Abstracts

Luciano Rossi PhD ARGENTINA
Rodrigo Nicolas Brandariz MD ARGENTINA
Ignacio Tanoira MD ARGENTINA
Nicolaus Piuza MD UNITED STATES
Maximiliano Ranalletta MD ARGENTINA

Summary:
Improvement in symptoms and functional outcomes after PRP subacromial injections were significantly worse in patients who had a Partial thickness rotator cuff tears compared with patients who had an isolated tendinopathy.

Data:
Purpose: The purpose of this study was to compare the effect of subacromial leukocyte-rich PRP injections in patients with isolated rotator cuff tendinopathy (RCT) and those with partial thickness rotator cuff tears (PTRCTs) based on functional outcomes, pain improvement, sleep disturbances, and return to sports.

Materials and Methods: Between November 2019 and March 2021, 150 participants underwent PRP injections in our institution for refractory rotator cuff tendinopathy (105 RCTs and 45 PTRCTs). The American Shoulder and Elbow Surgeons (ASES) score, The visual analog scale (VAS) for pain, the Single Assessment Numeric Evaluation (SANE), and The Pittsburgh Sleep Quality Index were evaluated at 2, 6, and 12 months follow up. Return to sports was also evaluated. An ultrasound examination was performed to evaluate structural outcomes 12 months after the injection. Results: The mean age was 36.6 years (±9.08). Overall, the ASES, VAS, SANE, and Pittsburgh scores showed statistical improvement after the injection (P < .01). Specifically, the improvement in the ASES score which was the primary outcome measure was significantly greater in the group without tears than in the group with PTRCTs at all follow-up times. Moreover, 94% of the patients in the isolated RCT group and 49% in the PTRCT group achieved a substantial clinical benefit at 12 months follow up. Ten out of the 50 patients (20%) who received PRP injections due to a partial RC tear underwent surgery due to lack of clinical improvement. Conclusions: Subacromial PRP injections produced a significant improvement in shoulder function, pain and sleep disturbances in most patients with RCT refractory to conservative treatment that was maintained up to 12-month follow-up. Moreover, most patients returned to sports at the same level they had previous to the injury. However, improvement in symptoms and functional outcomes were significantly worse in patients who had a PTRCT compared with patients who had an isolated tendinopathy. Level of Evidence: Prospective Cohort study. Level of evidence II

Category: Shoulder - Rotator Cuff

Clinical Outcomes and Tendon Lengthening After Arthroscopic Rotator Cuff Repair

Abstract ID# 22403

All Authors:
Yohei Harada MD, PhD JAPAN
Shin Yokoya MD, PhD JAPAN
Yasuhiro Sumimoto MD JAPAN
Nobuo Adachi MD, PhD JAPAN

Summary:
It was a common phenomenon that the shortened supraspinatus tendon appeared to be lengthened after rotator cuff repair, and the tendon lengthening did not affect postoperative outcomes such as shoulder motion, clinical scores, and postoperative pain; however, the amount of the lengthening had negative weak correlation with abduction strength index.

Data:
Introduction: There is a phenomenon in which the tendon appears to be extended after rotator cuff repair. However, it is unclear in which cases tendon extension occurs and how the degree of extension affects the surgical outcome. This study aimed to evaluate pre- and postoperative musculotendinous junction (MTJ) and tendon length on magnetic resonance imaging (MRI) and to assess the postoperative tendon lengthening and its impact on postoperative outcomes. Methods: We reviewed 109 patients with good repair integrity (Sugaya type I and II) after arthroscopic rotator cuff repair. Patients whose supraspinatus tendons were simply pulled out laterally without any additional procedures were included. They underwent serial MRI before surgery and at 3, 6, and 24 months after surgery. The location of the MTJ and the supraspinatus tendon length were measured. Clinical evaluation was conducted 2 years after surgery, including the range of shoulder motion, shoulder strength index (affected/unaffected strength), Constant score, University of California, Los Angeles (UCLA) score, and pain numeric rating scale (NRS). The characteristics of the preoperative tendon, change in tendon length over time, amount of the lateral shift of MTJ location and tendon length, and impact of tendon lengthening on postoperative clinical outcomes were analyzed.

Results: The preoperative tendon retraction significantly correlated with the MTJ location (r = −0.75; p < 0.0001) and preoperative tendon length (r = −0.46; p < 0.0001). Tendon length at 3, 6, and 24 months (after surgery) was significantly longer than those before surgery (26.7 ± 5.8 mm, 27.9 ± 6.6 mm, 28.5 ± 5.6 mm, and 21.5 ± 5.1 mm, respectively). From before surgery to 24 months after surgery, the MTJ location moved 8.4 ± 8.6 mm laterally and the tendon extended 7.0 ± 6.1 mm. A significant and weak negative correlation was found between tendon lengthening and the abduction strength index (r = −0.22; p = 0.03); however, no significant correlation with pain, range of shoulder motion, external rotation strength index, Constant score, and UCLA score was found. Multiple linear regression analysis also showed that tendon lengthening was only associated with the abduction strength index (standardized coefficient = −0.20, p = 0.03). Conclusions: In this study, preoperative MRI showed that the more retracted the cuff tear, the more medialy retracted the MTJ and the shorter the tendon length. With successful tendon repair, the shortened tendons appeared to be lengthened over time after surgery, extending an average of 7.0 mm at 2 years after surgery, and larger preoperative cuff tears appeared to have more postoperative tendon lengthening and lateral shift of MTJ location. The tendon lengthening did not affect postoperative pain, range of motion, or clinical scores; however, the amount of tendon lengthening had a weak negative correlation with the abduction strength index. Tendon elongation may decrease the tension of the supraspinatus muscle belly, resulting insufficient recovery of strength.

Category: Shoulder - Rotator Cuff

A Randomised Controlled Trial Of Autologous Tenocyte Versus Corticosteroid Injection for Partial Thickness Rotator Cuff Tears and Impingement Syndrome

Abstract ID# 22488
All Authors:
Allan Wang FRACS, PhD, FAOrthA AUSTRALIA
Jay R. Ebert PhD AUSTRALIA
Jane Fitzpatrick MBBS, PhD, FASEP, MBA AUSTRALIA
Jeff Hughes MBBS, FRACS AUSTRALIA
Clair M. Lee PhD AUSTRALIA
Ming-Hao Zheng PhD, DM, FRCPath, FRCPA AUSTRALIA

Summary:
This is the first Level 1 prospective randomised controlled trial demonstrating that Autologous Tenocyte Injection (ATI) have shown that cultured tenocytes can synthesise extracellular matrix and facilitate healing of damaged tendon tissue. Therefore, ATI may be an effective treatment for interstitial cuff tears. This study presents the results from the first randomised controlled study to investigate the safety and efficacy of ATI compared to corticosteroid injection (CS) as treatment for tendinopathy and interstitial tears of the rotator cuff.

Data:
Introduction: Intersitial supraspinatus tears can cause persistent subacromial impingement symptoms despite non operative treatment. Preclinical and clinical studies of Autologous Tenocyte Injection (ATI) have shown that cultured tenocytes can synthesise extracellular matrix and facilitate healing of damaged tendon tissues. Therefore, ATI may be an effective treatment for interstitial cuff tears. This study presents the results from the first randomised controlled study to investigate the safety and efficacy of ATI compared to corticosteroid injection (CS) as treatment for tendinopathy and interstitial tears of the rotator cuff.

Methods: Eligible participants were randomised to receive ATI to the interstitial tear or CS to the subacromial bursa in a 2:1 ratio, under ultrasound guidance. Inclusion criteria were duration of symptoms >6 months, magnetic resonance imaging (MRI) confirmed intrasubstance supraspinatus tear and previously undergone physiotherapy and at least one CS injection. Assessments were undertaken pre-treatment and at 1, 3, 6 and 12 months post-treatment, including the Constant Score, Visual Analogue Pain Scale (VAS) and American Shoulder and Elbow Surgeons Assessment (ASES). 3 T MRI was performed at baseline, 6 and 12 months post treatment. Results: Thirty participants were enrolled (19 randomised to ATI and 11 to CS). The mean age of enrolled participants was 50.5 years (SD 8.5, range 30.2-63.3) and there were 10 female and 20 male participants. Mean duration of shoulder symptoms was 21.8 months (SD 12.1, range 7-48). No pre-treatment group differences (P>0.05) existed. The ATI group performed significantly better in the Constant Score at 1 (p=0.020, ATI = 81.8, CS = 67.6), 6 (p=0.026, ATI = 84.9, CS = 71.1) and 12 (p=0.024, ATI = 86.5, CS = 65.4) months, reported better (p<0.05) VAS scores at all post-treatment time-points and reported better ASES scores at all timepoints including 6 (p=0.012, ATI = 86.5, CS = 65.4) months, reported better (p<0.05) VAS scores at all post-treatment time-points and reported better ASES scores at all timepoints including 6 (p=0.012, ATI = 86.5, CS = 65.4) months.