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**Case Report**

# A solitary giant cell tumor of the tendon sheath of left third finger in a 23-year-old man: a case report

**Panduranga B. V., Guruprasad S.***

Department of Orthopaedics, SIMS and RC, Bengaluru, Karnataka, India

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***Correspondence:**
Dr. Guruprasad S.,
E-mail: guruprasad17101993@gmail.com

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## ABSTRACT

Giant cell tumor of the tendon sheath (GCTTS) is a common condition usually encountered in middle aged men, usually seen on the thumb, index, middle fingers. These benign tumors are known to reoccur. Re-occurrence can be attributed to poor surgical technique, excision of the tumor in toto is considered difficult given the close proximity of the digital nerves, blood vessels, tendons to the tumor. A magnifying loop is usually used in these cases to identify and resect the satellite lesions. In this case report, we are presenting a case of solitary GCTTS of the tendon sheath in a 23-year-old man with history of gradually progressive painless swelling over his left third finger. Musculo-skeletal ultrasound revealed a heterogeneously hypo-echoic well-defined lesion over the ventral aspect of the left third finger. Histopathology showed giant cell morphology. Patient underwent exploration, tumor excision in toto with primary suturing in our institute with an uneventful postoperative period. No loss of range of movements of the PIP, DIP joints was noted in the postoperative period. Good dissection with excision of the tumor in toto gives better outcomes.

**Keywords:** GCTTS, Tendon sheath, Excision, Hand

## INTRODUCTION

Giant cell tumor of the tendon sheath (GCTTS), also known as xanthoma is one of the most common solid tumors of the hand.[1,2] GCTTS can be divided into two types: localised (L-) and diffuse (D-).[3] While D-GCTTS develops in big joints with a more aggressive growth pattern and a high recurrence rate, L-GCTTS mostly affects the tendon sheaths of the hand and foot and has distinct borders. Ultrasound is helpful because it can be used to characterise the lesion and show how it relates to the surrounding tendon. On plain x-rays, tenosynovial giant cell tumors resemble soft tissue density peri-articular masses and have the potential to press against neighbouring bone, eroding it, or, very rarely, to enter the bone and seem like an intraosseous lesion.[4,5] It's rare to experience periosteal response and calcification. GCTTS is usually managed by surgical resection of the tumor enbloc. Most common complication of this entity is recurrence, commonly seen in patients with degenerative joint disease.[6,7]

## CASE REPORT

A 23-year-old male presented to our OPD with the chief complaint of swelling over his left third finger since 3 months. The patient first noticed the swelling 3 months ago. Initially the swelling was small to start with, gradually progressive in nature. The swelling was not associated with pain. There was no history of injury to the left third finger. Also, there was no history of similar swellings in the right hand and other body parts, no history of loss of appetite. On examination, a spherical swelling was noted over the volar aspect of left third finger extending middle phalanx to distal inter-phalangeal joint. The swelling had well defined edges and the skin over swelling was hyper-pigmented. Tenderness was absent, the swelling was firm in consistency, fluctuation and transillumination were negative. The range of movements of the PIP, DIP joints

were not affected. Decreased sensation of the skin over the swelling was noted.

On x-ray, bony erosion was absent. Musculo-skeletal ultrasound of the left hand showed a heterogeneously hypo-echoic well-defined lesion over the ventral aspect of the left third finger which measured 11×23×32 mm. Pre-op biopsy of the swelling revealed giant cell lesion.

The plan of treatment was exploration and excision of the tumor, Brunner's incision was taken over the volar aspect of the left third finger, triangular skin flaps raised. Tumor was dissected from the skin and superficial tissue, digital vessels, nerves were identified and separated from tumor. The tumor was dissected out from the FDP tendon and was excised in toto along with the distal A1 pulley. Haemostasis was achieved and skin flaps were closed using ethilon 4-0, the patient withstood the procedure well. Post-operative period was uneventful and skin sutures were removed on POD 14. The patient had no difficulty in movements of the PIP and DIP joints post-operatively.

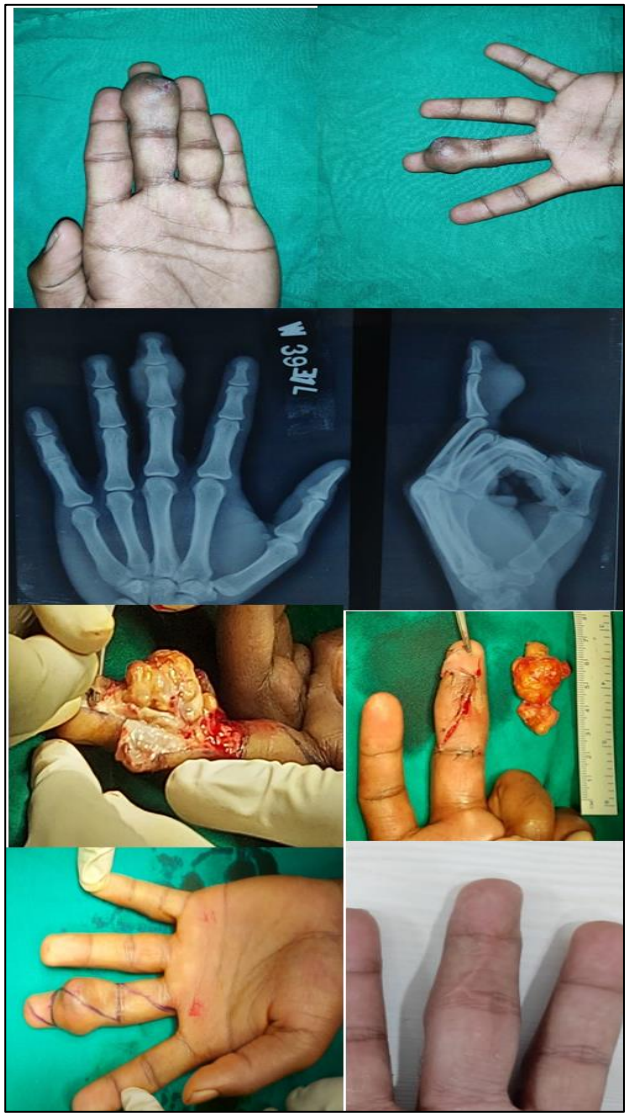

**Figure 1: Pre and post operative picture.**

## DISCUSSION

The second most prevalent benign tumour in the hand, behind ganglionic cysts, is the GCTTS, or pigmented villonodular tenosynovitis. Neurofibroma, pyogenic granuloma, desmidoma, and malignant fibrous histiocytoma are among the possible diagnoses for the tumour. GCTTS is primarily diagnosed through clinical evaluation and confirmed with either a good quality musculo-skeletal ultrasound/MRI of the hand or by biopsy of the lesion. The age distribution of these tumors is between first to eighth decade and are frequently seen on the flexor surface of the fingers.[8] Bony erosions are rare but are reported in a few cases.[4,5] These are slow growing tumors and can be small in size for many years. Most of these tumors are asymptomatic on presentation. Interference with the joint motion is seen if the tumor occurs at the PIP, DIP joints.

On cut sections, they appear encapsulated and are yellow/tan lobular masses. On biopsy, spindle cells, fibrous tissue, multi-nucleated giant cells are encountered.[8] These benign lesions are known for their recurrence in upto 40% of the cases.[8] The reasons for recurrence of the tumor is attributed to the location of the tumor at the level of DIP joints, tendon involvement, invasion of the underlying bone, improper surgical dissection and failure to excise the tumor in toto. Excision of the tumor is known to be difficult under direct vision and may require magnified vision to achieve complete surgical resection.

When magnifying lenses or a microscope is utilised durin g bulk resection, a decreased recurrence rate should beant icipated. In 18 patients with GCTTS, Ikeda had just one r ecurrence following microscopic excision of the lesion.[9]

Fragmentation of the tumor are avoided by meticulous and extensile surgical dissection. Identification of the digital nerves and blood vessels are of paramount importance as any injury to these structures would be considered detrimental in preserving the finger and its functions.

In cases with possible inadequate excision or the presence of mitotic figures, Kotwal et al.[10] advised postoperative irradiation of 20 Gy in divided daily doses of 2 Gy.

## CONCLUSION

GCTTS is a disease commonly affecting men in the third to fifth decade of life. A well performed musculoskeletal ultrasound and a biopsy can be used to confirm the diagnosis. Bony erosions are rare in this entity. Meticulous surgical dissection and en bloc resection of the tumor reduces the chance of tumor recurrence.

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