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## Case report - Tenosynovial giant cell tumor in hand in a 15 years old boy

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### Abstract

Giant cell tumor of tendon sheath is one of the most common tumor of hand in the age group 3<sup>rd</sup> -5<sup>th</sup> decades of life. It is common in index finger followed by middle ring and little finger. Here in we present a report of a case of GCTTS in a 15 years old boy who presented in out-patient department with solitary nodule in his right thumb and histologically diagnosed as GCTTS after total excision.

**Keywords:** Giant cell tumor, tendon sheath, hand

### 1. Introduction

Giant cell tumor of tendon sheath is the second most common soft tissue tumor of hand after ganglion. It is slow growing tumor causing mild pain or painless. Overall incidence is 1 in 50000 individuals. Mainly affect in 3<sup>rd</sup> to 5<sup>th</sup> decades of life with slightly female predominance. 15% of total cases there is typical history of trauma but no causative correlation established. It commonly affects small joints of hands mostly index finger followed by middle, ring, little and thumb. Other joints like elbow, knee, ankle are also affected. Complete local excision is done. Recurrence occurs in 15-20% cases. Re-excision is done in recurrence cases.

### 2. Case report

A 15 years old right handed boy with athletic built presented in out-patient department with a solitary nodule in base of right thumb that appear 4 months back. Initially it was small in size, gradually increased in size. There was no significant history of trauma. It was not associated with pain and restricted range of motion. On examination a 1cm x 1cm solitary nodule present over ulnar side of base of right thumb. Nodule was mobile not fixed to skin or underlying structure. No local muscle wasting or dermatological changes. MR scan reveals 8.3 x 7.1 x 8 mm (ML x AP x SI) size nodular lesion in the subcutaneous plane medial aspect of the thumb at the level of mid shaft of proximal phalanx. It is hypointense on T1, hyperintense on T2 & STIR. It is abutting the flexor tendon & mid shaft of proximal phalanx, however not infiltrating it. The medial digital neurovascular bundle in relation to it. Complete excision of tumor done under regional block. Under loupe magnification lesion dissected out by combined blunt and sharp dissection. Ulnar digital nerve and vessel which were entrapped in the capsule of the lesion, dissected out and separated from the lesion and resected "en mass" and sent for histopathological examination. Microscopically section show a well circumscribed lesion composed of round to spindle shaped mononuclear cells and hyalinized stroma. Scattered osteoclast like multinucleated giant cell seen. There was no evidence of malignancy.

### 3. Discussion

Giant cell tumor arises spontaneously in hand. Some people feel after minor trauma [13]. In our case there was no history of trauma. Main affected age group 3<sup>rd</sup> to 5<sup>th</sup> decades of life GCTTS at 1<sup>st</sup> decades is not so common. John S. Hwang *et al*, 2016 release a case report where 9 years old boy was affected. GCTTS is second most common soft tissue tumor of hand [1]. In hand index finger is affected most followed by middle, ring, little and thumb. Hence the thumb is affected [Fig.1]. Sometimes it mimics with some other lesion like lipoma, synovial sarcoma, synovial cyst, ganglion [7]. There are some factors like trauma, metabolic, inflammatory that causes GCTTS. Although the World Health Organization (WHO) classifies as benign so-called fibro histiocytic tumor, there is debate regarding

whether it is true neoplasm or a pseudo neoplastic inflammatory response to soft tissue trauma [10]. It is currently accepted as a neoplasm, a hypothesis supported by the presence of clonal chromosomal aberration (translocation involving chromosome 1p11-13) [11]. In radiography there may be some osseous indentation or bony erosion or neurovascular bundle compromise due to pressure effect of the tumor. In this cases recurrence level is high [2].

MRI is the investigation of choice [14]. Dr Mohamed Saber et al, low intensity on both T1 -weighted and T2-weighted image in GCTTS. But in our patient there is heterogenous signal intensity. Heterogeneity of MRI signal depend on fibrosis, hemosiderin deposition and inflammatory condition [14]. Here in MRI reveals the medial digital neurovascular bundle in relation to it. During operation we found ulnar

digital nerve and vessel entrapped by the capsule [Fig.7]. Under loupe magnification the capsule separated finely from the neurovascular bundle [Fig.8]. MRI helps in differentiating giant cell tumor of tendon sheath from other soft tissue lesion like lipoma, synovial sarcoma, malignant the whole mass removed “en mass” with its thick capsule [Fig. 9] MRI is very helpful to know the preoperative extend of tumor of its plane. Whole tumor was covered with thick capsule. According to Al-Qattan classification it was type Ia [2]. Fig. 7 and Fig. 8 shows ulnar digital nerve entrapment of tumor and after removal of tumor. Fig.10 and fig. 11 shows spindle shaped mononuclear cells and hyalinized stroma, Scattered osteoclast like multinucleated giant cell and does not shows any malignant neoplasm. There is no recurrence 3 months after surgery.



**Fig 1:** Right thumb solitary swelling



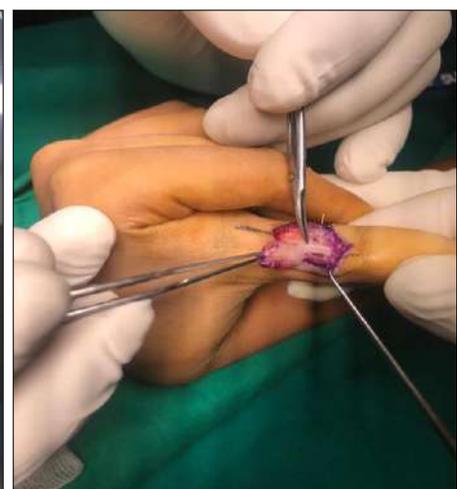
**Fig 2:** right thumb solitary swelling



**Fig 3:** X-ray



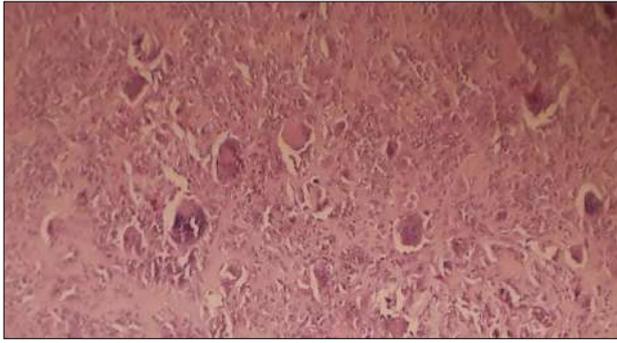
**Fig 4:** MRI T2 hyperintense



**Fig 7:** solitary nodule with capsule (intra-operative)



**Fig 8:** ulnar digital nerve and vessel



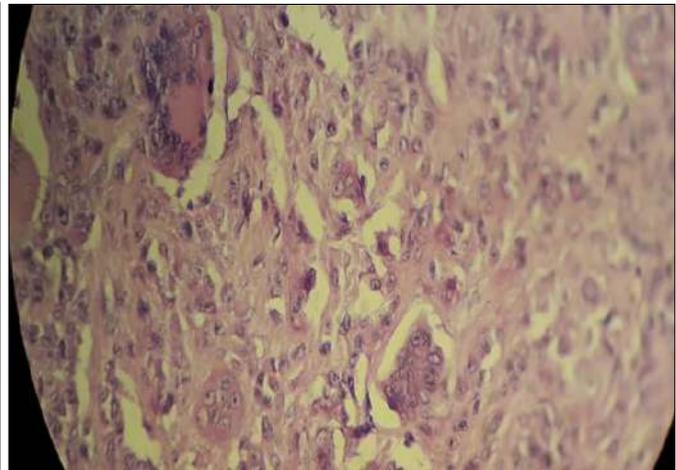
**Fig 9:** Solitary nodule



**Fig 10:** microscopically round spindle shaped mononuclear cell



**Fig 11:** Scattered osteoclast like multinucleated giant cell



**Fig 12:** Three months follow up

#### 4. Conclusion

GCTTS should be kept as differential diagnosis in soft tissue tumor of hand. Total excisional biopsy is the diagnostic and curative. But recurrence should be rule out by regular follow up.

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