INTRODUCTION

Arthroscopic rotator cuff repair (RCR) is an established & effective treatment option for symptomatic rotator cuff tears (RCTs). Surgical repair techniques have continued to evolve over time, attempting to reduce re-tear rates and improve functional outcomes. First, double-row RCR techniques, then transossseous-equivalent (TOE), interconnected RCR techniques, & most recently, knotless RCR techniques utilizing knotless medial anchors instead of knotted anchors to improve vascular inflow have been introduced. Little is known about whether & how a knotted suture-bridging or a knotless tape-bridging technique affects the functional outcome of TOE RCR (Figure 1). The aim of this study was to evaluate outcomes of two commonly used TOE arthroscopic RCR techniques for full-thickness supraspinatus tendon tears (FTST) using a robust multi-predictor model.

METHODS

- This was an IRB-approved retrospective outcomes study with prospectively collected data.
- Patients treated between 11/2005–10/2010 were included
  1. at least 18 years of age at surgery
  2. had a FTST tendon (with or without posterior extension into the infraspinatus tendon)
  3. underwent arthroscopic RCR using either a knotted suture-bridging or knotless tape-bridging TOE RCR technique.
- 155 shoulders in 151 patients (109 men, 42 women; mean age 59±10 years) who underwent arthroscopic RCR of FTST using either a knotted suture-bridging (KSB) or a knotless tape-bridging (KTB) TOE technique were included.
- ASES & SF-12 PCS scores assessed at a minimum of 2 years post-op were modeled using propensity score weighting in a multiple linear regression model.
- Patients able to return, underwent a follow-up MRI for evaluation of cuff integrity.
- Clinical failures were defined as the requirement for revision RCR.

RESULTS

- Outcomes data were available for 137 shoulders (88%; n=35/41 KSB; n=102/114 KTB). 7 shoulders (5.1%) underwent revision rotator cuff repair & were considered failures
  1. n=2/41, 4.9% with KSB repair; n=5/114, 4.4% with KTB repair.
  2. Mean follow-up was 2.9 years (range, 2.0-5.4 years) for 130/148 remaining shoulders (87.8%);
  3. n=33/39 with KSB repair & n=97/109 with KTB repair.
- Overall, post-op outcome scores were significantly improved when compared to pre-op baselines (p<0.05), with a median post-op ASES score of 98 (range 50, 100).
- Results from the multiple linear regression models for ASES & SF-12 PCS indicated that a higher pre-op baseline score & a longer follow-up had a positive effect, whereas a previous RCR & workers' compensation claims (WCC) had a negative effect.
- The repair technique, age, gender & the number of anchors used for the RCR had no significant influence.
- 52 patients returned for a follow-up MRI at a mean of 4.4 years post-op.
  1. 12/52 (23%) shoulders with follow-up MRI had RCR with the KSB technique and 40 shoulders (77%) with the KTB technique.
- Overall, in 7/52 shoulders a full-thickness RCT was diagnosed (13.5%).
- The re-tear rate was 33.3% (n=4/12) in shoulders with KSB repair and 7.5% (n=3/40) in shoulders with KTB repair. Patients with a KSB RCR were significantly more likely to have an MRI-diagnosed full-thickness rotator cuff re-tear (p<0.05).

CONCLUSIONS

Excellent outcomes can be achieved a minimum of 2-years following arthroscopic KSB or KTB TOE RCR of FTST. The pre-op baseline scores, a prior RCR, WCC & the length of follow-up significantly influenced the outcome scores. The repair technique did not effect final functional outcomes but patients with KTB TOE RCR were less likely to have a full-thickness rotator cuff re-tear.

REFERENCES


Table 1. Summary of patient reported outcome scores at minimum 2-year follow-up (*= statistical significance)

<table>
<thead>
<tr>
<th></th>
<th>KSB</th>
<th>KTB</th>
<th>All Patients</th>
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<tbody>
<tr>
<td><strong>Pre-op ASES score</strong></td>
<td></td>
<td></td>
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<tr>
<td>Median [min, max]</td>
<td>57</td>
<td>60</td>
<td>58 [15, 92]</td>
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<tr>
<td><strong>Post-op ASES score</strong></td>
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<tr>
<td>Median [min, max]</td>
<td>97</td>
<td>98</td>
<td>98 [35, 100]</td>
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<tr>
<td><strong>Pre-op SF-12 PCS score</strong></td>
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<td></td>
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<tr>
<td>Median [min, max]</td>
<td>51</td>
<td>44</td>
<td>45 [23, 58]</td>
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<tr>
<td><strong>Post-op SF-12 PCS score</strong></td>
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<tr>
<td>Median [min, max]</td>
<td>57</td>
<td>56</td>
<td>56 [28, 62]</td>
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