Abstract

Tenosynovial chondromatosis (TC) is a rare progressive benign tumor from the synovial lining of tendon sheath. The TC mostly affects males between the ages 30 to 50 years old at the ventral side of wrist. There are two different forms of TC that have been proposed in previous studies: an idiopathic cause (primary TC) and a joint related diseases cause (secondary TC). Even though trauma has been written to be a common reason for TC, a case of a secondary TC affecting the dorsal wrist following a triquetrum fracture has never been written before. The aim of this report is to present a rare case of a solitary post-traumatic TC at the dorsal wrist following a triquetrum fracture. We describe the clinical presentation, imaging modalities, histopathological and treatment challenges to manage this difficult lesion.

INTRODUCTION

Synovial chondromatosis (SC) is a rare benign lesion of the synovium found in joints and tendon sheaths that undergo metaplasia leading to cartilaginous nodules [1–3]. The SC in joints usually involves large areas such as the knee and the hip [1]. If SC develops extra-articular in the tendon sheaths, it is referred to as tenosynovial chondromatosis (TC). The TC tends to occur in the fingers, feet and wrist [1–3]. Despite being a benign lesion, the synovium produced in TC can calcify, generate loose bodies and damage the adjacent cartilages or tendons [4]. Maccagnano et al. defined TC into primary TC or secondary TC [4]. The primary TC occurs in normal joints by an unknown etiology while the secondary TC is the result of joint diseases such as osteoarthritis, neuropathic arthropathy and osteochondral fractures [4]. Even though trauma has been written to be a common reason for TC, a case of a secondary TC affecting the dorsal wrist following a triquetrum fracture has never been written before. The aim of this report was to present an unusual case of a solitary post-traumatic TC following a triquetrum fracture.

CASE REPORT

A 62-year-old woman with a past medical history of obstructive sleep apnea, hypertension and no toxic habits, presented with an 18-month history of progressive pain, swelling and enlarging mass on the dorsum of her dominant right wrist. Patient reported that the mass progressively changed from a soft to a hard consistency during this time, producing a restriction on the range of motion (ROM) at the hand. Two years before our initial visit, she had a non-displaced triquetrum fracture after falling from standing height at her home (Fig. 1).
At evaluation, a non-obese (body mass index = 24) patient with a palpable, soft and non-tender mass on the dorsum area of her right wrist was noted. The right hand had no neurological or vascular compromise. She had swelling and pain in dorsal wrist, with limited ROM of fingers at active and passive extension. Laboratories studies were negative for rheumatologic disease. Radiographs revealed a partially calcified mass in the dorsal aspect of the wrist concerning for a possible osseous or cartilaginous lesion (Fig. 3). A magnetic resonance image (MRI) of the right wrist showed an extensor tenosynovitis and a heterogenous lesion (measuring 2.6 × 1.3 × 2.5 cm) at the level of the first carpal row; suggestive for focal pigmented villonodular synovitis (PVNS) and cartilage nodules [4]. Two different forms can underly the differentiation of cartilage tissue with hyperplasia in synovial and cartilage nodules [4]. The primary TC relates an unknown etiology while the secondary TC involves previous history of osteoarthritis, osteochondral fractures or neuropathic arthropathy [4].

The exact pathogenesis of TC is unknown; however, it has been postulated that tendons undergo an initial neoplastic proliferation of cartilage tissue with hyperplasia in synovial and cartilage nodules [4]. The diagnosis of a TC is challenging due to the clinical and imaging variability presentation. Clinically, a wrist can present with swelling, pain, finger deformities and reduced ROM caused by compression of nearby structures [6]. A wrist X-ray can reveal calcification or ossification of cartilaginous nodules, bone erosions or have normal findings [1]. Additional imaging tools, such as MRI, play an excellent role in the location of loose bodies, proliferative synovium and extension of TC lesion prior to surgery. However, TC can be mistaken in MRI for other soft tissue conditions such as periosteal chondroma, PVNS and soft tissue chondrosarcoma [4, 7, 8]. In cases where there is an inconclusive diagnosis made by MRI, a biopsy with histological analysis remains the gold standard for diagnosis [4, 5].

The standard treatment for TC is complete excision of the neoformation and adjacent synovium [9]. Postoperative TC recurrence of the wrist has been reported in 3–23% of cases, requiring additional surgery for excision [10]. In cases where there is a high suspicion for a malignant soft tissue tumor of the wrist, an intraleisional biopsy can be performed prior to the complete excision [5]. In our patient, the involvement of loose bodies was not present at initial X-ray and MRIs; and a high suspicion of malignant soft tissue was noticed. Based on the imaging studies and the preference of the principal investigator, an intraleisional biopsy was performed prior to an excisional biopsy.

A clinical diagnosis of secondary TC should be suspected in patients with history of prior wrist bone fracture. If clinical and imaging modalities are inconclusive for TC, an initial intraleisional biopsy can be performed prior to the complete excision of the mass. After surgery, patients should be monitored regularly for possible recurrence of TC.
Figure 3: Right magnetic resonance imaging of the right wrist in (A, D) ‘coronal,’ (B, E) sagittal and (C, F) axial view revealing a dorsal wrist mass.

Figure 4: Intraoperative view of right dorsal wrist with (A) mass bed and bony excavation and (B) extracted calcified mass.

Figure 5: Histopathology of excised mass from (A) low power to (C) high power field showing a well-differentiated cartilaginous lesion of a tenosynovial chondromatosis.
Figure 6: Postop evaluation of intact wrist in (A) flexion, (B) extension, (C) supination and (D) pronation.

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CONFLICT OF INTEREST STATEMENT
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CONSENT
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