

**Aim:** This study aimed to validate the repeatability of the assessment of anteroposterior (AP) knee joint laxity using a non-invasive image free navigation system in normal, healthy subjects. Validation of this technology could aid clinicians in identifying and quantifying ligamentous injuries in a clinical setting.

**Methods:** Twenty-five healthy volunteers were recruited and examined in a single centre. The Lachman test was performed through flexion on both knees of each volunteer. AP translation was measured by an infrared camera and externally mounted optical trackers which transferred the data into the computer. Coefficients of Repeatability (CR) and Interclass Correlation Coefficients (ICC) were used to validate AP translation.

**Results:** The most reliable and repeatable AP translation assessments were at 30° and 45°, demonstrating good reliability (ICC 0.82, 0.82) and good repeatability (CR 2.5, 2.9). The AP translation assessment at 0°, 15°, 75° and 90° demonstrated moderate reliability (ICC ≤ 0.75), and poor repeatability (CR ≥ 3.0 mm).

**Conclusion:** The non-invasive system was able to reliably and consistently measure AP knee translation between 30° and 45° flexion, the clinically relevant range for this assessment. This system could therefore be used to quantify abnormal knee laxity and improve the assessment of knee instability in the clinical setting.

#### 0541: VALIDATION OF A NEW AND PRE-VALIDATED SET OF NON-INVASIVE OPTICAL TRACKERS USED ON THE IMAGE-FREE PHYSIOPILOT NAVIGATION SYSTEM

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**Aim:** The investigation aimed to validate a new set of optical trackers against a pre-validated set of optical trackers, and to determine the repeatability of the new optical tracker set.

**Methods:** Two examiners assessed the supine mechanical femoro-tibial alignment (MFTA) and Lachman test on each other. The assessments were performed 10 times with each tracker on each knee. The non-invasive system consisted of an infrared camera, externally mounted optical trackers and computer software. Validation of each tracker set was assessed through inter-examiner repeatability, with the acceptable limits of agreement set at 2° for the supine MFTA, and 3mm for anteroposterior (AP) translation.

**Results:** The pre-validated optical trackers demonstrated a more consistent supine MFTA acquisition in coronal alignment compared to the new tracker, with a range of +/- 2° and +/- 6° respectively. The pre-validated tracker set recorded higher levels of AP translation than the new tracker set, however the results were more consistent with the pre-validated set, with smaller standard deviation per knee.

**Conclusion:** The optimal tracker set was the pre-validated set, which demonstrated better repeatability and comparability between both examiners at acquiring supine MFTA, and AP translation assessments than the new tracker set.

#### 0548: THE QUALITY OF ANATOMICAL RESTORATION FOLLOWING DISTAL RADIUS FRACTURE FIXATION USING VOLAR PLATING SYSTEM

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**Aim:** Aim of the study is to evaluate the quality of distal radius anatomical restoration following distal radius fractures fixation.

**Methods:** We carried out a retrospective observational study evaluating anatomical measurements, using x ray films at (0 and 6 weeks). A cohort of 120 cases distal radius fractures between May 2011 and January 2013 treated with volar plating system at University Hospital of Wales were reviewed. Only 73 cases were considered to fit the inclusion and exclusion criteria of distal radius fractures. The distal radius anatomical measurements; were calculated both pre and post-operatively. A basic statistical analysis was carried out.

**Results:** 72.6% of fractures involved the dominant hand. 71% of our cohort was female. The majority of fractures were type C (42%), followed by Type A (32.9%) and B (24.7%). The mean age was 56 years old for both genders. In all cases, radial height improved from (mean) 10.2 mm preoperatively to

11.3 mm post-operatively. The palmar tilt had acceptable results from a mean of -2.4° to 5.9° post-operatively. The average time from injury to operation was 5.14 days.

**Conclusion:** At the University Hospital of Wales, the main anatomical measurements closely linked with good outcomes have been acceptably restored in most cases of distal radius fractures that have been plated.

#### 0578: SOFT TISSUE INFECTIONS ASSOCIATED WITH LEGAL HIGHS: AN INCREASING PROBLEM

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**Aim:** Intravenous drug abuse is known to be associated with significant health problems including soft tissue infections. Our department has recently noticed a concerning increase in admissions of intravenous drug users presenting with severe soft tissue infections after using legal highs. This study investigates further.

**Methods:** All admissions to the orthopaedic trauma unit with soft tissue infections over two six-month periods in 2013 and 2014 were investigated. Those associated with intravenous drug usage were identified. Cases were reviewed to assess patient demographics, co-morbidities, infection characteristics and management.

**Results:** This study demonstrated a three-fold increase in hospital admissions for soft tissue infections resulting from intravenous drug use between the two time periods. In 2013 9.1% of admissions were related to the use of legal highs, whilst in 2014 this had increased to 68.8%. Patients using legal highs were more systemically unwell, had multiple lesions and 65% required operative management.

**Conclusion:** Legal highs are responsible for the dramatic increase in numbers and costs of intravenous drug users presenting with soft tissue infections to our department. With the emergence of such substances being estimated at a rate of one a week this has the potential to become a significant national public health problem.

#### 0588: AUDIT: IS THERE A BENEFIT TO ARTHROSCOPY FOR PATIENTS DESTINED FOR KNEE REPLACEMENT?

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**Aim:** BOA and NICE guidelines state arthroscopy should not be offered to patients as primary treatment for knee osteoarthritis. Conversely there is also literature suggesting arthroscopy is beneficial if it proffers symptomatic relief for the patient to delay total knee arthroplasty (TKA) for a significant time period; improving longevity of the prosthesis & reduction in revision surgery.

The aim of this audit was to assess whether there is significant (>12 months) interval between arthroscopy and TKA.

**Methods:** Prospective collection of 100 patients admitted for TKA. Patient notes examined for details of previous knee arthroscopy. Exclusion criteria: revision arthroplasty, uni-compartmental surgery, surgery on contra-lateral knee

**Results:** 19 patients had previous arthroscopy. 5 within 12 months of TKA; 10 within 24 months. Average age arthroscopy patients was 3 years younger than cohort average age 6 yrs younger at time of arthroscopy compared to TKA without previous scope. Average interval arthroscopy to TKA 39.9 months (range 6–121 m)

**Conclusion:** Small proportion (19%) of primary TKA have previously undergone arthroscopy. Arthroscopy patients were younger, and the majority had at least a 12 month delay to definitive surgery. This suggests benefit from their arthroscopy, provisionally reducing the need for early arthroplasty.

#### 0599: USE OF LOCAL ANAESTHETIC IN DISTAL FOREARM FRACTURES: A RETROSPECTIVE AUDIT AND COST ANALYSIS

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