Global Partners Oral On-Demand Abstracts

"Spaghetti Wrist" Injuries Associated with Soft Tissue Defects

Presenter: Alexandru Georgescu, MD, PhD, Romania

Introduction: "Spaghetti wrist", term which defines complex volar wounds involving more than three major structures, is a very severe lesion and with a significant morbidity. The lesion becomes more severe
in association with skin defects. This paper will present the results in 49 patients operated in a 10 year period, in terms of functional recovery and socio-professional reintegration.

Materials and Methods: We analyze the patients operated in a ten-year period for pure "spaghetti wrist" lesion or associating also a skin alone or a complex soft tissue defect. The patients were analyzed with regard
to the mechanism of injury, type of surgery, functional recovery and socio-professional reinsertion.

Results: In a ten years period, 49 patients (35 men and 14 women), with an average age of 34 were operated for a "spaghetti wrist" lesion. From those, 37 presented a pure "spaghetti wrist" lesion and 12 associated also a soft tissue defect, of more anatomical elements in 7 cases and of skin alone in 5 cases. The mechanism of injury was work related in 35 cases, traffic accidents in 2 cases, home accidents in 10 cases, and suicidal attempt in 2 cases. At least 3 tendons were injured in all the cases. The median nerve was injured in 19 cases, the ulnar nerve in 13 cases, and both of them in 17 cases. The radial artery was lacerated in 11 cases, the ulnar artery in 19 cases, and both of them in 7 cases. A complex soft tissue defect, including skin and tendons/arteries/nerves was registered in 7 cases, and a skin defect alone in 5 cases.

All the cases were solved in emergency as an all-in-one procedure. A free flow through simple or composite flap was used in 7 cases, and a propeller perforator flap in 5 cases. The range of motion was very good in 31 patients (8 from those associating defects), good in 12 patients (4 from those associating defects), and fair in 6 patients. The sensory recovery was very good in only 21 patients, good in 19 patients, and only protective in 9 patients (two-point discrimination of 2-5mm in 21 patients, and of more than 6mm for the others).

Conclusions: The outcomes after repair of both simple spaghetti wrist or associated with soft tissue defects are similar if a careful emergency all-in-one procedure is done. The overall functional outcomes after
repair are generally good, allowing the socio-professional reintegration of the patients.

Managing the Fallout from the Whakaari / White Island Volcanic Eruption

Presenter: Michelle Locke, Richard Wong She, MD, FRACS, Plastic Surgery, Counties Manukau District Health Board, Auckland, New Zealand; Amber Moazzam, MD, FRACS, Plastic Surgery, Counties Manukau District Health Board, Auckland, New Zealand; Co-Author: Paul Baker, MD, FRCS, Plastic Surgery, Counties Manukau District Health Board, Auckland, New Zealand

On December 9th 2019, New Zealand experienced an unheralded eruption from the Whakaari/White Island volcano. This phreatic eruption, whilst small from a geological perspective, was significant due to the presence of tourist groups within one kilometre of the vent who were exposed in close proximity

to the force of the resulting pyroclastic surge. There were 47 individuals on Whakaari/White Island at the time of the recent eruption. These people were clustered in groups at varying distances from the newly created fissure and with differing proximity to cover. Most individuals were dressed lightly. Thirteen (28%) individuals died during or shortly after the eruption. Three escaped injuries by diving underwater as the surge cloud passed overhead.

The remaining 31 people entered the New Zealand National Burn Service Network and underwent emergency evacuation and were admitted to regional hospitals in New Zealand for acute trauma assessment and treatment. Within three days, 13 surviving Australian residents were identified among the patients and were repatriated to Australian Burns Units for ongoing care. Of the remaining 18 patient cared for in New Zealand, 14 patients were transported to the National Burns Centre (NBC) at Middlemore hospital (MMH), Auckland. This presentation discusses the burns injuries identified and the workload associated with the care of these patients.

Most burns care research focuses on thermally inflicted injuries. However, volcanic eruptions contain both steam and gaseous compounds such as carbon dioxide, sulphur dioxide, hydrogen sulphide and other acids. This results in not just a thermal injury but also physical blast component as well as chemical burn superimposed on top of one another. Almost all injured areas seen on our patients eventually required debridement and grafting, despite initially appearing superficial to mid-dermal (i.e. would heal spontaneously). The progressive deepening of the burn wound necessitated rounds of debridement as burn wounds ‘declared’ themselves fully. This progression of the burn wound necessitated repeated returns to theatre to allow for debridement of the wound as required. Those patients in whom aggressive, deep debridement was performed early had the shortest operative courses and best short-term outcomes.

Challenges associated with managing this number of complex burn patients including lack of specialist Burns expertise (managed by seconding Burns surgeons from Royal Brisbane Hospital, Australia and nursing staff from Australia and UK); lack of availability of cadaver skin and other dressing supplies (New Zealand supplies were quickly depleted and transfer from overseas took several days); and significant use of operating theatre time beyond that usually allocated to the NBC, meaning this disaster had a significant impact on our local population though lack of access to medically necessary electives surgery in Plastics and other specialties. The final overall event mortality rate was 45%. The high mortality was due to the extreme nature of the trauma experienced by these people but, notably, this was comparatively small within the context of volcanic events, and we believe this represents an excellent surgical outcome from this disaster.

In Search of a Universal and Objective Method to Assess Facial Aging:the New Face Objective Photo-Numerical Assessment Scale

Presenter: Simone La Padula, MD, PhD, Assistant Professor, Plastic and Reconstructive Surgery, University of Naples Federico II, Naples, Italy
Co-Authors: Francesco D'Andrea, MD, Professor, Plastic and Reconstructive Surgery, University of Naples Federico II, Naples, Italy; Barbara Hersant, MD, PhD, Plastic Reconstructive Aesthetic and Maxillo-facial Surgery, CHU Henri Mondor, Université Paris 12, Paris, France; Jean Paul Meningaud, MD, PhD, Professor, Plastic Reconstructive Aesthetic and Maxillo-facial Surgery, CHU Henri Mondor, Université Paris 12, Paris, France

Most patients who undergo cosmetic rejuvenation treatment hope to appear younger and healthier (1). Although a number of scales have been put forward to assess facial aging, to date none has focused on

predicting patients' age (2-3). The purpose of our study was to validate a more complete version of the Face - Objective assessment scale previously developed by the authors (4). Since patients with a photo-damaged
skin can look older than others (5) we created a new sub-scale: the facial photo-aging scale, in order to provide a more comprehensive method for the overall assessment of facial aging.

The Rasch model was used as part of the validation process. We assigned a score to each patient based on the scales we have developed. The correlation between a patient's actual age and the obtained scores was analyzed; we also analyzed the inter-rater reliability and test-retest reliability. All the scales exceeded criteria for acceptability, reliability and validity. The facial aging scale we have developed proved to be a valuable tool to assess patients before and after facial rejuvenation treatment or surgery, as well as for clinical research in the field of facial skin regeneration.

References:

1)Honigman R, Castle DJ: Aging and cosmetic enhancement. Clin Interv Aging. Clin Interv Aging . 2006;1(2):115-9.
2) Panchapakesan V, Klassen AF, Cano SJ, Scott AM, Pusic AL: Development and Psychometric evaluation of the FACE-Q aging appraisal scale and patient-perceived age visual analog scale. 2013, Aesthet Surg J 33: 1099-1109.
3) Sinno S, Schwitzer J, Anzai L, Thorne CH. Face-Lift Satisfaction Using the FACE-Q. Plast Reconstr Surg. 2015;136(2):239-42.
4)La Padula S, Hersant B, SidAhmed M, Niddam J, Meningaud JP: Objective estimation of patient age through a new composite scale for facial aging assessment: the face - objective assessment scale. J Craniomaxillofac Surg. 2016, 44(7): 775e782.
5)Han A, Chien AL, Kang S. Photoaging Dermatol Clin. 2014, 32(3): 291e299

Impact of Women's Domination in Indonesian Plastic Surgery Residency Programs

Presenter: Indri Aulia, MD, Plastic Reconstructive and Aesthetic Surgery Division, Department of Surgery, Universitas Indonesia, Central Jakarta, Indonesia
Co-Authors: Rita Mustika, MD, PhD, Department of Medical Education, Universitas Indonesia, Central Jakarta, Indonesia; Sri Linuwih S W Menaldi, MD, PhD, Department of Dermatovenereology, Universitas Indonesia, Central Jakarta, Indonesia

Introduction: Shifting in gender dominance between men and women in the medical field has occurred from time to time globally, including in the Indonesian plastic surgery community. The profession, which was initially dominated by men, is currently dominated by women. This shift in female dominance might allow problems that affect the education and clinical settings of plastic surgery. This study aims to explore the phenomenon of women's dominance in plastic surgery residency programs in Indonesia.

Method: This study is a qualitative study of phenomenology. It was conducted on 3 medical residency programs specializing in plastic reconstructive and aesthetic surgery in Indonesia. The study began in January 2020. The research population consisted of 4 groups, namely residents, faculties, study program managers, and graduate users. Research subjects were selected using the maximum variation sampling method. Each respondent was provided with informed consent, all information given was confidential and did not affect the educational process of the respondents in academic institutions or the integration of workplace in plastic surgery services. Data collection

methods include documentation reviews, Focus Group Discussion (FGD), and In-Depth Interview. Research data obtained from various methods above were analyzed and processed thematically.

Results: The themes were categorized based on the educational process timelines, which are: pre-education, intra-education, and post-education. Each timeline had several themes which mutually influenced the educational process. During pre-education, there were personal characters that were affected by positive and negative perceptions from the society. Whereas the work environment atmosphere, the impact of women's dominance, and the cultural dimension affected the intra-educational process. After graduating from the residency program and entering their career life, residents expected an ideal working environment and had certain workplace preferences to achieve their well-being.

Conclusion: The impact of women's dominance during education affected the daily dynamics among residents and their interaction with faculties as mentors. However, this dominance did not affect the quality of education and workload. We also found that the phenomenon of leadership disparity did not occur during education but occurred in the post-education setting. This leadership disparity was not resulted by pressure in the community, but due to the tendency of the women's personality in general among the feminine community in Indonesia.

Reconstruction of an Injectable Vascularized Adipose Tissue for Soft Tissues Regeneration

Presenter: Yoshihiro Sowa, PhD, Departments of Plastic and Reconstructive Surgery, Kyoto Prefectural University of Medicine, Kyoto, Japan
Co-Authors: Fiona Louis, PhD, Joint Research Laboratory (TOPPAN) for Advanced Cell Regulatory Chemistry, Graduate School of Engineering, Osaka University, Osaka, Japan; Shiro Kitano, PhD, TOPPAN PRINTING CO., LTD., Osaka, Japan; Michiya Matsusaki, PhD, Department of Applied Chemistry, Graduate School of Engineering, Osaka University, Osaka, Japan

Adipose tissue injection for filling soft tissue defects is a good way to avoid invasive surgical procedure but remains a reconstructive challenge. The long-term studies reveal up to 70% volume loss, due to a lack of revascularization *in situ* leading to the necrosis of the fat graft. Vascularization should be reconstructed before the reinjection of the adipose tissue to improve the outcomes. However, mature adipocytes are already difficult to culture *in vitro* and the regeneration of a vascularized adipose tissue including mature adipocytes is still challenging. In this context, we used physiological collagen type I microfibers (CMF), the main component of adipose ECM, mixed with cells (human mature adipocytes, human ADSC and HUVEC) to construct *in vitro* adipose tissues. CMF allowed the *in vitro* maintenance of unilocular mature adipocytes. By adding ADSC and HUVEC, a vascularized adipose tissue was reconstructed *in vitro*, where functional mature adipocytes were found in close contact to the blood vessels in a similar way than *in vivo*, showing numerous lumens. Different scales were made: from $1mm^3$ tissues in 96 wells plate to $1.6cm^3$ bioprinted vascularized adipose tissues using a dispenser bioprinter. The balls can be then aspirated and released using a classic syringe and needle without losing their structure and viability. They were found to merge after injection to get a final high tissue volume. This innovative method using collagen microfibers might be suitable for soft tissue regeneration needs by enhancing the graft survival time on site after implantation.

Preenrichment with Adipose Tissue-Derived Stem Cells Improves Fat Graft Retention in Patients with Contour Deformities of the Face

Presenter: Mustehsan Bashir, PhD; Muhammad Sohail Bashir, FCPS, Plastic Surgery, King Edward Medical University, Lahore, Pakistan; Umer Nazir, FCPS, Plastic Surgery, King Edward Medical University, Lahore, Lahore, Pakistan

Quick absorption of adipose tissue grafts makes the outcomes less satisfactory for clinical applications. In the current study, adipose tissue grafts were mixed with adipose tissue-derived stem cells (ASCs) to improve retention of adipose tissue grafts and to make the clinical outcomes of fat grafting more reliable. Adipose tissue was either injected alone (conventional group) or mixed with ASCs (stem cell group) before injection. In both groups, adipose tissue was injected at the site of contour throughout layers of tissues till visual clinical symmetry with the opposite side was achieved. The volume of injected fat graft was measured after 72 hours and 6 months using a B-mode ultrasound device connected with a 12 MH frequency probe. The percentage reduction in the volume of injected fat, physician satisfaction scores (Ph-SCs), and patient satisfaction scores (P-SCs) were also recorded. After 6 months, there was significantly lower fat absorption in the stem cell group as compared to the conventional group. Mean physician and patient satisfaction scores were significantly improved in the stem cell group. No significant adverse effects were noted in any patient. Significantly lower absorption of graft due to the use of ASCs improves the clinical outcomes of conventional fat grafting for contour deformities of the face. The current preenrichment strategy is noninvasive, safe and can be applied to other diseases that require major tissue augmentation such as breast surgery.
Although adi-pose tissue grafting is a well-known technique to correct contour irregularities, quick absorption of fat at the site of application is a major concern for patients as well as clini-cians [2]. The rate of fat absorption may reach up to 90% due to hypoxic and ischemic environment after transplanta-tion. Clinically, this unreliability produces unsatisfactory and suboptimal final clinical outcomes, and therefore, multi-ple sessions of fat grafts are required, making this procedure expensive and lengthy.

References:

1. C. Baer and H. Geiger, “Adipose-derived mesenchymal stro-mal/stem cells: tissue localization, characterization, and het-erogeneity,” Stem Cells International, vol. 2012, Article ID 812693, 11 pages, 2012.
2. S. Choudhery, M. Badowski, A. Muise, and D. T. Harris, “Effect of mild heat stress on the proliferative and differentia-tive ability of human mesenchymal stromal cells,” Cytother-apy, vol. 17, no. 4, pp. 359–368, 2015.
3. Qin, P. Zhou, C. Zhou, J. Li, and W. Q. Gao, “The adipose-derived lineage-negative cells are enriched mesenchymal stem cells and promote limb ischemia recovery in mice,” Stem Cells and Development, vol. 23, no. 4, pp. 363–371, 2014.
4. J. Hong, P. I. Rogers, J. Kihlken et al., “Intravenous xenoge-neic transplantation of human adipose-derived stem cells improves left ventricular function and microvascular integrity in swine myocardial infarction model,” Catheterization and Cardiovascular Interventions, vol. 86, no. 2, pp. E38–E48, 2015.
5. Y. Hong, I. I.-K. Kim, S. O. Park, U. S. Jin, and H. Chang, “Systemic administration of adipose-derived stromal cells con-current with fat grafting,” Plastic and Reconstructive Surgery, vol. 143, no. 5, pp. 973e–982e, 2019.