



## **Tuberculosis of olecranon presenting as pathological fracture operated by olecranon anatomical plate fixation -A rare case report**

**1st Author- Dr.Dattatray Bhakare**

**2nd Author- Dr Rahul Salunkhe**

**3rd Author- Dr Ajinkya Chaudhari**

**4th Author - Dr Raj Kamble**

**Corresponding Author- Dr Kaman Kuity**

### **Abstract:**

**Introduction:**Skeletal tuberculosis is uncommon as compared to pulmonary tuberculosis. Incidence of skeletal tuberculosis is 1-3% of all tuberculosis.skeletal tuberculosis most commonly involved spine and hip. Elbow is an uncommon joint affected by tubercular infection .Most common site of elbow tuberculosis is olecranon followed by lateral condyle of humerus.Typically Elbow tuberculosis patients presented with pain , swelling , discharging sinus, non healing ulcer but delayed diagnosis may leads to osteoporosis and upto pathological fracture

**Case Report:**In our case A 18 years old male presented with pain , swelling and immobility of right elbow since last 15 days following a trivial trauma on right elbow which was sudden onset, excruciating in character, continuous in nature . Plain radiograph of right elbow revealed right sided olecranon fracture and lytic lesion over olecranon.Intra operatively a cavity was found which was filled with greyish white soft tissue bits and pieces .

Curettage was performed and fracture fixation done with olecranon anatomical plate, screws. Bone defect filled with bone graft . Intra operative sample sent for CBNAAT and histopathological examination which confirmed tuberculosis . ATT started after confirming tuberculosis. Elbow immobilisation was done by above elbow slab for three weeks and full range of motion achieved at eight weeks.

**Conclusion:**Although, early stage of olecranon TB treated conservatively with Anti tubercular therapy but surgical intervention along with long term anti tubercular therapy is the most effective treatment method for severe form of olecranon tuberculosis like pathological fracture.

**Keywords:** olecranon tuberculosis, anti-tubercular therapy,

### **Introduction :**

Skeletal tuberculosis is less common as compared to pulmonary tuberculosis. Incidence of skeletal tuberculosis is 1-3% of all tuberculosis.(1)skeletal tuberculosis most commonly involved spine and hip.(2) Elbow is an uncommon joint affected by tubercular infection .Most common site of elbow tuberculosis is olecranon and lower end of humerus followed by lateral condyle of humerus.(3) Typically Elbow tuberculosis patients presented with pain , swelling , discharging sinus, non healing ulcer and decrease mobility of elbow . (4) Delayed diagnosis may leads to osteoporosis and upto pathological fracture. osteoarticular tuberculosis commonly involve weight bearing joints ,relatively uncommon at non weight bearing joints such as elbow.(5)

Management of olecranon tuberculosis depend on severity of the disease.Aim of the treatment is to achieve full range of motion of elbow and activity of daily living . The following case report illustrates that Fracture fixation with anatomical olecranon plate and ATT combination is the most effective treatment for pathological olecranon fracture due tubercular osteomyelitis .

### **Case report :**

A 18 years old male presented with pain , swelling and immobility of right elbow since last 15 days following a trivial trauma on right elbow .The pain was sudden onset, excruciating in character, continuous in nature, aggravated by elbow movement and relieved by rest and immobilisation .No history of constitutional symptoms like evening raise of temperature , weight loss , loss of appetite etc.

On clinical examination , diffuse swelling , tenderness and crepitus presented over right elbow.In addition right elbow range of motion ( flexion ,pronation, supination) was painful and restricted .He had no open wound and Neurovascular compromisation .

Plain radiograph of right elbow ( Ap and lateral view ) revealed right sided olecranon fracture and lytic lesion over olecranon (figure 1)



Figure 1 : Pre operative radiograph of elbow showing olecranon fracture with a lytic lesion

Open reduction and internal fixation with olecranon anatomical plate was planned for him after pre anaesthetic check up. The procedure was done under general anaesthesia with the patient in lateral position. Arm abducted at 90 degree and elbow flexed at 90 degree. Tourniquet was inflated to 240 mmhg after exsanguination.

A 10 cm vertical incision over elbow by posterior approach under aseptic condition. Blunt dissection of soft tissue, ulnar head of flexor carpi ulnaris done and reflect extensor muscles to expose fracture site.

A large cavitory lesion (3.5\*2.5 cm) filled with greyish white soft tissue bits and pieces found at fracture site with joint invasion. (figure 2). curettage was performed and sample obtained from cavity. Through wash given with betadin and normal saline.



Figure 2: Intra operative picture showing cavity over olecranon

Sample sent for histopathological examination and CBNAAT test (figure 3). CBNAAT test detected M. Tuberculosis (rif sensitive) and histopathological examination revealed well formed granulomas, composed of central caseation necrosis surrounded by epitheloid cell and langhan's giant cell, confirmed tuberculosis (figure 4). Pulmonary tuberculosis was ruled out.

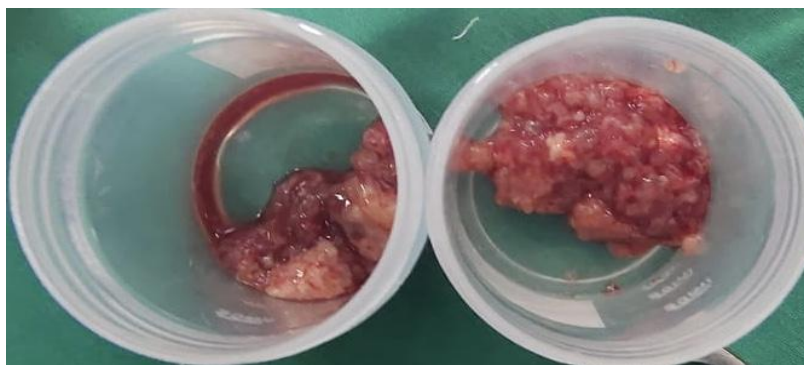


Figure 3: picture of Soft tissue bits and pieces debried from olecranon cavity

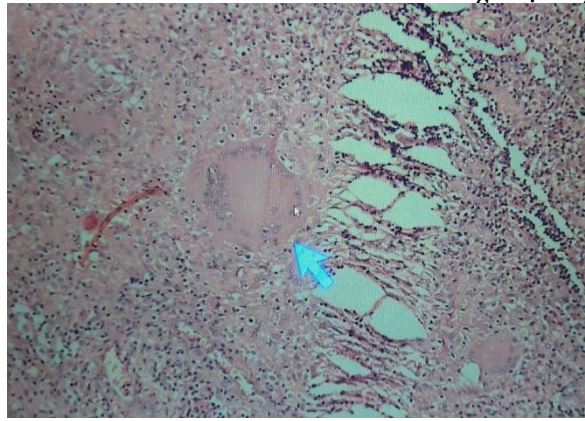


Figure 4: Histopathological examination shows caseation necrosis ,langhan's giant cell and epithelioid cell

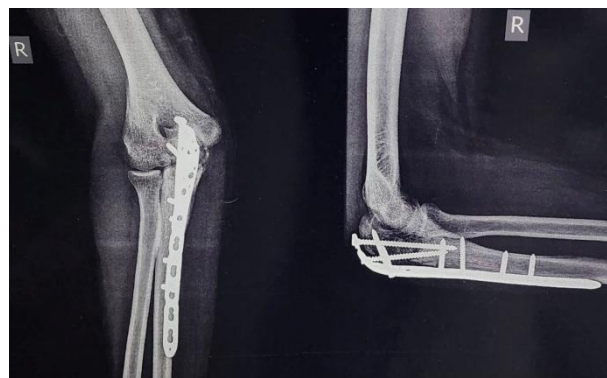
Fracture fixation done with olecranon anatomical plate, screws and Cavity filled with bone graft taken from same sided antero superior iliac spine . Routine closure was done and Post operative immobilisation was done by above elbow slab for 3 weeks .Post operative x-ray was taken,shown in figure 5

Figure 5 : Immediate post operative x-ray showing olecranon fracture fixation with olecranon anatomical plate



Patient was started on ATT after confirming diagnosis .Suture removal was done at post operative day 12.Another x-ray was taken at six weeks, showed sign of union,as shown in figure 6

Figure 6: 6 weeks post operative x-ray showing early signs of union



Gradual range of motion was started from third week as patient tolerated. Full range of motion achieved at eight weeks as shown in figure 7

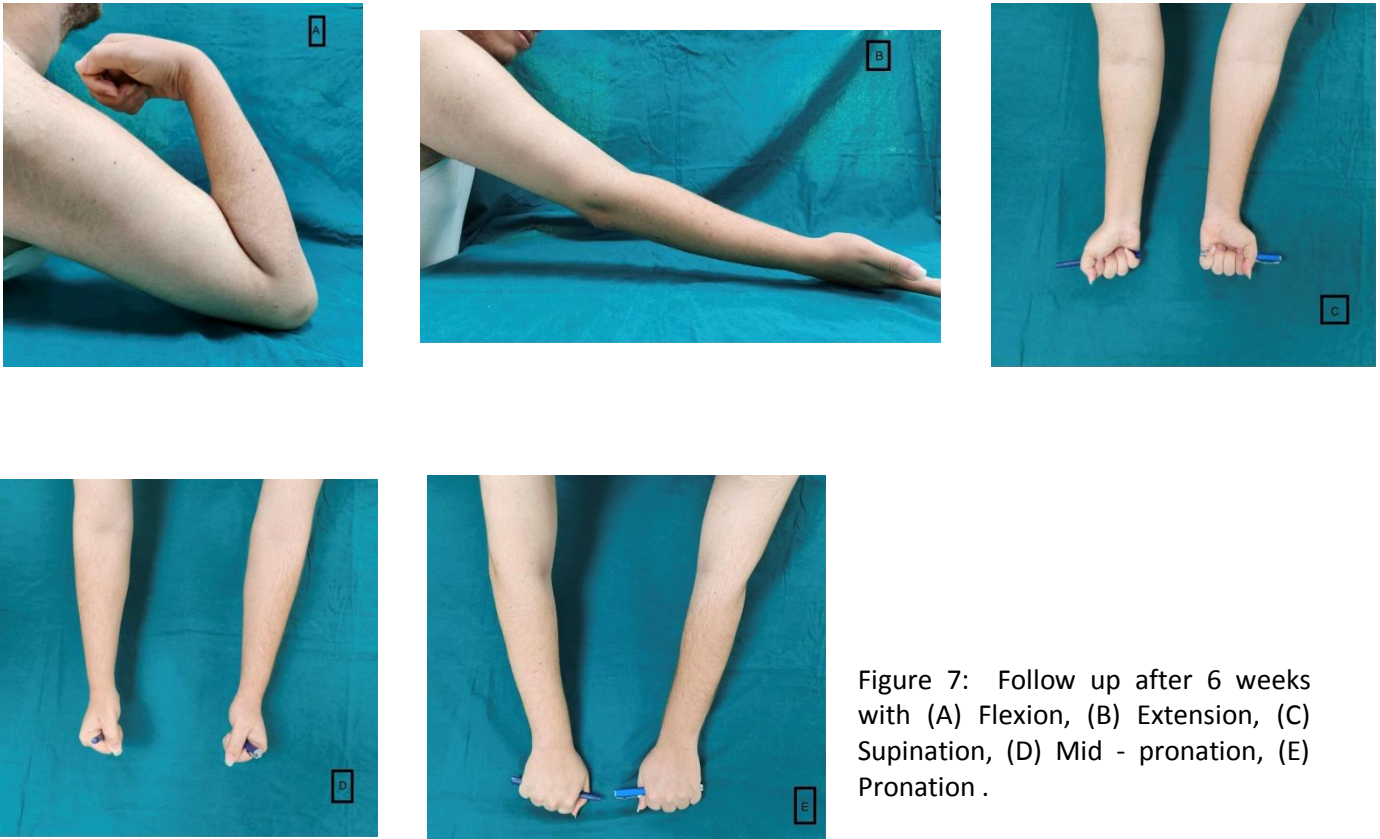


Figure 7: Follow up after 6 weeks with (A) Flexion, (B) Extension, (C) Supination, (D) Mid - pronation, (E) Pronation .

### **Discussion :**

Tuberculosis is a major public health burden globally. In 2021, 10.6 million people are suffering from tuberculosis worldwide. (6) Musculoskeletal tuberculosis is relatively uncommon which frequently affected sites of skeletal tuberculosis are spine, hip, knee. tuberculosis of elbow joint constitutes 2- 5 percent of all cases of skeletal tuberculosis. (7) Although elbow tuberculosis commonly started from olecranon but overall, Olecranon is less frequently affected.

Most common cause of musculoskeletal tuberculosis is hematogenous spread. It commonly affected young population ( usually 2<sup>nd</sup> and 3<sup>rd</sup> decade). Females are more affected than male. (8,9)

The diagnosis is based on medical history, physical and radiological examination, laboratory, microbiological and histopathological examination. Clinical presentations are pain, swelling, stiffness in early stage and may lead to, chronic discharging sinus, muscle atrophy, pathological fracture in advance stage.

Radiological features are non specific may shows lytic lesions ,dead within the infective foci, periarticular osteoporosis.(2,10)

Sensitivity of various laboratory investigations are different like AFB staining 10-30%,LJ media 30-80%,xpert MTB/RIF assay 61-83 %,Interferon gamma assay (QuantiFERON-TB) 60-83% andHistopathological examination 72-97%(11).so, no specific test shows 100% sensitivity.

Although, Anti tubercular therapy is the mainstay of treatment for elbow tuberculosis,but advanced stages ,non healing cases treated with surgical intervention and long term anti tubercular therapy.There are no clear guideline available for surgical intervention in elbow tuberculosis .usually surgical procedures are done for extra articular tuberculosis potential to joint invasion, cases not responding to anti tubercular therapy, kerri and martini stage 3 or 4.(12)Clinical outcomes completely depend on stage of the disease at the time of presentation .so early diagnosis is necessary to prevent upper limb morbidity .

In our case a young male patient presented with pathological olecranon fracture. preservation of the elbow joint was necessity to maintain activity of daily living. so, fracture fixation was done with anatomical olecranon plate and later anti tubercular drugs started after confirming M. tuberculosis with aim of provide painless elbow joint and full range of motion.

### **Conclusion:**

Olecranon is a rare site for TB. Functional outcome of olecranon TB completely depend on early diagnosis and management of tuberculosis.Although, early stage of olecranon TB treated conservatively with Anti tubercular therapy but surgical intervention along with long term anti tubercular therapy is the most effective treatment method for severe form of olecranon tuberculosis like pathological fracture.

**References:**

1. Dhillon MS, Sharma S, Gill SS, et al. Tuberculosis of bones and joints of the foot: an analysis of 22 cases. *Foot Ankle* 1993;14(9):505–513. DOI: 10.1177/107110079301400904
2. Takhar R, Bunkar M, Arya S, Mirdha N. Tubercular osteomyelitis of calcaneum bone: A rare occurrence. *Indian J Tuberc*. 2016;63:203–6. doi: 10.1016/j.ijtb.2015.07.011.
3. Vohra R, Kang HS. Tuberculosis of the elbow. A report of 10 cases. *Acta Orthop Scand*. 1995;66:57–8.
4. Dey B, Deshpande AH, Ojha P, Gargade CB, Nigam JS, Ray A. A case of painful ankle swelling: Cytomorphological clues and pitfalls. *Cytojournal*. 2017;14:25. doi: 10.4103/cytojournal.cytojournal\_49\_16.
5. Multifocal Tubercular Osteomyelitis of Metatarsal and Ulna A rare case report: Neetin P Mahajan<sup>1</sup>, Pranay Kondewar<sup>2</sup>, Prasanna Kumar GS<sup>3</sup>, Shubham Atal<sup>4</sup>, Amey Sadar<sup>5</sup>. Received on: 04 July 2021; Accepted on: 10 August 2021; Published on: 07 October 2022
6. Global tuberculosis report 2022. Geneva: World Health organization; 2022, <https://www.who.int/teams/global-tuberculosis-programme/tb-reports/global-tuberculosis-report-2022>
7. Liao Q., Shepherd J.G., Hasnie S. Mycobacterium tuberculosis of the elbow joint. *BMJ Case Rep*. 2017 Dec 6 doi: 10.1136/bcr-2017-222735. 2017.
8. Handa U, Garg S, Mohan H, Garg SK. Role of fine-needle aspiration cytology in tuberculosis of bone. *Diagn Cytopathol*. 2010;38:1–4. doi: 10.1002/dc.21150.
9. Chopra R, Bhatt R, Biswas SK, Bhalla R. Epidemiological features of skeletal tuberculosis at an urban district tuberculosis centre. *Indian J Tuberc*. 2016;63:91–5. doi: 10.1016/j.ijtb.2015.07.008.
10. Masood S. Diagnosis of tuberculosis of bone and soft tissue by fine-needle aspiration biopsy. *Diagn Cytopathol*. 1992;8:451–5. doi: 10.1002/dc.2840080505
11. Agarwal A. Paediatric osteoarticular tuberculosis: a review. *J Clin Orthop Trauma*. 2020;11(2):202–207. doi: 10.1016/j.jcot.2020.01.005. PMID: 32099280; PMCID: PMC7026562.
12. Current concepts in the diagnosis and management of tuberculosis of the elbow joint, Gaurav Kumar Upadhyaya, a Amit Kumar, a,b Karthikeyan P. Iyengar, c Anil Agarwal, d and Vijay Kumar Jaine. doi: 10.1016/j.jcot.2021.05.014 PMID: 34150492