

# Giant Cell Tumor: A Case Report

by Jenna Mackay, DPM<sup>1</sup>

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**Address correspondence to:** [jennabmackay@gmail.com](mailto:jennabmackay@gmail.com) <sup>1</sup>Podiatric Medicine and Surgical Resident, Mercy Regional Medical Center.

**G**iant cell tumor of the tendon sheath (GCT-TS) is a common soft tissue tumor found throughout the body, though less commonly found in the foot and ankle. These tumors are characteristically benign, sharply localized peritendinous fibrous masses in the synovial or tendinous spaces [1]. While often painless, pressure from the tumors on adjacent structures can lead to symptoms of pain, joint swelling, limitation of motion, or neurological symptoms [2]. Variations in presentation often lead to clinical misdiagnosis. We present the case of a 42-year-old female with a painful soft tissue mass with magnetic resonance imaging (MRI) findings inconsistent with a GCT.

## Case Report

This 42-year-old female presented to clinic complaining of a painful soft tissue mass at the base of the left hallux. Patient stated that the lesion had been worsening in pain and size over the last three to four months. Her past medical history was significant for anemia, dysmenorrhea, and depression. Patient was employed in a factory and worked long hours standing on her feet. She described her pain as aching in nature and rated it as a 5/10. She denied any trauma to the left foot, any signs of infection or any open lesions.

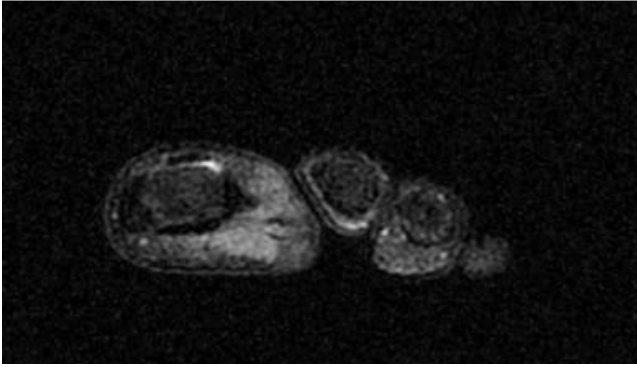
On physical exam, a soft tissue mass, with a firm consistency, was noted to be extending from the base of the proximal phalanx to the plantar lateral aspect of the left hallux. The lesion was well adhered, non-fluctuant and without erythema or edema. There was pain to palpation of the lesion. Her neurovascular status was intact. Radiographs revealed soft tissue edema at the location of the palpable soft tissue mass (Figure 1).



**Figure 1:** Left foot radiographs revealing soft tissue edema to the lateral aspect of the hallux interphalangeal joint (HIPJ).

Next, an MRI was ordered and the read by a radiologist revealed a 1.7 cm x 1.4 cm x 2.3 cm lobulated, well circumscribed mass to the lateral

aspect of the left hallux. The mass was further described as a mildly but relatively uniformly enhancing soft tissue mass most compatible with a vascular malformation and not typical for a ganglion cyst or giant cell tumor of the tendon sheath (Figure 2).



**Figure 2:** MRI of left foot revealing a soft tissue mass compatible with vascular malformation

After reviewing the MRI findings with the patient, it was deemed appropriate to pursue biopsy of the lesion for definitive diagnosis before excising the lesion. Patient elected for biopsy in the operating room (OR) as opposed to in clinic. Patient presented to the OR shortly thereafter where a core needle biopsy was obtained. Three core samples were sent for pathologic evaluation.

Pathologic evaluation of core needle biopsies determined the lesion was a GCT-TS. Patient was made aware of the results of the biopsy and consented to surgical excision of soft tissue mass.

Patient presents to the OR after appropriate pre-operative screening. After antibiotic prophylaxis the patient was placed under monitored anesthesia care and received a local digital block to the left hallux. Ankle tourniquet was utilized for this procedure. Attention was directed to the lateral aspect of the hallux where the soft tissue lesion was visible. Linear incision over the center of the mass was created using a #15 blade. Blunt dissection was carried to the level of the mass which appeared to be lobulated, hyperpigmented and non-encapsulated. Special care was taken to separate the mass from the surrounding healthy soft tissue. The mass was confined within the subcutaneous and deep fascial layers and did not extend beyond the first metatarsophalangeal joint. No osseous involvement was visualized. The mass was removed in toto and sent for pathologic evaluation. Surgical site was copiously irrigated, and the

tourniquet was deflated. Skin was closed using nylon and chromic gut suture. A dry sterile dressing was applied.

Patient was advised to remain non-weight bearing with crutches in a post-operative shoe until the sutures were removed. Patient progressed well post-operatively and sutures were removed at post-op day twenty, at which time she was able to return to full weight bearing. At five weeks post-operatively, the patient's pain was minimal, and she was able to return to work.

The final pathology report read as a 3.0 cm x 2.1 cm x 1.0 cm white-yellow nodular soft tissue mass with a somewhat gritty consistency. The pathology report confirmed a GCT-TS.

## Discussion

GCT-TS most commonly affect those in their third to fifth decade of life and have a high propensity for females [2]. While there is a substantial amount of literature regarding GCT-TS arising in the hand, there is little from the foot and ankle [2]. In a study of 118 cases, only 3% of GCT-TS originated in the foot [1]. MRI of a soft tissue mass is an appropriate method to aid in diagnosis, though as was seen in our case, biopsy is the gold standard.

Typically, on MRI, a GCT-TS has a decreased signal intensity on both T1 and T2 weighted imaging. This appearance is largely due to the hemosiderin deposits characteristic of GCT-TS [3]. In a case series and literature review by Zhang et al., 10 patients underwent pre-operative evaluation of soft tissue lesions with MRI, and 3 were diagnosed with GCT-TS [1]. While an MRI may provide more information than other imaging modalities such as ultrasound or computed tomography, it should not be relied upon solely for definitive diagnosis. As was demonstrated in our case, MRI alone can lead to misdiagnosis, and biopsy with pathologic evaluation should be utilized whenever possible to confirm diagnosis and appropriate treatment of soft tissue lesions.

With regards to possible recurrence, GCT-TS have been found to have a 9-45% recurrence rate in the hand [1]. Most recurrence was found to be associated with history of trauma [1]. While recurrence has not been specifically studied in the foot and ankle literature, there has been little suggested to reflect a

correlation between trauma and recurrence [1]. A correlation between bony involvement and recurrence was suggested by Shimizu et al., though this was reflective of diffuse type GCT-TS which is the more aggressive form of GCT-TS involving both extra and intra-articular regions [4]. Our case reflected the localized form of GCT-TS which is more commonly encountered [5]. To date no recurrence has been noted in the presented patient, who after wide excision was able to return to full activity without pain.

## References

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