

Severe Destructive Arthritis of the Carpometacarpal Joint: A Diagnosis of Exclusion Case Report

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SUMMARY

We present a case of severe destruction of the thumb carpometacarpal joint (CMCJ) and surrounding structures on a background of osteoarthritis and Seronegative Rheumatoid arthritis. Imaging studies suggested a soft tissue lesion consistent with Pigmented Villonodular Synovitis (PVNS), Synovial Osteochondromatosis or Giant Cell Tumour (GCT). Due to the possibility of malignant transformation and deteriorating symptoms the mass was excised. Histological analysis of the lesion revealed severe degenerative disease with no evidence of malignancy or infection. This represents an atypical presentation of thumb carpometacarpal joint arthritis, which should be diagnosed once more sinister pathology has been excluded.

Key words: thumb, carpometacarpal joint, destruction, arthritis

BACKGROUND

Arthritis of the thumb CMCJ is a common and debilitating disease resulting in pain, deformity and functional loss however, severe destruction is rare. Soft tissue masses including PVNS, Synovial Osteochondromatosis and GCT are typically implicated arising from tendon sheaths or bone. Although these entities are benign they can undergo malignant transformation requiring excision. This paper presents an atypical case of CMC joint destruction secondary to severe degenerative disease on a background of osteoarthritis and Seronegative Rheumatoid arthritis. It necessitated excision, trapeziectomy and tendon suspensionplasty.

CASE REPORT

A 61 year old right handed female Jewellery dealer presented with a 10 year history of right base of thumb pain which had deteriorated over the past 2 years with swelling, deformity, reduced grip strength and function. She was taking regular analgesia and had tried corticosteroid injections with limited efficacy. Stiffness and pain had led to her giving up her hobbies but she was independent with regards to activities of daily living and did not require any functional aids. Past medical history included osteoarthritis, bilateral hallux valgus, bilateral Morton's neuroma, non-specific interstitial pneumonitis, uveitis and diverticulitis.

On examination the patient was apyrexial with no local signs of infection or inflammation. There was marked adduction deformity of the right thumb with hyperextension of the metacarpophalangeal joint, both

of which were correctible. There was also subluxation of the base of the thumb metacarpal with tenderness on palpation (Figure 1).

Plain radiographs of the right thumb showed marked degeneration and destruction of the CMCJ (Figure 2) with metacarpal subluxation and joint space widening thus prompting further imaging. Computed tomography (CT) showed sclerosis and remodelling on both sides of the CMCJ around a soft tissue lesion indicative of a long standing process. Sharply defined erosions of the medullary cavity of the thumb metacarpal and the trapezium were noted but there was no calcification of the soft tissue lesion. Bone cysts were seen within the triquetrum and hamate. To further characterise the lesion Magnetic Resonance Imaging (MRI) was performed which showed a well-defined, heterogeneous STIR (Short T1 Inversion Recovery) hyperintense mass centred on the thumb CMCJ with associated remodelling and resorption of bone. The mass extended radially and palmarly, appeared encapsulated and contained multiple tiny low signal foci. There was also focal bone marrow oedema of the proximal thumb metacarpal and subluxation of the CMCJ. The flexor and extensor tendons were intact (Figure 3). These imaging features were largely non-specific and the differential diagnosis included Synovial Osteochondromatosis, PVNS or GCT.

Due to the deterioration of her symptoms and the unclear nature of the soft tissue lesion the mass was excised. Intraoperatively, there was a friable, yellow soft tissue mass tethered to the flexor carpi radialis tendon sheath destroying the base of the thumb metacarpal (Figure 4). The lesion was excised and a small

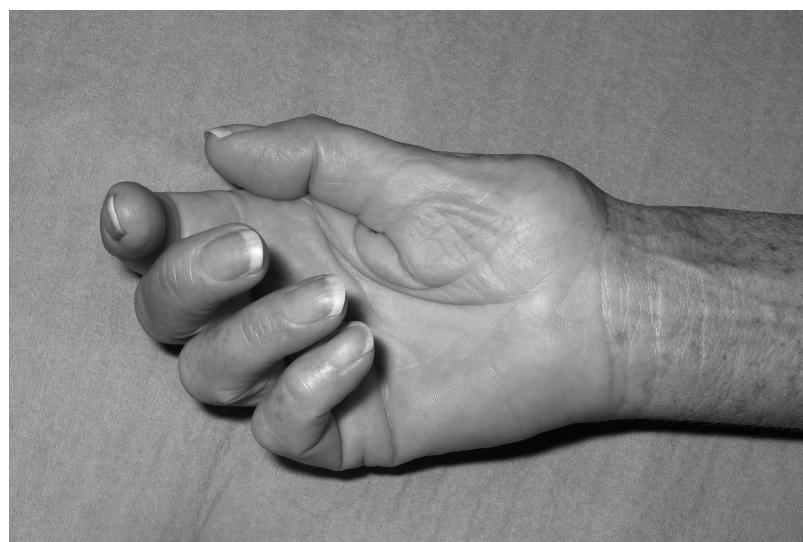


Fig. 1. Photograph of right hand. Wasting of the thenar eminence, adduction deformity and hypertension of the metacarpophalangeal joint



Fig. 2. X Ray Right Thumb. Marked degeneration and erosive destruction of the CMCJ with widening and subluxation of the thumb metacarpal. The outline of a soft tissue shadow is seen interposed within the CMCJ

cavity was left behind. A trapeziectomy was performed with an abductor pollicis longus tendon suspensionplasty to provide stability. The thumb was immobilised in a plaster of Paris splint followed by active physiotherapy 4 weeks post-operatively.

Histological analysis of the soft tissue mass revealed synovium of villous configuration and mild hyperplasia of surface synoviocytes. The bone was degenerate and surrounded by osteoclasts in areas with numerous fibrinoid bodies (Figure 5). There was no significant lymphoid infiltrate and no signs of infection or malignancy. There was also no evidence of PVNS, Synovial Osteochondromatosis or GCT. These features were non-diagnostic but most likely to represent severe degenerative changes.

At 1 month follow up, the operative site had healed and she was pain-free with good function. The adduction deformity was corrected and there was no tenderness at the CMCJ. The patient was subsequently reviewed by the Rheumatologists and diagnosed with Seronegative Rheumatoid arthritis (anti-CCP and Rheumatoid factor negative) due to pain, swelling and synovial hypertrophy in other small joints of the hand.

DISCUSSION

Arthritis of the thumb CMCJ is the most commonly involved arthritic joint in the hand, typically present in women between 50-70 years of age. Lig-

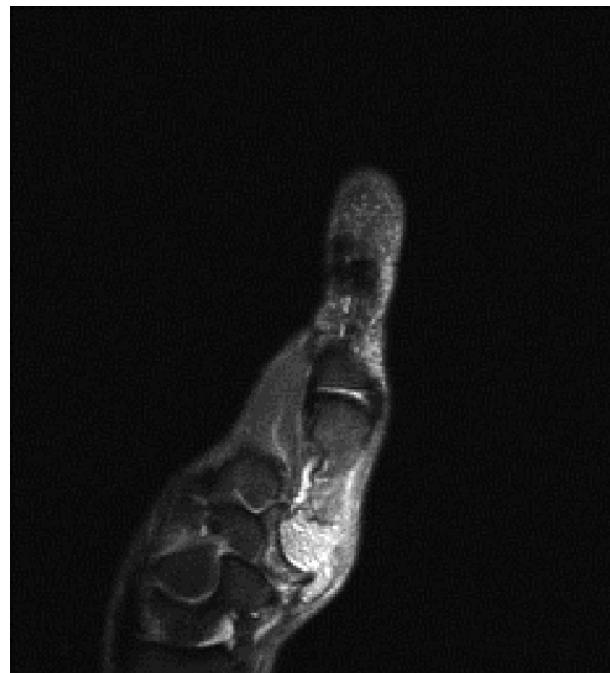


Fig. 3. MRI Right hand. Well defined heterogeneous hyperintense focal mass centred on the thumb CMCJ with associated remodelling and resorption of the base of the thumb metacarpal and trapezium with bone marrow oedema. The mass appears encapsulated and contains multiple tiny low signal foci

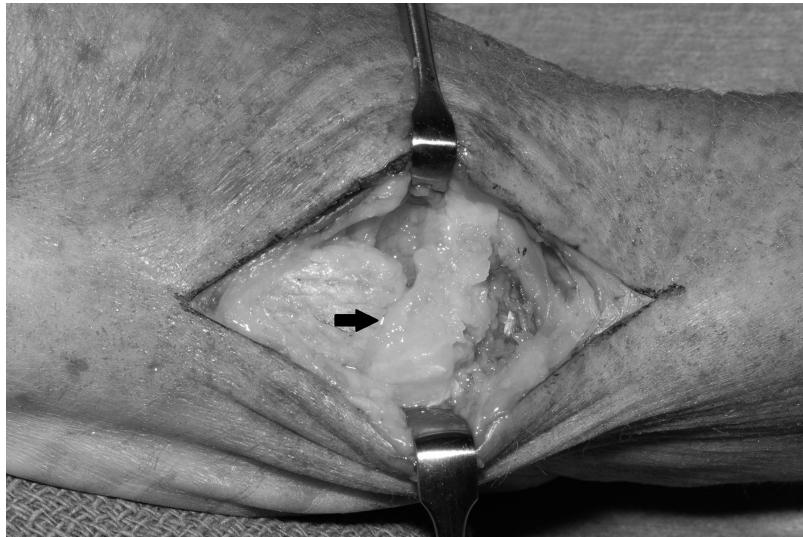


Fig. 4. Intraoperative photograph. Yellow friable mass tethered to FCR tendon sheath

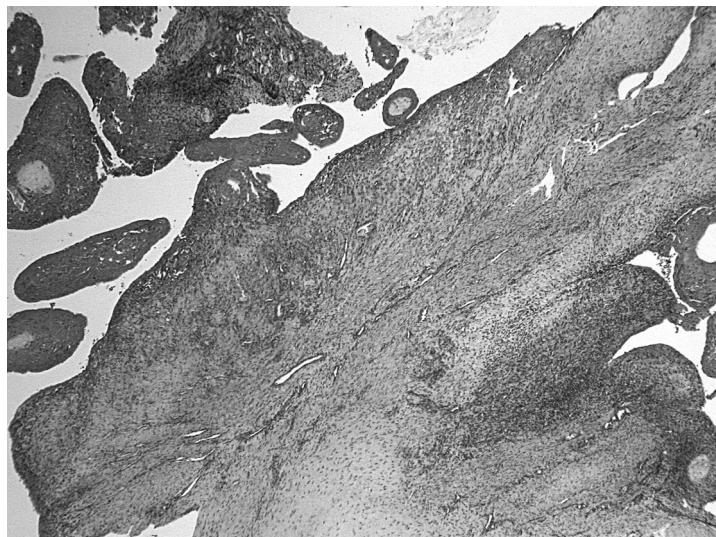


Fig. 5. Histology Slide. Synovium of villous configuration and mild hyperplasia of surface synoviocytes. The bone was degenerate and surrounded by osteoclasts in areas with numerous fibrinoid bodies

mentous laxity caused by repetitive stress of the CMCJ leads to articular cartilage degeneration with formation of bone cysts and osteophytes as well as joint space narrowing. Initial plain radiographs in this case revealed destruction and unusual widening of the CMCJ which prompted CT and MRI to identify the cause. The clinical and destructive radiological features were suggestive of PVNS, Synovial Osteochondromatosis or GCT.

The natural history of such soft tissue lesions is typically acute onset, with corresponding rapid deterioration in pain, deformity and function which was not demonstrated in this case. Although the differential diagnoses are histologically benign, they may behave in an aggressive manner and undergo malig-

nant transformation warranting excision [1,2,3]. Histological analysis following excision eliminated the proposed differential diagnoses from imaging. The subsequent diagnosis of Seronegative Rheumatoid arthritis suggests that the soft tissue mass may have been pannus although the histology results were inconclusive. Infection is another important possibility which must be considered in such cases although there was no evidence of this [4]. There are numerous surgical techniques to treat CMC joint arthritis including arthroscopy, arthroplasty, arthrodesis [5] and trapeziectomy with ligament reconstruction, although no technique has been shown to be superior to another.

In summary, this case represents a severe and atypical presentation of thumb CMCJ destruction.

Thorough clinical, radiological and histological examination of such destructive soft tissue lesions is required to exclude neoplastic (benign or malignant)

or infective causes in particular, and guide subsequent management.

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Liczba słów/Word count: 1296

Tabele/Tables: 0

Ryciny/Figures: 5

Piśmiennictwo/References: 5

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Otrzymano / Received 22.09.2013 r.
Zaakceptowano / Accepted 19.12.2013 r.