Clinical outcomes for osteochondritis dissecans of lateral femoral condyle in each shape of lateral meniscus

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I have no financial conflicts to disclose.
Osteochondritis dissecans (OCD) of lateral femoral condyle (LFC) is often reported in combination with discoid lateral meniscus (DLM).
Treatment strategy for sole OCD is decided according to OCD stage and is obtained consensus.

However there is few reports for clinical outcomes for OCD of LFC with each shape of lateral meniscus (normal, incomplete DLM, complete DLM).
Purpose

To evaluate clinical outcomes for OCD of LFC with each shape of lateral meniscus

Material

- Eighty seven knees in 73 patients were diagnosed with symptomatic OCD of LFC.
- Of these 73 patients, **72 knees in 62 patients** (mean **9.9** years) who were estimated shape of lateral meniscus on MRI were enrolled in our study.
Methods

Our treatment strategy for OCD of LFC

- Conservative treatment
  - patients with stable OCD* and no meniscal symptom

- Operative treatment
  - patients with unstable OCD*, meniscal symptom or invalid conservative treatment

*OCD stage (stable(1-2)/unstable(3-5), according to Brückl classification)
Evaluation items

1: Shape of lateral meniscus in all patients

2: In each shape of lateral meniscus,
   age,
   OCD stage (stable/unstable),
   meniscal symptom,
   OCD healing rate by conservative treatment
   operation performing rate

3: Characteristics of patients with operation
Results 1
Shape of lateral meniscus

- Normal: 26 knees (36.6%)
- Complete: 22 knees (30.5%)
- Incomplete: 24 knees (33.3%)
- DLM: 46 knees (63.8%)
<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Normal</th>
<th>Incomplete</th>
<th>Complete</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>11.6</td>
<td>11.2</td>
<td>10.9</td>
<td></td>
<td>n.s.</td>
</tr>
<tr>
<td><strong>OCD stage</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Stable</td>
<td>22</td>
<td>22</td>
<td>13</td>
<td></td>
<td>n.s.</td>
</tr>
<tr>
<td>unstable</td>
<td>4</td>
<td>4</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Meniscal symptoms (%)</strong></td>
<td>25</td>
<td>4(16)</td>
<td>5(20.8)</td>
<td>16 (72.7)</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td><strong>OCD healing rate</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>by conservative treatment (%)</td>
<td>44</td>
<td>22 (84.6)</td>
<td>20 (83.3)</td>
<td>2 (9)</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td><strong>Operation (%)</strong></td>
<td>28</td>
<td>4(15.3)</td>
<td>4 (16.7)</td>
<td>20 (91)</td>
<td>p&lt;0.05</td>
</tr>
</tbody>
</table>
Results 3

Characteristics of patients with operation

<table>
<thead>
<tr>
<th>Total</th>
<th>conservative</th>
<th>operation</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>72</td>
<td>44 (61.1%)</td>
<td>28 (38.9%)</td>
<td></td>
</tr>
</tbody>
</table>

| Age | 8.9 | <  | 13.2 | P<0.05 |
| Closed physis | 0 | < | 7 | P<0.05 |
| Meniscal symptoms | 6 (13.7%) | < | 18 (64.3%) | P<0.05 |
| Complete DLM | 2 (4.5%) | < | 20 (71.4%) | P<0.05 |

OCD Patients with older age, closed physis, meniscal symptoms and complete DLM were significantly more likely to undergo operation.
Discussion 1

- DLM in OCD of LFC : 70～89%
  
  Deie J Pediatr. 2006
  H-C Lim JBJS 2012

- This study DLM : 63.8% (46/72 knees)
  
  Normal 36.6%
  Incomplete DLM 33.3%
  Complete DLM 30.5%

- OCD healing rate by conservative treatment
  
  Almost same rate approximately 84%
  between normal and Incomplete DLM
  Poor healing rate with complete DLM

Nakayama The Knee 2016
This study
Discussion 2

- OCD with **complete DLM** healed after partial meniscectomy without treatment for OCD
  - *Mitsuoka Arthroscopy 1999*.  
  - *Lim and Bae J Med Case Rep 2011*.

- **Abnormal shear stress** of complete DLM itself may be disadvantage in treatment for OCD in this study
  - Complete DLM
  - Meniscal symptoms (73%)
  - Higher operation rate (91%)

【Treatment strategy for OCD with complete DLM】
Careful follow-up would be necessary even if stable OCD.
Clinical outcomes for osteochondritis dissecans of lateral femoral condyle in each shape of lateral meniscus were evaluated.

In terms of OCD healing rate, there was no significant difference between normal meniscal type and incomplete discoid type.

Since complete discoid type showed significantly meniscal symptoms and higher operation performing rate, careful follow-up would be necessary for OCD with complete discoid even if stable OCD.

References
