



Tenosynovial Giant Cell Tumor masked as de Quervain Tenosynovitis

Q. DIEGENANT¹, R. SCIOT², I. DEGREEF³

¹Institute of Orthopaedic research and Training IORT, Leuven University Hospitals, Orthopaedic Department – Hand Unit, Gasthuisberg, Herestraat 49, 3000 Leuven, Belgium; ²Leuven University Hospitals, Pathology Department, Gasthuisberg, Herestraat 49, 3000 Leuven, Belgium; ³Leuven University Hospitals, Orthopaedic Department – Hand Unit, Gasthuisberg, Herestraat 49, 3000 Leuven, Belgium.

Correspondence at: Ilse Degreef, MD, PhD, Leuven University Hospitals, Orthopaedic Department – Hand Unit, Gasthuisberg, Herestraat 49, 3000 Leuven, Belgium. Phone: +3216338800 - E-mail: Ilse.degreef@uzleuven.be

We present a patient who initially presented with clinical symptoms consistent with de Quervain tenosynovitis, resistant to conservative treatment. MRI revealed a cystic mass surrounding the radial styloid within the first extensor compartment (abductor pollicis longus (APL) and extensor pollicis brevis (EPB)), associated with scaphotrapezoid (STT) arthritis. However, upon surgical exploration, the lesion was identified as a localized tenosynovial giant cell tumor (TSGCT), which had caused erosion of the trapezium bone and compressed the EPB tendon. Histopathology confirmed the diagnosis. Postoperative recovery was uneventful, with functional improvement and no recurrence. This exceptional case highlights the importance of accurate diagnosis and the potential for atypical presentations of benign tumors.

Informed consent was obtained from the patient after surgery to use her case details in publication for educational and research purposes.

Keywords: Hand, de Quervain, tenosynovial giant cell tumor.

INTRODUCTION

De Quervain tenosynovitis is a common clinical syndrome characterized by inflammation of the synovial sheath surrounding the extensor pollicis brevis (EPB) and abductor pollicis longus (APL) tendons within the first extensor compartment (APL/EPB) of the wrist. These tendons pass through a tunnel (retinaculum) ensuring that the tendons are held against the bone. The synovial lining, surrounding the tendons, can become irritated by overuse or trauma, resulting in pain and difficulty moving.

The disease is more common in women than men with a median age of 40 to 59 years¹.

Clinical diagnosis is usually straightforward, with localized pain increasing with stretch, swelling and tenderness over the radial styloid (first extensor compartment (APL/EPB))². The swelling regularly occurs with concomitant peritendinous cysts. However, atypical features may warrant further investigation to rule out other pathologies, such as tumors.

This report describes a rare case of localized TSGCT arising within the first extensor compartment

(APL/EPB), initially mistaken for de Quervain tenosynovitis.

CASE REPORT

In October '21, a 66-year-old right-handed female patient was seen with pain at the base of the right thumb together with trapeziometacarpal arthritis (Rhizarthrosis) and swelling in the context of de Quervain already persisting for 3 years. Conservative treatment with bracing and physiotherapy was unsuccessful. On examination, tenderness was noted over the radial styloid, with a positive Finkelstein test, as well as positive Watson and grinding tests.

Further exploration with radiographs and MRI revealed a cystic lesion at the base of the thumb, which was initially interpreted as consistent with de Quervain tenosynovitis. Different ultrasound examination protocols mentioned synovial swelling, a cystic mass and even a possible soft tissue mass was suggested, for which MRI was performed. The T2/STIR sequences revealed a heterogeneous hyperintense lesion with a mildly hypointense rim,

clearly showing a well-defined mass at the base of the thumb—features suggestive of a cystic or solid nature (Figure 1). Secondly, the advanced STT-osteoarthritis as well as Rhizarthrosis with lateral subluxation were confirmed, which are clearly visible on the radiograph (Figure 2).

1 year later, the patient attended with persisting pain and increased swelling at the base of her right thumb. Clinical examination revealed tenderness and swelling over the radial styloid. Flexion of the wrist was painless; extension was somewhat sensitive from 60°. Pressure pain over the STT-ligament was noted.

The diagnosis of de Quervain tenosynovitis was made. It was decided to operatively remove the cyst.

During surgery, after a lazy S longitudinal incision was made over the cystic area (1st extensor compartment), an unexpected finding was encountered. Instead of the anticipated cyst, a large, well-defined tenosynovial type giant cell tumor was discovered with the typical features of brown coloration and foamy macrophages (Figure 3). The mass was found directly beneath and adherent to the extensor pollicis brevis tendon, resulting in partial compression and erosion of the trapezium bone (Figure 4). It was carefully excised around the tendon and within the erosion of the trapezium bone and STT joint. The abductor pollicis longus tendon was unavoidably sacrificed. Once the tumor had been completely excised, a maximum length of 32 mm was measured (Figure 5).

Histological examination of the tumor confirmed it being a localized tenosynovial giant cell tumor (TSGCT) characterized by histiocytoid mononuclear cells, multinucleated giant cells, foamy macrophages, and hemosiderin deposits.

At the two-week postoperative follow-up, the patient showed good wound healing with only mild rubor around the scar.

DISCUSSION

Tenosynovial giant cell tumor (TSGCT)—formerly referred to as giant cell tumor of tendon sheath (GCTTS) or pigmented villonodular synovitis (PVNS) is a locally aggressive but usually benign neoplasm that affects joints, tendon sheaths, and bursae^{3,4}. Patients generally present with symptoms as pain, swelling, stiffness and limited range of motion in the effected joint. The upmost affected joint is the knee, followed by the foot, hip, shoulder and hand accordingly⁵. Within the hand, TSGCT typically presents on the volar surface of the fingers⁶. Up to

now, we have found no report on TGCT at the first extensor compartment of the wrist.

TSGCT can be distinguished from ganglion cysts based on both imaging characteristics and clinical presentation. On ultrasound, TSGCT typically appears as a solid, nodular lesion with internal vascularity, whereas a ganglion cyst presents as a cystic structure with well-defined borders and no internal vascularity⁷. Clinically, the presence of a palpable, firm mass rather than diffuse swelling, persistent symptoms despite standard conservative therapy, and imaging findings suggestive of a solid or vascular lesion should raise suspicion for TSGCT rather than simple de Quervain tenosynovitis. Ultrasound and MRI play a key role in differentiation: ganglion cysts are generally avascular and fluid-filled, while TSGCTs are solid, vascularized, and may even cause erosion of adjacent bone.

Importantly, other rare soft-tissue lesions can also mimic TSGCT, both clinically and radiologically. A previously reported case described a tenosynovial haemangioma that presented with features indistinguishable from a giant cell tumor of the tendon sheath, highlighting the potential for diagnostic confusion between benign synovial tumors⁸. This observation reinforces the need for histopathological confirmation in all atypical or inconclusive cases, as imaging findings alone may not always ensure diagnostic accuracy.

Usually, females are affected more often than men, a characteristic similar to de Quervain tenosynovitis⁹. However, the typical age group for TSGCT is younger ranging from 20 to 50, while de Quervain tends to present at a median age of 40 to 59 years¹.

Although its exact origin is uncertain, the development of TSGCT is linked to overexpression of CFSR1 receptor. Application of inhibitors specific to CFSR1 have been shown to be effective. Nonetheless, surgery remains the primary treatment due to limited number of high-quality studies and lack of guidelines¹⁰. For localized lesions of the hand, the recurrence risk is low (approximately 6%) when complete marginal excision is achieved⁶. Routine long-term imaging follow-up is therefore not mandatory, but clinical surveillance aligned with symptoms is recommended to detect any potential recurrence early and to avoid unnecessary imaging in asymptomatic patients.

Limitations include the single-case nature, short follow-up, and absence of preoperative biopsy. Nevertheless, the case underscores the importance of recognizing TSGCT as a differential diagnosis when de Quervain symptoms are atypical.

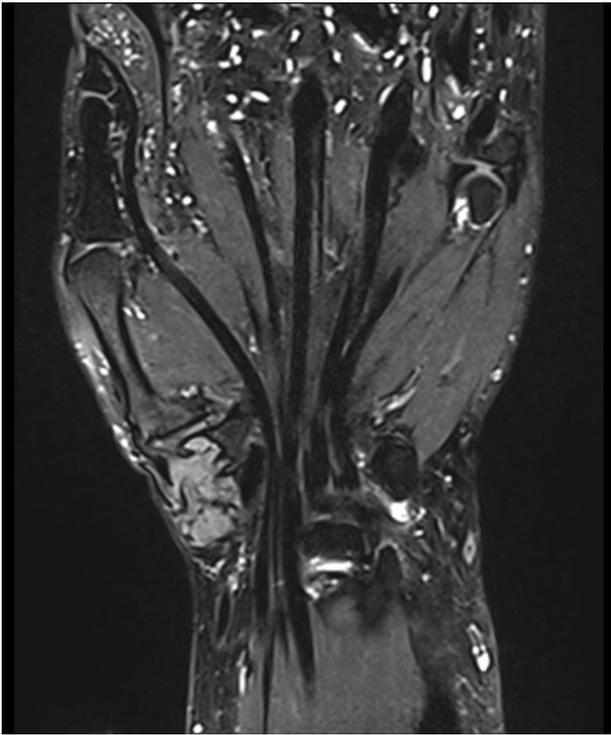


Fig. 1 — MRI showing the mass at the 1st extensor compartment.



Fig. 2 — Radiograph of the hand.

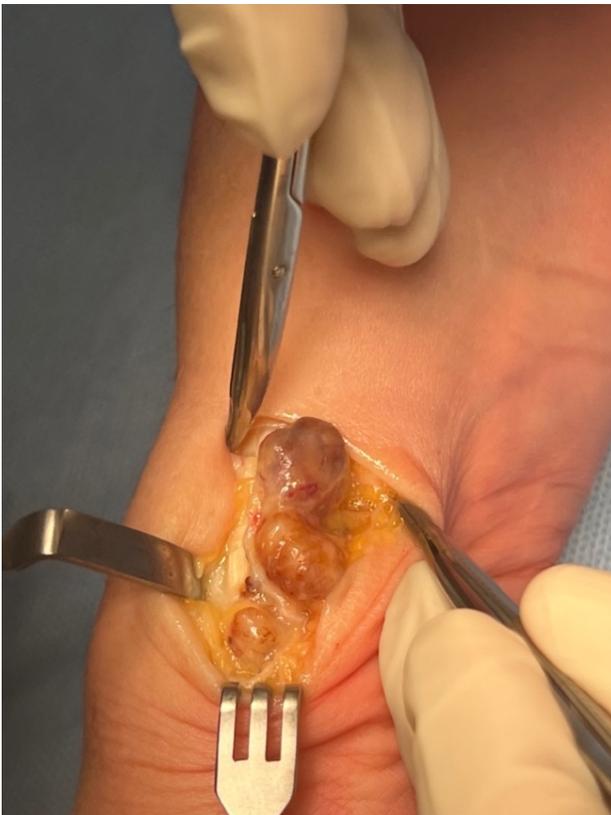


Fig. 3 — First discovery of the tenosynovial giant cell tumor.

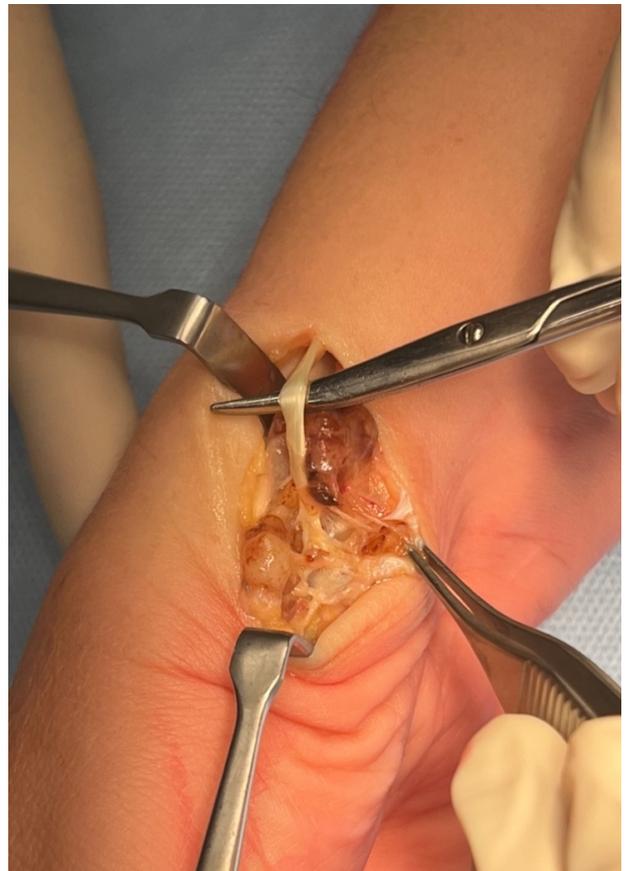


Fig. 4 — GCT infringing the m. extensor pollicis brevis tendon.



Fig. 5 — Excised tumor.

CONCLUSION

This case underscores the importance of considering alternative diagnoses in cases where the clinical presentation or imaging findings deviate from the expected norm. A high level of suspicion for benign tumors, even in the context of common clinical entities like de Quervain tenosynovitis, is crucial for appropriate management and optimal patient outcomes.

Conflicting interests: The author declares no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding: The author received no financial support for the research, authorship, and/or publication of this article.

Informed consent: Written informed consent was obtained from the patient for her anonymized information to be published in this article.

Ethical approval: KULeuven does not require ethical approval for this article since this is a descriptive report on the exceptional treatment with patient's consent.

Contributorship: The first author (Quinten Diegenant) is the student who prepared the initial report and literature review, attended the surgical procedure, and submitted the article. The second author (Raf Sciot) is the pathologist who provided the histological figure and description of the tumor. The third author (Ilse Degreef) is the chief surgeon who performed the procedure, guided the student, co-authored the text, and revised the scientific background.

Acknowledgements: None

REFERENCES

1. Currie KB, Tadisina KK, Mackinnon SE. Common Hand Conditions: A Review. *JAMA*. 2022;327(24):2434-2445. doi:10.1001/jama.2022.8481
2. Ilyas AM, Ast M, Schaffer AA, Thoder J. De quervain tenosynovitis of the wrist. *J Am Acad Orthop Surg*. 2007;15(12):757-764. doi:10.5435/00124635-200712000-00009
3. Court S, Nissen MJ, Gabay C. [Pigmented villonodular synovitis]. *Rev Med Suisse*. 2014;10(421):609-610, 612, 614-615.
4. Schenk P, Schöni M, Urbanschnitz L, Filli L, Rahm S, Zing P. Tenosynovial Giant Cell Tumor (TSGCT) of the hip: MRI accuracy and results of surgical treatment. *Acta Orthop Belg*. 2023;89(1):65-69. doi:10.52628/89.1.10424
5. Mankin H, Trahan C, Hornicek F. Pigmented villonodular synovitis of joints. *J Surg Oncol*. 2011;103(5):386-389. doi:10.1002/jso.21835
6. Ozben H, Coskun T. Giant cell tumor of tendon sheath in the hand: analysis of risk factors for recurrence in 50 cases. *BMC Musculoskelet Disord*. 2019;20(1):457. doi:10.1186/s12891-019-2866-8
7. Arıcan M, Turhan Y, Gamsızkan M. A rare localized giant cell tumor of the tendon sheath originating from the ligamentum mucosum: A case report. *Jt Dis Relat Surg*. 2020;31(1):149-153. doi:10.5606/ehc.2020.72323
8. Talwalkar S, Hayton M, Stilwell J, Temperley D, Freemont A. Tenosynovial haemangioma of the finger. *Acta Orthop Belg*. 2005;71(5):618-621.
9. Bernthal NM, Ishmael CR, Burke ZDC. Management of Pigmented Villonodular Synovitis (PVNS): an Orthopedic Surgeon's Perspective. *Curr Oncol Rep*. 2020;22(6):63. doi:10.1007/s11912-020-00926-7
10. Stacchiotti S, Dürr HR, Schaefer IM, et al. Best clinical management of tenosynovial giant cell tumour (TGCT): A consensus paper from the community of experts. *Cancer Treat Rev*. 2023;112:102491. doi:10.1016/j.ctrv.2022.102491