Patellar Subluxation With Early-Phase Synovial Chondromatosis of the Knee

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abstract

Primary synovial chondromatosis is a rare, benign, monoarticular disease process that affects the synovial membrane of the joint, the synovial sheath, or the bursa around the joint. The etiology is unknown, but it has been associated with trauma in some cases. Although it is a benign lesion, if left untreated, it may lead to early secondary osteoarthritis of the joint. The knee joint is affected in 50% to 65% of cases, followed by the elbow and the hip. This article reports a 30-year-old active woman who presented to the author’s clinic with a large infrapatellar mass that caused lateral subluxation of the patella, swelling, and episodic pain with crepitations 14 months after direct trauma to the knee. Clinical examination, magnetic resonance imaging, and arthroscopy revealed a large infrapatellar mass causing lateral subluxation of the patella with no loose bodies. Hoffa’s disease, para-articular osteochondroma, and early-phase synovial chondromatosis were considered in the differential diagnosis. The histopathologic and clinical features were consistent with early synovial chondromatosis. The patient underwent local excision of the mass through a medial parapatellar arthrotomy. At 5 years of follow-up, she had no recurrence of the lesion or progression of the disease. Early diagnosis of synovial chondromatosis with local excision offers a reliable cure. However, long-term follow-up is advised because of the high recurrence rates as well as the risk of metaplastic transformation. [Orthopedics. 2016; 39(1):e176-e179.]

Synovial chondromatosis is rare, and the basic pathophysiologic features result from metaplastic proliferation of ectopic foci of cartilage in the normally cartilage-devoid synovium, producing outgrowths in the form of nodular, pedunculated, or sessile lesions.1,2 Fragmentation into the joint space results in free intra-articular bodies that may become ossified or may undergo enchondral ossification. It typically presents in active men during the third to fifth decades of life.3 The knee is involved in 50% to 60% of cases, followed by the hip, elbow, and shoulder.4 This case report describes an unusual presentation of patellar subluxation caused by early-phase synovial chondromatosis in a young, active woman with a history of direct trauma to the affected knee. The lesion required local excision, and good results were seen at 5 years of follow-up.

CASE REPORT

In February 2009, a 30-year-old woman presented to the author’s clinic with a 1-year history of swelling, intermittent pain, and crepitation in the left knee. She had direct trauma to the affected knee 14 months before presentation.

On clinical examination, the patient had asymmetry of the knees, with evident swelling of the left knee, especially in the parapatellar region. Range of motion was 5° to 100°. A firm to hard swelling was...
palpated in the medial aspect of the left patella.

Plain radiographs showed soft tissue swelling and multiple irregular calcifications within the soft tissue. Lateral displacement of the patella was visible on skyline view.

Magnetic resonance imaging of the left knee showed a large mass in the infra- and parapatellar region causing subluxation of the patella (Figure 1).

In April 2009, the patient was admitted for left knee arthroscopy. She provided consent to perform arthrotomy if necessary. Arthroscopy showed a large, pedunculated mass extending from the synovium of the lateral gutter. The mass crossed infrapatellarly and medially, reaching the medial aspect of the patella, with evident displacement of the patella (Figures 2A-B). Because arthroscopic excision of the entire mass was technically difficult, the authors performed arthrotomy.

The large intra-articular mass that originated from the synovium of the lateral gutter was excised through a medial parapatellar incision. It had no attachments to Hoffa’s pad (Figures 2C-D).

The mass was well circumscribed, measured 10x3x4 cm, and included cartilaginous nodules amid myxoid, vascularized fibrofatty tissue. Histopathologic and intraoperative clinical findings were consistent with synovial chondromatosis (Figure 3).

Postoperatively, the patient had progressive improvement in range of motion and achieved normal flexion and extension after 6 weeks. During regular follow-up and up to 5 years after local excision, the patient had no symptoms or local recurrence (Figure 4).

**DISCUSSION**

Although young, active women often present with patellar maltracking and subluxation, this presentation has not been commonly associated with synovial chondromatosis of the knee, and to the best of the author’s knowledge, this has not been reported. Hoffa’s disease should be considered in the differential diagnosis. However, the absence of intraoperative attachment of the lesion to Hoffa’s pad precludes this diagnosis. The differential diagnosis also includes para-articular osteochondroma, but the finding of attachment of the lesion to the synovium in the lateral gutter with synovial lining on certain histopathologic slides and the absence of typical bone lesions covered with a cartilage cap do not support this diagnosis.

The etiology of primary synovial chondromatosis is unknown, but it is hypothesized that trauma is a predisposing factor. Recent molecular studies implicated the involvement of certain genes and tumor growth factors and suppressors in the primary form of the disease, suggesting a neoplastic association. A secondary
form of the disease has been described in association with pre-existing joint diseases, such as osteoarthritis and rheumatoid arthritis.

Although the condition is considered benign, malignant transformation of synovial chondromatosis to chondrosarcoma has been reported, with an incidence of 5%. It is not known whether it is a co-existing condition rather than a neoplastic transformation of synovial chondromatosis. Chondrosarcoma should be considered in patients with frequent recurrences, aggressive presentation, or long-standing disease.

As described by Milgram in 1977, primary synovial chondromatosis has 3 distinct phases. During the early, active phase, metaplastic formation of cartilaginous nodules occurs without the presence of loose intra-articular bodies in the synovial fluid. During the second, transitional phase, the intrasynovial disease becomes active in the presence of chondral or osteochondral bodies in the joint cavity. Finally, during the third, inactive phase, the disease becomes quiescent, but loose bodies remain in the joint space. Although Milgram’s description suggests a temporal sequence of events, he described these phases as self-limiting. Spontaneous regression reportedly occurs, but the disease is often progressive, with the potential to destroy the joints.

Surgical management of synovial chondromatosis is primarily used to remove lesions and halt progressive joint destruction. Open and arthroscopic procedures can be used. However, arthroscopic treatment offers better visualization of the entire joint, less postoperative pain, and shorter rehabilitation. The author performs arthroscopic visualization and excision of the intra-articular lesions when it is technically feasible. Acceptable results have been reported, regardless of the surgical approach, with the goal of complete removal of the loose bodies combined with partial or complete synovectomy. The recurrence rate for synovial chondromatosis in the same joint ranges from 18% to 23%, and most recurrences occur within 18 months of follow-up.

The current case presents an interesting insight into the pathophysiology of synovial chondromatosis. The patient had a large lesion in the early phase of synovial chondromatosis, as indicated by histopathologic findings that did not show intra-articular loose bodies. Trauma seemed to be a possible causative factor. Synovial chondromatosis with patellar subluxation is a highly uncommon presentation and has not been reported, to the best of the author’s knowledge. Local excision showed good results, with no recurrence of symptoms or disease over a 5-year period.

Synovial chondromatosis is a benign lesion that rarely presents with patellar subluxation. Local excision can be curative in the early, active intrasynovial phase of the disease. However, because of concerns about recurrence or malignant transformation, long-term follow-up is indicated.

REFERENCES


