

Tenosynovial Giant Cell Tumor, Extraarticular

- a.k.a. giant cell tumor of tendon sheath; formerly pigmented villonodular synovitis (PVNS)
- Benign synovial proliferation within tendon sheath, most commonly involving fingers
- **85% in fingers**
- Nonspecific soft tissue fullness on radiographs
 - Adjacent cortex erosion/remodeling in 10-28%
 - Periosteal reaction, intraosseous invasion, and cystic/degenerative change are uncommon
 - Calcification uncommon
- Lobulated mass with low to intermediate signal intensity on T1 and T2 MR
 - \pm hypointense fibrous septations
 - Lacks surrounding edema
 - Low-signal hemosiderin foci bloom on gradient-echo imaging
- Intense enhancement, which may be heterogeneous
- FDG PET avid: can mimic malignancy/melanoma

Clinical issues

- Age: 30-50 years (peak: 40-50 years)
 - Female predominance (2:1)
- Painless mass growing for weeks to years
 - \pm distal numbness, functional limitation
 - Prior trauma reported in 1-5%
- Treatment with surgical excision
 - Local recurrence in 4-44%
 - Following local recurrence, likely to have multiple relapses; poor surgical curative potential
 - Inoperable/relapsing: tyrosine kinase inhibitor
- Malignant TSGCT rare: \sim 3%; metastasizes to lymph nodes and lung

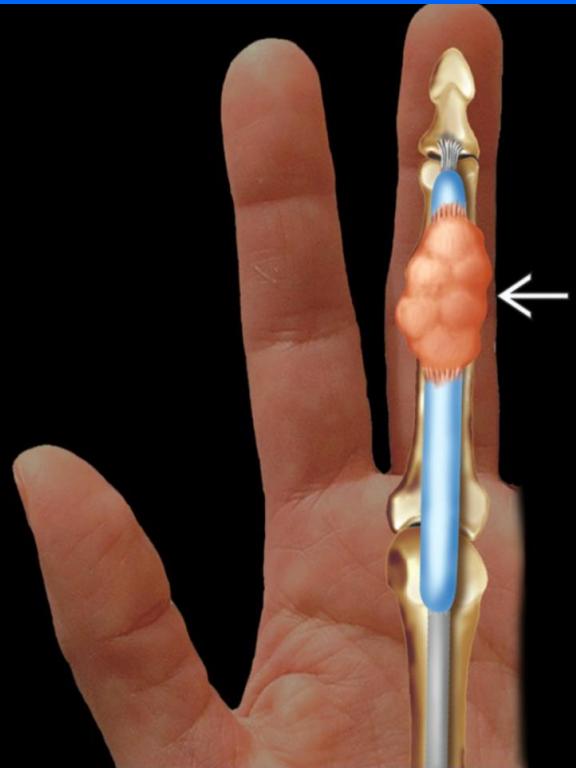
Features

■ Best diagnostic clue

- Lobulated soft tissue mass immediately along tendon

■ Location

- Localized: 85% in digits of hand; palmar > dorsal
 - » Thumb, index, and long fingers are most common
 - » Slight predilection for right hand
 - » Commonly located superficially and near interphalangeal joints
 - » Less common origin deep to tendon (between tendon and bone)
 - » Other: foot and ankle > knee > hip or elbow
 - » Occasionally, multifocal along tendon sheath
 - » May erode bone or involve skin
- Diffuse, extraarticular: rare; knee, thigh, foot, elbow



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Coronal graphic depicts a tenosynovial giant cell tumor (TSGCT) involving the long finger flexor tendon sheath →. Characteristic lobulations are also present.



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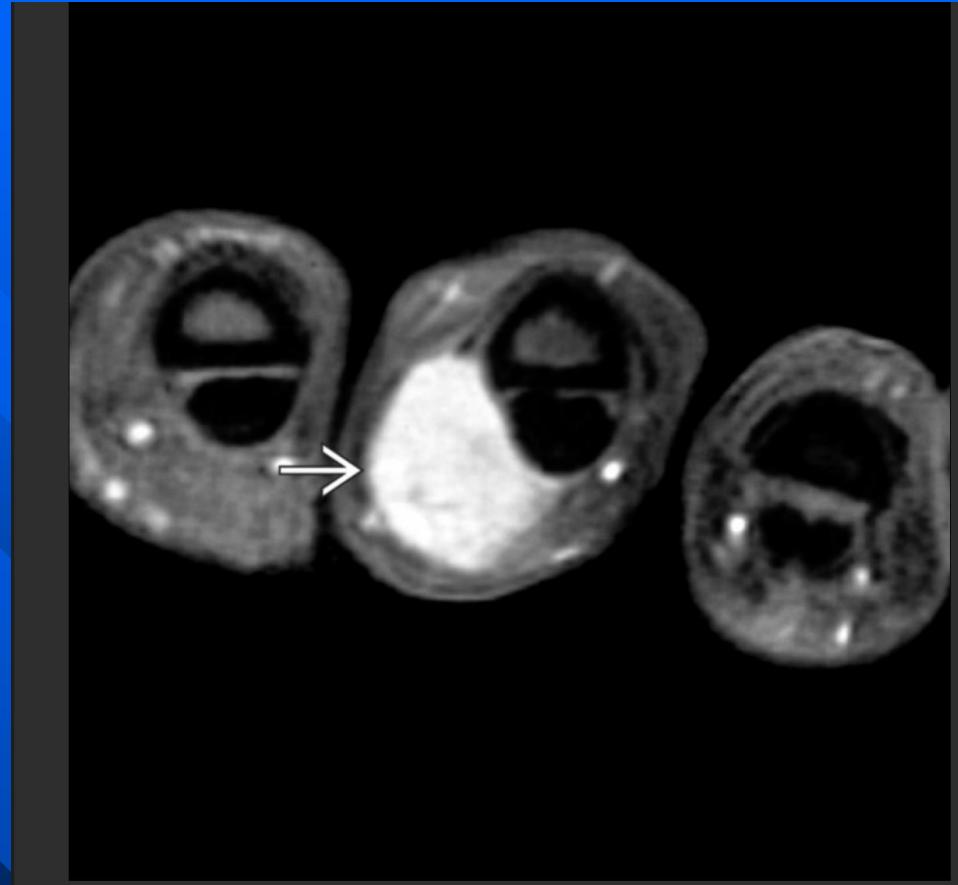
PA radiograph of the hand shows erosions → on both sides of the metacarpophalangeal (MCP) joint and asymmetric soft tissue swelling →. This asymmetric soft tissue prominence strongly suggests that the process is a soft tissue mass causing local erosion. Note the lack of calcifications.



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Coronal T1 C+ FS MR in the same patient shows avid enhancement →, causing pressure erosion on the adjacent bones, reflecting the erosions on radiography. Findings are typical of TSGCT.

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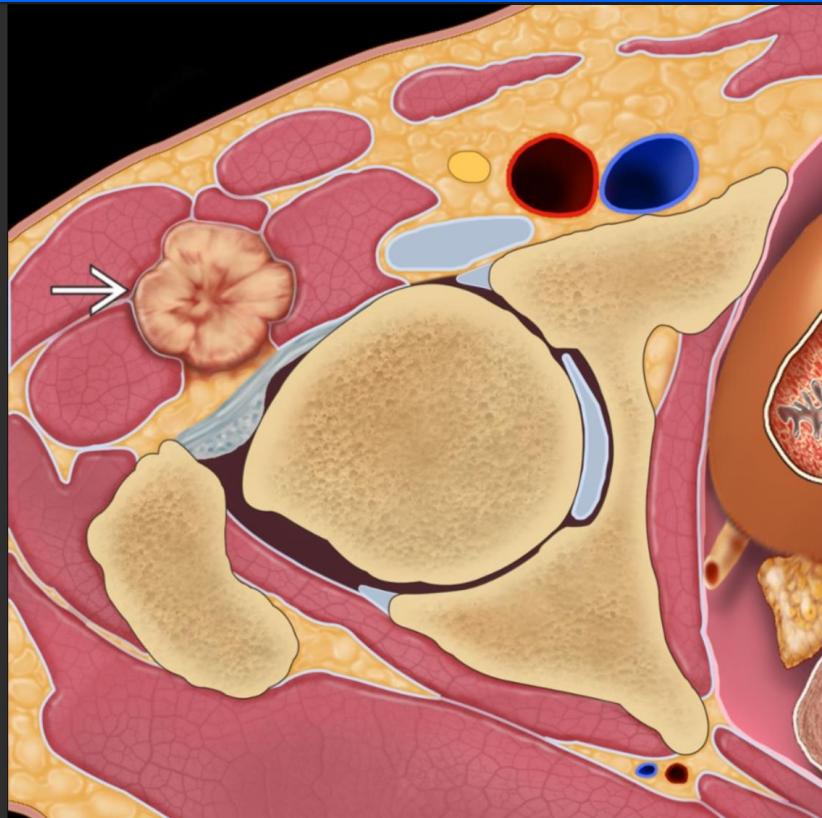
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Axial T1 C+ MR of the fingers shows avid enhancement of a TSGCT →. The location of this mass along the superficial surface of the flexor tendon sheath is typical.



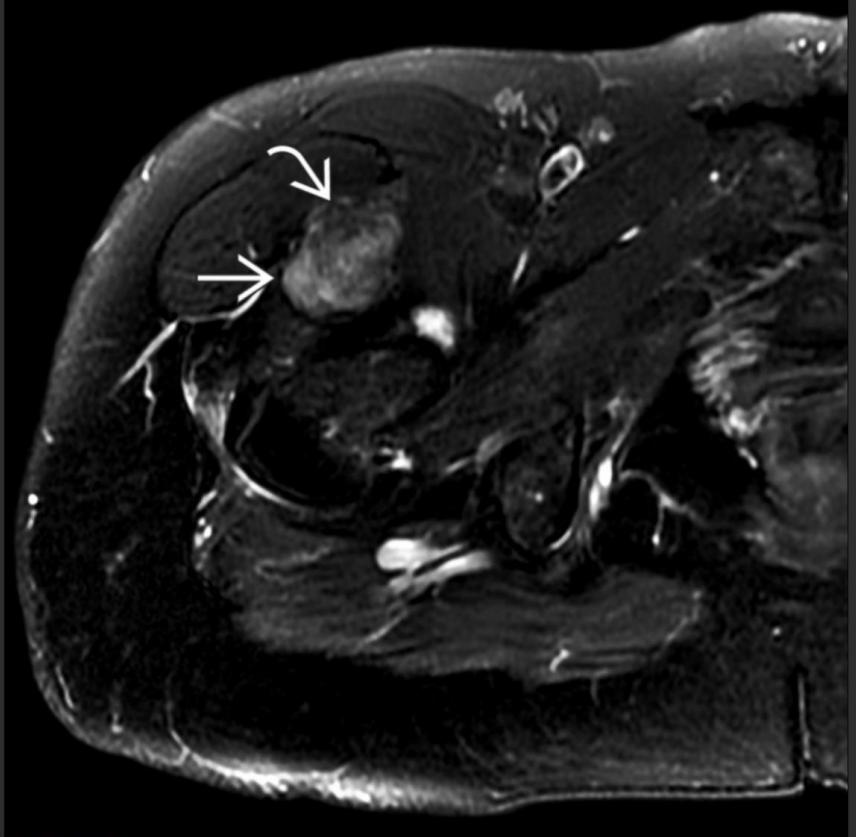
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Sagittal T1 MR shows an intermediate SI soft tissue mass → with low SI septa virtually replacing the Kager fat pad and causing mild erosion of the posterior tibia ↗.



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Extraarticular soft tissue form of diffuse-type TSGCT is shown. Axial graphic depicts a lobulated mass → in the periarticular soft tissues of the hip. These periarticular lesions lack the villous pattern that occurs with intraarticular TSGCT and may lack hemosiderin/low T2 SI, making the imaging diagnosis difficult prospectively.



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Axial T2 FS MR in the same patient shows the mass → to be heterogeneously hyperintense to muscle with areas of low SI ↗. The mass is located in an intermuscular space, bordered by the tensor fascia lata, rectus femoris, and iliopsoas muscles but not in a typical bursa.

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