CASE REPORT – OPEN ACCESS

International Journal of Surgery Case Reports 42 (2018) 182–186

Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

# Snapping wrist due to multiple accessory tendon of first extensor compartment

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ARTICLE INFO

*Article history:*
Received 27 September 2017
Received in revised form
30 November 2017
Accepted 4 December 2017
Available online 13 December 2017

*Keywords:*
Snapping wrist syndrome,accessory extensor pollicis brevis
De Quervain's tenosynovitis,extensor compartment of wrist

ABSTRACT

*BACKGROUND:* Snapping phenomena result from the sudden impingement between anatomical and/or heterotopical structures with subsequent abrupt movement and noise. Snaps are variously perceived by patients, from mild discomfort to significant pain requiring surgical management. snapping syndrome occurs at various site like hip, knee, shoulder and wrist. There are many cadaveric studies shows accessory tendon in first extensor compartment of wrist.

*CASE PRESENTATION:* We present a 19 year old male presents catching sensation and occasional radial side wrist pain for 6 months. Finkelstein test was negative. Radiograph showed small bony projection over the radial styloid. MRI wrist was reported as normal but retrospective analysis of image shows multiple tendons. Intraopertively we found multiple accessory tendon of extensor pollicis brevis which is causing snapping. Fibrous tunnel release with tenotomy of few accessory tendons done. On table patients catching sensation was assessed and found to be relieved. Patient is not having snapping on his follow up visit and able to carry out his daily activity without difficulties.

*CONCLUSION:* There are various causes for snapping wrist syndrome. Multiple accessory tendon can also cause snapping as shown in this case report. Moreover am presenting this case to highlight the diagnostic failure with non dynamic radiological investigation and to consider multiple accessory tendon as differential diagnosis for snapping wrist syndrome. Also suggest dynamic study could be a better choice of investigation to diagnosis snapping syndrome. First compartment tunnel release with few accessory tendon slip tenotomy gives good result.



## 1. Introduction

Snapping phenomena result from the sudden impingement between anatomical and/or heterotopical structures with subsequent abrupt movement and noise. Snaps are variously perceived by patients, from mild discomfort to significant pain requiring surgical management. Snapping phenomena have been reported commonly in hip, knee, ankle, wrist, elbow and shoulder. Snapping involves wide range of soft tissue structures that may be tendinous, ligamentous, or fibrocartilaginous. Non-symptomatic snaps are also frequent in the general population. Very minimally, snaps may be associated with significant pain or other debilitating symptoms, which define true symptomatic "snapping syndrome" [1,2]. Extensor tendon compartments of the wrist are anatomical tunnels on the back of the wrist (fingers and thumb). The compartments are numbered with each compartment containing specific extensor tendons [3]. Anatomical variations in the extensor tendons are common. Abductor pollicis longus (APL) and extensor digitorum (ED) are known to exhibit different variations with respect to their attachments. Abductor pollicis longus (APL) and Extensoe pollicic brevis (EPB) occupy the most lateral compartment of the extensor retinaculum in a single synovial sheath, crossing superficial to the radial styloid process. EPB origin from the posterior surface of the radius and the adjacent part of the interosseous membrane, distal to the attachment of the abductor pollicis longus (APL) and inserting into the posterior surface of the base of the proximal phalanx of the thumb after passing under the extensor retinaculum [4]. Its primary function is described as extending the metacarpophalangeal joint (MCPJ) of the thumb, as well as stabilizing the MCPJ of the thumb by integrating into the extensor hood [5]. APL originates from the posterior surface of radius, ulna and the interosseous membrane. The APL is usually inserted into the radial side of the base of the first metacarpal bone or the trapezium [6]. One common anatomical variation in the first compartment, is separate synovial sheaths and compartments, which raises the number of compartments from six to seven [7]. The EPB may be absent or fused completely with the APL [8]. Double or triple extensor digitorum communis (EDC) to long fingers, single or triple EDC to ring finger and single or double EDC to small finger [9]. A number of studies have indicated that

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https://doi.org/10.1016/j.ijscr.2017.12.004

**Fig. 1.** Radiograph of wrist shoeing small bony spur at radial styloid.

the APL and EPB within the first extensor compartment is separated in 30%–60% of cases by either a complete or partial septum [10,11]. Multiple tendinous insertion of APL in cadaver study by Krishnamurthy et al. [12]. Knowing the anatomical variation has implication in clinical diagnosis and management. This case report has been reported in line with the SCARE criteria as described by Agha et al. [13]

## 2. Case presentation

A 19 year old right handed engineering male student presented with abnormal catching and thudding sensation on flexion of wrist and thumb and occasional wrist pain for past 6 months in his right wrist. As per patient history he had snapping from high school itself but become symptomatic during his college days. He is a recreational badminton player. He first notice thudding sensation during forceful smashing while playing. The pain was sharp in nature which occur along the course of tendons of the first extensor compartment. He is worried more of snapping and catching sensation which occurs whenever he deviates wrist to extreme ulnar aspect. No similar history in the past or in the family member's. On examination mild tenderness over the radial styloid and palpable thud on palmar flexion of thumb. Finkelstein test was negative. No mass is palpable. Radiograph shows small bony projection over the radial styloid (Fig. 1). Magnetic Resonance Imaging (MRI) of wrist was reported normal before surgery. But retrospective analysis of MRI by radiologist along with intraoperative clinical picture suggestive of multiple tendon in first extensor compartment at the levele of base of first metacarpal [Figs. 2–4]. He was operated in view of bony projection which may be causing thudding sound by senior consultant of our department. Superficial radial nerve is identified and carefully retracted (Fig. 5). We found multiple tendon slips (Fig. 6) which is actually causing snapping by hitting against radial groove of first extensor compartment on thumb flexion. There is no thickening or synovial proliferation of tendon sheath. The tendon sheath is released over the dorsal aspect with tenotomy of few slips which were found to be slipping out of the groove on extreme ulnar deviation and bony prominence is removed which result in widening of

**Fig. 2.** MRI Axial T 1 image of distal forearm showing bulky 1 st extensoe compartment.

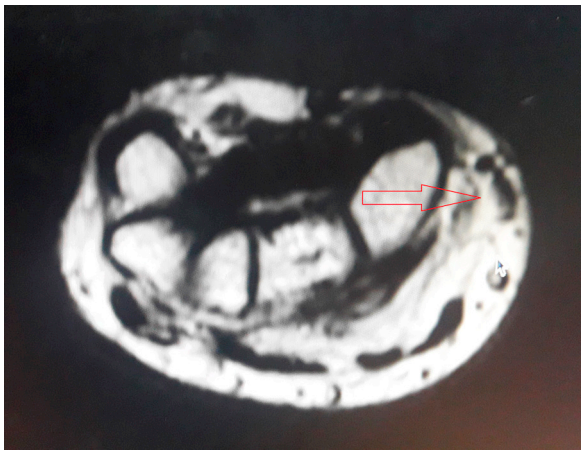

**Fig. 3.** MRI Axial T 1 image at the level of base of metacarpal showing multiple tendon slip in first extensor compartment.

tunnel space. On table patient catching sensation was assessed and found to be relieved. The operated limb was kept in arm pouch till removal of suture and then progressive wrist movement is allowed. The patient was reviewed after 3 weeks with full range of forearm rotation with slight limitation to ulnar deviation which may be due to pain along the scar. By 9 weeks he was completely free of pain and obtained full range of movements The patient was under regular follow up till 14 months post-surgery without recurrence of snapping and able to do his daily activities without any difficulty. He stopped playing badminton in fear of recurrence of symptoms.

## 3. Discussion

The anatomical variation of extensor compartment of wrist is studied by various author both in clinical and cadaver settings. Multiple accessory tendon of APL [12], septum in first extensor compartment of wrist [14], absence of extensor pollicis brevis [15], accessory EPB upto three tendons [16] are some of the anatomical variation seen in wrist first extensor compartment. This anatomical variation has been suggested to be cause for various pathological condition. A number of studies have indicated that the presence of multiple osseofibrous compartments may be associated with a greater predisposition to de Quervain's syndrome and may also contribute to the development of de Quervain's tenosynovitis [17–19]. Numerous hypotheses have been proposed to explain the pathogenesis of trapeziometacarpal arthritis in relation to super-