Free Paper Session VI — Foot & Ankle, Rehabilitation, Oncology, Education

6.1

Ingrowing Toenail — Would Postoperative Antibiotics Help to Reduce Postoperative Wound Infection in Stage III Ingrowing Toenail? Result of a Randomised Prospective Study in a Local Hospital

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Introduction: Wedge excision is a commonly practised procedure in treatment of ingrowing toenail (IGTN). Wound infection and recurrence are the 2 most common complications. Our previous retrospective study on 99 toes in 2011 showed that lack of postoperative antibiotics and stage III disease condition are factors related to wound infection.

Materials and Methods: A prospective study to look into the use of postoperative antibiotics in relation with wound infection in surgery for stage III IGTN with analysis of the spectrum of bacteria was conducted from mid-2012 to 2013.

Results: Patients with stage III disease were randomised into group A (use of postoperative antibiotics) and group B (controls). Granulation tissues harvested from wedge excision were sent for culture and sensitivity study. A total of 57 patients with 61 toes were included with 25 toes in group A and 36 toes in group B. For the whole group, wound infection was encountered in 12 (19.6%) cases and recurrence was noted in 5 (8.2%) cases. Age, sex, and location of lesion were similar in both groups. Wound infection rate was 0% in group A and 33.3% in group B which was significant. Besides, 49 specimens were sent for study and all were positive with 63.3% yielding ≥2 types of bacteria. *Staphylococcus* was the commonest bacteria encountered (85.7%).

Discussion and Conclusion: Stage III IGTN should be considered an infection pathology and postoperative antibiotics will definitely help to reduce wound infection rate.

6.2

10-Year Results of Minimally Invasive Endoscopic-assisted Hallux Valgus Surgery

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Introduction: Hallux valgus is a common condition and many patients require surgical intervention for various symptoms. Multiple surgical techniques have been described in literature and can be broadly classified into soft tissue procedures and osteotomies. The authors believe that the chief deformity in hallux valgus initiates with a soft tissue imbalance, which progressively brings about the secondary joint and bony defects. The endoscopic distal soft tissue procedure (EDSTP) was developed in early 2000s as a minimally invasive endoscopic-assisted surgical technique (MIS) which works along similar concept to the traditional McBride's soft tissue procedure. It comprises 4 stages including lateral soft tissue release, medial bunionectomy, reconstitution of intermetatarsal angle, and medical structure plication. Since MIS hallux valgus surgery is a novel procedure, long-term results have not been available until now.

Methods: This study included retrospective case series of patients undergoing this operation from 2000 to 2005. Radiological parameters were obtained preoperatively and at 10-year follow-up, while the clinical symptoms were quantified using the Foot and Ankle Outcome Score, Numeric Rating Scale, and the 36-item Short-form Health Survey.

Results: Good long-term outcomes were achieved by the EDSTP.

Discussion: The EDSTP builds on the proven corrective power of the traditional open soft tissue procedure, and combines it with the benefits of minimally invasive surgery. Although it is a technically demanding procedure with a high learning curve, we believe continual modification and simplification will allow MIS hallux valgus surgery be adopted by scope-savvy surgeons.

6.3

12 Years' Experience in Minimally Invasive Achilles Tendon Repair Using Suture-guiding Device

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Introduction: Minimally invasive Achilles tendon repair is becoming more and more popular recently. We evaluated our results in minimally invasive Achilles tendon repair using suture-guiding device.

Materials and Methods: This is a retrospective review of patients who underwent minimally invasive repair with suture-guiding device for acute closed rupture of Achilles tendon in our department from 2003 to 2015. Outcome parameters included incidence of re-rupture, other complications, and functional outcome.

Results: A total of 40 cases were included in this study, including 36 (90%) males and 4 (10%) females. Mechanisms of injury were basketball (28%), football (15%), squash (15%), and trauma (13%). The mean operating time was 59 (range, 30-90) minutes. The mean follow-up time was 8 (range, 3-35) months. The mean duration with casting was 7 weeks. The mean range of movement at 3 months was 8 degrees dorsiflexion and 33 degrees plantarflexion. There was no major complication necessitating surgical re-interventions such as re-ruptures and infections. No patient suffered from dysfunction of the sural nerve or delayed wound healing.

Discussion and Conclusion: Minimally invasive Achilles tendon repair using suture-guiding device is a safe and quick procedure with a low rate of re-rupture and a satisfactory recovery.

6.4

Peroneal Tendon Problems in Acute Displaced Intra-articular Calcaneal Fractures

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Introduction: Calcaneal fracture is the most common tarsal fracture, accounting for 2% of all fractures. Debates have been going on for the century in choosing operative and non-operative managements. Fracture displacements and configurations have been extensively evaluated. However, soft tissue injury is also important in choosing conservative or operative treatments. Among soft tissue problems, peroneal tendon pathologies are important, which also serve as indications of surgery. In this study, we identified how common peroneal tendon pathologies occurred in a group of patients with calcaneal fractures managed operatively.

Materials and Methods: A total of 28 patients with 32 displaced intra-articular calcaneal fractures (DIACF) were treated operatively from April 2014 to March 2015 in Queen Elizabeth Hospital of Hong Kong. The patients aged from 21 to 94 years with a male-to-female ratio of 4.6:1. Indications of surgery were displaced intra-articular fractures (>2 mm). The peroneal tendons were evaluated either with preoperative computed tomographic (CT) scan or according to documented operative findings.

Results: Both preoperative CT scan images (including semi-coronal and axial cuts) and operative findings identified 22 (69%) fractures with peroneal tendon subluxations or dislocations. A total of 24 (75%) fractures were found to have peroneal tendon pathologies.

Discussions and Conclusions: Peroneal tendon pathologies are common among patients with DIACF which needs operation. Early detection of peroneal subluxation, dislocation or entrapment helps to guide management plan. The restoration of normal anatomy of the tendons reduces subsequent incidence of peroneal tendon dysfunction.

6.5

Ultrasound-guided Injection of Steroid in Treating Recalcitrant Plantar Fasciitis

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Introduction: Plantar fasciitis is the most common cause of heel pain. Although most patients are responsive to conservative management, this can take up to 2 years for resolution. For the recalcitrant cases, steroid injection is one of the common second-line treatment options. Conventionally it was done under palpation guidance. But with the help of ultrasound, we can locate the thickened segment of plantar fascia and enhance the accuracy of interventions. Plantar fascia thickness can be compared objectively as well.

Materials and Methods: A total of 20 consecutive patients with recalcitrant plantar fasciitis were recruited. For each foot, 1 mL Depo-Medrol and lignocaine was injected under ultrasound (USG) guidance. Pre-injection and follow-up pain scores (visual analogue scale at rest and during activities of daily living) and plantar fascia thickness were analysed.

Results: Pain scores improved significantly after steroid injection upon first follow-up at 6 weeks. Most of the effects were maintained at 26 weeks after injection. For patients having recurrence, there were at least 50% reduction in pain compared with baseline. The mean thickness of the plantar fascia before injection was 5.2 mm. The thickness decreased to 3.3 mm 6 months after injection. There were no adverse complication (infection, heel pad atrophy, plantar fascia rupture) identified.

Discussion and Conclusion: The USG-guided steroid injection is a safe, tolerable, and effective treatment option for recalcitrant plantar fasciitis. The initial results were excellent. Although there was recurrence in long-term follow-up, the reduction in pain was significant compared with baseline.

6.6

Giant Cell Tumour of Bone. 10-Year Review of a Tertiary Centre

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Introduction: Giant cell tumour of bone is a benign aggressive neoplasm that has a propensity for local recurrence and lung metastasis. Surgery has been the mainstay therapy. However, recent medical treatments have also been shown to be beneficial. We review our results over a 10-year period in this era of change.

Materials and Methods: Patients with giant cell tumour of the bone involving the appendicular skeleton were included. The index surgeries were performed between 1 January 2005 and 31 December 2014 in the Hong Kong West Cluster. Data were retrieved via computer and patient records. The tumours were assessed independently by all the authors according to the Campanacci grading system.

Results: A total of 20 patients were included in the study. Intralesional curettage was performed for 11 while the other 9 had en-bloc resection. Zometa and denosumab were prescribed in 5 and 4 patients, respectively. The overall recurrence rate was 20%.

Discussion and Conclusion: Despite numerous advances in the treatment of giant cell tumour in terms of adjuvants or medical therapies, meticulous surgical technique remained the key factor in the prevention of recurrence. The use of denosumab is encouraging but its exact role remains to be further defined.

6.7

An Outcome Report on Formative Assessment with Attribute-based Performance Analysis for Undergraduate Orthopaedic Training

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Introduction: University Teaching and Learning Strategy emphasises the importance of Formative Assessment. Current web-based Student Learning Outcome Mapping Platform (SMP) has been upgraded with a Performance Analysis Reporting (PAR) System providing detailed attribute-based scores with respect to sub-topics, cognitive levels, and clinical domains at a mid-module Formative Assessment. This study aimed at evaluating its acceptance to students and teachers and its impacts on students' performance.

Materials and Methods: A total of 168 Year 5 medical students underwent a mid-module Formative Assessment comprising 30 A-type multiple choice questions (MCQ) covering 10 sub-topics in orthopaedics. Scores were adjusted with "mean equating" approach. The PAR System was presented to students at the following week to titrate their study planning. Feedback questionnaires were used to evaluate users' acceptance. The performance at the final examination was compared between 2 consecutive years without and with the PAR, respectively.

Results: Mean scores for various items in the feedback questionnaires ranged from 4.01 to 4.36 in students (n=147) and from 4.50 to 5.25 in teachers (n=14) indicating good results. Mean (± standard deviation) scores on MCQ items at the final examination increased from 27.04 ± 3.03 in 2014 (n=167, without PAR) to 28.33 ± 3.26 in 2015 (n=168, with PAR) [$p<0.05$].

Discussion and Conclusion: This study showed that PAR was well accepted by both students and teachers. Students' academic performance improved with it. The PAR is an acceptable and effective teaching and learning tool for orthopaedic modules and other teaching programmes of the medical curriculum.

6.8

Validity of a Concise Self-administered Food Frequency Questionnaire for Evaluation of Dietary Vitamin D Intake

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Introduction: Vitamin D (VitD) insufficiency is highly prevalent in Hong Kong. A quick assessment tool for dietary VitD intake is useful for clinical evaluation and beneficial for enhancing public awareness on the condition. The currently available Food Frequency Questionnaire (FFQ) is too cumbersome for routine use. A concise version of FFQ, the VDFFQ, has been developed specifically to evaluate dietary VitD intake. The study aimed to evaluate its validity.

Methods: The VDFFQ was a subset of the full FFQ which had been validated for use in Hong Kong. A total of 13 food items rich in VitD were selected into VDFFQ. In all, 47 subjects (24 females with a mean [± standard deviation] age of 10.83 ± 3.26 years and 23 males being 12.13 ± 2.95 years) were recruited. Dietary VitD intake obtained with VDFFQ was compared with that from FFQ.

Results: The mean dietary VitD intake were 324.1 ± 314.3 IU/day from FFQ, and 309.20 ± 311.80 IU/day from VDFFQ ($p<0.001$, paired *t* test). The VitD intake from VDFFQ accounted for a mean of 93% ± 5% of that obtained from FFQ. Pearson correlation coefficient between VDFFQ and FFQ was 0.999 ($p<0.001$).

Discussion and Conclusion: Dietary VitD intake obtained from VDFFQ was highly correlated and accounted for a mean of 93% when compared with that obtained from FFQ. The VDFFQ consisted of 13 food items only and could be conveniently administered in a short period of time. This study provided strong evidences that VDFFQ could be applied as a quick tool for evaluating dietary VitD intake for routine use.

6.9

Necrotising Fasciitis: A 10-Year Review in a Local Hospital

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Introduction: Necrotising fasciitis is a rapidly progressive and life-threatening soft tissue condition. This study aimed to review the cases of necrotising fasciitis involving the upper or lower limbs in our hospital.

Materials and Methods: Cases with upper or lower limb necrotising fasciitis admitted from January 2005 to December 2014 were reviewed. The demographic, aetiological, treatment, and outcome data were collected and analysed.

Results: The study involved 72 cases including 46 male and 26 female patients with a mean age of 69.0 years. There were 22 cases of upper limb and 50 cases of lower limb infection. The mean length of stay at the intensive care unit and at the general ward was 7.4 days and 28.0 days, respectively. The overall survival rate was 77.8%. Limb salvage was possible in 57.1% among survivors. There was no significant difference in the mortality rate between upper limb and lower limb involvement. The most common pathogenic bacteria was *Vibrio vulnificus* which was found at a rate of 43%. *Streptococcus* pyogenes was the second most common pathogens with a rate of 22.2%, but with a better prognosis with mortality of 12.5%.

Discussion and Conclusion: Necrotising fasciitis is an orthopaedic emergency with a high mortality rate. Early diagnosis with radical debridement can provide a better clinical outcome.

6.10

Randomised Controlled Trial Comparing Computer-aided Design Computer-aided Manufacturing and Conventional Laterally Wedged Insole to Patients with Knee Osteoarthritis: A Pilot Study

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Introduction: Laterally wedged insole (LWI) is one of the orthotic treatments prescribed for knee osteoarthritis. Recently developed computer-aided design computer-aided manufacturing (CAD CAM) technology is able to fabricate custom-made LWI. This study aimed at investigating difference in the outcomes between CAD CAM and conventional LWI to patients with knee osteoarthritis (OA).

Materials and Methods: A randomised controlled trial was conducted in 30 patients who diagnosed as moderate bilateral knee OA. Full-length 5-degree LWI was used as treatment for each patient in 3 months. Outcome measures included patients' pain score, Western Ontario and McMaster Universities Arthritis Index (WOMAC) score, and gait analysis.

Results: Regarding visual analogue scale pain score, CAD CAM group showed significant difference in pain score reduction in both knees while conventional group showed significant difference in more symptomatic knee only postoperatively. For WOMAC score, only CAD CAM group showed significant reduction in pain, activities of daily living section, and total scores postoperatively. By comparing both groups, significant difference was demonstrated in change of WOMAC total score. Concerning gait analysis, when compared with pretreatment results, significant difference in contact surface area, peak pressure, and mean pressure were noted in both CAD CAM and conventional groups while that in peak force as well as force-time and pressure-time integral were shown in CAD CAM group only. When comparing both groups, significant difference in change of contact surface area, peak pressure, pressure-time integral, and stance time were noted.

Discussion and Conclusion: Custom-made CAD CAM laterally wedged insole provides more symptomatic and gait benefits than conventional one.

6.11

Evaluation of Prosthesis Use, Mobility, and Quality of Life in Young and Adult Bilateral Lower Limb Amputees after 7 Years of 2008 Sichuan Earthquake

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Introduction: We carried out a cross-sectional study to evaluate prosthesis use, mobility, and quality of life of 17 bilateral lower limb amputees who joined StandTALL rehabilitation programme for 7 years after the 2008 Sichuan Earthquake.

Materials and Methods: Data were collected at home and clinic sessions between December 2014 and May 2015. The 12-Item Short Form Survey (SF-12), Amputee Mobility Predictor (AMP), Houghton Scale, and Trinity Amputation and Prosthesis Experience Scale were completed. Mean and standard deviation of scores from the questionnaires by demographics, prosthesis use, and exercising hours were compared using *t* tests.

Results: Patients with at least 1 below-knee amputation, when compared with bilateral knee / above-knee amputees, achieved lower activity restriction ($p<0.01$), higher AMP ($p=0.03$), and K-level ($p=0.01$) scores. Patients using prosthesis more than 50% waking time had better general adjustment ($p=0.02$) and less functional restriction ($p=0.01$). Patients with higher education level (diploma or above) performed better in mental component survey of SF-12 ($p=0.09$). Better AMP ($p=0.08$) and K-level ($p=0.06$) scores were resulted when exercising >3 hours per week.

Discussion and Conclusion: The results advocate for doctors' decision to preserve distal parts and knee joint movement. The preservations also reflect significant rehabilitation outcomes in terms of fewer activity restriction, higher mobility, and quality of life. The benefits of prosthesis use and exercise in rehabilitation programmes were also supported from our results.

6.12

Evaluation of Use of Prosthetics, Mobility, and Quality of Life in Young and Adult Unilateral Above-knee Amputees after 7 Years of 2008 Sichuan Earthquake

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Introduction: A cross-sectional study was carried out to evaluate the use of prosthesis, mobility, and quality of life on 24 traumatic unilateral above-knee amputees from StandTALL rehabilitation programme having passed the seventh year after 2008 Sichuan Earthquake.

Materials and Methods: All data were collected either at home visits or clinic sessions between December 2014 and May 2015 on-site. Main outcome measures included 12-Item Short Form Survey (SF-12), Amputee Mobility Predictor (AMP), Houghton Scale, and Trinity Amputation and Prosthesis Experience Scale. Results were calculated using independent t test and bivariate correlation.

Results: Adult amputees, when compared with young amputees, experienced worse psychological adjustment to limitation ($p=0.018$) and more social activity restrictions ($p=0.072$). They also suffered from higher stump pain ($p=0.024$) and phantom pain ($p=0.044$). Rehabilitation success was associated with less athletic restriction ($p=0.053$), less functional restriction ($p=0.077$), and higher prosthesis satisfaction ($p=0.085$). The AMP score was correlated with psychosocial adjustment ($r=0.291$, $p=0.068$), inversely correlated with activity restriction score ($r= -0.291$, $p=0.072$). The AMP score was also found to be directly correlated with Houghton Scale score ($r=0.299$, $p=0.065$) and physical health composition score in SF-12 ($r=0.304$, $p=0.048$).

Discussion and Conclusion: Adult unilateral amputees experienced greater difficulties on psychological adjustment to limitation and social activities, even 7 years after the operation. Effects experiencing stump and phantom pain were also greatly affected by age. Usage of prosthesis is also encouraged for better rehabilitation and mobility.