

Synovial Chondromatosis of Right Knee: A Case Report

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ABSTRACT

Synovial chondromatosis is a rare cartilaginous neoplasm that most commonly affects the knee joint. Histologically, it presents as a multinodular cartilaginous proliferation showing clusters of chondrocytes. These can be quite atypical, simulating chondrosarcoma. The lesion is usually self-limited but sometimes may exhibit a more aggressive clinical course characterized by multiple local recurrences. Chondrosarcomatous transformation in synovial chondromatosis is exceedingly rare but has been documented.

Until recently, synovial chondromatosis was considered a reactive process. Recent cytogenetic studies have shown recurrent chromosomal abnormalities, especially involving chromosome 6, therefore supporting a clonal, neoplastic nature of this intriguing lesion.

KEYWORDS: Reactive process, Chromosome 6, Ambrose Pare, Knee

INTRODUCTION:

Ambrose Pare was the first to describe synovial chondromatosis in the knee in 1558.^[1] In 1813, Laennec described intra-articular loose bodies originating from subsynovial tissues.^[2] This process of formation of cartilage in synovium occurs in two forms: primary synovial chondromatosis (also referred to as synovial osteochondromatosis, synovial chondrosis, Reichel syndrome, or synovial chondrometaplasia) and secondary synovial chondromatosis.^[3]

Synovial chondromatosis commonly presents when patients are aged 30–50 years, however, it may also occur during childhood. Synovial chondromatosis is a disease with an unknown aetiology that is potentially caused by the metaplasia of synovial cartilage. The formation of cartilaginous nodules or loose bodies in synovial tissues and joint

cavities has impacts on subintimal fibroblasts in the tendons and bursae of synovial joints. These nodules can detach and become loose bodies within the joint and may undergo secondary calcification and proliferation.^[4]

CASE REPORT:

A 31-year-old male presented with complaints of right knee pain for three months along with swelling over the joint. History of trauma present three years back.

Local examination revealed swelling present over the right knee joint along with tenderness over the mid patellar region and local rise of temperature. Also noted were restricted flexion and normal extension. The patellar tap was positive. On radiology, multiple, round to oval radio-opaque densities of varying sizes (partially and completely ossified) were noted in the suprapatellar recess and patellofemoral joint and knee joint (yellow arrow) – Probability of Synovial origin

Evidence of soft tissue swelling around knee joint. Mild narrowing of joint space noted (red arrow) Figure 1.

Patient was operated and intraoperatively, multiple loose cartilaginous bodies surrounding the right knee joint were noted Figure 2. Partial synovectomy was done, and the specimen was sent for histopathological examination.

Grossly, we received a single, irregular, grey-brown to grey-white mass measuring 3x2.5x1.5cm. Also received multiple, pearly white, firm bodies, largest measuring 1.5x1x0.5cm. Smallest measuring 1x0.5x0.5cm Figure 3.

Histopathological examination revealed fibrous stroma lined by synovial cells and the stroma revealed areas of cartilage, endochondral ossification with few dilated and congested blood vessels. Histopathological examination of loose bodies revealed mature hyaline cartilage Figure 4.

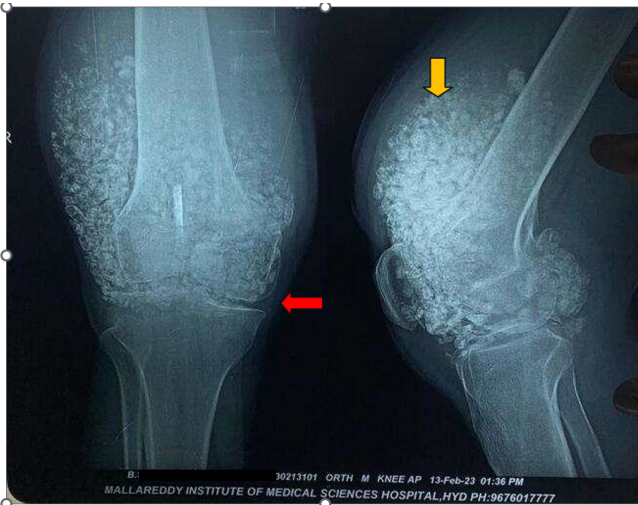


Figure 1: X-ray image showing round to oval radio opaque densities of varying sizes in suprapatellar recess and patellofemoral joint (yellow arrow). Soft tissue swelling around knee joint, mild narrowing of joint space (red arrow)

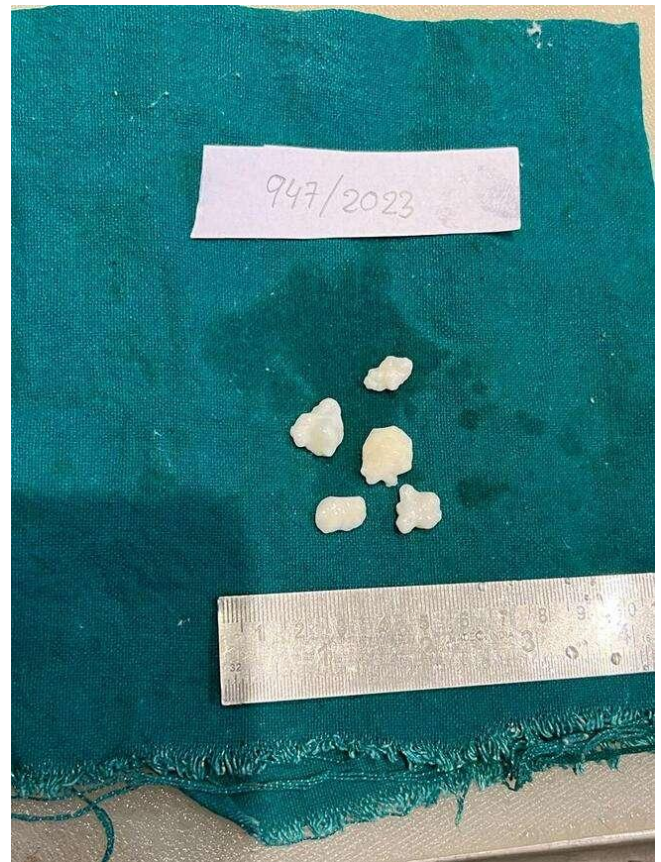


Figure 3: Multiple, pearly white, firm bodies, largest measuring 1.5x1x0.5cm. Smallest measuring 1x0.5x0.5cm.

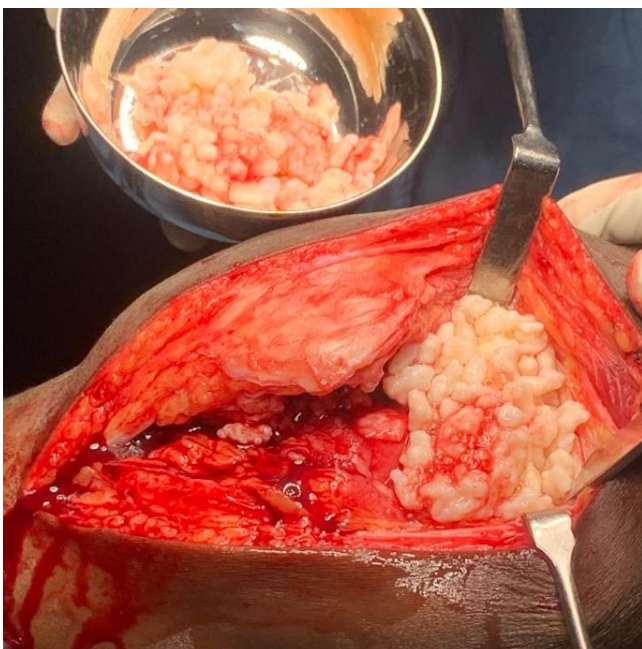


Figure 2: Intraoperative finding of loose cartilaginous bodies surrounding the knee joint

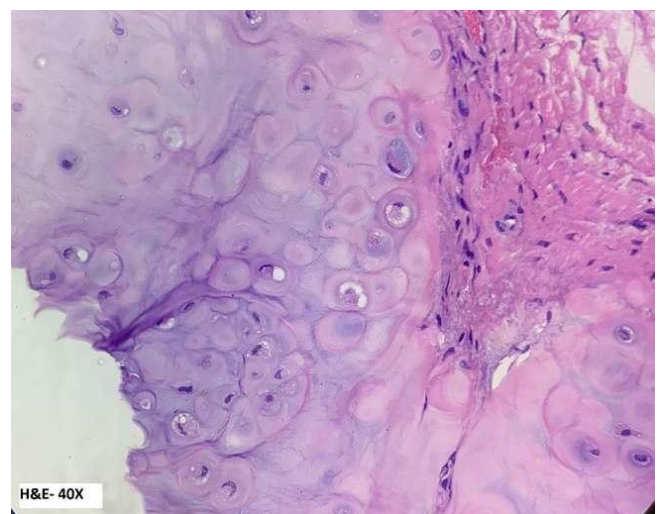


Figure 4: High power view of hyaline cartilage showing scattered chondrocytes exhibiting mild nuclear atypia

DISCUSSION:

Synovial chondromatosis is characterized by the formation of cartilaginous nodules in the synovial membrane.^[5] Even though the exact incidence is unknown, it has been reported as 1.8 per million individuals per year in England.^[6] Synovial chondromatosis occurs most commonly in the fifth decade of life; it is rarely present before age 20 and is very rare in children. Male:Female ratio 2-4:1.

The knee is the most common joint affected. Typically affects diarthrodial, weight-bearing joints of individuals 30-60 years of age. The joints affected in descending order: knee (70%), hip (20%), shoulder, elbow, ankle, and wrist.^[6] The etiology is unknown, but the presence of clonal chromosomal aberrations suggests that it represents a neoplastic condition.^[5]

Primary or idiopathic synovial chondromatosis involves otherwise normal joints with no association with trauma, infection, synovial irritation, or genetics. It presents at an earlier age, 30 to 40, and is relatively rare. Secondary synovial chondromatosis, there is an underlying joint pathology resulting in synovitis and/or articular destruction such as trauma, osteochondritis dissecans, advanced osteonecrosis, or Charcot neuropathic joint. Patients with secondary synovial chondromatosis are relatively older, in their 50s to 60s.^[6]

Milgram, in 1977, categorized the disease process into 3 distinct phases.^[7]

Phase I: (Active intrasynovial phase)- Cartilaginous metaplasia of the synovial intimal cells occurs with trauma, which is commonly thought of as an inciting stimulus. Active synovitis and nodule formation is present, but no calcifications can be identified.

Phase II: (Transitional lesions phase)- Nodular synovitis and loose bodies are present in the joint. The loose bodies are primarily still cartilaginous.

Phase III: (Quiescent/Inactive intrasynovial phase)- The loose bodies remain but the synovitis has resolved.

Synovial metaplasia occurs only in the first and second phase, while the free fragments are present in the second and third phases.^[8] After excision, the rate of recurrence is high (3-23%).^[9] Intraarticular or periarticular destruction can be a sequel of synovial chondromatosis.^[6]

CONCLUSION:

It is important to distinguish because primary synovial chondromatosis is treated with synovectomy, whereas the

secondary form is treated by simple removal of loose bodies and correction of the underlying cause. Malignant transformation to chondrosarcoma is a possible complication (6.4%, Scott Evans et.al) Hence, prompt diagnosis and treatment will assist in avoiding secondary pathology. The most important prognostic factor is the status of the articular cartilage coverage of the involved joint.

REFERENCES

1. Bojanić I, Vuletić LB, Troha I, Smoljanović T, Borić I, Seiwerth S. Sinovijalna hondromatoza [Synovial chondromatosis]. *Lijec Vjesn.* 2010 Mar-Apr;132(3-4):102-110.
2. Barwell R. Clinical Lectures on Movable Bodies in Joints. *Br Med J.* 1876;1(796):403-408.
3. Wagner S, Bennek J, Gräfe G, Schmidt F, Thiele J, Wittekind C et al. Chondromatosis of the ankle joint (Reichel syndrome). *Pediatr Surg Int.* 1999 Jul;15(5-6):437-439. doi:10.1007/s003830050627.
4. Yang Y, Wang J, Li H. Atypical synovial chondromatosis of the right knee: A case report. *Experimental and Therapeutic Medicine.* 2018;15:4503-4507.
5. Juan R, Ackerman LV. *Rosai and Ackerman's Surgical Pathology* (version 10th ed). Edinburgh: Mosby; 2011.
6. Habusta SF, Mabrouk A, Tuck JA, StatPearls [Internet]. Synovial Chondromatosis; 2023. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK470463/>.
7. Milgram J. Synovial osteochondromatosis: A histopathological study of thirty cases. *J Bone Joint Surg.* 1977;59:792-801.
8. Milgram JW, Hadesman WM. Synovial osteochondromatosis in the subacromial bursa. *Clin Orthop Relat Res.* 1988;236:154-59.
9. Wick MR, LiVolsi VA, Pfeifer JD, Stelow EB, Wakely PE, Lampros JN. *Silverberg's Principles and Practice of Surgical Pathology and Cytopathology.* Cambridge: Cambridge University Press; 2015. p. 998-1001.

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