SYLLABUS

1ST LEBANESE HAND & RECONSTRUCTIVE SURGERY CONFERENCE

November 17-18, 2012
Riviera Hotel, Beirut – LEBANON

Organized by

Lebanese Society of Reconstructive Microsurgery
LSRM
Lebanese Society of Plastic, Reconstructive, & Aesthetic Surgery
LSPRAS

In Joint sponsorship with

Cleveland Clinic

Continuing Medical Education Office at American University of Beirut – AUB

Endorsed by

World Society for Reconstructive Microsurgery
WSRM
Euro-Mediterranean Council for Burns & Fire Disasters
MBC
Association of Plastic Surgeons of Lebanese Descent
APSLD

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A MESSAGE FROM THE ACTIVITY DIRECTOR

Dear Colleagues and Friends,

It is my privilege and enormous pleasure to welcome you to the First Lebanese Hand and Reconstructive Surgery Conference held by the Lebanese Society of Reconstructive Microsurgery on November 17-18, 2012 in collaboration with the Lebanese Society of Plastic, Reconstructive and Aesthetic Surgery.

With renowned international and local speakers, we can guarantee that the Conference will be a rewarding scientific exchange in many aspects of hand and reconstructive surgery with a special focus on reconstructive microsurgical techniques and training. The program is broad and varied in content and should include topics of interest to every orthopedic and plastic and reconstructive surgeon.

Bishara Atiyeh, MD, FACS
President, Euro-Mediterranean Council for Burns and Fire Disasters – MBC,
Member of IPRAS Scientific Advisory Board,
Chairman, IPRAS Training and Accreditation sub-committee,
Clinical Professor of Surgery, Plastic & Reconstructive Surgery,
American University of Beirut, Lebanon

CONFERENCE DIRECTORS AND FACULTY

CONFERENCE DIRECTORS

Bishara Atiyeh, MD, FACS
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ORGANIZING COMMITTEE

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SPEAKERS & MODERATORS

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Head of Division of Plastic and Reconstructive Surgery at the CHU Tivoli, La Louvière, Belgium

Ghassan Abou-Sittah, MD MBchB FRCS(Plast)
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Professor & Head of the Department Plastic & Microvascular Surgery, Bombay Hospital Institute of Medical Sciences, Mumbai, India

Nadey Hakim, MD KCSJ PhD FRCS FRCSI FACS FICS
Professor, General, Bariatric and Transplant Surgeon, Surgical Director of the West London Transplant Unit based at the Hammersmith Hospital, London, UK, Former World President of the International College of Surgeons, London, UK

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GENERAL INFORMATION AND ACCREDITATION

OVERVIEW OF THE PROGRAM

The Lebanese Society of Reconstructive Microsurgery – LSRM in association with The Lebanese Society of Plastic Reconstructive & Aesthetic Surgery – LSPRAS has the pleasure to invite you to the 1st Hand and Reconstructive Surgery Conference to be organized in Beirut. Prominent internationally known guest speakers have been invited and the Scientific Program will cover a wide range of topics.

LSRM was established by an official decree from the Ministry of Interior No. 6812 date 25/05/1995, published in the Lebanese official Journal No. 31 on 3/08/1995. The founding members were B. Atiyeh, MD, R. Moucharafieh, MD, S. Roukos, MD, G. Khalil, MD, and M. Abi Fadel, MD. LSRM activities included the organization in collaboration with the Lebanese Society of Plastic, Reconstructive, and Aesthetic Surgery – LSPRAS as well as with other Lebanese societies of a local Microsurgery Conference and numerous Microsurgery Sessions to which several pioneers of Reconstructive Microsurgery have been invited such as H. Millesi, V. Meyer, J. Baudet, M Merle, E Biemer, J. Terzis, R. Khouri, and S. Moran, just to name few. For 4 consecutive years, it has supported several residents to train in microsurgical techniques. At present, it is at the down of a new revival and is organizing its first major conference on Nov. 17-18, 2012 in Beirut.

Acting under the guidance of the World Society of Reconstructive Microsurgery – WSRM, LSRM is dedicated to promote Reconstructive Microsurgery and to provide the highest standard of education and training in the field of Reconstructive Microsurgery in Lebanon as well as in the Middle East. In 2011 B. Atiyeh was appointed by WSRM as WSRM Country Liaison for Lebanon. All Plastic and Orthopedic Surgeons interested in Reconstructive Microsurgery are welcome to join the LSRM and the WSRM.

Though LSRM has already collaborated with other Lebanese Societies to organize several Microsurgery sessions since it was founded in 1995, this is the first major Reconstructive Microsurgery meeting with international standards to be organized in Lebanon and will be the milestone for the organization of similar meetings regularly in the future every 2 years

The scientific program of this conference will include sessions about most aspects of reconstructive surgery and microsurgery including composite tissue allotransplantation, reconstructive surgery of the upper and lower extremity, hand surgery, peripheral nerves and brachial plexus surgery, breast reconstruction, head and neck, chest wall and perineum reconstruction, as well as a special session on microsurgery education and training.

OBJECTIVES

1- Review the basic principles of reconstructive surgery and microsurgery
2- Describe the recent developments and innovations in reconstructive surgery and microsurgery
3- Demonstrate microsurgical techniques of various body locations
4- Illustrate basic guidelines for hand surgery

VENUE

The conference will be held at Riviera Hotel Beirut, Elissar Hall, on November 17-18, 2012.

TARGET AUDIENCE

This activity is targeted towards plastic and reconstructive and orthopedic surgeons, residents and students.

ACCREDITATION STATEMENT

This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of The Cleveland Clinic Foundation Center for Continuing Education and American University of Beirut Medical Center. The Cleveland Clinic Foundation Center for Continuing Education is accredited by the ACCME to provide continuing medical education for physicians.

The Cleveland Clinic Foundation Center for Continuing Education designates this live activity for a maximum of 17.5 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Participants claiming CME credit from this activity may submit the credit hours to the American Osteopathic Association for Category 2 credit.

FACULTY DISCLOSURE

In accordance with the Standards for Commercial Support issued by the Accreditation Council for Continuing Medical Education (ACCME), The Cleveland Clinic Foundation Center for Continuing Education requires resolution of all faculty conflicts of interest to ensure CME activities are free of commercial bias.

The following faculty have indicated that they may have a relationship, which in the context of their presentation(s), could be perceived as a potential conflict of interest:

Abdul Nasser Hachem, MD	Martin	Teaching & Speaking
	Synthese, Leibinger, Straumann Miniplates Screws	Teaching & Speaking
Bishara Atiyeh, MD	Arwan Pharmaceutical	Ownership & Consulting

The following faculty, have indicated they have no relationship which, in the context of their presentation(s), could be perceived as a potential conflict of interest:

George Abi Saad, MD
Alessio Baccarani, MD
Ali Ghanem, MD
Ashok Gupta, MD
Clement Leung, MD
Dana Davies Shaw, MD
Denis Corcella, MD
Dimitri J. Anastakis, MD
Elias Sawaya, MD
Fadi Sleilati, MD
Georges Ghanime, MD
Georges Kahlil, MD
Ghassan Abu-Sittah, MD
Hussein Choughri, MD
Jacques Baudet, MD
Joseph Y. Bakhach, MD
Krishna Kumar, MD
Lars-Peter Kamolz, MD
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Marwan Abboud, MD
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Masha Singh, MD
Masseh Yakubi, MD
Michel Moutran, MD
Mohammed Shibu, MD
Nabil Hokayem, MD
Nadey Hakim, MD
Nadine Hachach-Haram, MD
Panayotis N. Soucacos, MD
Peter Vogt, MD
Phillip Blondeel, MD
Pierluigi Tos, MD
Raja Kummoona, MD
Ramzi Moucharafieh, MD
Salvatore D'Apra, MD
Sami Saad, MD
Samim Ghorbanian, MD
Shady Hayek, MD
Srdjan Saso, MD
Wassim Raffoul, MD
Zinon T. Kokkalis,MD

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PROGRAM AT A GLANCE

	SATURDAY November 17	SUNDAY November 18
7:30-8:25	**REGISTRATION**	
8:25-8:30	**OPENING**	
8:30-8:45 8:45-9:45	**SESSION 1** MICROSURGERY EDUCATION & TRAINING	**SESSION 6** RECONSTRUCTIVE & MICROSURGICAL TECHNIQUES
9:45-10:00	**SESSION 2**	**COFFEE BREAK**
10:00-11:00	BURN INJURIES	**SESSION 7** COMPOSITE TISSUE ALLOPTRANSPLANTATION
11:00-11:15	**COFFEE BREAK**	
11:15-12:00	**SESSION 3**	
12:00-13:00	RECONSTRUCTIVE SURGERY UPPER & LOWER EXTREMITIES	**LUNCH**
13:00-13:30		**SESSION 8** RECONSTRUCTIVE SURGERY UPPER & LOWER EXTREMITIES
13:30-14:25	**LUNCH**	
14:25-14:30		**BREAK**
14:30-16:00	**SESSION 4** HAND SURGERY	**SESSION 9** BREAST RECONSTRUCTION
16:00-16:30	**SESSION 5**	
16:30-18:30	PERIPHERAL NERVES & BRACHIAL PLEXUS SURGERY	**SESSION 10** RECONSTRUCTIVE SURGERY HEAD & NECK, CHEST WALL, & PERINEUM
	COFFEE & TEA SERVED ALL DAY	
21:00	**GALA DINNER**	

SCIENTIFIC PROGRAM

SATURDAY NOVEMBER 17

7:30-8:25	**REGISTRATION**
8:25-8:30	**OPENING**

8:30-9:45	**SESSION 1 MICROSURGERY EDUCATION & TRAINING** **MODERATORS: Panayotis Soucacos, Georges Ghanime, Ghassan Abou Sittah**
8:30-8:36	-Skill Analysis And Curriculum Design In Microsurgery Training **Ali Ghanem*, Savitha Ramachandran, Sari Shurey, Simon Myers**
8:36-8:42	-A World Perspective On Education & Training In Microsurgery **Clement Chi Ming Leung**
8:42-8:48	-Objective Assessment Of Microsurgery Skills - Does It Exist? **Masha Singh*, Ali Ghanem, Simon Myers**
8:48-8:54	-Evidence For Educational Interventions In Microsurgery Education **Nadine Hachach-Haram*, Ali M. Ghanem, Clement Leung, Simon R. Myers**
8:54-9:00	-Sword Or Knight? The Impact Of Suture On Microsurgeons' Performance **Masseh Yakubi*, Masha Singh, Ali Ghanem, Simon Myers**
9:00-9:06	-Warm Up? The Phenomenon Of Warm Up And Its Application To Microsurgery **Samim Ghorbanian**
9:06-9:12	-Gaps In The Evolution Of Non-Living Models In Microsurgery Training **Dana Davies Shaw**
9:12-9:20	-Standardisation Of Microsurgery Training Programmes - Channels And Challenges **Ali Ghanem**
9:20-9:30	-Establishing A Comprehensive Program In Microsurgical Training - The Advanced Course Of The Italian Society For Microsurgery **Pierluigi Tos*, Riccardo Cipriani, Ignazio Marcoccio, Santolo Cozzolino**
9:30-9:45	-Microsurgery Education & Research Centers: Luxury Or Necessity **Panayotis Soucacos**

9:45-11:00	**SESSION 2 BURN INJURIES** **MODERATORS: Peter Vogt, Lars-Peter Kamolz, Bishara Atiyeh**
9:45-10:15	-Late Reconstruction Of Pediatric Burns – Plastic Surgery Options **Peter Vogt**
10:15-10:35	-Reconstruction Of Post-Burn Sequalae **Lars-Peter Kamloz**
10:35-10:50	-The Use Of Tissue Expansion In Burn Deformity Reconstruction **Shady Hayek*, Amir Ibrahim, Elias Zgheib, Shaghic Chorbajian , Bishara Atiyeh**
10:50-11:00	**DISCUSSION**

11:00-11:15	**COFFEE BREAK**

11:15-13:30	**SESSION 3 RECONSTRUCTIVE SURGERY - UPPER & LOWER EXTREMITIES** **MODERATORS: Bishara Atiyeh, Pierluigi Tos, Ramzi Moucharafieh**
11:15-11:30	-Functional Reconstruction In Plastic Surgery **Peter Vogt**
11:30-11:45	-Complex Limb Injuries **Krishna Kumar**
11:45-11:55	-Algorithm In The Management Of Gustillo IIIB/C Open Fracture Of The Lower Limbs **Michel Moutran**
11:55-12:05	-Principles And Methods Of Microsurgical Repair Of Lower Limb Defects **Wassim Raffoul**
12:05-12:15	-Custom Tailored Free Flaps In The Reconstruction Of Upper Limb Defects **Wassim Raffoul**
12:15-12:25	-Spare Parts Concept In Limb Reconstruction **Pierluigi Tos**
12:25-12:35	-Outcome of the foot after toe PIP joint transfer to the hand **Denis Corcella**
12:35-13:00	-Indications And Techniques Of Microsurgical Bony Reconstructions **Jacques Baudet**
13:00-13:25	-Avascular Necrosis Of The Femoral Head: Pathogenesis, Classification & Management With Long-Term Follow Up **Panayotis Soucacos**
13:25-13:30	**DISCUSSION**

13:30-14:30	**LUNCH**

14:30-15:25	**SESSION 4 HAND SURGERY** **MODERATORS: Jacques Baudet, Joseph Bakhach, Peter Vogt**
14:30-15:00	-Congenital Hand Anomalies: Molecular Morphogenesis, Epidemiology, Classification & Principles Of Management **Panayotis Soucacos**
15:00-15:10	-Reconstructive Microsurgery Of The Hand. What Are The Limits? **Joseph Bakhach**
15:10-15:20	-Reconstructive Surgery Of Defects In Post-Traumatic Hand Using An Artificial Dermis (Integra): Results With 15 Grafts **Hussein Choughri**
15:20-15:25	**DISCUSSION**

15:25-15:30	**BREAK**

15:30-18:30	**SESSION 5 PERIPHERAL NERVES & BRACHIAL PLEXUS SURGERY** **MODERATORS: Laurent Wehrli, Ali Ghanem, Dimitri J. Anastakis**
15:30-15:50	-Outcome Measurements Of The Upper Extremity After Nerve Repair **Laurent Wehrli**
15:50-16:10	-Peripheral Nerve Repair And Regeneration: From The Laboratory Bench To Clinical Application **Pierluigi Tos**
16:10-16:40	-Cortical Plasticity Following Peripheral Nerve Injury, Repair And Rehabilitation **Dimitri J. Anastakis**
16:40-17:00	-Assessment Of Processed Porcine Extracellular Matrix As A Protective Barrier In A Rabbit Nerve Wrap Model **Zinon T. Kokkalis**
17:00-17:10	**DISCUSSION**
17:10-17:30	-Infraclavicular Brachial Plexus Injuries **Zinon T. Kokkalis**
17:30-17:50	-Current Concepts In Management Of Adults Brachial Plexus Lesions **Laurent Wehrli**
17:50-18:20	-Basic Principles Of Brachial Plexus Repair **Krishna Kumar**
18:20--18:30	**DISCUSSION**

21:00 GALA DINNER

SUNDAY NOVEMBER 18

8:30-9:45	**SESSION 6 RECONSTRUCTIVE & MICROSURGICAL TECHNIQUES** **MODERATORS: Shady Hayek, Mohammed Shibu, Denis Corcella**
8:30-8:36	-Vein Loops In Microsurgery **Krishna Kumar**
8:36-8:42	-Easy LDI (Laser Doppler Imaging) A New Reliable Tool In Microsurgical Monitoring **Wassim Raffoul**
8:42-8:48	-Intra-articular sub-periosteal osteoid osteoma of the triquetrum. Case report **Marwan Baaklini**
8:48-8:55	-Digital replantation performed under pure digital anesthesia **Denis Corcella**
8:55-9:05	- The Medial Head Of Triceps Brachii: A New Muscular Flap **Elias Sawaya*, R. Weigert, V. Casoli**
9:05-9:15	-Freestyle Pedicled Perforator Flaps **Salvatore D'Arpa**
9:15-9:25	-Local Vs Free Flap? Decision Making In Limb Reconstruction **Mohamed Shibu**
9:25-9:45	-A Journey Through Three Decades: Complex Life / Limb Saving Microsurgical Reconstruction: Long Term Results **Ashok Gupta**

9:45-10:00	**COFFEE BREAK**

10:00-12:00	**SESSION 7 COMPOSITE TISSUE ALLOPTRANSPLANTATION** **MODERATORS: Nadey Hakim, Phillip Blondeel, Peter Vogt**
10:00-10:30	-History Of Composite Tissue Allotransplantation **Nadey Hakim**

10:30-11:00	-The Importance Of 3D-Modeling In The Pre-Operative Planning Of Complex Facial Reconstruction By A Vascularized Composite Tissue Allotransplantation (VCTA) Of The Face **Phillip Blondeel**
11:00-11:15	- Pushing The Frontiers Of Transplantation Surgery: The Enigma Of Uterine Transplantation **Srdjan Saso**
11:15-11:30	-Lower Limb Allotransplantation In The Rat: Definition Of A Conservation Protocol By Refrigeration After Perfusion Of Natural And Synthetic Anti-Freeze Proteins. Preliminary Trials And Results **Elias Sawaya**
11:30-11:45	-The Xenotransplantation Of Cryopreserved Digits In The Rabbit **Joseph Bakhach**
11:45-12:00	**DISCUSSION**

12:00-13:00	**LUNCH**

13:00-14:25	**SESSION 8 RECONSTRUCTIVE SURGERY - UPPER & LOWER EXTREMITIES** **MODERATORS: Ashok Gupta, Zinon Kokkalis, Georges Khalil**
13:00-13:10	-Restoration Of Shoulder Abduction In Brachial Plexus Injury: Muscle Tendon Reconstructions **Ashok Gupta**
13:10-13:25	-Palliative Surgery For The Paralyzed Shoulder **Zinon T. Kokkalis**
13:25-13:45	-Emergency Free Flaps In Upper Limb Reconstruction **Pierluigi Tos*, Davide Ciclamini, Bernardino Panero, Paolo Titolo, Bruno Battiston**
13:45-13:55	-Lower Limb Replantation **Pierluigi Tos**
13:55-14:05	-Treatment Of Post Operative Neuropathic Pain, 10 Years Experience **Wassim Raffoul**
14:05-14:25	-Our Experience With Lipofibromatosis Hamartoma Of The Peripheral Nerve **Dimitri J. Anastakis**

14:25-14:30	**BREAK**

14:30-16:00	**SESSION 9 BREAST RECONSTRUCTION** **MODERATORS: Phillip Blondeel, Fadi Sleilati, Sami Saad**
14:30-14:40	-The Deepithelialized Thoracodorsal Flap, A New Concept For Autologous Breast Reconstruction **Marwan Abboud*, Saad Dibo**
14:40-14:50	-Megavolume Fat Transfer Following Autologous Breast Reconstruction **Marwan Abboud*, Saad Dibo**
14:50-15:15	-Improving Outcomes In Microsurgical Breast Reconstruction **Michel Moutran**
15:15-15:30	-Breast Reconstruction By DIEP Flap: Lessons Learned, New Tendencies, And The Conclusions Of Our 4 Year Experience **Elias Sawaya**
15:30-16:00	-State Of The Art In Autologous Breast Reconstruction With Perforator Flaps **Phillip Blondeel**

16:00-18:30	**SESSION 10 RECONSTRUCTIVE SURGERY - HEAD & NECK, CHEST WALL & PERINEUM** **MODERATORS: Nabil Hokayem, Wassim Raffoul, Raja Kummoona, Krishna Kumar**
16:00-16:30	-Complex Head And Neck Reconstructions: Traditional Microsurgical Approach And Experimental Options **Alessio Baccarani**
16:30-17:00	-Perforators and Refinements in Head and Neck Reconstruction **Salvatore D'Arpa**
17:00-17:25	-Lateral Cervical Flap In Reconstruction Of The Orofacial Region **Raja Kummoona**
17:25-17:50	-Principles Of Full Thickness Thoracic And Abdominal Wall Reconstruction **Wassim Raffoul**
17:50-17:57	-Mandibular Reconstruction: Special Considerations In Condyle, Ramus And Body **Abdul Nasser Hachem**
17:57-18:04	-Case Presentation – Single Stage Gracilis Transfer For Reanimation Of Face Following Facial Nerve Palsy **Krishna Kumar**
18:04-18:10	-Management Of Congenital Ectopic Scrotum - Case Report And Review Of The Literature **Ali Ghanem*, Mohammed Shibu**
18:10-18:20	- Management Of Warfare Injuries In Misrata – Libya **Mohammed Shibu**
18:20-18:30	**DISCUSSION**

* Indicates the person making the presentation of a multi-author paper

POSTERS (NON-CME)
Sunday, November 18, 9:00-12:00

-Health Care Professionals And Uterine Transplantation
Srdjan Saso
-AUFI Patients And Uterine Transplantation
Srdjan Saso
-Allogeneic Uterine Transplantation In A Rabbit Model
Srdjan Saso
-Salvage Of Digital Replantations By Intra-Arterial Fibrinolysis
Saad Dibo, Joseph Bakhach
-The OMEGA Pulley Plasty "Ω". A New Plasty To Enhance The Volume Of The Annular Pulleys (A2 And A4) Of The Fibreous Digital Tube
Arij El Khatib, Joseph Bakhach
-The Digito-Dorsal Metacarpal Flap". A Useful Flap For Long Fingers Dorsal And Distal Defects
Elias Zgheib, Joseph Bakhach

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The 1st LEBANESE HAND AND RECONSTRUCTIVE SURGERY CONFERENCE

SPEAKERS

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Dr Abboud completed his medical school and plastic surgery residency at the ULB (Université Libre de Bruxelles). He then worked with Professor Lejour for several years, focusing on the different aspects of breast surgery. In addition Dr Abboud spent an additional year as a fellow with Professor Fernando Ortiz-Monasterio in Mexico before starting his practice. He has been the head of division of plastic and reconstructive surgery at CHU-Tivoli, Belgium for more than 15 years now. Moreover, he has his private practice, working with several hospitals in Brussels.

DIMITRI J. ANASTAKIS
Professor of Surgery, Division of Plastic and Reconstructive Surgery
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Dr. Dimitri Anastakis is a Professor of Surgery in the Faculty of Medicine. He is also appointed to the Bloomberg Faculty of Nursing at the University of Toronto. Dr. Anastakis is the Vice Dean of Continuing Education and Professional Development, Faculty of Medicine, University of Toronto. He is also the Executive Director of SIM-one, Ontario's Simulation Network. He is the former Chair of Plastic and Reconstructive Surgery, Department of Surgery, Faculty of Medicine, University of Toronto, and has served in the past as the Associate Director of surgical services at University Health Network in Toronto.

Dr. Anastakis obtained his medical degree from the University of Toronto in 1988. He then completed his Plastic and Reconstructive Surgery training at U of T in 1995. He was an R. S. McLaughlin Fellow and studying brachial plexus and peripheral nerve surgery at the Clinique de Longeraie in Lausanne, Switzerland. He holds a Masters of Health Professions Education from the University of Illinois at Chicago, and a Masters of Health Care Management from Harvard University. Dr. Anastakis' clinical practice focuses on brachial plexus and peripheral nerve surgery and reconstruction of the paralyzed upper extremity.

Over the past two decades, Dr. Anastakis has served as surgical teacher, professor, director and chair of numerous committees and task forces. Dr. Anastakis is actively involved in surgical education research, including technical skills teaching and assessment, and visual spatial abilities in surgical skills acquisition. Currently, he is studying structural and functional cortical changes following peripheral nerve injury, repair

and rehabilitation. Dr. Anastakis is committed to medical education and has won numerous awards for teaching and research.

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Dr, Salvatore D'Arpa, is currently an Assistant Professor in the Department of Plastic and reconstructive Surgery in the University of Palermo. He has graduated in Medicin cum Laude in July 2001 and has completed hiss Plastic surgical training on October 30th 2006. On March 2010 he obtained a PhD on ear reconstruction after cancer resection and has won the 2006 EURAPS Young Plastic Surgeons Scholarship. He has spent several periods abroad as a fellow in the Department of Plastic Surgery of the Gent University Hospital (Gent, Belgium), the Head and neck Service at the Memorial Sloan Kettering Cancer Center in New York (New York, USA), In the Department of Plastic and Reconstructive Surgery of the University of Innsbruck (Innsbruck, Austria), in the Head and Neck Service in the National Institute for Cancer in Milan (Milan, Italy) and in the Burn Center of the University of Catania (Catani, Italy). His fields of interest are reconstructive microsurgery, perforator flaps, head and neck surgery, functional muscle transfers, melanoma, cosmetic surgery.
Dr. D'Arpa is member of EURAPS, (European Association of Plastic Surgeons), ISAPS (International Societies for Aesthetic Plastic Surgery), EPSRC (European Plastic Surgery Research Council) SIM (Italian Society for Microsurgery), SICPRE (Italian Society for Plastic Reconstructive and Aesthetic Surgery). He is in the board of directors of the Italian Society for Microsurgery (SIM) and is section editor for the liposuction section of Aesthetic Plastic Surgery. He is reviewer for several prominent journals and author of 27 international publications.

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Specialist in Orthopaedic and Traumatologic Surgery (Paris-france). Qualified in Microsurgery. Hand and Upper Limb Surgery (Lyon-France). Graduated in Microsurgery (University Diploma). Paris XII University (1998). Graduated in Hand and Upper Limb Surgery (University Diploma). Université Pierre et Marie Curie-Paris VI (1998). Graduated in Arthroscopy (Inter-University diploma). Université Paris VII (1999). Graduated in Shoulder and Elbow Surgery (Inter-University Diploma). Paris XII University (2001). Member of the Board of Teachers of Hand and Microsurgery Diploma at Rockefeller Medical University-Grange Blanche – Lyon France. Member of the French Society of Hand Surgery (GEM). Member of the French Society of Microsurgery (GAM). Member of the French Society of Orthopaedic and Traumatologic Surgery (SOFCOT). Reviewer of the French Journal of "Hand Surgery "

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Dr. Baccarani is author or co-author of more than 50 publications in the field of Plastic and Reconstructive Surgery (peer reviewed journals and book chapters), and more than 90 presentations at national and international meetings (World Society for Reconstructive Microsurgery Meeting, American Society for Reconstructive Microsurgery Meeting, American Society of Plastic Surgeons Meeting, European Confederation of Societies for Microsurgery Meeting, EURAPS Meeting). He is International reviewer for 3 journals in the field of Plastic Reconstructive Surgery, Maxillofacial Surgery, and General Surgery (Int J Oral Maxillofacial Surg; Bentham PRSJ; ISRN Surgery). Member of the Editorial Board of The Bentham Plastic and Reconstructive Surgery Journal. Member of the Board of the Italian Microsurgery Society since 2009. He is also member of several Plastic Surgery and Reconstructive Microsurgery societies.

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Dr Joseph Bakhach, Plastic and Reconstructive Surgeon graduated in 1992 from the University of Bordeaux - France. He was specifically involved in Hand reconstruction and Microsurgery. He is member of the French, European and International Societies of Hand Surgery and Reconstructive Microsurgery. He has personally developed and published original techniques in these two fields.

JACQUES BAUDET
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Professor of Orthopedic, Traumatology (option Plastic and Reconstructive Surgery) 1974 and attending Surgeon at the Department of Plastic and Reconstructive Surgery, 1975-1985 at the Hospital St André, BORDEAUX. Chief of Departement of Plastic, Reconstructive, Aesthetic, Hand Surgery, Microsurgery at the Hospital du Tondu , Centre Hospitalier PELLEGRIN BORDEAUX 1981 -2005. Founding member and first President of the GAM (Groupe Advancement Microsurgery) 1976. Président of the Société Française de Chirurgie de la main (GEM) 1998. President of the International society of Reconstructive Microsurgery (ISRM) LOS ANGELES 1999. Founding Member with Julia Terzis and Willy Boecks at LOS ANGELES of the WSRM 1999. JACQUES MALINIAC LECTURER at the Congress of the ASPRS (MONTREAL) 1995. KAZADJIAN lecturer at the Institute of Plastic and reconstructive surgery NYU 1995. Doctor Honoris Causa University of COIMBRA (PORTUGAL) 2000. Guest Lecturer of the JAPANESE SOCIETY OF PLASTIC SURGERY, TOKYO 2000. Prof. Baudet's main contribution to the development of microsurgery has been concretized by the description of many new techniques published in international congresses and reviews. The active and passionate work of his French and Foreign fellows whom he trained in his department (more than 300) has significantly contributed to the major advances in microsurgery. At the UNIVERSITY OF BORDEAUX, in order to transfer his experience in

microsurgery and surgery of the hand and open new fields in research, he has since a long time created several diplomas with theoretical teaching and clinical practice in laboratories : Diploma of microsurgery, Diploma of flaps donor sites, Diploma of surgical anatomy of the hand. Prof. Baudet has participated in more than 20 surgical humanitary missions in the Third World Countries.

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Phillip Blondeel at present, he is vice-chairman since 1996 and professor of Plastic Surgery since 2000 at the department of Plastic Surgery in Gent, Belgium. In 2011 he was appointed Chairman of the Composite Tissue Allograft Programe. He graduated "maxima cum laude" as doctor in Medical Sciences (Ph.D.), Faculty of Medicine of the University of Gent. Thesis "Free perforator Flaps in Breast Reconstruction" in 1998. He is member of numerous societies: treasurer of the Belgian Society for Plastic Surgery, member of the Swiss, American and European Society for Plastic Surgery, the American and World Society of Reconstructive Microsurgery. At present, Prof. Blondeel is member of the editorial board of 'Plastic and Reconstructive Surgery', the Journal of Plastic, Reconstructive and Aesthetic Surgery, the Journal of Reconstructive Microsurgery and the European Journal of Plastic Surgery. Prof. Blondeel is world renown for his contributions in reconstructive and aesthetic breast surgery. He is one of the pioneers in so-called "perforator flap" surgery and was the first surgeon in Europe to apply the "perforator flap" principle in breast reconstruction in December 1993. Author of 6 books, 21 chapters and numerous other scientific publications and recipient of numerous distinguished awards,, he teaches reconstructive and aesthetic breast surgery continuously at his own institution and as invited speaker at many universities and conferences all over the world. He won numerous awards and distinctions in the field of breast surgery.

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Dr Choughri is head of the Hand Unit at Department of Plastic Surgery & Hand Surgery, University of Bordeaux, France. He graduated from the Catholic University of Louvain, Brussels, Belgium and completed his General Surgery and Orthopedic Surgery in the same University. Subsequently he completed a Fellowship in Hand Surgery and Plastic Surgery in Lille, France, and in Microsurgery at Brugman Medical School, Brussels, Belgium. Dr Choughri obtained the Belgian board of Orthopedic Surgery in 1999. He is Fellow of the French Society For Surgery of the Hand (GEM) and of the European Wrist Arthroscopy Society (EWAS)

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Dr Corcella graduated and did his residency training at University of Grenoble Faculty of Medicine following which he completed 2 short fellowships in hand surgery at Clinique du Parc, Strasbourg with Dr. G. Foucher and Dr. F.Marin-Braun, and in Reconstructive Microsurgery at Chang Gung Memorial Hospital, Taipei –Taiwan (Rep. of China) with Pr. Fu Chan Wei. At present, he is on the full time staff of Service de Chirurgie de la Main et des Brûlés - CHU de GRENOBLE and is in charge of the Clinique Universitaire de Chirurgie de la Main & Chirurgie Plastique et Réparatrice. Dr Corcella is certified in General Surgery, General Anatomy and Organogenesis, Statistics and Clinical Research, Epidemiology, and in Microsurgery. He holds also the European diploma of Hand Surgery and a diploma in Medical Law and Forensic Medicine.

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Ali Ghanem has extensive experience in teaching and considers medical education in surgical context as one of his personal interests and to this end he has been appointed as a consultant in Medical Education in the International Medical Education Trust 2000 (IMET2000): A UK based organisation providing continuous and accessible healthcare education and training for all professionals working in the global health sector. Winner in 2011 of the London Deanery Simulation and Technology-Enhanced Learning Initiative Award, an award for an investigation of the use of simulation training in the understanding of skill acquisition in microsurgery and of the Imperial College London MSc Research Bench award, an award for one placement of master in science student to investigate the role of hand motion analysis in skill acquisition in microsurgery. Member of several British professional and scientific organizations, at present he is an Academic Clinical Lecturer in Plastic Surgery at Barts and The Royal London Hospitals focusing on establishing a comprehensive curriculum for the advancement of microsurgery training.

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Dr Ghorbanian at present in training at the General Plastic Surgery - Plastic and Reconstructive Surgery Department, Royal London Hospital, London. He has special interest in clinical research and has been involved in a number of Research Projects as which allowed him to gain proficiency in several laboratory based research techniques including; Cell Culture, Western Blotting, Sphere Assays, Fluorescent Assisted Cell Sorting and Clonogenicity Assays.

ASHOK GUPTA
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Dr. Ashok K. Gupta is a plastic surgeon and teacher affiliated to prestigious hospitals like Grant Medial College, Mumbai, Bombay Hospital Institute of Medical Science and Bombay Hospital & Medical Research Centre. Board of Governors member of the Medical Council of India, he has been recently conferred upon with the highest honor of "Padma Shri Award" by the President of India and the "Sheikh Hamdan International Award" 2010. Author of numerous scientific publications and guest speaker at many national and international conferences, Dr Gupta is one of the founder members of the WSRM and as well the Chairperson for VIII Congress of the WSRM to be held at Mumbai in 2015.

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Nadey S Hakim is a General and Transplant Surgeon with a particular interest and expertise in kidney and pancreas transplantation. In addition he is a Bariatric Surgeon and Fellow of the American Society of Bariatric Surgeons. He obtained his MD from Paris Rene Descartes University; and received his surgical training at Guy's Hospital in London, in addition he has received a PhD in small bowel transplantation from University College London. He completed a Gastrointestinal Fellowship at the Mayo Clinic and a Multiorgan Transplant Fellowship at the University of Minnesota. Represented Britain in the International team which has performed the world first arm Transplant and the world first double arm Transplant.
Editor in Chief of International Surgery, a prestigious peer reviewed journal and on the Editorial Board of Transplant Proceedings, Graft, Experimental and Clinical Transplantation and of several other journals. Past President of Transplantation Section of the Royal Society of Medicine. Prof Hakim was awarded the 2007 J Wesley Alexander Award for Outstanding Research.

NADINE HACHACH-HARAM
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Dr. Nadine Hachach-Haram was invited to join the Academic Plastic Surgery group, Microsurgery Anastomosis Simulation Hub, under the supervision of Professor Simon Myers and Mr. Ali Ghanem. Her research role is currently focussed on investigating educational interventions for accelerating microsurgery skill acquisition. She was also invited by Professor Dunaway and his team, at Great Ormond Street Hospital, to join their research group looking at the use of geometric morphometrics for planning 3D facial reconstruction. In addition, she was awarded the prestigious Harvey Minasian Prize for top marks in her MB BS degree and was the recipient of the prestigious BAPRAS (British Association of Plastics, Reconstructive & Aesthetic Surgery) Bursary, which she used towards her voluntary work with Facing the World, a UK-based charity, whose aim is to help children with facial disfigurement and offers them life-changing reconstructive surgery in the UK. She has presented at multiple conferences, locally, nationally and internationally. Apart from this, she is the annual course organiser of the UPRAS (Undergraduate Plastic and Reconstructive Surgery) Conference aimed at educating and preparing undergraduates about a career in reconstructive surgery and was recently nominated to be a faculty member of the Emergency Management of Severe Burns course. Dr. Hachach-Haram sits on the Plastic Surgery Council at the Royal Society of Medicine, UK. She grew up in USA & Lebanon and currently lives in London with her husband Waleed and 2 children, Kaled & May

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Lars-Peter Kamolz was born 1972 in Berlin, Germany. He has studied medicine in Vienna, Austria; he is a boarded Plastic, Aesthetic and Reconstructive Surgeon. Dr. Kamolz was the Head of the Vienna Burn Center, Medical University of Vienna until 2010; from 2010 until 2011 he was the Section Head of the Section of Plastic, Aesthetic and Reconstructive Surgery at the LKH Wiener Neustadt. Since 2012 he is Professor of Plastic, Aesthetic and Reconstructive Surgery and the Head of the Division of Plastic, Aesthetic and Reconstructive Surgery, Department of Surgery, Medical University of Graz, Austria. He is President of the European Burn Association – EBA to be organized in Vienna in 2013.

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Since 2009, Dr Kokkalis is Consultant Orthopaedic Surgeon, Department of Orthopaedic Surgery, University Hospital "ATTIKON", Athens. Director: Prof. PJ Papagelopoulos and since 2011 he is Lecturer in Orthopaedics, University of Patras, Patra. He was awarded a Ph.D degree with grade "Excellent" in July 26, 2010 from the National and Kapodistrian University of Athens, School of Medicine. The title of his Doctoral Thesis was: "Effect of acetyl-l-carnitine on peripheral nerve

regeneration after an end-to-side neurorrhaphy of the musculocutaneous to the median nerve in a rat model". Author of numerous scientific publications and book chapter, Dr Kokkalis served as Instructor at the 24th and 25th Seminar of Microsurgery. University of Ioannina, Department of Orthopaedics, Ioannina.

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Dr. Kumar completed 6 years of Plastic Surgery training in the UK, following which he spent 2 years fellowship in Microvascular & Hand Surgery at Christine M. Kleinert Institute, Louisville, Kentucky, USA. He was elected best candidate of the year – 1997, Canniesburn Microsurgical Course and was awarded the Hackett Memorial Trainee Prize – Best paper of the 1997 annual meeting of BAAPS. In 2010 his paper on Brachial Plexus was awarded the Best Paper Award at the New Zealand Plastic Surgery Association Annual Conference.

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Professor Raja Kummoona, Fellow of the Royal College of Surgeons of England (FDSRCS), Emeritus professor of Maxillofacial Surgery of Iraqi Board for Medical Spcializations, Fellow Royal Society of Medicine, Resaerch Fellow Royal college of Surgeons of England for the years (1975-1977), President of Iraqi Dental Society for the years (1977-1985), Registrar of Primary FDSRCS in Iraq for the years(1985-1990), the most distinguish professor of University of Baghdad for the years 1991-1992, one of 40 top scientist in Iraq awarded gold medal for 3 years 2000-2002 by presidential celebration , he had many publication and contribution to science by advocating many surgical procedures and research in cancer surgery and flap reconstruction, TMJ surgery and missile war injuries of the face with advancing surgery of war injuries of the face worldwide. Editor of Neck Dissection, Clinical Application and Recent Advances, Feb 2012, InTech

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Senior House Physician in General Practice to Dr J Rosenthal and Dr D Rosenthal. Senior House Surgeon in Plastic Surgery to Mr N Kang, Mr M A Mosahebi-Mohamnadi, Mr G O'Toole, and Mr S Hamilton and Senior House Physician in Accident & Emergency to Dr A Fogarty and Dr J Costello. He is currebtly undergoing at Barts and The London, School of Medicine and Dentistry a research project focusing on advancing microsurgical education through the establishment of a comprehensive curriculum throughout the various stages of postgraduate surgical training. This project was the winner of the 2011 Educational Excellence Innovation Award of London Deanery and NHS London.

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Dr Michel Moutran is Assistant des Hôpitaux de Lyon and Chef de Clinique in Plastic Surgery at the University of Lyon School of Medicine since 2009. Graduate of the University of Lyon in Plastic and Reconstructive Surgery. He has an additional degree in Microsurgery as well as Biological Science and Tissue Engineering. Member of the French and Lebanese societies of Plastic, Reconstructive and Aesthetic Surgery and member of the French College of Plastic, Reconstructive and Aesthetic Surgery.

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Professor Wassim Raffoul is Head of the Plastic and Reconstructive Surgery Department at the University of Lausane. He was awarded twice the prize of the Swiss Society of Plastic Surgery in 191, and 2007. His studies about wound healing, tissue cultures, regeneration of peripheral nerves, bone and cartilage as well as breast reconstruction are known wordwide. Developing Reconstructive Microsurgery has been a common denominator in all his sudies and research projects.

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Dr Srdjan Saso qualified from Imperial College, School of Medicine in 2007. He completed basic training in Northwick Park and St. Mary's Hospitals before being appointed to the North West Thames Deanery Obstetrics and Gynaecology programme in 2009.
In October 2010, he deferred his clinical training in order to commence a 3 year PhD programme at Imperial College (Division of Surgery and Cancer, Institute of Reproductive and Developmental Biology) under the supervision of Mr Richard Smith, Miss Sadaf Ghaem-Maghami, and Professor David Noakes. His PhD will focus on anatomical, immunological and psychological aspects of uterine transplantation.
In addition to his clinical appointments, he held an Honorary Clinical Research Fellowship in the Department of Biosurgery and Surgical Technology at Imperial College under the supervision of Mr Thanos Athanasiou and Lord Ara Darzi. His work focused on the application of statistical methodology to review various aspects of surgical practice.

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Dr Sawaya is specialized in Plastic, Reconstructive and Aesthetic Surgery, Hand Surgery, and Microsurgery. He trained with Pr Baudet, Pr Martin, Pr Pelissier, and Dr Hejeili. Dr Sawaya is author of numerous scientific publications and has contributed to several conferences in France. His MD thesis was *"A pilot study of psychometric characteristics of a self-report instrument measuring physical criteria of the hand"*

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Mr Shibu is Consultant in Paediatric & Plastic Surgery. He has special interests in Microsurgery; Hand Surgery; Paediatric Plastic Surgery. He has numerous publications related to Plastic and Reconstructive Surgery and Hand Surgery.

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Visiting Research Fellow, Queen Marys, University of London as part of full time MSc Surgical Sciences, Imperial College, London. Course Instructor Basic Skills in Microsurgery at Barts and the London Microsurgery Course. Self-organised small group teaching sessions on Plastic Surgery. Developed free teaching website (www.setpras.org), with presentations and MCQs. Chairman and founder of SETPRAS (Society for Education and Training in Plastic, Reconstructive and Aesthetic Surgery). Clinical Tutor and Lecturer DrExam Intercollegiate MRCS Revision Courses.

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Immediate Past President of the World Society of Reconstructive Microsurgery, Dr. Soucacos was elected In 2002Professor and Chairman of the Department of Orthopaedic Surgery at the University of Athens, School of Medicine. He has been involved in many regional, national and international activities related to orthopaedics. He has served as Chairman of several International Congresses. Dr. Soucacos is member of the Editorial Board of several distinguished International and Greek Orthopaedic Journals.

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Professor Peter M. Vogt, M.D., Ph.D. is Past President of the German Burn Society, President of the German Society of Plastic, Reconstructive and Aesthetic Surgeons and Vice President of the European Burn Association. He is expert in microsurgical soft tissue coverage after trauma or tumor excision, hand surgery, breast reconstruction for cancer patients nerve repair, brachial plexus surgery, wound healing and cosmetic surgery. Professor P. M. Vogt, MD, was awarded the 2007 German Universities' Annual Award for Innovations in Medicine. The Award was given for the application of spider silk as a novel substitute for nerve tissue reconstruction.

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Masseh is a 4th year medical student at Bart's and The London School of Medicine and Dentistry, currently studying Molecular Medicine as a BMedSci. He is the Co-Founder of BLAMSS: Barts and The London Academic Medical and Surgical Society and currently General Secretary for Barts and The London Surgical Society, Pott's Barbers. He has a keen interest in surgery and is currently undertaking research into the technical factors that affects skill acquisition in microsurgery at the Microsurgery Anatomises Simulation Hub in the Centre for Cutaneous Research at Barts and The London with Professor Myers as well as research into Paediatric Surgery at The Royal London Hospital.

The 1st LEBANESE HAND AND RECONSTRUCTIVE SURGERY CONFERENCE

ABSTRACTS

SESSION 1

MICROSURGERY EDUCATION & TRAINING

Skill Analysis And Curriculum Design In Microsurgery Training

ALI GHANEM*, S. RAMACHANDRAN, S. SHUREY, S. MYERS

Introduction: In order for surgical educators to develop a competency-based simulation curriculum in microsurgery there are several gaps in the literature that need to be addressed. The following aspects have been poorly defined in the literature:
1. Definition of microsurgical skill
2. Number of training sessions/duration of programme to attain competency
3. Establishment of specific training goals
4. Establishment of safe clinical thresholds
Answers to these pertinent questions lie in the understanding of microsurgical skill acquisition, and the construction standardized learning curves specific to the stage of training. The paucity of literature in these crucial aspects of curriculum development has inspired this study.
Methodology: A Literature search investigating what constitutes microsurgical skill has been performed. At the London Deanery Microsurgical Anastomosis Simulation Hub (MASH) 43 surgical trainees at various levels of their surgical training are underwent a standardized 5-session training course. A standard simulated microsurgical procedure is performed at the end of a training session, recorded and blindly analyzed using standardized and modified global rating scales (GRS). The same group is then followed through the five days session course and comparison is made at the end of the course to scores of an expert group of microsurgeons.
Results: 43 recruited participants (18 females, 25 males) have been analyzed. The participants include,
14 postgraduate trainees and 25 undergraduates. A total of 16 components of microsurgical skills were found to be statistically significant in correlation with skill acquisition. Using GRS scores our study showed that 5 sessions are insufficient to reach expert standards. Based on linear regression model, we found that 27 sessions (with an average of 2 anastomosis per session) are required to reach expert standards.
Conclusion: This paper demonstrates the importance of simulated training in identifying components of microsurgical skill, which are sensitive indicators of skill acquisition. It further demonstrates the possibility of establishing safe clinical thresholds at which the trainee attains expert level. Assuming the
GRS of the expert cohort to represent such a safe practice threshold. This finding presents a foundation for the establishment of a competency based microsurgical training programme in which the threshold of safe practice have been identified and learning exercises have been individually designed to reach such a threshold.

World Perspective Of Microsurgical Training Opportunities

CLEMENT CHI MING LEUNG

Introduction: With greater emphasis on mastering microsurgery techniques in laboratory, there is a need for 2 standardized training programmes in microsurgery. We reviewed microsurgery-training courses available in six continents of the world.
Method: Data was collected from PubMed, MEDLINE (Ovid), EMBASE (Ovid) searches and online course information, of up to five established microsurgery course from each of the six continents. Fellowships and flap-harvesting courses were excluded.
Results: Considerable variations between courses exist. Total course length ranged from 20 hours to 1,950 hours. Student-to-teacher ratios ranged from 2:1 to 10:1. Only a few course offered in-vivo animal models. Instructions in microvascular end-to-end and end-to-side anastomoses were common, but peripheral nerve repair or free groin flap transfer was not consistently offered. Methods of assessment ranged from no formal assessment where instructor monitored and gave instant feedback, to immediate assessment of patency and critiqued on quality of repair, to delayed re-assessment of patency after 12-24 hours period. Only one centre used rating scale.
Discussion: Microsurgery training across the world is heterogeneous, which may be due to availability of resources, regulations in animal experimentation, and cost of maintaining laboratory. Despite merits for diversity in curriculum, there should be aminimum level of 2tandardized microsurgery training.

Objective Assessment Of Microsurgery Skills – Does It Exist?

MASHA SINGH *, GHANEM A, MYERS S

Introduction: There is a current trend in modern microsurgical training towards trainees providing evidence of competency rather than evidence of experience. Validated competency based assessments in microsurgery include Direct Observation of Procedural Skills (DOPS), Checklists and Global Rating Scales (GRS), however, these may be subject to observer bias and often require great time commitments from both the assessor and candidate. Due to technological advances in motion tracking, there is now a possible role for Hand Motion Analysis (HMA) as an objective assessment tool for microsurgical skill. Motion analysis has already been used successfully in allied fields, such as laparoscopic surgery and here we present our results of this technology applied to microsurgical skill assessment.
Methodology: In order to simulate the "real world" microsurgical training experience, we developed a 5-day basic microsurgery course, with the use of non-living models, such as cryopreserved rat aorta through to freshly killed chicken thigh. Candidates ranging from undergraduates, through to senior postgraduate surgical trainees underwent training across the 5 days, with Hand Motion Analysis performed for a standardized task. Outcome measures included total time to complete task, total number of hand movements and total hand travel distance. In total, 30 candidates underwent assessment. Each performed a single anastomosis of a rat cryopreserved aorta at the beginning, middle and end of the course. Each used a standardized approach and was concurrently recorded for assessment using validated Global Rating Scales.
Results: 30 candidates (10 undergraduate, 10 basic surgical trainees and 10 higher surgical trainees) were assessed. Hand motion analysis was able to demonstrate construct validity and discriminate candidates of different skill levels, using all three recorded outcome measures. We were also able to demonstrate concurrent validity for the system by a reduction in all recorded outcome measures across all groups during the course.
Conclusion: This study validates the construct and concurrent validity of Hand Motion Analysis as an objective assessment tool when used to assess surgical trainees undertaking a 5-day basic microsurgery course. It was also able to form learning curves for candidates at different levels of their training and we suggest that these may be used to provide useful guides to direct further microsurgical training.

Evidence For Educational Interventions In Microsurgery Education

ALI M. GHANEM, NADINE HACHACH-HARAM*, CLEMENT LEUNG, SIMON R. MYERS

Introduction : Over the past decade, driven by advances in educational theory, pressures for efficiency in the clinical environment, and increasing culture of litigation, there was a shift in surgical training towards objective assessment and bench model technology-enhanced simulation training, in order to transfer the risk inherent to surgical training from clinical to controlled lab setting. Microsurgery is a technical skill with a steep competency learning curve on which the clinical outcome greatly depend. This paper investigate the evidence for educational interventions of traditional skills courses in order to establish best evidence practice in training and curriculum design
Methods : A systematic review of Medline and EMBASE databases was carried out and papers with level I & II evidence of educational interventions that objectively improve microsurgical skill acquisition was identified and critically analysed using the Chochrane methodology.
Results : The EMBASE and Medline databases search yielded 1460 and 2277 citations respectively. Limiting to randomized controlled trials and abstract reviews reduced the number to 4 relevant RCTs. Critically appraisalusing the BestBETs group methodology supported a laboratory based low fidelity model microsurgical skills curricula with evidence that training on low fidelity models has the same degree of benefit as training on high fidelity models. There was strong evidence that technical skills acquired on low fidelity models transfers to improved performance on higher fidelity human cadaver models and that self directed after-hours practice leads to improved and faster technical performance.
Conclusion : Although there is significant paucity in the literature to support current microsurgical training practices, simulated training on low fidelity models in microsurgery is an effective intervention that leads to acquisition of transferable skills and improved technical performance. More research to identify educational interventions associated with accelerated skill acquisition is greatly needed in this field.

Sword Or Knight? The Impact Of Suture On Microsurgeons' Performance

MASSEH YAKUBI*, M. SINGH, A. GHANEM, S. MYERS

Background: There are a plethora of microsurgical sutures available on the market. To our knowledge no study has been performed to compare the different types of sutures in the context of microsurgical training. We aim to find out if the type of suture used has an effect on microsurgical anastomosis training. If so; we hope to ascertain which sutures is ideal.
Materials and Methods: 20 candidates of varying experience were been enrolled. All candidates perform microvascular anastomosis on rat aorta using 6 different types of sutures. The variables for our study are; the size of suture (8-0 and 10-0), material used (polypropylene and nylon), type of suture point (taper Point and M.E.T Point), and the needle length (5.0mm and 3.8mm).
Results: Three outcome measures are recorded; firstly a 16 point likert scale questionnaire was completed after using each suture. Secondly all anastomosis were video record to mark candidates based on global rating score. Thirdly hand motion analysis was recorded with each suture.
Conclusion: We identified that there was a difference in the subjective experience of candidates with each sutures. The 10-0 3.8mm sutures were most liked by the candidates, the worst rated was the prolene sutures. We also noted that undergraduates were less able to differentiate between sutures then higher surgical trainees.

Warm Up? The Phenomenon Of Warm Up And Its Application To Microsurgery

SAMIM GHORBANIAN

Introduction: Pre-operative warm-up exercises for surgeons have received increased attention in recent times secondary to advances in simulated surgery. Foremost, in Laproscopic surgery the pre-operative warm up has been shown to have beneficial effects in enhancing performance and reducing errors. Underlying the potential benefits of surgical warm-up is optimising psychomotor preparedness. Warm up improves perfusion to relevant muscle groups, reduces anxiety and induces cognitive arousal enabling higher levels of psychomotor skill. Within microsurgery previous studies have demonstrated that warm up utilising the "round the clock" exercise may improve subsequent attempts at the same exercise regardless of experience.
Method: This was a randomized control trial utilising 56 trainees with varying experiences of microsurgery. The participants were randomised into two groups. Both of whom partook in a number of microsurgical exercises. One group were asked to perform anastemosis of a Rat Aorta with warm up utilising the round the clock technique, and one group without. Students were graded anonymously using GRS.
Results: There were no significant differences between the two groups with regard to ability performing anastemosis of rat aorta. This study demonstrated no significant benefit in using the round the clock exercise to warm up prior to anatomises of rat aorta.
Conclusions: Previous studies demonstrating the benefits of microsurgical warm of have used the round the clock exercise both as the warm up and follow up exercise, allowing for a homogenous short term familiarization effect. Research in laparoscopic surgery has demonstrated warm up exercises utilising procedure specific simulation was significantly better than their generic counter parts. This study demonstrates that the round the clock exercise does not produce the necessary short term familiarization effect which would allow for a significant improvement in psychomotor skill when carrying a separate exercise namely anatomises of rat aorta. Further research is needed to identify which exercises do increase performance of overall microsurgical skill when used as warm up.

Gaps In The Evolution Of Non-Living Models In Microsurgery Training

DANA DAVIES SHAW

Standardisation Of Microsurgery Training Programmes –-- Channels And Challenges

ALI GHANEM

Currently, basic microsurgery training is largely achieved through a multi-day rat model skills courses. These courses vary in their duration, contents and are mostly completed without a formal assessment of skill acquisition. This paper investigates the training programmes and trainees' skills assessments of established microsurgery education centres in Europe and the United States and analyses their quality control measures. It discusses the standarisation of training as a means to raise competency standards of surgical skill and present a preliminary report of the International Microsurgery Simulation Society working group on standarisation of basic microsurgical courses.

Establishing a comprehensive program in microsurgical training – the Advanced Course of the Italian Society for Microsurgery

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Some basic microsurgery courses are available in Italy in different cities but no advanced courses were present until 1999. The Italian Society for Microsurgery, in cooperation with the Italian Society for Surgery of the hand and Cardarelli Center of Biotechnologies in Naples, starts with a new program for an advanced micro-course. We would like to present this initiative which in

2012 became international for the presence of foreign students. The course is aimed at providing a substantial practical-theoretical background in vascular and neuronal microsurgery through a program developed in one year for a total of 137 hours, 100 hours of practical and 37 of theoretical activities, organized in 15 day, each divided in three sections.
A final practical examination is expected in order to show the acquisition of the practical techniques. A multiple choice questionnaire will be administered and a thesis will be discussed. All participants will receive a Participation Certificate, while those who passed the final examination will receive a "Diploma Certificate in Microsurgical Techniques". Participants who didn't pass the examination have the possibility to repeat it at the end of the next scheduled edition, after having attended the last week of the course. During the course, each participant will develop a research project aimed at producing an experimental thesis (Work Project). The student will be able to attend the Center for a further year with additional costs. In alternative a non experimental thesis will be discussed during the final examination.
All participants will receive the wholly documentation of the Theoretical lessons at the Hand Surgery National Congress as regards for hand specialization.

Microsurgery Education & Research Centers: Luxury Or Necessity
PANAYOTIS N. SOUCACOS

Microsurgery is becoming an integral part of a surgeon's training in various fields and specialties. Today, academic microsurgeons are asked to provide high-caliber education and training in the field of reconstructive microsurgery, as well as promoting basic and translational research in state-of-the-art issues in the field. This is best achieved with dedicated Microsurgery Laboratories or Centers which are designed as multi-functional clinical, research and educational facilities, aimed at the advancement of reconstructive microsurgical techniques and surgery, and to continuous education programs in this field. Education in state-of-the-art microsurgery is essential for academic and clinical excellence in surgical disciplines. It allows for the advanced management of severe crush injuries, amputations, devastating open trauma of the upper and lower extremities, composite tissue allotransplantation, among others, that plague modern industrial society on the one hand, which demand expertise in cutting edge microsurgical techniques, on the other hand. In several areas, there is a lack of adequate specialized training centers and courses. By establishing a microsurgical laboratory, young fellows, residents and physicians will be attracted to learn basic microsurgery skills and to participate in continuous training programs. These Microsurgery Laboratories will be a primary source for medical scientists, physicians and researchers from an entire area to successfully train in modern microsurgical skills. These laboratories / centers will also serve to promote the scientific research interests of graduate and post-graduate students; as well as stimulate interdisciplinary cooperation among researchers. As such, they will act as central catalysts for graduate students, physicians and researchers to successfully complete break-through research, which will result in high-caliber publications in renowned medical journals. The translation of these findings to solve significant issues in clinical practice is pivotal to our interests. There is no doubt of the academic significance of Microsurgery Centers in terms of training and research. They will contribute to academic excellence and technical expertise in the field of microsurgery. This in turn, promotes more qualified scientific research in the rapidly expanding field of experimental surgery. With the support of these centers, we will be able to take important steps in the advancement of Microsurgery that will be meaningful in education, research and ultimately in clinical practice.

SESSION 2
BURN INJURIES

Late Corrections of Pediatric Burns – Plastic surgery options

PETER M. VOGT

The literature on the sequelae of pediatric burns provides a wide spectrum of pathologies. Contractures appear to be among the most predominant conditions. However also impaired tanning, diminished tactile sensibility, increased reddening observed in some studies are even more frequent complaints than limited joint mobility or constrictive scars on the trunk.
The most devastating complications are observed when after pediatric burns, proper skin grafting is missed or soft tissue reconstruction when needed is not available thereby leading to prolonged healing and unstable scars.
Extensive scars on the abdomen may in females prevent a regular development of the breasts. Constrictive scars on the extremities inhibit adequate bony growth of the joints and long bones. Scars to the neck and face pose problems to the development of speech or growth of the mandible. Some of the children may acquire behavioral abnormalities due to social isolation with their obvious disfigurements.
In this paper late complications are presented in adults after pediatric burn injuries in which the opportunity for sufficient soft tissue reconstruction was missed earlier in childhood.
Cases presented include total trunk burns with scarry distorsion of the thorax leading to non development of breast, scarring of the vulva, unstable scars with chronic ulceration of the lower leg with development of metastatic squamous cell carcinoma, neck burns with major impairment of the mandible and scarry affection of the ankle joint leading to club foot deformities. Plastic surgical options are discussed.
Those included scar release by Z-plasties, skin grafting, artificial dermis and split skin grafts, local fasciocutaneous flaps, distant pedicled flaps, free flaps of native or preexpanded tissue and different minimal invasive techniques of resurfacing including dermabrasion, laser peeling and keratinocyte spray. The most recent development is microneedling in combination with local Vitamin A application which provides a promising perspectives for otherwise difficult to treat large areas of scarring and fat injections into scar areas.

Reconstruction of Post-Burn Sequalae

LARS-PETER KAMOLZ

Management of Complex limb injuries is always a challenging experience. Each case has to be Loss of skin integrity and skin functions due to injury or illness may acutely result in a substantial physiologic imbalance with long term morbidity or even death. The most common cause of severe skin loss is the thermal injury. The possibility of surviving burn injuries has changed dramatically over the past decades. One of the milestones was a more aggressive approach concerning surgery; early wound debridement and early wound coverage has led to a higher survival rate, but also to a higher number of patients, who will require reconstructive surgery, because formation of scar tissue at a wound site and scar contraction is still a very common consequence of a thermal injury.
General principles: Objective assessment of deformities and functional problems caused by scarring and scar contracture, in this sense, will require detailed understanding of the extent of the original injury and the precise treatment approach used to manage the burned wound. Formulating a realistic plan to restore physical problems and to alleviate pain and discomfort in the area of injury similarly requires in-depth analysis of the physical deformities and psychological disturbance sustained by the patient. Psychiatric, psychosocial, and physiotherapeutic cares, in this sense, must be continued while a surgical treatment plan is instituted.
The techniques of reconstruction

There are several techniques routinely used to reconstruct bodily deformities and to close defects common to burn injuries; i.e. unsightly scar, scar contracture, and joint contracture. Principally, they are:

- direct closure techniques,
- closure with a skin graft with or without the use of a dermal substitute,
- closure with local and regional flaps,
- closure with free flaps,
- closure with tissue expansion,
- closure by use of composite tissue allo-tx,
- closure by use of tissue engineering,
- improvements due to the use of robotics and prothetics

The Use Of Tissue Expansion In Burn Deformity Reconstruction

SHADY HAYEK*, IBRAHIM A, ZGHEIB E, CHORBAJIAN S, ATIYEH B

New Approach Of Stem Cells Extracts In Burn Management

LAYAL HIJAZI

SESSION 3

RECONSTRUCTIVE SURGERY - UPPER & LOWER EXTREMITIES

Functional Reconstruction In Plastic Surgery

PETER M. VOGT

In contrast to the role of plastic surgical reconstruction of soft tissue defects, the other main goal of plastic surgery the reconstruction of the function of extremities is less popular and the advances are less obvious. Especially in the tetraplegic patient major efforts have been undertaken to restore basic but enormously valuable function. One specific example is key grip function.

In general, indications include all non reconstructable nerve lesions, posttraumatic or postoncological loss of muscles and tendons. Also congenital and obstetrical lesions and disease of peripheral nerves as well as congenital muscle disease and malformation are widely accepted pathologic conditions.

The term functional reconstruction implies replacement of irreparably lost muscle function by transposition of intact tendon-muscle units. In most of the indications functional transfer of antagonistic muscle tendons is sufficient but may be combined with additional procedures such as arthordesis or tenodesis. Up until now a wide spectrum of options exist for functional reconstruction especially in the upper extremity. Examples include restoration of shoulder abduction, elbow flexion, basic grasping and key grip reconstruction in the hand. While techniques for the upper extremities and the hand are well known and also popularized by orthopedic specialists the restoration of function in the lower extremity is less well known and especially in the drop foot controversely disputed.

However highly efficient techniques for the lower extremity have been established and were forgotten over time that enable single stage restoration of knee extension and foot elevation and eversion.

Techniques have to be applied to the patients based on individualized concepts and thus will provide excellent results in the hand of the reconstructive plastic surgeon. The lecture gives an overview on the current status of restoration of extremity function in plastic surgery and provides the results of a highly specialized single center of reconstructive plastic surgery.

Complex Limb Injuries

KRISHNA KUMAR

Management of Complex limb injuries is always a challenging experience. Each case has to be individualized to obtain a satisfactory result.

To understand this better one has to have a clear understanding of the basic limb anatomy. In its most simplistic form limbs are composed of five major structures

Skin which provides -Cover
Blood Vessels which provides -Vascularity
Nerves which provide -Sensation / Motor innervation
Bones which provide -Stability
Tendons / Muscles providing -Movement

Simple Injury is one in which one or more of the above structures are transected
Complex Injury is one in which one or more of the above structures are lost

Complex injuries come in varying grades in which loss of major structures range from one to all the five elements mentioned above. If only one element is lost it is a reasonably straightforward procedure these days to replace the lost element by microsurgical free tissue transfer. But when more than one of the above structures is lost the situation gets more challenging

The basic principle in achieving a successful outcome in these cases is to ANATOMICALLY reconstruct ALL the lost tissues to achieve PRIMARY healing within a LIMITED period.

In the olden days these sort of injuries were treated by one of the three methods – Amputation, long term dressings or by putting the limb in a plaster cast. Amputation is a quick simple option, but in this modern age with lots of sophisticated techniques available one should think twice before chopping someone's limb off (This does not imply that ALL crushed limbs can be salvaged). Putting a crushed limb in a cast and forgetting about it was a popular practice with the orthopedic surgeons especially during the Second World War. This was due to the extremely large number of casualties and the fact that very few reconstructive surgeons were available those days. The third technique was to keep on dressing the wound with bedside debridement hoping for the wound to granulate ad then put a graft on it.

Patients managed by these techniques had two outcomes – If they were lucky the limb rotted and died!!! Or the limb survived, but with severe handicaps. The handicaps occurred as ALL the lost tissues were NOT ANATOMICALLY reconstructed and they healed by SECONDARY (Not Iry) intention in a PROLONGED (Not limited) period of time. The handicaps were Skin / Soft Tissue providing Cover was not reconstructed it led to UNSTABLE Scar – Repeated breakdown - Infection - Pain - Discharge - Malignancy (Marjorlin's ulcer)

If the BONE was not properly reconstructed it led to C/C osteomyelitis - Discharging sinus - Infection - Pain - Foul smell - Marjorlin's Ulcer

If the VESSELS are not reconstructed the limb might still survive but with Significant ischemia - Exercise intolerance -Cold insensitivity - Tip necrosis / gangrene

If the NERVES are not reconstructed it will lead to Motor deficit - Insensate Limb- Parasthesia / Hyperesthesia – Pain- Repeated trauma / burns leading to breakdowns

To avoid these problems and to achieve a successful outcome one needs to have a definitive game plan. To look at this very simplistically the plan should be EARLY RADICAL DEBRIDEMENT - EARLY RECONSTRUCTION - REPLACING ALL LOST STRUCTURES WITH LIKE STRUCTURES (Anatomical) - ACHIEVE PRIMARY HEALING WITHIN A LIMITED PERIOD

This was first proven scientifically by Godina et al in their paper. He showed a flap failure rate of 0.75% and Infection rate of 1.5% when done within 72 hours after which it went up to 20% and 40% respectively.

This was followed by another paper by Bird et al. Soon paper after paper was published all echoing the same sentiments.

When we talk of DEBRIDEMENT there are a few points which should be highlighted.

Should be early radical debridement - Waiting will never bring dead tissue back to life, but it can convert a contaminated wound to an infected wound pouring pus Debride with magnification - Open up widely & Expose beyond zone of trauma With / without tourniquet All non-viable / doubtful viable structures debrided except nerve - SHOULD BE DONE BY THE SENIOR SURGEON

This should be followed by EARLY RECONSTRUCTION - REPLACING ALL LOST STRUCTURES WITH LIKE STRUCTURES (Anatomical) - ACHIEVE PRIMARY HEALING WITHIN A LIMITED PERIOD

This principle will be demonstrated by our series of a large number of complex injuries with loss of 2, 3 and sometimes four of the cardinal elements of limbs which have been successfully reconstructed and rehabilitated.

To sum up, Fundamental to the success of limb salvage effort is initial wound debridement

In our experience simultaneous multiple microsurgical procedures particularly in acute injuries results in reduction of cost, total number of procedures & duration of hospitalization without increased complications.

Complex limb injuries are real challenges as each patient presents unique problems and with development of micro vascular free tissue trans transfers many formerly lost limbs can be salvaged, bringing happiness to many patients and their families.

Algorithm In The Management Of Gustillo IIIB/C Open Fracture Of The Lower Limbs

MICHEL MOUTRAN

Gustillo IIIb/c open fractures of the lower limbs are challenging situations for the plastic surgeon and the orthopaedic surgeon. The timing of the reconstruction, the type of flap used and the sequential surgical approach have largely been debated. The purpose of this presentation is to develop an algorithm in the management if these cases.

Material and Method: We reviewed a series of 42 patients with Gustillo IIIb/c open fractures

admitted to our department. They were managed in a staged algorithm in collaboration with the orthopaedic surgeons. The type of flaps and the timing of reconstruction were studied. The late outcomes of bone consolidation, rate of infection and return to normal life were analyzed.
Results: A sequential two stages approach was privileged for these open fractures in close collaboration with the orthopaedic surgeon. Pedicle flaps were used in the proximal third of the leg and free flaps were privileged in the mid and distal third. The ALT perforator flap was the workhorse in this category. The rate of complications and the final outcomes were similar to the one stage approach and close to the closed fractures.
Conclusion: This algorithmic staged approach to Gustillo IIIb/C fractures has proven its efficiency in the management of these challenging situations.

Principles And Methods Of Microsurgical Repair Of Lower Limb Defects

WASSIM RAFFOUL

Background: Because of their anatomy legs and feet require frequently microsurgical procedures.
Reconstruction must take into account the specificity of each part of the lower limb.
The aim of the reconstruction can be, simply the coverage of a skin defect, or the reconstruction of deep structures and function, but in major trauma the aim can be the salvage of the limb.
Principles and methods of reconstruction of the lower limb defects differ from those of the upper limb
1. Types of trauma are different
2. Anatomical structures and functions are not similar
The physiology of the different structures of the lower limb is different from those of the upper limb.
4. The lower limb prostheses are effective and useful
Aims This paper aims to present the strategies we have adopted over the last ten years inlower limb reconstructions of upper limb defects.
Method and discussion: Microsurgical techniques addresses unusually below Knee defects. Our first choice is the large fascio-cutaneous flaps which could be distally pedicled (sural falp) or free. Sensitive flaps are essential for the sole coverage. Several methods are used in case of bone defects.
Results: In our experience the antero lateral thigh flap is an excellent fasciocutaneous flap with many advantages. Extended by fascia-latta it may be a good choice to reconstruct skin and tendons in one procedure. Muscle flaps are richly vascularised and pliable, they are our first choice in case of osteitis .
Conclusion: The reconstruction of the lower limb remains a challenge. Despite the improvement of the prosthesis, autologus reconstruction should be attempted specially in young patients.

Custom Tailored Free Flaps In The Reconstruction Of Upper Limb Defects

WASSIM RAFFOUL

Background: The principle of custom tailored flaps is routinely used in microsurgical reconstructions. We applied this principle during the last 10 years in upper limb reconstructions.
Aims This paper aims to present the strategies we have adopted over the last ten years in the early reconstructions of upper limb defects.
Method and Discussion: The upper limb was divided into two separate entities: the intermediate segment (arm and the forearm), and the hand, which is subdivided into dorsal and palmar sides. Reconstruction of the intermediate segment aims: ensuring the survival of the hand and rebuilding of deep structures. At this level in general large fascio-cutaneous free flaps were used. In the majority of cases their role was protection and coverage of deep structures. Hand reconstruction is more complicated. Several structures can be harmed. Reconstruction must seek a recovery of the function, which includes mobility and sensitivity while preserving the aesthetics.
Results: In our experience the antero lateral thigh flap is an excellent choice for defects of arm

and forearm. Extended by fascia-latta it may be a good choice to reconstruct the dorsal side of the hand and extensor tendons in one procedure. The fascia temporalis covered by skin graft is an excellent choice for the coverage of the dorsal side of the hand because of it's thinness and gliding properties. Sensitive flaps are reserved for palm and fingers. In 2 cases a complete destruction of carpal and metacarpal bones was reconstructed with a free iliac crest flap, the first metacarpal was individualized through an osteotomy of the bone. In those cases the final result was satisfactory.
Conclusion: The reconstruction of the upper limb remains a challenge. Good functional and aesthetic results can be currently obtained if we associate custom tailored microsurgical flaps and basic principles of hand surgery.

Spare Parts Concept In Limb Reconstruction

PIERLUIGI TOS

Tissues of amputated or unsalvageable limbs may be used for reconstruction of complex defects resulting from severe trauma. This notion is called the "spare parts concept" and is now a well established option for surgeons. A reconstruction strategy to treat complex trauma at wrist and hand level can not ignore this concept which represents the ultimate form of reconstruction allowing the surgeon to exert his creativity, and at the same time drastically decreasing the donor-site morbidity. In emergency, the surgeon should optimize form and function, and not necessarily recreate the pre-injury condition but always think towards future reconstructions in the mangled hand. In other cases the goal should be a quick, simple and fast recovery avoiding stiffness and "useless" fingers in aged patients. Priorities are restoring circulation, repairing divided structures, and achieving stable and adequate coverage, sometimes sacrificing a 'bad' digit to privilege a better one.
Spare parts can be used as vascularized or non-vascularized grafts, pedicled or free. In this review the different options and indications are schematized and illustrated for upper and lower limbs.

Outcome of the foot after toe PIP joint transfer to the hand

DENIS CORCELLA

Indications And Techniques Of Microsurgical Bony Reconstructions

JACQUES BAUDET

They are many modalities of bony reconstruction and conventional bone grafts are probably the most frequently used. Nevertheless microvascular bony transfers have several specific indications for mandatory important problems:
-Whenever the recipient bed is poorly vascularized.
-Whenever a composite reconstruction is requested to solve in one stage multitissular defects and -minimize the potential sequellae at several donor sites.
Many donor sites have been described during the last 40 years , each of them used in specific indications.
-The head and neck can provide donor sites such as calvarium with galea flap or tangential mandible segment with a submental flap.
-The supraclavicular area can be selected for a composite osteocutaneous, nerve, tendon reconstruction...
-The chest and shoulder are the most frequently sollicitated donor sites for coverage of extensive defects such as the latissimus dorsi myocutaneous flap with rib and the scapular and parascapular flaps with the free edge of the scapula.
-The upper arm is selected for donor of the lateral arm flap(osteocutaneous, tendon and nerves components)
-The forearm is well known for donor site of the radius with adjacent structures (skin ,

tendons, nerves .....) and the anterior interosseous osteocutaneous flap.for minor defects.

- The iliac area is a major donor site for osteoperiostal or osteocutaneous thick iliac bone flap.

-As for the lower extremity, the fibula (osteoperiostal or composite with skin ,muscle, tendon ....) provides adequate solution to extensive defects of the mandible ,the humerus,the radius, and tibial reconstruction .

Apart these basic donor sites, they are few others that are not very often resorted to.

The author will approach the anatomy and clinical applications of all these donor sites during the last 40 years in his own plastic surgery department.

Perfectly mastered both dissection of these flaps at the University human bodies laboratory and technique of microvascular and nerve surgery are mandatory to achieve the most reliable and satisfactory results.

Avascular Necrosis Of The Femoral Head: Pathogenesis, Classification & Management With Long-Term Follow Up

PANAYOTIS N. SOUCACOS

From pain relief symptomatic therapy to total hip replacement. The current preserving strategies are effective only in small early stage lesions. Free vascularized fibula grafting to the femoral head has provided the most consistently successful results than any other joint-preserving methods. Not only the fibula grafting supports the collapsing subchondral plate by primary callus formation, decreases intraosseous pressure, removes and replaces the necrotic segment, but it also adds viable cortical bone graft plus fresh cancellous graft which has osteoinductive and conductive potential. Factors predisposing to the success of the procedure are etiology, stage, and size of the lesion at the time of surgery. Furthermore, it is a hip salvaging procedure in early precollapse stages, and a time buying procedure in collapsed femoral heads. Compared with other methods, vascularized fibula graft presents the highest and long standing success rates.

SESSION 4

HAND SURGERY

Congenital Hand Anomalies: Molecular Morphogenesis, Epidemiology, Classification & Principles Of Management

PANAYOTIS N. SOUCACOS

The process of limb development has been conserved for more than 300 million years, with various important adaptations taking place throughout evolution. Recent developments in the field of hand surgery, in addition to research findings in molecular morphogenesis have resulted in significant advancements in the understanding and subsequently, in the management of congenital differences of the hand. The developmental mechanisms involved in limb differentiation are beginning to be understood through new studies on the molecular interactions and cascade of events that play a part in orchestrating limb patterning. As these mechanisms are unraveled, more congenital anomalies seen by hand surgeons will have an identifiable molecular basis. Over the last two decades, increased experience with congenital anomalies of the hand has significantly broadened the hand surgeon's knowledge and has resulted in new methods of classification and more effective approaches of management. The principles of treatment of various hand anomalies are constantly being refined with the addition of state-of-the-art technologies, such as free vascularized transfers, among others. Despite this exponential growth in the hand surgeon's armamentarium, the management of congenital differences of the hand remains a demanding challenge.

Reconstructive Microsurgery Of The Hand. What Are The Limits?

JOSEPH BAKHACH

The hand has benefit a lot from the different possibilities of the reconstructive microsurgery. Recent developments in this surgical field led us to rebuild anatomical units as small as the half of a fingertip or functional units as the whole finger flexor system. It is really challenging to know where the imagination of the microsurgeon and the technical microsurgical possibilities can push the frontier of the reconstructive procedure to serve as well the anatomy as the function of the injured hand.
Four original topics will be presented and discussed:
Temporary ectopic implantation of amputated digits as a novel solution to save the digits when it is not possible to perform a direct revascularisation. The proximal stump can be reconstructed in order to receive the fingers at a later stage and restore a normal shaped hand. The site of the ectopic implantation and the timing of these complex microsurgical procedures will be discussed.
Salvage of digits replantations by direct intra-arterial fibrinolytics infusion. It is well known that the rate of failure after finger replantations remains relatively high, particularly, when the amputated fingers experienced bad preservation conditions. These situations lead to the absence of finger perfusion due to a No-Reflow Phenomenon. The only way to dissolve these distal micro-emboli is by in situ infusion of fibrinolytic drugs. I will present my experience with our protocol associating fibrinolytics, anti-coagulants and vaso-dilatators.
Digital flexor tendon reconstruction with microsurgical free transfer of the second toe flexor system. This is a personal technique developed in the case where the whole flexor system of the finger needs to be reconstructed (tendons and pulleys). The anatomical studies, the operative technique and the results will be presented and discussed.

Case Presentations;
- Proximal Inter Phalangeal (PIP) Joints replacement using microsurgical transfer of the second toe PIP joint.
-Microsurgical reconstruction of the fingernail apparatus
- Custom made microsurgical toe-to-finger transfer for unusual fingertip amputations.

Reconstructive Surgery Of Defects In Post-Traumatic Hand Using An Artificial Dermis (Integra): Results With 15 Grafts

HUSSEIN CHOUGHRI, P. PELISSIER, R. WEIGERT, V. CASOLI

Introduction: The authors present the results of the use of Artificial Dermis
Integra® in the reconstruction of defects in post-traumatic hand. The advantages and disadvantages and indications are discussed.
Patients and methods: We operated 15 patients with this technique between 2004 and 2008. It was a series of 15 men. The average age was 40 years (between 7 and 87 years). Our average was 12 months (between 4 and 37 months). The defect was in all cases associated with bone exposure and / or joints and / or tendon exposure. The mechanism of injury includes accidents in the home, Do-it-Yourself accidents (DIY), public roads and degloving type "ring finger". The additional treatment of Negative Pressure Wound Therapy (VAC) was applied in 5 cases. The time between the application of Integra ® and the initial trauma was on average 12 days (between 0 and 34 days) and skin grafting of 26 days (between 7 and 54 days).
Results: We had two cases of failure of Integra®. The first concerns the coverage of palmar skin necrosis secondary to a "ring finger", re-operated successfully by a dorso-commissural flap and the second a loss of substance isolated palmar finger, small, with a basement tendon poorly vascularized. We had no infection or hematoma.
Discussion. The short, medium and long terms are very satisfactory both functionally and aesthetically quite adapted to pollicidigitale grip
*Conclusion:*This surgical experience of use of Integra ® in extreme cases loss of soft tissue trauma of the hand seems suitable for obtaining a stable scar, functional and esthetic. The very encouraging results we are offered as first-line for four years in specific indications for closure and skin resurfacing. This surgery in case of failure does not cut the bridges to traditional surgery.

Key words: Integra, loss of skin substance, artificial dermis; neodermis; transplant; bone exposure; traumatic wound

SESSION 5

PERIPHERAL NERVES & BRACHIAL PLEXUS SURGERY

Outcome Measurements Of The Upper Extremity After Nerve Repair

LAURENT WEHRLI

Over the past 40 years, the literature reporting clinical results after nerve repair has increased exponentially. A collection of parameters are needed to grade nerve recovery. However, there is actually no commonly accepted method to examine the patient and collect data. This short presentation will focus on means of gathering objective measurements and assemble patient reported functional improvements and quality of life.

Peripheral Nerve Repair And Regeneration: From The Laboratory Bench To Clinical Application

PIERLUIGI TOS

Translation of laboratory results to the patient is a critical step in biomedical research although sometimes promising basic science and preclinical results fail to meet the expectations when translated to the clinic.
Interest in the improvement of peripheral nerve repair and regeneration by means of tissue engineering is continuously increasing and, similarly to many other fields of regenerative medicine, great expectations have risen within the general public to its potential clinical application in the treatment of damaged nerves. However, in spite of the scientific advancements, applications to the patients is still limited and it appears that to optimize the strategy for the tissue engineering of the peripheral nerves in the clinical view, more basic science research is needed and neuroscientists have to strive for a new level of innovation which will bring together (in a multi-translational approach) the main pillars of tissue engineering, namely 1) Microsurgery, 2) Transplantation (of tissues, cells and genes), 3) Material science, 4) Physical therapy.
In this presentation, I will provide an brief overview of last advancements in peripheral nerve tissue engineering in order to throw a light on the most promising future perspectives in combining the different strategies for improving posttraumatic recovery and I will focus on an example of successful translational research in tissue engineering, namely nerve reconstruction by muscle–vein-combined nerve scaffolds.
I will provide a report of all studies conducted by our research group from muscle-vein-combined graft to termino-lateral nerve coaptation. All methods well be provided and a particular focus will be done on forelimb models not only in rats (i.e. median and ulnar nerves vs sciatic nerve/lower limb) but also in mice. The key element of a good nerve model is a reliable functional test and no auto-mutilations of animals during the study.
Microsurgery is the key scientific discipline in nerve tissue engineering, not only because it represents the last step for most clinical applications, but also because it should give directions to the other disciplines in order to avoid the production of ‘‘sterile’’ basic science results.
At the end I will shortly provide the clinical results on patients of two of the techniques we studyed more : muscle-vein-combined graft and termino-lateral neurorraphy.

Cortical Plasticity Following Peripheral Nerve Injury, Repair And Rehabilitation

DIMITRI J. ANASTAKIS

An increasing body of research exists describing cortical plasticity following upper extremity injury and reconstruction. Plastic surgeons, because of the motor and sensory reconstruction they perform, need to understand cortical plasticity following upper extremity injury, reconstruction and rehabilitation.
This presentation will provide an overview of the methods used to study cortical plasticity and the current knowledge of cortical plasticity as it relates to motor reconstruction and rehabilitation. Cortical plasticity following toe transfer for thumb reconstruction, free functioning muscles transfer for upper limb paralysis reconstruction and nerve transfers will be highlighted. The current state of knowledge regarding the impact peripheral nerve injuries have on the central nervous system will also be described.

Assessment Of Processed Porcine Extracellular Matrix As A Protective Barrier In A Rabbit Nerve Wrap Model

ZINON T. KOKKALIS

Nerve wrapping can improve outcomes by protecting nerves in a scarred tissuebed. Autologous tissue wraps have shown good results, but there are limitations associatedwith harvesting and availability. Extracellular matrix (ECM) derived from porcine smallintestinal submucosa offers an attractive off-the-shelf option. This study evaluated thismaterial as a nerve wrap. The sciatic nerves of 18 New Zealand rabbits were exposed andthen wrapped, while the contralateral side served as sham control. Presence and quality ofadhesions, motor conduction velocity (MCV), and histology were evaluated at 1, 2, and6 months (n = 6 animals per time point). The quality, extent, tenacity, and overallimpression of adhesions were not different from control at any time point (p = 0.18 to
0.99). MCV was also not statistically different from control (1 month, p = 0.35; 2 months,p = 0.20; 6months, p = 0.83). Histology demonstrated that wrapped nerves were healthy interms of myelination, density, and vascularity compared with controls. Vascularization andincorporation of the ECM material could be visualized at explants. All assessmentssupported the feasibility and safety of this material as a nerve wrap. Its ability to functionas a protective barrier has strong implications for clinical use in trauma and/or recurrentcompression neuropathies.

Infraclavicular Brachial Plexus Injuries

ZINON T. KOKKALIS

Infraclavicular stretch injuries are mainly caused by motor vehicle accidents and gunshot injuries. There is a higher incidence of associated injuries, such as shoulder dislocation/fracture, humeral fracture, as well as serious vascular injuries including axillary artery rupture,than in supraclavicular injuries.
Most of infraclavicular stretch injuries do not recover spontaneously and require operative treatment. Infraclavicular surgery can be technically more demanding than the supraclavicular approach becausethere is a need to dissect large vesselssuch as the axillary artery and veins, which have often been previously reconstructed with bypass grafts and are scarred down.
A preoperative angiography or triplex ultrasoundis usually required.Having a vascular surgeon available during the surgery may be needed. Intraoperative, a Doppler ultrasound device is important in detecting the axillary artery or the bypass graft. If nerve grafting or nerve transfers are performed, the affected brachial plexus components are carefully sectioned and trimmed back to healthy appearing nerve tissue. Selective nerve transfers may provide faster and better functional recovery, while nerve reconstruction using long grafts could give unpredictable results.

Current Concepts In Management Of Adults Brachial Plexus Lesions

LAURENT WEHRLI

The severity of brachial plexus lesions sequellae remain a challenge nowadays, even with advances made in diagnostic tools, microsurgical techniques and rehabilitation programs. This general presentation on traumatic brachial plexus injuries will focus on key elements of the clinical examination and describe the actual evidence of different diagnostic procedures. Considering the functional hand as the optimal goal in brachial plexus reconstruction, a hand based point of view will be adopted to present current treatment strategies. Indications for classic brachial plexus grafting will be discussed, in respect to more recently described distal neurotisations. Defining the methods of analysing long term results is another difficulty that needs to be addressed.

Basic Principles Of Brachial Plexus Repair

KRISHNA KUMAR

This is the paper that was awarded the best paper in the NZ Plastic surgeon's meet. This is a basic talk simplifying the complex principles governing the management of brachial plexus repair. Illustrated with cases from my personal series. All the salient points of Brachial Plexus management will be discussed including Essential Anatomy, Clinical Evaluation, Investigations, Initial Conservative Management.
Principles & guidelines of management of different types of injuries - open injuries, lesion in continuity, infraganglionic ruptures, upper trunk avulsions, pan plexus avulsions etc
Step by step illustration of the surgical management
Management of late presentations – Tendon transfers, free muscle transfer
All this will be illustrated with my personal case series

SESSION 6

RECONSTRUCTIVE & MICROSURGICAL TECHNIQUES

Vein Loops In Microsurgery

KRISHNA KUMAR

Free tissue transfers to cover defects are now common place. Usually healthy vessels are available nearby to which the flap vessels can be plugged into. In some cases defects may be situated in area where major vessels which can be used to plug the flaps on to are not present in the vicinity or have been destroyed due to trauma, infection or irradiation. In such cases veins loops from healthy major vessels situated some distance away from the defect come in handy to plug the free flaps to.
The talk will illustrate with clinical examples
The reasons why post traumatic / post irradiated vessels should not be used as recipient vessels
The technical points in creating a vessel loop
Tips to avoid complications like twists, kinks etc
The timing of transfer – Immediate or delayed. The advantages & disadvantages of each
All these points will be illustrated with examples from my personal clinical series

Easy LDI (Laser Doppler Imaging) A New Reliable Tool In Microsurgical Monitoring

WASSIM RAFFOUL

Laser Doppler Imaging (LDI) is a non-invasive and contactless optical method to visualize microcirculatory perfusion in the skin. So far, LDI systems have been slow and bulky, making them a useful tool in microcirculation research, but limiting clinical adoption. In collaboration with the Swiss start-up company Aïmago, we have developed a novel, easy-to-use LDI camera that works in real-time. Measures are repeatable and operator independent, and the camera can be used by surgeons and nurses alike.
We report on first experiences using the camera during and after surgery to objectify the assessment and the monitoring of flaps and replanted tissue. We compare perfusion levels of neighboring tissue sites, and track their evolution over time, which provides us with an instantaneous and reliable measure of tissue viability.
Our initial experiences have shown that the Aïmago LDI system is extremely sensitive to changes in the arterial and venous blood flow which is extremely important in the monitoring of microsurgical interventions.
It allows with high reliability an early differentiation between superficial and deep burns
It is an important tool in monitoring of extremity frostbite.
Further work must still be conducted to evaluate the importance of this tool in some vascular diseases of the hand such as Reynaud's syndrome, and other microvascularangiopathy
In conclusion, Aïmago LDI system is a reliable non invasive tool based on a new technology. It is extremely sensitive to tissues arterial and venous blood flow variation and very easy to use in clinical and research applications in hand surgery.

Intra-articular sub-periosteal osteoid osteoma of the triquetrum. Case report

MARWAN BAAKLINI

We report a case of subperiosteal osteoid osteoma of the triquetrum located into the piso-triquetral joint space. Such a variant at this particular location is very rare. The diagnosis was delayed for six years. A bloc resection of the tumour was followed by complete recovery.

Digital replantation performed under pure digital anesthesia

DENIS CORCELLA

The Medial Head Of Triceps Brachii: A New Muscular Flap

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Complex wounds and losses of substance in the elbow region are a challenging reconstructive problem. In addition, in selected cases a small muscular flap is suitable for distant reconstruction or reanimation.
Due to the neurovascular and muscular anatomy of the posterior area of the arm, the medial head of triceps brachii (MHTB) muscle can be harvested as a pedicled or free flap for these purposes.
We performed two cases of pedicled MHTB flap for proximal forearm reconstruction and one case of free MHTB flap. No complications occurred. The donor site morbidity was minimal and well tolerated.
This flap could be considered as an alternative option to the lateral arm flap or other local flaps for elbow and proximal forearm reconstruction, when some muscular tissue is required. Moreover, raising it as an innervated free flap could provide reanimation in difficult cases, when a small muscle is required. The procedure seems to be relatively safe, due to the constant anatomy of nerves and vessels, and minimally invasive, due to the limited role of the medial head in the upper limb motility.

Freestyle Pedicled Perforator Flaps

SALVATORE D'ARPA

INTRODUCTION: Anywhere in the body there is a tissue defect, as long as there is a neighboring perforator and an adequate quantity of local tissue, a Freestyle Pedicled Perforator Flap (FPPF) will be available to close this defect. These flaps are extremely flexible as they're customized based on the reconstructive needs.

MATERIALS AND METHODS: Between November 2004 and November 2011, 100 patients were treated for reconstruction of defects of different etiology in almost every body region. The majority of flaps were 180° propeller perforator flaps.

RESULTS: Overall complications rate was 6%. An algorithm has been developed for prevention and management of complications.

CONCLUSIONS: FPPFs allow complete customization of flap design to optimize donor and recipient site results. A learning curve is necessary to optimize results. In this presentation, an algorithm for planning, executing and managing these flaps is presented based on a 100 cases series.

Local Vs Free Flap? Decision Making In Limb Reconstruction

MOHAMED SHIBU

This paper presents a retrospective review of a single-surgeon series of severe limb trauma in paediatric and adult patients reconstructed over a 10-year period at Barts and the London Hospitals NHS Trust – UK: A level one tertiary referral trauma centre for the South East of England. The decision making process is presented indicating when and which flaps were used.

Illustrations demonstrate what was achieved, with all limbs obtaining an improvement in function and cosmesis. Although many of these complex injuries can be dealt with using local flaps the series illustrates the role and indications for free tissue reconstruction.

A Journey Through Three Decades: Complex Life / Limb Saving Microsurgical Reconstruction: Long Term Results

ASHOK GUPTA

SESSION 7

COMPOSITE TISSUE ALLOPTRANSPLANTATION

History Of Composite Tissue Allotransplantation

NADEY HAKIM

The Importance Of 3d-Modeling In The Pre-Operative Planning Of Complex Facial Reconstruction By A Vascularized Composite Tissue Allotransplantation (VCTA) Of The Face

PHILLIP BLONDEEL

Pushing The Frontiers Of Transplantation Surgery: The Enigma Of Uterine Transplantation

SRDJAN SASO

Women with absolute uterine factor infertility (AUFI) are considered as being 'unconditionally infertile'. Currently only two options exist with regard to child bearing: surrogacy and adoption, both fraught with moral, ethical and financial difficulties. Uterine transplantation (UTn) may be a possible treatment option for such women. This presentation, apart from briefly describing the history of UTn, will focus on a number of key areas of research that are important in order to move closer to a successful and crucially, safe transplant in the human setting. The following topics will be discussed: 1) anatomical and surgical aspects necessary for a successful UTn; 2) assessment of uterine perfusion and extent of ischaemia; 3) characterisation of the immunological mechanisms involved in allogeneic UTn; 4) establishment of pregnancy post-UTn; 5) motivations, aims and feelings of patients diagnosed with AUFI towards UTn; and 6) perceptions of health care professionals towards UTn. With closer collaboration among the various international teams working on this project, a safe UTn in a woman may be possible in the next few years.

Lower Limb Allotransplantation In The Rat: Definition Of A Conservation Protocol By Refrigeration After Perfusion Of Natural And Synthetic Anti-Freeze Proteins. Preliminary Trials And Results.

E. SAWAYA*, J. BAKHACH, V. CASOLI*, J-C GUIMBERTEAU**
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The aim of the study was to define a conservation protocole for composite tissue allotransplantation using anti-freeze proteins.
Materials and methods: four lower limbs were harvested from 3 laboratory rats. Two limbs were perfused with a synthetic anti-freeze protein solution with degressive concentrations. One was perfused with a natural anti-freeze protein. The fourth was perfused with a normal saline solution. After conservation at -4°C for three weeks, the limbs were then transplanted to healthy rats by anatomosis to the carotid artery and jugular vein.

The Xenotransplantation Of Cryopreserved Digits In The Rabbit

JOSEPH BAKHACH

Recently allo-transplantations of multi-tissue organs were accomplished allowing the reconstruction of total or partial upper arms amputations and complex defect of the face.
Nevertheless, this procedure comprises two main drawbacks: it should be done in emergency, when an organs donor is available and the vital necessity for anti-rejection all life long drugs treatment with their well-known side effects.
To overcome those problems and to enlarge the indications of allo-tranplantations possibilities (tendons, joints, nerves, etc...), we elaborated an experimental protocol for composite organ cryopreservation. It consisted in recuperating amputated fingers which are not indicated for replantations and in cryopreserving them according to a pre-defined cryoconservation protocol. Then, they are maintained at - 196°C. Some weeks later, the fingers are thawed, the cryoprotective agent eliminated and revascularised microsurgically on the carotid artery and the lateral jugular vein of the rabbit. The aim of the experimentation is to demonstrate the possibility of revitalizing a cryopreserved organ.
Three cryopreserved digits have been revascularised. The preliminary results are very encouraging with the establishment of blood irrigation. Those results reinforce our feeling on the possibility of revitalizing a cryopreserved organ.
I will present the different experimentation steps, the cryo-preservation methodology used and the treatment, particularly the use of fibrinolytics and anti-coagulants, administrated during the micro-surgical procedure and post-operatively.
Finally, according to some scientific reports, the cryopreservation procedure reduces the tissues immunogenicity. Those observations will allow us to limit the anti-rejection treatment to 12 months, especially since the allo-transfer doesn't include skin units.

SESSION 8

RECONSTRUCTIVE SURGERY - UPPER & LOWER EXTREMITIES

Restoration Of Shoulder Abduction In Brachial Plexus Injury: Muscle Tendon Reconstructions

ASHOK GUPTA

Hildebrandt (1906) laid foundation for tendon and muscle transfers for paralysis of Deltoid Muscle Transferred the entire origin of Pectoralis Major muscle to the Clavicle and Acromion Process. The mobility of the shoulder should be preserved with any or all possibilities of providing muscular control by means of multiple muscle / tendon transfers. The Mayer procedure was based on Lange's method in which numerous silk strands were threaded through the Trapezius at its insertion, Passed distally, and attached to the humerus at insertion of the deltoid; instead of silk, Mayer used a transplant of Fascia-lata.

Bateman modified Mayer's technique by osteotomizing the acromion and transferring it laterally along with the Trapezius muscle and anchoring the acromion directly to the humerus. Saha's classification of the Muscles of the Shoulder Saha suggested transfers the entire insertion of the Trapezius to the humerus to replace the anterior, middle and posterior parts of the muscle.

Saha's classification of the Muscles of the Shoulder: Steering group, Subscapularis , Supraspinatus, Infraspinatus; Depressor group: Latissimus Dorsi, Teres major, and Teres minor

Author's Modification of Saha's Procedure

Author suggests transfer the both the Vertical as well Horizontal part of the Trapezius Muscle to the humerus to enhance the anterior, middle and posterior parts of the Deltoid muscle. Author has used vertical as well horizontal segment of the Trapezius Muscle in varying combinations in 32 patients with Global Brachial Plexus injury for restoration of shoulder abduction.

Through an inverted U incision extending along the anterior border of the clavicle, acromion and scapula Tr. Muscle is mobilized upwards from clavicle up to 10.0 CMS. Free Trapezius from the superior border of the remaining part of the scapular spine medially to the base of the spine where inferior fibers of the muscle glide over the triangular area of scapula 1.5 CMS OF Acromion is osteotomized along with the Tr. Muscle

Osteo-synthesis is done at the greater tubercle using either tension band wire or Mitek Screw.

Using a longitudinal incision on the back for the vertical part of the trapezius muscle and by a careful blunt and sharp dissection about 24 cm of the the trapezius muscle was dissected. Use of vertical segment of the Trap. muscle to enhance the posterior deltoid muscle function augments the overall shoulder control as well stability of Abduction

Using a U shaped incision on the shoulder extending along the anterior surface of clavicle, the acromion and the spine of scapula was used to harvest the transverse part of the trapezius muscle.

Take part of the bone along with the muscle attachment from the lateral end of the clavicle and / or the acromion process as suggested.

Gryphon BR technique for Soft Tissue / Bone anchoring

Preloaded with one or two strands of Ortho Cord Suture

Offering 55 lbs. of tensile strength.

Osteo-synthesis of the acromion done below the greater tubercle of the humerus using 3 strong Mitec sutures, with the arm kept abducted at 110^{o} and flexed forward 20^{o} to simulate the action of the middle fibers of the deltoid muscle function.

The vertical part of the dissected Trapezius muscle used to re-enforce the posterior fibers of the deltoid muscle function. The Trapezius muscle was slided for 7.0 cms.

Shoulder Abduction is maintained with a custom made adjustable splint at 90 - 100^{0}

Palliative Surgery For The Paralyzed Shoulder

ZINON T. KOKKALIS

Palliative surgery for the paralyzed shoulder should be considered when there has been no further recovery or when function can be further improved with a relatively minor surgery. Secondary reconstructive options include: tendon or muscle transfers, rotational osteotomies, and shoulder arthrodesis.
Shoulder abduction: Trapezius transfer is indicated when there are no essential posttraumatic or degenerative changes of the glenohumeral joint, full strength of trapezius muscledoes exist, and when passive abduction of the shoulder exceeds 60°. Indications for shoulder arthrodesis include substantial degenerativechanges of the glenohumeral joint, passive abduction <60°, and after unsuccessful muscle transfers.
External rotation: In obstetrical brachial plexus palsy, paresis of the external rotators and abductors of the shoulder allows the internal rotators and adductors to contract unopposed, which leads to internal rotation contracture.Patients eventually may develop subluxation or posterior dislocation of the glenohumeral joint with severe functional impairment.Transfers involving rerouting of latissimusdorsi and teres major tendons, combined with openextraarticularmusculotendinous lengthening, could improve shoulder function. An arthroscopicrelease for young children anda combined arthroscopic release with latissimusdorsi transfer for older children could also be performed with analogous results.
Careful preoperative planning is mandatory, and the approach should be applied, depends on the type of palsy, the age of the patient, and surgeon's preferences.These treatment options offer patients with brachial plexus injuries the ability to obtain reasonable shoulder function with shoulder stability.

Emergency free flaps in upper limb reconstruction

PIERLUIGI TOS, DAVIDE CICLAMINI, BERNARDINO PANERO, PAOLO TITOLO, BRUNO BATTISTON

The concept of immediate treatment in one time of all injured tissues in complex trauma of the upper limb has been introduced in 1977 by Foucher. Debridement of all necrotic and contaminated tissues followed by immediate soft tissue coverage in order to obtain primary healing is nowadays the standard approach to all open injuries of the extremities. Other authors demonstrated the superiority of early closure with free flaps of complex lesions as to reduce risk of infection, hospital stay and improvement of flap survival rate both for upper and lower extremities. All delay in treatment will lead to higher risk of infection, granulation tissue formation and extended fibrosis, reduced flap survival rate, longer hospital stay, late rehabilitation and eventually poor function.
We report the results of a case series of thirteen upper limb emergency and delayed reconstruction (up to seven days) with free flaps. Indications are: free flaps are needed when the loss of substance is too large or too deep or too complex to be closed with a local or regional flap, and where a skin graft would be inappropriate because of poor bed conditions, or because it would compromise function or further reconstructions. Indications are represented by an exposed vital structure, high risk of infection, a flow-through flaps and a salvage flaps. Relative indications are represented by definitive reconstruction of fingers from the foot.
In this paper we present the results of this heterogeneous group of lesions and discuss the principles of free flap choice.

Lower Limb Replantation

PIERLUIGI TOS

Nowadays the need for reconstruction of lower limb amputations is increasing due to high energy traumas in road accidents or work injuries. The indication for lower limb replantations is still in literature controversial and, compared to upper limb replantations, indications are more selected. This is due to the frequent complications in lower limb salvage procedures (severe general complications or local complications such as necrosis, infections, non-unions, the need for secondary lengthening or other reconstructive procedures) and to the satisfactory results given by artificial prosthesis (quicker recovery time and less frequent secondary procedures).

As from 1993, we have replanted 14 amputations of the lower limb in 12 patients (2 bilateral cases) – (mean age 28 years – 14 to 65 years). Although survival of the replanted segment was obtained in all the patients, 5 cases had to be amputated for severe secondary complications. The remaining 7 cases had good results (Chen I and II), 1 sufficient (Chen III) and 1 poor (Chen IV).
Our experience, brought to light for the necessity to careful and objective patient selection. This led us to work out a score evaluation system, which is the modification of an international classifying method for severe limb traumas (MESS system). This relatively simple system, based on the retrospective study of our cases, considers several parameters (patient's age, general conditions, level and type of lesion, time of injury, associated lesions, etc.) giving each one a score. The total score gives the indication for replantation, predicts the functional outcome and facilitates decision-making.

Treatment Of Post Operative Neuropathic Pain, 10 Years Experience

WASSIM RAFFOUL

Postoperative neuropathic pain is a current complication of different surgical procedures, and is the consequence of direct or indirect nervous injury. Peripheral nerves can be damaged directly by iatrogenic nerve transection, or indirectly by postoperative perineural fibrosis. In the case of direct damage, the injury will lead to the formation of a terminal neuroma and the regenerating axons will fail to reconnect to the distal stump. In the case of indirect damage, the entrapment of nerves by fibrosis will provoke a neuroma-in-continuity, which consists of a focal enlargement of the nerve without perineurial disruption. The same mechanisms of pressure, traction, tethering, and constriction seen in primary peripheral nerve entrapment syndromes are reproduced. Nervous function and axonal regeneration are disturbed by oedema and vascular compromise. Neuroma-in-continuity and terminal neuromas share many symptoms of pain, paraesthesia, dysaesthesia, hyperalgesia, allodynia, causalgia, and neurological deficits such as hypoaesthesia, anaesthesia, and paraesia. Terminal neuromas invariably present with neurological deficits and the clinical distinction from neuroma-in-continuity is difficult. Both conditions often coexist within the scar. Diagnosis and selection of patients for surgical treatment is of critical importance and will govern the final outcome. Psychological, social, and professional implications have to be taken into account for each one.
Exploration, epineural neurolysis, and eventual resection of a terminal neuroma and relocation into adjacent muscle or bone, seems to be one of the most effective methods of prevention.

Our Experience With Lipofibromatosis Hamartoma Of The Peripheral Nerve

DIMITRI J. ANASTAKIS

Lipofibroatous harmartoa (LFH) is a rare tumour that requires early diagnosis and treatment. We present the epidemiologic and pathological characteristics, the presentation, diagnosis and treatment of LFH in the upper extremity. We also present our hypothesis that LFH may represent a spectrum of disease – being more than a focal distal pathologic entity.
LFH is distinguished pathologically from other intraneural tumours by fibrofatty infiltration around the nerve fascicles. Typically, patients present either early with macrodactyly or later with a forearm mass lesion or symptoms consistent with a compressive neuropathy of the affected nerve. Studies at our centre now confirm that LFH can involve multiple peripheral nerves and extend proximally to involve the roots. Based on these studies, MRI of the entire upper extremity should be considered in specific patients with LFH.
Treatment for patients with no neurologic deficit involves prophylactic decompression of the affected nerves at all points of possible compression. Patients with macrodactyly may benefit from debulking, joint reconstruction or amputation.
LFH differs from other benign nerve tumours with respect to clinical presentation, pathological characteristics, MRI features and management. Because LFH is extensive and inseparable from the nerve fascicles, excision is not recommended. Finally, LFH should not be considered simply as a focal distal pathologic entity. MRI of the entire upper extremity should be considered in LFH patients,

especially when the ulnar nerve is affected above the elbow.

SESSION 9
BREAST RECONSTRUCTION

The Deepithelialized Thoracodorsal Flap, A New Concept For Autologous Breast Reconstruction

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Background: The purpose of this study was to share 12-year experience with a new concept in autologous breast reconstruction using the deepitheliliazed thoracodorsal (TD) flap. This flap combines a deepithelialized latissimus dorsi (LD) musculocutaneous flap with a fasciocutaneous thoracic extension.
Methods: A retrospective analysis of all the files of patients who underwent TD flap reconstruction between 2000 and 2011 was done. The TD flap was designed from almost the back midline in an elliptical pattern and extended up to the mid inframammary fold, with a maximal width at the axillary level.
Results: The total number of TD flaps was 298, all performed by the senior surgeon. Immediate and delayed breast reconstructions were done in 14.4% and 85.6 % of the cases respectively. Bilateral breast reconstruction was done in 9% of the patients. 52 patients had been previously reconstructed by breast implants. 62.1% of the patients had received breast radiotherapy. The Average operative time was 2 hours and 20 minutes, ranging from 2 to 3 hours. The complication rate was 11.4 %. No total flap loss was reported. The seroma rate was 7% after all the drains had been removed. The Mean hospital stay was 3 days (range 2 to 5). Contralateral breast remodeling was performed in 87.2 % of the cases and fat grafting in 22.8% of the cases. With an average follow-up of 4 years, patient satisfaction was rated high by the patients.
Conclusion: The TD flap is a safe and reliable surgical technique with a wide range of applications in breast reconstruction. Its main advantages include achieving large breast volumes circumventing the use of prosthetic material, avoiding the patch look on the reconstructed breast, improving the skin quality mainly following radiation and achieving considerable tissue expansion, while insuring acceptable donor site morbidity.

Megavolume Fat Transfer Following Autologous Breast Reconstruction

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The purpose is to report a new concept in breast fat grafting following autologous breast reconstruction, with pedicled myocutaneous flaps, achieving large volumes while maintaining a reduced operative time. The concept is to exploit the autologous flap as a matrix in order to optimize fat grafting. The technique consists of harvesting fat then filling it into 60 ml syringes attached to an injection gun after allowing it to decant. Using the Vibroliposuction machine, multidirectional and multilayered tunneling is performed in the reconstructed breast, focusing on the flap, in a way to fashion a matrix for fat grafting. The latter is then carried out and is followed by a vibrational step, the aim of which is to improve diffusion of the injected fat in the created matrix.
The technique was applied for 70 patients, between 2008 and 2011.
The patient population included 31 immediate and 39 delayed breast reconstructions, subdivided into unilateral and bilateral cases, all performed under general anesthesia. Injections were performed between 3 and 12 months following reconstruction. The injected volumes ranged between 100 and 450 ml (AV 210) per session and the operative time ranged between 30 to 90 min (AV 45). One to two injection sessions were required, performed at 6 months intervals. The follow up period ranged between 12 and 36 months. The average resorption rate was 50 %

at 6 months follow up. Complications included liponecrotic cysts in 5.9 % of the Breasts.
In this described technique, the autologous flap is exploited as a matrix for large volume fat grafting. Multidirectional, multilayered tunneling of the recipient site followed by the vibrational phase optimizes diffusion and survival of the grafted fat. The technique remains a reliable option to achieve mega volume fat grafting to the breast while maintaining a reduced operative time.

Improving Outcomes In Microsurgical Breast Reconstruction

MICHEL MOUTRAN

Introduction: Microsurgical breast reconstruction has become a standard in mammary rehabilitation after breast cancer. The DIEAP, SIEA, SGAP and TMG free flaps have proven their efficiency in providing reliable and reproducible outcomes. The purpose of this presentation is to underline the role of these different techniques in the armamentarium of breast reconstruction
Material and Method: We developed an algorithm for the plastic surgeon guiding the decision of breast reconstruction in autologous vs implant, free vs pedicled flaps. The construction of this algorithm relied on evidence-based data and has been modified by the experience of the reconstructive team. The outcomes were retrospectively reviewed and compared to the outcomes of the reference centers.
Results: The rate of flap complication was comparable to the literature. The final outcomes were satisfactory for the patient, a third party and the surgeons. Some interesting technical modifications appeared to give improved aesthetic results.
Conclusion: Microsurgical breast reconstruction is a challenging yet very efficient approach in breast reconstruction. The success rate of this approach relies not only on surgical skills, but also on patient selection and strict teamwork.

Breast Reconstruction By DIEP Flap: Lessons Learned, New Tendencies, And The Conclusions Of Our 4 Year Experience

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The authors present their assessment of four years of breast reconstruction by the DIEP free flap. After initially using the scapular circumflex artery as the recipient site for vascular anastomosis of the flap, our team shifted to systematic use of the internal thoracic pedicle. We present the conclusions of a 2 year prospective follow-up of 31 patients who underwent secondary breast reconstruction by DIEP flap anastomosed to the internal thoracic artery: complications, hospitalisation and recovery time, secondary surgery and learning curve. We also present video footage of DIEP flap harvesting, vascular anastomosis to the axillary pedicle, the internal thoracic pedicle and images of an anatomical feasability study of anastomosis to the acromio-thoracic artery.

State Of The Art In Autologous Breast Reconstruction With Perforator Flaps

PHILLIP BLONDEEL

SESSION 10

RECONSTRUCTIVE SURGERY - HEAD & NECK, CHEST WALL & PERINEUM

Complex Head And Neck Reconstructions: Traditional Microsurgical Approach And Experimental Options

ALESSIO BACCARANI

Complex head and neck reconstruction is a multi-step procedure which includes skeletal and soft-tissue reconstruction, implant insertion and prosthetic restoration, to restore function. These different steps have evolved over the years from the technical standpoint. Vascularized – fibular-graft (VFG) has been set as the "workhorse flap" for patients in need of skeletal reconstruction. Our report analyzes the significant technical evolutions based upon a 15 year experience developed within our department.
More recently composite tissue allotransplantation has began to be regarded as an option for patients presenting with the most extensive defects. This treatment possibility will also be discussed.

Perforators And Refinements In Head And Neck Reconstruction

SALVATORE D'ARPA

Perforator flaps have allowed reduction of donor site morbidity by sparing tissues such as muscles that were only included in the flaps for vascular purposes but were unnecessary for reconstruction.
Perforator flaps have also opened a new era of thinking and operating that has resulted in improvements also in the recipient site thanks to the new reconstructive possibilities brought by perforator flaps.
In the head and neck reconstruction of cutaneous and intraoral defects has been greatly improved by perforator flaps, free and pedicled, that have allowed to:
Perform operations previously performed in two stages in only one stage;
Reconstruction of complex tridimensional defects with two flaps on one pedicle (chimaeric flap);
Develop techniques for vascular protection in high risk head and neck cases;
Improve the donor sites of the radial forearm flap;
Improvement of safety of the fibula osteocutaneous free flap.
In this presentation new applications of perforator flaps and refinements of old techniques with the aid of perforators in Head and Neck reconstruction will be described and discussed.

Lateral Cervical Flap For Reconstruction Of Perioral And Oral Cavity

RAJA KUMMOONA

A number of soft tissue flap have been used to reconstruct the orofacial region after ablative surgery and the aim is to repair the defect created by resection of tumor or a defect of post-traumatic missile injuries of the face to restore function and provide an acceptable cosmetic feature. Pedicle flap remain an important tool in perioral and oral reconstruction after radical cancer surgery. The use of various musculofasciocutanneous flaps in reconstructive surgery has allowed considerable refinement of the primary and secondary reconstruction of various perioral and orofacial structures after radical cancer surgery and post-traumatic missile injuries. Lateral Cervical Flap (LCF) was advocated by the author in 1994, the LCF composed of the platysma muscle, fascia and overlying skin has been designed to reconstruct the lost part of the oral cavity and upper neck region as single stage procedure..Experimental studies were performed on rabbit for reconstruction of lateral side of the tongue and sub mental region to assess the viability of LCF, clinical cases will be shown also.
The LCF proved to be an ideal and most reliable flap for reconstruction of both perioral and oral defect after radical cancer surgery and post-traumatic missile injuries.

Principles of Full Thickness Thoracic and Abdominal Wall Reconstruction

WASSIM RAFFOUL

The number of surgical interventions resulting in large abdominal or thoracic wall defects is growing steadily. This fact is in relation with

- The progress made in the surgical field
- The improvement of resuscitation
- The Increase number of radiation-induced soft tissu sarcomas.
- The Improvement in reconstructive surgery that currently allow primary closure of defects by ensuring the physiological functions of these complex structures.

The abdominal and thoracic walls are solid structures that protect the underlying structures, but at the same time they are flexible allowing, trunk mobility, expansion and shrinkage during physiological phenomena such as inspiration, expiration or digestion. Any effective reconstruction method must ensure all these functions.
Reconstruction of the thoracic and abdominal wall can be completely autologus or combine biocompatible materials covered by flaps. In this presentation we describe a clear and comprehensive approach to these difficult situations.

Mandibular Reconstruction: Special Considerations In Condyle, Ramus And Body

ABDUL NASSER HACHEM

Introduction: A multi-disciplinary team of doctors and surgeons, in our Hospital in Abu Dhabi, recently performed a complex resection and reconstruction of 4 recurrent Ameloblastoma Tumors of the maxillofacial surgery. The surgery included a radical resection of the patient mandible, and floor of mouth, from the high subconyle area, mandibular angle, Body, symphysal region into mandibular lateral incisor opposite side, while the patient leg free fibular oder iliac bone microvasculary transplant was used to reconstruct his jaw. Problem: A 42, 32, 28 and 25 year-old male and female Patient performed from November 2009 to November 2011 surgeons excised the mandible, and floor of the mouth of the Patient. The patients suffered from a polycystic, monocystic primary or recurrent Ameloblastoma. The Patients presented to Maxillofacial Outpatient Clinic of our Hospital with a massive tumour in his face. The lymph nodes were removed from right sides of his neck during the surgery, Supraomohyoidale functionell Neck Dissection, and then 40 to 60 % of the Mandibule and oral mucosa were placed on the mouth floor to re-construct entire mandibule. Additional procedures will be needed to perfect the appearance of the lower Face with dental enossal Implantation from the (Straumann Company).

Material and Methods: From November 2009, to November 2011 4 patients with mandibular bone Reconstruction included in study from 2 institutions, 4 men and 1 women with mean age of 33 year. 3 underwent fibula free flap harvest without STSG or Muscles, One underwent Bone illiac grafting, they Majority is Big Tumor.
Results: One donor sites from the left leg, The length is 21 cm Fibular bone for the reconstruction of the right ramus, body and symphyseal area to region 31, by recurrent Ameloblastoma., No intra- extraoraly complications, Need for additional surgery, Correction of the Ramus and mandibular Body. Primary Tumors composed of 4 Ameloblastomas , The tumour, as large as a 18x3.5 cm, was extracted completely from the patient's face during the surgery. What made this situation so compelling, was that a much smaller surgery could have been performed if it had received the proper care years ago. I have tremendous respect for the patient who worked tirelessly for years to see that himself finally received the proper care. I also salute the patient as well, who faced the surgery and all his care with tremendous courage for such a young man.

Case Presentation – Single Stage Gracilis Transfer For Reanimation Of Face Following Facial Nerve Palsy

KRISHAN KUMAR

The options for C/c facial nerve palsy are pedicled muscle transfers or free muscle transfers innervated by facial nerve branches from the normal side.
Pedicled muscle transfers are simpler procedures but they provide only a hitch up and do not provide the spontaneity of a bilaterally symmetrical smile.
The traditional free muscle transfer is a two-stage procedure with a first stage cross facial N graft. Once the regeneration is complete a second stage free gracilis muscle transfer innervated by the nerve graft is carried out. This has the disadvantage of a two stage procedure and two anastamosis on the nerve
To avoid these disadvantages the current concept is to do a single stage transfer innervated by the buccal branches from the normal side. A thinned required segment of gracilis was harvested with its neurovascular pedicle. The nerve was harvested right up to the obturater foramen splitting the main trunk. The muscle was inset and vascular anastamosis was done to the facial vessels. The long nerve was tunneled across the upper lip to the normal side and was anastamosed to two branches of the buccal branch.
The surgical steps and final outcome will be demonstrated

Management Of Congenital Ectopic Scrotum - Case Report And Review Of The Literature

ALI GHANEM*, MOHAMMED SHIBU

A case of suprainguinal ectopic left scrotum associated with severe left lower limb reduction deformity, absent left hemipelvis and an absent left hip joint is described. Scrotal reconstruction was carried out at the age of 7 months The literature is reviewed and the scrotal reconstruction procedure is discussed.

Management Of Warfare Injuries In Misrata – Libya

ALI GHANEM*, MOHAMMED SHIBU

During the armed conflict in Libya to end the rule of Gaddafi between February to March 2011 contracted healthcare workers left the country creating a significant deficit in specialist care necessary to treat complex war injuries. This shortage of specialist care prompted several humanitarian medical operations. This paper presents the experience of an independent multidisciplinary team in treating warfare injuries in Misrata in four visits over the period from July 2011 until December 2011 presenting a framework for independent philanthropic effort in war zones and the lessons learnt in care of civilian and combatant patients sustaining major trauma in the Middle East.

POSTERS

The Dorsometacarpal Digital Retrograde Flap

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The "Dorsal Digitometacarpal Flap" or "Extended Distal Pedicled Dorsal Metacarpal Flap" is a skin flap, useful in reconstructing large distal defects on the dorsal aspects of the digits. It is raised on the dorsum of the hand, over an intermetacarpal space. Its vascularization is provided by proximal dorsal cutaneous branches of the digital collateral arteries through the rich, anastomotic arterial network of the webspace. This flap is a useful flap compared to other flaps harvested from the dorsum of the hand, such as the reverse metacarpal flaps. The operative procedure preserves the dorsal interosseus muscles' aponeurosis, the juncture tendinum and the dorsal metacarpal artery. Its vascularization depends on the webspace arterial network which is constant contrary to the dorsal metacarpal arteries of the ulnar spaces. This flap is indicated to cover distal defects on the dorsum of the digits because of its large rotation arc. The anatomical basis and operative technique of the flap will be discussed and a review of our experience will be presented.

The OMEGA Pulley Plasty "Ω". A New Plasty To Enhance The Volume Of The Annular Pulleys (A2 And A4) Of The Fibreous Digital Tube

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The authors describe an original technique of volume enhancement of the digital fibreous tube annular pulleys (A2 and A4). It is not a reconstructive procedure of the annular pulleys but a plasty of enlargement of their diameter without any rupture on their anatomical integrity.
Tendons repair in zone II often modify the tendons shape and show a volume discrepancy between the digital fibreous tube and the repaired tendons. This creates a resistance for tendons sliding worsening the forecast of the tendons injuries. This conflict appears generally with the annular pulleys A2 or A4.
The Omega pulley plasty "Ω" consists of releasing one lateral annular pulley attachment from the corresponding anterior phalangeal crest. This sub-periosteal liberation increases the pulley diameter and its internal surface. It makes it possible to adapt the volume of the pulley to that of the repaired tendons. Thus it creates the best conditions for the restoration of a normal tendon gliding.