

## TUBERCULOUS TENOSYNOVITIS OF FLEXOR TENDON PRESENTING AS MASS ON THE PALMAR ASPECT OF RIGHT RING FINGER: A RARE CASE REPORT

Dr Rajesh K  
Ambulgekar

H.O.D, Department of Orthopaedics, Dr S.C.G.M.C Nanded

Dr Rahul S  
Agrawal\*

Junior Resident, Department of Orthopaedics, Dr S.C.G.M.C, Nanded.  
\*Corresponding Author

### ABSTRACT

Infectious tuberculous tenosynovitis is an exceptional location of musculoskeletal tuberculosis involving flexor tendon of the finger. The patient was a 38 year old female of tuberculous flexor tendon presenting as a mass on the palmar aspect of the right hand & ring finger without any other pulmonary or extrapulmonary tubercular manifestation. This report highlights the occurrence of tuberculous tenosynovitis in our environment in patients with associated risk factors for early diagnosis and treatment.

**KEYWORDS :** Infectious tenosynovitis, tuberculous tenosynovitis, extrapulmonary tuberculosis, flexor tendon sheath, rare case report

### INTRODUCTION

Tenosynovitis, a type of tendinopathy results from idiopathic, infectious or noninfectious etiologies such as autoimmune, traumatic or mechanical problems [1]. Infectious tenosynovitis is most commonly caused by *Staphylococcus aureus* and the site of involvement is usually the flexor tendons [2]. Tuberculous infectious tenosynovitis of the flexor tendon is very rare in literature and has been mentioned in very few case reports [3,4]. We present herein a rare case of extrapulmonary manifestation of tuberculosis involving the hand flexor tendon sheath, presenting as mass on the palmar aspect of the right ring finger, in the absence of any other signs or symptoms of tuberculosis.

### Case Presentation

This is a 38 year old female patient, presenting with two months history of swelling & pain over right ring finger associated with mass on the palmar aspect of the right ring finger. She first sought medical advice from a peripheral hospital who made a diagnosis of cellulitis that had failed treatment with amoxicillin-clavulanic acid & analgesic.

Upon physical examination in orthopaedic clinic of our hospital, the patient had a tender fusiform edematous lesion on the right ring finger with erythema extending to the metacarpophalangeal joints of the right ring finger. On palpation, we felt a mass-like cystic enlargement on the right ring finger. She also had stiffness of metacarpophalangeal & interphalangeal joints of the finger (Figure 1). The patient was afebrile, without any other signs or symptoms. There was no history of traumatic injury to the finger. She had no history of contact with a patient with tuberculosis. The superficial lymph nodes were not palpable. Examination of the chest and spine were essentially normal



Figure 1: Clinical photo of hand pre operatively showing fusiform swelling of right ring finger.

Laboratory examinations including complete blood count, random blood sugar and creatinine were all within normal limits with Erythrocyte sedimentation rate (34 mm/hour) & C Reactive Protein (45 mg/L) was raised. However, sputum examination did not yield any tuberculous bacilli. Plain radiographs of the hand were without any bony abnormal findings. (Figure 2) Chest X-ray was normal.

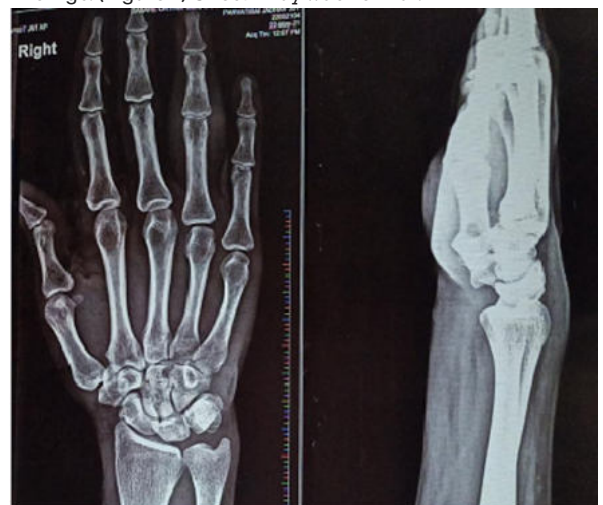


Figure 2: X-ray of hand with wrist showing no bony abnormality.

Ultrasonography of hand revealed soft tissue swelling with hyperechoic collection & thick internal echoes surrounding tendons suggestive of infective etiology.

An MRI of the hand was ordered and revealed a flexor tendon surrounded by abnormal hyperintense fluid in space of parona in distal forearm deep to flexor tendon & in space between pronator quadratus & flexor digitorum profundus suggestive of "infective tenosynovitis"

The decision was made to address the pathology by surgical tenosynovectomy with specimens taken for culture and pathology. Under wrist block anesthesia, a palmar S-shaped incision was made over the ring finger of hand, deepening through subcutaneous tissues until reaching the mass which was completely adherent to the flexor tendons. Intra operatively single pus filled sac was observed with multiple rice granules were seen (Figure 3) Difficult dissection of the mass was carried out to liberate the flexor tendons from the retinaculum. Excision of the mass was carried out. Subsequently, tissues were sent for pathology and the wound was closed in layers.



**Figure 3:** Surgical intervention: mass which was completely adherent to the tendons with presence of rice granules.

Pus Culture & Sensitivity had no growth after 48 hours. Histopathology of the tissues specimens showed caseating granuloma. The antituberculous chemotherapy comprised of intensive phase of isoniazid, ethambutol, pyrazinamide, and rifampicin for the first 3 months and continuation phase of isoniazid, rifampicin, pyrazinamide for another 6 months.

Two months postoperatively, the patient presented to the clinic with complete recuperation of the inflammatory process at the surgical site, and recovery of the finger range of motion in flexion and extension

## DISCUSSION

Tenosynovitis is a medical term used to describe a wide variety of clinical conditions that involve inflammatory or non-inflammatory disruption of the tendon sheath [5]. It can be divided into three pathophysiologic groups: non-inflammatory, inflammatory, and infectious.

The non-inflammatory group is the most common type divided into two subgroups. The first subgroup is stenosing tenosynovitis mainly affecting the flexor tendons, (mostly the ring finger followed by the thumb) [6] present in 2% of the general population and 20% of the diabetic general population [7]. The second subgroup is DeQuervain tenosynovitis which involves the 1st extensor compartment of the wrist, which is present in 0.6 to 2.8/1000 person [8].

Another group is the inflammatory TS, in which etiological factors such as autoimmune immune disease, rheumatoid arthritis, trauma, microtrauma, or even idiopathic inflammation play an important role in the pathophysiological pathways of the disease. These types usually affect the dorsal extensor compartments of the wrist, such as extensor pollicis longus tenosynovitis, 4th compartment tenosynovitis, intersection syndrome, and extensor carpi ulnaris tenosynovitis [5].

The last group is the infectious tenosynovitis. Although no data exists about its incidence, flexor tendons are more commonly involved than the extensor tendons [9]. The most common pathogen isolated in any infectious tenosynovitis is

*Staphylococcus aureus* [10]. As a causative agent *Mycobacterium tuberculosis* is uncommon [11]. Tuberculosis is a major infectious disease affecting mainly lung tissue, but may also infect other organs. The infection can be spread by two major routes: hematogenous or lymphatic [12].

Infected patients can be asymptomatic (latent tuberculosis) or develop active tuberculosis disease, which in turn can be primary extrapulmonary or combined pulmonary and extrapulmonary disease. Extrapulmonary tuberculosis represents about 14% of all tuberculosis cases [11]. The main affected organs include lymph nodes, pleura, bones and joints, brain and meninges, gastrointestinal organs, liver, genitourinary organs, peritoneum, and pericardium [13]. Among all cases of extrapulmonary tuberculosis, the musculoskeletal system is involved in about 1% to 3%, of which the hand as the main site of infection represents only 1% [14].

This extremely low incidence combined with the unusual involvement of the flexor tendon sheath makes the diagnosis of tuberculous tenosynovitis of the extensor tendons of the hand a very unique and rare entity that was mentioned in very few case reports [3,4,11,15].

Risk factors include age >60 years, malnutrition, alcohol abuse, low socioeconomic status, history of or exposure to tuberculosis, immunosuppression from any cause, diabetes mellitus, and intake of corticosteroids [3].

On the tissue level, the tuberculous tenosynovitis is classified into three stages. The first stage involves sheath thickening and serous exudation. The second stage is the proliferative stage showing granulomatous tissue that forms the rice bodies that can be seen in this case. In third and final stage, tissue necrosis is seen. [11].

The challenge in diagnosing this rare disease stems from its nonspecific presentation. In fact, the typical presentation such as the Kanavel sign is absent in most infectious flexor tenosynovitis [9].

The clinical signs of swelling along the tendon sheath can mimic many other conditions that affect the wrist such as De Quervain tenosynovitis, granulomatous tophaceous gout, fungal infections, rheumatoid diseases (rheumatoid arthritis, sarcoidosis) and some types of tumors [16]. This can easily delay the diagnosis for a few months which could ultimately lead to tendon rupture [4]. Our case was misdiagnosed as infectious cellulitis delaying appropriate treatment.

Laboratory data are nonspecific except for elevated CRP and ESR [15]. The diagnosis is aided by ultrasound which may reveal a thickening of the tendon sheath as well as fluid collection inside of it. MRI is a more sensitive and specific imaging modality and a paramount tool in guiding the diagnosis when the suspicion of tuberculous tenosynovitis is high. It allows, in addition to the findings mentioned in the ultrasonography, the visualization of synovial proliferation, abscess formation, and the destruction of adjacent bone [17].

The diagnosis is confirmed by surgical excision, culture and biopsy. Histopathological examination typically shows numerous caseating granulomas surrounded by epithelioid histiocytes and multinucleated giant cells. However, non-caseating granulomas can be seen in 27% of cases [18].

The mainstay of treatment consists of surgical debridement followed by 9 to 12 months of antibiotic therapy with rifampicin, isoniazid, ethambutol, and pyrazinamide with good clinical outcomes reported in the literature. Our patient received a combination of isoniazid, ethambutol, pyrazinamide, and rifampicin for the first 3 months and continuation phase of

isoniazid, rifampicin, pyrazinamide for another 6 months. [19].

## CONCLUSIONS

Tuberculous tenosynovitis of the hand remains a rare pathology requiring a high index of suspicion. The unusual involvement of the flexor tendons and the non-specificity of the clinical presentation, could challenge the physician and delay the diagnosis, which can be accurately made with the combined use of many tools such as ultrasonography, MRI, tissue culture, and histopathology. Although no consensus has been established on the treatment of this condition, surgical excision followed by 9 to 12 months of antibiotic therapy with ethambutol, isoniazid, pyrazinamide, and rifampin yield good clinical outcomes.

**Consent:** Written informed consent of patient has been taken before publishing the case report.

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