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Tenosynovial giant cell tumour of left index finger: A case report

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Abstract
Tenosynovial giant cell tumour, also known as pigmented villonodular tenosynovitis, is the second most common soft tissue tumour in the hand, after ganglion cysts. Diffuse form and confined form are the two categories. We report on a 31-year-old female patient who has had a two-year history of Tenosynovial GCT of the left index finger's proximal phalanx. Histopathological and radiographic evaluations are required to assist in deciding whether to pursue additional therapy. The entire tumour was removed during the surgical excision procedure. According to histopathology, these masses were consistent with benign tenosynovial GCT. Six months following surgery, there was no sign of recurrence, both clinically and radiologically.
A uncommon instance of tenosynovial GCT at the hand within a single digit is shown by this case. Owing to its elevated probability of recurrence, it is advisable to remove the tumour entirely in order to minimize the likelihood of recurrence. The tumour needs to be examined radiographically and histopathologically; it is found to be benign and doesn't need to be treated any more. If required, the hand's function should be restored to minimize the loss.

Keywords: Tenosynovial GCT, surgical excision, recurrence

Introduction
A particular kind of tumour that develops from tendon sheaths, synovia, and bursae is known as a tenosynovial giant cell tumour (TSGCT) or giant cell tumour tendon sheath (GCTTS) [1]. TSGCT is very common (1: 800.000), primarily affecting women in their 40s and 50s [2]. The World Health Organization classified this tumour into two groups in 2013: diffuse type and confined type [1]. Two-thirds of instances of the localized form (85%) include the digits and wrists, whereas the diffuse type involves major joints such the knee, hip, ankle, and elbow [2]. While the diffuse type is aggressive and destructive with a malignancy component, the localized kind is usually benign [2, 3]. TSGCT is a benign tumour that often develops from the tendon sheath. However, in a few cases, the diffuse type has been documented to lung metastases.
From a molecular perspective, the colony stimulating factor (CSF) gene fusion that promotes tumour growth is typically present in both subtypes [4, 5]. TGCT behaviour is complex and difficult to predict, despite the fact that both subtypes encompass a wide range of clinical entities and share a common pathogenesis [6]. Patients may present with symptoms such as pain, stiffness, oedema, and limited range of motion, with symptoms ranging from minimally symptomatic to severely incapacitating [7].

Patient and observations
History: For the preceding two years, a 31-year-old woman had complained of pain and swelling in the proximal phalanx of her left index finger. There were no past injuries or indications of a concomitant constitutional ailment. The swelling had been increasing in size without causing any pain. The pain was limited to the lesion site, modest, continuous, non-cyclical, and non-radiating. There have never been previous episodes of fever, loss of appetite, increased joint involvement, or swelling over any other body region. No noteworthy medical, family, psychosocial, or genetic history from the past.

Clinical findings: Examining the area revealed a localized enlargement (3x2x3 cm3) in the proximal phalanx of the left index finger [FIGURE 1, 2], which was not painful. The swelling, which was limited to the proximal interphalangeal joint, was grape-like in shape, hard in substance, and painless. It moved with the muscle tendon but became stationary when the muscle was forced to contract against opposition. There were no indications of infection or inflammation on the normal-looking skin above. Pinchable skin covers the lesion. The proximal interphalangeal joint (PIP joint) of the index finger was flexible and pleasant. Swelling moved in tandem with movement of the proximal and distal interphalangeal joints. There was no concurrent lymphadenopathy. Capillary refilling in the nail bed was good. Both digital vessels' patent status was disclosed by Allen's test. There was no sensory deficiency.

Fig 1

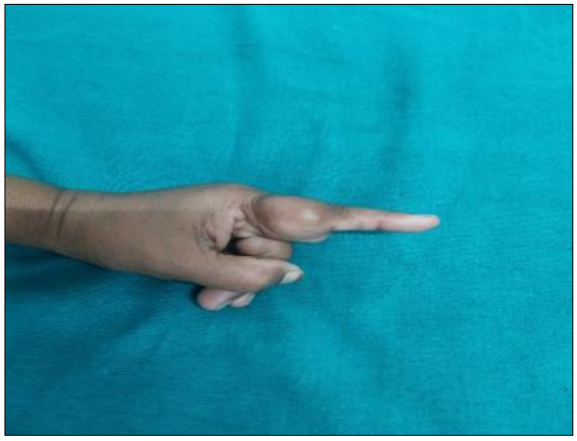

Fig 2

Diagnosis

The patient underwent plain x-ray of left hand which show soft tissue swelling of left index figure involving the proximal part of left index finger. [Figure 3]

The ultrasound of the swelling revealed a relatively well defined lobulated hypoechoic solid lesion measuring around 2.9cm*1.5cm which is noted predominantly involving palmar aspect of left index finger extending to involve subcutaneous and myotendinous plane with no internal vascularity.

The contrast enhanced MRI of the left hand revealed a well defined soft tissue lesion in flexor and lateral aspect of proximal phalanx along flexor digitorum tendon of index finger of left hand likely to be a tenosynovial giant cell tumour. [Figure 4]

The FNAC of the swelling revealed giant cell tumour of tendon sheath.

All the blood parameters are in normal level.

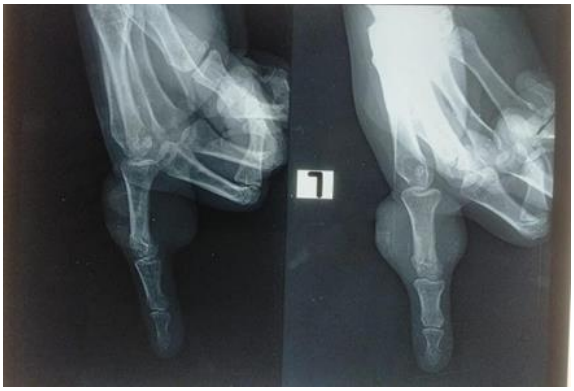

Fig 3

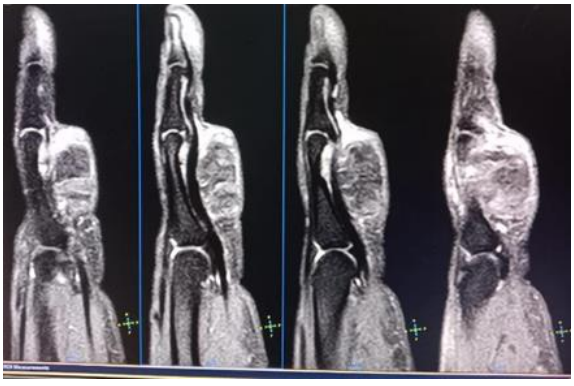

Fig 4

Management

The only option for these kinds of GCT instances is surgical bulk removal.

In our instance, we made a linear incision across the swelling on the lateral aspect of the index finger, and the tendon sheath was discovered to be above it. Without causing any harm to any tendon or neurovascular tissue, the entire mass was excised [figure 5] and skin was closed [Figure 6] and sample sent for an excisional biopsy.

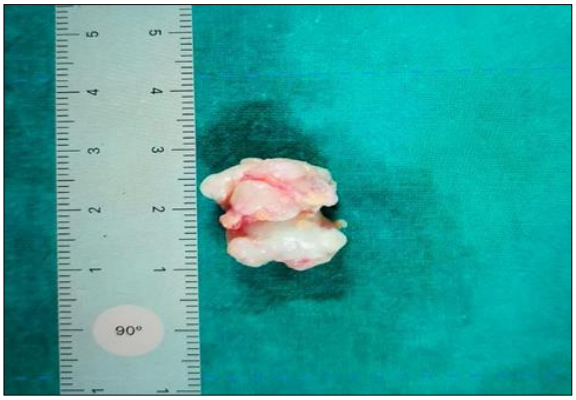

Fig 5

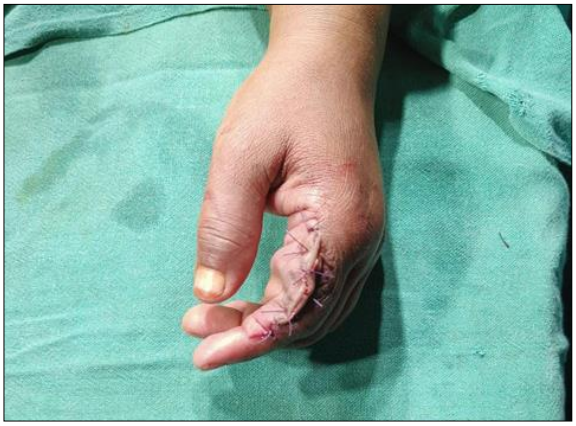

Fig 6

Follow up

After 14 days, the patient returned for a follow-up visit. The stitches had been taken out, and the biopsy report had verified the diagnosis. The patient was subsequently monitored for six months [Figure 7, 8, 9], during which time she underwent radiological and clinical evaluations and

showed no signs of a tumour recurrence. Upon clinical examination, the finger's implicated interphalangeal and metacarpophalangeal joints showed normal ranges of motion.

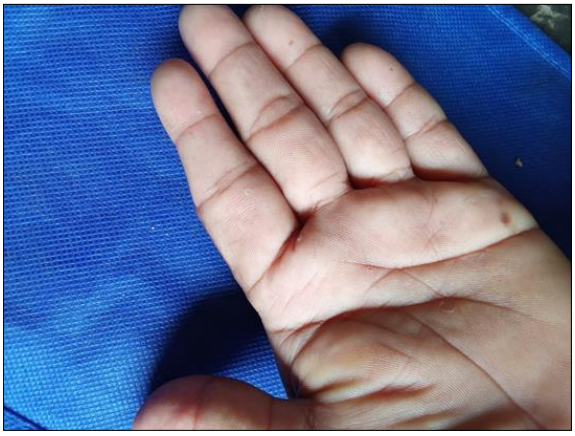

Fig 7

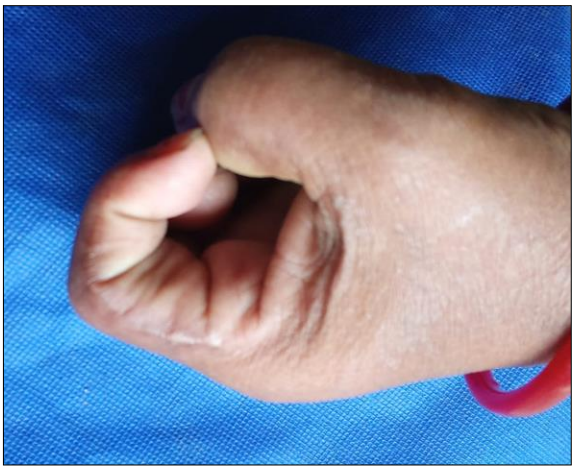

Fig 8

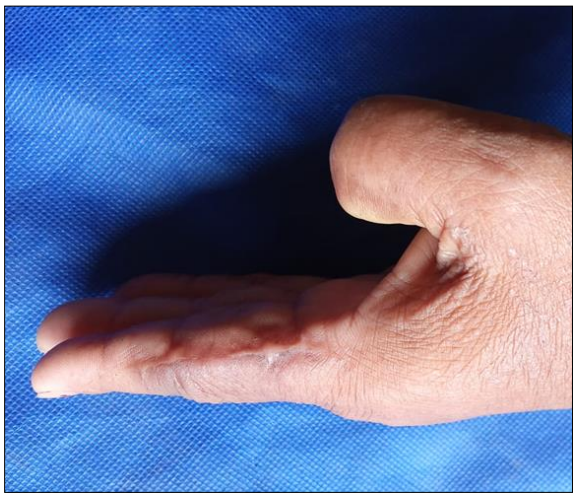

Fig 9

Patient perspective: The patient recovered quickly from a brief hospital stay and showed no signs of recurrence at this time. The patient's primary complaint, oedema, went away when they were able to move freely. Additionally, there were few bed stays and follow-up visits. As a result, the patient experienced greater relief, was happy with his treatment, and avoided developing any skeletal deformities.

Discussion

The benign fibrous tissue tumour known as tenosynovial GCT arises from the tenosynovial sheath, bursae, and joint synovium. This tumour is more prevalent in individuals between the ages of 30 and 50 and is more common in women [8]. Tenosynovial GCT may have a variety of aetiologies, including trauma, infection, osteoclastic growth, inflammatory response process, and local lipid metabolism abnormality [9].

In general, painless, swollen, slowly developing masses are seen on tenosynovial GCT. Recurrence and joint injury, requiring surgical resection, are the main risks associated with GCTTS [10].

According to Choughri *et al*., the tumour's recurrence rate following surgery was estimated to be between 15 and 45% [11].

The overall recurrence rates, according to Williams *et al*., varied from 7 to 44% [12]. According to Hakan, there were 6% recurrences [13].

To prevent recurrence, extensive surgical intervention is crucial right now. In order to avoid recurrence, we achieved full excision of these lesions containing tendon sheaths in our study. At the six-month follow-up, which was carried out in the subsequent research, no recurrence was discovered. Here, we emphasize that a radical removal of the tumour accompanied by removal of tendon sheath and removal bone erosions is necessary.

According to Manske and Tang JB *et al*., the removal of the A1 and A2 pulleys would result in a partial loss of hand function [13, 14]. As a result, the pulley's integrity is crucial to the hand's functionality. The pulley in this instance was undamaged and required no repair. In cases of hand tumours, the surgeon should take into account the possibility of reconstructing the lesion in order to minimize functional loss. The patient's hand flexion and extension activities were observed after surgery, and they were normal.

Conclusion

A uncommon instance of tenosynovial GCT at the hand within a single digit is represented by our case. Furthermore, the tumour needs to be entirely excised to lower the chance of recurrence due to its high recurrence rate. Furthermore, the tumour needs to undergo radiographic and histological examinations; these tests reveal that the tumour is benign and doesn't need to be treated further. Lastly, if necessary, the hand's function should be restored to minimize the loss.

Authors' contributions

Prof Dr Chinmoy Das has made substantial contributions to the concept and design, and is the main author.Dr Avinish Kumar Singh, Dr Somesh Saha and Dr kaustav Kashyap Hazarika have been involved in the drafting of the manuscript and revised it critically for important intellectual content. All authors have agreed to be accountable for all aspects of the work. All authors read and approved the final manuscript.

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Conflict of interest: None declared

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