Saucerization and Repair of Discoid Menisci with Peripheral Rim Instability: Intermediate Term Outcomes in Children and Adolescents

S. Clifton Willimon, MD
Michael T. Busch, MD
Melissa A. Christino, MD
Crystal A. Perkins, MD

Children’s Healthcare of Atlanta
Disclosure Information

S. Clifton Willimon, MD
Paid Consultant: Smith & Nephew
Research Support: Orthopediatrics

Michael T. Busch, MD
Research Support: Orthopediatrics

Melissa A. Christino, MD
No disclosures

Crystal A. Perkins, MD
Research Support: Orthopediatrics
• Discoid meniscus tears often involve horizontal cleavage tears of the central discoid component +/- PRI

• Historically, total meniscectomy was recommended as the treatment for a symptomatic discoid meniscus

• Meniscal preservation provides long-term benefits over resection


Peripheral Rim Instability (PRI)

- Sagittal MRI sequences of discoid lateral menisci with peripheral rim instability secondary to anterior (a) and posterior (b) meniscocapsular tears
- Bridging synovial tissue (arrow) does not adequately stabilize the meniscus and leads to displacement
Purpose

To describe the outcomes of pediatric and adolescent patients treated with saucerization and meniscocapsular repair of discoid menisci with peripheral rim instability
Methods

- Single center retrospective review
- 2013 – 1027

**Inclusion Criteria**
- Age < 18 years
- Discoid lateral meniscus with meniscocapsular tear treated with saucerization and repair
- Minimum 24 month follow-up

**Chart Review**
- Tear location and pattern
- Repair type (inside-out, outside-in, all-inside, hybrid)
  - Hybrid = 2 or more repair types

**Primary Outcomes**
- Revision meniscus surgery
- PROMs - Pedi-IKDC and Tegner
Results

• 32 knees, 30 patients
• 15 males, 15 females
• Mean age 12 years (5 – 17 years)
• Right knee 63%

• Tear Type
  • Post meniscocapsular = 16 (50%)
  • Ant meniscocapsular = 14 (44%)
  • Ant AND Post meniscocapsular = 2 (6%)
• Meniscocapsular repair + saucerization in all patients

<table>
<thead>
<tr>
<th>Repair Type</th>
<th>Number of patients (%)</th>
<th>Number of sutures (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside-In</td>
<td>10 (31)</td>
<td>3.8 (3 – 6)</td>
</tr>
<tr>
<td>Inside-Out</td>
<td>8 (25)</td>
<td>8.1 (3 – 13)</td>
</tr>
<tr>
<td>All-Inside</td>
<td>8 (25)</td>
<td>4.3 (2 – 7)</td>
</tr>
<tr>
<td>Hybrid</td>
<td>6 (19)</td>
<td>5.7 (2 – 13)</td>
</tr>
</tbody>
</table>
Results

- Mean follow-up 54 months (30 – 86 months)

- 3 knees (9%) had revision meniscus surgery
  - No statistically significant differences between knees that did or did not require a secondary surgery with respect to age, tear location, tear pattern, repair type, or number of sutures

- 9 patients (30%) had surgery for a contralateral symptomatic discoid meniscus during the follow-up period
Revision Surgery
n = 3 knees

- Patient #1
  - Persistent pain 11 months post-op with partial lateral meniscectomy of a new horizontal tear of the posterior horn
  - Original meniscocapsular repair well healed

- Patient #2
  - New injury 8 months post-op with repair of residual meniscocapsular tear of posterior horn

- Patient #3
  - Noncompliant with post-op restrictions after initial repair
  - Partial meniscectomy of a horizontal tear and revision repair of meniscocapsular tear of posterior horn and body
• PROMs obtained for 23 patients (94%) at final follow-up

• Pedi-IKDC
  • Mean 96
  • Range 82 – 100

• 89% of patients returned to the same or higher level of sport following surgery
• Saucerization of discoid lateral menisci with repair of meniscocapsular tears is associated with low rates of revision surgery and good intermediate-term outcomes

• PRI may be easily overlooked.
  • Synovial tissue, which is bridging, but not stabilizing the tear, may preclude detection of PRI with visualization alone
  • Careful assessment and probing of the anterior and posterior meniscocapsular junctions, thru both medial and lateral viewing portals, is important to detect PRI

• If tissue quality permits, meniscal preservation should be considered in all patients to avoid potential consequences of subtotal meniscectomy