Proximal radio-ulnar joint anatomy as a marker for radial head arthroplasty placement

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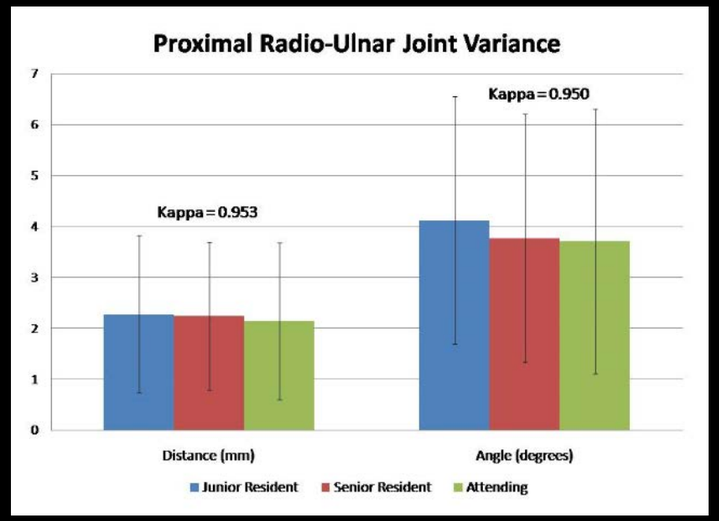
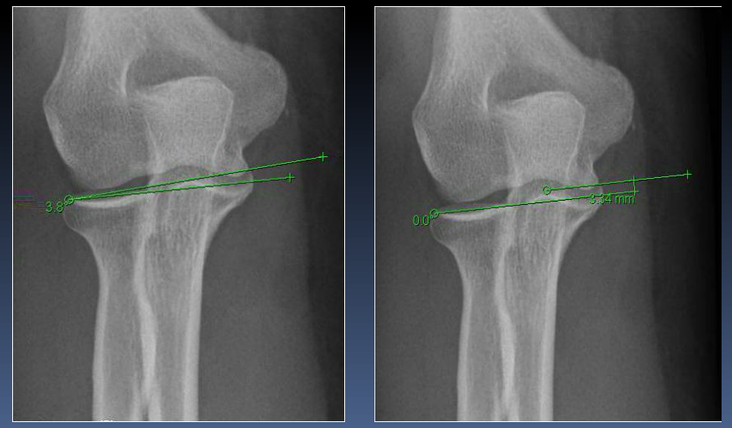
Introduction

- Radial head arthroplasty is a reliable treatment option for salvage of complex radial head trauma
- Incorrect sizing of the radial head can cause "overstuffing" and damage to the radiocapitellar joint
- X-rays of the elbow can define a normal variance of the proximal radioulnar joint to assist with sizing of the radial head implant.

Methods

- 50 elbow AP radiographs randomly selected for review. Patients with trauma from the humeral shaft to the DRUJ were excluded.
- AP coronoid-radial head height and angle were measured by two fellowship trained hand surgeons, one senior and one junior resident. The figure shows example calculations
- Inter-observer reliability was calculated for both distance and angle readings.





Sample X-rays showing calculation of the coronoid-radial head distance and angle.

Results

- The study group had 13 females, 37 males, average age 40±16 years.
- As shown in the chart, the average coronoid-radial head distance was 2.1±1.5 mm with Kappa 0.95
- Average Coronoid-radial head angle was 3.7±2.6 degrees with Kappa 0.95

Discussion

- The PRUJ has a consistent radiographic relationship with the coronoid on average 2.1 mm proximal to the radial head or at an angle of 3.7 degrees.
- The PRUJ relationship can be used as a marker for appropriate placement and sizing of radial head prostheses
- X-ray outcomes are similar to CT results and can be used to reduce radiation and cost

References

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