

A Rare Case of Diffuse Tenosynovial Giant Cell Tumor

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Statement of Purpose

Tenosynovial giant cell tumor (TGCT) is an uncommon proliferative disorder of the synovium with an annual incidence of roughly 11 cases per million.¹ This report adds to the growing literature on TGCT management and supports open surgical excision as the primary treatment approach.

Literature Review

TGCT is thought to arise from a chromosomal translocation resulting in the overexpression of colony stimulating factor 1 (CSF1). Excess CSF1 binds to the CSF1-Receptor, leading to the recruitment of macrophages in the synovium and formation of a tumor.² Notably, the CSF1-Receptor is also activated by malignant cells, which can make differentiation from TGCT challenging without pathological evaluation.³

There are two types of TGCT: localized (single nodule) and diffuse (nodular). Although these subtypes share similar histopathological and pathogenic features, they are differentiated by clinical presentation and radiological findings.⁴ In the lower extremity, diffuse TGCT (D-TGCT) is more rare and most commonly involves the rearfoot whereas localized TGCT most commonly involves the forefoot.⁵ Currently, surgical excision is the standard of care.^{6,7}

Case Study

A 57-year-old male patient presented with an enlarging mass behind his left ankle. The mass has been present for many years but has doubled in size over the past two months. The mass now interferes with wearing shoes, prompting his request for surgical removal. His past medical history is significant for thrombocytopenia, a lung nodule, and osteoarthritis.

Physical examination revealed a well-circumscribed, firm mass to the posterior aspect of the left ankle. The mass was non-tender and ankle joint range of motion was full. Radiographs demonstrated a focal soft-tissue mass along the posterolateral aspect of the ankle joint (Figure 1). MRI showed findings suggestive of TGCT arising from the posterior ankle within kager's fat pad without evidence of invasion into adjacent osseous structures (Figure 2). Due to the chronicity of the lesion and its recent rapid increase in size, the decision was made for surgical excision.



Figure 1

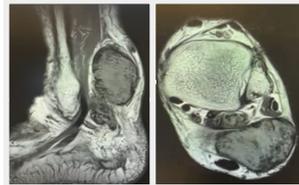


Figure 2

Surgical Technique

An incision was made to the posterolateral aspect of the ankle, just posterior to the peroneal tendon course. Dissection was carried through the subcutaneous tissue where a well-encapsulated nodular mass was identified. The mass was noted to be loosely adhered to surrounding soft tissue and was firm without evidence of fluid content. It was carefully dissected free, revealing a stalk

extending deeper into the tissue. There was no evidence of invasion into adjacent tendon sheath or extension from nervous structures. The mass measured 7cm x 7cm x 6cm (Figure 3).

A second incision was made lateral to the achilles tendon, maintaining a skin bridge greater than 3cm from the initial incision. An additional nodular mass was identified and excised. The second mass measured 6cm x 3cm x 2cm.



Figure 3

Results

Pathology results were positive for CD-68, a marker highly expressed by macrophages, and negative for cytokeratin AE1/AE2 and SOX-10, markers expressed in carcinoma and melanoma respectively. Furthermore, these findings supported the diagnosis of TGCT. Based on its nodular appearance intraoperatively, the tumor was further classified as D-TGCT.

Post-operatively, the patient was kept non-weight bearing for two weeks. The incisional site healed without complication. Given the chronicity of the lesion and the patient's history of a lung nodule, a referral was made to hematology/oncology for evaluation of possible malignant transformation. After further workup, no additional treatment was recommended. Surveillance radiographs at the two-year follow-up showed no evidence of recurrence of the soft tissue mass (Figure 4).



Figure 4

Analysis and Discussion

Surgical excision remains the standard of care for treatment of TGCT. Notably, it has been reported that 1 to 3% of TGCT can undergo malignant transformation into osteosarcomas.³ Furthermore, this underscores the need for a multidisciplinary treatment approach involving surgeons, pathologists, and oncologists when evaluating suspicious soft tissue masses.

Despite surgical management, recurrence rates of TGCT remains high, with a reported rate of up to 55%.² An emerging pharmacological treatment, emactuzumab, targets and inhibits CSF1-Receptor activation.² While this modality shows promise, further studies are needed to evaluate its long-term efficacy.

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