Conclusions: This is the first study to report on the biomechanical properties of the mini-plate for coracoid fixation in the Latarjet procedure. The results indicate significantly superior failure loads with the mini-plate compared to all other constructs, which may have clinical implications, particularly in the high-demand contact athlete. Across all fixation techniques and screw sizes, constructs with screws inserted at 0° performed better than constructs inserted at 15°. Overall, for graft fixation during the Latarjet procedure, this data suggests superior biomechanical properties with mini-plate versus conventional screw fixation. Clinical studies with analysing patient outcomes and failure rates are necessary to determine the clinical implications of these biomechanical findings.

Paper #6 SMART PHONE "SELFIES"âA RELIABLE AND ACCURATE TOOL FOR MEASURING ELBOW RANGE OF MOTION

Maegan N. Shields, MD, MSc, Anthony M. Vaichinger, BS, ***Shawn W. O'Driscoll, PhD, MD,*** *Department of Orthopedics, Mayo Clinic Rochester, Minnesota, USA*

Introduction: It has been previously demonstrated that digital photography is an accurate and reliable tool for capturing elbow range of motion when patients are carefully positioned by orthopaedic surgeons. Our hypothesis was that self-taken photographs ("selfies"), performed independently after instruction by video or illustrated handout, would be an accurate and reliable tool for capturing elbow range of motion in patients with elbow contractures.

Methods: 50 patients presenting with elbow contractures participated in the study. After completion of the selfie (Fig. 1), the senior author clinically measured flexion and extension with a goniometer. The angles from the photographs were measured and analyzed.

Results: The agreement between measurements obtained by goniometer and from the "selfies" correlated closely (R^2 = 0.98, Fig. 2). Agreement was excellent in both extension and in flexion with interclass correlation coefficients (ICC) of ≥0.93. Systematic errors were also low (Fig. 3). Systemic error was 0° (95% C.I., ±11°) in extension. Systemic error in flexion was –3° (95% C.I., ±10°). Six patients demonstrated ≥10° difference between clinical and selfie measurements. Four of those six patients did not flex or extend to their limit of motion, but did so after personal instruction. Ability take a usable selfie, was inversely correlated with age (R^2=0.97).

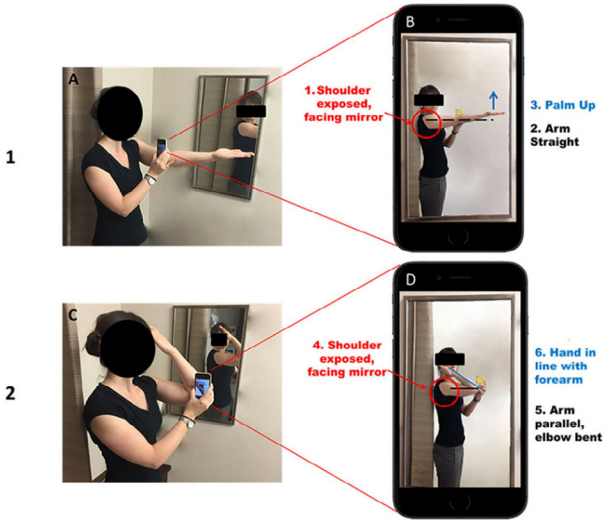

Figure 1 (A) 1.Shoulder exposed, facing mirror. (B) 2. Arm straight. 3. Palm up. (C) 4. Shoulder exposed, facing mirror. (D) 5. Arm parallel, elbow bent. 6. Hand in line with forearm.

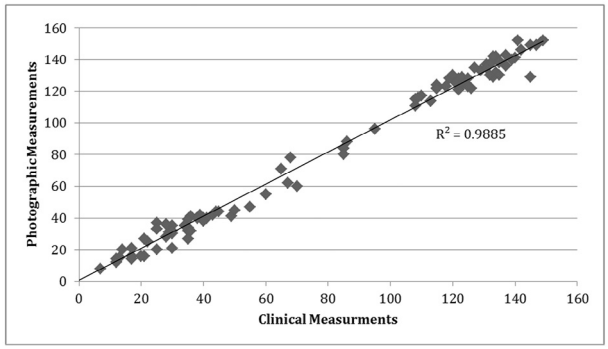

Figure 2 Correlation between clinical and photographic measurements.

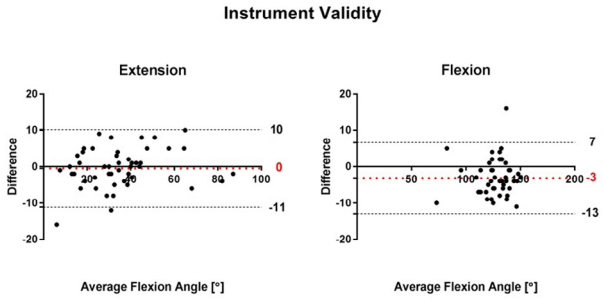

Figure 3 Instrument validity.

Conclusion: Self-taken flexion-extension photographs are a reliable and accurate tool for measuring elbow range of motion. This important parameter of elbow function can therefore be obtained outside a normal clinic visit, thereby improving frequency of follow up assessments (and minimizing loss to follow up) necessary for quality control and research.

Paper # 7 SAFETY OF POSTERIOR ENDOSCOPIC DISTAL BICEPS REPAIRS

Christopher C. Schmidt, MD[a], *Joseph F. Styron, MD PhD*[b], *E.A. Lin*[a], *M.N. Scott*[a], [a]*Orthopaedic Specialist, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, USA;* [b]*Department of Orthopaedic Surgery, Cleveland Clinic, Cleveland, Ohio, USA*

Background: A prerequisite to restoring preinjury supination strength following a distal biceps rupture is tendon re-attachment to its footprint.[1] An ECU / supinator muscle splitting approach reliability exposes the footprint, but iatrogenic injury to the supinator has been associated with decreased strength.[1] Repairing the distal biceps tendon using endoscopy is a unique technique that minimizes supinator injury while providing the visualization required for an anatomic repair (Fig. 1).[2] The goal of this study is to determine safe posterior endoscopy portals for distal biceps repair.

Methods: In 11 adult cadaveric specimens, the distal biceps tendons were re-attached to their footprints using endoscopy through two posterior cannulas positioned within the ECU. After repair, a flexible dilator was placed along the bicipital tunnel and through the distal cannula (Fig. 2). The dilator marked the distal extent of the endoscopic dissection.

The specimens were then dissected under loupe magnification. The PIN location was measured (LS Starrett caliper, accuracy 0.01 mm) from its dorsal location to the dilator and the olecranon—radial styloid (ORS) reference line (Fig. 3). The anatomic findings were used to