The Bony Morphology of the Intertubercular Groove Influences the Development and Type Of Pulley Lesions

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Summary:
Medial and bilateral pulley lesions are associated with a dysplastic shallow intertubercular groove.

Data:
Purpose: To investigate the influence of the bony morphology of the intertubercular groove (IG) on the development of different types of biceps reflection pulley (BRP) injuries. Methods: 221 Patients with a preoperative diagnosis suspecting BRP injury, who underwent arthroscopy, were retrospectively analysed. Surgeons described the presence or absence as well as type of pulley injury (medial, lateral or bilateral) in the operative report. The intertubercular groove was evaluated on MRIs after a standardised triplanar reconstruction: The axial plane was reconstructed in 3 planes at the level of and in line with the highest points of both the greater and lesser tuberosity and aligned perpendicular to the floor of the IG. The IG depth, width, medial wall angle (MWA), lateral wall angle (LWA) and total opening angle (TOA) were measured. IG depth and width were expressed relative to the diameter of the average humeral head. All measurements were performed by two clinicians independently and averaged. Results: Of 166 included cases 43 had bilateral, 65 medial and 38 lateral BRP lesions as confirmed during arthroscopy. 20 patients had intact BRPs and represented the control group. The interrater correlation coefficient showed a high degree of reliability (0.843 – 0.955). Shoulders with a medial or bilateral BRP injury had a flatter MWA (38.8° or 40.0° vs. 47.9°, p < 0.001), wider TOA (96.1° or 96.6° vs. 82.6°, p < 0.001), greater width (12.5 or 12.3 vs. 10.8 mm, p < 0.01) and shallower depth (5.5 or 5.4 vs. 6.2 mm, p < 0.001) compared to the control group. There was no significant difference in the IG morphology of patients with medial vs bilateral BRP lesions. The IG morphology of those with lateral BRP injuries was not significantly different from those with intact BRPs in any measurements. The odds ratio for a medial or bilateral BRP injury when the TOA exceeded 95° was 6.8 (CI 3.04 – 15.2). Conclusion: A dysplastic type of IG morphology with a wide TOA, flat MWA, decreased depth and increased width is associated with the presence of medial and bilateral BRP injuries. A TOA of > 95° increases the odds for a medial or bilateral BRP injury 6.8-fold, which makes this a useful diagnostic marker. In contrast, lateral BRP injuries are not associated with dysplastic IG morphology. This knowledge can help inform a decision to perform concomitant biceps tendon surgery during rotator cuff repair.

Category: Elbow/Wrist/Hand

Does Translation of the Proximal Radius Relative to the Capitellum Predict Need for Collateral Ligament Reconstruction in Transolecranon Fracture Dislocations?

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Summary:
In this first clinical series, displacement of the proximal radius relative to the capitellum on initial radiographs predicted the need for collateral ligament repair in transolecranon fracture dislocations. 0-5mm displacement did not require ligament repair, 5-10mm sometimes required ligament repair and those with more than 10mm displacement all required ligament repair at the time of fixation.

Data:
BACKGROUND Biomechanical studies have shown inferior translation of the proximal radius relative to the capitellum in the sagittal plane can predict integrity of the collateral ligaments in a transolecranon fracture model, no studies have examined this in clinical practice. METHODS Nineteen consecutive transolecranon fracture dislocations were retrospectively reviewed. Data collection included: patient demographics, fracture classifications, surgical management and failure with instability. Distance between the centre of the radial head and the centre of the capitellum was measured on initial radiographs by 2 independent raters on several occasions. Statistical analysis was used to compare the mean inferior displacement between patients who required collateral ligament repair and those who did not. RESULTS Sixteen cases with a mean age of 57 years (32-85) were analysed with an inter-rater Pearson coefficient of 0.89. 3 cases were excluded due to inadequate imaging. Mean inferior displacement where collateral ligament repair was needed was 16.3mm (SD + 4.5) compared with 7.1mm (SD + 7.5) where collateral ligament repair was found not to be needed intra-operatively; p=0.024. 75% of cases with ligament repair were classified as Wrightington D+, Ring III or Jupiter IIB types. Older patients more likely required ligament repair (63 vs 50 years; p=0.108). In 3 cases, ligament repair was not performed initially but deemed necessary later. Of these, the mean inferior displacement was 14.48mm (SD + 2.50) and 2 of these required revision fixation. CONCLUSION This clinical study can offer some guidance of the impact of radiographic sagittal inferior displacement on management of transolecranon fracture dislocations. Where inferior displacement on initial radiographs exceeded 10mm lateral collateral ligament repair was required in all cases, except for one. If less than 5mm, ligament repair was not required in any of the cases. Older patients, associated radial head fractures and posterior apex injuries showed trend towards ligament repair.

Category: Elbow/Wrist/Hand

Muscle Activity of the Extensor Carpi Ulnaris in the Left and Right Wrists of Sub-Elite Golfers During the Golf Swing

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Summary:
EMG activity of lead ECU was higher in the trail arm in backswing and follow through, however EMG activity of trail arm was greater than the lead arm in downswing.

Data:
Background Wrist injuries are the most common upper limb injuries in sub-elite and elite golfers. The left wrist accounts for 67% of all wrist injuries, of which