Perthes-Like Lesion in Wrist Joint: Stripping of Ulnar Collateral Ligament

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Abstract

Background Chronic ulnar-sided wrist pain often proves to be a challenging presenting complaint. A new type of injury to the ulnar collateral ligament (UCL) of the wrist is described in a young female. It is characterized by stripping of UCL from ulnar attachment.

Case Description A 32-year-old female sustained an injury after lifting heavy weight. Examination revealed tenderness to the ulnar styloid, terminal radial deviation was painful and decreased grip strength. The arthro-computed tomography (Arthroscanner) diagnosed stripping of ulnar collateral ligament (UCL). The UCL was refixed with transosseous sutures. At one year follow-up, the patient was pain-free with good range of motion and improved grip strength.

Literature Review After intense literature review, we found this type of injury was not reported, but we found the same type of injury in the shoulder “Perthes lesion.”

Clinical Relevance The UCL stripping of the wrist is a rare entity and undiagnosed on routine investigation. This lesion was only diagnosed on an arthroscanner and was missed on MR study which is commonly used for diagnosed wrist pain. This case is being reported for its rarity and to expand the differential diagnosis of the ulnar-sided wrist pain.

Keywords

- wrist joint
- ulnar collateral ligament
- stripping
- perthes lesion

Determining the cause of ulnar-sided wrist pain is difficult, largely because of the complexity of the anatomic and biomechanical properties of the ulnar wrist.^{1,2} The common causes of pain on the ulnar side of the wrist are wrist meniscus injuries to the triangular fibrocartilage complex (TFCC), injuries to the distal radioulnar joint (DRUJ), ulnar impaction syndrome, and irritation of the wrist tendons (extensor and flexor carpi ulnaris).

Case Report

A 32-year-old right-handed female housewife came with a history of pain in the ulnar aspect of the left wrist joint. There was a history of lifting heavy weight (water soaked cloth bucket) of 20 kg, 8 to 9 months back. On examination, there was tenderness to the ulnar styloid, and piano key

sign and fovea sign were negative. The ulnar impaction test was also negative. Range of motion of the wrist was in full range, except the terminal radial deviation was painful and a decreased grip strength of 90 mm Hg was assessed with Sphygmomanometer.³ Posteroanterior and lateral views were normal (► **Fig. 1**). Magnetic resonance imaging (MRI) study of the affected wrist was obtained on a 3T MR unit and showed tenosynovitis of an extensor carpi ulnaris tendon (► **Fig. 2**). The patient was treated conservatively by above elbow slab in full supination for 4 weeks and nonsteroidal anti-inflammatory drug and physiotherapy for 3 weeks, but still the pain was persistent. Multidetector computed tomographic (MDCT) arthrography (commonly called Arthroscanner)⁴ was done, which the author performs routinely for undiagnosed chronic wrist pain. The arthro-CT showed spillage of radiolucent dye between ulnar

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Fig. 1 Normal pre-operative radiographs: (A) anteroposterior and (B) lateral views.

styloid and ulnar collateral ligament (UCL) with meniscus homolog avulsion (► **Fig. 3**). On operative exploration, there was sagging of UCL on the ulnar deviation (► **Fig. 4**). Intraoperatively, the arthro-CT finding was correlated and diagnosis of stripping of the ligament was done. The UCL was

detached from its attachment (► **Fig. 5**) and anchored back to a bone by 3-0 Ethibond with full tension and augmented by 3-0 Prolene (► **Fig. 6**). Above elbow slab in full supination was given for 4 weeks and then physiotherapy was started. After 1 year follow-up, the patient had no pain. Range of motion of the wrist was full and no discomfort on the terminal radial deviation. The grip strength improved to 110 mm Hg (pre-op 90mm Hg).

Discussion

There have been many studies and classifications of the complex network of ligaments on the ulnar side of the wrist but when it comes to UCL, then there is little consensus and no universal agreement. Some authors showed the existence of UCL at that originates in the ulnar styloid, blends with the triangular fibrocartilage complex (TFCC) and meniscus, continuing distally to attach to the triquetrum and hamate, terminating at the base of the fifth metacarpal.^{5,6} On the other hand, Nakamura et al used Hammock's concept to describe a ligament in this area of the wrist, most notably describing the UCL as part of the TFCC.^{7,8} Palmer et al noted that the difference between the TFCC and a separate UCL is "not merely a matter of semantics," and that these two structures cannot be separated from one another.⁹ Finally, there are authors who do not believe that the UCL exists as an independent structure.¹⁰

Ulnar-sided wrist pain is very frustrating to patients because of its insidious onset, vague and chronic nature with intermittent symptoms. There is a diagnostic dilemma for both radiologists and hand surgeons. Because of the complex anatomy, challenging differential diagnosis, and variable treatment outcomes, ulnar sided pain has been called the "low back pain of the wrist".¹¹ The patient

Fig. 2 Sagittal view of magnetic resonance imaging is showing focal swelling of extensor carpi ulnaris and its sheath. There is fluid collection within the tendon sheath and sub sheath.

Fig. 3 Arthro CT scans. (A) Coronal, (B) transverse and (C) sagittal images showing spillage of dye between ulnar collateral ligament and ulnar styloid (red solid arrow) with meniscus homolog avulsion (red transparent arrow).

presented with chronic ulnar sided pain and after clinical examination ECU tendinosis, TFCC injury, and impaction syndrome were the differentials. Wrist radiography was done to rule out impaction. MRI study showed focal

Fig. 4 An intraoperative image is showing sagging of ulnar collateral ligament due to stripping from ulnar styloid (white solid arrow).

Fig. 5 Ulnar collateral ligament hold by forceps after detached from ulnar attachment and meniscus homolog is seen (white solid arrow).

Fig. 6 The ulnar collateral ligament anchored back to ulnar styloid (US) by Ethibond with full tension and augmented by Prolene (white solid arrow).

swelling of the ECU tendon and its sheath along with mild thickness, a fluid collection within the tendon sheath and subsheath suggestive of tendinosis, so the patient was treated conservatively for 7 weeks and not responded to

because each structure of the wrist is small and thin. In addition, MRI of the collateral ligaments of the wrist has rarely been reported partially because of anatomical complexity and less consensus.¹² MRI is highly specific for tears of the intrinsic carpal ligaments, and its sensitivity is low.^{13,14} Multidetector CT arthrography of the wrist joint is helpful in the investigation of a wide range of articular and ligament injuries.¹⁵ The arthro CT showed stripping of a UCL ligament from ulnar attachment. This lesion was confirmed intraoperatively.

After intense literature review, we found this type of injury was not reported, but we found the same type of injury in the shoulder “Perthes lesion.” This is a variant of *Bankart lesion*, presenting as an anterior glenohumeral ligament injury that occurs when the scapular periosteum remains intact but is stripped medially and the anterior labrum is avulsed from the glenoid, but remains partially attached to the scapula by intact periosteum.¹⁶ In our case, ulnar collateral ligament stripped medially but remains partially attached to the styloid process by intact periosteum and meniscus homolog (HM) is avulsed from the styloid attachment of TFCC, we labeled as “Perthes lesion” of a wrist (→ Fig. 7).

The UCL stripping of the wrist is a rare entity and undiagnosed on routine investigation, but should be considered in. This lesion was only diagnosed on an arthroscope and was missed on MR study which is commonly used for diagnosed wrist pain. MR study may not be always of diagnostic help in ulnar-sided pathology, so MDCT is an important diagnostic tool for a confirmation. This case report will expand the differential diagnosis of the ulnar-sided wrist pain and needs larger study to include this lesion in the list.

Fig. 7 Schematic presentation. Perthes lesion in shoulder (A) and wrist joint (B). HH, humeral head; AC, anterior cartilage; LLC, anteroinferior labro-ligamentous complex; P, periosteum, UCL, black solid arrow; ECU, black transparent arrow; meniscus homolog (MH) black asterisk.

the treatment. ECU tendinosis on MRI was not understood. Wrist MRI is technically the most difficult and challenging among musculoskeletal MRIs. It requires high resolution, high signal-to-noise, high contrast with a small field of view imaging for accurate assessment of anatomy and pathology,

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Conflict of Interest
None declared.

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References

- 1 Lichtman DM, Alexander AH. *The Wrist and Its Disorders*. 2nd ed. Philadelphia, PA: WB Saunders Co; 1997
- 2 Taleisnik J. Pain on the ulnar side of the wrist. *Hand Clin* 1987;3(01):51–68
- 3 Denby K, Nelson G, Estrada CA. Bedside hand grip assessment with the sphygmomanometer. *J Gen Intern Med* 2013;28(10):1381
- 4 Moser T, Dosch JC, Moussaoui A, Buy X, Gangi A, Dietemann JL. Multidetector CT arthrography of the wrist joint: how to do it. *Radiographics* 2008;28(03):787–800
- 5 Hogikyan JV, Louis DS. Embryologic development and variations in the anatomy of the ulnocarpal ligamentous complex. *J Hand Surg Am* 1992;17(04):719–723
- 6 Bogumill GP. Anatomy of the wrist. In: Lichtman DM, ed. *The wrist and its disorders*. Philadelphia: WB Saunders; 1988:21
- 7 Nakamura T, Yabe Y, Horiuchi Y. Functional anatomy of the triangular fibrocartilage complex. *J Hand Surg [Br]* 1996;21(05):581–586
- 8 Nakamura T, Takayama S, Horiuchi Y, Yabe Y. Origins and insertions of the triangular fibrocartilage complex: a histological study. *J Hand Surg [Br]* 2001;26(05):446–454
- 9 Palmer AK, Werner FW. The triangular fibrocartilage complex of the wrist—anatomy and function. *J Hand Surg Am* 1981;6(02):153–162
- 10 Taleisnik J, Gelberman RH, Miller BW, Szabo RM. The extensor retinaculum of the wrist. *J Hand Surg Am* 1984;9(04):495–501
- 11 Palmer AK. The distal radioulnar joint. *Orthop Clin North Am* 1984;15(02):321–335
- 12 Nozaki T, Wu W, Kaneko Y, et al. High-resolution MRI of the ulnar and radial collateral ligaments of the wrist. *Acta Radiol* 2017;58(12):1493–1499
- 13 Hobby JL, Tom BD, Bearcroft PW, Dixon AK. Magnetic resonance imaging of the wrist: diagnostic performance statistics. *Clin Radiol* 2001;56(01):50–57
- 14 Haims AH, Moore AE, Schweitzer ME, et al. MRI in the diagnosis of cartilage injury in the wrist. *AJR Am J Roentgenol* 2004;182(05):1267–1270
- 15 Moser T, Dosch JC, Moussaoui A, Dietemann JL. Wrist ligament tears: evaluation of MRI and combined MDCT and MR arthrography. *AJR Am J Roentgenol* 2007;188(05):1278–1286
- 16 Perthes G. Ueber operationen bei habitueller schulterluxation. *Dtsch Z Chir* 1906;85(05):199–227