ISAKOS

International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine

12th Biennial ISAKOS Congress • May 12-16, 2019 • Cancun, Mexico

Paper #141

Lower Combined Cortical Thickness is Associated with Poorer Functional Outcomes after Arthroscopic Rotator Cuff Repair

Merrill Lee, MBBS, MRCS(Edin), SINGAPORE
Jerry Chen, MBBS, MRCS(Edin), MMed(Orth), SINGAPORE
Denny T. T. Lie, MBBS, FRCS, FAMS, SINGAPORE

Singapore General Hospital
Singapore, SINGAPORE

Summary:
In patients who have undergone arthroscopic rotator cuff repair, a lower Combined Cortical Thickness of the proximal humerus measured on preoperative radiographs is associated with poorer functional outcomes up to 24 months postoperatively.

Abstract:

Recent studies have shown that reduced bone mineral density (BMD) independently affects bone-tendon healing after rotator cuff repair, possibly by suture anchor loosening/pull-out before adequate tendon-to-bone healing can occur, or by having a negative impact on overall healing biology after surgical repair. The Combined Cortical Thickness (CCT), a radiographic parameter measured on conventional radiographs, has been described as a reliable and reproducible predictor for the BMD of the proximal humerus. An absence of literature on the effect of CCT on rotator cuff repair prompted this study to investigate the influence of this radiographic parameter on functional outcomes after arthroscopic rotator cuff repair.

Power analysis was performed based on the minimal clinically important difference (MCID) of Constant Shoulder Score (CSS). Between May 2010 to June 2016, 210 patients who underwent arthroscopic double row rotator cuff repair with subacromial decompression by a single fellowship-trained shoulder surgeon were included in this study. All patients had documented atraumatic, full thickness RCTs. An independent reviewer measured the CCT on preoperative radiographs performed within a year of surgery. These patients were evaluated preoperatively and followed up prospectively at 3, 6, 12 and 24 months postoperatively. Functional outcome was assessed with CSS, Oxford Shoulder Score (OSS), and UCLA Shoulder Score (UCLASS). Patients were first divided into two groups based on CCT: 1) = 4mm; and 2) < 4mm. Then, propensity scores generated using logistic regression were used to adjust for confounding variables of body mass index (BMI), age, and gender, allowing matching of patients in each group in a 1:1 ratio. The Student's Unpaired T-test was used to compare continuous variables between the two groups of patients, while the Pearson Chi-square test was used for categorical variables.

After propensity score matching for the abovementioned preoperative variables, there were 70 patients in each group. Preoperative functional scores were comparable between both groups. At 12 months follow-up, the CSS, OSS and UCLASS were 7±1, 3±1, and 2±1 points poorer in the patients with lower CCT (p=0.003, p=0.014, p=0.019 respectively). The difference in both CSS and OSS at 12 months were greater than the known MCID of both scores.

At 24 months follow-up, CSS and OSS remained 5±1 and 2±2 points poorer in the patients with lower CCT (p=0.016 and p=0.033 respectively). Only the UCLASS was comparable between the two groups of patients (p=0.315).

This study represents the only series available in the current literature that attempts to investigate the influence of CCT on functional outcomes after arthroscopic rotator cuff repair. The authors conclude that a CCT of < 4mm is associated with statistically significant poorer functional outcomes at both 12 and 24 months follow-up.