Clinical and Functional Effects of Surgical Technique for Repair of Bucket Handle Meniscus Tears

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#17
Disclosures

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• Robert Magnussen, MD receives grant support from Biomet.
Background

• All-inside meniscus repair has recently been explored as an alternative to inside-out meniscus repair of bucket handle meniscus tears.

• Current evidence suggests there are comparable outcomes between inside-out and all-inside repairs for bucket handle meniscus tears. (1, 2)

• There are limited data that directly compare all-inside repair with inside-out repair.
Purpose and Hypothesis

Aim: To determine if there are clinical and/or functional differences between all-inside and inside-out repairs of bucket-handle meniscus tears.

Hypothesis: That there would be no difference between all-inside and inside-out repairs with regards to both failure rate and post-operative functional outcomes scores.
Methods and Study Design

- All bucket handle meniscus tear repairs from 2007 to 2017 were eligible for the study (n = 77).
- This cohort constituted the “All Bucket Handles” Group
  - Failure rates were evaluated by chart review and confirmed via phone
  - A likelihood ratio was calculated to compare failure rates between the two repair types
  - Logistic regression was used to evaluate the effect of implant number on failure rates
Methods and Study Design

- 9 all-inside repair patients were contacted for functional assessment.

- These were then double matched by concomitant procedure with inside-out repair patients.

- Patients were called and assessed for repeat surgery, KOOS, IKDC, and Marx Activity scale

- An independent sample T-test was calculated to compare the failure rates between all-inside and inside-out repairs
Results: All Bucket Handle Tears

Among all bucket handle patients (n=77), failure rate was not statistically different when comparing AI to IO ($\chi^2 = 0.2191, \ p= 0.6397$).

- Failure was also found to be independent of implant number (OR 0.96, 95% CI -0.46, 0.16; \( p = 0.339 \)) when controlling for BMI, age, and repair technique.

<table>
<thead>
<tr>
<th>Table 1: All Bucket Handles</th>
<th>All-Inside (n=19)</th>
<th>Inside-out (n=58)</th>
<th>Total/Statistical Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years) - Mean (SD)</td>
<td>31.98 (12.48)</td>
<td>25.59 (7.41)</td>
<td>27.41 (9.49)</td>
</tr>
<tr>
<td>Sex</td>
<td>M = 13 F = 6</td>
<td>M = 35 F = 23</td>
<td>M = 48 F = 29</td>
</tr>
<tr>
<td>BMI - Mean (SD)</td>
<td>30.04 (8.32)</td>
<td>26.53 (5.87)</td>
<td>27.49 (6.73)</td>
</tr>
<tr>
<td>Failure Rate</td>
<td>n = 3 (15.79%)</td>
<td>N = 12 (20.69%)</td>
<td>Likelihood ratio = 0.227 OR: 1.39 95% CI (0.347, 5.57)</td>
</tr>
</tbody>
</table>
### Table 2: Matched Pairs Clinical Outcomes

<table>
<thead>
<tr>
<th></th>
<th>All-Inside (n=9)</th>
<th>Inside-out (n=18)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td>39.74 (13.25)</td>
<td>25.63 (7.63)</td>
<td>30.34 (11.7)</td>
</tr>
<tr>
<td>- Mean (SD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td>M = 6</td>
<td>M = 8</td>
<td>M = 14</td>
</tr>
<tr>
<td></td>
<td>F = 3</td>
<td>F = 10</td>
<td>F = 13</td>
</tr>
<tr>
<td><strong>BMI</strong></td>
<td>28.38 (4.51)</td>
<td>26.71 (7.14)</td>
<td>27.2 (6.37)</td>
</tr>
<tr>
<td>- Mean (SD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Failure Rate</strong></td>
<td>n = 2 (22.22%)</td>
<td>n = 7 (38.89%)</td>
<td></td>
</tr>
</tbody>
</table>
Matched Pairs Functional Outcome Results

**Functional Outcome Scores**

- IKDC
- KOOS-ADL
- KOOS-Pain
- KOOS-QOL
- KOOS-Sport
- KOOS-Symptoms
- Marx Activity

Repair Technique:  
- All-inside
- Inside-out
Conclusions

- There is no significant difference in functional outcome scores between patients who underwent all-inside or inside-out repair.
- Also, there is no significant difference in failure rate between all-inside and inside-out repairs.
- Failure did not depend on implant number when controlling for age, BMI and repair technique.
References


Repair the Meniscus!

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Thank You

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