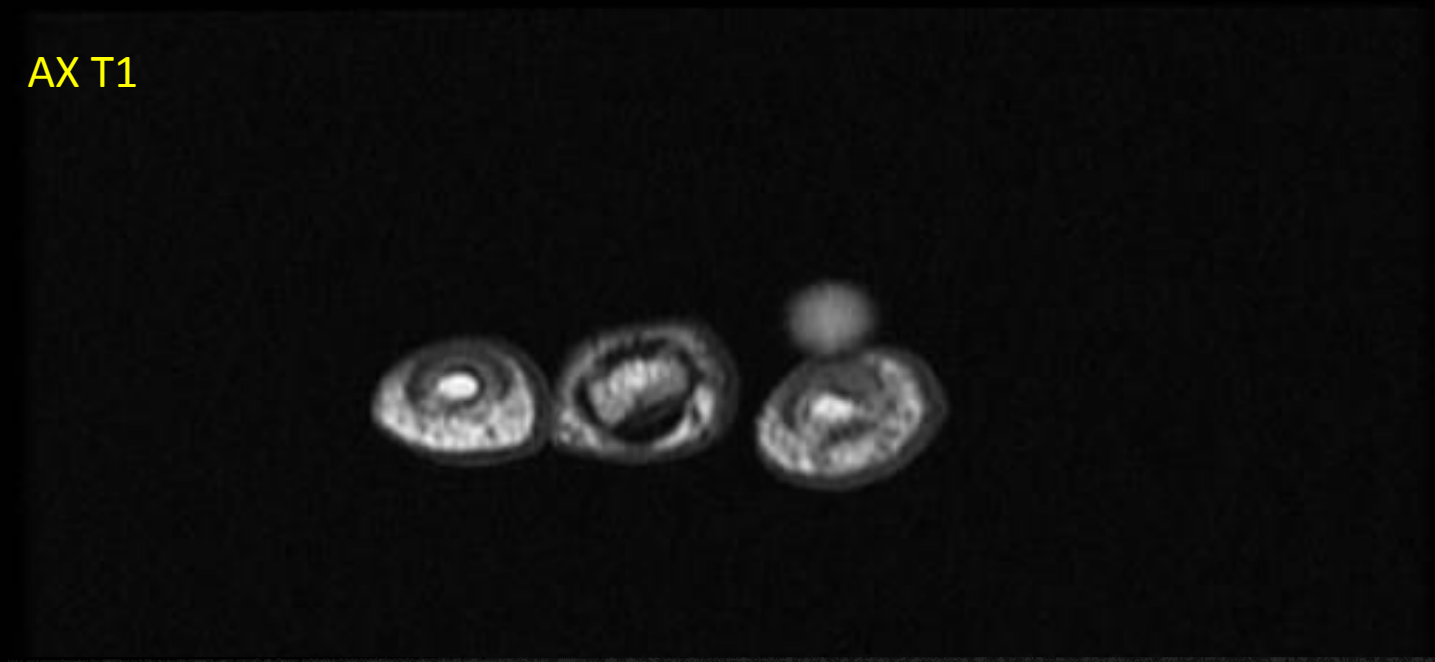
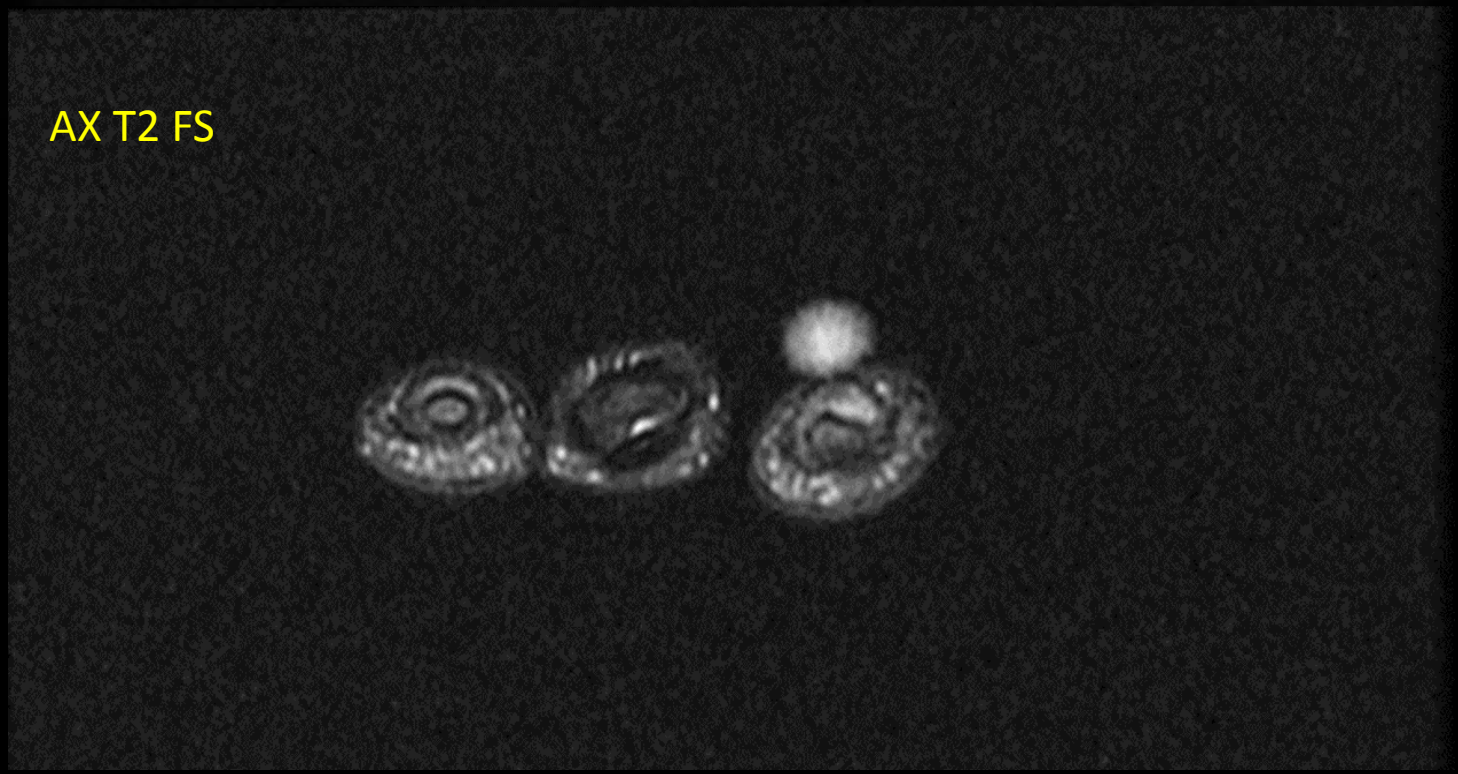
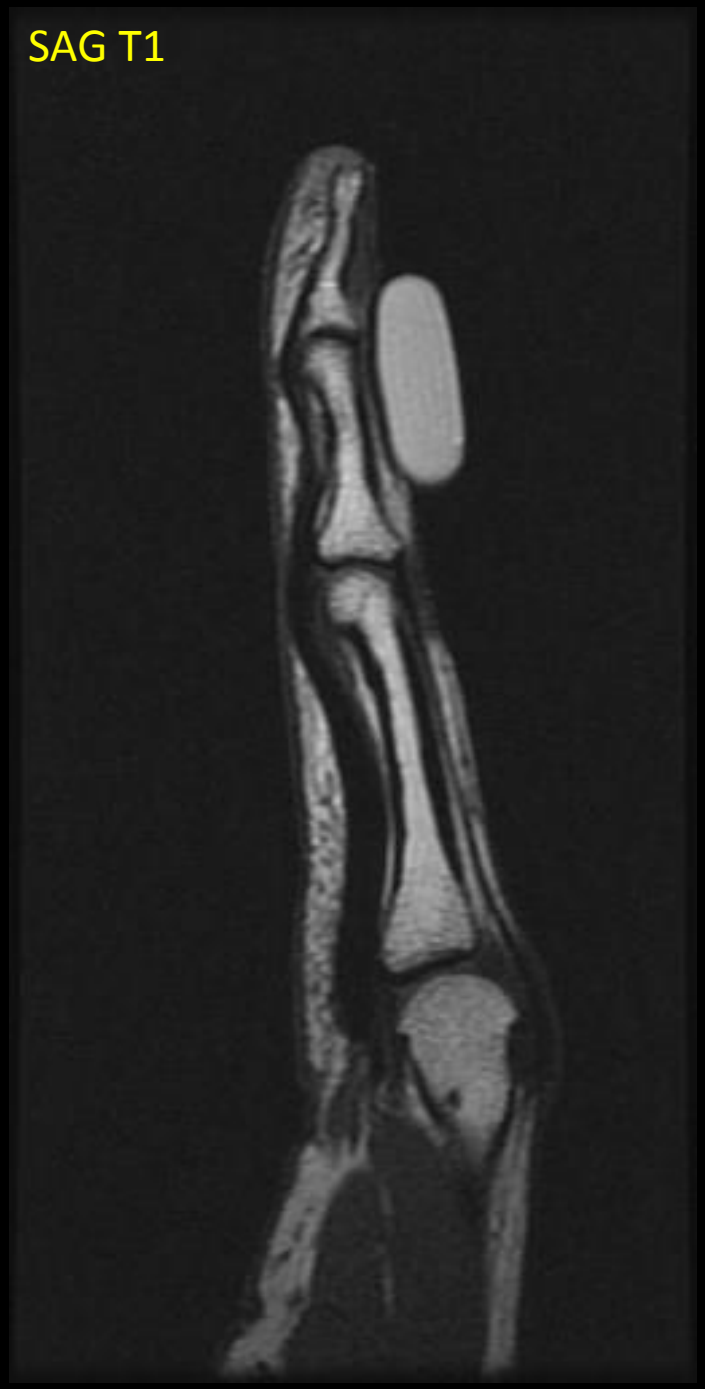
41 year-old female with left index finger pain

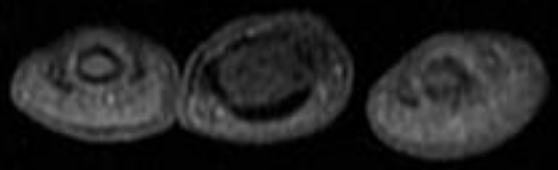

AX T1


AX T2 FS

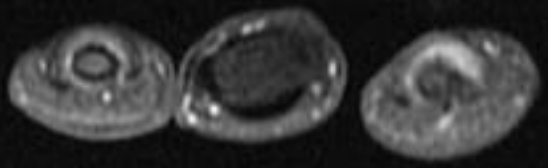

SAG T1

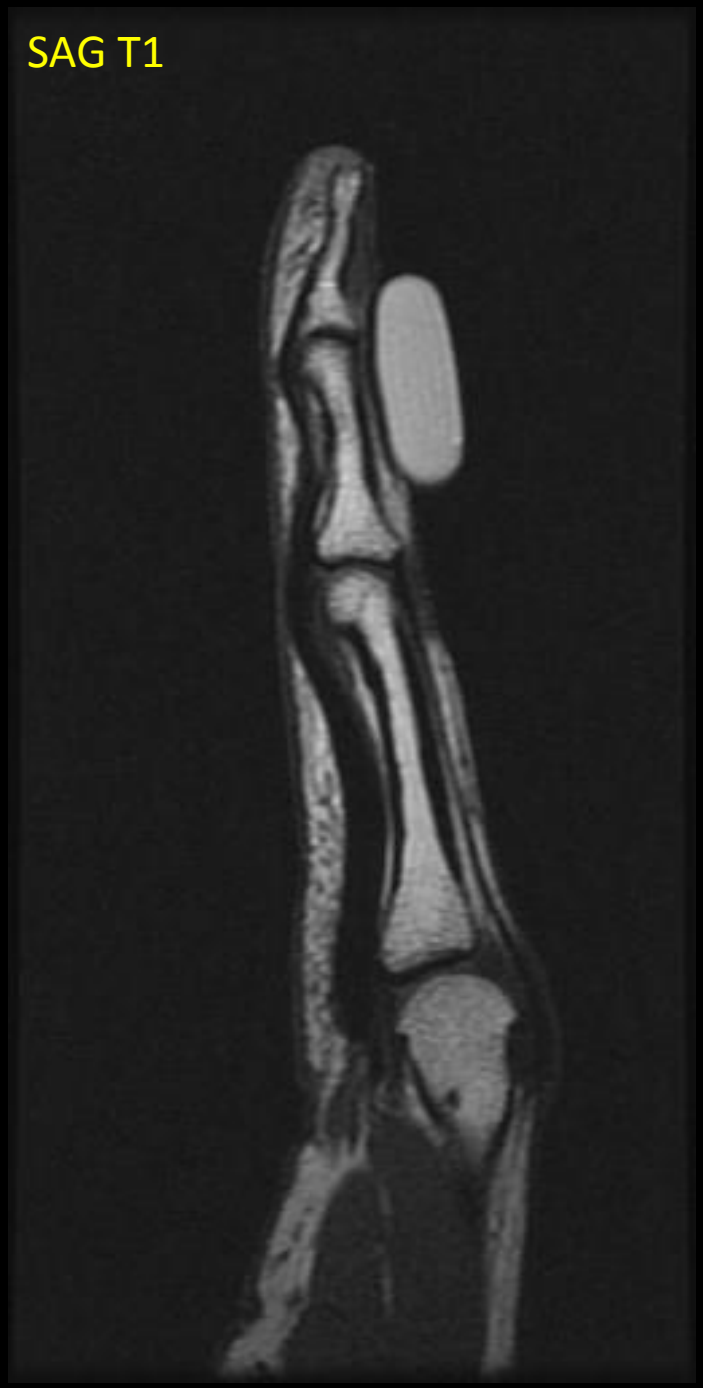

SAG IR

AX T1 FS PRE



AX T1 FS POST

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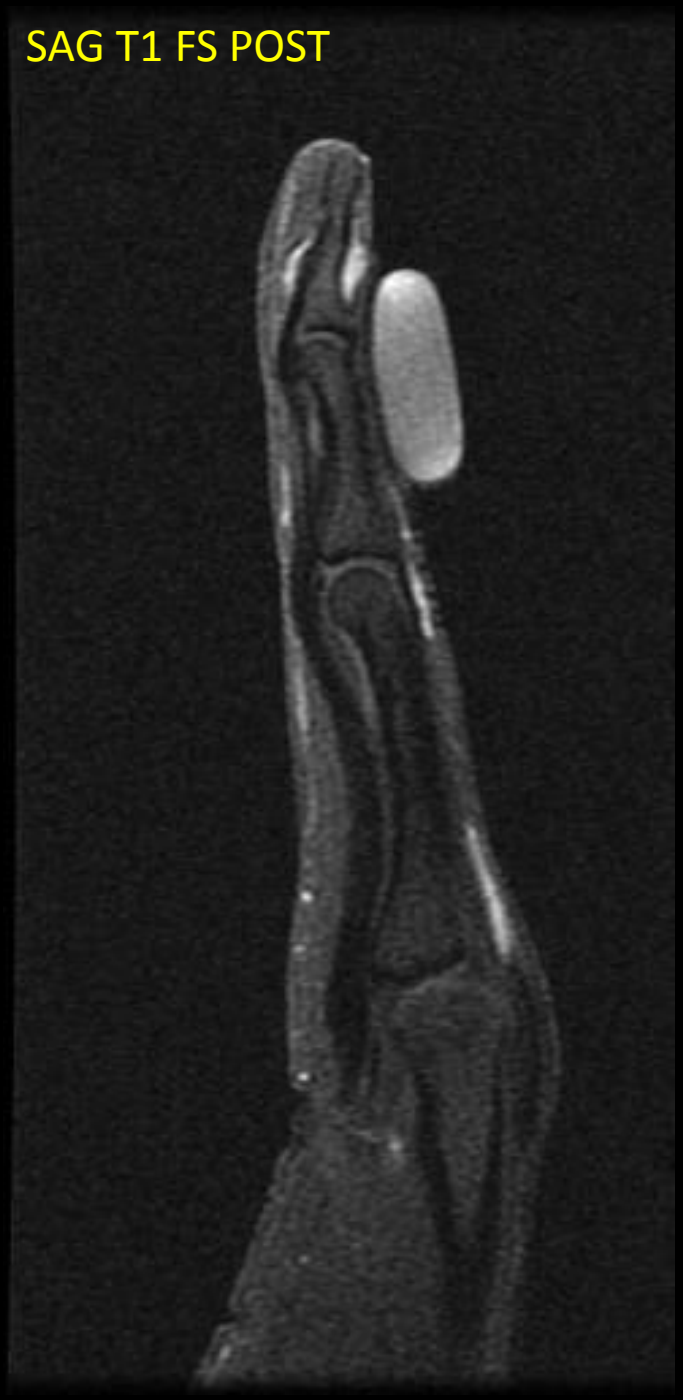
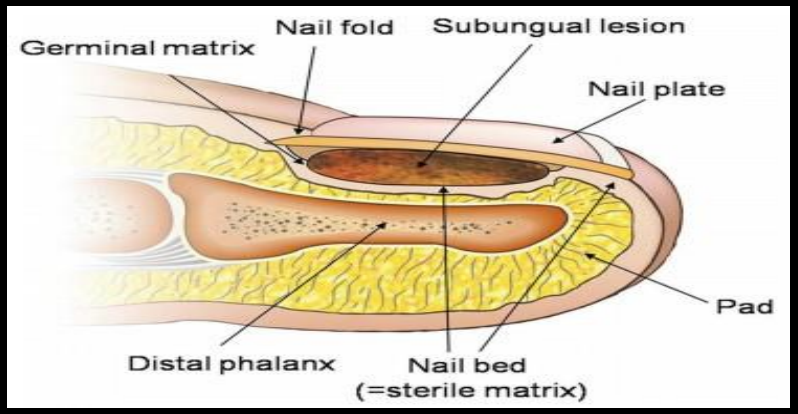
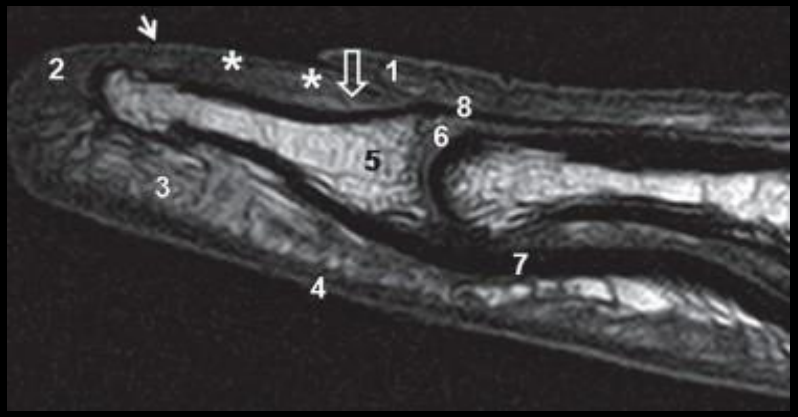
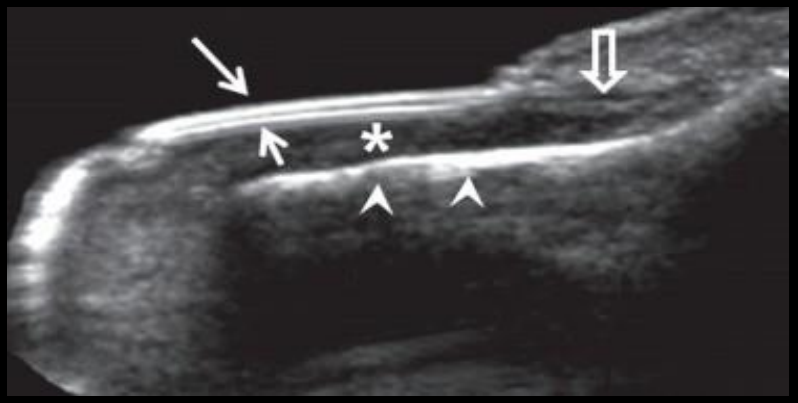

SAG T1 FS POST

Anatomy of Nail Apparatus

- 4 different components: germinal matrix, nail bed (sterile matrix), nail plate, and nail folds
- nail bed (*): distal continuation of the germinal matrix (⇩)
- nail plate (↓): firmly attached to the nail bed, sheet of compacted keratinized cells
- nail folds (1): help direct nail growth and consist of two lateral folds and one proximal fold
- subungual space is a potential space beneath the nail (very small 1-2 mm), is sealed by hyponychium (2), and includes the nail matrix, nail bed, and dermis (3)
  - rich in glomus bodies and blood vessels, with dense innervations







Baek et al. Radiographics 2010; 30: 1621-1636

More patient history

- index finger pain for 2 years
- no history of prior trauma to the index finger
- exquisitely tender to palpation
- no sensitivity to cold

Subungual Tumors and Lesions

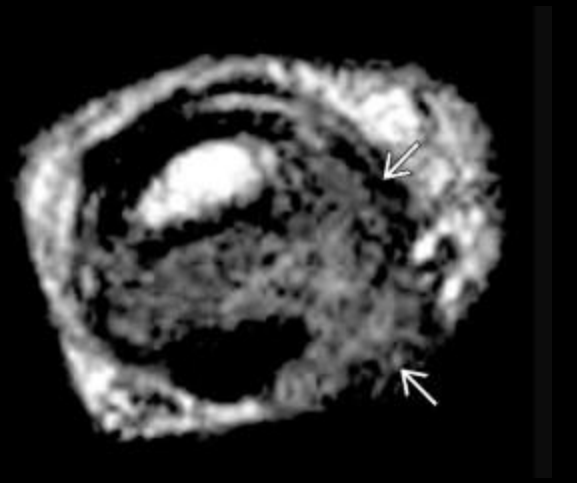
- benign solid tumors
  - glomus tumor
  - subungual exostosis
  - giant cell tumor of tendon sheath
  - fibroma of tendon sheath
  - soft tissue chondroma
  - keratocanthoma
  - hemangioma
  - lobular capillary hemangioma (pyogenic granuloma)
- benign cystic lesions
  - epidermal cyst
  - mucoid cyst
- malignant tumors
  - squamous cell carcinoma
  - malignant melanoma

Giant Cell Tumor of Tendon Sheath

- histologically identical to PVNS
- 2nd most common mass of hand after ganglion cyst
- 85% in fingers; common near IP joints and superficial to tendon sheath with predilection for flexor tendons
- usually painless, slow-growing
- most common 30-50 yo, F > M
- CR: nonspecific soft tissue fullness, possible cortical erosion, calcs are uncommon
- US: homogeneously hypoechoic, internal blood flow on Doppler
- MR: T1 hypo-intermediate; T2 hypo-intermediate with hypo hemosiderin foci; intense enhancement

T1

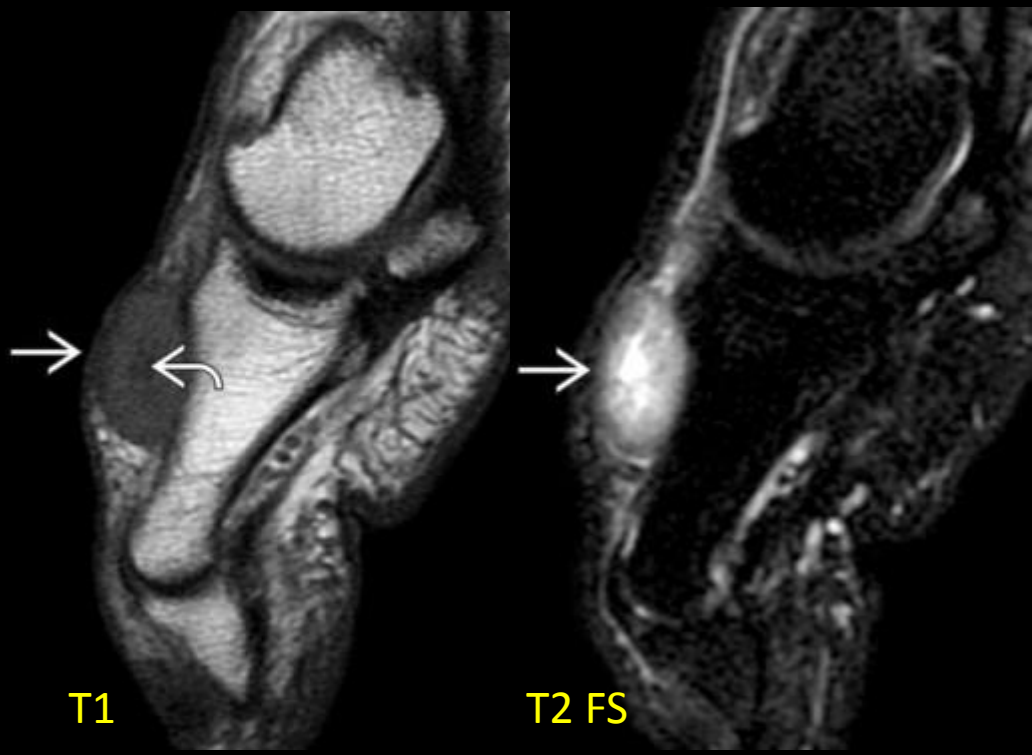
T2



https://my.statdx.com/document/giant-cell-tumor-tendon-sheath

Fibroma of Tendon Sheath

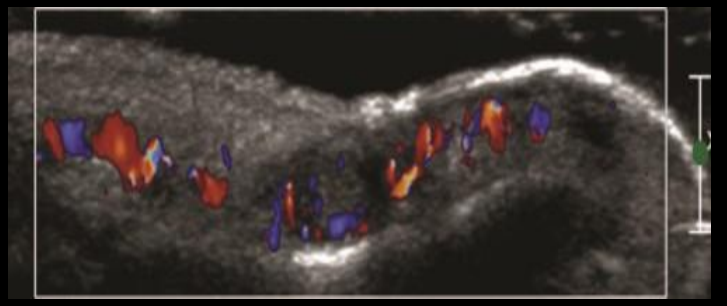
- painless, slow growing benign soft tissue nodule adjacent to tendon sheath
- most common in 4th decade; M > F
- upper > lower ext
  - most commonly 1st through 3rd digits of hand
  - more common on flexor surface
- CR: soft tissue mass; may produce scalloping or erosion but is infrequent
- US: hypoechoic; variable vascularity on Doppler
- MR: homogeneous to mildly heterogeneous; low to intermediate on T1 and low to high signal on T2; variable enhancement



https://my.statdx.com/document/fibroma-of-tendon-sheath

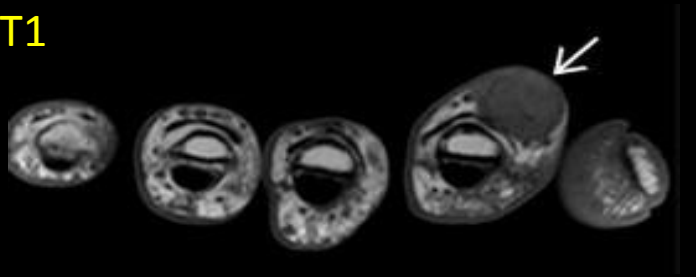
Hemangioma

- not uncommon to arise in finger; located in superficial dermis
- can be associated with pseudoclubbing or discoloration
- CR: soft tissue mass; may show phleboliths or bone erosion but infrequent
- US: heterogeneous echogenicity with hypoechoic vascular channels; calcs will show post acoustic shadowing; variable vascularity on Doppler
- MR: hypo to isointense on T1; hyperintense on T2; vascular regions intensely enhance; calcs have low signal on all seq; hemorrhage may show fluid-fluid levels

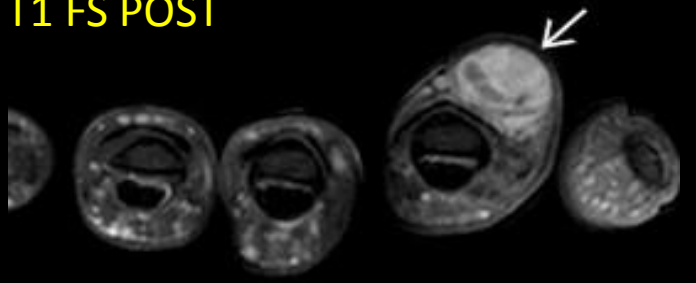


Baek et al. Radiographics 2010; 30: 1621-1636

T1



T1 FS POST

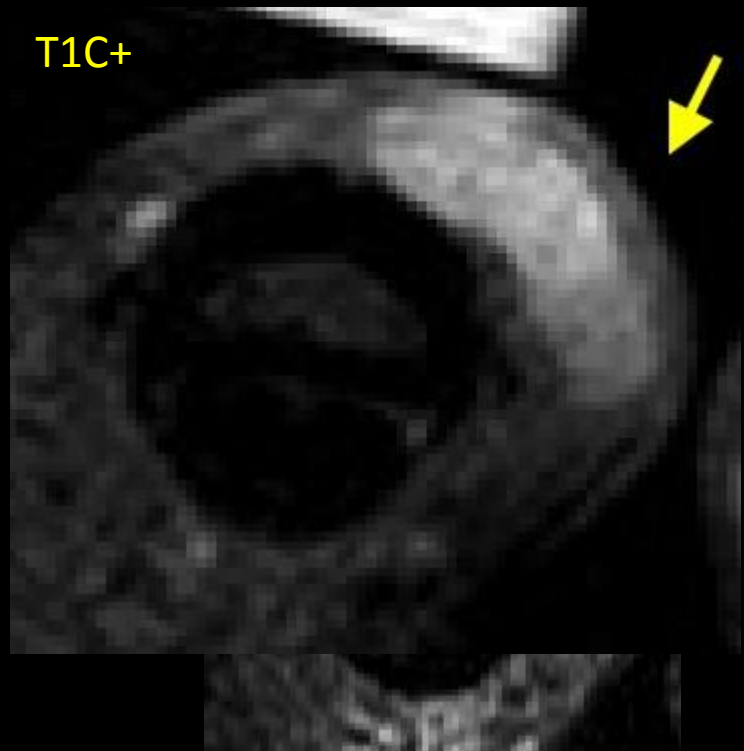


https://my.statdx.com/document/hemangioma-soft-tissue

Lobular Capillary Hemangioma (Pyogenic Granuloma)

- acquired benign vascular neoplasm of skin and mucous membranes
- often related with hx of trauma; grows rapidly over period of few weeks and usually painless
- most commonly in head, neck, and upper extremities
- most common middle age, F > M
- US: mild to mod echogenic and prominent vascularity on Doppler
- MR: iso on T1 and hyper on T2 with marked enhancement

http://www.eatonhand.com/img/img00063.htm



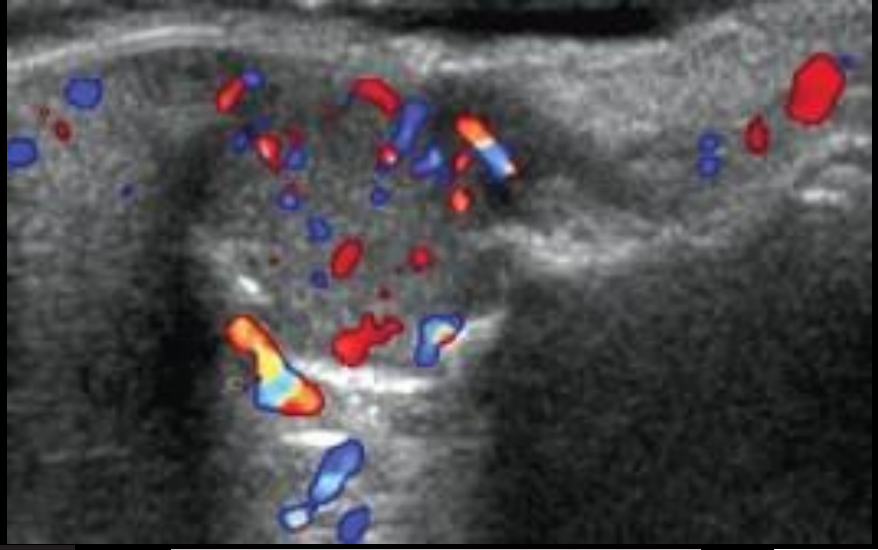
http://internationalskeletalsociety.com/getattachment/6aee7d4d-a2e4-4409-9103-8a9b406cd0e2/EE30.aspx

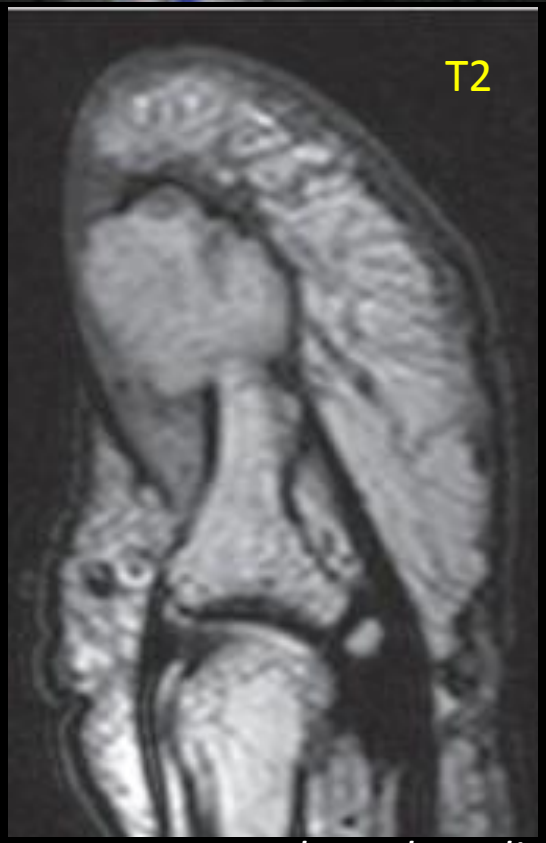
Glomus Tumor

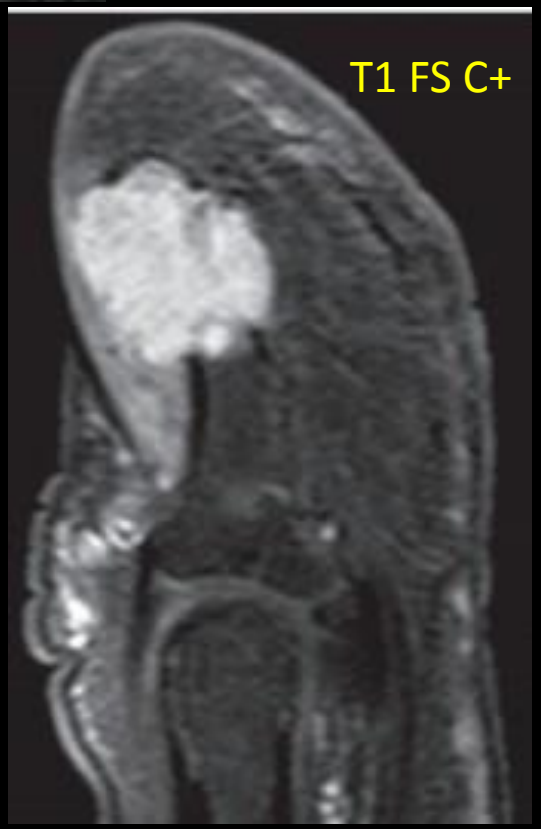
- hamartoma that develops from neuromyoarterial glomus body; present in the dermis throughout the body and highly concentrated in digits, palms, and soles of feet
- glomus body serves as an arteriovenous shunt and regulates skin temperature
- account for 1-5% of all hand tumors; < 2% of soft tissue tumors
- typically 30-50 yo (M = F)
- propensity to involve subungual region but can be throughout body and intraosseous
- pain, intense point tenderness, temperature sensitivity
- nail bed may be ridged or discolored
- 3 subcategories
  - solid glomus tumor (~ 75%)
  - glomuvenous malformation/ glomangioma (~ 20%)
  - glomangiopericytoma
- glomangiomatosis
- glomangiosarcoma (< 1%)
- only treatment is surgical excision
- incidence of recurrence after surgery is anywhere from 5-50%
  - can be quite small and have different imaging characteristics, including: ill-defined margins, iso-hypointense signal on T2, and faint to no enhancement
  - can be confused with scar tissue or traumatic neuroma

Glomus Tumor Imaging

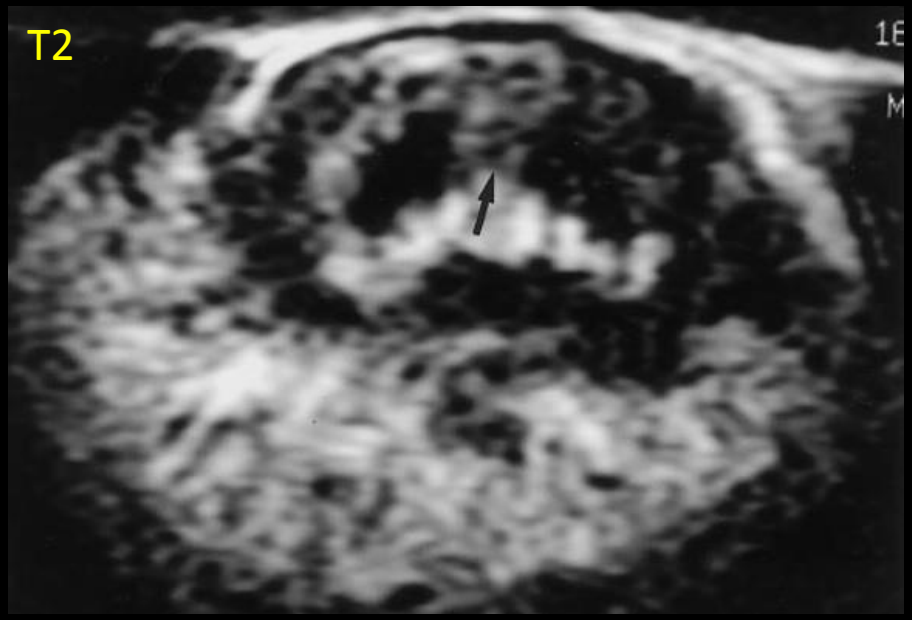
- typically small (< 1cm)
- CR: may or may not be evident radiographically; may produce deformity of adjacent bone
- US: hypoechoic with hypervascularity on Doppler
- MR: intermediate to low signal on T1 and hyperintense on T2 with intense homogeneous enhancement
- MRA: may be helpful in diagnosis of recurrent glomus tumors; helps confirm arteriographic characteristics of glomus tumor by revealing strong enhancement in the arterial phase and tumor blush which increases in size on delayed images



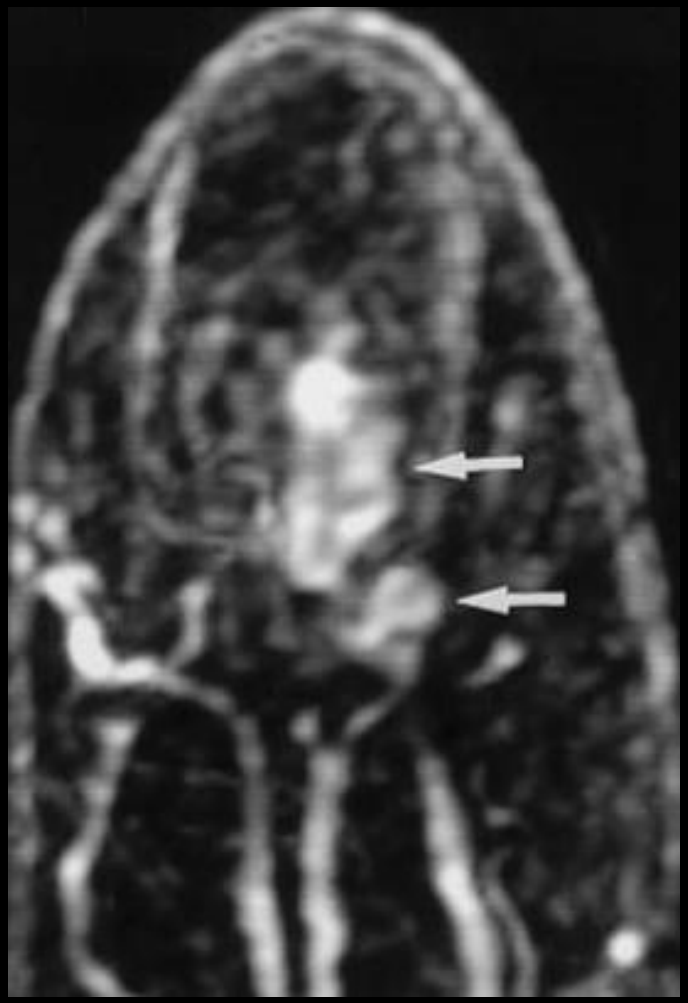




Baek et al. Radiographics 2010; 30: 1621-1636



Theumann NH, et al. *Radiology* 2002; 223: 143-151



Theumann NH, et al. *Radiology* 2002; 223: 143-151

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