

Management of Chronic Palmar Distal Radio-ulnar Joint Dislocation of Wrist: A Case Report on Young Gymnast with 1-Year Follow-up

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Abstract

Background: A palmar dislocation of distal radio-ulnar joint (DRUJ) is rare and causes gross functional restriction of pronation. It is certainly major cosmetic concern for the patient as keeps the forearm supinated because of dislocation. Usually, such injuries are caused due to high velocity trauma and fall on supinated hand. The literature is sparse on the management of palmar dislocation of DRUJ.

Materials and Methods: We present a case report on the management of chronic palmar dislocation in a 27-year-old professional gymnast trainer with 1-year follow-up. We describe the surgical technique of open reduction by palmar approach and reconstruction of triangular fibrocartilage complex ligament by suture anchor. The post-operative rehabilitation protocol is also mentioned in detail.

Results: The patient has 80° pronation and painless wrist range of movements at 1-year follow-up. She is able to perform all activities of daily living though not confident in weight bearing on affected wrist.

Conclusion: As per our knowledge, this is described for the 1st time about the management of chronic palmar DRUJ case in young gymnast. The restricted pronation is important sign of palmar DRUJ dislocation. The return of pronation gives immense satisfaction to the patient.

Keywords: Case report, palmar, chronic, DRUJ, dislocation, wrist, gymnast.

Introduction

The palmar dislocation is very uncommon and so far, reported as a case reports in the literature. As in such injuries, wrist flexion and extension movements are retained near normal, they are often missed. The important sign of palmar dislocation of distal radio-ulnar joint (DRUJ) is loss of pronation and palpable ulnar head. We describe one of the methods of management of 3 months of chronic palmar dislocation of DRUJ of wrist in a young gymnastic player.

Materials and Methods

A 27-year-old female gymnast presented to us at 3-month post fall on out-stretched hand while doing gymnastics. She had inability to pronate the forearm and severe pain on attempt of pronation. She had complete supination up to 30° (Fig. 1) and then further pronation was not possible (Fig. 2). Her flexion and extension at wrist were 70° and 45°, respectively (Fig. 3). The hand and elbow range of movements were normal. The ulnar head was palpable and tender on palmar aspect with pain in foveal region of ulnar side of the wrist. There

was no distal neurovascular deficit. The X-ray of wrist showed palmar dislocation of wrist with no fractures (Fig. 4). Magnetic resonance imaging showed dorsal tear of triangular fibrocartilage complex (TFCC) ligament with no fracture (Fig. 5). The surgical intervention in the form of palmar exploration (Fig. 6), arthrolysis of DRUJ, and open reduction of ulnar head (Fig. 7) was performed and it was relocated in sigmoid notch. It was unstable and on attempt of pronation, it used to get dislocated. Therefore, open TFCC repair was done by suture anchor placement in fovea (Fig. 8).

Post-operative rehabilitation: The patient was given above elbow slab for 3 weeks after surgery. At 3 weeks, cock up splint was given. The flexion and extension were started by intermittent

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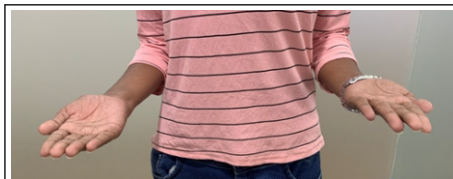


Figure 1: Complete supination.

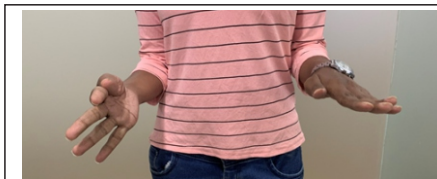


Figure 2: Restricted pronation.

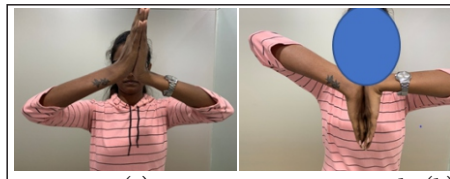


Figure 3: (a) Wrist extension 45° and (b) Wrist flexion 70°.



Figure 4: X-ray right wrist postero-anterior view and oblique views.

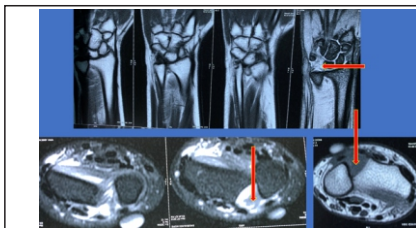


Figure 5: MRI- Palmar dislocation of DRUJ and dorsal near complete TFCC ligament tear.

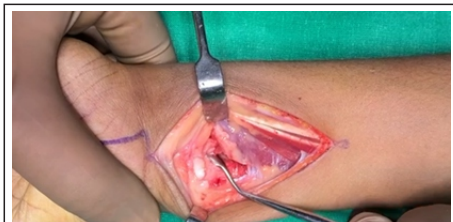


Figure 7: Open relocation of ulnar head.

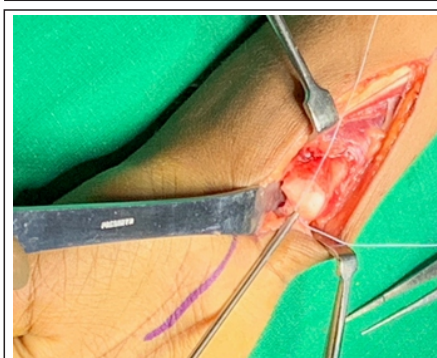


Figure 8: Repair of TFCC by suture anchor placement in fovea.



Figure 10: (Follow-up at 1 year) (a) Pronation 70° and (b) Supination 90°

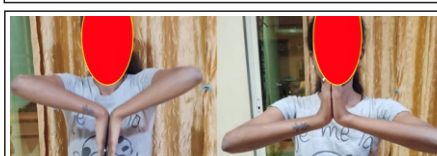


Figure 11: Wrist flexion 80° and extension 80°

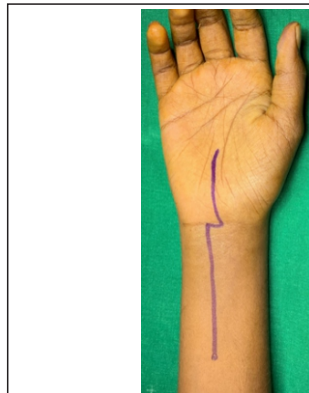


Figure 6: Palmar approach



Figure 9: X-ray of the right wrist PA and lateral view showing well reduced DRUJ and placement of suture anchor.

removal of splint at 3 weeks. The active pronosupination started at 6-week post-surgery. All passive movements at wrist were initiated after 8 weeks from surgery. The follow-up was kept at 3-months, 6-months, 9-months, and at 1 year (Table 1). The function was assessed by observing improvement in pronation and ability of performing activities of daily living. The final functional outcome was assessed by Patient Rated Wrist Evaluation score. The repeat X-ray at 6 months showed well reduced DRUJ and proper placement of suture anchor (Fig. 9).

Result

The patient had complete supination up to 90° and 70° pronation was possible at 1-year follow-up (Fig. 10). She had 80° 0° flexion and extension (Fig. 11). The PRWE score was 15 at year.

Discussion

The DRUJ injuries with or without ulnar

styloid fractures are common after fall from out-stretched hand in all age group of people. We frequently notice dorsal subluxation of DRUJ due to ulnar styloid fracture or TFCC ligament tear. The acute palmar dislocation remains unnoticed many times in emergency department or in orthopedic out-patient department as these patients usually have near normal wrist flexion and extension. The central or foveal tear of TFCC with

Table 1: : Patient Rated Wrist Evaluation PRWE score

Patient Rated Wrist Evaluation PRWE score	At 3-months	At 6-months	At 9-months	At 1 year
Pain	24	19	11	6
Function	A-27 B-13	A-21 B-9	A-14 B-7	A-5 B-4
Total score	64/100	49/100	32/100	15/100

subluxation requires surgical intervention if conservative treatment fails [1]. As described by Lee et al., the natural history of TFCC ligament injury with stable DRUJ may take 6 months to heal by fibrosis and to have complete absence of ulnar-sided wrist pain [2]. The lately presented DRUJ dislocation with degenerative changes in ulnar head has been managed by partial resection of head and repairing radio-ulnar ligament

with achievement of 60° pronation at 1-year follow-up [3]. The mechanism of palmar dislocation of DRUJ is described due to fall on fully supinated hand. The irreducibility of ulnar head in to sigmoid notch could be due to contracted volar soft tissues, dorsal TFCC tear, and torn pronator quadratus muscle [4, 5, 6].

Conclusion

The important sign of palmar dislocation

of DRUJ at wrist is restricted pronation and palpable ulnar head. Even in chronic case, palmar open reduction and refixation of TFCC ligament can give excellent function with proper rehabilitation as mentioned in this case report.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the Journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Conflict of Interest: NIL; **Source of Support:** NIL

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