Outcomes After Repair of Quadriceps Tendon Rupture in Patients 40 Years of Age and Younger

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Disclosures

• The authors have no relevant disclosures.

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Background

• Quadriceps tendon rupture (QTR)
  – A rare injury that typically occurs in males over 40 and those with medical comorbidities (thyroid disease, diabetes, hyperlipidemia, etc.)

• Outcomes in young patients are limited to case reports and small series
Background

• The purpose of this study was to review the clinical outcomes of patients who underwent quadriceps tendon repair at 40 years of age or younger.

• We hypothesized that after QTR repair, patients 40 and under would be able to return to a high level of function and activity.
Methods

• Level IV, Retrospective Case Series

• Patients who underwent quadriceps tendon repair between January 2009 and December 2017 were retrospectively identified
  – Patients were included if they were 40 years of age or younger at the time of surgery and sustained an isolated, complete QTR

• The presence of predisposing comorbidities was noted

• Patients were contacted to complete a custom survey, the International Knee Documentation Committee (IKDC), Lysholm, and Tegner Activity Level surveys.

• Chi-squared analysis, Mann-Whitney U, and Kruskal-Wallis tests were performed
  – Significance set at $p < 0.05$. 
Results

- 49 patients identified
- 40 (81.6%) available for follow-up
- Mean follow-up of 5.9 + 2.4 years (range 2.5-11.3 years)

<table>
<thead>
<tr>
<th>Baseline Demographics</th>
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<tbody>
<tr>
<td><strong>Age (Range)</strong></td>
<td>32.4 ± 6.9 (15-40)</td>
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<tr>
<td><strong>Sex</strong></td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>35 (87.5%)</td>
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<tr>
<td><strong>BMI</strong></td>
<td>30.8 ± 6.6</td>
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<tr>
<td><strong>Comorbidities</strong></td>
<td>Yes</td>
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<td>7 (17.5%)</td>
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<tr>
<td><strong>Athletes</strong></td>
<td>Yes</td>
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<tr>
<td></td>
<td>20 (50%)</td>
</tr>
<tr>
<td><strong>Employed</strong></td>
<td>Yes</td>
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<tr>
<td></td>
<td>35 (87.5%)</td>
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</tbody>
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Results

IKDC:
Mean: 74.0 ± 22.8
Range: 26.4 - 100

Lysholm:
Mean: 86.2 ± 19.9
Range: 30 – 100
75% with good or excellent outcomes
Results

Tegner Activity Level
• Pre-op mean: 6.3 ± 1.6
• Post-op mean: 5.0 ± 2.0
  – Higher: 7.5%, Same: 35%, Lower: 57.5%

Pain
• VAS: 1.5 ± 2.0

% Contralateral
• 82.6 ± 14.0%

% Satisfaction
• 88.7 ± 20.3%
Results

Return to sport
• 20 athletes
  – 3 professional, 3 competitive (HS, college), 14 recreational
• 65% (13/20) RTP at same or higher level
  – Returned at a mean 8.3 ± 4.7 months
• No difference in RTP between levels of play

Return to work
• 35 employed
  – 6 with extreme physical demand, 18 moderate, 11 mild
• 88.6% (31/35) returned at same or higher level
  – Mean 3.7 ± 3.2 months
• Those with extreme demand took longer to return
  – 5.8 vs 3.4 months (p = 0.04)
Results

- Patients ≤ 25-years-old had higher satisfaction ($p = 0.046$)

- Comparing good/excellent ($n = 30$) v fair/poor ($n = 10$), no difference in
  - Age at surgery ($p = 0.24$), age at follow-up ($p = 0.19$), months of follow-up ($p = 0.33$)
  - Athlete status ($p = 0.47$)
  - Comorbidity status ($p = 0.81$)
  - Worker’s Compensation status ($n = 5$), ($p = 0.17$)
  - Pre-operative BMI ($p = 0.39$)
  - Pre-operative Tegner Level ($p = 0.48$)
Results

• Complications
  – 50% complained of pain AND/OR stiffness
    • 40% (16/40) pain, 40% (16/40) stiffness
  – 12.5% (5/40) numbness
  – 7.5% (3/40) clicking

• Major complications
  – 1 re-rupture (2.5%) during the follow up period
  – 2 injuries to contralateral knee
  – 0 DVT, infections
Conclusion

• In previous reviews of QTR with older patients on average, Lysholm scores range from 85-92.5 \cite{3-9}
• Our results are at the lower end of the spectrum (86.2)
  – Unclear if due to demands, expectations, or other factors

• Limitations
  – Retrospective review – no pre-operative data, recall bias
  – Outcomes based on patients reported outcomes without in-person examination or strength testing

• Overall, patient reported outcomes are satisfactory but there is a high likelihood of being unable to return to sport and reporting pain and/or stiffness at follow-up
References


