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RESEARCH ARTICLE

KNEE SYNOVIAL OSTEOCHONDROMATOSIS: CASE REPORT, SAUDI ARABIA

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Abstract

A rare benign condition known as synovial osteochondromatosis is characterized by the development of several cartilaginous nodules in the synovial joint. It is a monoarticular or polyarticular joint disease, that is easily diagnosed with radiographs. We decided to present this case as it's infrequently seen in our arthroplasty clinic and accidentally found during routine images when the patient presented with pain and limited range of motion.

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Introduction:-

Primary synovial osteochondromatosis characterized by the formation of multiple cartilaginous nodules in the synovium, which is a rare benign neoplastic disease [1,2]. Males are more susceptible to being affected than females, with a ratio of 4:1 [3]. It is usually a monoarticular disease, although a few cases of multiple joint involvements were reported [4]. More than 50% of the patients were found to have knee osteochondromatosis [5]. However, it can affect any synovial body joints such as the hip, elbow, shoulder, wrist, and phalanges [6].

Diagnosis of synovial osteochondromatosis made through history, physical examinations, and radiological evaluation in the form of x-ray, CT scan, and MRI if needed. These joints usually present as having a large effusion and sometimes appear deformed due to swelling or synovial hypertrophy [3].

On standard radiographs, multiple-round calcified nodules can be clearly seen, but unusual presentations with joint destruction or unmineralized lesions may need further imaging with a CT scan or MRI. In most cases, a surgical extraction is necessary for pain alleviation and the restoration of functional movement. [1].

Case presentation:

58 years old male patient, known to have diabetes mellitus, hypertension, and dyslipidemia. Presented to an orthopedic clinic complaining of right knee pain and limited range of motion for 10 years.

He underwent a right knee diagnostic arthroscopy with meniscectomy 20 years earlier, and since that time he was complaining of right knee pain and limited range of motion. The patient was first seen in the orthopedic clinic in November 2021; his pain aggravated more with walking, claiming up and down the stairs, and started to affect his daily activity.

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Upon examination: the patient has mild right knee effusion compared to the left knee, limited extension with flexion contraction of 15 degrees, and flexion up to 90 degrees.

Distal pulses were intact and peripheral nerve examination: intact sensation and power were 5/5. An X-Ray of the right knee in standing and skyline views (figure 1-3) was done and showed: Osteoarthritic changes are seen involving tibiofemoral and patellofemoral articulation with evidence of narrowing medial tibiofemoral joint space and genu varus deformity. Right knee evidence of synovial osteochondromatosis, periarticular and patellar osteophytes, and no suspicious focal bone lesions.

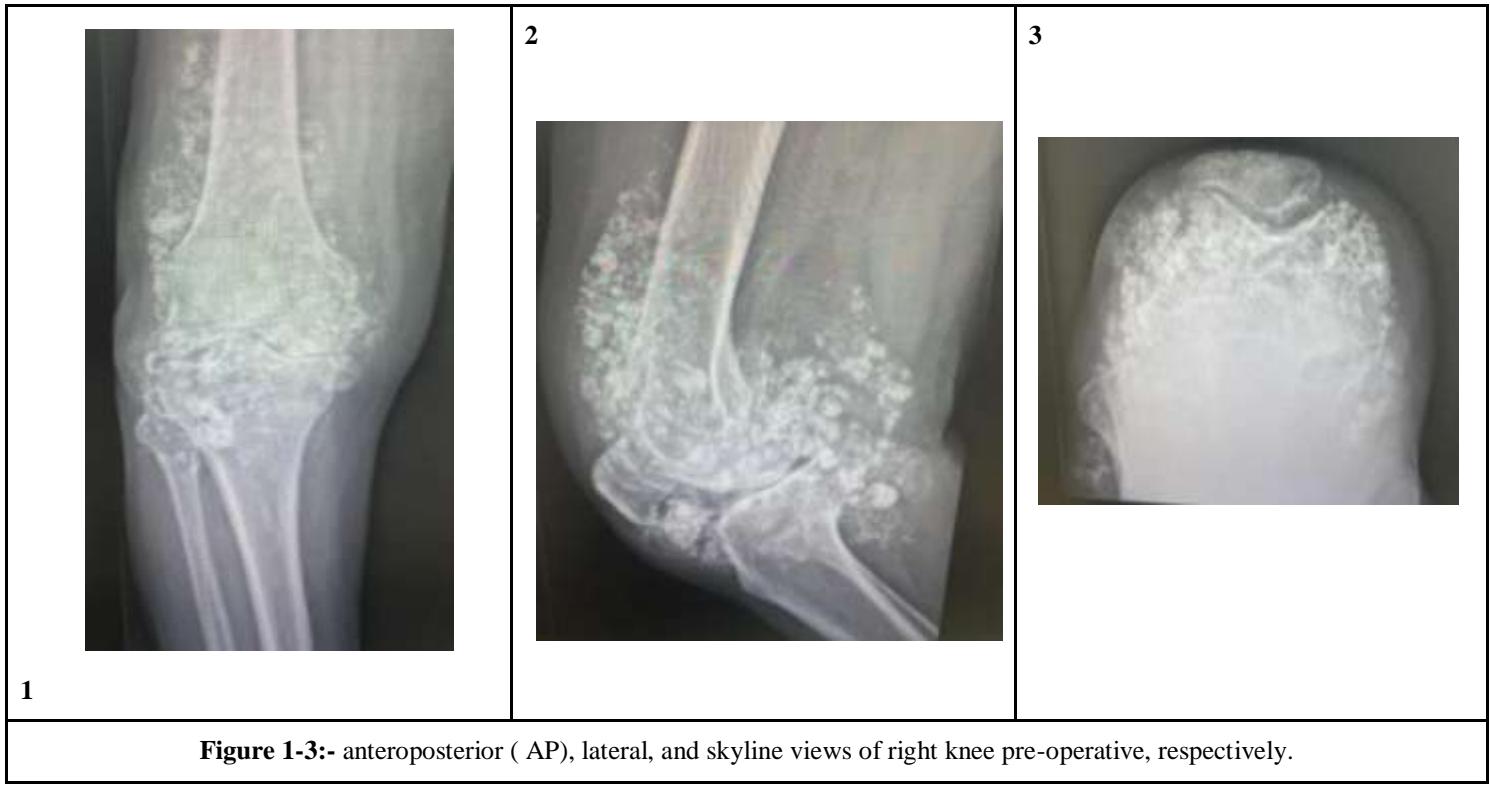


Figure 1-3:- anteroposterior (AP), lateral, and skyline views of right knee pre-operative, respectively.

Management:

Subsequently, after he failed all conservative management in the form of analgesia, injections, and physical therapy. So we decided for the removal of loosening bodies and total knee arthroplasty to be done with an expert surgeon.

The patient underwent the procedure in December 2021; under spinal anesthesia, right lower limb prep, and draped in sterile manners. Using anterior midline skin incision and medial subvastus approach, almost all cartilaginous-osseous loosening bodies were removed from the knee joint (figure 4). Following that, when we re-examined the anterior and posterior aspects, we found flexion contracture around 10 degrees, and flexion around 100 degrees. Accordingly, we choose to cut 10-11 mm from the proximal tibia then we put our spacer and flexion was acceptable but the extension was tight. Hence, we agreed to cut 11 mm from the distal femur and removed a lot of cartilaginous- osseous bodies from the posterior aspect of the knee and that has improved the extension. We elected to choose a short tibia stem and were given a 75 mm stem.

The patient tolerated the procedure very well without any complications or difficulties. During his hospital stay; the patient received a sufficient level of analgesia and physical therapy was performed twice a day. A post-operative knee x-ray (figure 5-6) was done, which showed acceptable alignment and a stable implant with remaining osseous nodules. he was discharged home on the third-day post-operative in a good, stable condition of health.

Furthermore, the patient was seen in the clinic in the first-week post-operative he was having mild pain and tenderness, which was relieved with analgesia, and the range of motion improved with physical therapy. After that,

he was seen again in the clinic three weeks post-operative: Surgical wound was clean and dry, the stapler removed and the wound showed a good healing process. At that time, the patient still needed strengthening exercises to enhance his range of motion. Moreover, the patient was followed in the clinic at three and six months post-operatively; he is at his usual state of health, returned to his daily activity, and his range of motion reached a full extension with flexion of 110 degrees with full power muscle strength.

4	5	6
		
Figure 4: Cartilaginous-osseous bodies that were removed from the knee joint.		Figure 5-6:- post-operative right knee x-ray, AP (5), and lateral (6).

Discussion:-

Synovial osteochondromatosis was previously reported in the literature. A study was conducted in 2015 by Pimentel et al. [7] they presented a 60-year-old male patient with pain and swelling in the right knee for 4 years duration. CT scan of the knee showed moderate joint effusion with multiple free calcified nodules. No surgical intervention was done for that case.

Synovial osteochondromatosis can occur as idiopathic or secondary to osteoarthritis. In 2016, Deinum et al. [8] presented a study of a 71-year-old female with significant osteoarthritis and severe synovial osteochondromatosis with intra-articular and suprapatellar bursa involvement of the right knee. They performed Total knee arthroplasty with excision of loosening bodies and partial synovectomy. During a 2.5-year follow-up, the patient returned to her full range of movement without recurrence in her affected knee.

A case series, conducted by Zacharia et al. [9] reported two patients with elbow synovial osteochondromatosis and a case of hip synovial osteochondromatosis. The first case was a 41-year-old male complaining of pain in the right

elbow and swelling for a one-year duration of symptoms associated with flexion contraction of 30 degrees. The diagnosis was confirmed based on MRI findings. After that, he was managed with synovectomy and loose body extraction which relieved his symptoms and improved his elbow motion. The second patient was a 35-year-old man who reported left elbow pain and swelling for almost two years after a history of minor trauma that was associated with progressive restriction in his range of movement. He was treated with synovectomy along with loose body removal that didn't improve his restricted elbow. On the other hand, the third patient was described as a 15-year-old boy with right hip pain that presented for one year, associated with limping. His treatment plan was synovectomy and osseous nodule removal which enhanced his pain and gait abnormality.

Conclusion:-

There is no specific recommended management for knee synovial osteochondromatosis. therefore, identifying the primary etiology and addressing the patient's desire through detailed history taking, physical examinations, and proper radiological imaging will help in deciding the best management plan.

We emphasized the importance to proceed with appropriate management for joint arthroplasty as pain management and recouping functional range of motion with activity modifications.

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