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Giant cell tumor of the extensor tendon sheath of hand presenting clinically as De'Quervains tenosynovitis: A case report

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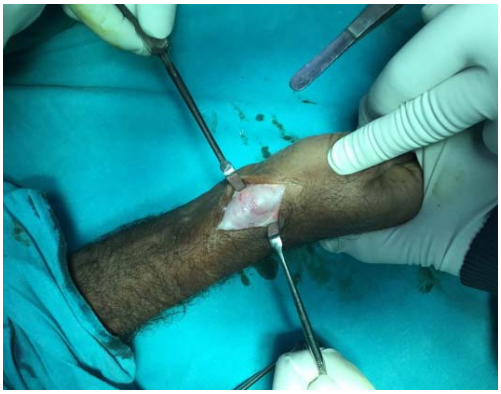
Abstract
Giant-cell tumor of the tendon sheath is an extra articular, localized, solitary, firm, benign, soft tissue tumor that usually presents with painless swelling for several years. Although giant cell tumors (GCT) are considered benign and have a good prognosis, they have a high risk of recurrence. Its overall incidence is 1 in 50,000 individuals and usually affects people between 30 to 50 years. The female to male ratio is 3:2. Etiology of the disease is unknown; it typically affects small joints of hands and feet. Complete local excision is the treatment of choice but local recurrence after excision is approximately 10% to 20%. We report a case of giant cell tumor of tendon sheath of hand presenting clinically as De'Quervains Tenosynovitis.

Keywords: Giant-cell tumor, extensor tendon sheath, De'Quervains tenosynovitis

1. Introduction
Giant-cell tumor of the tendon sheath (GCTTS) is a solitary benign soft-tissue tumor of the limbs. The tumor was first described by Chassaignac in 1852 as fibrous xantoma. Synovial membrane makes the lining of joints, tendons and bursa. GCTTS typically presents as a localized, painless, slow-growing, firm tumor, arising from the tendon sheath mostly of small joints of the hands and feet. It is unusual for giant cell tumors to involve larger joints but it can be found around the ankle, knee joints, elbow or hip[3, 4]. Although giant cell tumors (GCT) are considered benign and have a good prognosis, they have a high risk of recurrence [1].

2. Case Report
A 41 years male presented with painless swelling over right hand since six months. There was no any history of trauma. Swelling was painless, slow growing, solitary and localized to left wrist. There was little pain at radial side of wrist on movement at thumb, especially movements like extension at thumb. Wrist movements were full. There were no local signs of inflammation. There was any previous similar history or swelling elsewhere in the body.
Physical examination revealed swelling over radial border of left wrist. Swelling was firm over tendon of 1st dorsal compartment and was diffuse but firm. There was mild tenderness at radial side of the wrist at abductor pollicis longus (APL) and extensor pollicis brevis (EPB) tendons. Pain was elicited even on Finkelstein provocative maneuver i.e. ulnar deviated wrist with thumb clenched in fist.
Clinical history and physical examination indicated the features of De' Quervains tenosynovitis i.e. stenosing tenosynovial inflammation of the 1st dorsal compartment. Hence, patient was counseled and Non-steroidal anti-inflammatory (NSAID) were prescribed. Patient was asked to follow-up after two weeks.
Follow-up showed no relief of symptoms and hence we decided to immobilize thumb by thumb Spica with continuation of NSAID's. Two months follow-up showed no relief of symptoms. On examination there was slight increase in swelling, hence, an ultrasonography was done. Ultrasonography examination revealed synovial thickening with minimal fluid along first extensor compartment tendon showing increased vascularity.

Release of tendon by excision of tendon sheath was performed under regional anaesthesia. Skin Incision was taken running from dorsal to volar aspect in a transverse-to-oblique direction, parallel with the skin creases over the area of tenderness in the first dorsal compartment. After retracting the skin edges, blunt dissection done in the subcutaneous fat to expose clearly the retinaculum over the 1st dorsal compartment tendons. The 1st dorsal compartment tendons were identified proximal to the stenosing dorsal ligament and sheath, and the compartment on its dorso-ulnar side were opened. The retinaculum covering the tendon which is usually smooth was found unusually thickened and irregular (Fig.1and 2).



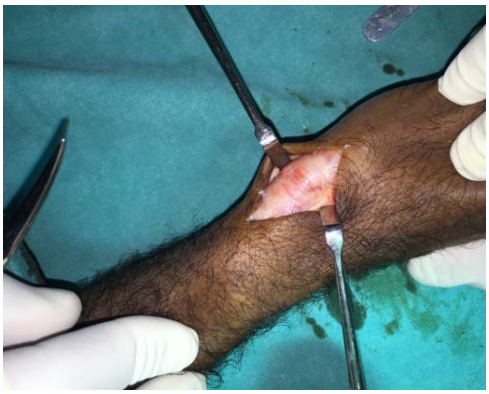


Fig 1 and 2: Exposed first dorsal compartment showing retinaculum covering tendons.

The retinaculum was carefully excised along the fibres and the excised tissue was sent for histopathological examination. With the thumb abducted and the wrist flexed, abductor pollicis longus and the extensor pollicis brevis tendons were lifted from their groove. Thumb movements performed and smooth gliding of tendons ensured (Fig.3). Skin was sutured and small dressing was applied. Thumb and wrist range of motion was immediately encouraged and was increased as tolerated, except for forceful wrist flexion.

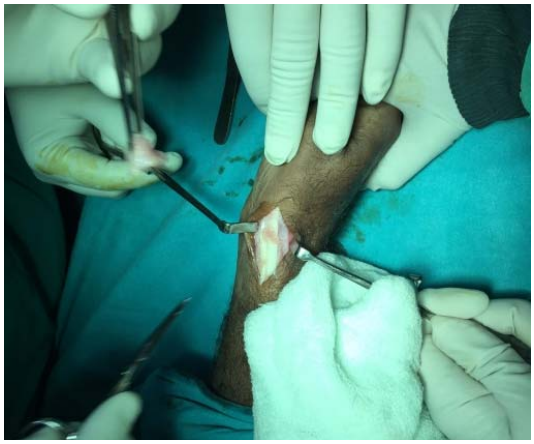


Fig 3: Excised retinaculum with underlying free tendons.

Histopathology of the excised tissue showed tumor consisting sheets of mononuclear cells and osteoclasts type of giant cells having multiple nuclei. Individual mononuclear cells are large round to oval nucleus and prominent nucleoli. Background shoes fibro-collagenous tissue and inflammatory cells (Fig. 4 and 5).

3. Discussion

Etiology of the disease, indeed, is unknown so the tumor is generally considered idiopathic. There are some risk factors that are mentioned in the literature such as infection (the tumor is considered as an inflammatory process arising as a consequence of chronic antigenic stimulation), disorder in the immune system, osteoclastic proliferation, vascular abnormality, localized lipid metabolism disorder [2, 3, 4, 5].

Even though GCTTS was initially considered mostly as an inflammatory disease, the finding of aneuploidy in some cases and the demonstration of clonal chromosomal abnormalities support a neoplastic origin [6].

GCTTS is characterized by proliferation of synovial-like cells accompanied by giant cells, inflammatory cells, siderophages, and xanthoma cells with polyhedral, fibrotic material and hemosiderin deposits. It is grey to yellow – orange in color with brownish areas, depending on the amount of hemosiderin, collagen and present hystiocytes.

It can be divided into localized nodular type (common in hand) and diffuse type (common in joints). Diffuse form is hyper cellular with several giant cells, while localized form is relatively hypo cellular with numerous giant cells. Another classification proposed by Al-Qattan classified GCTTS into Type I (single tumor, round and multi-lobulated) and Type II (two or more distinct tumor's, not joined together). Type II is more often related with recurrence as satellite lesions when microscopic excision is not done [7, 8]. The tumor can be partially or completely encapsulated and may have extensions and/or satellite lesions [2].

GCTTS is a relatively rare soft tissue tumor. The most frequent tumor location is a hand (exceeded in that location only by ganglion cyst), especially the fingers - the index finger (29.7%) followed by thumb (12.9%), the long (24.6%), the ring (16.8%) and then with little (16%) fingers [4].

GCTTS is an extra-articular tumor localized mostly painless soft tissue mass. Patients usually present with painless swelling for several years [1].The intra-articular form of such tumor is commonly described as pigmented villonodular synovitis and they share similar histological characteristics [7]. They are mostly small in size (average tumor size - 2.0 cm), albeit lesions of greater size may be found in the large joints. They are usually well-circumscribed and typically lobulated.

Tumor has been reported as both hypoechoic and hyperechoic by ultrasonography. In most cases, they are hyper vascular lesions. Close contact with the tendon sheath or joint does make this tumor a primary consideration when diagnosing a soft tissue mass near a tendon sheath or a joint [1].

Radiographs are not so important in making this diagnosis but it will tell us whether there is cortical compression, interosseous involvement or soft tissue swelling. Magnetic

resonance is of course the most precise procedure where GCTTS is seen as low signal intensity on both T1- and T2-weighted images and it can accurately assess the tumor size and degree of tumor extent which can affect the type of surgical approach. To reach a diagnosis preoperatively, fine needle aspiration biopsy shall be performed [1, 8].

There is no certain treatment protocol but complete local excision with or without radiotherapy is the treatment of choice. The tumor should be dissected gently without allowing any seedling. In order to achieve that, removing of a cuff of the tendon sheath, part of a capsule, periosteum or even part of a tendon can be done.

Local recurrence after excision is approximately 10% to 20% and according to some authors even 45%, especially in the hand. The known risk factors associated with the high recurrence rate are proximity to the joint, proximity to the distal interphalangeal joints of the fingers, proximity to the interphalangeal joint of the thumb, presence of degenerative joint disease, incompletely excision and radiological osseous erosions [8, 9].

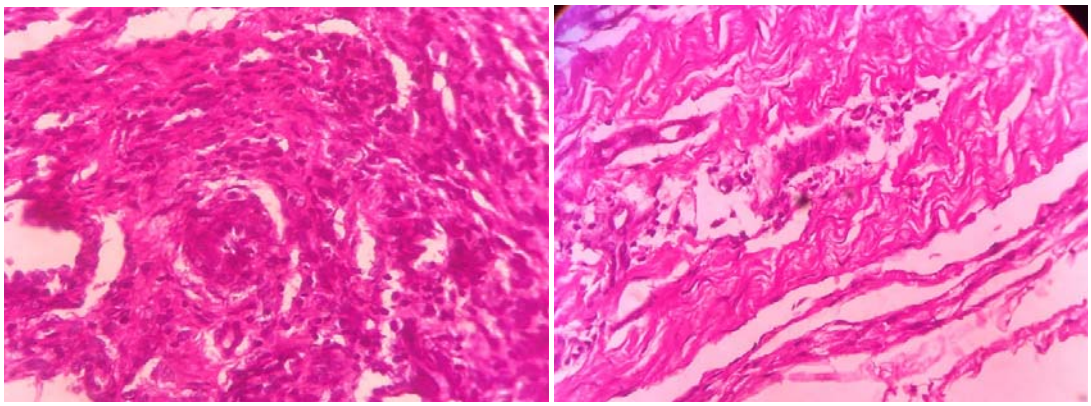


Fig 4 and 5: Histopathological slides showing tumor cells.

Monaghan *et al*. in their study found a mean count of 5 mitoses/10 HPF (range, 1–21/10 HPF) and mitotic figures were found in all lesions. Wright *et al*. found mitoses in only 50% of lesions and Rao and Vigorita found three or more mitotic figures in each 10 HPF in over 10% of their cases. Wright *et al*. noted that recurrences occurred in highly cellular lesions with an increased number of mitoses, and Rao and Vigorita also assumed that the three or more mitotic figures in each 10 HPF might suggest an actively growing lesion, which was more likely to recur. On the other hand there are authors that think how cellularity and mitosis does not seem to affect the prognosis of cancer [10].

4. Conclusion

GCTTS is a rare benign soft tissue lesion that arises from the tendon sheath and that is situated extra articular. It should be considered as a differential diagnosis if the mass is found next to the joint. The most helpful diagnostic procedure is MRI, but to make definite diagnosis histopathological examination is required. Complete excision is the treatment of choice, but the tumor has quite high recurrence rates.

5. Acknowledgments: None

6. Conflicts of Interest: None

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