

Case Report

Asymptomatic bilateral luno-triquetral coalition a rare case report

Roger Kennedy X¹, Prabhu Ethiraj^{2*}, Arun H S³

1. Junior Resident, Department of Orthopaedics, Sri Devaraj Urs Medical College, Sri Devaraj Urs Academy of Higher Education and Research, Kolar.
2. Professor, Department of Orthopaedics, Sri Devaraj Urs Medical College, Sri Devaraj Urs Academy of Higher Education and Research, Kolar.
3. Professor and Head, Department of Orthopaedics, Sri Devaraj Urs Medical College, Sri Devaraj Urs Academy of Higher Education and Research, Kolar.

Abstract

Luno triquetral coalition is a congenital carpal anomaly that is most often diagnosed as an incidental finding and are usually asymptomatic. Here in this case report we present a 27-year-old male patient with the complaints of swelling and pain in left middle finger at middle interphalangeal (MIP) joint following a fall on outstretched hand.

Keywords: Lunotriquetral coalition, Carpal coalition, Minnar.

Introduction

Luno-triquetral coalition is a congenital carpal anomaly that is most often diagnosed as an incidental finding in asymptomatic patients and can be associated with other synostoses or malformations.¹ The congenital fusion of the lunate and the triquetral hand bone is more common in females (female to male ratio is 2:1, as in larger series), According to the literature, the incidence of carpal coalitions in the general population is 0.1% with 90% of them being the fusion of lunate and triquetrum, followed by the capito-hamate coalition with 5.6% of all carpal fusions.² Most coalitions occur between carpals within the same carpal row.³ Coalitions between carpals from different rows are rare.⁴ The mal-segmentation results in a carpal coalition, which may be fibrous (syndesmosis), cartilaginous (synchondrosis), frequently a mixture of both or osseous. Circulating Tumour Cell (CTC) - a rare coalition type - is usually considered asymptomatic. In very rare cases however

fibrocartilaginous (type 1) CTC may be a cause of focal pain due to the pseudarthrosis or a post-traumatic disruption of CTC. The most frequently used classification on plain film is of de Villiers Minnaar.⁵

Treatment options for this condition depends on the type of coalition and also the symptoms restricting the daily activity of the patient. Most cases are asymptomatic, symptomatic patients complain of ulnar sided wrist pain and restriction of wrist movements. such cases can be treated accordingly by wrist denervation, partial arthrodesis of carpals or complete arthrodesis in case of profound arthritis.

Case History

A 27-year-old male patient came with the complaints of swelling and pain in left middle finger at middle interphalangeal (MIP) joint following a fall on outstretched hand at his residence in bathroom while bathing, came with complaints of severe swelling and pain over his left index finger and MIP joint and came to RLJ hospital, Tamaka, Kolar for further management.

Clinical Examination: Left Hand

There was diffuse swelling around the left index finger MIP joint. No bony crepitus or abnormal bony mobility on physical examination, Tenderness over the Luno-triquetral joint, no pathologic "shuck"

*Corresponding Author

Dr. Prabhu Ethiraj

Professor, Department of Orthopaedics,
Sri Devaraj Urs Medical College, Sri Devaraj Urs
Academy of Higher Education and Research,
Tamaka, Kolar-563101.

Mobile No: 9886469972

E-mail: prabhu.thepreacher@gmail.com

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and “shear” test between lunate and the triquetrum. There was no limitation in range of motion of the wrist; however, flexion and extension were minimally painful. No other significant findings could be appreciated clinically.

Investigations

Plain radiograph was taken at the radiology department of the x-ray bilateral wrist Poster-anterior view. X-rays showed bilateral Luno-triquetral coalition it belonged to Minaar's classification type 3. That is complete fusion of lunate and triquetrum without any distal notching. There were no secondary changes around other carpal bones.

Figure 1: posterior- anterior radiograph of both wrist showing complete fusion of Lunate and Triquetrum on both the sides.



Figure 2: posterior- anterior view of left wrist with hand and oblique view showing Luno-Triquetral coalition Minaar type 3.



Follow Up

1. Patient will be followed up regularly for any restrictions of range of movements or ulnar sided wrist pain to diagnose secondary changes due to coalition.

2. Till date patient has come for follow up regularly every 2 months and is asymptomatic with good range of wrist movements.

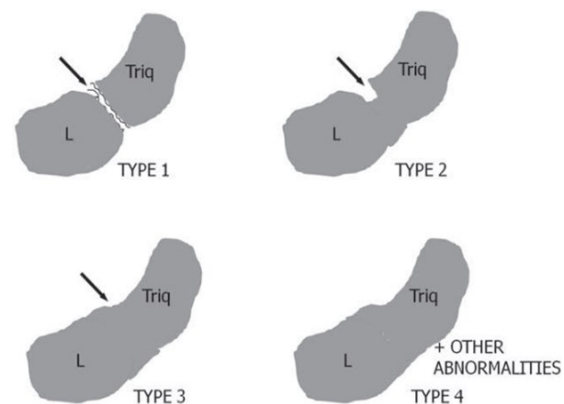
Discussion

Carpal coalition is a congenital or acquired anomaly resulting from the failure of differentiation with the former 4, during embryonic development. It should be avoided to use the term "fusion" to describe this abnormality, as the process that actually occurs is incomplete demarcation of cartilaginous precursors rather than the union of two previously separate structures.^{6,7,8,9}

The most common place for carpal coalition is the joint between the lunate and the triquetrum. Different types of bonding can develop depending on the degree of cellular apoptosis, which can range anywhere between complete coalition and normal joint development.

This anatomical variation was categorised by de Villiers Minaar into 4 types.

Figure 3: De Villiers Minnar classification of Luno-triquetral coalition.



- Type 1: Incomplete fusion resembling a pseudoarthrosis (Fibro-cartilage coalition)
 Type 2: incomplete osseous fusion
 Type 3: complete osseous fusion
 Type 4: complete osseous fusion associated with other carpal anomalies.^{10, 11}

Radiographic survey includes anteroposterior and lateral radiographs as well as radial and ulnar clenched fist views of both wrists for proper diagnosis. Joint space expansion of Scapho-lunate is commonly associated with the Luno-triquetral coalition.¹¹

Differential Diagnosis is a rare case of symptomatic capitate-trapezoid carpal coalition, Minnaar-type1. Acquired fusion due to secondary arthritis, Surgery, Trauma, acquired fusion after drug intake during pregnancy, Metaplastic conversion of Intra-articular structures, Carpal coalitions associated with other hand and/or wrist abnormalities.

Treatment by Luno-triquetral arthrodesis is not recommended in any case, as no motion is expected between the lunate and the triquetrum in Minaar's classified type II-IV patients.¹² However, deficient cartilage formation in Minaar's type 1 between incomplete separated carpal bones patients can result in symptoms analogous to those of degenerative arthritis.¹³ In such cases fusion of affected bones or wrist denervation should be considered.

Carpal fusions will result in instability of the wrist which will increase the risk of arthritis around the surrounding carpal bones, even though carpal fusion is accepted as a treatment option for carpal instability. Therefore, in the event of a significant, pain-related, reduced quality of life, we would recommend one to exhaust conservative treatment, such as physiotherapy, and offer a wrist denervation. Partial arthrodesis should be performed in case of carpal arthritis and if pronounced arthritis is evident then total arthrodesis should be the treatment option alternative to wrist denervation.

Conclusion

This report suggests that bilateral Luno-triquetral Coalition of wrist joint is a rare entity in Indian population with not many reported cases in literature. Inability to diagnose it until it is pain full or fractured or associated with any other wrist injuries but incidental at presentation is not uncommon. Prompt diagnosis and appropriate management leads to a satisfactory outcome with regaining of functional and acceptable range of motion in cases of Carpal bone coalitions. This condition being a rare entity, our case report highlights the importance of understanding this condition so as to diagnose it early in a day-to-day clinical practice and provide early treatment.

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