

2.2

IDENTIFICATION OF MICRORNA-145 AS NOVEL BIOMARKER FOR PREDICTING CLINICAL CURVE PROGRESSION IN ADOLESCENT IDIOPATHIC SCOLIOSIS – FROM CROSS-SECTIONAL TO LONGITUDINAL STUDY.

JJ Zhang^{1,2}, YJ Wang^{1,2}, KL Cheng^{1,2}, KY Cheuk^{1,2}, ALH Hung^{1,2}, TP Lam^{1,2}, BKW Ng^{1,2}, JCY Cheng^{1,2}, WYW Lee^{1,2}

¹Department of Orthopaedics and Traumatology, SH Ho Scoliosis Research Laboratory, The Chinese University of Hong Kong, Hong Kong

²Joint scoliosis Research Center of Chinese University of Hong Kong and Nanjing University, The Chinese University of Hong Kong, Hong Kong

Introduction: AIS is a three-dimensional spinal deformity without clear etiopathogenesis. Last year, we reported that aberrant overexpression of miRNA-145 in AIS led to impaired osteocyte activities which contribute to the abnormal bone qualities in AIS. Given that miRNA is detectable in circulation, we hypothesized that circulating miRNA-145 could be a novel biomarker for predicting curve progression in AIS

Methodology: This study consists of a case-control cohort (90 AIS girls vs 40 healthy control) and a longitudinal cohort with 6 years follow-up (52 AIS girls). Cobb angle and bone qualities were measured with posteroanterior X-ray and HR-pQCT. In the longitudinal cohort, blood was taken at first visit, and the progressive or non-progressive group was defined according to SRS criteria (> 6 degrees or <6 degrees annually). Plasma level of miRNA-145 was determined by qPCR. Mann-Whitney, Student's T test, Spearman's rank correlation and Area under the ROC test were used.

Results and Analysis: AIS has numerically higher plasma level of miRNA-145 than the control. Plasma miRNA-145 level is positively and significantly correlated with maximal Cobb angle. In the longitudinal cohort, the progressive group has significantly lower plasma level of miRNA-145. Plasma miRNA-145 as predictor for progression was showed with an AUC of 0.66 (95%CI = 0.511-0.809).

Discussion and Conclusion: This study demonstrates circulating miRNA-145 as a biomarker to reflect curve severity and prognosticate curve progression in AIS. Result of the study shed light on potential of novel biomarkers to improve timely treatment of AIS.

2.3

ARE THERE DIFFERENCES IN THE STRUCTURE AND FUNCTIONAL EXPRESSION OF THE OSTEOCYTE LACUNO-CANALICULAR NETWORK (LCN) BETWEEN CONCAVE AND CONVEX SIDES AT THE APEX OF THE MAJOR CURVE IN SEVERE ADOLESCENT IDIOPATHIC SCOLIOSIS

KL Cheng¹, Z Feng², J Zhang¹, Y Wang¹, ALH Hung¹, TP Lam¹, Y Qiu², JCY Cheng¹, WYW Lee¹

¹The Chinese University of Hong Kong, Hong Kong

²Nanjing University, China

Introduction: AIS is a complex spinal deformity associated with low bone mass. Recent studies on iliac crest bone biopsies showed abnormal LCN structure in AIS compared with non-AIS control, we hypothesize that such abnormality might be a systemic phenomenon which makes the spine more vulnerable to deformation. This study aimed to compare the LCN structure and osteocyte markers expression between concave and convex sides at the apex of the major curve in AIS.

Methodology: Facet joint bone biopsies were collected from five severe AIS patients undergoing posterior spinal corrective surgery, then fixed and embedded with Technovit® 9100 MMA. After sectioning, total canalicular length and lacunar volume per osteocyte were determined semi-quantitatively with FITC-Imaris technique. Sclerostin expression was assessed by immunohistochemistry and qPCR was used to determine the relative expression of osteocyte markers (E11 and SOST) in the bone biopsies.

Results and Analysis: The average canalicular length per osteocyte for concave side was 655.8µm, much shorter than convex side which was 861.2µm (p=0.065). The Concave side showed lower expression of sclerostin, and mRNA of E11 and SOST (mRNA for dendritic marker and sclerostin, respectively).

Discussion and Conclusion: Findings further confirmed the systemic abnormality of the osteocyte LCN and the existences of discrepancy between the concave and convex sides at the apex of the major curve in severe AIS. Whether results suggest primary or secondary to asymmetric loading at the apex in the presence of other initiating factors of the spinal deformity would need further studies including spinal bone biopsies from non-AIS control subjects and from scoliosis subjects from non-idiopathic causes.

Free Paper Session II: Basic Science & Foot & Ankle

2.4

DEVELOPMENT OF FUNCTIONAL ASSESSMENTS BY GAIT AND OPEN FIELD ANALYSIS IN A RAT ROTATOR CUFF REPAIR MODEL

Y Liu^{1,2}, SC Fu^{1,2}, TC Cheuk^{1,2}, SH Yung^{1,2}

¹Department of Orthopaedics and Traumatology, The Chinese University of Hong Kong, Hong Kong

²Prince of Wales Hospital, Hong Kong

Introduction: Functional recovery is the main assessment after rotator cuff repair in clinic. Animal model of rotator cuff repair would help to investigate new treatment for functional recovery. This study aims to further develop functional assessment and explore the histological contribute to the functional change in a rat rotator cuff repair model.

Methodology: Male SD rats were used in the study. Right supraspinatus tendons were detached with scalpel in the injured group(n=4) and repaired in transosseous manner in repaired group(n=4). Walking gait and open field test were recorded preoperatively, and on the first 3 days, 1, 2, 4, 6, 8, 10, 12 weeks postoperatively. All rats were euthanized at week 12, whole shoulder joints of both sides were harvested for histological evaluation.

Results and Analysis: At week 2, repaired group exhibited significant higher forelimb loading pressure in downhill walk and more time of spontaneous activities than injured group. At week 12 no difference on the functional assessment were revealed. In injured group, the gap wound was fill with inferior fiber tissue, tendon substance was swelling with hyper cellularity. In the repaired group, reattachment of tendon was maintained but no typical insertion was reformed.

Discussion and Conclusion: Repair could improve functional recovery in early time points. At week 12, no functional difference was noticed due to similarly inferior histological result in both groups. Downhill walking gait and open field test could reflect the functional changes in a rat rotator cuff repair model. Histological outcome is parallel with the functional change.

2.5

HIGH GLUCOSE ENVIRONMENT CAN BE A CAUSE TO TENDINOPATHY VIA EXAGGERATED INFLAMMATION AND WEAKENED PRO-RESOLVING RESPONSE

ECK Kwan¹, SC Fu¹, CG Rolf², SH Yung¹

¹Department of Orthopaedics and Traumatology, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong

²Division of Orthopaedics and Biotechnology, CLINTEC, Karolinska Institute, Sweden

Introduction: It was reported that diabetic patients have an increased risk in the development of tendinopathy. Specialized pro-resolving mediators (SPM) are a family of lipid mediators that actively resolves the inflammatory process. In this study, we aim to compare the response to IL-1B stimulation with or without pre-treatment in a high glucose environment.

Methodology: Tendinopathic TDSCs were cultured from a tendinopathic patellar tendon. Healthy TDSCs were cultured from a healthy hamstring tendon. mRNA of untreated cells, cells stimulated by 2ng/ml IL-1B for 24 hours, and cells pre-incubated in 2g/L glucose for 24 hours then stimulated by 2ng/ml IL-1B for 24 hours were collected. mRNA were processed for qPCR targeting B-actin, ALOX12, ALOX15, FPR1, FPR2, ChemR23 and COX2.

Results and Analysis: Comparing gene expressions after IL-1B stimulation, tendinopathic TDSCs showed a weakened up-regulation of ALOX12(p=0.006), ALOX15(p=0.009), ChemR23(p=0.005), and FPR1(p=0.021). Comparing IL-1B stimulated healthy TDSCs with and without pre-incubation in a high glucose environment, pre-incubation in a high glucose environment increased up-regulation of COX2(p=0.025), together with decreased up-regulation of ALOX12(p=0.002), ALOX15(p=0.005), FPR1(p=0.017), and FPR2(p=0.043).

Discussion and Conclusion: The ability to upregulate pro-resolving mediators was weakened in the tendinopathic TDSCs. A high glucose environment not only enhanced inflammation upon stimulation, but also weakened the ability of healthy TDSCs to up-regulated pro-resolving mediators. The data from this study suggests that the high glucose environment in diabetic patients can be a cause of elevated risk in development of tendinopathy via exaggerated inflammation and weakened pro-resolving response.

2.6

SUBCHONDRAL MICRO-PERFUSION IN DIFFERENT STAGES OF KOA AND HEALTHY PEOPLE

D Guo, J Liu

The Second School of Clinic Medicine, Guangzhou University of Chinese Medicine, China

Introduction: In recent years, more attention has been placed on high subchondral bone turnover and micro-perfusion alteration in knee osteoarthritis (KOA). Studies suggested that abnormal perfusion detected by dynamic contrast-enhanced MRI(DCE-MRI) are associated with pain in KOA. This study aims at the characteristics of subchondral micro-perfusion in different stages of KOA and healthy people.

Methodology: Severe osteoarthritis group(S group n=20) , mild osteoarthritis group(M group n=15), and 15 healthy people(H group) were enrolled. MRI were applied to acquire multiple sequence images and sagittal DCE images. The sagittal DCE images and the intensity-time curve were attained with Mean Curve function. 4 similar subchondral rectangle interesting regions were selected in medial and lateral compartment of distal femur and tibia plateau, the enhanced rate(ER) and maximum upslope(MU) of those regions were measured.

Results and Analysis: There were no significantly statistical differences in basic signals among 3 groups. Significant enhancements in the MU of medial distal femur, medial and lateral tibia plateau, significant enhancements in the ER of the medial tibia plateau were observed in S group, compared with M group. Significant enhancements in the MU and ER of medial distal femur and tibia plateau, the MU of lateral tibia plateau were observed in S group , compared with H group.

Discussion and Conclusion: Significant increasing of enhanced rate and maximum slope in severe osteoarthritis group indicate that higher subchondral micro-perfusion was in company with KOA aggravating, especially in medial enhancements. The higher subchondral micro-perfusion may relate with pathology changes with subchondral angiogenesis.

2.7

EFFECT OF QUERCETIN ON HUMAN FIBROBLAST-LIKE SYNOVIAL CELLS AND CHONDROCYTES FROM OSTEOARTHRITIS PATIENTS

KW Ho¹, SSW Mok¹, SC Fu¹, KM Chan¹, J Malda², PSH Yung¹

¹*The Chinese University of Hong Kong, Hong Kong*

²*Utrecht University, Netherlands*

Introduction: Osteoarthritis (OA) is a whole joint disease which involves synovial inflammation, cartilage degradation and subchondral bone remodelling. It is known that pro-inflammatory mediators induce joint inflammation and cartilage degradation. Quercetin (Que) is a dietary supplement that has both anti-inflammatory and anti-oxidative properties. In this study, the effect of Que to antagonize IL-1 β induced inflammation and cartilage degradation were investigated in fibroblast-like synovial (FLS) cells and chondrocytes from OA patients.

Methodology: Human chondrocytes (passage 1) and FLS (passage 4) were stimulated with IL-1 β (1 ng/mL), followed by co-incubation with Que (0.1 mM) for 24 hours. Cells were also incubated in plain medium, Que (0.1 mM) and IL-1 β (1 ng/mL) as controls (n=6 patients). The mRNA expression of IL-6, COX-2, iNOS, IL-10 and HAS1 were measured in FLS, while IL-1 β , COX-2, iNOS, NOX4, MMP-13, ADAMTS5, and COL2A were measured in chondrocytes. GAPDH was the housekeeping gene. Kruskal-Wallis test followed by Mann-Whitney U test was used to compare differences between groups. Statistical significance was accepted at $\alpha=0.05$.

Results and Analysis: Both cell types from OA knees responded to IL-1 β stimulation, with significant upregulation in most genes measured. In FLS, co-incubation with Que downregulated the mRNA expression of iNOS, HAS1 and IL-6, except COX2 and IL-10. In chondrocytes, co-incubation with Que downregulated the mRNA expression of all genes measured, except COL2A.

Discussion and Conclusion: Quercetin reduced IL-1 β stimulated inflammatory and degenerative response in FLS and chondrocytes from OA knee patients. Hence, dietary supplements of Que may be a safe, alternative anti-inflammatory treatment for OA of the knee.

| Free Paper Session II: Basic Science & Foot & Ankle

2.8

MSC EXOSOMES ALLEVIATE INFLAMMATION AND JOINT DEGENERATION IN RAT KNEE OSTEOARTHRITIS

FKL Wong^{1,2,5}, Y Wang², S Zhang³, KYW Teo³, X Ren², A Hassan², RC Lai⁴, SK Lim^{4,5}, JHP Hui^{2,6,7}, WS Toh^{3,6}

¹Department of Orthopaedic Surgery, Sengkang General Hospital, Singhealth, Singapore

²Department of Orthopaedic Surgery, Yong Loo Lin School of Medicine, National University of Singapore, Singapore

³Faculty of Dentistry, National University of Singapore, Singapore

⁴Institute of Medical Biology, Agency for Science, Technology and Research, Singapore

⁵Department of Surgery, Yong Loo Lin School of Medicine, National University of Singapore, Singapore

⁶Tissue Engineering Program, Life Sciences Institute, National University of Singapore, Singapore

⁷Cartilage Repair Program, Therapeutic Tissue Engineering Laboratory, National University Health System, Singapore

Introduction: Osteoarthritis (OA) is a degenerative joint disease associated with chronic inflammation, pain and joint dysfunction. Studies have demonstrated that the therapeutic efficacy of mesenchymal stem cell (MSC) therapies in OA. However, the efficacy of MSC therapies is increasingly attributed to paracrine secretion, particularly exosomes. Here, we examine the effects of MSC exosomes on pain, inflammation and joint degeneration in a surgically-induced rat OA model.

Methodology: Exosomes were purified from human MSC conditioned medium by size fractionation. The anterior cruciate ligament transection (ACLT) procedure was performed on the right knee joints of 48 rats to induce OA over 4 weeks. Thereafter, the OA rats received weekly intra-articular injections of 10, 50 and 100 µg of exosomes or PBS (phosphate-buffered saline) as vehicle control. The remaining sham-operated 12 rats received PBS injections. Analyses were performed by weekly assessment of weight distribution (WD), micro-computed tomography, histological assessment and scoring. Synovial fluid and plasma cytokines analyses were performed by multiplex cytokine assay.

Results and Analysis: Weekly injections of MSC exosomes attenuated pain severity and progressive degradation of cartilage and subchondral bone induced by ACLT in a dose-dependent manner. By 8 weeks, exosome-treated rats showed good joint restoration and pain recovery that approximated that of sham. These improvements were accompanied by suppressed local and systemic inflammation as evidenced by reduced levels of synovial and plasma pro-inflammatory cytokines. No adverse tissue reaction was observed in all the immunocompetent animals treated with MSC exosomes.

Discussion and Conclusion: MSC exosomes could reduce OA joint pain and degeneration, possibly through modulation of local and systemic inflammation.

2.9

A NOVEL HOSPITAL DESIGNED POSTERIOR-STABILIZED KNEE CEMENT SPACER: STABILITY AND RIGIDITY VERSUS A COMMERCIAL SPACER BY CADAVERIC STUDY AND FINITE ELEMENT ANALYSIS

LCM Lau^{1,2}, CKB Kwok¹, ECS Chui³, JMK Yu¹, KKW Ho³, KY Chung², YW Hung¹, JCH Fan¹

¹Department of Orthopaedics and Traumatology, Alice Ho Miu Ling Nethersole Hospital, Hong Kong

²Department of Orthopaedics and Traumatology, Prince of Wales Hospital, Hong Kong

³Department of Orthopaedics and Traumatology, The Chinese University of Hong Kong, Hong Kong

No copyright transfer for abstract printing.

2.10

MICRORNA-494 INHIBITED OSTEOSARCOMA PROLIFERATION THROUGH REDUCING MMP-9 EXPRESSION

KSC Cheung¹, T Sun¹, KSC Cheung¹, ZL Liu², F Leung¹, WW Lu¹

¹Department of Trauma and Orthopedics, University of Hong Kong, Hong Kong

²Department of Orthopedic Surgery, the First Affiliated Hospital of Nanchang University, Nanchang, China

No copyright transfer for abstract printing.

2.11

LOW-MAGNITUDE HIGH-FREQUENCY VIBRATION TREATMENT AND MAGNESIUM ENHANCE MYOTUBE FORMATION IN MYOBLASTS – AN IMPLICATION ON SARCOPENIA

SKH Chow, C Cui, L Qin, N Zhang, JY Wang, WH Cheung

Department of Orthopaedics & Traumatology, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong

Introduction: Sarcopenia is an age-related geriatric syndrome leading to generalized loss of muscle mass and strength with a risk of adverse outcomes. Low-magnitude high-frequency vibration (LMHFV) is a non-invasive biophysical intervention providing systemic mechanical stimulation. Meanwhile, aging is associated with magnesium deficiency and dietary magnesium (Mg) was reported to help conservation of age-related loss of skeletal mass and power in elderly. The study aims to investigate the effects of combined applications of LMHFV and Mg on myotube hypertrophy in myoblast cell line and look into the mechanism of PI3K/Akt/mTOR pathway.

Methodology: C2C12 myoblasts were fused into myotubes at 70% confluence in differentiation medium. The time point at which differentiation was induced was regarded as day 0 (D0). 10mM Mg and LMHFV (35 Hz, 0.3g; 20min/day) were administered on D1, while PI3k-Akt/mTOR inhibitors were on D3. Myotube formation was examined by immunofluorescence on D5. The transcriptional expression levels of myogenic regulatory factors, MAFbx and MuRF1 were assessed by qPCR; the translational level of PI3k p85, pAkt, mTOR were detected by Western Blot.

Results and Analysis: By calculating infusum Index and myotube diameter, myosin heavy chain (MHC) type IIa expressions in Mg group and LMHFV group were respectively 2.1X ($p < 0.01$) and 2.3X ($p < 0.001$) higher than control group. In contrast, with the inhibition of PI3k-Akt/mTOR, myotube formation was partially abolished, which western blot results further substantiated the findings.

Discussion and Conclusion: Mg and vibration separately could accelerate and increase myotube formation compared to control group through the PI3k-akt/mTOR pathway; however, there was no synergistic effect detected for combined treatment.

| Free Paper Session II: Basic Science & Foot & Ankle

2.12

LOW-MAGNITUDE HIGH-FREQUENCY VIBRATION ENHANCED OSTEOPOROTIC FRACTURE HEALING IN THE PRESENCE OF SARCOPENIA

SKH Chow, N Zhang, KS Leung, SKH Chow, WH Cheung

Department of Orthopaedics and Traumatology, The Chinese University of Hong Kong Hong Kong

Introduction: Delayed osteoporotic fracture healing was found in sarcopenic SAMP8 compared with the control SAMR1. LMHFV could enhance osteoporotic fracture healing. Myostatin was a key mediator in sarcopenia and fracture healing. In this study, we evaluated the efficacy of LMHFV on osteoporotic fracture healing with sarcopenia and investigated the role of myostatin played in this process.

Methodology: The in vivo part, closed fracture was created at the right femur of 8-month-old SAMP8 and SAMR1. Control groups (SAMP8, SAMR1) received no treatment; those in LMHFV groups (SAMP8-V, SAMR1-V) received daily LMHFV treatment. Radiographs, Micro CT, histology, mechanical testing, myostatin expression were performed at selected timepoints. The in vitro part, conditional medium of myofibers from aged and young SAMP8 were cultured without LMHFV treatment was further used for ontogenetic MC3T3 with or without myostatin inhibitor followed by alkaline phosphatase staining, quantitative real time PCR and western blot of Runx2.

Results and Analysis: At week 2, Callus formation was enhanced in SAMP8-V group than SAMP8, despite not significantly and significantly enhanced in SAMR1-V as compared to SAMR1. At week 4, SAMP8 showed significantly poorer mechanical properties than SAMR1 and the mechanical properties were significantly enhanced in SAMP8-V. At Week 2, myostatin expression of SAMP8 was significantly higher compared to the other groups. ALP staining and Runx2 was lower in aged group compared to the young groups, and up-regulated after treated with myostatin inhibitor.

Discussion and Conclusion: LMHFV could partly enhance the delayed osteoporotic fracture healing in the presence of sarcopenia partly by blocking the myostatin pathways.

2.13

WHOLE BODY VIBRATION TREATMENT INFLAMMATORY RESPONSE IN OSTEOPOROTIC FRACTURE HEALING IN RAT MODEL

YN Chim, KS Leung, WH Cheung, SKH Chow

The Chinese University of Hong Kong, Hong Kong

Introduction: Vibration enhances ovariectomy-induced osteoporotic fracture healing in rats. Fracture healing begins with the inflammatory stage, and all subsequent stages are regulated by the release of inflammatory cytokines. We hypothesized that vibration treatment may restore the inflammatory response leading to accelerated healing of osteoporotic fracture.

Methodology: Ovariectomy-induced osteoporotic closed-femoral fracture SD-rats were randomized into control (OVX-C) or vibration group (OVX-V) (n=24, n=6 per group per time point). Local expressions of TNF- α , IL-6 and IL-10 were detected by immunohistochemistry and quantified by colour threshold in ImageJ, assessed at weeks 1 and 2 post-fracture. Callus morphometry was determined by callus width from weekly radiography.

Results and Analysis: Significantly higher TNF- α and IL-6 expressions but lower IL-10 expression were found at the bony callus in OVX-V rats at week 1 compared with OVX-C, which indicates enhanced inflammatory response after vibration treatment. Callus width was higher in OVX-V group than that of OVX-C at weeks 1 and 2.

Discussion and Conclusion: We have previously reported that ovariectomy impaired the inflammatory response in fracture healing. Inflammatory cytokines involved in fracture healing were shown to coordinate different processes in the early healing phase. Enhanced pro-inflammatory TNF- α and IL-6 expressions and suppressed anti-inflammatory IL-10 expression in OVX-V group suggests that vibration treatment can restore the inflammatory response in OVX bones, thus leading to accelerated fracture healing as evidenced by promoted callus formation during the early healing phase. This project was supported by the Direct Grant (2017.047), OTC(2015-SCNT) and NSFC(81472097)

CIRCUMFERENTIAL CONSTRICTION ISCHAEMIC SYNDROME (CCIS): A POTENTIALLY REVERSIBLE ISCHAEMIC CONDITION OF LOWER LIMB

N Ho¹, CYK Tang¹, KH Ng¹, Y Kwok²

¹*Department of Orthopaedics and Traumatology, Queen Mary Hospital, Hong Kong*

²*Department of Podiatry, Queen Mary Hospital, Hong Kong*

Introduction: Circumferential constriction in limb will lead to distal limb ischaemia. This is a potentially reversible condition but it has drastic consequence if undiagnosed.

Methodology: We described a patient with underlying diabetes mellitus presented with persistent lower limb linear circumferential ulcer and developing subacute limb ischaemia distal to the ulcer.

Results and Analysis: Surgical exploration found that there was a rubber band underneath the ulcer causing circumferential constriction and removal of the rubber band was performed. Subsequently, the ulcer healed uneventfully and the distal limb perfusion improved clinically.

Discussion and Conclusion: From the literature, we found a few similar cases in upper limb. We would like to coin a new term-Circumferential Constriction Ischemic Syndrome (CCIS) to recognise this potentially reversible but devastating condition. A scoring index consisted of contributing risk factors (including cognitive impairment or uncertain history of ulcer, poor social support, diabetes mellitus, presence of peripheral neuropathy, circumferential ulcer or presence of linear circumferential constriction scar in lower limb and ischaemic changes distal to ulcer) was proposed to facilitate the diagnosis. A flow chart was proposed to serve as a treatment protocol to ensure logical and comprehensive management. We hope the proposal of the new term and flowchart can help improve the threshold of recognition and for salvage of potentially devastating limb ischemia.

| Free Paper Session II: Basic Science & Foot & Ankle

2.15

COHORT ANALYSIS COMPARING ENDOSCOPIC VS ARTHROSCOPIC LATERAL SOFT TISSUE RELEASE FOR CORRECTION OF HALLUX VALGUS DEFORMITIES

SKK Ling¹, TH Lui², CM Ma², YC Siu², A Slocum², YC Lau², YH Sin²,

¹Chinese University of Hong Kong, Hong Kong

²North District Hospital, Hong Kong

Introduction: Lateral soft tissue release is commonly performed in hallux valgus surgery; it aims to realign and reduce the 1st metatarsal-phalangeal joint and sesamoid complex by releasing the contracted lateral soft tissue. The traditional incision in the dorsal 1st web space is still used; but MIS techniques are increasingly common. Variations the intra-articular inside-out technique which can be performed percutaneously and endoscopic assisted release. The traditional surgical incision is made at the dorsal 1st web space, but there has been a trend towards more minimally invasive approaches. One is the intra-articular approach which can be performed arthroscopically or percutaneously (or from the medial incision) and aims to release the lateral structures from an inside-out sequence. Endoscopy can also be performed in the 1st web space where the deep peroneal branch may be fully visualized and protected. This study aims to compare the endoscopic lateral soft tissue release and the arthroscopic soft tissue release. The hypothesis is that the arthroscopic soft tissue release provides the same good outcomes as the endoscopic release but is technically easier and can be performed faster.

Methodology: This is a prospective cohort of 10 consecutive cases of hallux valgus undergoing Endoscopic lateral soft tissue release (5 cases) or Arthroscopic lateral soft tissue release (5 cases). All cases in both groups subsequently underwent bunionectomy, medial capsule plication and closure of the IMA using a cerclage suture and a basal positional screw.

Results and Analysis: Both the endoscopic and arthroscopic groups had statistically significant improvements in clinical and radiological parameters. The endoscopic release group had a statistically significant longer operative time compared to the arthroscopic soft tissue release group.

Discussion and Conclusion: Although the endoscopic release has been reported to provide good long-term results, it is technically difficult with a steep learning curve. The arthroscopic lateral soft tissue release is an easier alternative and provides outcomes that are on par with the endoscopic lateral soft tissue release, and it has the benefit of a shorter operative time due to its simpler technical demand. Thus, we conclude that the arthroscopic lateral soft tissue release is a good surgical option because it strikes a balance between the blinded percutaneous release and the technically difficult endoscopic release.

2.16

LONG-TERM CLINICAL OUTCOMES OF SCARF OSTEOTOMY IN REGIONAL HOSPITAL HONG KONG

WL Ng, KB Chan, YN Yeung

Tuen Mun Hospital, Hong Kong

Introduction: Lack of local data concerning the long-term clinical outcomes of Scarf Osteotomy in Hong Kong.

Methodology: This is a retrospective review of 75 patients (88 feet), who underwent Scarf Osteotomy with a mean follow-up of 94.20 months. Clinical ratings were based on visual analog scale (VAS) and American Orthopaedic Foot & Ankle Society (AOFAS) scales. Weight bearing radiographs were used to perform angular measurements i) hallux valgus angle (HVA), ii) intermetatarsal angle (IMA), iii) distal metatarsal articular angle (DMAA), and iv) tibial sesamoid position before operation and at time of latest follow-up.

Results and Analysis: The median overall AOFAS scales improved from 29.66 points preoperatively to 86.83 points at the time of final follow-up. The VAS score improved from 6.61 to 0.66. The average HVA correction was 25.42. The 8 to 10-year recurrence rate (HVA > 20) was 31.80%. Higher degree of preoperative HVA predicts the higher recurrence rate.

Discussion and Conclusion: Scarf osteotomy is an effective procedure for symptom control and improvement in radiological parameters for hallux valgus deformity. However, recurrence rate is relatively high.

2.17

PILOT RANDOMISED CONTROLLED TRIAL TO INVESTIGATE IF EARLY WEIGHT BEARING WALKING AFTER SOFT TISSUE HALLUX VALGUS CORRECTION IS SAFE AND BENEFICIAL

SKK Ling¹, TH Lui², YH Sin², A Slocum², YC Lau², YC Siu², CM Ma²

¹Chinese University of Hong Kong, Hong Kong

²North District Hospital, Hong Kong

Introduction: Patients with symptomatic hallux valgus often opt-out of surgery because of their inability to accommodate a long period of walking restriction post-operatively. Questions about the post-operative regime are the most commonly asked in the clinic and are often the determining factor to proceed to surgery or not. There has been no trial to investigate the optimal timing to allow weight-bearing walking after distal soft tissue reconstruction for hallux valgus. The objective of this randomized controlled trial is to investigate whether early partial weight bearing will improve the outcomes of patients undergoing a distal soft tissue procedure for correction for hallux valgus.

Methodology: RCT of 12 consecutive patients undergoing the endoscopic distal soft tissue procedure. In the control group, the subjects followed the existing protocol of non-weight bearing walking for 6 weeks followed by heel walking; in the trial group, the subjects will begin heel walking at 2 weeks post-operation.

Results and Analysis: Groups were comparable (control 7 : study 5), all patients had significantly improved radiological (HVA, IMA, tibial sesamoid) and clinical outcomes after the surgery. Pain and range of motion were better in the early rehabilitation group.

Discussion and Conclusion: The study has shown that early heel walking does not result in more failed constructs; in fact, early weight bearing helps alleviate early postoperative pain and provides a bit more range of motion although stiffness is a known occurrence in hallux valgus correction without a shortening osteotomy. We suggest that early weight bearing at 2 weeks after a distal soft tissue correction for hallux valgus deformity is safe, and it helps accelerate the patient's rehabilitation progress.

2.18

ASSOCIATION OF INGROWN TOENAILS WITH FLAT FOOT, HALLUX ABDUCTO VALGUS AND HALLUX LIMITUS

HS Kei¹, HS Cheng², KW Ho¹

¹The Chinese University of Hong Kong, Hong Kong

²Prince of Wales Hospital, Hong Kong

No copyright transfer for abstract printing.