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Ulnar-sided Wrist pain due to Extensor Carpi Ulnaris tendon subluxation: A case report

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Abstract

Traumatic Extensor Carpi Ulnaris (ECU) subluxation is often missed and undiagnosed or wrongly diagnosed. ECU muscle plays a key role in active movement of wrist extension, ulnar deviation and also in providing support to the ulnar side of wrist. Its position relative to the other structures in the wrist changes with forearm pronation and supination. As such it must be mobile yet stable. This structure can be injured in a variety of different athletic activity and following fall on outstretched hand. It lies subcutaneously and easily palpated and visualized, allowing early diagnosis and management. We in our study report a case of traumatic ECU subluxation. An 18 year old female patient presented to our OPD with ulnar side wrist pain. MRI showed volar subluxed ECU tendon with ruptured ECU sheath. We had done open ECU sheath repair and excision of bursa. Very few literature shows traumatic ECU subluxation report. The case is reported for the rarity of presentation and likely to misdiagnose in day to day clinical scenario.

Keywords: ECU, subluxation, trauma

1. Introduction

The Extensor Carpi Ulnaris and its retaining sheath are commonly injured in sports injury and fall. The Extensor Carpi Ulnaris (ECU) is a muscle located in the human forearm that acts to extend and adduct the wrist. It crosses through the sixth dorsal compartment where it is held tightly to the ulnar groove by a subsheath. Traumatic recurrent dislocations of the ECU tendon are rare injuries caused by tearing of the subsheath of the wrist, particularly on forearm pronation and supination. Tenderness and swelling are often present over the ECU tendon at the ulnar head^[1].

The ECU tendon passes through a fibro-osseous tunnel (the sixth extensor compartment) as it leaves the forearm, lying within a bony groove on the dorsal surface of the ulna. It is maintained within this groove by a retinaculum and subsheath. The structural integrity of the tendon and the fibro-osseous tunnel are essential for normal wrist mechanics and function.

In full supination, the ECU tendon lies in a dorsal position relative to the flexion/extension axis of motion, resulting in a greater contribution to true wrist extension. In forearm pronation, the ECU tendon lies more in the palmar and ulnar positions, diminishing its contribution to wrist extension^[2, 3].

2. Case Report

An 18 year old girl patient presented to our OPD with pain and swelling right wrist of 3 months duration. She fell down on outstretched hand 3 months ago following which she consulted a local orthopaedic surgeon and she was treated for wrist sprain with below elbow volar POP slab for 3 weeks. As pain was persisting after 3 weeks of immobilization she underwent local steroid injection from the same doctor. As the pain was still persisting she came to our OPD. She was admitted X-ray (Fig-1) and MRI (Fig-2) of involved wrist taken which was suggestive of ECU and DRUJ subluxation.

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Fig 1: X ray Wrist AP view

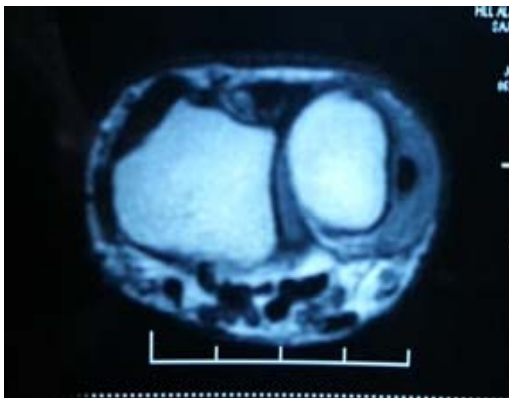


Fig 2: MRI Wrist

On examination ulnar head was more prominent and ECU tendon was subluxated volarwards (Fig-3). X ray wrist was suggestive of DRUJ subluxation.



Fig 3: Subluxated ulnar head and ECU

Routine work up was done for surgery. Under supraclavicular block, through dorsal approach ECU tendon exposed and ECU sheath was found to be ruptured along with volar subluxation of ECU tendon (Fig 4 & 5). ECU tendon repositioned to the ECU



Fig 4: Ruptured ECU Sheath



Fig 5: Subluxated ECU Tendon

groove and sheath repaired with Ethibond suture. DRUJ subluxation reduced and stabilized with 2 K-wire. Post op wrist was immobilized in long arm slab in full supination. Sutures were removed on 10th day. After 6 weeks DRUJ K-wire removed and ROM exercise started under physiatrist consultation. She was followed up after 3 weeks, 3 months, 6 months and at 1 year. She was assessed for pain, range of movement and position of ECU tendon. Her pain disappeared and she has got full Range of movement of wrist as well as supination and pronation. She has now joined her GNM nursing course. There was no recurrent dislocation of the ECU tendon of the patient at her last follow up at 12 months after the operation (Figures 6 to 9).

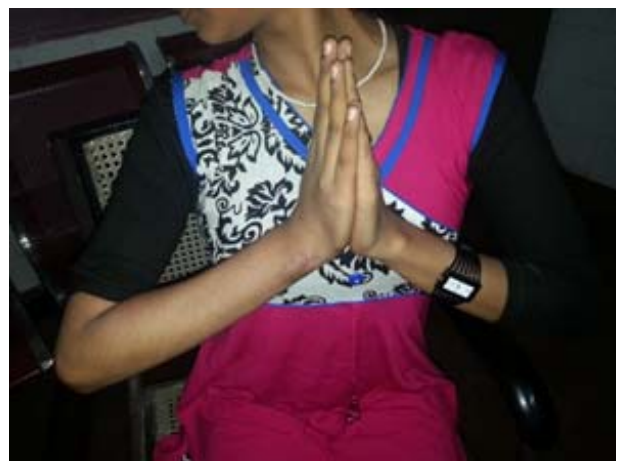


Fig 6: Full Dorsiflexion



Fig 7: Full Palmar Flexion



Fig 8: Full Supination

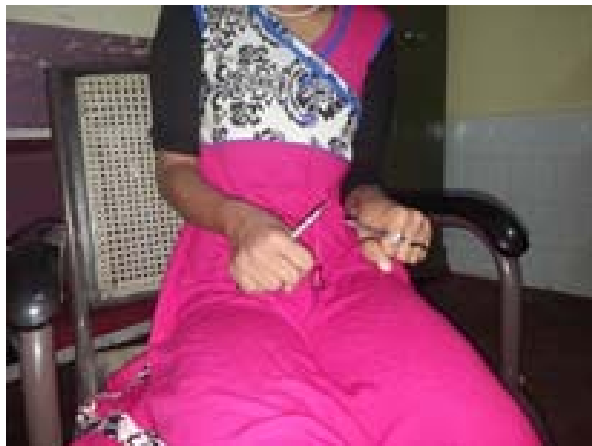


Fig 9: Full Pronation

3. Discussion

Though it is a very common injury but oftenly missed. The mechanism causing ECU subluxation is often forced supination, palmar flexion and ulnar deviation of the wrist. The ECU dislocates during supination and relocates with pronation. ECU instability was first described by Vulpius in 1964 [4]. Spinner and Kaplan described the tension of the tendon of ECU in its intact fibrous tunnel as an important stabilizing factor for the distal radioulnar joint. The stability of the joint during supination is maintained by the tendon being retained in its groove [5].

In acute subluxation, immobilization for six weeks in a long arm cast with the forearm pronated and the wrist in a slight radial deviation and dorsiflexion may be done, but in chronic and symptomatic subluxation, surgical reconstruction of the subsheath should be considered [6]. According to Rowland, surgical treatment of ECU subluxation may be considered even in an acute case due to the inadequate potential for anatomic healing of the fibrous sheath [7].

4. Conclusion

Tension of the tendon of the ECU in its intact fibrous tunnel is an important stabilizing factor for the distal radioulnar joint.

As in our case, undefined pain of the ulnar wrist often poses a diagnostic challenge and ECU tendon dislocation should be suspected in differential diagnosis [8]. On supination the tendon displaces, often with an audible snap, and on pronation it relocates to its normal place in the ulnar groove.

Although we achieved satisfactory results with surgical treatment, more study is needed if this pathology is to be treated with conservative methods accurately in acute cases.

5. Consent

Written informed consent was obtained from the patient for publication of this manuscript and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

6. Acknowledgement

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