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Bilateral knee synovial chondromatosis with osteoarthritis - A case report

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Abstract
Synovial chondromatosis is a rare, benign metaplastic condition that typically affects the synovial membrane of large joints, such as the knee, hip, shoulder, and elbow. This case report presents a 67-year-old male with bilateral knee osteoarthritis complicated by synovial chondromatosis, who underwent total Knee Replacement (TKR). The patient presented with progressive pain, swelling, and limited range of motion in both knees over two years. X-ray imaging revealed multiple radiodense loose bodies in both knees, and histopathological examination confirmed the diagnosis of synovial chondromatosis. Treatment involved removal of the loose bodies and synovectomy during TKR. Postoperative follow-up showed no recurrence of loose bodies after one year. This case highlights the challenges of diagnosing and treating synovial chondromatosis, particularly when it coexists with advanced osteoarthritis, and underscores the importance of comprehensive treatment for improving patient outcomes.

Keywords: Synovial chondromatosis, knee osteoarthritis, loose bodies, total knee replacement, synovectomy, metaplasia, cartilage, histopathology, bilateral knee, joint inflammation, calcification

Introduction
Synovial chondromatosis is a rare benign condition (metaplasia), which arises from synovial membrane & synovial sheath or bursa of large joints [1, 2, 3] like knee (70%), hip (20%), shoulder & elbow [4, 5, 6, 7, 8, 9, 10]. Ambrose Pare described synovial chondromatosis in the knee in 1558 [11]. Then, in 1813, Laennec described intra-articular loose bodies originating from synovial tissues [12, 4]. Male are affected 2-4 times more commonly than female. Patient presents with joint inflammation & effusion due to synovial hypertrophy. Initial diagnosis made by patient history (pain at rest & worsen on motion with decreased ROM), physical examination radiological evaluation (Multiple loose radio-opaque Chondroid bodies). It may be intra & extra articular but out of which intra-articular type is more common as in our case report. It may undergo malignant transformation to chondrosarcoma, reported in few cases [13]. It is mainly of primary (idiopathic) & secondary type (repetitive microtrauma, osteoarthritis, rheumatoid arthritis) [14, 15]. Primary synovial chondromatosis also referred to as synovial osteochondromatosis, synovial chondrosis, Reichel syndrome, or synovial chondrometaplasia. Primary synovial chondromatosis commonly seen in 3rd to 5th decades of life where as secondary synovial chondromatosis commonly seen in 6th to 7th decades of life. Removal of Chondroid bodies & radical synovectomy is main goal of treatment. In this case report we describe a patient with bilateral knee osteoarthritis with multiple synovial chondromatosis in both the knees.

Case report
A 67 years old male non diabetic, hypertensive, presented with swelling of both the knees & pain (insidious & progressive) while walking for last two years that limit his daily activities. There is no history of trauma. On inspection there was swelling of both knees. Medial joint line tenderness & multiple hard loose bodies were palpated both the knees with FFD 10 degree. On x-ray evaluation of both knees, multiple large radiodense loose bodies with degenerative osteoarthritis seen bilaterally. After clinical & radiological evaluation TKR planned in two stages. During TKR, multiple loose bodies (15-18) with variable sizes (maximum size upto 4x3.5x3cm) were removed from each knee. Synovectomy done at the time of total knee replacement. Synovial chondromatosis was confirmed by Histopathological studies. Loose bodies were hard in consistency, smooth, rounded in nature and of variable sizes.

Fig 1: Digital x-ray film showing both knee anteroposterior & lateral view

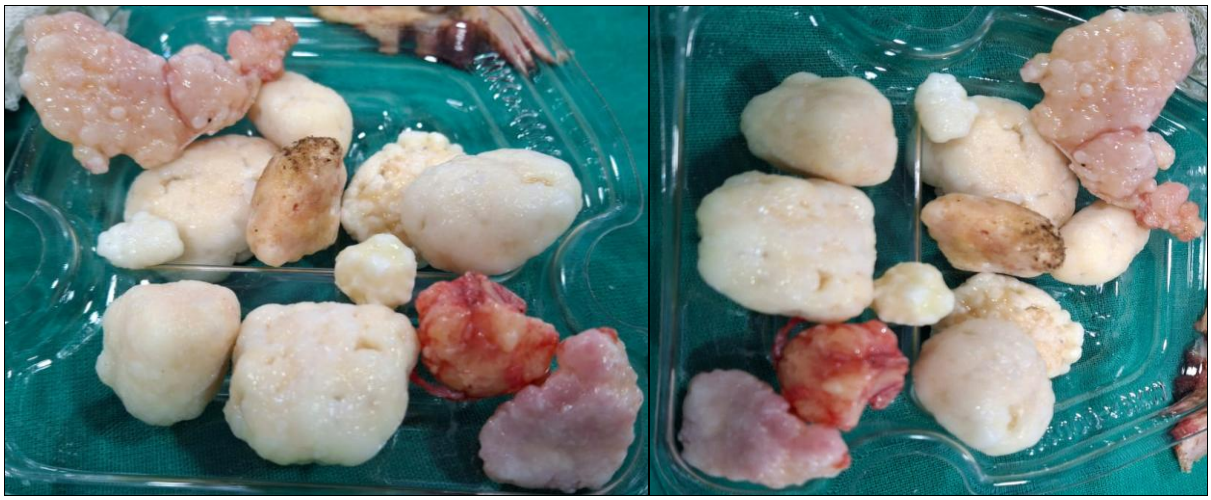
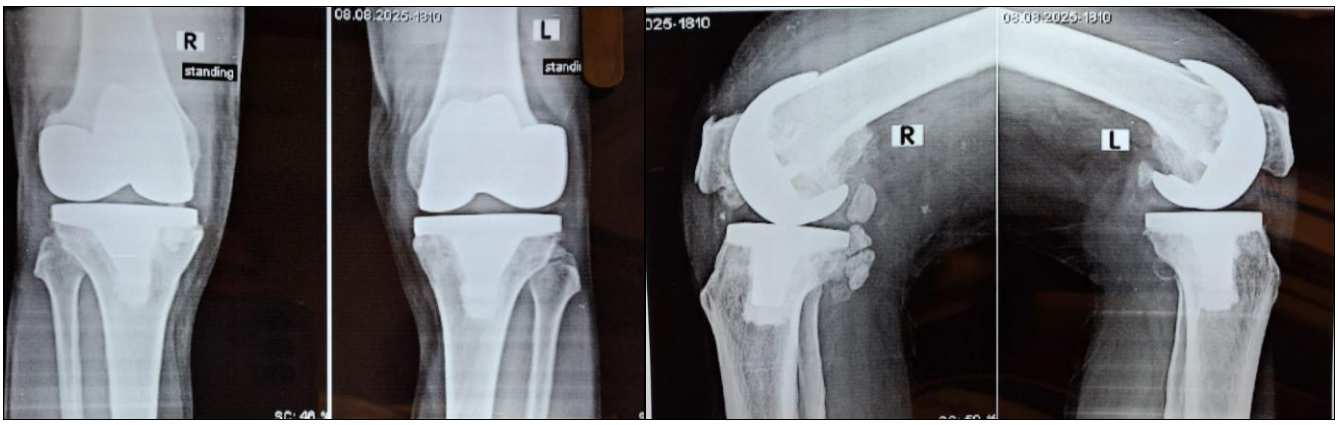


Fig 2: The total knee replacement done through medial para patellar approach



Discussion

Synovial chondromatosis is a rare benign metaplasia of unknown etiology that involves the synovial lining of large joints of our bodies. In this disease multiple sessile hyaline cartilaginous nodules/foci, are formed which become pedunculated after maturation then they break and become lose bodies [16, 17]. These loose bodies keep growing & get calcified (enchondral ossification) after taking nutrition from synovial fluid [18]. Synovial chondromatosis accelerate early onset arthritis of large joint that finally end up with joint replacement as happened in our case. Grossly and microscopically, the major proportion of these loose bodies is in a transitional zone between synovium and hyaline cartilage (atypical) due to the abundance of pluripotent stem cells in this area [5, 19]. In early stage of disease patient present with joint inflammation, effusion & arthropathy but there is no obvious findings seen on x-rat film. As time passes by there is palpable loose bodies seen in large joint but still no obvious seen on x-ray film. After calcification & maturation of loose bodies that will clearly visible on x-ray

film. MRI narrows the final diagnosis with characteristic inflammatory & nodular changes, whereas Histopathological examinations confirm the final diagnosis. In Synovial chondromatosis of primary type, loose bodies rounded, smooth, uniform in size & large in numbers with elevated BMP in loose bodies. Where as in secondary type irregular, rough, variable in size & few in numbers. Neoplastic or metaplastic transformation seen in 1-10% cases according to literature [20].

In conclusion, the present case report describes a case of bilateral knee synovial chondromatosis with advanced osteoarthritis. Loose bodies were removed & synovectomy was done at the time of TKR. No further loose bodies were formed at t one year follow up.

References

1. Lee LM, Zhu YM, Zhang DD, Deng YQ, Gu Y. Synovial chondromatosis of the temporomandibular joint: A clinical and arthroscopic study of 16 cases. J Craniomaxillofac Surg. 2019 Apr;47(4):607-610.
2. Grace MM, Letonoff EJ. Synovial chondromatosis: An unusual case of knee pain and swelling. Fed Pract. 2018 Apr;35(4):45-48.
3. Littrell LA, Inwards CY, Rose PS, Wenger DE. Chondrosarcoma arising within synovial chondromatosis of the lumbar spine. Skeletal Radiol. 2019 Sep;48(9):1443-1449.
4. Evans S, Boffano M, Chaudhry S, Jeys L, Grimer R. Synovial chondrosarcoma arising in synovial chondromatosis. Sarcoma. 2014;2014:647939.
5. Tokis AV, Andrikoula SI, Chouliaras VT, Vasiliadis HS, Georgoulis AD. Diagnosis and arthroscopic treatment of primary synovial chondromatosis of the shoulder. Arthroscopy. 2007 Sep;23(9):1023.e1-e5.
6. Aydogan NH, Kocadal O, Ozmeric A, Aktekin CN. Arthroscopic treatment of a case with concomitant subacromial and subdeltoid synovial chondromatosis and labrum tear. Case Rep Orthop. 2013;2013:636747.
7. Chillemi C, Marinelli M, de Cupis V. Primary synovial chondromatosis of the shoulder: Clinical, arthroscopic, and histopathological aspects. Knee Surg Sports Traumatol Arthrosc. 2005 Sep;13(6):483-488.
8. Adelani MA, Wupperman RM, Holt GE. Benign synovial disorders. J Am Acad Orthop Surg. 2008 May;16(5):268-275.
9. Davis RI, Hamilton A, Biggart JD. Primary synovial chondromatosis: A clinicopathologic review and assessment of malignant potential. Hum Pathol. 1998 Jul;29(7):683-688.
10. Huang TF, Wu JJ, Chen TS. Bilateral shoulder bursal osteochondromatosis associated with complete rotator cuff tear. J Shoulder Elbow Surg. 2004 Jan-Feb;13(1):108-111.
11. Barwell R. Clinical lectures on movable bodies in joints. Br Med J. 1876 Apr 01;1(796):403-405.
12. Halstead AE. IV. Floating bodies in joints. Ann Surg. 1895 Sep;22(3):327-342.
13. Bojanić I, Vuletić LB, Troha I, Smoljanović T, Borić I, Seiwerth S. Synovial chondromatosis. Lijec Vjesn. 2010 Mar-Apr;132(3-4):102-110.
14. 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.
15. Adelani MA, Wupperman RM, Holt GE. Benign synovial disorders. J Am Acad Orthop Surg. 2008 May;16(5):268-275.
16. Jung KA, Kim SJ, Jeong JH. Arthroscopic treatment of synovial chondromatosis that possibly developed after open capsular shift for shoulder instability. Knee Surg Sports Traumatol Arthrosc. 2007 Dec;15(12):1499-1503.
17. Alexander JE, Holder JC, McConnell JR, Fontenot E. Synovial osteochondromatosis. Am Fam Physician. 1987 Feb;35(2):157-161.
18. Marchie A, Panuncialman I, McCarthy JC. Efficacy of hip arthroscopy in the management of synovial chondromatosis. Am J Sports Med. 2011 Jul;39 Suppl:126S-231S.
19. Small R, Jaffe WL. Tenosynovial chondromatosis of the shoulder. Bull Hosp Jt Dis Orthop Inst. 1981;41:37-47.
20. Vanel D, Picci P, Hanna SA, Alberghini M. Imaging of bone and soft tissue tumors: A comprehensive review. Springer; 2020.

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