

Localized Synovial Hypertrophy in the Anteromedial Compartment of the Osteoarthritic Knee

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Purpose: The purpose of this study was to investigate the clinical and arthroscopic findings of osteoarthritis (OA) of the knee with localized synovial hypertrophy in the anteromedial compartment and the clinical results of arthroscopic partial synovectomy. **Type of Study:** Retrospective case series. **Methods:** We treated 19 osteoarthritic knees with localized synovial hypertrophy in 19 patients by arthroscopic partial synovectomy under local anesthesia. All patients had complained of knee pain (mechanical type pain) and catching sensations preoperatively. Preoperative diagnosis based on physical findings and imaging studies was a medial meniscus tear with medial OA in all patients. The mean follow-up was 37 months (range, 28 to 46 months). Clinical results were assessed with the Hospital for Special Surgery (HSS) scoring scale, overall subjective estimation, and patient satisfaction. **Results:** The catching sensation resolved immediately after surgery in all patients. The mean HSS score improved from 56.8 to 72.4 points ($P < .01$). Nine patients (47.4%) were rated excellent or good according to the overall subjective estimation, and 11 patients (57.9%) were satisfied with the treatment. Both HSS score and patient satisfaction were higher in patients (10 patients) who complained of intraoperative pain during synovectomy than in those (9 patients) who hardly felt the pain. **Conclusions:** Localized synovial hypertrophy in the anteromedial compartment of OA knees occasionally caused symptoms of pain and catching sensations that resembled meniscal symptoms. Arthroscopic partial synovectomy was effective, especially for those who complained of intraoperative pain during synovectomy under local anesthesia. **Level of Evidence:** Level IV. **Key Words:** Arthroscopy—Knee—Synovium—Synovectomy—Osteoarthritis.

Arthroscopic debridement is useful in certain patients with osteoarthritis (OA) of the knee, especially those who have concomitant meniscal disease or symptoms.¹⁻³ However, it remains an unsettled question if the meniscal lesion is the primary source of the patients' symptoms. In addition to this, meniscal tears are usually associated with OA of the knee,⁴ and we usually find degenerated menisci during arthroscopic surgery of knees with OA. There is considerable doubt

as to the effect of trimming the degenerated meniscus. Because OA is not only a meniscal disease but also involves degenerative changes to other structures, we think that lesions beside those of the meniscus should be given more attention.

Although we have performed arthroscopic debridement of knees with OA for patients with knee pain and meniscal symptoms (such as locking, catching sensation, and giving way), occasionally we could not find any unstable meniscal fragments, but instead found localized synovial hypertrophy in the region of the patients' symptoms. Most of these patients' symptoms improved after arthroscopic partial synovectomy without trimming the degenerated meniscus. Clinical and arthroscopic findings in these patients are characteristic. Herein, we present the clinical and arthroscopic findings of localized synovial hypertrophy in OA of the knee, and the clinical results of arthroscopic partial synovectomy.

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METHODS

We performed arthroscopic debridement of knees with OA in 78 patients between April 1999 and March 2001. The inclusion criteria of this study were grade II or III medial OA according to the radiographic grade of Kellgren and Lawrence⁵ as well as localized synovial hypertrophy in the anteromedial compartment. The exclusion criteria were grade IV medial OA, lateral or patellofemoral OA, unstable meniscal or chondral fragments, pathologic plica, or diffuse synovial hypertrophy. Nineteen patients met the inclusion criteria. There were 14 women and 5 men whose average age was 60.4 years (range, 50 to 79 years). The radiographic grade of OA according to Kellgren and Lawrence was II in 12 patients and III in 7.

All patients in this study had complained of knee pain and catching sensations that were refractory to conservative treatments, including nonsteroidal anti-inflammatory drugs, physical therapy, and hyaluronic acid injections, for 1 to 3 months. Symptoms had appeared after hitting their knees in 5 patients. The character of their knee pain was so-called mechanical type pain (pain with specific motions or positions). There was a point of tenderness localized at the anteromedial joint space. The McMurray test results were positive in all patients. Preoperative magnetic resonance imaging undertaken in 10 patients could not detect the localized synovial hypertrophy, but suggested medial meniscal tear with OA.

All arthroscopic surgeries were performed under local anesthesia using 20 mL of 1% lidocaine for the intra-articular injection and 20 mL of 1% lidocaine with epinephrine for the portal injection. Standard arthroscopic portals were used for a 30°, 4-mm arthroscope. Our procedures in this study consisted of joint lavage with 3 to 4 L of saline solution and partial synovectomy using synovial shavers and cupped forceps. Because there were no unstable fragments of meniscus or cartilage, we did not perform meniscectomy or chondroplasty in this study. Normal medial patellar plicae, which we sometimes found apart from the hypertrophied synovium, were not excised. All of the operations were performed by the senior author (Toshiaki Takahashi).

Clinical evaluation, using the Hospital for Special Surgery (HSS) scoring scale, was performed before surgery and at the final follow-up. The level of patient satisfaction with the treatment was recorded using a visual analogue scale⁶⁻⁸ from 0 (very unsatisfied) to 10 (very satisfied) at the final follow-up. According to Louville et al.,⁶ scores higher than 7 were selected as

an indicator of satisfaction. Patients were also asked to give an overall subjective estimate of their knee, according to criteria described by Tapper and Hoover⁹ and Jackson and Rouse³ at the final follow-up. An excellent result meant an asymptomatic patient who had no limitations and believed his or her knee to be essentially normal. A good result meant that the patient was subjectively greatly improved after synovectomy, that he or she still had symptoms, but no more than an occasional ache or effusion after heavy use. A fair result meant that the patient was somewhat improved after synovectomy but that he or she experienced more frequent symptoms and was somewhat limited in his or her activities. A poor result meant the patient was no better or was worse after synovectomy and that he or she continued to experience disabling symptoms. The average period of follow-up was 37 months (range, 28 to 46 months).

Because we performed arthroscopic surgery under local anesthesia, we could monitor the patient's pain during surgery.¹⁰ Some patients complained of severe pain during surgery and others did not. Because most patients complained of pain during synovectomy, we recorded the level of synovial pain (graded as none, mild, moderate, or severe). The patients were divided into 2 groups according to whether or not they felt pain during synovectomy. The first group consisted of patients who felt severe or moderate synovial pain (P), and the remainder, without pain or with only mild pain, composed the second no pain (NP) group. We also evaluated the correlation between intraoperative pain during the synovectomy and the clinical results. Statistical analysis was performed using the Wilcoxon signed-rank test; $P < .05$ was considered significant.

RESULTS

Arthroscopic Findings

The common findings were anteromedial synovial hypertrophy and cartilage lesion in the medial compartment. According to the Outerbridge grading system,¹¹ there were 7 grade II (shallow fibrillation or fissuring involving less than 50% of the thickness of the cartilage), 8 grade III (deep fibrillation or fissuring involving more than 50% of the thickness of the cartilage), and 4 grade IV (exposure of subchondral bone) cartilage lesions. There were no unstable fragments of meniscus or cartilage, but only degenerative changes in this study group. The hypertrophied synovium covered the anterior portion of the medial meniscus near the chondral lesion. It seemed that the

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