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Introduction: Recent studies have raised concerns over accuracy of suture passage during arthroscopic remplissage. Our purpose was to validate if a previously described "safe zone" technique (SZ) for remplissage suture placement can improve accuracy of suture passage through the infraspinatus tendon.
Methods: An arthroscopic remplissage was performed on 6 cadaveric specimens using a recommended "safe zone" suture passage technique, described as a region at least 1 cm lateral to the posterolateral acromion (PLA) and no greater than 3 cm distal. Two anchors were placed following, which sutures were shuttled through the posterior rotator cuff arthroscopically. Specimens were then dissected to analyze the accuracy of suture passage. Results were compared with a control group of 6 separate specimens where suture passage was done with standard techniques without use of the "safe zone" (SZ).
Results: A total of 24 suture passes were performed for each group. 83.3% (20/24) passed through the infraspinatus tendon in the SZ group. This was significantly improved compared with the control group where only 25% (6/24) pierced through the infraspinatus tendon ($p<0.01$). 4.2% (1/24) of attempted passes in the SZ group passed through the muscle or musculotendinous junction compared with 75% (18/24) in the control group ($p<0.01$). Prevention of over-medialization significantly improved using the SZ as represented by both anchors having suture passage significantly more lateral (6-10mm) than the control group ($p<0.01$). There was also an improvement in the precision of suture passes with utilization of the SZ, as overall precision (SD) improved in 75% of passes.
Conclusion: We found the safe zone technique significantly improved accuracy of suture penetration into the infraspinatus tendon during arthroscopic remplissage. This technique also prevents over-medialization with regards to muscle penetration and over-distalization caused by teres minor penetration. The safe zone technique provides a reproducible method that may prove useful to prevent reported complications associated with remplissage.

Arthroscopic Superior Capsular Reconstruction for the Treatment of Massive Irreparable Rotator Cuff Tears in the Active Patient: 1-2 year Results

SS-06
May 18, 2017, 8:10 AM
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Introduction: To report our results in the first 58 shoulders in 57 patients undergoing arthroscopic superior capsular reconstruction for the treatment of the younger active patient with irreparable rotator cuff tears and rotator cuff arthropathy.
Methods: 57 consecutive patients presented with massive irreparable rotator cuff tear with retraction and atrophy (Goutallier grade 4). One patient has undergone bilateral arthroscopic superior capsular reconstruction. All had failed previous treatments including surgical and non-surgical modalities. These patients were too young and active (ages 42-67) for treatment with reverse total shoulder arthroplasty. All patients had unacceptable pain and weakness. The tears involved the supraspinatus or both supraspinatus and infraspinatus tendons. All patients were treated with arthroscopic superior capsular reconstruction with an acellular dermal allograft. Evaluation utilizing an internet based outcome tracking system, radiographic analysis and functional assessment to assess range of motion and dynamometric strength data utilized to track outcomes.
Results: At minimum of one year follow up, 56/57 shoulders are satisfied. One shoulder went on to revision to reverse total shoulder arthroplasty. Outcome data analysis demonstrated significantly improved scores in visual analog scores (3.6 to 1.3), Simple shoulder test (39 to 64), SANE Scores (31 to 65), ASES Function scores (14 to 21), and ASES Index scores (45 to 64) at minimal one year follow up. Active range of motion measurements in forward flexion and abduction as well as dynamometric strength measures have shown significant improvement as well. Radiographic analysis demonstrated significant improvement in acromiohumeral distance that was maintained over the postoperative period (1 to 2 years).
Conclusion: Arthroscopic superior capsular reconstruction with acellular dermal allograft has been a successful procedure in decreasing pain and improving function during this early postoperative period. As this procedure "burns no bridges", it is an attractive alternative to reverse total shoulder arthroplasty in the young active patient population.

Arthroscopic Superior Capsule Reconstruction (ASCR) vs. Latissimus Dorsi Transfer (LDT): a comparison of early clinical outcomes

SS-07
May 18, 2017, 9:15 AM
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Introduction: Arthroscopic superior capsule reconstruction (ASCR) has recently been introduced as an alternative to latissimus dorsi transfer (LDT) for treatment of irreparable rotator cuff tears in young patients. Our hypothesis was preliminary clinical outcomes for patients undergoing ASCR would not significantly differ from those of LDT patients for irreparable tears.
Methods: Patients who underwent either a LDT or ASCR with a minimum follow-up of 6 months (mean 26 month, range 6-92 month) were included. In the ASCR technique, a 3-mm acellular human dermal allograft was individually

customized to the size of the defect. Objective, subjective, and demographic data were prospectively collected and retrospectively reviewed. ASES, SANE, QuickDASH, SF-12 and satisfaction outcome measures were collected pre and post-operatively.

Results: 34 patients (13 women, 21 men, mean 52 ± 7 years) were included in this study. 16 patients underwent ASCR and 18 patients underwent LDT. Failure of the repair occurred in 1 patient in the ASCR group (6.2%), who suffered a graft tear shown on MRI at 141 days postoperatively, and 2 patients (11%) in the LDT group, both whom progressed to rTSA. Two additional patients (11%) in the LDT group had further surgery around 1-year postoperatively - an arthroscopic cuff repair and hardware removal operation. In those who did not fail, pain significantly decreased postoperatively ($p<0.05$) in both groups. Only patients who underwent ASCR had a statistically significant functional improvement ($p=0.002$ vs. $p=0.161$). Mean change in abduction and flexion were -7.3° and 0.6° respectively in the LDT group, compared to 56.0° and 21.7° respectively in the ASCR group. At final follow-up, satisfaction was a median 8/10 points in both groups.

Conclusion: Patients who underwent ASCR had significantly improved postoperative scores and range of motion, compared to those who underwent LDT, but longer follow-up is required.

Influence of Preoperative Musculotendinous Junction Position on Rotator Cuff Healing After Double-Row Repair

SS-08

May 18, 2017, 9:20 AM

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Introduction: The purpose of this study was to determine the effect of the preoperative position of the musculotendinous junction (MTJ) on rotator cuff repair healing after double-row repairs.

Methods: Preoperative and postoperative MRIs were reviewed of 42 patients undergoing arthroscopic double-row rotator cuff repair. Preoperative MRIs were evaluated for anteroposterior tear size, tendon retraction, tendon length, muscle quality, and MTJ position with respect to the glenoid. The position of the MTJ was referenced off the glenoid face as either lateral or medial. Postoperative MRIs were evaluated for healing, tendon length, and MTJ position.

Results: 36 of 42 tears (86%) healed, with 27 of 31 small/medium tears (87%) and 9 of 11 large/massive tears (82%) healing. Repairs that failed to heal did have a significantly more medialized preoperative MTJ position (1.3 mm vs. 9.9 mm lateral to the glenoid, $p = 0.033$). 94% of tears that had a preoperative MTJ lateral to the face of the glenoid healed, while only 56% of tears that had a preoperative MTJ medial to the face of the glenoid healed ($p=0.0135$). Results from univariate regression analysis indicated that a preoperative MTJ medial to the glenoid face was correlated with worse tendon healing ($p=0.047$). The measured tendon length increased an average of 14.4 mm in patients who healed compared to shortening 6.4 mm in patients that did not heal ($p<0.001$). The MTJ lateralized an average of 6.1 mm in patients who healed compared to medializing 1.9 mm in patients who did not heal ($p=0.026$).

Conclusion: Preoperative MTJ position is predictive of postoperative tendon healing after double-row rotator cuff repair. The glenoid face can be used as a marker to reference MTJ position and predict postoperative healing rates. If the tendon heals, healing typically occurs with some tendon lengthening and some MTJ lateralization.

Higher Critical Shoulder Angle Increases the Risk of Re-tear after Rotator Cuff Repair

SS-09

May 18, 2017, 9:25 AM

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Introduction: No evaluation has been done on CSAs relationship with re-tear after repair. Our purpose was to evaluate if higher CSA is associated with re-tears after rotator cuff repair (RCR).

Methods: This was a retrospective review of 76 patients who had undergone RCR with postoperative ultrasounds. Ultrasounds were graded no re-tear (NT), partial thickness re-tear (PT) or full thickness re-tear (FT). Preoperative radiographs were used to measure CSA, glenoid inclination (GI), lateral acromial angle (LAA) and acromion index (AI).

Results: Average age was 61.9 yrs (45.3-74.9). On ultrasound, 57 shoulders (74.0%) had NT, 11 (14.2%) had PT, and 8 (10.3%) had FT. There was no significant difference in re-tear rate by age, gender or tension of repair. Average CSA for the NT group was significantly lower at 34.3±2.9 deg than FT group at 38.6±3.5 deg ($P<0.01$). If CSA was greater than 38 degrees the odds ratio of having a full thickness re-tear was 14.8 ($p<0.01$). In addition, higher CSA inversely correlated with postoperative ASES scores ($p<0.03$). Average glenoid Inclination was significantly lower in the NT group at 12.3±2.7 deg compared to 17.3±2.6 deg in the FT group ($p<0.01$). If glenoid inclination was greater than 14 degrees the odds ratio of having developing a FT re-tear was 15.0 ($p<0.01$).

Conclusion: At short-term follow up, higher CSA significantly increased the risk of a full thickness re-tear after rotator cuff repair. Also, increasing CSA correlated with worse postoperative ASES scores. This radiograph marker may help manage expectations for rotator cuff tear patients.