The One- to Five-Year Results of Superior Capsule Reconstruction Using Doubled Dermal Allograft for Irreparable Rotator Cuff Tear

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Disclosure

• Abilash Thimmegowda - No conflict
• James Childs - No conflict

• Martyn Snow
  – Consultant Smith and Nephew, Medical advisory board member Ortho RTI, Royalties Arthrex
Superior capsule reconstruction

- Irreparable rotator cuff tear, with intact subscapularis.

- Mihata reported excellent short term results with low failure rates

- Facia Lata graft, doubled or tripled to create 6-10mm thick graft, 6x3cm in size.
Clinical Results of Arthroscopic Superior Capsule Reconstruction for Irreparable Rotator Cuff Tears

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- Total of 23 patients
- Mean active elevation increased significantly from 84 to 148 (P < .001)
- External rotation increased from 26 to 40 deg (P < .01).
- Acromiohumeral distance (AHD) increased from 4.6 +/- 2.2 mm preoperatively to 8.7 +/- 2.6 mm postoperatively (P < .0001).
- There were no cases of progression of osteoarthritis or rotator cuff muscle atrophy.
- 83.3% had no graft tear or tendon re-tear during follow-up (24 to 51 months).
- ASES score improved from 23.5 to 92.9 points (P < .0001).
Dermal allograft

• Facia lata harvest results in donor site morbidity and has a cosmetic deformity.

• Facia lata graft require a significant amount of graft preparation.

• Dermal allografts are a more convenient option however concerns exist regarding integration, post implantation creep and graft failure.
My Surgical Technique

- Double loaded 2.8 Q-Fix on glenoid, 2 simple sutures and a double pulley
- 2 Helicoil anchors on humerus - double pulley with sutures
- 2 Lateral row anchors using tapes to create double row suture bridge.
- Doubled max force extreme GraftJacket.
- Infraspinatus sutured posteriorly
- Post surgery patient immobilised for 6 weeks in abduction sling
Discussion points

• Doubled Human Dermal patch - Max force / Extreme
  - $182N \times 2 = 364N / 400N+$
  - Good biology, convenient, avoids morbidity
  - Porous surfaces superior and inferior
  - MUST be pre-tensioned to reduce post implantation creep

• Fixed superior migration requires capsular release.

• Infraspinatus integrity important to success and should be repaired if torn
Study population

• 45 patients reviewed with mean fu of 30 months (12-65)
• Mean age 62.5yrs (53-70)
• All irreparable tears at arthroscopy or >grade 3 fatty atrophy of supraspinatus.
• Intact or repaired subscapularis and no OA.
• Failure defined as revision surgery or <10% improvement in baseline ASES
Results

• ASES improved from 22.2 (SD 22.1) to 85.5 (15.6) p<0.001

• 15 (33%) associated subscapularis repairs
• 20 (44%) associated infraspinatus rotator cuff repairs
• No acute surgical complications
• 1 (2%) post op stiffness, resolved with physio at 8 months

• 2 (4%) current clinical failures to date.
Failure 1 - early failure at 6 months

- 61 year old female underwent SCR for massive re-tear following previous cuff repair. At surgery a large and retracted tear of subscapularis was repaired.

- 6 months post surgery, pain had not improved and MRI demonstrated failure of the SCR.

- Patient underwent reverse shoulder replacement at 16 months post surgery.
Failure 2 - Clinical failure at 3 years

- 62yr old female 3 years following SCR presents with increasing pain and loss of range of motion.

- MRI confirmed dermal graft rupture at the level of the GHJ

- Good integration of graft with subsequent fatigue failure of graft.
In conclusion

• Arthroscopic SCR performed using a doubled layered dermal allograft resulted in good clinical improvements in the short to midterm in patients with irreparable rotator cuff tears.

• The procedure has associated minimal morbidity

• Compared to tendon transfer SCR does not distort anatomy and the rehabilitation is significantly easier.

• Further long term follow-up is required to confirm the place of SCR in the treatment algorithm for irreparable rotator cuff tears.