BP01

CAN COMBINED INTRA-ARTICULAR AND INTRA-VENOUS TRANEXAMIC ACID ADMINISTRATION FURTHER REDUCE BLOOD LOSS IN TOTAL HIP ARTHROPLASTY? A PROSPECTIVE RANDOMISED CONTROLLED TRIAL COMPARING COMBINED VERSUS INTRAVENOUS ADMINISTRATION

PK Chan[1], KY Chiu[2], CH Yan[2], CH Fu[1], MH Cheung[2], YL Cheng[1], Tegan Ho[2]
[1]Department of Orthopaedics & Traumatology, Queen Mary Hospital, Hong Kong
[2]Department of Orthopaedics & Traumatology, The University of Hong Kong, Hong Kong

Introduction: Intravenous (IV) or Intra-articular (IA) administration of tranexamic acid (TXA) showed to reduce blood loss in total hip arthroplasty (THA). Aim of study is to evaluate combined IV and IA administration of TXA in reduction of blood loss when compared with IV only administration.

Methodology: In this IRB approved study, patients, undergoing unilateral THA, were randomized into 2 groups: (1) IV TXA only: pre-operative IV TXA (15 mg/kg) on induction, and same dose given 4hrs afterwards. (2) Combined IV & IA TXA : 3gm of TXA applied topically in additional to the IV TXA in regimen (1). All patients received standardized perioperative care. Trial participants and care providers were blinded to study. Primary outcomes included haemoglobin drop, blood loss calculated by Gross formula, volume of drain output, and transfusion rate. Secondary outcomes included venous thromboembolism, and rehabilitation parameters.

Results and Analysis: A total of 28 patients (Mean age: 60.5±13.4 ; Male : Female = 16:12). Perioperative parameters were comparable between groups. Group 2 had lower calculate blood loss at postop D0 (355.9 ±274.3, 249.1±106.7ml, p=0.039), but not in postop D1-D2. There was no statistically significant difference in haemoglobin drop from postop D0 to D2 (D0 : 2.39±1.14, 2.17±0.96 g/dL, p=0.47), and volume of drain output (104.3±93.2, 120.8±159.1 ml, p=0.207) between groups. No patients required blood transfusion, or were complicated by venous thromboembolism. The rehabilitation outcomes were comparable between groups.

Discussion and Conclusion: Combined TXA administration only showed transient reduction in blood loss at D0 when compared with IV only.

BP02

ENHANCING FRACTURE HEALING IN OSTEOPOROTIC BONE WITH CYCLICAL MECHANICAL STIMULATION—THE ROLE OF OSTEOCYTE LACUNO-CANALICULAR NETWORK?

VMH Choy, RMY Wong, MC Li, SKH Chow, N Tang, JCY Cheng, WH Cheung
Department of Orthopaedics and Traumatology, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong

Introduction: Fragility fractures are highly correlated with deteriorated morphology of osteocytes. Previous studies have reported that low-magnitude and high-frequency vibration could promote osteoporotic fracture healing. As osteocytes are critical for mechano-sensing and initiating bone healing. As most osteoporotic fractures occur at metaphysis, we hypothesize that LMHFV can enhance fracture healing through morphological and mineralisation changes in the osteocyte lacuno-canalicular network(LCN).

Methodology: Sprague-Dawley rats(n=72) were obtained and half had underwent bilateral ovariectomy(OVX) to develop osteoporosis. After fracture, the rats were then randomized to either treatment or control groups. Assessments of the LCN(Scanning Electron Microscopy, immunohistochemistry), mineralization and healing(microCT, mechanical testing) were performed at week 1, 2 and 6 post-fracture (*$p<0.05$).

Results and Analysis: There was a 65.3% increase in dendritic branch points($p=0.03$) and 93% increase in dendritic length($p=0.019$) in OVX+LMHFV group, and generally increase in SHAM+LMHFV group. Osteocyte-derived proteins E11 and DMP1 are upregulated for reconstruction of the LCN after LMHFV. The decrease in sclerostin represented active bone formation while the gradual increase signified bone remodelling. The overall bone mineral density was raised in the OVX+LMHFV group with an increase in BV/TV, higher ultimate load and stiffness.

Discussion and Conclusion: Previous reports revealed that decreased osteocyte density would impede bone repair. This is the first report to illustrate that LMHFV could accelerate osteoporotic fracture healing through the underlying mechanism of osteocytes, by enhancing osteocytes' morphology, protein expression and mineralization. Further mechanistic studies of osteocytes could be stimulated with potential clinical significance.

BP03

CAN WE SIMPLIFY THE CURRENT COMPLEX HAND MATURITY STAGING TO FOCUS ON THUMB EPIPHYSES A VALIDATION STUDY ON STAGE-TO-STAGE CORRELATION WITH CLASSIC TANNER-WHITEHOUSE AND SANDERS SIMPLIFIED SKELETAL MATURITY SYSTEM (SSMS)

ALH Hung[1], BL Shi[2], A Kumar[3], LCM Lau[1], WW Chau[3], BKW Ng[3], TP Lam[3], JCY Cheng[3]

[1]Prince of Wales Hospital, Hong Kong

[2]Nanjing University, China

[3]The Chinese University of Hong Kong, Hong Kong

Introduction: Thumb ossification composite index(TOCI) based on thumb epiphyses ossification and adductor sesamoid has shown to be simple, reliable and accurate in predicting skeletal maturity in idiopathic scoliosis(IS) comparable to the Tanner-WhiteHouse(TW3) derived Sanders' SSMS system. To further improve its clinical applicability, we conducted the study to validate the stage to stage correlation with TW3 and SSMS system throughout peri-pubertal period.

Methodology: Hand radiographs of 125 pre-menarche IS girls followed at 6 monthly interval longitudinally until skeletal maturity. All digital epiphyses were scored with TW3 staging (from F to I), TOCI and SSMS system, were then compared stage to stage and correlated with timing of peak height velocity (PHV). Chi-square test, Spearman, Cramer V and Somers delta correlation were analysed.

Results and Analysis: 45 hand radiographs and 11517 epiphyses were scored. The concordance rate of TW3 stage F, G, I in thumb PP epiphysis versus all epiphyses of 4 ulnar digits were 72.5%, 72.5%, 90% respectively, with high Cramer V correlation and statistical significance ($p < 0.01$). TOCI is highly correlated with SSMS($r=0.92$, $p< 0.05$) with excellent peri-PHV stages correlation at overall concordance rate of 71.3% , further supported by Somers delta correlation > 0.8($p<0.05$).

Discussion and Conclusion: By focusing on two thumb epiphyses and sesamoid bone i.e. 3 instead of 19 of small hand bones, TOC provide a reliable stage-to-stage comparability and interchangeability with SSMS. With extra advantages of showing higher sensitivity and finer predictability for skeletal maturity in the peri-PHV period, TOCI serves as a new practical system to simplify current complex staging of the skeletal maturity status in busy clinic setting.

BP04

365-DAYS PHYSIOTHERAPY SERVICE ENHANCED POST-OPERATIVE EARLY MOBILIZATION IN ORTHOPEDIC PATIENTS

CM Ng, PL Tsang, P Cheng, PL Lam
Department of Physiotherapy, Queen Mary Hospital, Hong Kong

Introduction: Post-operative early mobilization was shown to be beneficial. Daily physiotherapy becomes essential as an interruption of rehabilitation service would delay recovery. The aim of this study is to evaluate the effect of a 365-day physiotherapy service programme in enhancing functional recovery.

Methodology: A 365-day physiotherapy service programme has been launched in an acute hospital (Queen Mary Hospital), providing weekend and public holiday services for post-operative patients with lower limb fractures and arthroplasty. Mobility training services, including muscle strength training and gait education, etc., were targeted to patients within the first week of post-operation. Main target groups were patients with arthroplasty, fractured hip and other lower limb fractures. Numeric pain rating scale (NPRS) and Modified Functional Ambulation Category (MFAC) were collected on the first visit and upon discharge for these 3 groups. Elderly Mobility Scale (EMS) was measured in the same approach for patients with fractured hips.

Results and Analysis: Half year data was reviewed from 1 Oct 2017 to 31 Mar 2018. Additional 498 patients (with 1064 attendances) received this service. Patients mainly improved from lyer/ sitter to dependent/ assisted walker upon discharge in view of MFAC (increased 28% - 36% ($p<0.0001$)) for all 3 groups. Similarly, mean NPRS has decreased 13% - 23% ($p<0.0001$). For fracture hip patients, mean EMS has improved from 0.46 to 4.13 ($p<0.0001$).

Discussion and Conclusion: These preliminary findings suggested that 365-day physiotherapy service was feasible in enhancing early mobilization and would be a future perspective in the acute setting.

BP05

ORTHOPAEDIC SELECTIVE SPASTICITY-CONTROL SURGERY (OSSCS) FOR HIP SUBLUXATION WITH CEREBRAL PALSY ~ THE OUTCOME FOR MORE THAN 3 YEARS AFTER THE PROCEDURE ~

A Nakura, M Taketa, A Wada, K Nakagawa, H Kubota
Saga Handicapped Children's Hospital, Japan

Introduction: Soft-tissue releases for spastic hip subluxation with cerebral palsy (CP) have proved to be effective. This study assessed the outcome of OSSCS (Matsuo 2002) for hip subluxation with CP for minimum 3-year follow-up.

Methodology: The medical records and radiographs of forty-eight children with CP were available. Forty-three patients had spastic quadriplegia; four patients spastic diplegia; and one patient athetosis. The mean age at OSSCS was 5.5 years and the mean follow-up period was 10.6 years. The surgical procedure consisted of open section of semimembranosus and section or fractional lengthening of semitendinosus and biceps femoris in prone position and then open section of gracilis, section or fractional lengthening of adductor longus, open section of psoas and section or Z lengthening of rectus femoris in supine position. Hips were evaluated according to the hip migration percentage. The final outcome for the patient was defined according to the worse hip.

Results and Analysis: Five patients (10%) had a good result, twenty-two patients (46%) a fair result, ten patients (21%) a poor result, and eleven patients (23%) a failure. The mean hip migration percentage was 47% preoperatively and 33% at the final follow-up. The migration percentage preoperatively was strongly associated with the final outcome ($p < 0.01$).

Discussion and Conclusion: Early intervention is recommended worldwide for hip subluxation with CP and the same thing will be true of OSSCS to achieve a good result.