chilling in the sunrise. Any world-weariness will soon be forgotten.


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Date Sunday, August 28, 2011
Time 05^{30}–09^{00}
Venue St. Pauli Fish Market/Große Elbstraße

Please note this is not an official program event. Those interested should ask at the check-in desk.

Venue
MS Cap San Diego
Luke 3
Überseebrücke
20459 Hamburg, Germany

Date
August 25–28, 2011

Homepage
For latest information please visit www.epsrc.eu.

Arrival
By public transport
From central station to the MS Cap San Diego

Line	Direction	Destination	Time intervals	Travel time
U3	Schlump – Barmbek	Baumwall	at 5-minute intervals	10 min
S1	Wedel	Landungsbrücken	at 10-minute intervals	6 min
S3	Pinneberg	Landungsbrücken	at 10-minute intervals	7 min

From Hamburg airport to MS Cap San Diego
Take line S1 to station Ohlsdorf → change to line U1 (direction Farmsen) → exit at station Kellinghusenstraße → change to line U3 (direction Hauptbahnhof Süd - Barmbek/Wandsbek-Gartenstadt) → exit at station Baumwall

By car
Navigation details: Vorsetzen • 20459 Hamburg

Please see page 28 for the exact location of the meeting venue (MS Cap San Diego is highlighted in red)!

Education Credits and Certification
The 3rd meeting of the European Plastic Surgery Research Council has been acknowledged for CME points at the Medical Chamber of Hamburg. Accreditation is valid for German participants only:

Friday, August 26, 2011	8 CME points
Saturday, August 27, 2011	8 CME points

Please don't forget to bring along the labels of the Medical Chamber for every-day registration into the lists of participation.

Attendance List
Please remember to sign the attendance lists daily which are displayed at the check-in (if necessary with barcode).

Certification of Attendance
Certificates of attendance for the registered participants will be available at the check-in.

Prizes and Bursaries

Lecture prize	500 EUR
Poster prize	250 EUR

The prizes are sponsored by MEDA Pharma.

Name Tags

Participants and registered accompanying guests will receive a name tag with their registration. Admission to the meeting and exhibition area is only allowed with a valid tag. Tags must be worn visibly during the congress and at the social activities. Exhibitors' tags will be provided for the staff of the exhibition booths.

Evaluation

We appreciate your active participation by giving your feedback in our evaluation. Please hand in your completed evaluation at the check-in on your last congress day.

Check-In

You will find the check-in on the upper deck, entrance Luke 3.

Cloakroom

You will find the cloakroom on the upper deck, entrance Luke 3.

Media Check-In

You will find the media check-in on the lower deck in the lecture hall.

Opening Hours	Thursday	Friday	Saturday
Check-In	17^{00}–19^{00}	07^{30}–20^{00}	07^{30}–20^{00}
Media Check-In	18^{00}–19^{00}	07^{30}–20^{00}	07^{30}–20^{00}
Cloakroom		07^{30}–20^{00}	07^{30}–20^{00}
Industrial exhibition		08^{00}–18^{00}	08^{00}–18^{00}

Internet

An internet pool situated on the upper deck with free access is provided for all participants.

Language

Official meeting language is English.

Abstract Publication

Abstracts of the long oral presentations (LOP01–39) have been published in the August issue of "Plastic and Reconstructive Surgery" (PRS Vol. #128, Issue #2, August 2011).

Industrial Exhibition

As part of the conference, an industrial exhibition will take place on the premises. Please find an overview and a map of all exhibitors on pages 22-23 in the program. The exhibiting companies are looking forward to welcoming you!

Smoking

Smoking is not allowed inside the congress venue or at other venues for the social functions. Smokers are required to smoke outdoors and in the designated smoking areas.

Information for Oral Lectures

Media Check-In

Speakers are asked to submit their lectures at the media check-in. Please prepare your lectures either in PowerPoint format or as a PDF file. If you have special requirements (e.g. animations) please contact the media check-in counter in advance. Presentations should be well readable. The usage of Macintosh and Open-Office formats as well as the usage of your own laptop are not intended but might be possible if communicated in advance. In this case please write us at epsrc2011@conventus.de by August 19, 2011.
Video or audio data will only be accepted in the following formats: avi, wmv, and mpg which have to be provided separately. If your presentation includes a video, please ensure that it encloses the right CODEC in order to be played correctly.

Please make sure to submit your media in time (at least two hours before your lecture) at the media check-in (Please follow the signage on site!).

Note: When using an USB stick as storage medium, please do not protect it with any software.

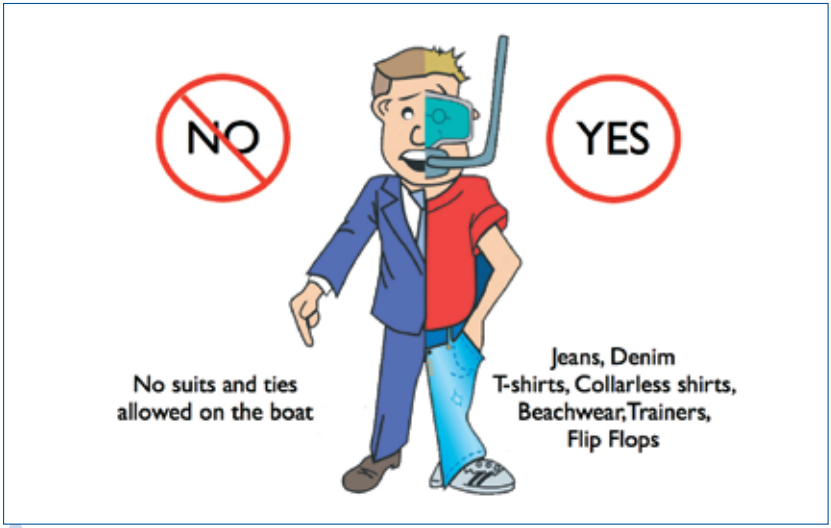
Talk Time

To ensure the smooth running of all lectures, the speakers are asked to keep to the allocated speaking time. The chairs of each session are requested to interrupt the speakers in case of over-running time. Please advise the chairs of your session in advance about any changes or special requests that might occur concerning your presentation. The speaking time of each long oral presentation is fixed to 10 minutes (including time for discussion). The speaking time of each short oral presentation is fixed to 3 minutes.

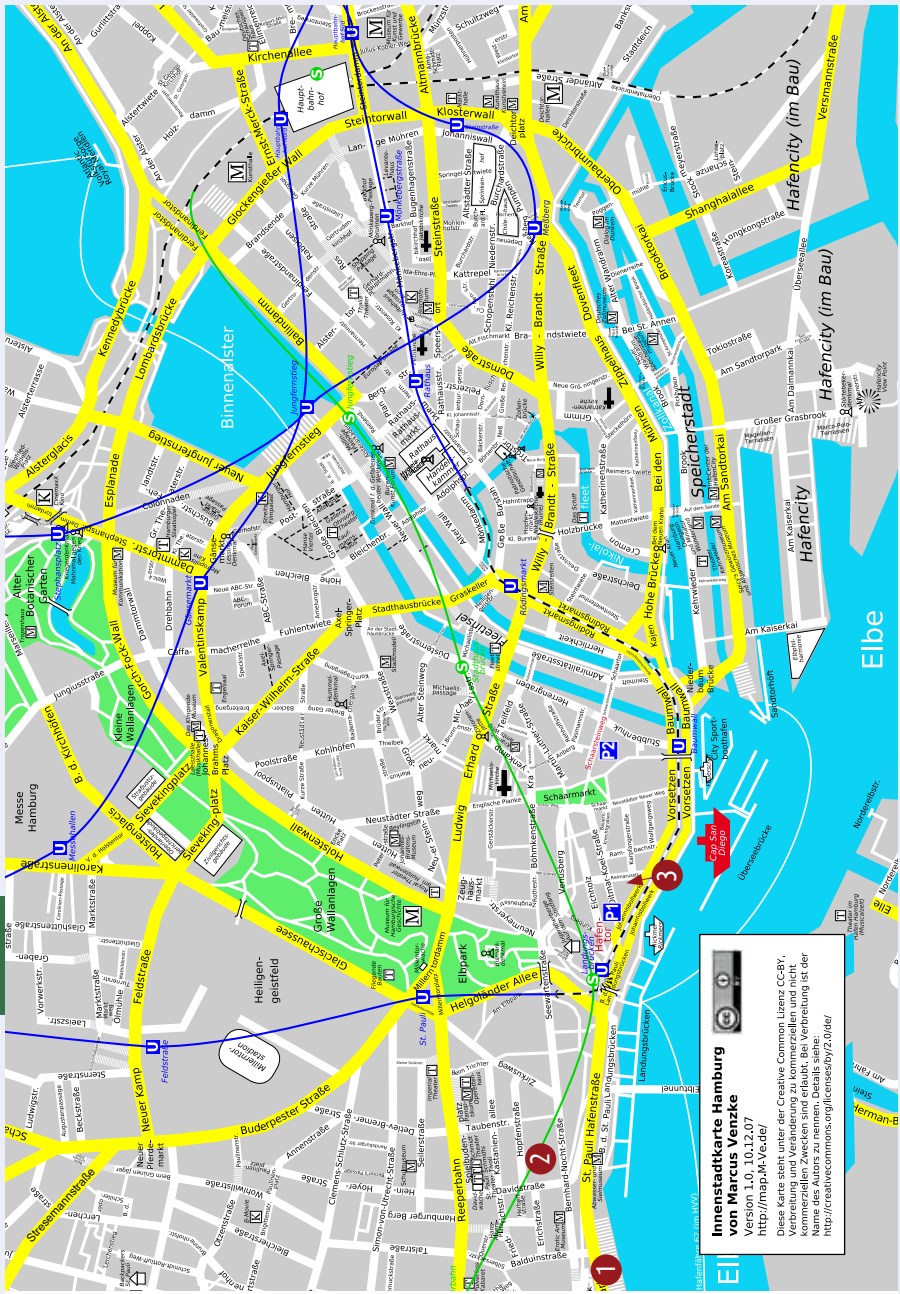
Lecture and Poster prize

The prizes for the best long oral presentation and the best short oral presentation (e-posters) will be presented during the farewell brunch on Sunday from 09^{00}–11^{00}.

Dress Code



Map of Hamburg



1. St. Pauli Fischmarkt
2. Hotel Empire Riverside
3. Hotel Stella Maris

Registration and Confirmation
Registration is subject to capacity limitations. Registration must include the name of any accompanying person to ensure their inclusion into the planning of the social program. Upon receipt of registration invoice or confirmation, registration is considered official and effectual. This document is a valid VAT invoice which may be submitted to the local tax and revenue office for tax purposes.

Invoicing and Due Date for Fees
Fees for the scientific program of the event, the social evening and the social program will be charged in the name and on behalf of the company Conventus inclusive the statutory VAT rate of 19% (as of 2010). All fees are due upon receipt of the registration invoice or confirmation form. Transfer payments must include the name of the participant and the invoice number, otherwise they will not be accepted. All major credit cards are accepted.

Scope of Services
Event fees and day tickets include participation in the scientific program only. Additional fees for the training courses and social program will apply. Included in this fee are program book, abstract book, tickets for the social program, name tags and a certificate of attendance. These items are generally handed out at the venue.

Cancellations, Changes, Refunds
Any cancellations after July 15, 2011 or no-shows at the event are not eligible for a refund and the full fee in accordance to the registration invoice or confirmation will be due. Any changes in booking, after booking confirmation has been issued, will result in a handling fee of 15 EUR. Any requested additions to existing reservations or reservations made during the event on-site will be processed according to availability.

Event Cancellation, Refunds
There is limited capacity for all events. For certain events a minimum number of participants is required. If the minimum number of participants is not reached, the organiser reserves the right to cancel all or parts of the event on a short-term notice. In this case, all paid fees will be fully refunded.

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The organizer is responsible for all changes to individual parts of the event. Claims for damages are excluded if the staging of the event or individual components are hampered or prevented by unexpected political or economic events or generally by force majeure or by the cancellation of speakers or if similar changes are required.

Hotel Reservations, Disclaimer
Conventus acts as an intermediary for hotel reservations and therefore assumes no liability for reservations. Changes and cancellations have to be addressed to the according hotels directly. The cancellation terms of the individual hotels apply.

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In the event of any other damage, the liability of Conventus, its legal representatives and its vicarious agents is limited to deliberate and gross negligent conduct, provided that no essential contractual obligations have been breached.

Applicable Law, Place of Performance and Jurisdiction

The laws of the Federal Republic of Germany apply excluding the U.N. Convention on Contracts for the International Sale of Goods (CISG).
To the extent allowed by law, Jena is the place of performance and jurisdiction for all claims.

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As of 24 February 2010

Abstracts

LOP01: SINGLE CELL GENE EXPRESSION ANALYSIS IDENTIFIES A SUBPOPULATION OF MESENCHYMAL STEM CELLS DIMINISHED IN DIABETIC BONE MARROW AND ADIPOSE TISSUE

M. Sorkin, J. Glotzbach, M. Januszyk, J. Chen
V. Wong, K. Rustad, M.T. Longaker, G.C. Gurtner
Stanford University, Plastic Surgery, Stanford United States

INTRODUCTION: Pathophysiologic changes associated with diabetes severely impair neovascularization and are accountable for complications affecting the cardiovascular system and wound healing. Mesenchymal stem cells derived from bone marrow (BM-MSC) and adipose tissue (ADSC) play an important role both in physiologic and therapeutic neovascularization. BM-MSC are recruited to ischemic wounds and participate in vasculogenesis while ASC are an easily obtainable source of progenitor cells for treatment. In this study we hypothesized that the impaired neovascularization capacity in diabetic mice is reflected by transcriptional changes within BM-MSC.
METHODS: Total bone marrow cells and stromal vascular fraction were harvested from wildtype (C57BL/6) and diabetic (db/db) mice. BM-MSCs with the surface marker profile lin- CD45-Sca1+ and ADSC with the surface profile CD45-CD31-CD34+ were sorted as single cells using FACS. Microfluidic single cell transcriptional analysis was performed across an array of 48 gene targets. Mathematical clustering analysis was employed to identify subpopulations.
RESULTS: Transcriptional analysis revealed multiple genes affected by diabetic metabolism. Especially genes associated with vasculogenesis were found to be downregulated in diabetic BM-MSC and ADSC. Furthermore, cells expressing the transcriptional factors associated with 'stemness' characteristics were depleted in the diabetic group. Using cell clustering analysis, a subpopulation of cells that was defined by the expression of vasculogenic genes was found to be diminished in diabetic mice.
CONCLUSION: Recruitment of BM-MSC to peripheral tissues plays a crucial role in the recovery from an ischemic insult. Likewise, ADSC have substantial therapeutic potential. Here we show that a subpopulation of mesenchymal stem cells defined by the expression of vasculogenic genes is significantly reduced in diabetic mice. These findings suggest a pathophysiologic mechanism underlying impaired diabetic vasculogenesis and may serve as a guide for future therapeutic approaches.

LOP02: OPTIMIZING BIOMATERIALS FOR TISSUE ENGINEERING HUMAN BONE USING MESENCHYMAL STEM CELLS

C. Weinand[1], C. Neville[2], E. Weinberg[3]
T.Q.V. Phan[1], P. Theodorou[1], Y. Tabata[4]
G. Spilker[1,4], J.P. Vacanti[2]
[1]*University Hospital Cologne-Merheim, University Witten-Herdecke, Plastic, Reconstructive and Aesthetic Surgery, Hand Surgery, Burn, Cologne-Merheim, Germany*
[2]*Massachusetts General Hospital, Harvard Medical School, Laboratory for Tissue Engineering and Organ Fabrication, Boston, MA, United States*
[3]*Massachusetts Institute of Technology, Department for Biotechnical Development Cambridge, MA, United States*
[4]*Kyoto University, Department of Biomaterials, Field of Tissue Engineering, Institute for Frontier Medical Sciences, Kyoto, Japan*

INTRODUCTION: Trabecular bone is needed in reconstruction after trauma, tumor resection or congenital defects. Autologous grafting causes donor site morbidity and does not meet anatomical needs. Various biomaterials in combination with mesenchymal stem cells can be customized in shape for tissue engineering bone. They are based on osteoinductive and osteoconductive β-Tricalciumphosphate (β-TCP) or Hydroxylapatite. However, these basic materials do not withstand mechanical load. Recently combination of materials improved mechanical stability.
MATERIALS AND METHODS: β-TCP was mixed with 5 different hydrogels (Gelatin, Collagen I, Fibrin glue, Alginate, Pluronics) and 3 dimensionally printed. Mesenchymal stem cells from human femoral heads were expanded and seeded under dynamic oscillating conditions onto the scaffolds. Acellular controls were made of TCP scaffolds and gels. Constructs were harvested after 6 weeks and evaluated histologically, radiologically, biomechanically and expression of bone specific proteins via RT-PCR. Native human bone served as control.
RESULTS: Collagen I, Fibrin glue and Gelatin β-TCP specimens supported bone formation best histologically, radiologically, biomechanically and expressed the highest levels of bone specific proteins.Biomechanical stiffness and radiological densities reached the ones of human bone. Alginate constructs showed the highest biomechanical stiffness. Control samples had initial higher strength, but had lower biomechanical resistance. Constructs comprised of Pluronics did not support bone formation.

CONCLUSION: Tissue engineered polymer constructs combining 3-D printed Collagen/TCP scaffolds and MSCs appear to be a promising substitute for human bone reconstruction.

LOP03: IN SEARCH OF THE IDEAL NERVE CONDUIT, SUPPLEMENTATION OF DECELLULARIZED NERVE ALLOGRAFTS WITH STEM CELLS DERIVED FROM TWO DIFFERENT SOURCES

R. Kapaj[1], D. Alhan[1], M. Nisanci[1], C. Uysal[1]
A.U. Ural[2], H. Akgun[3], S. Isik[1]
[1]Gulhane Military Academy of Medicine, Plastic Surgery Department, Ankara, Turkey
[2]Gulhane Military Academy of Medicine Hematology Department, Ankara, Turkey
[3]Gulhane Military Academy of Medicine Neurology, Ankara, Turkey

QUESTION: Regeneration is very difficult in nerve gaps and often scarification of a healthy nerve is necessary.
HYPOTHESIS:
1. Supplementation of acellular nerve allografts (ANA) with stem cells will provide similar results to nerve autografts in the sciatic nerve gap model of the SD rats.
2. The neurogenic regeneration activity of Adipose Derived Stem Cells (ASCs) is similar to Bone Marrow Derived Stem Cells (BSCs) in nerve gaps.
MATERIAL AND METHODS: The sciatic nerves of 12 SD rats were used as donors for the allografts. The Sondell et al. protocol was used for the decellularization. 54 rats were used (9 rats/group). 10 mm defects were created in the right sciatic nerves.
1. The sciatic nerve was exposed in the Sham group,
2. The retrieved segment was recoapted in the autograft group,
3. No repair was performed in the defect group,
The 12 mm ANA's were coapted to the stumps in three groups.
4. 0.05 ml control medium was injected in the 12 mm ANA in one group,
5. 10^6 DiI stained ASC's were injected in the 12 mm ANA in one group and
6. 10^6 DiI stained BMSC's were injected in the 12 mm ANA in the last group.
RESULTS: Data was compared using a one way ANOVA test. PostHoc test was applied as appropriate. Statistical significance was accepted at $p < 0.05$.
Walking Gait Analysis:(12^{th} week)
The highest SFI (Sciatic Function Index) belonged to the Sham group followed by the ANA+ASC's group. There was statistically significant difference between the stem cell enhanced groups and ANA+Medium group, but no difference between the autograft and SC enhanced groups.
Electrophysiology, histomorphometry and immunehisto-chemistry analysis (S100 and GFAP) (12^{th} week)
The lowest latency and highest amplitude was recorded on the Sham group, followed by the MSC enhanced groups. The highest myelin count belonged to the Sham group, followed by the autograft group. The MSC enhanced groups showed statistically significant difference when compared to the ANA +medium group and no statistically significant difference from the autograft group. DiI and S100 stained cells were interpreted to be MSC derived Schwann like cells (Figure 1).
CONCLUSION: Similar results to the autografts have been achieved using the stem cell enhanced ANA's.

LOP04: EVALUATION OF CLINICAL OUTCOMES AND AESTHETIC RESULTS AFTER AUTOLOGOUS FAT GRAFTING FOR CONTOUR DEFORMITIES OF THE RECONSTRUCTED BREAST

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BACKGROUND: Autologous fat grafting is gaining more widespread acceptance for the management of soft tissue deformities of the reconstructed breast. However, published data on long term outcomes and aesthetic results of fat grafting to the breast are lacking. The purpose of this study was to review our early experience of fat grafting in the correction of acquired contour deformities after post-mastectomy breast reconstruction.
METHODS: A detailed retrospective review of 49 patients who received fat grafting to 68 reconstructed breasts was carried out. Clinical outcomes were analyzed and aesthetic results were assessed with objective picture grading of pre- and post-operative photographs by two independent and blinded plastic surgeons.
RESULTS: On average, 67 cc of fat was injected into each breast per session. There were 111 fat injection procedures as more than one injection was required in 51.5% of cases. Average follow up time was 2.4 years. Complications occurred in 6.3% of procedures, including fat necrosis (3.6%), oil cysts (1.8%), and infection (0.9%). Aesthetic outcome was significantly improved across all measurements including volume, contour, placement, and superomedial fullness ($P < 0.001$, all).

CONCLUSIONS: While further studies are required to provide surgeons with definitive guidelines for the implementation of this technique, fat injection is a safe intervention and significantly improves the aesthetic results in patients with contour deformities of the reconstructed breast.

LOP05: IMPACT OF SYSTEMIC INJURY ON FREE FLAP OUTCOMES IN TRAUMA PATIENTS

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PURPOSE: With improvements in trauma care, outcomes of patients with critical injuries have improved. Severely injured patients are more likely to survive and present with devastating wounds requiring reconstructive procedures. Free tissue transfer is a proven method for treating traumatic injuries; however the role and safety of this technique in patients with concomitant systemic injuries remains unclear.
METHODS: A retrospective review of all free flaps performed for traumatic injuries between January 1997 and December 2006 by a single surgeon (LSL) was performed. Patient demographics, comorbidities, treatment and outcomes were evaluated. Injury severity scores (ISS) were determined for all patients.
RESULTS: A total of 170 free flaps were performed on 160 patients during this time period. Seventy-nine patients had injury wounds in the absence of distinct systemic injuries (Group 1). Eighty-one patients had injury wounds in the presence of distinct systemic injuries (Group 2). The mean age and comorbidities were similar in both groups. The ISS was significantly higher in Group 2 (21.5 versus 9.4; $p<0.05$) – (Figure 1). A significantly greater proportion of patients in Group 2 sustained injuries secondary to motor vehicle collisions (95.1% versus 20.3%; $p<0.05$). The mean time from trauma to flap (tertiary transfer) was 24 days for Group 1 and 16 days for Group 2. Overall flap survival was 92% and total surgical complication rate was 30%, neither of which significantly differed between groups (Figure 2). Length of stay was significantly greater in Group 2 (19.9 days versus 14.1 days; $p<0.05$). Subgroup analysis of systemically injured patients (Group 2) demonstrated that ISS was not predictive of flap loss or complications. Furthermore, patients with pulmonary contusion and/or intracranial injury did not portend a worse perioperative outcome.
CONCLUSION: In this selected group of patients we did not find a significant difference in free flap survival or overall early outcome relative to the presence or absence of systemic injury. This highlights the importance of clinical judgment in determining which patients may be suitable for free tissue transfer. As acute care continues to improve, the complexity and severity of injured patients potentially managed with free tissue transfer will further evolve.

LOP06: VIOLATION OF THE RECTUS COMPLEX IS NOT A CONTRAINDICATION TO COMPONENT SEPARATION FOR ABDOMINAL WALL RECONSTRUCTION

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QUESTION: Surgeons often avoid component separation (CS) for abdominal wall reconstruction when the rectus abdominis has been violated. However, no credible evidence supports this. We hypothesized that patients have similar outcomes whether or not the rectus has been violated.
METHODS: We retrospectively evaluated consecutive CS patients with and without rectus violation at MD Anderson Cancer Center over 12 years. Rectus violation patients were subclassified (prior/current ostomy, prior/current gastrostomy/jejunostomy, surgical transection of rectus, and surgical resection of rectus) for subanalyses. Univariate and multivariate regression analysis evaluated potential predictive or protective factors for surgical outcomes.
RESULTS: We included 170 patients: 116 (68%) patients with and 54 (32%) patients without rectus violation. Mean follow-up was 15.9 ± 14.1 months. Overall complications were similar between the violation (n=29, 25%) and non-violation (n=13, 24%) groups, as were specific surgical outcomes between the violation and non-violation groups, respectively: recurrent hernia (8% vs. 9%, p=0.77), abdominal bulge (4% vs. 6%, p=0.68), skin necrosis (21% vs. 22%, p=0.84), skin dehiscence (7% vs. 4%, p=0.51), cellulitis (9% vs. 9%, p=1.0), and abscess (13% vs. 9%, p=0.61). Subset analysis showed the ostomy group to have the most complications among the violation types (34%), but this was statistically equivalent to the non-violation group (24%, p=0.42).
CONCLUSIONS: We found that surgical outcomes were similar for CS whether or not the rectus complex was violated in this first study to directly evaluate the effects of rectus violation in CS patients. Contrary to

previous recommendations, CS can be reliably performed in cases of rectus violation without additional morbidity.

LOP07: IMMUNOLOGICAL CHARACTERIZA-TION OF ALLOGENIC AND AUTOFETAL TRANSPLANTATION OF PORCINE AMNIOTIC MEMBRANE IN A PIG MODEL

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INTRODUCTION: Previously there exists no report of a direct transplantation of fresh maternal amniotic membrane to the newborn, neither in an animal model nor in humans. Aim of this study was the assessment of immunogenicity and immunologic tolerance of allogenic and "autofetal" amniotic membrane in a pig model.
MATERIAL AND METHODS: We perform caesarean sections on 6 sows and preserve the amniotic membrane under sterile conditions. 12 piglets were transplanted one day after birth with allogenic (n=6) or "autofetal" amniotic membrane (n=6). Therefore a subcutaneous pocket was prepared and the fresh membrane was inserted. On days 5, 10, 14, 21 and 90 after treatment punch biopsies and blood samples were taken for western-blot (IL-1β, TNF-α), qRT-PCR (18SrRNA, IL-1β, TNF-α, CD3, CD4, CD8α, CD8β), FACS scan (CD-3, CD-4, CD-8, CD-90) and histologic analysis (HE/EvG).
RESULTS: In both groups an uneventful healing of the transplanted regions could be seen. There were no signs for rejection reactions such as inflammation, desquamation or necrosis detectable. Significant lower levels of IL-1β and TNF-α were measured for "autofetal" transplantations. Western-Blot and FACS data confirmed these results. No significant differences could be observed in the histology.
CONCLUSION: The results approve the theory of a preferred use of "autofetal" amniotic membrane. By the good availability in humans completely new ways of treatment, e.g. for reconstruction of cleft palates, are opened.

LOP08: THE EFFECTS OF ISCHEMIA-REPERFUSION (I/R) INJURY AND EPIDURAL/SPINAL ANAESTHESIA ON TRANSVERS RECTUS ABDOMINIS MUSCULOCUTANEOUS (TRAM) FLAP: EXPERIMENTAL STUDY

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INTRODUCTION: In microsurgical procedures, the choice of appropriate anaesthetic technique is important for providing surgical success. The purpose of this experimental study is to compare spinal and epidural anaesthesia on the rat TRAM flap model which is denotative of experimental muscle flap transfer ischemia-reperfusion injury.
MATERIAL AND METHODS: Fourty male Sprague-Dawley rat was divided into 4 experimental groups containing 10 animal each. Animals were divided into Group I (Sham, n=10), group II (I/R, spinal anaesthesia, n=10), Group III (I/R, Epidural anaesthesia, n=10) and Group IV (I/R, control, n=10). TRAM musculocutaneous flap was occured in all groups. At the end of the surgery; hyalinization, nuclear changes and inflammation rates for histopathological evaluation and total antioksidan state (TAS), total oxidative stress (TOS), malonyldialdehyde (MDA), nitric oxide (NO), paraxonase (PON) measurements for biochemical evaluation were evaluated on tissue samples obtained from muscle tissue.
RESULTS: Biochemical analyse revealed that MDA level was significantly lower in epidural group when compared with I/R group and PON level was significantly higher in epidural group when compared with I/R group. TOS level significantly increased in spinal group when compared with epidural group and in I/R group when compared with epidural group. Pathological evaluation showed that minimal inflammation and nuclear change rate findings were significantly higher in spinal group comparing with epidural group
CONCLUSION: In the presented study, MDA level, basic derivative of lipid peroxidation; and oxidative stress significantly decreased in epidural anaesthesia. In other words, epidural anaesthesia provide more efficient free radical scavenger by increasing total antioxidant capacity. Histopathologically, nuclear migration to center, hyalinization wtih globuler changes, degeneration of fibers and inflammation

is seen during I/R injury. Our findings indicate that epidural anaesthesia can be considered as a suitable choice of anaesthetic method for decreasing ischemia reperfusion injury of muscle flaps.

LOP09: DYNAMIC RECONSTRUCTION OF THE ABDOMINAL WALL WITH PEDICLED INNERVATED FLAPS FROM THE ANTEROLATERAL THIGH – DYNAMOMETRIC STUDIES OF RECIPIENT AND DONOR SITE

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INTRODUCTION: Reconstruction of large full thickness abdominal wall defects is a major challenge.We use the anterolateral thigh flap with fascia lata and a segment of vastus lateralis with its femoral nerve branches intact to restore muscular continuity. This leads to a dynamic function of the abdominal wall. We did dynamometric studies on the donor leg to verify donor site morbidity and on the abdominal wall to evaluate function of the ALT/VL after reconstruction in a patient with severe Bechterew disease.
METHODS: Knee extension (quadriceps) and flexion (hamstrings) were measured by isokinetic testing at 60 and 120 degree/sec. Abdominal flexion and lumbar extension was performed in semi-standing position at 60 deg/sec and 120 deg/sec. Ten parametes were tested at 3,6 and 12 months postoperatively.
RESULTS: Maximal strength and immediate reaction force of quadriceps was diminished in the donor leg (diff L/R =29.6 % and 11.3%). After 6 months the RQH and DMSQ of donor legs quasi normalized. Peak torque improved by 65 % and average power by 60 % at 12 months. Acceleration and deceleration time, both indicative of neuromuscular capabilities of the muscle, improved by 25 % and 62.5 %. Peak torque in the abdominal wall enhanced by 110 % to a value of 110.1 NM. Average power in the abdominal wall enhanced by 130 %. Acceleration and deceleration time improved with 130 % at 12months. Because of severe Bechterew, the patient needed to exercise intensively (nordic walking) without subjective functional limitation in donor leg or abdominal wall.
CONCLUSION: The pedicled anterolateral thigh composite flap, with the motor branches to the vastus lateralis muscle intact, is a valuable flap to dynamically restore infra-and supra-umbilical abdominal wall defects. Donor site morbidity is minimal.

LOP10: VASCULARIZED COMPOSITE ALLOGRAFT TRANSPLANTATION AND MIXED HEMATOPOIETIC CHIMERISM ACROSS A FULL MHC BARRIER IN SWINE: PRELIMINARY RESULTS

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PURPOSE: The morbidity of immunosuppression and the risk of acute and chronic rejection represent important obstacles to widespread application of Vascularized Composite Allograft (VCA) transplantation (hand/face transplantation). The aim of this study was to induce stable mixed chimerism across a full MHC barrier through bone marrow transplantation (BMT) to facilitate long-term acceptance of a simultaneously transplanted VCA in MGH swine.
METHODS: Recipients in Group 1 received low-dose (100cGy) of total body irradiation (TBI), T-cell depletion with CD3-immunotoxin, a 45-day course of Cyclosporine (CyA) and BMT (1x109 BM cells/kg). Recipients in group 2 received the same conditioning regimen, increased TBI (200 CGy) and increased bone marrow dose (4x109 cells/kg). In both groups, a gracilis myocutaneous VCA was transplanted on day 0. Flap viability was assessed daily by visual inspection, and chimerism, serum alloantibody and immune response against donor MHC were assessed by flow cytometry and in vitro assays. Control animals underwent VCA transplantation either without conditioning regimen or without bone marrow.
RESULTS: A control recipient receiving a VCA with no treatment rejected all VCA components in 6 days. Animals from Group 1 did not display detectable chimerism, but prolonged acceptance of the VCA, with epidermal rejection by week 4 and full rejection by week 8. A recipient conditioned with increased TBI and no BMT also displayed prolonged VCA survival, but erythema of the flap was observed starting on week 2, epidermal rejection by week 5 and full rejection by week 11. In contrast, the animal receiving increased TBI and BM dose displayed high-level mixed chimerism up to week 7 and no signs of skin

rejection to that point. Decreasing chimerism levels and mild erythema of the flap was noted on week 8. This animal remains under investigation.
CONCLUSIONS: A concomitant VCA/BMT strategy is currently under investigation as a clinically-relevant large animal model across a full MHC barrier. Improved T-cell depletion, increased TBI and bone marrow cell dose led to higher initial levels of mixed chimerism in the blood, and the skin remains intact, although with mild erythema at week 8. Further follow-up is ongoing, as are additional strategies for long-term VCA tolerance.

LOP11: COLLAGEN DEGRADATION OF HUMAN SKIN IS MEDIATED BY TNF-ALPHA THROUGH P38 MAPK SIGNALING AND MMP INDUCTION

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INTRODUCTION: Tumour necrosis factor (TNF)-alpha is involved in inflammatory processes in the skin and can damage skin. The mechanisms are unknown although TNF-alpha induces matrix metalloproteinases (MMP) that could contribute to the tissue destructive processes. The aim of the study was to investigate the mechanism of TNF-alpha on collagen degradation in organ-cultured normal human skin.
MATERIAL AND METHODS: Skin explants were cultured in serum-free media without or with TNF-alpha, the broad-spectrum MMP inhibitor GM6001, a selective p38 mitogen-activated protein kinase (MAPK) inhibitor or cycloheximide. Fragmented collagen molecules in the tissue were measured by hydroxyproline assay. Degradation and synthesis of type I collagen specifically were measured by the markers carboxyterminal telopeptide of type I collagen and type I C-terminal collagen propeptide.
RESULTS: Collagen degradation was time-dependent, accelerated by extra TNF-alpha ($P<0.01$), accomplished by MMPs, dependent on de novo protein synthesis and mediated by the TNF-alpha-activated p38 MAPK pathway. TNF-alpha specifically increased cleavage of type I collagen but had no significant effect on type I collagen synthesis.
CONCLUSIONS: TNF-alpha increases the overall MMP activity via the p38 MAPK pathway that leads to a collagen net loss in human skin. This may explain some of the detrimental effect of elevated TNF-alpha on skin integrity.

LOP12: FIBROBLAST AGGREGATE-DERIVED PARACRINE FACTORS PROMOTE CELL PROLIFERATION AND MIGRATION IN A PORCINE MODEL OF EPIDERMAL WOUND HEALING

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RATIONALE: Efficient re-epithelialization of skin lesions is dependent on paracrine support from connective tissue fibroblasts. We previously showed, that a keratinocyte viability and motility stimulating active matrix can be constructed by combining a fibrin sealant with paracrine growth factors released from multicellular spheroids of human dermal fibroblasts, Finectra. In order to understand the mechanism of Finectra on skin wound healing, an animal study was carried using a porcine partial-thickness wound healing model.
METHODS: A series of deep, mirror image partial thickness 4x5cm wounds were created with a dermatome on the lateral paravertebral skin of each pig, in a cephalad-caudad orientation. Treatment was initiated by single application of the Finectra-fibrin matrix or a fibrin matrix containing conditioned medium from standard fibroblast monolayer cultures. Corresponding collateral control wounds were treated with saline. Experiments were continued until the third post operative day without dressing changes. Following full thickness removal of the whole wound area, tissues were sectioned, stained and analyzed morphometrically.
RESULTS: We observed a significant increase in new epithelial area in Finectra treated wounds compared with both saline and control monolayer medium treated wounds ($p<0.001$). This proliferative and migratory effect was evident in the lateral zones of the wound in the length and area of the migrating wound edge ($p<0.001$). Extensive granulation tissue production was seen in Finectra treated groups ($p<0.001$) compared with controls.

CONCLUSION: This data supports our previous in vitro results indicating that Finectra provides a positive stimulus for epidermal regeneration notably in the early phases of wound repair. Our approach, to utilize a biologically degradable and straightforwardly applicable fibrin carrier matrix, is a promising method for treatment of donor site wounds.

LOP13: IN VITRO ASSESSMENT OF NOVEL COLLAGENASE (XIAFLEX®) ON DUPUYTREN'S DISEASE FIBROBLASTS DISPLAYS UNIQUE DRUG RELATED PROPERTIES

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Dupuytren's disease (DD) is a benign, fibroproliferative disease of the palmar fascia, with excessive extracellular matrix (ECM) deposition and over-production of cytokines and growth factors, resulting in digital fixed flexion contractures limiting hand function and patient quality of life. Surgical fasciectomy is the gold standard treatment but is invasive and has associated morbidity without limiting disease recurrence. Injectable Collagenase *Clostridium histolyticum* (CCH)- Xiaflex® – is a novel, nonsurgical option with clinically proven *in vivo* reduction of DD contractures but with limited *in vitro* data demonstrating its cellular and molecular effects. This study aimed to delineate the effects of CCH on primary fibroblasts isolated from DD and non-DD anatomical sites (via RTCA, LDH, WST-1, FACS, qRT-PCR, ELISA and In-Cell Quantitative Western Blotting) to compare the efficacy of varying concentrations of Xiaflex® against a reagent grade collagenase (Collagenase A). Results demonstrated that DD nodule and cord fibroblasts had greater proliferation than those from fat and skin. Xiaflex® exposure resulted in dose- and time-dependent inhibition of cellular spreading, attachment and proliferation, with cellular recovery after enzyme removal. Unlike collagenase A, Xiaflex® did not cause apoptosis. Collagen expression patterns were significantly ($p<0.05$) different in DD fibroblasts across anatomical sites – the highest levels of collagen I and III were detected in DD nodule, with DD cord and fat fibroblasts demonstrating a smaller increase in both collagen expression relative to DD skin. Xiaflex® significantly ($p<0.05$) down-regulated ECM components, cytokines and growth factors in a dose-dependent manner. An *in vitro* scratch wound assay model showed that, at low concentrations, Xiaflex® enabled a faster fibroblast reparatory migration into the wound, whereas, at high concentrations, this process was significantly ($p<0.05$) inhibited. This is the first report elucidating potential mechanisms of action of Xiaflex® on Dupuytren fibroblasts, giving greater insight and better understanding of its effect in DD.

LOP14: DEVELOPMENT OF DERMAL BILAYERED SCAFFOLD WITH NEW GENERATION OF NANO-COMPOSITE POLYMER

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BACKGROUND: Despite the myriad of skin substitutes, current gold standard treatment of full-thickness burns remains split-thickness autografts. However, their use cannot be extended to patients with a large %TBSA (total body surface affected). The objective was to develop a porous bilayered scaffold for dermal replacement from a novel nanocomposite polymer, polyhedral-oligomeric-silsesquioxane poly(caprolactone-urea)urethane (POSS-PCL) and compare the properties of the construct to Integra®; in addition, to seed adipose tissue derived stem cells (ADSC's) onto developed scaffolds, which have been found to enhance wound healing and angiogenesis. **METHODS**: The inner layer was produced via phase separation for a highly porous morphology. A removable outer layer incorporated silver nanoparticles to impart antimicrobial properties. Effect of different pore sizes on physicochemical properties was established by tensile testing, contact angle, permeability, FTIR and scanning electron microscopy(SEM) analysis. Optimal pore morphology for cell proliferation was elucidated through ADSC culture. Cell viability and apoptosis were tested using an Alamar Blue™(AB) and LDH assay. All tests were repeated on Integra®.

RESULTS: The physical construct was easy to handle and clinically applicable. Macroporosity and permeability was demonstrated, which were up to 72% porous; confirmed by SEM. Outer layer contact angle was >100°, indicating hydrophobicity and the inner layer was <70° indicating hydrophilicity of the scaffold. Young's modulus of scaffolds ranged from 0.406-0.492 MPa. Both results are comparable to skin. AB assay showed cell proliferation onto the scaffold, comparable to that on Integra®; confirmed by fluorescent imaging.
CONCLUSIONS: *In vitro* assessment of the POSS-PCL dermal scaffold suggests it is a promising alternative to the current industry leader, Integra® and has many desirable properties that could successfully mimic human skin. Future directions involve covalently bonding bioactive molecules (i.e. cyclic RGD) to further enhance cell attachment and proliferation.

LOP15: CELLULAR INTERACTION BETWEEN ENDOTHELIAL PROGENITOR CELLS AND PREADIPOCYTES FOR THE PURPOSES OF TISSUE ENGINEERING

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INTRODUCTION: The main problem of adipose tissue engineering is a resorption of the transplant due to an insufficient vascularization. This could be improved by the coimplantation of preadipocytes with endothelial progenitor cells (EPCs). In this study, we investigated the effects of co-culture of preadipocytes and EPCs on EPC sproud formation in vitro and neovascularization of implants semi-in vivo.
MATERIALS AND METHODS: Preadipocytes were isolated from human adipose tissue and EPCs were isolated from human peripheral blood. In vitro, the ability of EPCs in building capillary-like structures was investigated in a Matrigel- and in a Spheroid-assay. Semi-in vivo, cells were suspended in fibrin and incubated directly on the chorioallantoic membrane (CAM). Angiogenesis was determined by histological examination after 9 days of incubation.
RESULTS: In vitro, EPCs form significant longer capillary-like structures in co-culture with preadipocytes compared to monoculture. Semi-in vivo, no difference of neovascularization was observed between monoculture and co-culture.
CONCLUSION: In vitro, co-culture with preadipocytes enhances the angiogenic potential of EPCs but this effect could not be confirmed in the CAM assay. Nevertheless, EPCs as an easy available cell population remain an interesting tool for tissue engineering.

LOP16: ATORVASTATIN ALLEVIATED VIABILITY OF RAT ISCHAEMIC FLAP DEPENDENT OF VEGF MRNA EXPRESSION

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BACKGROUND: Management of skin avulsion with tissue exposure is a challenge in plastic surgery. Clinical observations have suggested more survival of skin flap alleviates further contamination and infection. Less well known is the role of Atorvastatin in avulsed skin flap, therefore, we attempted to determine whether Atorvastatin could alleviate avulsed skin flap in a rat model.
METHODS: 20 male Sprague-Dawley rats were randomized into two groups: control and Atorvastatin. Before operation, each rat received an initial blood perfusion scan as base-line data. Then, each rat received an operation of skin flap incision, elevation, and re-suturing to the original position under general anesthesia. On postoperation 30 min, 4 days and 7 days, each rat received another blood perfusion scan. On postoperation 7 days, all rats in both groups were sacrificed. The necrotic area of skin flap was measured as the skin flap viability. The skin flap tissues at 2.5 and 5 cm distal to the skin flap base were collected for histopathological analysis, measurements of vascular endothelial growth factor (VEGF) mRNA expression and vascular density.
RESULTS: Compared with postoperation 30 min, there was a significant increase in ratio of skin flap blood perfusion on postoperation 4 and 7 days in both control and Atorvastatin groups ($P<0.05$). Compared with the control group, there was a significant decrease in necrotic area, significant increase in ratio of skin flap blood perfusion on postoperation 4 and 7 days, and significant increase in vascular density under high field at 2.5 cm distal to the base of skin flap in the Atorvastatin group ($P<0.05$). The $VEGF_{121}$ and $VEGF_{165}$ mRNA expression at 2.5 cm distal to the base of skin flap differ significantly between the two groups ($P<0.05$).
CONCLUSION: Compared with the control group, treatment of Atorvastatin improved skin flap blood perfusion, vascular density and necrotic area dependent of VEGF mRNA expression.

LOP17: FIRST IMPLANTABLE DEVICE FOR HYPOXIA-MEDIATED ANGIOGENIC INDUCTION

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QUESTION: Delayed or inadequate vascularisation is one of the major factors leading to tissue infarction and poor graft survival. Current vascularisation strategies that rely on delivering single growth factors have proved ineffective or hard to control in practise. An alternative approach has been identified by this group that relies on stimulation of physiological angiogenic factor cascades by engineering local cell-hypoxia, within a nano-fibrillar collagen material. Here we report on a novel, practical and effective implantable device for delivering engineered angiogenic signalling, on demand.
METHODS: Human dermal fibroblast-seeded dense-collagen depots were pre-conditioned under physiological cell-generated hypoxia to up-regulate production of key angiogenic factors, including HIF1α and VEGF(165).
RESULTS: The level of VEGF(165) protein retained within depots (indicating general angiogenic factor production) was directly correlated to the duration of pre-conditioning. Angiogenic factor delivery from pre-conditioned, non-viable depots and formation of spatial factor gradients rapidly induced a directed angiogenic response within endothelial cell-seeded constructs in vitro. Implanted acellular 3D constructs incorporating such angiogenic depots in their core were infiltrated with perfused vessels by 1week in vivo, at which stage non-angiogenic implants were minimally perfused.
CONCLUSIONS: Depot stability, tuneability of cell/matrix composition with long clinical experience of the collagen material, together with cost effectiveness, make this angiogenic therapy a promising clinical tool for improving local tissue perfusion.

LOP18: ISCHEMIA REPERFUSION INJURY IN HUMAN FREE MUSCLE FLAPS INDUCES A MOLECULAR SWITCH IN CRP (C-REACTIVE PROTEIN) AGGRAVATING INFLAMMATORY TISSUE INJURY: THERAPEUTICAL IMPLICATIONS FOR FREE FLAP SURGERY

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INTRODUCTION: C-reactive protein (CRP) is a pentameric plasma protein consisting of 5 identical subunits and proposed to be not only a marker, but also a mediator of inflammatory disease. We recently showed that ischemia/reperfusion injury (IRI) after free flap surgery induces a molecular switch leading to dissociation of pentameric CRP (pCRP) to monomeric CRP (mCRP), however the pathophysiological relevance remains elusive. Here we investigated the effect of CRP-dissociation in an *in vivo* model of IRI by intravital microscopy.
MATERIAL AND METHODS: Leukocyte adhesion/rolling in the microcirculation of the cremaster muscle of the rat was analyzed after IRI and application of pCRP. Local dissociation of pCRP to its monomeric subunits in IRI was examined via immunohistochemistry. Addition of 1,6-bisPC-Hexane (PCH) stabilized pCRP thus inhibiting dissociation.
RESULTS: Administration of pCRP induced a significant increase in leukocyte adhesion/rolling after IRI but not in sham operated animals ($p<0.05$). IRI provoked dissociation of pCRP in the inflamed tissue as detected by conformation specific anti-CRP antibodies. PCH prevented leukocyte recruitment after ischemia.

CONCLUSION: These results suggest that IRI triggers a molecular switch in pCRP. The subsequent formation of mCRP might be causal event in the pathophysiological cascade of inflammatory tissue damage. Inhibiting CRP dissociation by PCH prevents these inflammatory changes and thus might be a feasible therapeutic strategy.

LOP19: FUNCTION OF AN IMPLANTABLE BIOARTIFICIAL HEMOFILTER IS DRAMATICALLY INCREASED VIA VEGF- AND PDGF-INDUCED SMALL VESSEL ANGIOGENESIS

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INTRODUCTION: Annually, 15 billion dollars are spent treating end stage renal disease. Tissue engineering is a promising approach to treatment. We developed an induced angiogenesis model that provides a vascular interface to a fluid collecting system, to generate glomerular-like ultrafiltrate. Previous results have shown that fiber surface area and vascular density are two characteristics that improve ultrafiltrate production. We sought to examine the effect of exogenous growth factor delivery on vascularization of the construct, and thereby attempt to influence filtration rates.
METHODS: Hollow semipermeable fibers were placed in proximity to the femoral vasculature of rats, and enclosed within silicone chambers which promote angiogenesis. Outflow from the fibers was directed to a neo-bladder and an access port. Osmotic pumps were implanted that infused growth factors (VEGF and PDGF) versus normal saline into the lumens of the chambers for 28 days. n=12 in each group. Angiogenesis was allowed to mature for two weeks, and then filtrate was collected three times a week. Fluid production volumes were measured, and analyzed for BUN, protein, and albumin. Six animals from each group were sacrificed at four weeks, and three each at six and nine weeks. Upon sacrifice, serum samples were evaluated for BUN, total protein and albumin, and the tissues within the chambers was harvested and processed for histologic analysis. The specimens were sectioned and stained with hematoxylin and eosin (H&E) and for von Willebrand factor to identify endothelial cells. Newly-formed angiogenic vessels were identified and the diameter and cross-sectional area of each vessel was measured to evaluate the degree of vascularization.
RESULTS: The fluid-to-serum BUN ratios were not statistically different from 1.0. The fluid-to-serum protein ratios were 0.33, and 0.29 for control and growth factor groups, respectively. Delivery of pro-angiogenic growth factors resulted in significantly increased filtrate fluid volumes at weeks 6 and 9 ($P<0.025$, see figure). This increase in fluid production was accompanied by an increase in the absolute number of smaller vessels with diameters <10 µm ($P=0.052$) or cross-sectional area <80µm2 ($P=0.047$).
CONCLUSIONS: Utilizing angiogenesis, a vascular bed and collecting system interface has been created resulting in an implanted bioartificial hemofilter that produces ultrafiltrate for up to nine weeks. The low filtrate to serum protein ratio demonstrates permselective properties of the model. By delivering VEGF/PDGF via an osmotic pump, we have increased the number of newly-formed small vessels and, simultaneously, the ultrafiltrate production. The clinical translation of this approach will require successful scale up in large animal models.

LOP20: ROLE OF THE INNATE IMMUNE SYSTEM IN IDIOPATHIC INFLAMMATORY MYOPATHIES

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INTRODUCTION: The idiopathic inflammatory myopathies (IIM) encompass a heterogeneous group of rare disorders. **Sporadic inclusion body myositis** (s**IBM**) and **Polymyositis (PM)** are both idiopathic inflammatory muscle diseases.
The aim of this study was to determine factors of the innate immune system in tissue sections of sIBM and PM patients.

MATERIAL AND METHODS: The expression of IL-18, HBD-1, HBD-2 and HBD-3, RNase 7, LL-37 and Dermcidin were determined in skeletal muscle biopsies from patients with sIBM (n=10) and PM (n=10) using qPCR. Muscle biopsies from healthy patients (n=10) served as a negative control. Tissue sections were used to localize specific mRNA expression by fluorescence *in situ* hybridization (FISH) or immunohistochemical co-localization of HDP with CD8, CD68 and Atg8. The evaluation was performed by confocal laser scanning microscopy.
RESULTS: The IL-18 and HBD-3 expression increased in both myopathies by a factor of 2.6 and 100 respectively compared to the healthy patients.
The localization of HBD-3 expression by FISH shows increased signaling within the muscle fibers of sIBM patients, while in PM samples, the signals were mainly found in the fibers surrounding connective tissue.
The co-localization staining demonstrated a great consistency of the signals for both HBD-3 and either CD8 (cytotoxic T-cells), CD68 (macrophages) or Atg8 (autophagy) respectively.
DISCUSSION: The expression ratios between HBD-3 and IL-18 indicate a direct correlation between both factors. In addition, it the origin of the HBD-3 expression appears to be different between the investigated myopathies.
The upcoming steps should examine the regulation of HBD-3 expression in muscle cells to determine potential pathophysioplogical pathways.

LOP21: A NEW COLLAGEN CONDUIT FOR THE REGENERATION OF THE PERIPHERAL NERVES USING TISSUE ENGINEERING TECHNIQUES – PRELIMINARY RESULTS

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INTRODUCTION: Several types of nerve conduits have been used for peripheral nerve gap bridging. This study investigated the in vivo engineering of a biological nerve conduit and its suitability for nerve gap bridging. The aim of this study was to develop an artificial, biocompatible, nerve guide to induce regeneration in the peripheral nervous system.

MATERIAL AND METHODS: The authors compared the regeneration of a sciatic nerve in a rat model through a 1.5 cm gap, using a nerve conduit of reticulated collagen, filled with saline or several neurotrophic tissues. Fifty Brown Norway rats were randomized to five nerve reconstruction groups: 1) reversed sciatic nerve autograft (control group); 2) saline-filled conduit; 3) conduit containing the morselized sciatic sectioned nerve fragment; 4) conduit containing autologous bone marrow stromal cells; or 5) conduit containing morselized adipose stem cells. The regeneration was evaluated with the functional walking test (sciatic index, SFI), muscle weight analysis (tibialis anterior muscle) and histological counting of the regenerated axons passing through the conduit.
RESULTS: Biogenic conduits revealed highest number of vessels per cross-section after 4 weeks. The results of SFI analysis did not show significant difference between the repairs with biogenic conduit and autologous nerve graft. Nerve area and axon count in the biogenic conduit group were not significantly different than in the autologous nerve group. The biogenic conduit group showed significant higher myelination values.
CONCLUSIONS: This engineered tissue potentially simulates the neurotrophic environment of a nerve graft through the contribution of the stem cells and other neural elements.

LOP22: IMPROVED REGENERATION OF AN ISCHEMIC RAT FLAP MODEL AFTER LOCAL PRECONDITIONING WITH IMPLANTATION OF NON-VIRAL TRANSFECTED FIBROBLASTS

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INTRODUCTION: In the present work, we investigated a cell-based, non viral gene- transfer method using fibroblasts to temporarily produce bFGF and $VEGF^{165}$ in ischemic tissue for therapeutic purposes. Protein delivery from transfected cells can induce expression of tissue inductive factors to stimulate the cellular processes required for regeneration. Both, bFGF and $VEGF^{165}$, were delivered into a rat flap model of ischemia as a form of pharmacological local preconditioning before tissue ischemia occurs. Functional evaluations were performed to detect the protein expression and resulting clinical effects.

MATERIAL AND METHODS: The eukaryotic expression vectors harboring VEGF and bFGF cDNAs were transfected into rat primary skin fibroblasts mediated by Amaxa Nucleofector. To determine an improvement in ischemically challenged tissue, a genetically modified cellspool was injected in an ischemic flap model. Cells were implanted into 40 rats. Gene expression and protein production were measured in vitro and in vivo by real time PCR and immunoassay (BioPlex) respectively at different time points. Clinical outcome was demonstrated by immunohistology and planimetric measurements.
RESULTS: Transient protein expression of bFGF and $VEGF^{165}$ in the target tissue of the ischemic flap model increased compared to controls after injection of genetically modified cells. As a result a reduction in flap necrosis by nearly 35% was detected after two weeks if transfected cells were applied 1 week before ischemia. Transient protein expression of bFGF and $VEGF^{165}$ improved tissue survival in our ischemic flap model.
CONCLUSION: In our work we showed that transient expression of bFGF and $VEGF^{165}$ induces therapeutically relevant effects after local preconditioning with non-viral transfected fibroblasts in the ischemic rat flap model. Our transfection technology is now used in preclinical research.

LOP23: TISSUE ENGINEERING OF AXIALLY VASCULARIZED BONE USING MESENCHYMAL STEM CELLS AND RHBMP-2 IN THE SHEEP AV-LOOP MODEL
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INTRODUCTION: Bone tissue engineering aims to overcome the limitations associated with autologous bone grafts by combining different bone substitutes with osteogenic cells and growth factors. For therapy of large complex bone defects the arteriovenous (AV)-loop sheep model has been established previously.
MATERIAL AND METHODS: To achieve vascularised de novo bone formation in the sheep AV-loop model, mesenchymal stem cells (MSC) with and without recombinant human bone morphogenetic protein-2 (rhBMP-2) implanted in a ß-tricalcium phosphate/hydroxyapatite (β-TCP/HA) matrix for 12 weeks.
RESULTS: Histological and immunohistochemical evaluation revealed newly formed bone in both groups with an increased amount of bone area in the rhBMP-2 group. Osteoblastic and osteoclastic cells were detected, revealing an active bone remodelling process. MSC were found close to the β-TCP/HA granules. Over time, MRI and micro-CT imaging confirmed increasing vascularization arising from the AV-loop.
CONCLUSION: This study shows de novo engineering of axial vascularized transplantable bone tissue in clinically significant amounts using directly autotransplanted MSC and rhBMP-2 in the sheep AV-loop model.

LOP24: MICROSURGICAL TEACHING PROGRAM AFTER ELEVEN YEARS OF EXPERIENCE IN VICTOR BABES UNIVERSITY OF MEDICINE AND PHARMACY, TIMISOARA
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INTRODUCTION: In the last two decades, microsurgery gradually evolved, today being one of the most favored tools for the modern reconstructive medicine. Training of the microsurgical skills, no matter for what kind of surgery, has been established today as an important part of the continuous education, generating national training programs, with many different approaches ranging from bench to bedside. Microsurgery skills have to be achieved in the laboratory and the training program has to be adapted to the individual needs of the trainees.
METHODS: Forty-nine courses in living tissue were organized over the last 11 years, including basic microsurgery, flap dissection, endoscopic-assisted flap dissection, video-assisted microsurgery, ocular microsurgery and individual training courses. The microsurgical training models are performed in latex, chicken leg and rats, while the flap dissections models are performed in pigs. Individual assessment of the skills of the trainees and self-evaluation of the course is performed.
RESULTS: From a total of 612 trainees, 301 were plastic surgeons, followed by general and orthopedic surgeons, mostly residents (429) originating especially from European countries without a national microsurgical training program. Diversification of training courses and the developing a "training ladder" type of program responded to trainees' specific needs and allowed for a greater efficiency of the training process.
CONCLUSION: The source for the standardization of the training program was the permanent interaction with the trainees. The diverse types of courses encourages the young doctors to have a complete formation, each trainee being free to choose the course he/she feels is more significant at a specific moment of his/her surgical evolution.

LOP25: ANESTHESIA DURATION AS A MARKER FOR SURGICAL COMPLICATIONS IN OFFICE-BASED PLASTIC SURGERY

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INTRODUCTION: Office-based Plastic Surgery has continued to increase throughout the past two decades with the increased demand for cosmetic surgery procedures. Increased regulations on these surgical practices require careful scrutiny on both major and minor anesthetic and surgical complications. The safety of office-based plastic surgery could be identified by looking at complication rates and as a function of anesthesia duration.
METHODS: We retrospectively reviewed a database of 2595 patients who had undergone office-based plastic surgery procedures between October 2000 and January 2005. All patients received general anesthesia for a broad range of cosmetic surgeries. The primary outcome was overall complications, which were anesthetic, surgical, and aesthetic in nature. Complications were looked at as a function of anesthesia duration. The follow-up period was 30 days. Statistical analysis was completed using SPSS v.18.
RESULTS: Patients were on average 41 years old (Range: 11-81), and a vast majority were women (2428, 93.6%). The overall complication rate was 24.2%. For anesthesia durations of <2 hours, 2-4 hours, and >4 hours the complication rates were 18.1, 29.5%, and 43.3% respectively. The difference in overall complication rate for anesthesia duration > and < 4 hours, was statistically significant (22.5% vs. 43.3%, p<0.0001). Overall, there were 66 (2.5%) patients that required reoperation due to surgical complications (hematoma, seroma, necrosis, dehiscence) of which there was no statistical difference between > and < 4 hours of anesthesia (p = 0.098). We did find a significant increase in the occurrence of surgical complications such as seroma (3.0% vs 5.7%, p = 0.032), hematoma (2.4% vs. 8.1%, p<0.0001), necrosis (1.3% vs. 3.8%, p=0.0097), urinary retention (0.7% vs. 7.1%, p<0.0001) and PONV (2.7% vs. 5.7%, p=0.0293). The only major morbidities were one pulmonary embolism (< 4 hours) and one deep vein thrombosis (> 4 hours). Four patients (0.15%) were admitted to the hospital by POD#1 for surgical and/or medical management (3 hematomas, 1 DVT).
CONCLUSION: Duration of general anesthesia in office-based Plastic Surgery does not seem to be an indicator of major morbidity and mortality. Although both surgical and anesthetic complications are significantly increased in patients who are under anesthesia >4 hours, there was no significant increase in reoperation rates, major morbidities, or hospital admission as a result of the greater operative time.

LOP26: NOVEL APPROACH TO CLOSED TREATMENT OF PROMINENT EAR WITHOUT SKIN RESECTION (ENDOTOPLASTY)

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INTRODUCTION: The aim of this study is to demonstrate an alternative closed approach to treat prominent ear without skin resection. The surgical access is a single 5-8mm incision located on the external border of the helix at the junction of the posterior crura of the anti-helix. The strategy is performed by anterior and posterior global undermining of the auricular skin over the anti-helix and concha, controlled anterior anti-helix rasping and anti-helical row using stabilization using trans-cutaneous Kaye stitches. The reduction of the hypertrophic concha is made according the "conchal show" principles.[1] This technique is mainly indicated in ethinic skin patients.
PATIENTS AND METHODS: The surgery was performed on 642 patients (398 female and 244 males, mean age 18.6 years), included 616 bilateral and 26 unilateral cases (n=1,258 ears), in a follow-up period of 12 years.
RESULTS: A balanced external ear configuration was achieved in majority of the cases.[3] A smooth antihelix surface was consistently achieved with few complications. Sinus formation in 20 patients(2,8%) were the main complication.
Moderate asymmetry in 8 patients (1,2%). Hematoma in 5 patients (0,6%). No infection or pathologic scar were not recorded.
Follow-up period ranged from six months to 12 years.
DISCUSSION: The entire procedure can be performed through a single 5-8mm incision.Tumescent infiltration facilitates the undermining over the antihelix and the concha in front and behind the ear. The global schrinkage of the skin envelope contributes to the medianization of the auricle, making skin resection unnecessary.[5] A skin nasal descolator, nasal

thin rasp, one full curved 1 5cm Metzembaum and Fomon pair of scissors is the only the instrumentation utilized. Eletrocautery is unnecessary.

CONCLUSION: The closed approach performed through a small incision located as mentioned above can correct effectively prominent ear types I, II and III of the Egloff grading. This strategy requires tumescent infiltration with anterior and posterior undermining of the auricular over the anti-helix and concha, controlled anterior scratching over of the anti-helix, which is moulded and stabilized using trans-cutaneous stitches. The hypertrophic concha is removed according the "conchal show" principles.

LOP27: RISK FACTORS FOR CUTANEOUS SQUAMOUS CELL CARCINOMA METASTASIS

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INTRODUCTION: The incidence of cutaneous SCC (cSCC) has increased globally in recent decades. Literature on the reported incidence of metastasis from cSCC varies widely from 0.1 to 10%. We investigated the metastatic rate of cSCC and the effect known risk factors such as lesions size, location, and the presence of perineural invasion (PNI) and lymphovascular invasion (LVI), had on metastasis.

METHODS: Pathology reports of all patients who were treated surgically for cSCC lesions confirmed histologically from 1997 to 2007 in the Central Region of New Zealand were culled from our database. The data was searched for patient demographics, LVI and PNI. The metastasis rate of cSCC was calculated for all patients with a minimum follow-up of 18 months. Odds Ratio (OR) and logistic regression was used for analysis of the risk imposed by histological factors (PNI and LVI). Strength of OR on cSCC metastasis was assessed using Chi-square test.

RESULTS: 6,172 patients were treated for 9,036 primary cSCC lesions over the 10-year study period. Of these, 219 patients developed metastasis, 105 of which had a recorded primary and 114 had an unknown primary. The SCC metastatic rate for the 219 patients was 3.5% (95% CI, 3.0-4.0%); assuming all unknown primaries were of cutaneous origin. If patients with metastasis from an unknown primary were excluded, the metastatic rate was 1.8% (95% CI, 1.7-2.5%). The mean interval between treatment of the known primary SCC and metastasis was 1.8 years (range, 6 days-7.3 years). Nodal metastasis accounted for almost 70% of all metastases most commonly to the cervical lymph nodes. The remainder had metastatic deposit in the subcutaneous tissue and/or muscle. Odds ratio (OR) showed lesion location, differenitation, size, PNI and LVI all had significant influence on the likelihod of mestastasis.

CONCLUSION & DISCUSSION: The low incidence of metastasis from cSCC reported underscores the need to better identify those lesions that require more intensive initial treatment and followup. We show a significant correlation between location, size, differentiation, PNI and LVI and metastasis.

LOP28: ROBOTIC ASSISTED RECONSTRUCTION OF THE OROPHARYNX

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BACKGROUND: Access to challenging oropharyngeal tumors has traditionally been through a transmandibular, translabial approach. Because of the morbidity of this approach, as well as the efficacy of chemoradiation therapy, there has been a paradigm shift away from surgery. The consequence has been significant chemoradiation related morbidity and mortality. Robotic resections provide the benefits of locoregional control, without the morbidity of mandibulotomies or high does chemoradiation. Robotic resections pose a challenge for plastic surgeons, because the cynlinder of the oropharynx remains almost entirely closed and access to oropharyngeal anatomy severely restricted. Robotic inset of complex flaps has the benefits of excellent visualization and the ability to accurately place and tie suture in a restricted space.

METHODS: The DaVinci Surgical System was used in 15 cases of oropharyngeal reconstruction. All oropharyngeal tumors were resected, using a transoral robotic approach with or without a pharyngotomy. The robot was used for trans oral inset of free or local flaps, and in four cases, microvascular anastomosis.

RESULTS: Fifteen cases were performed from July 2009 to March 2011. All tumors were squamous cell carcinomas. All tumors required a transoral robotic resection, and 8/15 required a pharyngotomy for additional exposure. Reconstructions consisted of 5 anterolateral thigh flaps, 1 radial foream flap, 1 ulnar artery perforator flap, 2 facial artery myomucosal flaps and 3 pharyngeal flaps. Robotic microvascular anastomosis was peformed in 4 cases. There was no vascular compromise. When robotic anastomosis

was performed, no hand thrown sutures were required. There were no free flap losses. There were no fistulas. There was one instance of delayed wound healing. All patients were decannulated and are independent of tube feeds.
CONCLUSION: Minimally invasive resections provide locoregional control without the morbidity of mandibulotomies or high dose chemoradiation. Trans-oral robotic reconstruction allows access and precision within the oropharynx. It is safe and effective, and may expand minimally invasive resections where reconstruction is not possible through traditional approaches.

LOP29: THE OSTEOGENIC CHARACTERISTICS OF IMMORTALIZED CALVARIAL CELLS
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INTRODUCTION: Bone morphogenetic proteins (BMPs) are sentinel to osteoblastic growth and differentiation, and their implementation into clinical practice can potentially revolutionize the management of cranial defects. Previously, we demonstrated that BMP-9 may have increased osteogenic potential compared to BMP-2 and BMP-7. Here, we compare the differential effects of BMP-9 and BMP-2 in murine-derived primary calvarial cells.
METHODS: Calvarial bone harvested from 3-week old CD-1 mice was minced and cultured. The presence of progenitor cells within the isolate was confirmed by flow cytometry and IHC staining for mesenchymal stem cell markers (CD-133, CD-105, and CD-166). At culture-day 21, isolated cells were immortalized by retroviral transfection of the SV40 large T antigen. Adenoviral vectors encoding BMP-9, BMP-2, and green fluorescent protein (GFP, control) were used to infect immortalized calvarial cells (iCALs), and infection efficiency was assessed by fluorescent microscopy to ensure equivalency. Alkaline phosphatase (ALP) activity, degree of matrix mineralization, and mRNA expression of late markers of osteogenic differentiation were analyzed. Lastly, the capacity of ad-BMP-infected cells to form bone in vivo was tested using a murine ectopic bone model.
RESULTS: Primary calvarial cells retained their mesenchymal markers following the immortalization process. Both BMP-2 and -9-infected iCALs expressed significantly increased ALP activity, and in general, BMP-9-infected cells to a greater degree than BMP-2-infected cells, compared to GFP-infected iCALs ($p<0.05$). Osteocalcin mRNA transcripts were significantly elevated in BMP-9-infected cells by day 8 post-infection and in BMP-2-infected cells by day 14. BMP-9- and BMP-2-treated cells stained positively for alizarin red by days 14 and 21, respectively. Mature bone nodules were present in nude mice implanted with ad-BMP-infected iCALs by 6 weeks post-implantation compared to ad-GFP control subjects, and confirmed via H&E and trichrome histochemistry.
CONCLUSIONS: Both BMP-9 and BMP-2 promote osseous differentiation in calvarial-derived progenitor cells, but the present data shows that BMP-9-treated cells demonstrate a more robust, a potentially earlier, osteogenic response. These findings evoke further studies to comprehensively test the differing and potential synergistic effects of these and additional BMPs in the craniofacial skeleton.

LOP30: FREE FLAP MANDIBLE RECONSTRUCTION AFTER BISPHOSPHONATE RELATED OSTEONECROSIS OF THE JAW (BRONJ)
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INTRODUCTION: The systemic bisphosphonate application in oncology, especially in bone metastases cases, is important for skeletal stabilization and quality of life preservation. Only a few years ago bisphosphonate related necroses of the jaw were described the first time. The bone lying open to the oral cavity is infected. Therefore, a lot of jawbone must be often removed with the surgical treatment, especially in stage III cases. In relapse cases the bone integrity can be weakened so far that a reconstruction becomes necessary. Aim of the study was an analysis of suitability of bony free flaps for mandible reconstruction in bisphosphonate related osteonecrosis of the jaw cases.
MATERIAL AND METHOD: Between April 2005 and August 2010 367 patients in an average age of 58.3 years (M=248; F=119; 2-89, Median age 57 years) underwent a free flap reconstruction. From this in 177 cases a bony free flap was performed. Since March 2009 a microsurgical reconstruction was carried out in five BRONJ cases as last possibility. The average age in these cases was 56.6 years. The oncological disease, the duration and kind of bisphosphonate therapy, the kind of flap and the flap loss rate were raised.
RESULTS: In three cases a plasmacytoma, in one case kidney carcinoma metastases and in one case prostatic carcinoma metastases were the reason for bisphosphonate application. In all cases the patients received

Zoledronat (Zometa®) intravenous for a period from more than three years. In two cases a fibular flap and in three cases a scapula flap was harvested. In one case the flap was lost and in four cases the flap was successful.

CONCLUSION: Bisphosphonate still are important in oncology. The avoidance of a stage III necrosis must be the purpose of treatment. In isolated far progressed cases in which a continuity resection must occur bony free flaps seem to be an option to preserve quality of life.

LOP31: ROLE OF EPHRIN-B4 IN WOUND REPAIR

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INTRODUCTION: The different Ephrin receptors (Ephs) and their ligands play an important role in angiogenesis, axon guidance and developmental processes. A combinatorial code of the Ephs dictates whether cell migration will be contact inhibited. We investigate the putative role of ephrins in cutaneous wound healing, where well-orchestrated migration towards the wound bed and cell differentiation is crucial.

MATERIALS AND METHODS: We used primary human keratinocytes from patients undergoing abdominoplasties and a human keratinocyte cell line (HaCaT) as control. EphB4 was silenced by siRNA transfection. mRNA levels of EphB4 were determined by quantitative real time PCR. In vitro scratch-assays were performed to examine cell migration. A porcine wound infection model was employed to study EphB4 expression in cutaneous wounds. Tissue sections from full-thickness wounds were taken for immunohistochemical staining using antibodies against EphB4.

RESULTS: EphB4 silenced cells show impaired cell migration. RT-PCR reveals increased expression of EphB4 in cells with high numbers of cell-cell contacts. In immunohistochemical staining the origin of the epithelial tongues in porcine wounds showed increased EphB4 expression.

CONCLUSION: Our results indicate that ephrins might be involved in regulating migration and differentiation of keratinocytes in wound healing. Upcoming investigations towards the impact of ephrin/Eph interactions on wound closure and tissue regeneration are in progress.

LOP32: HYPOXIA PRECONDITIONED ASCS IMPROVE FLAP VIABILITY

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PURPOSE: Adipose-derived stem cells (ASCs) delivered to surgical flaps may enhance wound healing and vascularization. We investigated whether ASCs preconditioned in hypoxia could improve flap viability and the mechanisms that might govern such an effect.

METHODS: ASCs were harvested from Lewis rats and conditioned in either normal or hypoxic environments for 72 hours. For in-vivo studies; 21 rats had dorsal flaps elevated using a standard ischemia model. At the time of elevation, flaps were injected with DMEM, ASCs (10^6 cells) preconditioned in normal oxygen or ASC's (10^6 cells) preconditioned in hypoxia. At 7 days post elevation, flaps were evaluated by gross exam for viability and immunohistochemistry for cell localization. For in-vitro studies, hypoxia preconditioned ASCs were compared to normal ASCs for migration potential, VEGF production and VEGF chemotaxis.

RESULTS: Tissue viability was significantly greater in flaps injected with hypoxia preconditioned ASCs as compared to DMEM controls (37 +/- 18 % versus 11 +/- 7%; $p<0.05$) – Figure 1. PKH-67 labeled ASCs could be seen within the substance of the flaps and across flap interfaces. Using a scratch assay, normal ASCs and hypoxia preconditioned ASCs were found to migrate at a similar rate. Using ELISA, conditioned media from hypoxic ASCs was found to have significantly greater concentrations of VEGF than conditioned media from normal oxygen controls (3215 +/- 173.1 pg/ml versus 2476 +/- 108 pg/ml; $p<0.05$). Next, we wished to determine whether preconditioned ASCs might induce ASC migration through VEGF. Using transwell assays, ASC migration was increased in response to full media (3.4X), conditioned media from normal oxygen (1.7X) and hypoxia preconditioned ASCs (1.7X), as well as VEGF (10ng/ml) containing minimal media (2X). Following the addition of VEGF blocking antibody (0.5ug/ml), ASC chemotaxis was significantly decreased in only the VEGF (10ng/ml) containing media group (2.01 fold versus 1.05 fold; $p<0.05$).

CONCLUSIONS: Intradermal injection of hypoxia pre-conditioned ASCs improves overall flap viability. Hypoxia preconditioning enhances ASC VEGF production. However, ASC migration in response

to full and conditioned media is not dependent on VEGF. These results suggest that other factors govern migration of ASCs within a hypoxic environment.

LOP33: KERATINOCYTES INDUCE EXTREME SENSORY NEURONAL HYPEREXCITABILITY AND CHRONIC PAIN

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INTRODUCTION: Keratinoctyes play an important role in the dialog between skin and cutaneous sensory neurons. Nerve growth factor (NGF) is produced by skin keratinocytes and hypersecretion of NGF has been suggested to contribute to changes in sensory neurons leading to hyperalgesia. The present study was performed to investigate the effect of human KTs (hKT) in contact with injured peripheral nerve.
METHODS: hKTs were microinjected into the proximal end of ligated nude rat sciatic nerve. 2 weeks, the nerves were assayed for NGF using ELISA and the dorsal root ganglia prepared for in vitro whole cell patch clamp recording.
RESULTS: ELISA indicated large elevations in NGF were observed at the injury site. Whole cell patch clamp recordings from the primary afferent neurons displayed extreme hyperexcitability, and the animals exhibited profound pain behaviour. The neurons gave rise to high frequency persistent action potential burst firing from a single stimulus which have previously been associated with neuropathic pain.
CONCLUSION: This study represents a direct demonstration of the critical role keratinocytes may have in signalling sensory neuronal hyperexcitability and pain. The cellular release of NGF by KTs have a profound effect on neuronal excitability and have implications for neuropathic pain mechanisms in hyperproliferative KT states such as after burn injury or in wound healing.

LOP34: MANDIBULAR RECONSTRUCTIONS WITH FREE FIBULA FLAP AND CUSTOM MADE PLATE PRODUCED BY CAD-CAM AND RAPID PROTOTYPING TECHNOLOGY

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INTRODUCTION: The goal of mandibular reconstructions is to provide to the patient the best possible aesthetic and functional result.
The use of free fibula flap with a titanium osteosinthesis plate is the standard technique: the plate is bent and shaped intraoperatively, or preoperatively on anatomic stereolithographic models. The shaping procedure is manual, is often not precise and the result depends on the surgeon's experience.
CAD-CAM technology can be used to design and produce a custom made plate for each patient.
MATERIALS AND METHODS: 10 patients affected by mandibular cancer were operated at Bologna University Hospital for mandibular resection and reconstruction with free fibula flap and custom made plate produced by CAD CAM technology.
Based on pre-operative CT scan datas, we used CAD technology (computer aided design) to plan the surgical resection and design a custom made plate for each patient, in order to carefully reproduce the patient's original facial contour. An stl file (3D design of the plate) was produced. The computer designed plate was then "printed" in Titanium by Direct Metal Sinthering (a rapid prototyping method), sterilized and used as a reconstructive plate during the operation to fix the free fibula flap.
3 months post-operative each patient underwent a CT scan for follow-up.
The follow-up CT scan datas were confronted with the virtual planned reconstruction in order to evaluate the precision of the reconstruction.
RESULTS:
In the 10 patients series the following results were achieved:
Reproducibility of the virtual planned reconstruction ranged from 94% to 98%; Surgery was facilitated, with an everage spare of 30 minutes per operation; Costs were higher compared to the traditional technique (due to time and cost of plate design and production); Custom made plates tolerability was comparable to standard plates, no complic ations were reported in the 10 patients series.

CONCLUSION: The new protocol for mandibular reconstruction with free fibula flap and CAD-CAM titanium plate may represent a viable way to reproduce the patient's anatomical contour, giving the surgeon better procedure control.

LOP35: LOCAL HEAT PRECONDITIONING IN SKIN-SPARING MASTECTOMY

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INTRODUCTION & PURPOSE: Experimental data has shown a significant reduction of flap necrosis after supraphysiological 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 4days, for controls 8.3days.
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.

LOP36: EVALUATION OF THE USE OF CYANOACRYLATE GLUE IN MICROVASCULAR ANASTOMOSIS

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INTRODUCTION: With the evolution of reconstructive microsurgery, new techniques and tactics have emerged with the aim of providing a reduction in the time required to perform microvascular anastomosis. The use of cyanoacrylate glue appeared to decrease the time required to perform microvascular anastomosis, however there are few studies that demontrate the efficacy and safety of the substance. OBJECTIVE: Confirm the efficacy of the cyanoacrylate glue used in microanastomosis.
MATERIAL AND METHODS: Twelve Wistar rats were divided betwen two groups, 6 in group A and 6 in group B. The iliac artery and vein were used on the study. In group A the animals were submited to conventional suture and in group B they were submited to fewer conventional sutures associated with ester of cyanoacrylate glue. The microanastomosis were done with a 10.0 Nylon suture and a microscope with 40 times visual enhance.
RESULTS: The mean number of arterial microanastomosis stitches was 5.5 in group A and 3.4 in group B, the mean number of vein microanastomosis stitches was 9 in group A and 6 in group B. The mean surgical time of the whole procedure was 188.25 minutes for group A and 133.3 minutes in group B. Histopathological study with hematoxylin and eosin showed the absence of microaneurysms and thrombosis.
CONCLUSION: The experiment demonstrates that the use of cyanoacrylate glue associated with conventional suture is a faster method than the use of conventional suture alone.

LOP37: EXPANDING THE ENVELOPE: THE PORSH-LIVER VASCULAR COMPOSITE ALLOGRAFT

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INTRODUCTION: Solid organ transplantation in the pediatric population presents a challenge in abdominal wall reconstruction due to size mismatch, multivisceral transplants, and prior recipient abdominal surgery. While a number of recipient variables are

fixed, we now report a novel technique of concomitant organ size reduction and abdominal wall expansion in a vascular composite allograft.
METHODS: A 20 year old donor liver was matched to a Status 1b 14 month old female with biliary atresia and a failed Kasai procedure. Her liver disease was complicated by gastrointestinal hemorrhage necessitating massive transfusion and ligation of a gastric Dieulafoy lesion. At the time of transplantation, the recipient was critically ill with an open abdomen covered with polygalactin mesh.
RESULTS: Procurement of the posterior rectus sheath (PORSH) and liver was performed in continuity with preservation of the falciform ligament. The liver was split and the left lateral lobe of the liver was transplanted into the recipient. Arterial and biliary anastomoses were performed as the standard split liver transplant procedure and PORSH perfusion was evident immediately upon completion. Fascia was closed with donor PORSH as an interposition flap between the recipient abdominal wall. No additional immunosuppression medications were utilized beyond the standard liver regimen.
CONCLUSIONS: Closure of the abdominal cavity in pediatric transplant patients is a challenging dilemma. We describe a novel method of abdominal wall reconstruction and suggest the universal application of the liver-PORSH vascular composite allograft in liver transplantation in situations of size mismatch, multivisceral transplants and compromised abdominal wall of the recipient.

LOP38: VASCULARIZED BONE MARROW TRANSPLANTATION INDUCE PARTIAL TOLERANCE TO HEMIFACE TRANSPLANTATION IN RATS

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OBJECTIVE: Clinical application of composite tissue allograft transplants opened discussion on the restoration of facial deformities by allotransplantation. The authors introduce hemifacial allograft transplant plus femur transplantation as a vascularized bone marrow model to investigate the rationale for the development of functional tolerance across the major histocompatibility complex barrier.
METHODS: Ten rats in two groups were studied. The composite hemifacial allotransplantations including the ear and scalp and femur allotransplantation were performed between Lewis-Brown Norway (RT1+n) and Lewis (RT1) rats. Hemiface allotransplantation alone controls (n = 5) and both hemiface and femur allograft (n = 5) were treated with cyclosporine A 16 mg/kg/day during the first week; this dose was tapered to 2 mg/kg/day over 4 weeks and maintained at this level thereafter.
RESULTS: The number of rats that reject under cyclosporine A monotherapy protocol and the interval free of rejection was significant different between the two groups.
CONCLUSIONS: These facts demonstrate the contribution of the superior microchimerism levels in induction of a partial tolerance in the group with simultaneous hemiface and vascularized bone marrow transplantation.

LOP39: LEARNING CURVE IN HEMIFACIAL TRANSPLANTATION IN RATS

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To study the learning curve and applicability as a training procedure of the hemifacial transplantation model in rats performing it by two operators – a trained microsurgeon and a medical student, trained in basic microsurgery.
MATERIAL AND METHOD: A total number of 15 hemifacial transplants between Brown Norway as donors and Wistar as receiver rats were performed by two operators: experienced microsurgeon (group II, n=5) and the medical student (group III, n=10). Time of ischemia, duration of the operation and survival rate were emphasized and used for comparison. All the rats received immunosuppressive treatment with cyclosporine A in monotherapy for 30 days. Results were processed statistically using SPSS and Microsoft Excel.
RESULTS: Transplantation procedure duration time performed by experienced microsurgeon began from 420 min and decreased to 330 min after 5 transplantations, with an average of 382±43.2 and the ischaemic time decreased from 140 min to 50

min, with an average of 90±38.2 min. Medical student tended to equalize the duration of surgery and ischaemic time, approximately, after 9 transplantation, from 660 min to 330 min and ischaemic time from 190 min to 60 min with an average for the duration of 467±130.1 and 133.5±50.7 min for the ischaemic time. All the rats (n=5) from group II operated by experienced microsurgeon survived (100%), 6 rats survived (60%) in the group III operated by the student. No significant differences were emphasized in survival rate between these two groups ($p<0.05$). By analyzing learning curves using two parameters (duration of surgery and ischaemic time) no significant differences were noticed between transplantations performed by experienced microsurgeon and student ($p<0.05$).

CONCLUSION: Hemifacial transplantation model in rats is a useful tool for preparing experimental and clinical application of the facial transplantation. It is good model for training young specialists for future transplantation surgery. It is important to notice that the medical student had previous experience in microsurgery and the learning curve was applied only for this specific procedure. Even young specialist in microsurgery could perform such complex procedure after an appropriate training period (in our study after 9 consecutive transplantations) with the same results as an experienced microsurgeon. Using of cyclosporine A as monotherapy gave good immunosuppression results in rats' transplantations (30 days).

SOP01: LONGTERM MORPHOMETRIC ANALYSIS OF THE EYEBROW POSITION FOLLOWING ENDOSCOPIC BROWLIFT AND TRANSPALPEBRAL BROW LIFT

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QUESTION: Although during brow lifting procedures the desired effect of brow elevation can be achieved intraoperatively, there is very scarce data which proves this effect in the mid and long term follow up. The intention of this study is to give an objective and comparable analysis of the eyebrow position after different surgical techniques and to provide data about the long term changes of the brow position.

METHODS: In retrospective study photo documentations of brow lift patients from 1997 until 2010 were analysed.

Patients were grouped regarding the type of operation. The standardized photo documentations were then grouped to follow up time periods and morphometrically analysed. Five perpendicular distances along the constant intercanthal plane to the upper border of the eyebrow were measured (L1-L5). Additionally the position of the highest point of the eyebrow was determined to evaluate changes in eyebrow shape.

RESULTS: The study analyzed a total of 172 eyes of 86 patients, 55 patients had an endoscopic browlift and 31 patients had a transpalpebral brow lift.

For the endoscopic browlift at all postoperative examinations there was a rise of the eyebrow. The highest eyebrow position is also elevated and moves more medially.

For the transpalpebral brow lift there is a decent below the preoperative brow height at most instances. The highest eyebrow position also decreases and moves more laterally.

CONCLUSIONS: Our results demonstrate that with the endoscopic browlift a long lasting successful eyebrow repositioning can be achieved, the eyebrow rarely descents below the preoperative position even after many years.

Whereas the patients treated with a transpalpebral brow lift already show a decrease of the eyebrow position a short time after the operation. This result has to be considered together with the fact that an upper eyelid blepharoplasty is simultaneously performed with this procedure, which corrects upper lid blepharochalasis and therefore diminishes the dynamic stimulus for brow elevation. The nevertheless subjectively satisfying results in these patients are probably due to the correction of blepharochalasis in the combined blepharoplasty/browlift operation.

SOP02: CAPSULAR CONTRACTURE AFTER COSMETIC BREAST AUGMENTATION: DO TOPICAL ANTIBIOTICS MATTER?

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QUESTION: We investigated if lavage with topical antibiotics reduces occurrence of capsular contracture in cosmetic breast surgery.

MATERIAL AND METHODS: We included 308 women who underwent cosmetic breast augmentation (n=168, Group A and n=140, Group B).

Infra-mammary approach and dual-plane pocket were used.

In Group A, patients received a single intravenous dose of 1.5g of cephalothin and 750mg of cephalexin twice a day for 1 week orally after discharge.

In Group B, 750mg of cefuroxime was administrated intravenously; implants and pockets were irrigated with 10% povidone-iodine solution, 750mg of cefuroxime and 40mg of gentamicin. After discharge, 500mg of levofloxacin once a day for 10 days was given.
Infection, seroma and capsular contracture occurrence were registered.
We considered significant capsular contracture when graded III or IV in Baker Classification.
RESULTS: No postoperative infections or seroma were detected. Capsular contraction rate was significantly higher in Group A (5.9% vs 0%; p=0.003).
CONCLUSION: Use of topical antibiotics in cosmetic breast surgery is recommendable, because a significant capsular contracture increase was observed in patients not treated with them.

SOP03: SUBJECTIVE RATING OF COSMETIC TREATMENT WITH BOTULINUM TOXIN TYPE A: DO EXISTING MEASURES DEMONSTRATE INTER-OBSERVER VALIDITY?

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QUESTION: The widely-used Facial Wrinkle Scale (FWS) and Subject Global Assessment (SGA) attempt to measure effect and duration of cosmetic treatment with Botulinum Toxin. We sought to determine the inter-observer validity of these subjective, qualitative scales. Our null hypothesis was that there would be no difference in concordance for the FWS and SGA between plastic surgeons, residents and medical students.
METHODS: BT injections were performed to cosmetic effect in 6 patients recruited as part of an Institutional Review Board-approved investigation. Subjects were photographed at rest and during facial animation prior to treatment and at follow-up to 6 months. Standardized digital 8"x10" prints were scored using the FWS, rating wrinkle severity from 0 (none) to 3 (severe), by Board-certified plastic surgeons (n=5), general surgery residents (n=3) and medical students (n=4). Each time point was also compared to baseline, rating percent change using the SGA. The observers were blinded to each other's scores. Statistical analysis of observer data was performed using SPSS v19. Cohen's kappa (FWS) and Spearman's rho (SGA) were calculated for each pair-wise comparison of observer data, with a conservative alpha of 0.01.
RESULTS: FWS and SGA observer scores were in agreement overall (Fig 1), but the distribution of concordance values was highly variable (Fig 2). Agreement among plastic surgeons was the greatest (kappa=0.194-0.609). Resident concordance was moderate, and medical students displayed the most variable agreement. Spearman's rho for SGA scores was much higher in all groups, with surgeons approaching excellent agreement (0.443-0.992). In pair-wise comparisons between members of different groups, agreement ranged from slight to good for both the FWS and SGA.
CONCLUSION: The FWS and SGA represent the current standard of cosmetic outcomes measures; however, when subjected to scrutiny they display unpredictable agreement even among plastic surgeons. We must reject the null hypothesis for residents and medical students, as well as for pair-wise comparisons between groups. Compared to the FWS, the SGA has a more acceptable user concordance. These data underline the need to explore novel objective, quantitative outcomes metrics for cosmetic patients.

SOP04: CHRONIC POSTOPERATIVE PAIN AND SENSORY CHANGES FOLLOWING REDUCTION MAMMAPLASTY

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BACKGROUND: Few studies have examined persistent pain after reduction mammaplasty, and sensory changes remain a controversial subject with studies reporting both reduced, improved, and unchanged skin sensitivity following surgery. The aim of the present study was to describe the prevalence, character, and impact of sensory changes and persistent pain following breast reduction surgery and to assess possible causes and predictors of persistent sensory changes and chronic pain.
METHODS: In May 2010, a detailed questionnaire was mailed to all 109 patients who underwent reduction mammaplasty at the Department of Plastic Surgery, Aalborg Hospital from September 2004 to February 2010. Ninety patients (83%) returned the questionnaire; mean age was 48.7 years (SD 14.7); and mean time since surgery was 27.7 months.
RESULTS: Eight patients reported that they had sensory abnormalities in the breasts before surgery, which normalized or improved in four, remained unchanged in

one, and worsened in three patients following surgery. Forty-nine patients (54%) reported sensory changes in the nipple-areola complex or skin as a consequence of surgery. Sixty-nine patients reported having pain before surgery (most often in the neck/back), which was completely relieved in 42% and partially in 43%. Twenty-five patients (28%) reported having pain in the breasts as a consequence of the operation: 20% had chronic pain (defined as constant pain or pain at least once weekly for at least 3 months) and 7% had moderate to severe pain. In more than half of the patients, the pain was compatible with neuropathic pain. Patients with pain tended to be less satisfied with the surgery than those without pain ($p = 0.07$, Mann-Whitney U test). Young age, time since surgery, complications to surgery and sensory abnormalities before surgery were significantly related to pain.
CONCLUSION: Reduction mammaplasty relieved neck and back pain in most patients, but the surgery is associated with a risk of developing new sensory abnormalities and persistent neuropatic pain.

SOP05: NOVEL METHOD TO GENERATE ALLO-SPECIFIC REGULATORY T CELLS FOR SKIN TRANSPLANTATION

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INTRODUCTION: The application of allogeneic skin grafts in clinical practice is complicated by immune mediated rejection. Immunosuppressive therapies can be prescribed to impair the immune response but undesirable side effects may outweigh the benefits of allogeneic skin grafting. The aim of this study is to focus on induction of specific immune tolerance to alloantigens without generalised immunosuppression using the intracellular enzyme indolamine 2,3-dioxygenase (IDO). IDO generated microenvironment up-regulates regulatory T cells (Treg), the body's natural tolerogenic cells. Fibroblasts can be induced to express IDO and thus used to generate antigen specific Treg cells.
MATERIALS AND METHODS: Mouse allogeneic fibroblasts were induced to express IDO and co-cultured with autologous mouse splenocytes for 72 hours. CD4+CD25+Foxp3+ Treg cells were counted using Flow cytometry assisted sorting (FACS) analysis before and after the 72 hr incubation period. Magnetic assisted cell sorting was used to isolate out the Treg cells and antigen specificity was confirmed by mixed lymphocyte reaction and CFSE proliferation assay.
RESULTS: In comparison to baseline a three-fold increase in Treg cell numbers was found in the IDO expressing fibroblast co-culture. Mixed lymphocyte reaction with autologous CD8+ T cells, generated Treg cells and allogeneic splenocytes showed reduced CSFE proliferation suggesting impaired CD8+ cell activation through the suppressive action of antigen specific Treg cells.
CONCLUSION: Antigen specific Treg cells to allogeneic skin antigens can be generated through splenocyte co-culture with IDO expressing fibroblasts. Immune tolerance will be determined in the in vivo model of the study.

SOP06: RECONSTRUCTION OF PLANTAR HEEL DEFECTS WITH PLANTARIS MEDIALIS NEUROVASCULAR ISLAND FLAPS

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INTRODUCTION: Soft tissue defects of the heel are difficult to repair and treatment often causes problems because of the anatomical structures of the foot's function in bearing the entire weight of the body. Flaps taken from the non-weight bearing area of the sole have normal quality of the plantar skin, which has fibrous septa with reduced flexibility. In view of the quality of the skin and subcutaneous tissue and the quality of the nerve supply, plantaris medialis neurovascular island flaps have been used to cover small- to middle-sized heel defects. The aim of this study was to determine the indication and clinical outcome of plantaris medialis neurovascular island flaps used for the reconstruction of plantar heel defects.
MATERIALS AND METHODS: 15 consecutive patients with plantar heel defects who received treatment at our institution between 2002 and 2009 were analyzed retrospectively. Patient data analyzed included epidemiological, clinical and management details, sensation, and development of recurrence.
RESULTS: Mean age of the patients was 42.3±12.3 years (mean±sd). 69% were male and 31% were female. Plantar heel defects were secondary to trauma in 33%, pressure sores in 27% tumours in 20% and osteomyelitis in 20%. Patients had a mean of 0.8 risk factors (e.g. BMI>30, smoking, diabetes mellitus). Flap survival was 100% in 12/15 patients and partial in 3/15 patients. There were no flap losses. Other

complications included flap in 20%, secondary split skin grafting after debridement was performed in 13.3% and haematoma evacuation in 6.7%. After a follow-up of 59±29.4 months, there were no further reports of recurrent heel defects.
DISCUSSION: Plantaris medialis neurovascular island flaps should be included in the armamentarium for plantar heel reconstruction to provide durable closure of small to middle-sized plantar heel defects. These flaps are limited in width and cannot always cover large defects, particularly after excision of malignant tumours.

SOP07: MACROSTOMIA: A SPECTRUM OF DEFORMITY

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INTRODUCTION: The etiopathologic mechanisms of macrostomia (MS) are still not entirely understood, although multiple hypothesis exist, none have been definitively shown to be responsible for the variable phenotypes seen. This series highlights cases of isolated MS presenting with several distinct phenotypes including simple unilateral or bilateral MS, MST associated with diastasis of facial musculature, severe facial clefts extending from the oral commissure to the tragal region and diastasis of facial musculature without significant MS. The purpose of this series is to examine phenotypic differences in MS patients to further elucidate its ethiopathogenesis.
MATERIALS & METHODS: A retrospective review of MS patients evaluated at the Craniofacial Center of Sao Palo University was performed over a ten year period. Patient demographics and clinical features were identified. A scientific review of the literature was performed.
RESULTS: We identified 24 patients with MS (11 M/13 F). Right sided MS occurred in 14 patients, left sided MS occurred in 6 patients, and bilateral MS occurred in 4 individuals. Of the bilateral cases, 100% existed in isolation of CFM or other significant craniofacial abnormalities including skin tags or microtia. In this series, 12 patients presented with MS in isolation of CFM; in this subgroup the male to female ratio was 1:1. Bilateral MS was present in 4/12 (33%) of patients. Unilateral MS occurred more often on the right (5:3). Phenotypes included simple unilateral or bilateral MS 8/12 (66%), MS associated with severe diastasis of the cheek musculature 1/12 (8%), MS associated with maxillary, zygomatic & mandibular abnormalities 3/12 (25%), and finally diastasis of cheek musculature without MS 1/12 (8%). Both facial nerve paralysis and cleft soft palate were present in 2/12 (16%) patients representing the most severe phenotypes. The cases are presented with photographs and CT-scans.
CONCLUSION: Macrostomia seen in isolation of CFM may present in phenotypically distinct forms. It is unlikely that a single mechanism is responsible for this interesting range of phenotypes. We believe that both intrauterine trauma as well as failure of fusion of the mandibular and maxillary processes secondary to an aberration in FGF8 function are responsible. Additionally, diastasis of facial musculature may result from delayed fusion and subsequent decreased mesodermal penetration of the mandibular and maxillary processes.

SOP08: MANDIBULAR FRACTURE REPAIR: THREE-YEAR OUTCOMES FROM A HIGH-RISK PATIENT POPULATION

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INTRODUCTION: Mandible fractures are a common traumatic injury. This study sought to determine epidemiologic factors that influence incidence and outcome by analyzing repairs performed at a Level I Trauma Center.
MATERIALS AND METHODS: Outcomes of patients ORIF mandiblar repair by a single surgeon with monocortical plating from July 2007 to September 2010 were reviewed. Standard statistical methods were used with significance defined as $p<0.05$.
RESULTS: Eighty-five patients were treated for 151 fractures. Etiology was assault (71%), motor vehicle crash (15%), and falls (14%). Patients were primarily from zip codes with lower education status, averaging 31% high school graduation. More than 50% were unemployed. Post-operative complications occurred in 17 cases, primarily due to wound complications (74%). The percentage of tobacco, alcohol and drug abuse was noted in 58%, 79% and 26% of patients, respectively. Habitual drug users had significantly more instances of plate exposure than non-users (21% vs. 4%, $p=0.03$). Fifty-three percent failed to return for follow-up.
CONCLUSION: Socioeconomic factors and substance abuse affect the incidence, wound and bone healing, and follow-up of mandibular fractures. These findings indicate the need to incorporate a more comprehensive treatment plan, including both psychological and physiological intervention.

SOP09: FINANCIAL VIABILITY OF OUTPATIENT WOUND CARE CENTERS IN THE UNITED STATES

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QUESTION: In the US, managing 5-7 million chronic wounds results in expenditures of US$25 billion per year.
The management of complex wounds remains plagued with poor rates of resolution and high rates of recurrence. We hypothesize that complex wounds are best managed in a multidisciplinary environment and that limited access to wound care centers may account for the high costs and poor outcomes. This study sought to determine whether comprehensive wound care centers exist at major academic institutions and how existing centers are supported financially.
METHODS: An online survey was mailed to the Division Heads of Plastic Surgery of 110 medical schools in the United States. Contents of the survey items addressed issues related to outpatient wound care centers, including presence or absence, financial viability, and practical and administrative issues. Responses to the survey items were yes-or-no, multiple-choice, fill-in-the-blank, and free-text-responses. Data related to the survey responses were summarized using descriptive statistics.
RESULTS: Representatives of 71 schools (64%) responded to the survey. Of these, 39 (54%) reported that their institution had an outpatient wound care center, of which only 24 (34% of respondents) integrated inpatient and outpatient care. Among schools with wound care centers, 70% were multidisciplinary and in 54% the administration was provided by the institution with directors mainly being plastic surgeons (45%). 83% of the wound care centers are financially supported by the institution, possibly because only 56% of respondents reported that providing wound care was profitable for the department/division.
CONCLUSION: These data support our hypothesis that a majority of US medical centers do not provide comprehensive wound care services. Of those that do, 83% required institutional support to remain financially viable and this may account for the absence of wound care centers at many major US medical institutions. If we intend to improve outcomes for patients with complex wounds, new strategies for the organization and financial operation of wound care centers must emerge.

SOP10: MICROSURGERY TRAINING: STUDENTS VS. SURGEONS

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INTRODUCTION: This study presents a comparison between medical students in their clinical semester and surgeons with varying clinical experience, who participated at a microsurgery skill course with different surgical prior knowledge.
MATERIAL AND METHODS: 36 medical students and 18 surgeons attended on a 14-day microsurgical skill course. The course included theoretical and practical lessons with a priority on practical training, made up like a step by step training program. At the end of the course an examination was given, which was composed of a theoretical and a practical part. An already established scoring system was used to objectively assess the level of skill of the participants.
RESULTS: A comparison of medical students and surgeons shows, that the scores achieved at the practical and theoretical examination were equal for both groups, regardless of the initial surgical level of education. With a worse compliance of the surgeons, the students show a more regular participation. This shows that students without practical prior knowledge can learn the microsurgical skills at least equally reliable and qualitatively homogeneous as surgeons.
CONCLUSION: It is worth to mold the time of medical education in a more attractive way through new microsurgical courses, in order to facilitate a decision-making for the students in choosing a microsurgical subject and to benefit from their ability to learn skills requiring motor coordination a lot easier than older ones do. Moreover, the early training of microsurgery leads to perform operation with a high level of skill which guarantees a great benefit for the patient.

SOP11: RELIABILITY OF NEAR-INFRARED ANGIOGRAPHY EVALUATING MICROVASCULAR ANASTOMOSES

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QUESTION: Intraoperative fluorescence angiography has been reported to be a promising method with rapid and high quality image production at low cost

when used for the detection of microvascular complications. The purpose of study was to evaluate the reliability of intraoperative near-infrared indocyanine green (ICG) angiography compared with the microvascular Doppler in a standardized model in the rat with different vessel patency.
METHODS: The carotid, aorta, and femoral vessels of 23 Wistar rats were used. ICG angiography and micro-Doppler testing was performed to assess microanastomosis with a vessel patency randomly narrowed at the anastomosis to an outer patency of 100%, 75%, 50%, 25%, and 0%.
RESULTS: A total of 424 investigations were performed for 68 anastomoses, including both ICG video-angiographic and micro-Doppler examinations. The overall sensitivity and specificity of the micro-Doppler at different degrees of stenoses were 100% and 86.9%. The positive predictive value for all observations was 95.8%, and the corresponding negative predictive value was 100%. ICG angiography revealed an overall sensitivity value of 95.3% and a specificity value of 100%. The positive predictive value for these observations was 100%, and the negative predictive value was 84%.
CONCLUSIONS: ICG angiography and microvascular Doppler sonography are quick and reliable methods for assessing blood flow in vessels in the laboratory model. The combined use of ICG angiography and microvascular Doppler sonography can increase the accuracy of assessment of microvascular anastomoses intraoperatively. ICG can be used first, but followed by the microvascular Doppler in cases of a negative result to maximize accuracy.

SOP12: STANDARDIZED PROCEDURE OF HARVESTING MURINE ADIPOSE-DERIVED STEM CELLS EITHER FROM VISCERAL OR SUBCUTANEOUS FAT OR BOTH

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QUESTION: Although subcutaneous fat is harvested often from rodents, there is a certain lack of standardized procedures. The aim of this study is to present a standardized procedure for harvesting either subcutaneous and visceral fat from mice and comparison of ASC purity in the harvested fat.
METHODS: BALB6 mice (n = 8) were anaesthetized, incisions were made in the axillary and inguinal region bilaterally. Subcutaneous fat pad was dissected in each region followed by a median laparotomy to expose visceral organs. Perirenal and parametrial fat was bluntly dissected with foreceps. Fat was put in sterile Hanks Buffered Saline. Hereafter, mice were euthanized.
ASC were isolated by collagenase digestion, centrifugation and culturing with supplemented DMEM, ASC purity was determined by flow cytometry for CD 90+Sca-1+ cells.
RESULTS: Harvesting procedure had a median duration of 32 minutes, volume of either each subcutaneous fat pad or each side of perirenal as well as parametrial fat was ~1 cm^3. Plastic-adherent cells with ASC-typical morphology could be observed after 48 h, cells were passaged due to confluency after 2 and 7 days and purity of CD90+Sca-1+ cells was >98%.
CONCLUSIONS: The procedure presented here is a fast and standardized procedure for harvesting murine ASC in density and amounts larger than common attempts resulting in fast population doubling as well as very high purity.

SOP13: FUNCTIONAL ANCONEUS FREE FLAP FOR THENAR RECONSTRUCTION: A CADAVERIC STUDY

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INTRODUCTION: Restoration of thumb opposition when significant thenar soft tissue defects occur remains a considerable surgical challenge. Free functioning muscle transfer (FFMT) of the anconeus muscle (AM) for such purposes has not been reported due to equivocal anatomy.
MATERIAL AND METHODS: The AM, its corresponding thenar eminence (TE), and the supplying neurovasculature in eight white British cadaveric upper extremities were identified and dissected. Measurements were performed using standard callipers and Image J 1.45d.
RESULTS: The mean measures of the AM (fibre length = 88.0±9.9mm, area = 1341.9±230.4mm2) were larger than those of the TE (fibre length = 57.7±9.0mm, area = 987.7±251.2mm2). The mean fibre angles were not statistically different (AM = 70.5±11.9 degrees, TE = 78.4±12.2 degrees; $p>0.05$). There was no signifi-

cant difference between mean measures of the neurovasculature of the AM (artery diameter = 1.9±0.2mm, nerve diameter = 1.7±0.3mm) and TE (artery diameter = 2.0±0.5mm, nerve diameter = 2.1±0.4mm; p>0.05). The AM artery was of sufficient length (31.3±6.9mm) for microsurgical anastomosis.
CONCLUSIONS: The anatomic rationale for FFMT reconstruction of thenar defects with the AM is sound and may provide the added advantage of a greater degree of opposition compared to other FFMTs due in part to the orientation of its muscle fibres.

SOP14: RADIOLOGICAL OUTCOMES OF DISTAL RADIUS EXTRA-ARTICULAR FRAGILITY FRACTURES TREATED WITH EXTRA-FOCAL KIRSCHNER WIRES

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INTRODUCTION: The classical colles fracture (extra-articular, dorsally angulated distal radius fracture) in patients with osteoporotic bone is becoming increasingly more frequent. There still appears to be no clear consensus on the most appropriate surgical management of these injuries. The purpose of this study is to appraise the use of percutaneous extra-focal pinning, in the management of the classical colles fracture.
METHODS: We retrospectively analysed 72 consecutive cases of colles fractures treated with interfragmentary k-wire fixation, in female patients over 60 years of age, in two orthopaedic centres, under the care of 12 different orthopaedic surgeons. We correlated the radiographical distal radius measurements (ulnar variance, volar tilt, and radial inclination) at the pre-operative and intraoperative stages with the final radiographical outcome.
RESULT: Mean dorsal angulation was 218 at time of presentation. Closed reduction significantly improved fracture position to amean of 2.78 volar angulation (p<0.05). Mean angulation at time of k-wire removal was 1.68 dorsal, this was not significant in comparison to post-reductionmeasurements (p<0.05). Mean ulnar variance at time of presentation was 2.5 mm (range 7.4 to _4.2). Reduction improved fracture displacement to a mean of 0 mm, which was statistically significant (p<0.05). Mean ulnar variance at time of k-wire removal was 2.4 mm (p<0.05). 56.8% of cases demonstrated radial shortening of 2 mm or more.
CONCLUSION: In female patients over 60 years of age, the best predictor of radial length, when k-wire fixation is to be used, is the radial length prior to fracture reduction. Thus if there is radial shortening visible in the initial radiographs as measured in terms of ulnar variance, one should consider a method of fixation other than inter-fragmentary k-wires.

SOP15: IDENTIFICATION OF MESENCHYMAL STEM CELLS IN PERINODULAR FAT AND SKIN IN DUPUYTREN'S DISEASE: A POTENTIAL SOURCE OF MYOFIBROBLASTS WITH IMPLICATIONS FOR PATHOGENESIS AND THERAPY SHORT TITLE – MESENCHYMAL STEM CELLS IN DUPUYTREN'S DISEASE

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QUESTION: Dupuytren's disease (DD) is a fibroproliferative disorder characterized by aberrant proliferation of myofibroblasts, the source of which remains unknown. Recent studies indicate circulating and tissue-resident mesenchymal stem cells (MSCs) can differentiate into myofibroblasts. Therefore, the aim of this study was to profile MSCs from phenotypically distinct DD sites including cord, nodule, skin overlying nodule (SON) and peri-nodular fat (PNF) compared to unaffected internal controls i.e., distant palmar fat (DPF) and transverse palmar fascia (Skoog's fibers) as well as external control carpal tunnel (CT) tissue including skin, fat and fascia.
METHODS: Freshly isolated primary fibroblasts as well as cells grown up to passage 5 (P5) from DD (n=27) and CT (n=14) samples were analyzed for the presence of established MSC markers CD73, CD90 and CD105 and absence of hematopoietic marker CD34 using fluorescence activated cell sorting, in-cell quantitative Western blotting, immunohistochemistry and immunocytochemistry. Freshly isolated cells from SON, PNF and cord biopsies had a higher number of CD34-73+90+105+ cells compared to Skoog's fibers and CT controls.
RESULTS: P3 cells obtained from all DD biopsies compared to CT samples, differentiated into osteocytes, adipocytes and chondrocytes. P3 cord and nodule cells expressed intense α-SMA staining compared to skin and fat cells. Stem cell markers including stem cell factor, MSC homing marker CXCR4 and Wnt/β-catenin down-regulator Dkk-1 were all up-regulated in SON and PNF compared to CT skin and CT fat respectively as shown by qRT-PCR.

CONCLUSIONS: In conclusion, we have shown the presence of MSCs in specific DD tissue phenotypes compared to internal and external control tissue. These findings provide preliminary support for a potential alternative source of disease myofibroblasts originating from sites such as SON and PNF as opposed to palmar fascia alone.

SOP16: STAIRCASE TECHNIQUE: A VALUABLE APPROACH TO RECONSTRUC-TION OF THE LOWER LIP

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QUESTION: The aim of this study was to compare the aesthetic and functional outcome after use of different operative techniques to repair defects of lower lip after tumor resection.
MATERIALS AND METHODS: From January 2006 to January 2010 thirty-two patients have been treated (22F and 12M; mean age 69 years) with squamous cell carcinoma of the lower lip. The Authors evaluated aesthetic and functional outcome after reconstruction by different techniques. In particular, in smaller defects (up to one-third of lip) were compared wedge excision and the step technique, whereas in wide defects (two-thirds of lip) the staircase technique was compared with steple technique. The aesthetic outcomes valuated: respect of the aesthetic units of the face, lip projection, adequate buccal sulcus, intact labial commissures and the resulting facial expression. The functional outcome consisted of evaluation of lip's symmetrical movement (mouth opening, smiling, blowing up), lips at rest (mouth continence) and satisfactory regarding sensibility.Two independent groups of Plastic Surgeons evaluated the results using a rating score from 0 (poor results) to 5 (excellent results).
RESULTS: In defects involving up to one-third of the lip, the functional and aesthetic outcome was better for the step technique than for wedge excision. Also in wide defects the results were better using the step technique, because the aesthetic units are respected and there wasn't symptomatic microstomia. (Statistical trend was observed, $p = 0.05$).
CONCLUSIONS: The authors have shown that the step technique is a simple, flexible, one stage operation (therefore a rational approach) to reconstruction of full-thickness defects of lower lip with preserving the aesthetic units of the face and its function.

SOP17: SIGNIFICANCE OF DOUBLE VENOUS ANASTOMOSES IN SECONDARY MAXILLOFACIAL RECONSTRUCTIONS WITH THE RADIAL FOREARM FREE FLAP

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INTRODUCTION: The radial forearm free flap (RFFF) is commonly used in maxillofacial reconstructive surgery. Several methods have been described for its venous anastomosis but debate as to which alternative is preferable continues. A complicating factor is the unpredictable anatomical situation in patients needing secondary operations. The authors elaborated and evaluated a standard operating procedure (SOP) postulating double venous anastomoses for RFFF, which is applicable for primary and secondary patients.
MATERIAL AND METHODS: Retrospective analysis of 120 patients (primary: 79, 65.8%; secondary: 41, 34.2%). Measurements: age; sex; history of radiotherapy; flap size; cephalic vein integration; included venae comitantes; recipient veins; arterial anastomoses; revisions, flap survival, mortality.
RESULTS: Double venous anastomoses were applicable in 52 (65.8%) primary and in 26 (63.4%) secondary patients, resulting in 100% flap viability in both groups. In the remaining cases, single anastomoses were performed, resulting in 100% flap survival in primary and 73.3% in secondary reconstructions. Flap survival in secondary reconstructions was significantly higher when double anastomoses were conducted (P=0.012).
CONCLUSION: The results indicate the superiority of double venous anastomoses in patients needing secondary maxillofacial reconstruction with RFFF.

SOP18: SOFT TISSUE SARCOMA: THE NORTH OF SCOTLAND EXPERIENCE

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BACKGROUND: Soft tissue sarcomas are rare tumours comprising 0.7% of all cancers; 60-70% of these arise in the limbs. The treatment of soft tissue sarcomas has evolved from amputation, to limb sparing surgery in the form of local excision and direct closure, or flap/graft assistance from collaborating with plastic surgeons.

OBJECTIVES: We aimed to review the multidisciplinary sarcoma service, and its outcomes.
METHODS: A retrospective cohort was made of all patients (41), aged 11-83, median age 55, treated for soft tissue sarcoma, between February 2002 and February 2007, by the North of Scotland Musculoskeletal Oncology Group.
RESULTS: 5 of 33 extremity sacromas were treated with amputation, 27 with limb-sparing surgery, and one presented with extensive inoperable tumour and metastases. 5 of 41 patients were lost to follow-up; the others were followed up for a mean of 50 months. 9 out of 36 (25%) patients were dead at 5 years. We analysed the histological subtypes and excision margins of cases that had the least favourable outcomes.
CONCLUSION: We concur that complete staging and treatment planning by a multidisciplinary team of cancer specialists is required to determine optimal treatment of patients with this disease. A streamlining of follow-up arrangements would be imperative.

SOP19: FAT GRAFTING IN FACE LIFT (INTEGRAL PROCEDURE FOR FACIAL REJUVENATION)

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Fat grafting is an important advance in plastic surgery. The aging equals atrophy which goes from the skin to the bone. To rejuvenate a face we must not only lift the tissues but also recreate the volumes that are lost. The bony structure that defines beauty and harmony, the deep planes support the soft tissues and the skin quality and texture define the appearance of youth. Both the bony structure and the soft tissue undergo volumetric changes with age that need to be corrected.
Concerning the periorbital and the mid face area recent studies, consists of comparing a significant number of patient photos at different ages using markers as moles to evaluate the following question: do the mid face tissues descend with gravity or not? Theses markers showed to be stable over the years showing that aging is mostly due to loss of volume rather than actual tissue descent. Apparently, with aging there is very little actual descent of the mid face tissues. So, the logical treatment would be volume replacement instead of mid face lifts. Concerning the lower face, the configuration of the mandible is very important in the outcome of rejuvenation and facelift procedures because it provides the support for the soft tissues to re-drape during the facelift. The mandibular bone also undergoes volumetric changes: the mandibular length decreases (which explains decreased chin projection with age) the mandibular height decreases and the mandibular angle increases which results in loss of definition in this area. So there is a process of mandibular contraction with less support of the soft tissues leading to sagging.
CONCLUSION: Fat grafting is an integral part of any facelift procedure and has raised dramatically the quality of our results.

SOP20: NEUROREGENERATION OF THE SPINAL CORD IN RATS FOLLOWING LOCAL THORACIC LESION DEMONSTRATED BY RETROGRADE TRACING

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OBJECTIVE: Re-innervation of skeletal muscles following peripheral nerve transplantation from the traumatized spinal cord is possible. Now neuroplasticity could be demonstrated in the sense of neuroregeneration within the damaged spinal cord areas with staining by the retrograde tracer "fast blue".
MATERIAL: Three month after nerve graft implantation into the right lateral funiculus with co-adaption to the distal nerve stump of the motor nerve the retrograde tracer fast blue was applied. To prove neuromodulation in this rat experiment a neurotrophic substance (Cerebrolysine®) that is know having neuroprotective and neuromodulating properties, was administered 5 mg/kg i.p./d double blinded vs Placebo after transplantation over a period of 14 days.

RESULTS: 1.Fast blue has been localized within in the spinal cord apart from the nerve graft; 2. Functional neuromodulation was proven by an increase of GLU1 transporters in Western blot after three months 3. Following neurotrophic medication marked differences in the histopathology was shown not only within the spinal cord at the site of the lesions (implantation) but also within the grafts proving neuroprotecting and neuroregeneration. The latter by (a) reduced sprouting of Schwann cells and enhanced number of oligodendroglia into the grey and white matter around of implant, correlated with more intense axonal regeneration; (b) reduced number of astrocytes around implantation area, indicating low atypical regeneration by cicatrisation, and correlated with a better axonal regeneration; (c) reduced number of microglial cells and macrophages around graft indicating less apoptosis and less axons degeneration in the damaged spinal cord; (d) better preservation of spinal neurons next to the graft; (e) reduced fibrosis and more intense axonal regeneration into the transplanted nerve.
DISCUSSION: Neuroregeneration capacity of the spinal cord after trauma is still a matter of controversial discussion. For the first time neuromodulation was shown due to neuroprotectiv and neurorgenerative effects of nerve growth factor like medication in rat experiments. That could be crucial for regeneration in brachial plexus avulsion as well.

SOP21: THREE-DIMENSIONAL EVA-LUATION OF OXYGEN GRADIENTS AND DISTRIBUTION OF HYPOXIA IN AN AXIALLY VASCULARIZED BIOARTIFICIAL CONSTRUCT IN VIVO

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QUESTION: Formation of a functional blood essel network is induced and regulated by hypoxia and is a prerequisite for generation of a transferable vital bioartificial tissue, but there is little knowledge regarding distribution of hypoxia in bioartificial constructs. The goal of our study was to investigate localization of oxygen gradients and hypoxia in the separation chamber in the arteriovenous (AV) loop model in the rat.
METHODS: In 12 rats an AV loop was microsurgically created and placed in fibrin within a separation chamber. The constructs were explanted at 3 time points (n=4 per group) and subjected to segmentation according to a newly established algorithm allowing for further analysis within a 3-dimensional coordinate system. Expression of the oxygen-sensing transcription factor Hypoxia-inducible Factor 1 (HIF-1α) was investigated and quantified immunohistochemically as an indicator for tissue hypoxia.
RESULTS: For the first time, we were able to localize distinct hypoxic areas by expression of HIF-1α within the AV loop on a molecular level. Depending on the distance from the central vessels -artery and vein- there were statistically significant differences in HIF-1α expression -indicating differences in O2 partial pressure- in all investigated dimensions. HIF-1α expression increased with increasing distance from both the central artery and the central vein.
CONCLUSION: Our results indicate that hypoxic gradients occur within our bioartificial vascularized AV loop construct which systematically display a characteristic pattern of distribution. This predictability may enable locally targeted therapeutic intervention for manipulation of angiogenesi and antiangiogenesis.

SOP22: CELL QUALITY AND COMPOSITION DEPENDENCY ON DONOR PARAMETERS AND SURGICAL HARVESTING TECHNIQUE IN AUTOLOGOUS FAT GRAFTING

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INTRODUCTION: Autologous fat grafting has become more and more popular in plastic surgery. However, the clinical outcome is far from predictable. Multiple donor parameters (e.g. BMI, age, donor site) or type of surgical technique have been proposed to provide predictive information on the number and quality of harvested adipocyte derived stromal cells (ASC), but no consistent data is currently available.
METHODS: A cross-sectional study (n=85) was conducted in patients undergoing liposuction or excision of adipose tissue at the authors' institution over a three-year period. The relationship between donor parameters (BMI, age, donor site), harvesting method (dry or tumescent liposuction, lipectomy) and ASC phenotypical marker profile (CD31,CD34,CD90,CD105) or the frequency of clonogenic colony forming units-fibroblastic was assessed.

RESULTS: Patients with a mean age of 42y (range:19-79) and a BMI of 26.3kg/m2 (range:16.3-51.3) were analyzed in this study. There was a negative correlation between age and CD31-cell surface marker (r=-0.399,p=0.026). No correlation was found between BMI and CD-markers. The cell quality and composition of ASC was affected neither by the type of surgery nor the harvest site. However, a high standard deviation was prevalent.
CONCLUSION: Based on our data, BMI, harvest site or harvest technique seem to be of no influence to the graft cell quality or composition. Further analysis of the high standard deviation is needed (high interdonor variability versus lack of standardization). If it was due to high interdonor variability, a biopsy prior to fat grafting could be performed in the future to evaluate tissue quality.

SOP23: MULTIFOCAL NECROTISING FASCIITIS: TENTATIVE STEPS TOWARDS A UNIQUE MANAGEMENT PATHWAY

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INTRODUCTION: Multifocal Necrotising Fasciitis is defined as more than one non-contiguous area of necrosis. Unlike necrotising fasciitis in general, there are no guidelines specific to the management of multifocality.
MATERIALS AND METHODS: A PRISMA-guided systematic review of MEDLINE, OLD MEDLINE and Cochrane Collaboration was performed from 1966 to March 2011 using sixteen search terms. Of the papers that met demonstrated multi-focality, patient demographics, likely inciting injury, presentation time-line, microbial agents, sites affected, objective assessment scores, treatment and outcome were extracted.
RESULTS: 33 individual cases of Multifocal Necrotising Fasciitis were included in the quantitative analysis. 52% of cases were Type II Necrotising Fasciitis. 42% had identifiable inciting injuries. 21% developed multifocal lesions non-synchronously, of which 86% were Type II. 94% of cases had incomplete objective assessment scores. One case identified inflammatory imaging findings prior to clinical necrosis.
CONCLUSIONS: Multifocality in Necrotising Fasciitis is likely to be associated with Type II disease. We postulate that validated objective tools will influence management pathways and identify high risk group. We recommend the adoption of regional Multifocal Necrotising Fasciitis registers and consideration of early pre-emptive imaging.

SOP24: IMPACT OF CONTINUOUS CONTROLLED TEMPERATURE APPLICATION ON MICROCIRCULATORY PARAMETERS IN FREE TISSUE TRANSFER

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INTRODUCTION: Improving the rheological conditions bares special benefit for free flaps that show micro-vascular compromise, e.g., by avoiding hypothermia. This can ideally be achieved by continuous controlled extra-corporal temperature application during the postoperative course. This study aims to evaluate alterations of micro-circulatory parameters in free flaps that are induced by a continuous controlled rise of tissue temperature in comparison to tissue temperature associated with conventionally applied dressing techniques.
MATERIAL AND METHODS: This prospective study was designed to evaluate temperature regulation in free fasciocutaneous flaps (n=30) after surgery by applying conventional dressing techniques as well as the Hilotherm-System (Hilotherm GmbH, Ludwigsburg, Germany), which implements a continuous controlled thermo-regulation. The temperature alterations were measured by an implanted Licox® (Integra LifeSciences Corporation, Plainsboro, New Jersey, USA) temperature microprobe. As microcirculatory parameters serve the oxygen saturation, the relative amount of haemoglobin, the relative blood flow in the flap, which were obtained via a Laser Doppler device O2C® (LEA Medizintechnik, Giessen, Germany). The measurements were carried out before and after warming the flap via the procedures mentioned above.
RESULTS: In comparison to conventional dressing techniques the continuous controlled extra-corporal temperature application reaches significantly higher levels in tissue temperature. Further increased tissue temperature improves the microcirculatory parameters (flow) in the fasciocutaneous flap significantly.
CONCLUSION: The results suggest a potential benefit in the continuous controlled temperature augmentation for the microcirculation of free flaps. Flaps that present non-surgical microvascular compromise might especially profit from the improved rheologic condition, that further imply thromboprophylactic effects.

SOP25: PERFORATOR MAPPING IN THE TRUNK: A GUIDE FOR FREESTYLE FLAP SURGERY AND AN INTRODUCTION TO THE SUSTAINABLE ANATOMICAL STUDY

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INTRODUCTION: Freestyle Perforator flaps minimize flap harvest morbidity and can be harvested anywhere in the body if perforators anatomy is well known.
A study of trunk perforator vessels has been performed on recycled CT scans avoiding cadaver investigations or unnecessary radiation exposure.
MATERIALS AND METHODS: 200 CT scans, performed for the study of liver or pancreatic disease, were examined. No unnecessary radiation was administered. Previous abdominal surgery was reason of exclusion.
The trunk between the xyphoid process and the umbilicus was studied.
On axial scans, the trunk was divided in 4 quadrants: Q1 anterior right, Q2 anterior left, Q3 posterior left, Q4 posterior right,.
Scans were examined and the position of any perforator >1mm in caliber was measured. The values were transferred on a MS excel ® data sheet and analyzed.
RESULTS: The average number of perforators per patient was 25,63 (6,09 Q1, 7,21 Q2, 6,20 Q3, 6,14 Q4).
Anteriorly, the majority of perforators were between 0 and 5cm from the midline, while posteriorly between 5 and 10 cm.
The perforators are more numerous and symmetric anteriorly (Q1 and Q2).
Perforators course within the subcutaneous tissue was vertical or oblique for perforators of the Superior Epigastric Artery, horizontal or oblique for perforators of the lateral intercostal arteries, vertical or oblique for perforators of the posterior intercostal arteries.
CONCLUSIONS: The region of the trunk between the xyphoid process and the umbilicus has several perforators of more than 1mm in caliber that might potentially be used as pedicle of freestyle flaps.
This study provides a map of the location of perforator in the middle trunk to serve as a guide for the surgeon to harvest free style flaps in this area.
This study also introduces the concept of recycling existing CT scans for the purposes of anatomical investigation and might encourage others to exploit CT scans databases to collect anatomical information.

SOP26: SIGNALING OF HUMAN BETA-DEFENSIN-3 ON THE HUMAN SKIN

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INTRODUCTION: Recently, in vitro and in vivo investigations suggested that the human host defense peptide human beta-defensin-3 (hBD-3) could promote wound healing. In this study we investigated the immunological changes of human skin wounds after adenoviral delivery of hBD-3 ex vivo.
MATERIALS AND METHODS: Human full-thickness skin from abdominoplasties was placed in the BO-Drum®, an ex vivo full-skin culture system. In culture, a circular epidermal incision with a diameter of 4mm was created. Samples were then treated by topical application of either adenoviral hBD-3, adenoviral LacZ (treatment control) or PBS (carrier control) with a group seize of n=6. The transduction efficacy of the transcutaneous gene delivery was determined by X-Gal staining. RNA was isolated and the chemokines RANTES, MCP-1, MIP3-alpha, IP-10 and IL-6, IL-10 and IL-18 were quantified via real time PCR.
RESULTS: X-Gal staining for the reporter gene-construct confirmed successful cutaneous adenoviral transduction. Real time PCR did not reveal a significant difference in the expression of RANTES, MCP-1, MIP3-alpha or IL-6, but demonstrated a reduction of IL-18 and IL-10 (p
CONCLUSIONS: HBD-3- induced changes in an ex vivo human full-skin sample could be demonstrated. HBD-3 elevated the chemotactical signaling for endothelial cells via increased expression of IP-10. The anti-inflammatory immune reaction of IL-10, a potent systemic suppressor of macrophages, was inhibited. Interestingly, hBD-3 decreased IL-18 expression. As IL-18 is a potential trigger for hBD-3, our results possibly reveal an involvement in a negative feedback mechanism. HBD-3 may therefore offer a topical immunoactivation in wounds in a self-regulating manner.

SOP27: MEDICINAL LEECH THERAPY IN RECONSTRUCTIVE SURGERY

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QUESTION: The history of leech therapy can be traced back to tomb paintings of the Egyptian pharaonic period in 1.500 BC. Modern analytical methods have detected a bunch of active ingredients in the leech saliva being secreted in the course of the sucking process. Some of these ingredients have become stand-alone marketed drugs like hirudin, factor Xa inhibitor, or hyaluronidase. Pharmacological and clinical studies have exhibited anti-coagulant, analgesic and anti-inflammatory action as major effects of these substances. Accordingly, leech therapy is not restricted to counteract venous congestioin in reconstructive surgery. Examples for further leech therapy indications comprise osteoarthritis, tendinitis, thrombophlebitis, varicose veins, or leg ulcer. The use of leech therapy in our clinical unit of reconstructive surgery is reported.
METHODS: The use of leech therapy in reconstructive surgery has been outlined in many clinical reports. In selected cases, venous congestion of microvascular flaps can be managed by the application of leeches. Leech therapy is primarily used in the management of venous congestion of flaps with a cutaneous portion used for external head and neck skin coverage. However, surgical re-exploration should be the first line management of a compromised flap.
RESULTS: In our series, the radial forearm flap was salvaged in 17 patients with leech therapy when venous congestion was noticed in time.
CONCLUSIONS: Leech therapy is an effecacious tool when problems of venous congestion may delay healing of skin and tissue graftzs following transplant surgery

SOP28: TAILORING THE SEQUENCE AND DURATION OF CONVENTIONAL IMMUNOSUPPRESSIVE DRUGS AND ITS EFFECTS ON TOLERANCE AND IMMUNOREGULATORY MECHANISM

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INTRODUCTION: Clinical composite tissue allotransplantation (CTA) has become an important reality in reconstructive plastic surgery. However as most CTA recipients do not suffer from a life threatening diseases, the requirement of risky chronic immunosuppression for sustaining a CTA is ethically debatable, and the idea solution would be to induce CTA tolerance. Since regulatory mechanism plays important role in transplant tolerance, and current immunosuppressive drugs, such as FK 506 and rapamycin, have different effects on IL-2 dependent immunoregulation, in this study we sought to develop a novel strategy by tailoring the sequence and duration of conventional immunosuppressive drugs to induce CTA tolerance.
METHOD: Hind-limb transplant was performed from BN to Lew rats. The recipients were threated with a strategy consists of anti-lymphocyte serum (ALS) (day -4 and +1) and FK-506 (day 0-7), followed by rapamycin (day 8-21). Blood were harvested at 21, 45 and > 150 days post-transplantation and T-cells (CD3,CD4,CD8,CD45R,FoxP3) were analyzed by FACS.
RESULTS: This strategy permits long-term hind limb allograft survival in the MHC mismatched BN to LEW strain combinations. 50% of them showed tolerance 33,3% rejcted before POD 50 and 16.6% rejected after POD 100. In contrast, from control recipients receiving ALS plus FK506 100% rejected, ALS plus RPM 100% rejected and ALS plus FK506 and RPM, 75% rejected. There were significant increase of CD4+CD25+Foxp3+ T cells at 45 days post-transplantation in the blood of the recipients receiving novel therapy.
CONCLUSION: A strategy by tailoring the sequence and duration of conventional immunosuppressive drugs can induce CTA tolerance. The enhanced regulatory mechanism may play a role in the tolerance induction.

SOP29: COMPLEX TOTAL RECONSTRUCTION OF THE NOSE FOLLOWING SEVERE NEONATAL BURN OF THE FACE

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INTRODUCTION: The nose as a central part of the face plays a major role in the general appearance of every human being. 3rd degree burns of the face and nose lead to severe tissue loss and massive scarring. This not only leads to a severe functional disability but also to a catastrophic aesthetic appearance which can lead to social isolation.
The total nasal reconstruction in the burned face is technically demanding. To restore the respiratory function and the outer appearance the inner lining, the rhinal framework and the outer skinny layer have to be restored.
METHODS: The complex rhinal reconstruction as described by Jacques Joseph and refined by Burget and Menick is demonstrated by a clinical example of a 36 year old male patient whose face was burned as a newborn due to a defect facial mask.
The single reconstructive steps are described and technical refinements are explained. The inner lining was reconstructed using a butterfly shaped free radial forearm flap. Costal cartilage was used to reconstruct the nasal framework and refined by a diced cartilage onlay wrapped in homologous facia lata. Skin coverage was achieved by a paramedian forehead flap and the hypoplastic premaxilla was improved by highly porous polyethylene implants.
RESULTS: The multi-staged functional and aesthetic total rhinal reconstruction is a highly effective procedure if the correct reconstructive steps are chosen. Autologous tissue is used to reconstruct the total nasal inner lining, the framework and the skin. The function of the rhinal airflow is highly improved. The improvement of the aesthetic appearance of the patient cannot be overestimated.

SOP30: REVERSE TISSUE EXPANSION: A NEW RUNG ON THE RECONSTRUCTIVE LADDER

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INTRODUCTION: Oncological reconstruction represents a recurring problem for the plastic surgeon. Multiple lesions in a limited skin region such as the lower limb may lead to a deficit of available tissue cover. Local flaps while highly effective in certain circumstances are often impractical where multiple excisions are required. Grafting of these wounds has often been a mainstay of their treatment but has the associated problems of donor site morbidity and variable graft take. The cohort of patients who tend to present with multiple skin lesions are often afflicted by other co-morbidities. The use of anti-coagulants, anti-platelet agents or steroids increases complication rates. We therefore present a simple yet effective method for reconstructing the deficits caused by multiple skin cancer excisions.
METHODS: Clinically selected patients who may not be suitable for alternative methods of reconstruction are placed in 3 layered compression bandaging for 4 weeks. These patients undergo ABPI measurements prior to commencement of compression therapy to exclude arterial disease. Compression therapy is discontinued if there are signs of arterial compromise. Upon removal of the compression bandaging, surgery is performed with a surfeit of skin to allow adequate skin closure without tension. A period of compression post-operatively may be necessary as both dressing and support.
RESULTS: The patients who met the inclusion criteria and subsequently finished their course of surgery went on to achieve skin opposition and epidermal integrity.
CONCLUSION: In patients for whom existing reconstructive methods, such as local flaps or skin grafting, are not appropriate reverse tissue expansion may provide a method that is both acceptable to patients and is cost effective. This missing rung on the reconstructive ladder is simple to perform and may provide a solution to a difficult problem.

SOP31: INVESTIGATION OF DERMIS DERIVED HYDROGELS FOR WOUND HEALING APPLICATIONS

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INTRODUCTION: Cell interactions with the extracellular matrix (ECM) regulate wound healing. Proteins present in the basement membrane (BM) of the dermis play an important role in proper skin

function and healing. Materials that contain proteins specific to the dermis BM may facilitate appropriate tissue regeneration. We have developed a method for generating ECM-rich, tissue-derived hydrogels from soft tissue samples. Dermal-based hydrogels derived from this technique may provide benefit for applications in wound healing of skin. In this study we examined properties of dermis derived hydrogels and evaluate their use in a wound healing application.

MATERIAL AND METHODS: ECM-rich extracts were isolated from dermis samples. Dermal extracts were induced to assemble into gels by temperature and pH mechanisms. A modified excisional full thickness wound healing model was developed to evaluate the use of the dermis hydrogels in a wound healing application. After application of dermis-derived hydrogels the wound was closed creating a stable, moistened wound chamber. Evaluation was performed via formalin fixed samples (harvested at 1, 2, and 3 weeks).

KEY RESULTS: Basement membrane proteins are present at high levels in the extracts. Robust vascularization was seen in all groups (via CD31). The control group and the dermis-derived hydrogel treated group found no significant difference in blood vessel density. At 2 and 3 weeks 4 out of 5 of the wounds in gel treated groups has closed and all of the control wounds were closed. These results suggest that dermis derived hydrogels may be promising for facilitating appropriate tissue regeneration.

SOP32: NON-INVASIVE IMAGING AND DNA MICROARRAY OF ACUTE AND CHRONIC WOUNDS IN A SEQUENTIAL BIOPSY MODEL

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INTRODUCTION: Chronic wounds affect for 3-5% of people aged 65 and over. Our aim was to assess the differences in conposition, superficial perfusion and gene expression in acute and chronic wounds using a unique sequential biopsy model.

MATERIALS AND METHODS: Nine Caucasian patients (mean age: 75, range 60-88) with chronic venous ulcers had sequential punch biopsies of the chronic wound edge and the inner arm skin (acute wound) to evaluate wound healing on days 0, 7 and 14. Non-invasive imaging using spectrophotometric intracutaneous analysis (SIAscopy) to assess differences in composition of melanin, hemoglobin and collagen and full-field perfusion imaging (FLPI) to assess superficial perfusion were carried out on both sites at standardized time points. Whole genome DNA microarray analysis of the tissue biopsies, quantitative polymerase chain reaction (qPCR) and immunohistochemistry were carried out to identify the genetic expression profile of tissue biopsies.

RESULTS: SIAscopy revealed Increased levels of melanin ($p<0.005$), reduced levels of collagen ($p\leq0.001$) and hemoglobin ($p=0.063$) in chronic wounds compared to acute wounds. FLPI analysis demonstrated a significant increase in superficial perfusion of chronic wounds compared to acute wounds ($p<0.05$). However, reduced blood flow was observed in some chronic wound biopsy sites indicating initial perfusion abnormalities. Microarray and subsequent qPCR analysis showed differences in the expression of a diverse collection of genes, with the most significant differences seen in FRAS1 ($p=0.009$), TNXB ($p=0.002$), FABP4 ($p=0.014$), INHBA ($p=0.014$), LPL ($p=0.029$) and NRIH3 ($p=0.043$).

CONCLUSION: This unique sequential biopsy model has shown a significant difference in the composition, superficial perfusion, gene profiling and expression of acute compared to chronic wounds in the same individuals. These results identify new areas of research in better understanding of the pathophysiology and potential molecular pathways involved in the healing of acute versus chronic wounds.

SOP33: IMMUNMODULATING ACTIVITY OF HOST DEFENSE PEPTIDES IN INFECTED PORCINE WOUNDS

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INTRODUCTION: The increasing morbidity of patients and the growing numbers of antibiotic-resistant pathogens and the limited knowledge of chronic wounds points out the necessity of finding new potential therapeutic tools to treat infectious diseases. Host Defense Peptides (HDPs) play a central role as effector molecules of innate immunity and are known to have antimicrobial and immunomodulatory activities.
This study provides the immunological coherence of HDP in a clinical comparable animal model.

MATERIALS AND METHODES: There are known six beta-Defensine, which are expressed in porcine skin: porcine Beta-Defensin 1 (pBD1), pBD2, pBD3, pBD4,

pBD123, pBD129. On day 6, 8 and 12 the expression profile of these porcine HDPs and IL 1a, 1b, 6, 8, 10, 12, 17, 18, 22, TNFa, TNFb and IFNg as well CD14, Toll-like receptors -2 and -4 were measured through rt-PCR. (n=12) These expression profiles were shown in Staphylococcus aureus infected and non-infected wounds and compared to the skin regeneration.
RESULTS: In respond to S. aureus pBD-2 and pBD-3 were expressed ten times as much, in contrast pBD-1 and pBD-129 were expressed lower compared to the control. The expression profile of interleukins showed an increasing inflammation in infected wounds until day 12. The histological analysis demonstrated an significant decline of epithelium growing and the High Power Field Analysis showed doubled cell numbers of neutrophils und macrophages in infected wounds until day 8.
CONCLUSION: The genetic analysis showed direct correlation ($p<0,5$) of Interleukines with HDP expressions. We strongly believe that nature' pylogentetic oldest armentarium of diverse HDPs offers high potential to develop powerful "biological weapon" against rising multi-drug resistant pathogens.

SOP34: PREDICTION OF RESECTION WEIGHTS FOR REDUCTION MAMMAPLASTY
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INTRODUCTION: Reduction mammaplasty belongs to the most commonly used surgical procedures at breasts and represents a significant role of plastic surgical operations. The anticipatory resection weight of reduction mammaplasty has already been the topic of many publications. In february 2008 a formula (= (35,4 x notch to nipple distance + 60,66 x nipple to inframammary crease distance) – 1239,64) of a south african study group was published to predict the resection weight (Descamps MJ et al. A formula determining resection weights for reduction mammaplasty. Plast Reconstr Surg2008 Feb;121(2):397-400.). Based on frequent and high differences between the predicted and the actual surgical weight of resection the examination of the south african published formula was initiated.
PATIENTS AND METHODS: 144 reduction mammaplasties of 77 patients between 2006-2009 were retrospectively analysed. The pre- and postoperative determined clinical data, the South African formula, the operation reports, the surgical resection weights and the standardised photo documentations served as data pool. Exclusively data of reduction mammaplasty with inferior pedicle following the Robbins technique were used. The surgical intervention was performed by two of four constant plastic surgeons.
RESULTS: The South African publication modifies the resection weight between 600g and 1600g as most accurate for the use of their formula. Therefore the data of our study was classified into 3 resection-groups. Each calculated resection weight was compared and correlated to the actual surgical resection weight. All 3 resection-groups confirmed not a significant and verifying correlation between the calculated and the surgical resection weight. The resection weight group < 600g showed a difference between calculated and surgical resection weight up to 633g with an averaged percentage error of 39,15 and a standard deviation of 22,35. The analysis of the main resection group of 600g to 1600g demonstrated a resection difference up to 570g with an averaged percentage error of 18,16 and a standard deviation of 15,76. Resection weights higher than 1600g offered differences from 670g to 1040g with an averaged percentage error of 55,19 and a standard deviation of 11,28.
CONCLUSION: The analysis of our data demonstrated that the predicted resection weights were not significantly reproducible. Therefore we are in a prospective examination phase of a new retrospective determined formula for reduction mammaplasty and their predictable resection weights.

SOP35: BREAST AUGMENTATION WITH IMPLANTS FOLLOWING PREVIOUS ENHANCEMENT WITH MACROLANETM FILLER INJECTIONS
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INTRODUCTION: Macrolanetm is a product marketed for breast enhancement, composed of hyaluronic acid (HA) in an injectable form that allows breast enhancement via a non-surgical outpatient procedure. We present the preoperative and intraoperative findings for breast augmentation in a patient who had previous macrolanetm injections for breast enhancement. There are few previous reports of surgical augmentation following a series of macrolanetm injection breast enhancement The literature on macrolanetm breast fillers is reviewed.
DISCUSSION: Macrolanetm is It is a gel composed of HA, injected into the breast under local anaesthetic, it is non-permanent and 100-150 ml of macrolanetm can be injected to provide a cup-size increase in

breast volume. Macrolanetm is slowly reabsorbed over 12-18 months. Common side effects include injection site pain and capsular contraction. As multiple injection sites are used there is potential for multiple capsules to form.
Our case presented with multiple visible and palpable lumps resulting from capsular contractions. This may have implications for breast examination and screening.
CONCLUSION: There are no articles published stating the medium and long-term use of macrolanetm in breast augmentation. Our case highlights possible hurdles a surgeon may encounter in performing breast augmentation surgery in patients who have previous macrolanetm breast enhancement.

SOP36: POST-OPERATIVE ANALGESIA FOLLOWING MINOR SURGICAL EXCISION OF CUTANEOUS LESIONS: HOW MUCH IS NECESSARY?

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INTRODUCTION: There are no set guidelines as to the nature and duration of post-operative analgesia in patients undergoing minor surgery for excision of cutaneous lesions. This study aimed to establish an effective regime for analgesic prescription in patients undergoing such procedures.
METHODS: A retrospective review of 50 patients treated for excision of cutaneous lesions over a two month period was conducted. The type and duration of analgesic was recorded from patient notes. These patients were contacted post-operatively via telephone to enquire how much analgesia had been taken, and whether there was any breakthrough pain.
RESULTS: Data was collected on 36 patients who underwent excision of cutaneous lesions under local anaesthetic. No analgesia was prescribed in 18 patients. Paracetamol and Co-codamol was prescribed in 16 and 2 patients respectively. The range of prescription duration was 2-7 days. However, patients only self-administered a maximum of 2 days of analgesics post-operatively. No patients reported any breakthrough pain.
CONCLUSION: Patients should be advised to take paracetamol for pain relief, unless contraindicated, as it is readily available as an over the counter medication. Prescription of 2 days of paracetamol is sufficient for pain relief in patients undergoing excision of cutaneous lesions.

SOP37: STT FUSION – INDICATION; LEARNING CURVE, FUNCTIONAL RESULTS

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INTRODUCTION: STT fusion is acknowledged as one of the standart therapeutic procedures in the therapy of Kieneboeck´s disease stage IIIb and STT arthritis. An essential requirement is the integrity of the fossa scaphoidea. The functional outcome depends on the anatomical reposition. The present study was conducted to evaluate the functional outcome.
MATERIAL AND METHODS: In the period of 2000 until 2008 stt fusion was performed in 39 patients and were analysed retrospectively. Patients content, quality of life and functional outcome was analysed using the DASH – and Krimmer score in all patients. 27 patients were also examined clinically and x-rays were performed. Grip power was measured using the Jamar-dynamometer. Intensity of pain was verified using the visual analog scale.
RESULTS: A consolidation of the stt fusion could be achieved after one operation in most of the patients. The bone graft was harvested from the distal radius in the majority of cases.
Grip strength was reduced to 65% compared to the healthy opposite side. The most severe functional impairment was noticed for wrist flexion and radialduction. The mean DASH score was 41.
CONCLUSION: An adequate reduction in pain intensity, with allows the patients to participate in day to day activities and which allows them to return to work can be reliable be achieved in most patients following stt fusion. Functionally the wrist flexion and radial duction is impaired the most.
An anatomical reposition is mandatory. STT fusion can reliably be achieved using Krischner wires. Prolonged consolidation is one major problem following stt fusion.
75% of patients would agree to the procedure again.

SOP38: MANAGEMENT OF KERA-TOACANTHOMA AND SQUAMOUS CELL CARCINOMA – EARLY EXCISION VERSUS WATCH AND WAIT?

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INTRODUCTION: Keratoacanthomas (KA) and Squamous Cell Carcinomas (SSC) are UV-light induced cutaneous neoplasms which are difficult to distinguish clinically and histologically. Whilst typical KAs have three clinical stages and completely resolve, Squamous Cell Carcinomas are invasive and can metastasise. The aim of this study was to assess how accurately KAs are diagnosed clinically as accurate diagnosis is vital in guiding management and prognosis.
METHODS: Computerised Histopathology Database Search at the Countess of Chester Hospital. Retrospective analysis of preoperative clinical diagnosis with postoperative histopathology results over a period of 10 years between 2000 and 2010. We determined how many KAs were accurately diagnosed and how many turned out to be SCCs.
RESULTS: 265 Patient histologies were identified. Diagnosis was made in 43% (115) of patients by the GP, 29% (76) by a Plastic Surgeon, 21% (55) by a Dermatologist and 7% (19) by other health care professionals. Histological diagnosis matched clinical diagnosis in only 45% for KAs. Histological results could be ambiguous.
CONCLUSION: Distinguishing KAs from well-differentiated SCCs is clinically and histologically challenging. While Keratoacanthomas may undergo involution, SCCs may pose the risk of invasion and metastasis. In more than 50% of cases clinical KAs are likely to be SCCs hence we advocate early excision to avoid spread.

SOP39: A NEW DESIGN FOR IN-VIVO-TISSUE ENGINEERING OF MUSCULOSKELETAL TISSUE USING THE INFERIOR EPIGASTRIC ARTERY AS CENTRAL ANASTOMOSABLE VESSEL OF A 3-DIMENSIONAL CONSTRUCT

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BACKGROUND: The creation of musculoskeletal tissue represents an alternative for the replacement of tissue after severe damage. However, most of the approaches of creating musculoskeletal tissue have their limitations in the size as the maximally obtainable dimensions of bioartificial tissue are limited due to lack of supporting vessels within the 3-dimensional-construct. The seeded myoblasts require high amounts of perfusion, oxygen and nutrients to survive. To achieve this, we developed a transplantable 3-dimensional-scaffold which features a macroscopic core vessel.
METHODS: In animal studies on Wistar rats the inferior epigastric artery was found to be suitable for implantation of an in-vivo bioreactor chamber. After dissecting the epigastric artery with leaving the small branches open the customized chamber was implanted hosting the inferior epigastric artery as central core vessel. Fibrin glue was administered as matrix surrounding the artery in the bioreactor. Luciferase-transfected myoblasts were implemented and followed up by bioluminescence for a period of 7 days.
RESULTS: The implantation of the in-vivo-bioreactor with the epigastric artery as core vessel was done routinely without any side effects or wound problems during the experimental period. The follow-up of the implanted myoblasts by bioluminescence showed a higher cell survival in areas of the open branches of the inferior epigastric artery.
CONCLUSIONS: Again, it was shown that the cell survival in-vivo is highly depending on the blood supply. The inferior epigastric artery is easily accessible and therefore usable as a core vessel for in-vivo tissue-engineering in the rat model offering a wide range of further experimental approaches.

SOP40: DEEPITHELIALIZED FLAP CLOSURE: A NOVEL APPROACH TO COMPLEX VENTRAL HERNIA REPAIR

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QUESTION: Ventral hernias continue to be a major surgical challenge with complications such as wound separations, infections, and recurrence contributing to the morbidity. Herein we describe a new technique that we believe is a helpful adjunct in repairing difficult ventral hernias.
METHODS: The technique involves the use of an appropriately chosen, redundant skin edge that is deepithelialized and used to reinforce the hernia repair. Advantages include the redistribution of mechanical tension, reinforcement of the midline at the site of greatest pressure, elimination of dead space, and staggering of suture lines to prevent direct external contamination of prosthetic material should wound dehiscence occur.
RESULTS: A series of seven patients in whom the technique was used is presented. All seven patients had complete repair of their incisional ventral hernia defects without any complications of infection, wound dehiscence, seroma formation, need for reoperation, or hernia recurrence; furthermore, patients reported a subjective increase in abdominal wall strength and improvement in performing daily activities.
CONCLUSION: Advantages of this novel use of deepithelialized flap closure are. It can be used in conjunction with any herniorrhaphy technique. It strengthens wound closures through increased midline mechanical support and utilizes redundant skin normally excised to correct subcutaneous tissue deficits. Furthermore, our technique prevents spread of infection to deeper layers, fistula formation, widening of scars, and mesh exposure by staggering, not superimposing, suture lines. It is conceptually ideal to address risk factors shown to contribute to incisional ventral hernia recurrence. The only disadvantages are that it requires a significant early learning curve, and may be initially slow to perform.

SOP41: A NOVEL STRATEGY FOR RECONSTRUCTION OF THE MUSCULOTENDINOUS JUNCTION

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The musculotendinous junction is a unique histological structure that transmits the contractile forces generated by the muscle cells to the fibrous tendon tissue. The strength of this structure lies in an equal distribution of the generated forces over a big connection surface between muscle and tendon. Ruptures at the musculotendinous junction are very hard to repair, since it is extremely difficult to imitate this refined anatomical structure.
Here, we present a novel strategy for secondary reconstruction of the musculotendinous junction, using a free vascularized fascia lata graft. We mimic the anatomical situation by using a slowly resorbable thread with unidirectional shallow barbs with a circumferential distribution, which provides numerous anchor points of the fascia lata graft to the muscle. To decrease tension on this delicate reconstruction, we paralyzed the muscle belly with botulinum toxin type A.
This approach integrates novel techniques that have proven their efficiency in other areas, resulting in an optimized reconstructive strategy for such a refined structure as the musculotendinous junction.

SOP42: DO THE NEW UK 2010 GUIDELINES REGARDING COMPUTERED TOMOGRAPHY IN STAGE IIB AND IIC MELANOMA PATIENTS CONCUR WITH REGIONAL FINDINGS: A SIX YEAR STUDY

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INTRODUCTION: Patient prognosis in malignant melanoma is directly related to clinical stage, and accurate staging is key to appropriate management. Revised BAD/BAPS (British Association of Dermatologists/British association of Plastic Surgeons) 2010 guidelines for the management of cutaneous melanoma recommend that CT is no longer indicated for AJCC (American Joint Cancer Committee) IIb and IIc disease, unless the patient is symptomatic. Previous UK guidelines had recommended that all AJCC IIb or worse patients should have chest, abdomen and pelvic CT as staging investigations. New guidelines now include head CT in their recommendations.

Our aim was to investigate findings in patients diagnosed with AJCC IIb and IIc disease who underwent initial and follow-up CT scans. We also aimed to establish whether the CT findings changed management, and if our regional results affirmed new UK guidelines.

METHODS AND PATIENT GROUP: A retrospective review of case notes was performed on 172 cases of AJCC IIb and IIc disease referred across Lothian, Borders and Fife to plastic surgery services during the period of January 2004 to January 2010. Clinical findings, results of CT scans and changes in management were noted. Chest, abdomen and pelvic CT scan were defined as one scan as they were always performed together. CT head and CT neck were defined as separate scans. A positive CT result was defined as those reported with metastasis or an indeterminate result leading to further investigations. Change in management was defined as alteration in chemo/radiotherapy or surgery.

RESULTS: A total of 247 scans were performed on 133 patients. 117 initial presentation CT scans were performed on 75 patients and detected 0% occult metastasis. Clinical management changed in 1/75 (1.4%) patient due to detection of an incidental GIST. A total of 130 follow-up scans were performed in 64 patients and detected 42/64 (65.6%) patients with occult metastasis and a change in management. All 42 displayed signs and symptoms of clinical metastatic disease. Head CT detected 21/63 (33.3%) of all metastasis.

CONCLUSION: CT scanning should only be performed in AJCC IIb and IIc melanoma patients if signs or symptoms of clinical metastatic disease are present. Head CT should be included in the staging process. Our regional results concur with new BAD/BAPS guidelines

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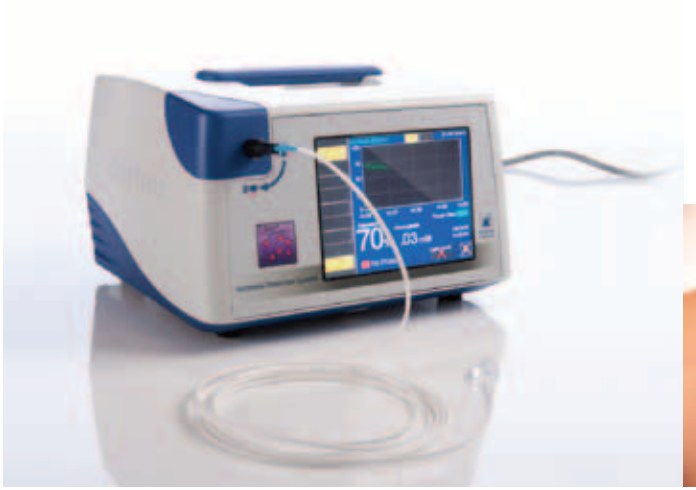
Notes

T-Stat

We cannot prevent a take back. But recognizing earlier signs of pending problems, T-STAT can help prevent flap necrosis and morbidity.

When minutes count, use T-STAT for reliable and accurate post operative monitoring.



The T-Stat is the first broadband white light device used to detect poor perfusion. Reading St02 (tissue saturation) and Hemoglobin provides us with an accurate and reliable number that you can treat to. Don't guess at ischemia, know.

Easy to understand - Easy to operate
Simple to place - Noninvasive - Continuous

More accurate than any other device.

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