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Case Report

A rare case of trapezium osteochondroma: unveiling a unique tumour with clinical implications

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ABSTRACT

Osteochondroma is a benign bone tumour commonly found on the metaphysis of long bones. The presentation of osteochondroma on the trapezoid bone, a carpal bone in the wrist, is exceptionally rare. To our knowledge, no such cases have been reported in India. This report details a rare case of osteochondroma located on the trapezoid bone and its successful surgical management. A 55-year-old female presented with pain and swelling in the wrist. Radiological imaging, including X-rays and MRI, revealed a well-defined, pedunculated mass arising from the trapezoid bone. The patient underwent surgical resection of the tumour. Histopathological examination confirmed the diagnosis of osteochondroma. Postoperatively, the patient experienced significant relief from symptoms and showed no evidence of tumour recurrence during follow-up. This case contributes to the limited body of literature on osteochondromas in rare locations, particularly on the trapezoid bone. It illustrates the successful outcome of surgical treatment for rare bone tumours and emphasizes the need for heightened awareness and comprehensive diagnostic approaches in similar cases.

Keywords: Osteochondroma, Trapezium, Carpal bone, Surgical excision

INTRODUCTION

Osteochondroma, also referred to as cartilaginous exostosis, stands as the most prevalent benign primary bone tumor, representing 20-50% of all such tumors.[1] These lesions typically manifest during childhood and are characteristically located at the metaphyses of long bones, including the distal femur, proximal tibia, proximal humerus, and fibula.[2] Osteochondromas are generally slow-growing and benign, with malignant transformation being an infrequent occurrence. Despite their benign nature, they can provoke significant cosmetic concerns and functional impairments by encroaching upon adjacent structures such as nerves, blood vessels, and tendons, leading to a range of symptomatology.[3,4]

Osteochondromas are defined by their cartilaginous caps and bony outgrowths. The vast majority of these tumors (85%) are solitary and non-hereditary. Approximately 15% of osteochondromas present as multiple lesions within the context of hereditary multiple exostoses (HME). Most osteochondromas (around 80%) are found in long bones, predominantly near the knee and in the upper humerus. However, the occurrence of these tumors in the carpal bones is exceedingly rare. Among carpal bones, the scaphoid is the most frequently affected.[5,6] To date, only two cases of osteochondroma involving the trapezium have been documented, with no such cases reported within the Indian population.[7] This report introduces a rare case of osteochondroma originating in the trapezium, underscoring its extraordinary presentation and the necessity for heightened clinical awareness and diagnostic vigilance in encountering such uncommon bone tumors.

CASE REPORT

A 55-year-old female teacher presented to the outpatient department with persistent pain and swelling on the dorsal aspect of her left wrist, which had been ongoing for the

past year. The symptoms had progressively worsened, leading to significant difficulty with grasping motions and increased pain when holding objects. The patient reported no recent trauma to the wrist.

Physical examination revealed a palpable lump on the dorsal aspect of the 1st carpometacarpal joint (Figure 1). Tenderness was noted over the trapeziometacarpal joint, and there was a reduced range of motion in wrist extension. The Finkelstein test was positive, indicating possible tenosynovitis. Neurovascular status was intact, and laboratory tests were unremarkable.

Plain radiographs demonstrated an abnormal bony outgrowth on the radial aspect of the left trapezium (Figure 2), with mild osteoarthritic changes in the carpometacarpal joint. Computed tomography further defined the presence of a bony exostosis on the radial side of the trapezium, measuring approximately 9×7.5 mm, suggestive of osteochondroma (Figure 3). MRI revealed a cartilage cap measuring 6 mm in thickness with underlying cortical irregularity (Figure 4), and showed indentation of the abductor pollicis longus and extensor pollicis brevis tendons with mild tenosynovitis (Figure 5). These clinical and imaging findings confirmed the diagnosis of osteochondroma of the trapezium.

Initially, conservative management was attempted, including analgesics and other supportive measures. However, due to the failure of these conservative treatments, surgical intervention was planned.

Surgical details

Following the administration of a brachial block, the patient was positioned supine with the arm abducted. A J-shaped incision was made along the dorsum of the thumb metacarpal, curving medially at the wrist flexion crease and centered over the first carpometacarpal joint (Figure 6). The joint capsule was incised to expose the tumor (Figure 7). A 2×2 cm tumor was identified on the dorsoradial aspect of the trapezium. Throughout the procedure, the superficial radial nerve and extensor pollicis longus (EPL) tendon were carefully protected. The extensor carpi-radialis longus (ECRL) tendon was partially released and retracted radially to enhance visibility of the trapezium. The osteochondroma was completely excised using a small bone chisel. Additionally, tenolysis of the first dorsal compartment was performed, and the joint capsule was repaired with vicryl sutures. A short arm thumb spica splint was applied postoperatively.

Outcome and follow-up

The excised specimen was sent for histopathological examination, which revealed cartilage tissue with underlying bone marrow and fat (Figure 8), consistent with the diagnosis of osteochondroma. Postoperative radiographs confirmed complete removal of the mass from the trapezium (Figure 9). The patient was reviewed 12 days after surgery; sutures were removed, and a below-elbow thumb spica splint was applied for an additional two weeks. Following splint removal, the patient was advised to commence mobilization exercises. At the six-month follow-up, the patient was pain-free, and radiographs showed no signs of recurrence.

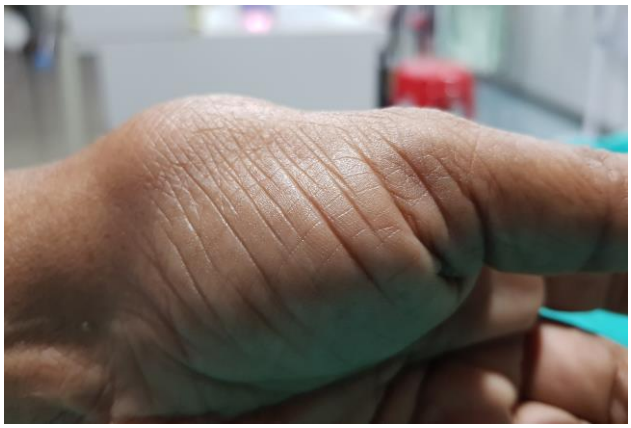

Figure 1: Swelling around the dorsal aspect of 1st carpometacarpal joint.

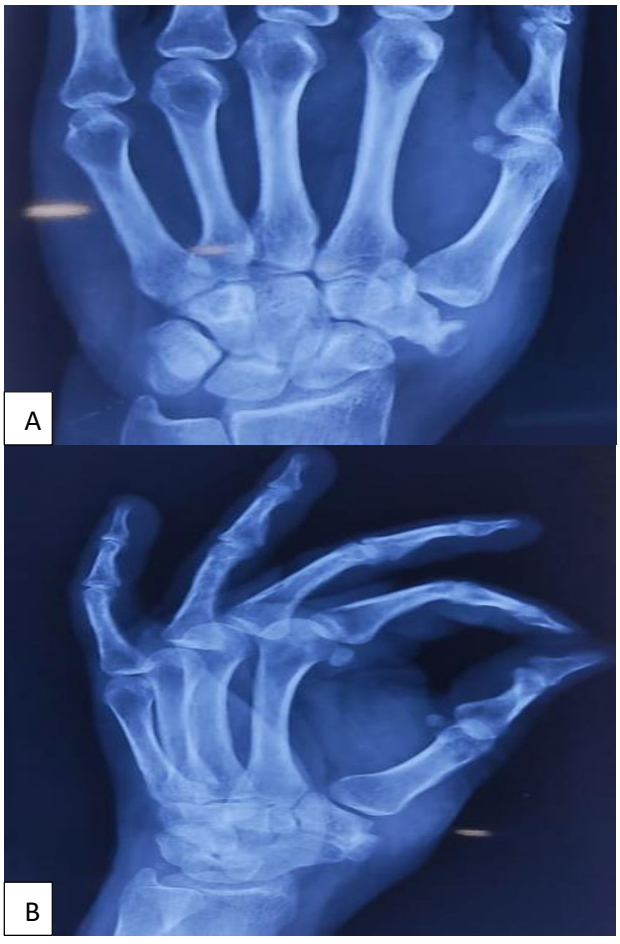

Figure 2 (A and B): X-ray of the wrist revealing abnormal bony outgrowth on the radial aspect of the left trapezium.

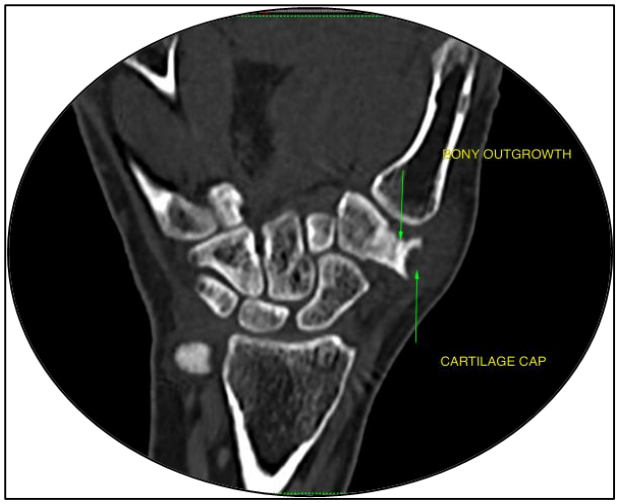

Figure 3: CT scan demonstrating osteochondroma in the left trapezium.

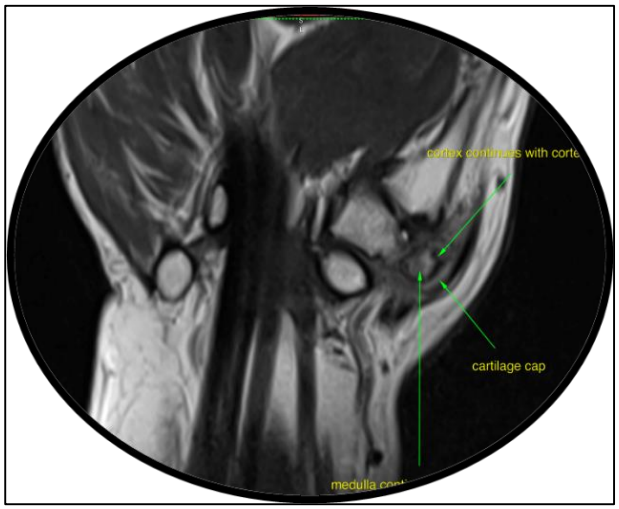

Figure 4: MRI showing a 6 mm thick cartilage cap and underlying cortical irregularity.

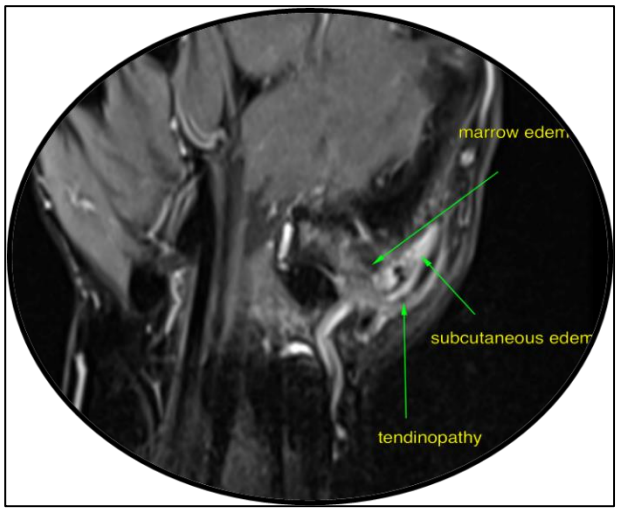

Figure 5: MRI showing tenosynovitis of the 1st dorsal compartment tendons.

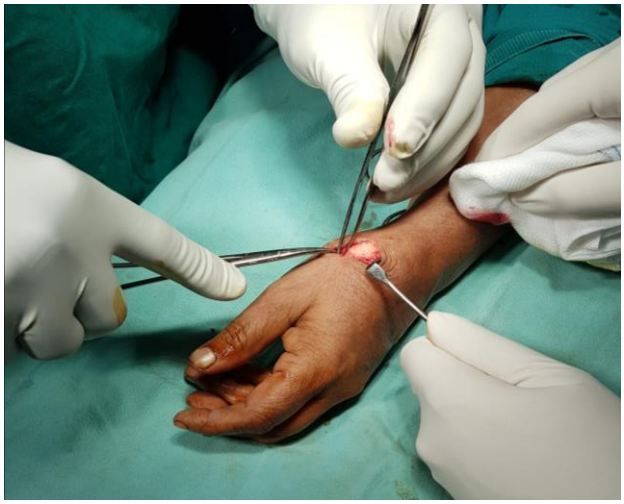

Figure 6: Surgical incision over the carpometacarpal joint.

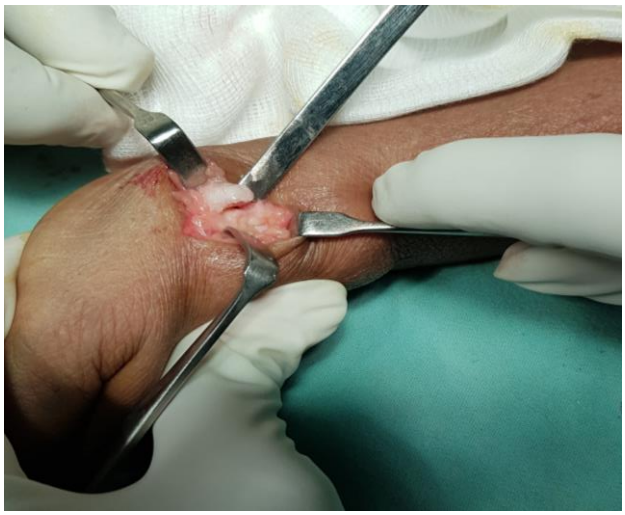

Figure 7: Intraoperative image of the tumour.

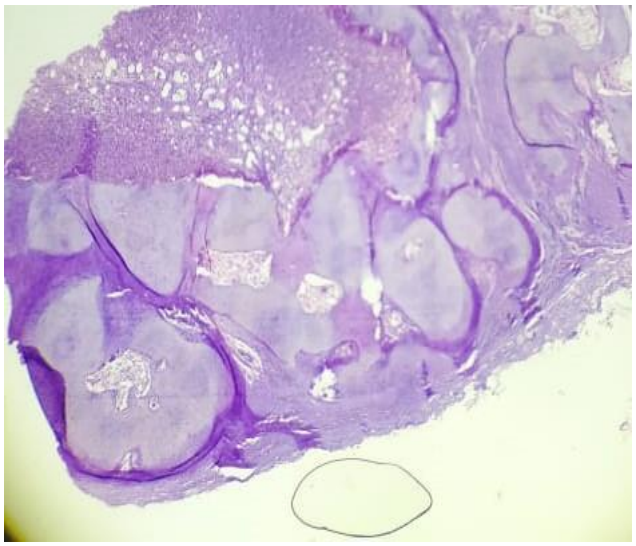

Figure 8: Histopathological examination showing outer cartilage and inner bony trabeculae.

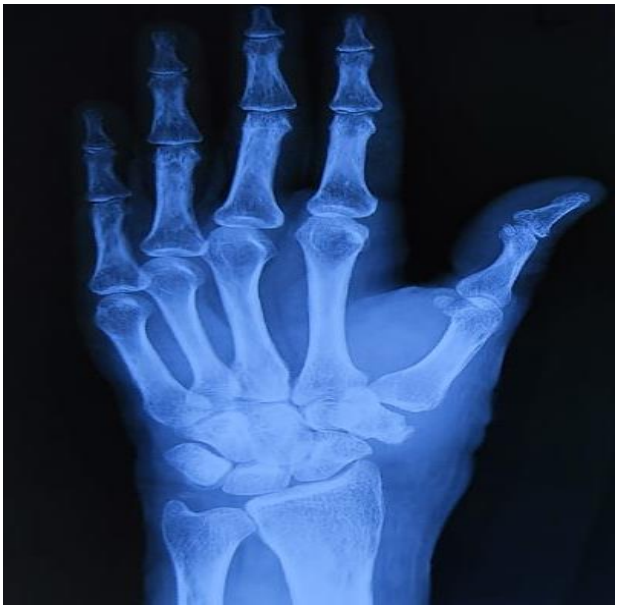

Figure 9: Postoperative X-ray showing excised tumour.

DISCUSSION

Osteochondroma typically arises from the metaphysis of longitudinally growing bones, often due to defects in the periosteum or at tendon insertions.[4] Carpal bones, characterized by their limited periosteal surface and their development from expanding ossification centers, rarely give rise to osteochondromas.[6] The pathogenesis of osteochondroma remains debated, particularly for lesions in bones without epiphyses. Carpal ossification centers develop from cartilage and expand outward; once they reach the surface, periosteal bone formation commences, leading to further appositional growth. Osteochondromas may result from the activation of cartilaginous rests in the periosteum or tendon attachments. Since the trapezium lacks tendinous insertions, the presence of cartilaginous rests in the periosteum may explain the development of osteochondromas in this bone.[8]

Carpal bone tumors are often diagnosed late or misdiagnosed due to their subtle presentation on plain radiographs and potential asymptomatic nature. Symptoms are frequently confused with conditions such as 1st carpometacarpal joint arthritis, carpal tunnel syndrome, or even normal radiographic variations. Misdiagnosis can lead to more invasive procedures, such as trapezectomy or 1st carpometacarpal arthrodesis. Accurate diagnosis of carpal bone tumors necessitates advanced imaging techniques, including computed tomography, bone scans, angiography, and magnetic resonance imaging.

Typically, osteochondromas are slow-growing and asymptomatic, managed conservatively in the absence of symptoms.[11] However, osteochondromas located in the carpal bones may cause a range of issues, including restricted wrist motion, carpal tunnel syndrome, tendon irritation, or rupture due to their proximity to critical structures.[12] Symptomatic osteochondromas should be promptly identified and surgically resected to prevent complications. Although malignant transformation of carpal osteochondromas is unreported, ongoing vigilance is essential, as even asymptomatic osteochondromas can cause delayed symptoms from long-term tissue irritation.

Complications associated with carpal osteochondromas include nerve palsy, reduced wrist motion from carpal ligament tears, tendon rupture, and osteoarthritis.[9] In this case, trapeziometacarpal osteoarthritis was observed alongside the trapezium osteochondroma. While most osteochondromas are benign, malignant transformation can occur in 1% of solitary lesions and 3-5% of patients with hereditary multiple exostosis.[10] Small or asymptomatic osteochondromas typically require observation, but surgical intervention should be considered for patients experiencing mechanical symptoms or pain.

The case underscores the significance of considering surgical treatment when patients experience mechanical symptoms or pain associated with osteochondromas. While most osteochondromas are asymptomatic and do not require specific treatment, surgical intervention becomes necessary in symptomatic cases. The successful outcome in this case, with pain relief and no recurrence at the 6-month follow-up, emphasizes the importance of prompt diagnosis and appropriate management in ensuring positive patient outcomes.

CONCLUSION

This case report illustrates the vital need for precise diagnosis and timely intervention in managing osteochondromas, particularly those located in the carpal bones. Despite their typically benign and slow-growing nature, these tumours can cause significant symptoms and complications due to their proximity to crucial anatomical structures. The findings highlight the importance of using advanced imaging techniques to achieve an accurate diagnosis, as carpal bone tumours are often misidentified due to their subtle presentation. Clinicians should be attentive to the possibility of osteochondromas and opt for surgical treatment when symptoms arise. This case reinforces the importance of early detection and appropriate management to prevent complications and ensure positive patient outcomes.

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