



## Post Traumatic Solitary Giant Synovial Osteochondroma of Elbow

Authors

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### Abstract

*Primary synovial chondromatosis represents a relatively rare benign neoplastic process which shows hyaline cartilage nodules in the subsynovial tissue of a joint, tendon sheath, or bursa. It commonly occurs within joints. The most frequently affected articulation is the knee. Other commonly involved joints include the hip, elbow, shoulder, and ankle. Single giant synovial osteochondroma is furthermore rare entity as in this case which has a history of old trauma. Plain radiograph was done for the patient initially, with contrast enhanced computed tomography (CECT) and magnetic resonance imaging (MRI) done for detailed evaluation. Plain radiograph revealed a calcified lesion in relation to the olecranon fossa towards the posterior elbow joint. CT scan showed a solitary large ossified lesion separate from the bones in relation to the elbow joint. MRI images showed lesion within the elbow joint with iso-intensity with medulla. Patient underwent surgery and histopathological examination confirmed synovial osteochondromatosis. This case highlights a uncommon presentation of a rare disorder with the formation of a giant synovial osteochondroma.*

**Keywords:** CT, elbow, giant synovial osteochondroma, MRI.

### Introduction

Primary synovial chondromatosis represents a relatively rare benign neoplastic process with hyaline cartilage nodules in the subsynovial tissue of a joint, tendon sheath, or bursa. The nodules may enlarge and detach from the synovium. This condition is usually affects a single joint of which it affects the knee joint in more than 50% of cases.<sup>1</sup> The disease occurs more commonly in

males. The peak age distribution is in the fifth decade of life.<sup>2</sup>

The main pathological characteristic is chondroid metaplasia of the subintimal tissue of synovial joints. The term giant SOC is believed to be first used by Edeiken et al in 1994 to indicate synovial chondromas of more than 1 cm.<sup>1</sup> This giant form of SOC is rarely reported in various literatures, and multiple aspects of the condition are still

unknown and it is believed by some to represent a separate entity.<sup>3</sup>

### Case Presentation

A 27 year old, presented with restricted limb movements involving right elbow joint. Patient gave a history of trauma with fracture involving distal humerus at the age of 10 years with closed reduction done at that time. Details of the same were not available at present. Over the years his movements were reduced at the joints. He had consulted a doctor about

5 years back, who advised surgery. However they were not willing for surgery. Recently he had begun to develop intermittent pain for which he came for consultation.

On clinical examination at present, gross reduction in flexion and extension at the elbow joint was detected. Supination and pronation were normal. A firm bony hard mass, measuring approximately 2 x 3 cm, was felt towards the posterior aspect of elbow joint, which was non mobile. The overlying skin was normal. There was no muscle wasting. No clinically detectable distal neurovascular deficit was also noted.

Plain radiograph (Fig 1) revealed a calcified lesion in relation to the olecranon fossa towards the posterior elbow joint.

Patient underwent CT scan for evaluation. CT scan (Fig 2a & b) showed a solitary large ossified lesion separate from the bones in relation to the elbow joint. The lesion measured 1.5 x 2 x 2.8 cm. No significant soft tissue swelling was noted. A mal-united fracture involving trochlea was also noted. Underlying osteophytic changes involving articular surfaces of humerus and ulna were also detected.

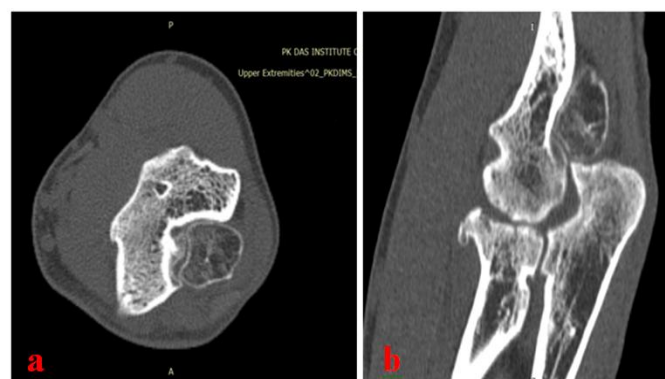
MRI scan (Fig 3a-c) showed the solitary lesion to be separate from the bones and located within the joint space. The lesion showed central T1 and T2 iso intensity with bone medullary tissue. The lesion also had thin hypointense peripheral rim. No other soft tissue oedema or lesions were detected. Neurovascular bundles were relatively normal.

Imaging diagnosis was suggestive of a benign pathology and primary possibility of synovial osteochondroma was given. Differential of large loose body was also considered.

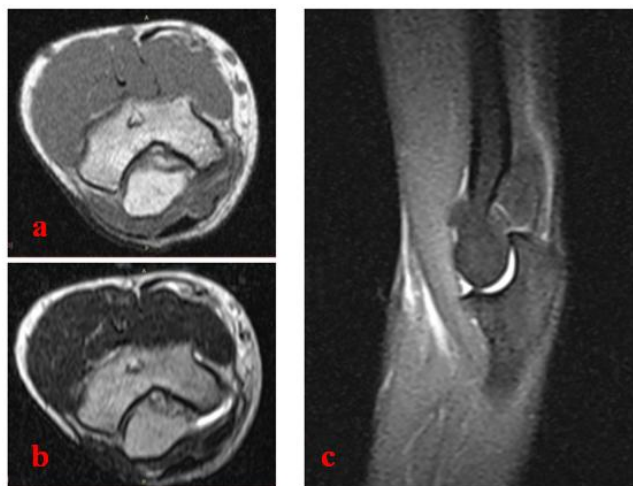
The patient underwent surgery after consent was obtained. Through a postero-medial approach, the joint capsule was opened and the mass removed. Post-operative recovery was uneventful. Histopathological examination confirmed synovial osteochondromatosis. (Fig 4a-d)



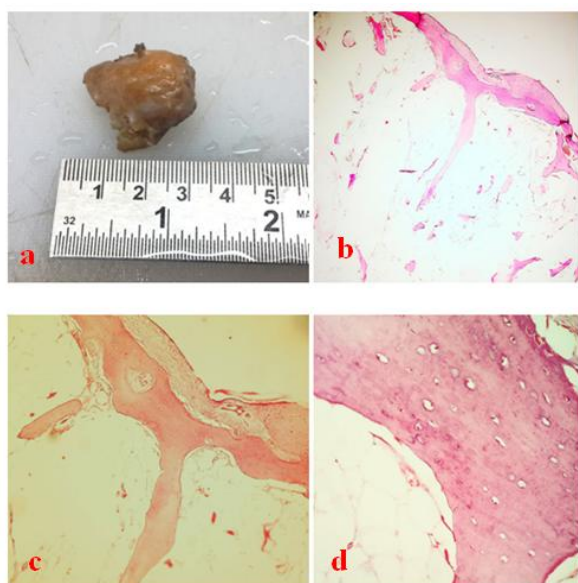
**Fig. 1:** Plain radiograph of elbow lateral view showing heterogenous calcified body posterior to distal humerus in relation to joint. Osteophytic changes were also noted involving articular surfaces of elbow joint.



**Fig. 2:** CT scan axial (2a) and Sagittal (2b) sections showing a solitary calcified lesion in relation to elbow joint separate from the bones. Osteophytic changes were also noted in CT as well.



**Fig. 3:** MRI T1 (3a), T2 (3b) and PDFS (3c) images showing a lesion within the elbow joint with iso-intensity with medulla. No significant adjacent soft tissue inflammation noted.



**Fig. 4:** Post excision gross specimen (4a) and histology images (4b, 4c & 4d) confirm abundance of chondroid tissue with synovial proliferation indicative of synovial osteochondroma.

### Discussion

Synovial chondromatosis was first described by Leannac in 1813.<sup>4</sup> The current description of the disease, however was not applied until 1958 by Jaffe.<sup>4</sup> Synovial chondromatosis has been divided into primary and secondary forms. Secondary synovial chondromatosis is associated with joint abnormalities, such as mechanical or arthritic

conditions, that cause intra-articular chondral bodies.

Synovial chondromatosis is a benign process which is typically self-limited and may recur locally. However, its histologic appearance can be suggestive of a more aggressive chondroid neoplasm like chondrosarcoma to the less experienced. Malignant transformation of synovial chondromatosis to chondrosarcoma is an unusual complication of this disease.<sup>5</sup> These type of tumors have their origin from the synovial cells or the primitive cells lying within the synovium.<sup>2</sup> These tumors are formed by metaplasia of synovial cells to chondrocytes, thus giving rise to cartilage within the synovial tissue. Further it can lead to multiple loose bodies within the joint cavity which can undergo secondary mineralization.<sup>5</sup> Synovial chondromatosis commonly occurs inside of joint space.

The knee is considered to be the most frequently affected joint, with more than 50%–65% of cases.<sup>1</sup> Other commonly involved joints are the hip, elbow, shoulder, and ankle.

Imaging features of synovial chondromatosis are commonly pathognomonic. Radiographic features include multiple intra-articular lesions with “ring-and-arc” chondroid mineralization and may show erosion of bone on both sides of the joint due to extrinsic compression.<sup>6</sup>

Computed tomography (CT) is the ideal radiologic modality to identify and characterize these calcified intra articular fragments and extrinsic erosion of bone. MRI appearance of synovial chondromatosis is variable due to the extent of mineralization and ossification of the bodies. However the extent of involvement is exquisitely depicted in MRI.

Edeiken et al has described the radiological appearance of giant synovial osteochondromatosis in 10 cases affecting five different joints of which one case is of the elbow.<sup>1</sup> Coalescent of multiple synovial osteochondromatosis may give rise to giant chondroma.<sup>7</sup>

The mainstay of treatment is surgical management which aims to alleviate symptoms. Surgery

consists of removal of loose bodies with excision of involved active synovium. The latter may prevent recurrence.<sup>8</sup>

### Conclusion

The most important take home message is to remember the fact that synovial osteochondromas can mimic a giant loose body. This case report highlights an uncommon presentation of a relatively rare disorder with the formation of a giant synovial osteochondroma which is rarely reported previously in the literature.

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