Case Report

Meniscal Ganglion Cysts without Accompanying Meniscal Tears: A Report of 2 Cases

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Abstract: We report 2 cases of meniscal ganglion not associated with meniscal injury.

The incidence of meniscal ganglion is reported to range from 1.4% to 3% among patients who have some injuries of the knee joint and underwent diagnostic tests or treatments including arthroscopy. Cases of meniscal ganglion not associated with meniscal injury as reported here are extremely rare. Treatment by partial meniscectomy including resection of the ganglion generally achieves good outcome.

Key words: knee, meniscus, ganglion, cyst, arthroscopy

INTRODUCTION

Meniscal ganglion is relatively rare. In most cases, these are related to degeneration of the tissue or herniation of synovial cells into the tissue as a result of trauma1,2). Therefore, meniscal ganglion not associated with meniscal injury is extremely rare. We report two cases encountered at our institution.

CASE PRESENTATION

Case 1

A 13-year-old boy who belonged to a basketball club was referred to our department for investigation of pain and a mass in the right knee. From approximately one month before visiting our department, the patient complained of a bulge and pain in the right knee and visited a local hospital. MRI revealed a cystic lesion in the medial meniscus, and a jellylike substance was aspirated from a puncture. Meniscal ganglion cyst was diagnosed clinically. However, the bulge persisted and pain was not improved. He was referred to our department. At presentation, an elastic hard mass measuring 3 cm in diameter was palpable on the medial side of the right knee joint (Fig. 1a). The range of motion of the knee joint was normal. McMurray test and Apley test were negative. A plain radiograph showed no clearly abnormal findings. MRI studies revealed a mass lesion at the articular capsule attachment region of the middle segment of medial meniscus, showing hypointensity on T1-weighted and hyperintensi-
ty on T2-weighted images. However, no damage of the medial meniscus was evident (Fig. 1b). Meniscal ganglion was diagnosed and surgery was conducted. Arthroscopic findings showed no damage of the medial meniscus, although an elevated lesion was found near the border of the attachment site (Fig. 2). Since intra-articular resection was judged to be difficult, open surgery was conducted, which removed the mass together with the meniscal rim and a portion of the articular capsule. Histopathological examination showed a multilocular cyst surrounded by fibrous tissue. From the lack of definitive lining cells, the mass was diagnosed as ganglion (Fig. 3). At the latest follow-up conducted 32 months after surgery, the patient had no pain and normal range of motion in the knee, and relapse was not observed.

Case 2
A 31 year-old woman was referred to our department for investigation of clicking and pain in the right knee. Fourteen years ago, the patient sprained her right knee during a basketball match, and despite receiving conservative treatment from a local hospital, discomfort in the right knee had persisted. From six months before visiting our department, she began to feel clicking and pain in the right knee, and was referred to our hospital. At presentation, the
range of motion of the knee joint was normal. McMurray test and Apley test were negative. Anterior drawer sign and Pivot shift test were positive. A plain radiograph showed no definitive bone abnormality. MRI studies revealed irregularity of the anterior cruciate ligament and a cystic lesion extending from the infrapatella fat pad to the anterior segment of the lateral meniscus, showing hypointensity on T1-weighted and hyperintensity on T2-weighted images (Fig. 4). Ganglion arising from the lateral meniscus was suspected and surgery was conducted. Arthroscopic examination showed mild degeneration at the free rim of the middle segment of lateral meniscus, but no definitive damage. Marked swelling was observed from the anterior horn to the anterior segment of lateral meniscus (Fig. 5), and this portion was resected arthroscopically. A diagnosis of ganglion was made from histopathological findings (Fig. 6). Anterior cruciate ligament reconstruction was performed simultaneously. At the latest follow-up conducted one year after surgery, pain and clicking of the knee joint had improved, and no relapse of ganglion was observed.

DISCUSSION

Meniscal ganglion is sometime detected accidentally when patients who had sustained injury in the knee underwent diagnostic tests or treatments including arthroscopy.\textsuperscript{5-7} The reported incidence of meniscal ganglion is low, including 2\% in a review of 2522 knee arthrograms by Schuldt \textit{et al.},\textsuperscript{8} 3\% among patients who underwent meniscectomies in the series of Biehl \textit{et al.},\textsuperscript{9} and 1.4\% (16 cases) among 1160 arthroscopies conducted by Passler \textit{et al.}\textsuperscript{10} Various reports on the etiology and pathogenesis of meniscal ganglion have indicated that this condition is frequently associated with meniscal injury\textsuperscript{1,2,11}. Therefore, confirmation of whether...
Meniscal damage is present by arthroscopic examination is important. On the other hand, meniscal ganglion not accompanied by meniscal damage is extremely rare, and only six cases, including the present two cases, have been reported in the literature (Table 1). We guess that these cases were caused the mucoid degeneration as a result of previous small trauma or chronic pressure (for example, sports, age, ligament injury, etc).

For the treatment of meniscal ganglion without meniscal injury, partial meniscectomy including resection of ganglion was conducted in all cases and good outcome was reported. Regarding the method of resection for ganglion of the knee, David et al. advocated that while arthroscopic excision gives good result if the lesion can be resected on bloc arthroscopically, open excision should be chosen for lesions exceeding this size. Of our two cases, one case of ganglion arising at the border of meniscus—articular capsule attachment site was treated with open excision because arthroscopic excision was not feasible.
judged difficult, and the other case of ganglion occurring near the free rim of the anterior segment of meniscus and could be visualized up to the ganglion stalk was treated by arthroscopic resection. Complete resection of the meniscus occupied by the lesion is essential, and the choice of excision method should consider the size of the lesion and the location that the lesion occupies.

Table 1. Summary of reported cases of meniscal ganglion without definitive meniscal damage

<table>
<thead>
<tr>
<th>Reference</th>
<th>Number of cases</th>
<th>Location</th>
<th>Treatment method</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.C. Schmitz 12)</td>
<td>1</td>
<td>Medial meniscus anterior horn</td>
<td>Open excision</td>
</tr>
<tr>
<td>Ching-Jen Wang 13)</td>
<td>1</td>
<td>Lateral meniscus anterior horn</td>
<td>Arthroscopic cystectomy</td>
</tr>
<tr>
<td>Ko-Hsiu Lu 14)</td>
<td>2</td>
<td>Lateral meniscus anterior segment</td>
<td>Open excision</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lateral meniscus anterior segment</td>
<td>Open excision</td>
</tr>
<tr>
<td>Present</td>
<td>2</td>
<td>Medial meniscus middle segment</td>
<td>Open excision</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lateral meniscus anterior segment</td>
<td>Arthroscopic cystectomy</td>
</tr>
</tbody>
</table>

Fig. 6. Histopathological examination showed myxoid change around the dominant cyst. From the lack of definitive lining cell in the cystic wall, the mass was diagnosed as ganglion (H & E stain; original magnification, × 100).
STATEMENTS

The authors declare that they have no competing financial interests.

REFERENCES