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Carpal Synostosis: A Case Report

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Abstract

Introduction: Carpal synostosis is a very rare anomaly consisting of fusion of multiple carpal bones diagnosed with other concomitant conditions and reported rarely in literature. **Case report:** We are reporting a case of complete fracture of shaft of fifth metacarpal with fusion of all four proximal carpal bones and in distal row fusion of trapezoid with trapezium and capitate with hamate. **Discussion:** Carpal synostosis is congenital anomaly diagnosed incidentally like in our case with fracture of shaft of fifth metacarpal. **Conclusion:** It is completely asymptomatic rarely require treatment for isolated fusion of carpal bones.

Keywords: Carpal synostosis, congenital, fracture, fifth metacarpal.

Introduction

Carpal synostosis is a rare anomaly with an incidence of 0.1% in general population with exceptional higher incidence in female and African population. ⁽¹⁾ It occurs when there is failure of incomplete cavitation of the common carpal cartilaginous precursor's intrauterinally. These anomalies are incidentally diagnosed like in this case of 5th metacarpal shaft fracture as they are completely asymptomatic. ⁽²⁾

Case Report: A forty-three years old male presented with complaints of pain and swelling of ulnar aspect of left hand following fall onto the ground. Clinical examination revealed swelling and bony tenderness at ulnar aspect of the hand (figure 1), range of motion at wrist was normal and other small joints of the hand were also normal.

Radiographic examination of left wrist and hand in anteroposterior view showed a complete fracture of shaft of fifth metacarpal with fusion of all four proximal carpal bones and in distal row fusion of trapezoid with trapezium and capitate with hamate (figure 2)



Fig. 1



Fig. 2

Discussion:

Carpal synostosis or Carpal coalition is rare anatomical variant that can be congenital in origin or acquired. It is defined as intrauterine fusion of carpal bones due to lack of cavitation of precursor cartilage followed by chondrification and ossification of the carpals in 4th and 8th week of intrauterine life.⁽³⁾ Most common carpal fusion reported is lunate – triquetral coalition followed by capitate and hamate coalition.^(4,5,6) Carpal Synostosis present an isolated anomaly involving only few carpals more commonly proximal row of carpal bones or can be associated with syndromes like Arthrogryposis multiplex congenital; Spondylotarsal synostosis syndrome⁽⁸⁾; Otopalatodigital syndrome⁽⁷⁾; Steel syndrome with multiple anomalies with multiple fused bones.⁽⁹⁾

Carpal Synostosis has female preponderance and higher incidence of some variants in African subcontinent.⁽¹⁰⁾ Usually asymptomatic patients found incidentally with fracture, scaphoid luxation or non-union after a fracture involving the carpal synostosis. Symptomatic cases can be treated conservatively or operatively. Conservative treatment consists of anti-inflammatory medications, rest or immobilisation and avoids pain inducing activities. Operative management depends on the radiological findings and patients discomfort.

In our case report it is fusion of all four proximal carpal bones and in distal row fusion of trapezoid with trapezium and capitate with hamate with fracture of fifth metacarpal, completely incidental diagnosis of carpal synostosis with no other associated congenital anomalies. In this case there was no difficulty in treating the fracture of fifth metacarpal. Carpal synostosis would have some implication in approach for the treatment of fracture if the fracture would have been through the synostosis or involving the base of metacarpal as seen in case report by Soliman et al⁽¹¹⁾ in which he fixed the scaphoid fracture in an antegrade fashion through dorsal approach as the volar approach could have been more challenging because of the proximity of the fracture to carpal synostosis.

Conclusion:

Carpal Synostosis is a rare anatomical anomaly or can be acquired and completely incidental finding in an asymptomatic patient presented for some other condition. Very few cases require treatment for isolated carpal synostosis.

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