regeneration of tendon in a chronic rotator cuff tear (RCT) model of rabbit. Method: In vitro, the cellular properties as well as the expression profiles of growth factors of BMAC were analyzed. The multi-lineage differentiation potential of BMAC with different carriers (atelocollagen and poly-deoxyribonucleotide) was also assayed. In vivo, sixty-four rabbits were randomly allocated 4 groups (n = 16 each). To create the chronic RCT model, we induced complete supraspinatus tendon tears in both shoulders, and left them untreated for 6 weeks. All transected tendons were repaired in a transossseous manner with saline injection in group A, only BMAC injection in group B, BMAC + poly-deoxyribonucleotide (PDRN) injection in group C, and BMAC + atelocollagen injection in group D. Genetic analysis was performed at 4 weeks after repair (8 rabbits per group), and the biomechanical analysis was performed at 12 weeks after repair (8 rabbits per group). Results: In vitro, the successful multi-lineage differentiations of BMACs were achieved under the both PDRN and atelocollagen environments, forming multiphase tissues with tendon and cartilage-like regions, and there were no differentiation differences between two carrier environments. In vivo, groups with carriers (group C and D) showed higher collagen type Ia1, bone morphogenetic protein 2, and aggrecan expressions than the control groups without any carrier (P < 0.006, 0.014 and 0.015, respectively) at 4 weeks after repair. There was no difference between group C and D. For the biomechanical evaluation, group D showed a significantly higher load-to-failure rate than the other groups (P < 0.001) at 12 weeks after repair. Conclusion: BMAC with two different carriers could effectively achieve the multi-lineage differentiations and gene expressions, compared to those without carrier, at the early phase. However, the combination of BMAC and atelocollagen finally had more superior tendon-to-bone healing effects in a RCT model of rabbit.

Category: Shoulder - Rotator Cuff

Superior Capsular Reconstruction Using An Acellular Dermal Xeno- Or Allograft for the Treatment of Irreparable Posterosuperior Rotator Cuff Tears: Clinical and Radiographic Outcome at Minimum 2-Year Follow-Up

Abstract ID# 23248

All Authors: Lorenz Fritsche MD GERMANY
Maximilian Hinz MD GERMANY
Hannes Degenhardt MD GERMANY
Lukas Nawid Muench MD GERMANY
Marco-Christopher Rupp MD GERMANY
Sebastian Siebenlist MD, MHBIA, Prof. GERMANY
Bastian Scheiderer MD GERMANY

Summary: Superior capsular reconstruction leads to an improvement of pain and shoulder function in a cohort with irreparable posterosuperior rotator cuff tears.

Data: Purpose: The purpose of this study was to evaluate the clinical and radiological outcome following superior capsular reconstruction (SCR) as a salvage procedure for patients with irreparable posterosuperior rotator cuff tears. It was hypothesized that SCR would lead to a significant reduction in pain and improvement of shoulder function, but that a low rate of graft integration would be observed. Material and Methods: Patients with irreparable posterosuperior rotator cuff tears, who underwent SCR with an allograft or xenograft (porcine xenograft) between the 05/2018 and 03/2020, were eligible for participation. Pre- and minimum 24 months postoperatively, patient-reported outcome measures (PROMs; American Shoulder and Elbow Society Score (ASES), Subjective Shoulder Value (SSV), Visual Analog Scale (VAS) for pain) and shoulder range of motion were evaluated. Additionally, isometric abduction, flexion, and external rotation strength was tested postoperatively using an isokinetic dynamometer and compared to the contralateral side. Lastly, magnetic resonance imaging was performed to evaluate graft integration. The pre-to-postoperative change in PROMs and side-to-side difference in ROM as well as isometric strength were tested for statistical significance. Results: In total, 21 patients (mean age 52.6 ± 9.4 years; 59.1% male) were included in the study. In 12 cases (54.5%) an allograft and in 9 cases (45.5%) a xenograft was used. At follow-up (33.6 ± 7.1 months), a significant improvement of the ASES Score (38.0 [interquartile range 21.5-59.0] vs. 70.0 [62.5-95.0]; P < 0.001) and the SSV (70 [50-80] vs. 95 [77.5-100]; P < 0.004) as well as a significant reduction in pain (VAS for pain 6 [4-0.8] vs. 1 [0.0-2.0]; P < 0.001) were reported. Patients’ abduction (807 [45.0-100.0] vs. 145.07 [100-165.0]; P < 0.004) and flexion (907 [60.0-155.0] vs. 1507 [95.0-170.0]; P = 0.017) ROM significantly improved, whereas external rotation ROM did not change significantly (P = 0.775).

Abduction (p<0.001) and flexion (p<0.001) strength was significantly lower when compared to the contralateral side, but no significant difference was noted regarding external rotation strength (p>0.05). Magnetic resonance imaging revealed an SCR-graft integration in one case (5.9%). In total, 4 patients underwent revision surgery (2x lattisimus dorsi transfer, 2x reverse total shoulder arthroplasty), which was performed in the xenograft group (44% revision rate for xenografts). Conclusion: In a cohort with irreparable posterosuperior rotator cuff tears, SCR achieved a significant improvement in shoulder function and reduction in pain. However, an overall low rate of graft integration and high rate of revision when using xenografts should be noted.

Category: Shoulder - Rotator Cuff

Clinical Results After Tendon Patch Grafting Using Distal Fascia Lata Autograft For Irreparable Massive Rotator Cuff Tears

Abstract ID# 21694

All Authors: Matteo Baldassarri MD ITALY
Diego Ginelli ITALY
Sarino Ricciardello MD ITALY
Alessandro Parma MD ITALY
Luca Perazzo MD ITALY
Roberto Buda Prof. ITALY

Summary: purpose of this study is to investigate the clinical outcomes and MRI results of autologous fascia lata transplantation in massive rotator cuff tears

Data: PURPOSE: To assess minimum 2-year clinical outcomes after open biologic patch augmentation with distal fascia lata (DFL) repair in patients with irreparable large or massive rotator cuff tears (RCTs) with low-grade fatty tendon degeneration (stage 1 or 2 according to Goutallier classification) MATERIALS & METHODS: This study included 32 patients (24 men and 8 women) with a mean age of 57 years (range, 26 to 68 years) with massive rotator cuff tears who underwent open rotator cuff repair with patch augmentation were identified after clinical and MRI evaluation. All selected patients have undergone conservative therapy with ineffective results before surgical treatment and have persistent pain and weakness. Outcomes data collected included Constant and American Shoulder and Elbow Surgeons scores (ASES). After patch augmentation, there were no complications, no adverse reactions to the patch, and no patients required further surgery. Minimum 2-year outcome scores were available for 30 of 32 (96.3%) shoulders after a mean follow-up period of 2.5 years (range, 2.0 to 4.0 years). The ASES score improved by 21.5 points especially the function component improved significantly when compared with their preoperative baselines (P < 0.05). Median patient satisfaction at final follow-up was 9/10 (range, 2 to 10). Regarding the Constant shoulder score an excellent grade was achieved in 27 patients of 32 form the baseline. Post-operative MRI at the final follow-up showed that 3 shoulders (8.3%) had retears of the repaired RC, 6 (12.5%) had graft tears but no retears of the repaired RC, and 25 (79.2%) had no graft tears or retears of the repaired tendon; furthermore no progression of fatty degeneration was detected. CONCLUSIONS: Biologic patch augmentation using distal fascia lata autograft was a inexpensive, safe and effective treatment method for patients with RCT with deficient rotator cuff tendons with low-grade fatty tendon degeneration.

Category: Shoulder - Rotator Cuff

The Change in Shoulder Muscle Strength After Superior Capsule Reconstruction for Reinforcement of Arthroscopic Rotator Cuff Repair

Abstract ID# 22447

All Authors: Satoshi Furuta MD JAPAN
Terushika Mihata MD, PhD JAPAN
Atsushi Takeda PT JAPAN
Akihiko Hasegawa MD, PhD JAPAN
Akihiro Uchida MD JAPAN
Akihiko Hasegawa MD, PhD JAPAN
Teruhisa Mihata MD, PhD JAPAN
Yusuke Noguchi MD JAPAN
Masashi Neo MD, PhD, Prof. JAPAN

Summary: Superior capsule reconstruction for reinforcement prevents postoperative retear of the repaired rotator cuff tendon and improves shoulder muscle strength.

Data: