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# Giant Cell Tumour of Tendon Sheath

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**Abstract**
*Giant cell tumour of tendon sheath is a benign but locally aggressive and recurrent Neoplasm. Origination of this tumour is commonly from membrane of tendon sheath, bursa, and joints. Malignant behaviour is uncommon. The patient presented with progressive and irregular increase in the dimension of the left middle finger over period of time which was basically did not interfere with the functioning of the hand.*
**Keywords:** *GCT of tendon sheath, Local Gigantism of finger.*

## Introduction

Giant cell tumour of soft tissue is uncommon. Giant cell tumour of the tendon sheath (GCTTS) is known by various synonyms like fibrous histiocytoma of synovium, pigmented nodular synovitis, tenosynovial giant cell tumour, localized nodular synovitis, benign synovioma, and fibrous xanthoma of synovium[2].However, each entity has subtle difference as the name indicates. Most common age groups involved is 30to 50 years[3]. Females being more prone than males andrare in children.

The tumour is a gradually developing painless soft tissue mass. It is the second most common tumour of the hand. The tumour can occur in various sites like spine, ankle knee, and feet[2]. Clinically it is of two types.One is localized and theother is diffuse form.Localized type is a common one which is encapsulated, extra-articular and commonly seen in the tendon sheath of the fingers. Diffuse type is rare one which is non-encapsulated, intra articular and involves the joints[2]. Pathological nature of this disease is still controversial as to whether this lesion is neoplastic or non-neoplastic, because of the recurrence rate which is reported at 45%. Metabolic disease is considered as the causative factors and lesions associated with trauma and inflammation. The tumour is composed of oval, plumphistiocytes, macrophage with hemosiderin pigments along with multinucleated giant cell and collagen strands; synovial hyperplasia is also observed. Giantcells present in these lesions resembles that of osteoclastic type. Giant cells are nearly 100 micrometre in size with around 50 nuclei. These giant cells are present throughout the lesions. The present study is comprised of

clinical and imaging sciences which gave the probable clinical diagnosis of soft tissue tumour with the differential diagnosis of local gigantism (a suggested history that the patient whose presenting age was 21years had the lesion over the several years probably a decade). The fine needle aspiration cytology gave the diagnosis which was confirmed by histological analysis of the specimen received in the Pathology Department.

**Clinical History**

21-year-old man, a skilled manual worker presented with the complaint of swelling over the left middle phalanx of middle finger for past 8 years allegedly following a trivial trauma. A non-tender swelling, which is sudden in onset and slowly progressing. On examination a bosselated solitary swelling present over the left middle finger measuring 4 x 2.5 cm of varying consistency namely soft to yielding in nature. The signs of inflammation are not present and there were no restrictionin the mobility of the joint.

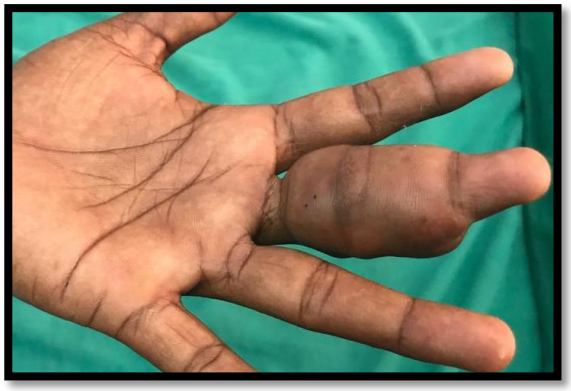


**Figure 1:** The giant cell tumor of the tendon sheath (GCTTS) on the palmar aspect of the middle phalanx of the left hand.

FNAC was done and a provisional diagnosis of giant cell tumour of tendon sheath was made. Subsequently after proper planning, the lesion was excised in toto.

**Fine Needle Aspiration**

To achieve a tentative diagnosis fine needle aspiration cytology was attempted and under conventional asepsis, blood stained fluid was aspirated. Multiple smear studied reveal a material composed of few small groups of round to polygonal to elongated to spindle shaped cells along with scattered multinucleated giant cells of osteoclastic cell type[1]. Background shows haemorrhage.

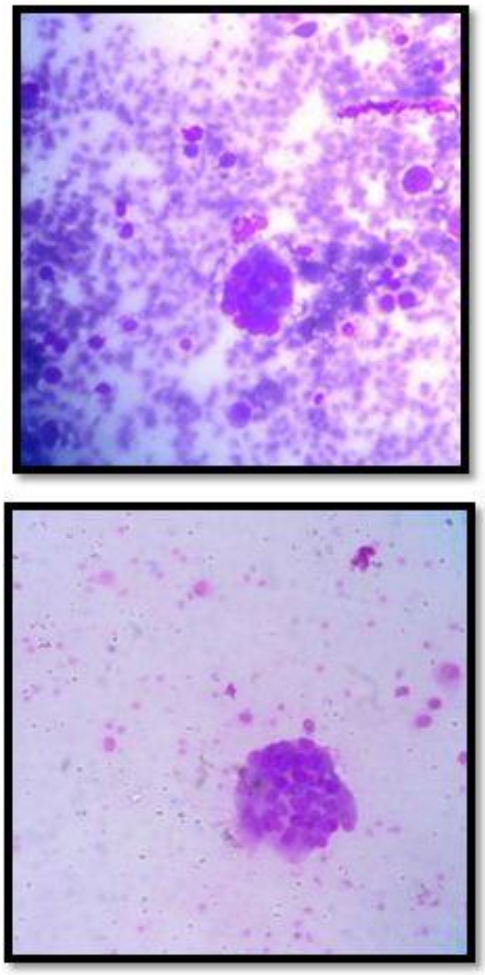


**Figure 2 & 3:** 40x FNA Material to Show Multinucleated Osteoclastic Type of Giant Cell

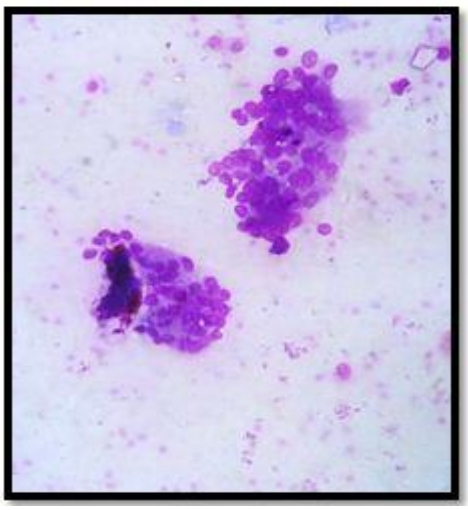


**Figure 4:** 10 X FNA multinucleated giat cell with hemosiderin laden macrophages.

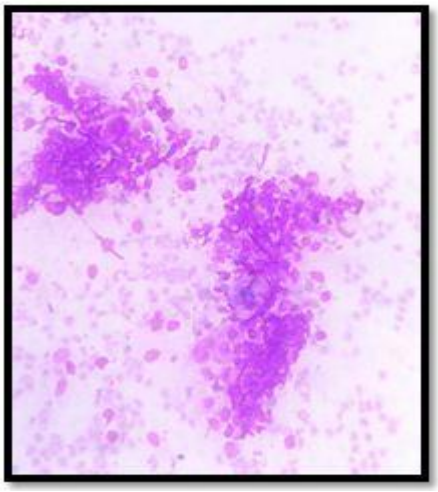


**Figure 5:** 10 x stomal cells.

**Macroscopy**

A large, single, grey brown soft tissue mass measuring 5x3x2cm was received. External surface showed bosselation. On cut section of the mass, grey yellow, grey white solid and gelatinous areas were identified.

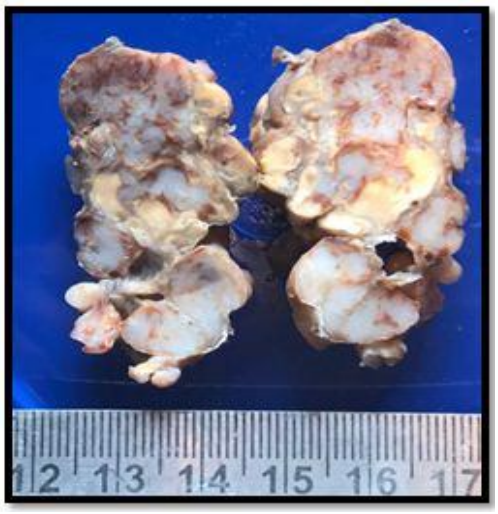
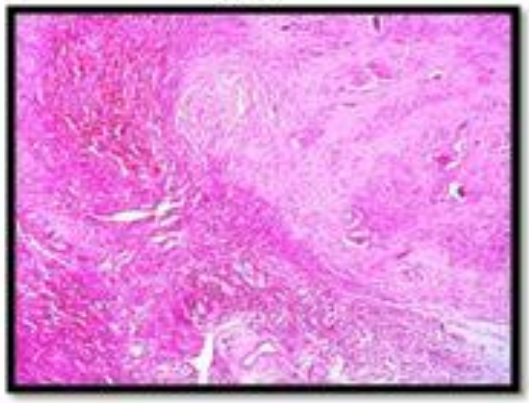


**Figure 6:** Circumscribed multi lobulated soft tissue mass with myxoid and hemorrhagic areas.

**Microscopy**

Multiple sections studied reveal a cellular tumour composed of foamy xanthomatous cells namely Localized collection of cholesterol-laden histiocytes[1]; also seen are elongated spindle shaped cells which are arranged in sweeping bundles[1]. Osteoclastic type ofgiant cells are frequently seen. Extensive areas of hyalinization is present. Occasional cartilaginous areas are observed. The tumour also had macrophage laden with hemosiderin pigments.



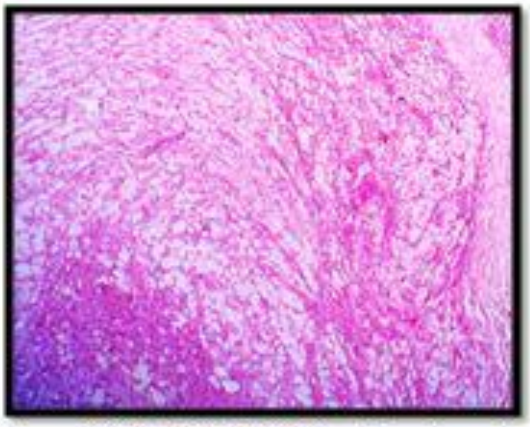
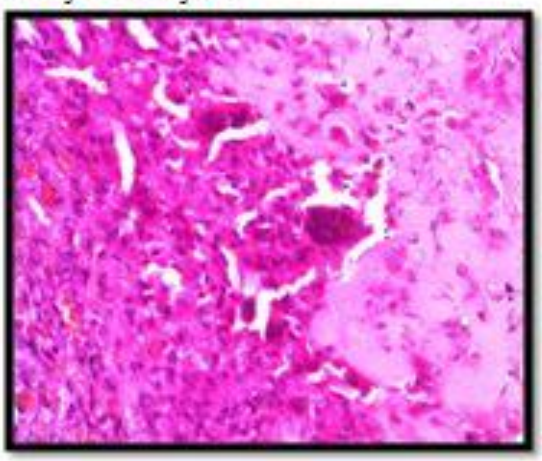


Figure 7&8: 10X H &E: Showing giant cell along with hemosiderin pigments& foamy histiocytes



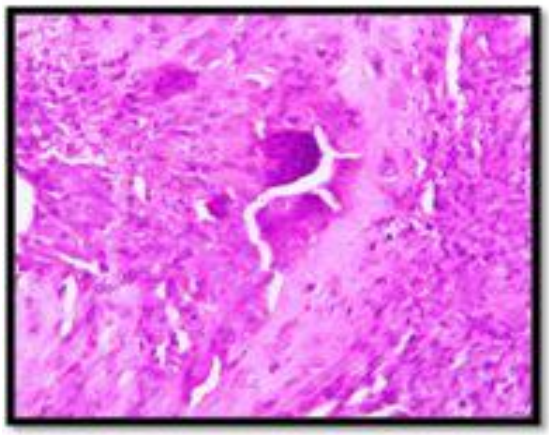


**Figure 9 & 10:** 40X H & E Showing Giant Cell with Chondroid Area

**Discussion**

Histologically GCTTS is composed of multinucleated giant cells, polyhedral histiocytes and hemosiderin pigments. These are spindle shaped cells which are elongated in nature and arranged as bundles[1]. There is no prognostic effect on the cellularity and mitosis[3]. The growth factor such as macrophages Colony Stimulating Factor-1(CSF1) plays an important role. These factors are involved in the proliferation, differentiation and survival of monocytes, macrophages[2]. 1p 13 break point plays the major oncogenic role in GCTT. Mostly they are non-neoplastic cells. Neoplastic cells produce CSF1which influence the inflammatory cell recruitment and activation, called as landscaping. CSRF1 is a Group II receptor tyrosine Kinase that shows structural homology with KIT.

The most frequent location of the tumouris in the long finger (23.5%), followed by the thumb (20.3%), index finger (20.3%), ring finger 7.8%, and little finger 7.8% observed in the Di Grazia *et al*., study. Fotiadis *et al*. and Briët *et al*., in their study, found the most common location of the tumour to be in the index finger (29.7%) and 30%, respectively[2].The treatment approach to the tumour is established by radiograph techniques. However the first method used to diagnose GCTTS is ultrasound and it provides the information regarding tumour vascularity, tumour size and its relationship with the surrounding tissue. Pre operatively the Fine-needle aspiration is helpful to make the tissue diagnosis and further subsequent management. Fine-needle aspiration cytology (FNAC) is very useful in the pre-operative diagnosis and help in pre-operative planning to prevent recurrence. In the present study the lesion was diagnosed as GCTTS by fine needle aspiration.

The reason for high recurrence rate of GCTT is the Subcutaneous location of GCTTS from the tendon sheath and its deeper extension to neurovascular bundle. It makes it difficulty in proper excision of the lesions. The high recurrence rate can depend on proximity to arthritic joint, proximity to distal interphalangeal joint of thumb, and radiological osseous erosion, to types of cells, to mitotic activity, capsular invasion, and incomplete excision.

**Conclusion**

Whether Giant cell tumour is neoplastic or reactive process is still controversial and needs further study. The patient presented with local gigantism and he was not concerned about the swelling as it was symptom less. A pre-operative diagnosis by FNAC was contributory which helped in proper planning and surgery. The histology was confirmatory.

Note: The patient was symptom free and there was no recurrence in the past 12 months follow up; he was advised to report if there was any discomfort or swelling at the operated site.

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