

Giant Cell Tumour of Tendon Sheath Presenting as Ulnar Tunnel Syndrome: A Novel Technique of Tumour Dissection with Bipolar Cautery.

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Abstract:

Giant cell tumour of the tendon sheath (GCTTS) is a slow growing rare benign tumour arising from the synovial cells of the tendon sheath. GCTTS occurs most commonly in the third to fifth decades of life in the flexor tendons of the hand, and only rarely involves other soft tissues or bone. Treatment of GCTTS is still controversial mainly because of the high recurrence rate of its frequent extensions in surrounding soft tissues and presence of satellite lesions. We present an interesting case of a GCTTS, over right wrist and forearm with a satellite lesion and presenting as ulnar tunnel syndrome in a 32 years male, and a novel technique of dissection with bipolar cautery to minimize the recurrence.

Keywords: giant cell tumour of tendon sheath, bipolar cautery, ulnar tunnel syndrome

Introduction

A giant cell tumour of the tendon sheath (GCTTS) is a benign proliferative disorder of the synovium that may affect the tendon sheaths, joints, and bursae [1]. With an approximate incidence of 1/50,000 per population it remains an uncommon condition [2]. The incidence of GCTTS is higher in women than in men and mostly seen in the third to fifth decade. These lesions are characteristically slow-growing, nodular, painless, and usually asymptomatic. Conventional radiographs are usually normal or may show a soft tissue mass, and only rarely reveal some bone involvement[3]. However, secondary nerve compression, joint degeneration, and bone erosion can occur [3]. Local excision is the treatment of choice. But about 4 to 30 % of cases recur after surgical excision [4]. It has been suggested that recurrences develop most often in highly cellular tumours or lesions with a high mitotic count [4]. Here we are presenting the case of GCTTS with unique presentation and a specialised surgical technique used to minimise its recurrence.

Case report

A 32 years male patient presented to us with swelling over right wrist and distal forearm since 8 months. Initially the swelling was present over volar aspect of the wrist and distal forearm which was diagnosed as ganglion cyst over ulnar border. But gradually the swelling extended to dorsal aspect. (Fig-1A) At first the swelling was painless but patient started having pain over ulnar distribution of right hand 6months prior to presentation.

He also developed tingling and numbness in right little and ring finger. There was no history of trauma or fever.

On examination swelling was firm, lobulated, well circumscribed and not adhered to overlying skin but was adherent to underlying soft tissues. Local temperature was normal, there was no redness. The swelling was non pulsatile. Radiographs were non-conclusive showing only soft tissue shadow. Magnetic resonance imaging (MRI) of right wrist with forearm showed soft tissue mass contiguous with flexor digitorum superficialis, extending from volar to dorsal aspect, probably a ganglion cyst or giant cell tumour of tendon sheath. (Fig-1-B,C)

Complete excision of tumour was planned and done under brachial block. V-shaped incision was taken over volar aspect of forearm and extended to dorsal side (Fig-2A) A brownish yellow multi lobulated tumour of around 4x3 cm was excised completely (Fig-2B), with meticulous dissection using bipolar cautery to minimize the chances of recurrence. (Fig-2C) A satellite lesion (Fig- 2D) was also excised along with the tumour, which was compressing the superficial branch of ulnar nerve at the Guyon's canal.

Histopathology sections showed multi lobulated tumour with giant cells, foamy macrophages, hemosiderophages and stromal cell without atypia with hyaline stroma, which confirmed the diagnosis of tenosynovial giant cell tumour. (Fig-2E)

Discussion

Giant cell tumour of the tendon sheath (GCTTS) is a rare condition with an incidence reported at 0.5% [5]. It is the second most common soft tissue tumour of the hand and wrist, after synovial ganglion, occurring predominantly in females. Localisation to the hand and wrist is noted in about 70% of cases, with a propensity for the radial three digits, the volar aspect and the distal interphalangeal joint [5]. Our patient was 32 years male who presented with lesion over ulnar aspect of right forearm extending from volar to dorsal aspect.

GCTTS has been known to impinge upon

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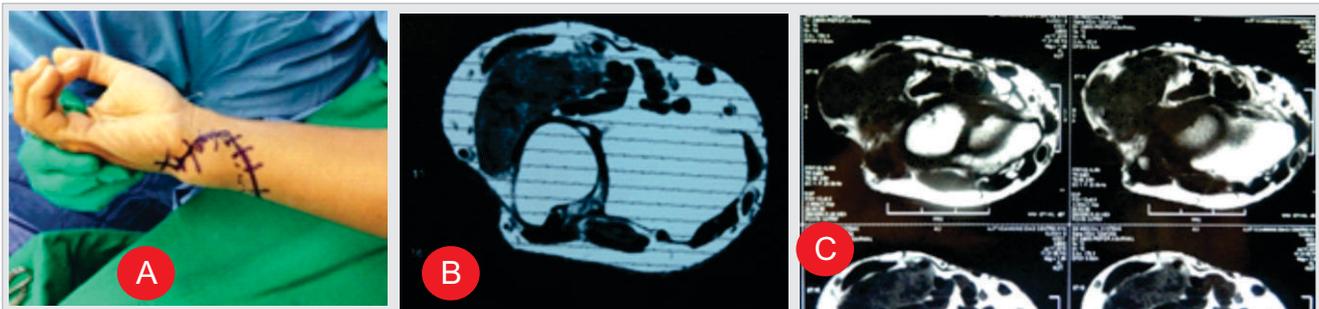


Figure 1: A- 32 Year male patient presented with swelling over right wrist. B,C- Magnetic resonance imaging (MRI) of right wrist with forearm showed soft tissue mass contiguous with flexor digitorum superficialis, extending from volar to dorsal aspect, probably a ganglion cyst or giant cell tumour of tendon sheath

surrounding structures and soft tissue and may erode bony structures as it grows in a confined space. At the wrist it may cause ulnar tunnel syndrome [6]. Ulnar tunnel syndrome presents as pain in the wrist and the forearm radiating to the ulnar 2 digits, increased pain at night exacerbated by exercise or wrist flexion, numbness, tingling, burning, and prickling in the ulnar 2 digits. It may or may not show weakness and wasting of the intrinsic hand muscles innervated by the ulnar nerve [7].

MRI is the investigation of choice; it delineates exact extent of lesion, intra or extra articular involvement, intrinsic relationship to tendon sheath. Even small extension along tendon margin suggests the teno-synovial origin. It is multilobular generally well circumscribed, may be partially or completely encapsulated or may have extension or satellite lesion connected by as little as a few strands of fibrous tissue.

Lesion is low to intermediate signal intensity with well-defined lobular soft tissue mass in T1W and heterogeneous in T2W scans. A T1 and T2 focus of hypointensity due to hemosiderin deposition which blooms on gradient-echo images is diagnostic [1, 8].

Complete excision after wide exposure is the management of giant cell tumours of tendon sheath. Often, partial excision of the joint capsule or tendon sheath is necessary for complete excision of the tumour. Wide exploration and meticulous dissection are essential because satellite lesions are common. Bony debridement with a curette or rongeur is necessary if adjacent bony erosion is seen. Puncturing of these lesions must be avoided to prevent the seeding of adjacent soft-tissue structures [9].

No specific method of dissection is mentioned in the literature. We in our patient used bipolar cautery for precise and complete dissection to avoid recurrence;

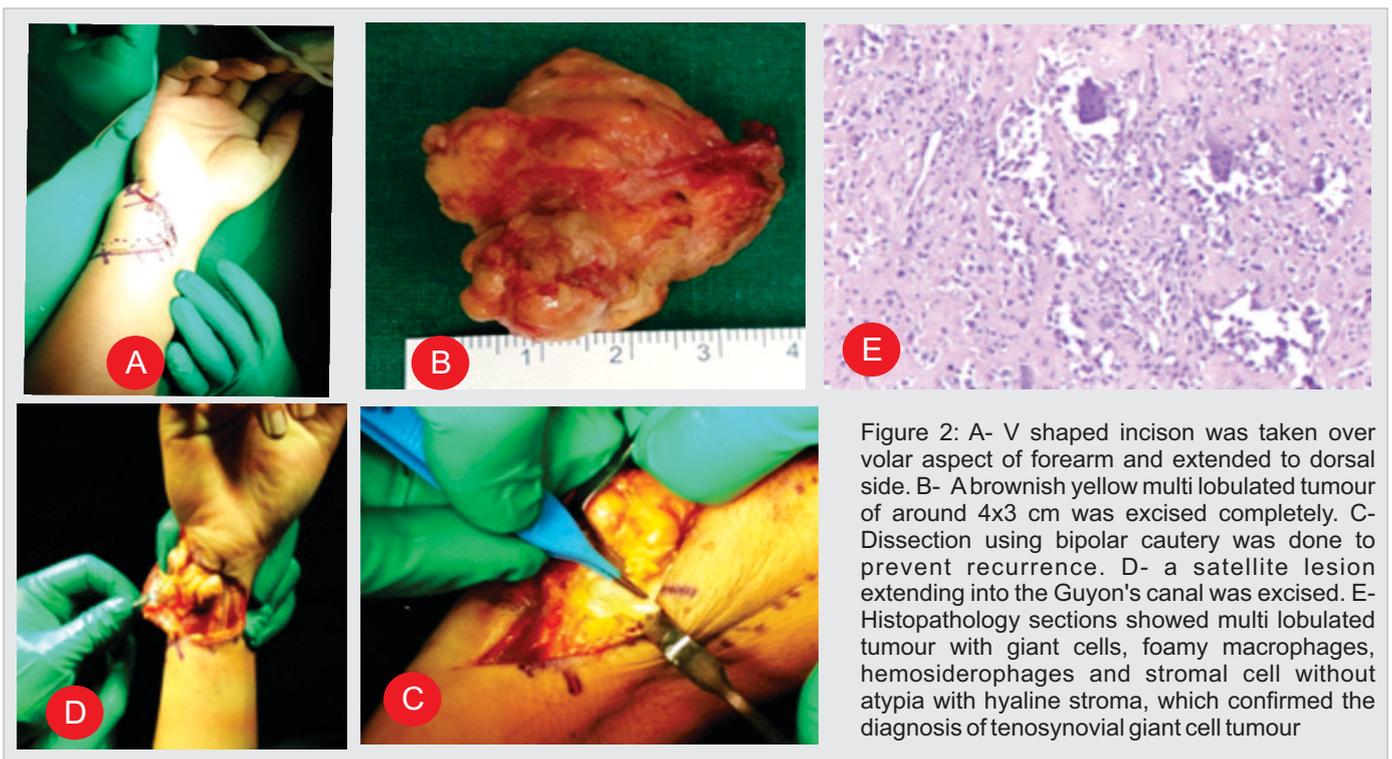


Figure 2: A- V shaped incision was taken over volar aspect of forearm and extended to dorsal side. B- A brownish yellow multi lobulated tumour of around 4x3 cm was excised completely. C- Dissection using bipolar cautery was done to prevent recurrence. D- a satellite lesion extending into the Guyon's canal was excised. E- Histopathology sections showed multi lobulated tumour with giant cells, foamy macrophages, hemosiderophages and stromal cell without atypia with hyaline stroma, which confirmed the diagnosis of tenosynovial giant cell tumour

this technique of using bipolar cautery for dissection is frequently utilized for resection of malignant gliomas in neurosurgery [10].

There is a high rate of recurrence of the tumour after excision. Many factors are considered as causing recurrence, including incomplete excision of the lesion, proximity to the distal inter phalangeal joints, presence of degenerative joint disease, radiological erosion and increased mitotic activity. To prevent recurrence is complete surgical excision with removal of all satellite nodules is required [11, 12]. In this case we have used bipolar diathermy for surgical dissection to decrease the chances of recurrences.

Conclusion

GCTTS is rare tumour which is most commonly mistaken as ganglion, so high level of suspicion is necessary for proper diagnosis. As the tumour has high propensity for recurrence, meticulous dissection is necessary for complete excision for which bipolar diathermy is an effective tool. Also the probability of satellite lesions should be kept in mind and should be excised along with the tumour.

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