Meniscal Repair: Failure Rate And Clinical Outcomes With Minimum Two-Years Follow-Up

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Disclosure

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The authors have no financial conflicts to disclose
The purpose of our study was to evaluate the clinical outcomes and failure rate of a series of patients who underwent meniscal repair with at least two-years of follow-up.
Methods

Retrospective study. Meniscal repair surgery

Inclusion Criteria:
- Meniscal repair surgery
- Isolated repair or in association with ACL reconstruction
- Longitudinal and/or horizontal tears
- 2 years minimum follow-up

Exclusion Criteria:
- Meniscal root tears, ramp lesions, radial tears
- Meniscal repair combined with other than ACL reconstruction (E.g. Tibial Plateau Fracture or Multiligament Reconstruction)
Methods

Surgical Findings
Meniscus affected
Association with ACL reconstruction
Affected zone
Type y number of sutures

Clinical assessment
Failure Rate
Lysholm and IKDC scores
Return to sports
MRI evaluation
Results

169 Patients

- 49 Lost Follow up
- 10 Excluded
  - 6 root tears
  - 1 Tibial plateau Fracture
  - 2 Ramp lesion
  - 1 Radial tear

TOTAL 119 > 2 year Fup

71 Associated with ACL R
- 35 bucket-handle
- 25 only 1 all-inside suture

48 Isolated Meniscal Repair
- 59 Combined suture (not bucket-handle)
  - outside-in
  - all-inside
Results

6.75 years follow-up

Average age: 26 years (range 15-48)

Sex: 20♀ 98♂

Knee: right 68 / left 51

Return to sports: 7.8 months (range 2-19)

Surgical details: Type of sutures

- Outside-in: 48
- Inside-out: 16
- All inside: 29
- Combined: 26

Meniscus repaired
- Medial: 66%
- Lateral: 34%
Overall failure: **24 of 119 (20%)**

Overall time to failure: **20 months**

### Isolated vs associated with ACL-R

<table>
<thead>
<tr>
<th></th>
<th>Isolated</th>
<th>Associated with ACL-R</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>48</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>failure n (%)</td>
<td>11 (22%)</td>
<td>13 (18%)</td>
<td>0.53</td>
</tr>
<tr>
<td>Time to failure (months)</td>
<td>23</td>
<td>17</td>
<td></td>
</tr>
</tbody>
</table>

### Before 2014 - 2013 vs After 2014 - 2016

<table>
<thead>
<tr>
<th></th>
<th>2004 - 2013</th>
<th>2014 - 2016</th>
<th>( p )</th>
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</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>67</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>failure n (%)</td>
<td>18 (27%)</td>
<td>6 (12%)</td>
<td><strong>0.03</strong></td>
</tr>
<tr>
<td>Time to failure (months)</td>
<td>21</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

**MODIFICATION IN:**
- **surgical technique:** *inside-out > outside-in*
- **number of sutures**

### Bucket-handle lesions

**TOTAL:** **35**

Overall failure rate: **9 (26%)**

Time to failure: **20 months**

<table>
<thead>
<tr>
<th></th>
<th>2004 - 2013</th>
<th>2014 - 2016</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>23</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>failure n (%)</td>
<td>8 (36%)</td>
<td><strong>1 (8%)</strong></td>
<td><strong>0.03</strong></td>
</tr>
<tr>
<td>Time to failure (months)</td>
<td>22</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>
MRI evaluation

71 patients evaluated
- 24 re-operated (re-rupture)
- 47 asymptomatic
  - 36 informed as *normal* or *healed sutured meniscus*
  - 10 informed as *re-rupture* → 14% false positive

More than 14 mm gap is informed as re-rupture

MR informed as *healed sutured meniscus*

Second look arthroscopy

Patient reoperated for re-rupture ACL (revision ACL) 2.5 years post ACL-R and medial meniscus suture

Notice the stable posterior horn of the medial meniscus
## Discussion

<table>
<thead>
<tr>
<th>Group</th>
<th>Year</th>
<th>n</th>
<th>Follow-up (years)</th>
<th>Failure (%)</th>
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</thead>
<tbody>
<tr>
<td>Brisbane</td>
<td>2009</td>
<td>45</td>
<td>5</td>
<td>24</td>
</tr>
<tr>
<td>Seúl</td>
<td>2009</td>
<td>48</td>
<td>2</td>
<td>0</td>
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<tr>
<td>St’ Louis</td>
<td>2009</td>
<td>82</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Frankfurt</td>
<td>2010</td>
<td>42</td>
<td>8.8</td>
<td>15</td>
</tr>
<tr>
<td>Toronto</td>
<td>2013</td>
<td>2.571</td>
<td>2</td>
<td>9.7</td>
</tr>
<tr>
<td>Nueva York</td>
<td>2013</td>
<td>9.529</td>
<td>5</td>
<td>8.9</td>
</tr>
<tr>
<td>Iowa</td>
<td>2014</td>
<td>235</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>HIBA</td>
<td>2018</td>
<td>119</td>
<td>6.75</td>
<td>20</td>
</tr>
</tbody>
</table>

Similar results in overall failure rate

Failure rate since 2014: 12%

Greater number of sutures

Surgical technique: inside-out

More stable repairs?
Limitations and strengths

- Retrospective study ✗
- Lost follow-up: 30% ✗
- Same senior surgeon ✓
- Same rehabilitation protocol ✓
- > 2 years follow-up ✓
- Number of patients ✓
- Evaluated with MR ✓
Conclusion

General failure rate was 20%

Although, statistically significant difference was found before (27%) and after (11%) 2014

This could be consequence of a modification in the technique and the greater number of sutures used

MR evaluation could be misunderstood when evaluating meniscal repairs