Snapping Wrist due to an Anomalous Extensor Indicis Proprius: A Case Report

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Abstract Variation in the extensor muscles of the hand is common. These anatomic deviations are rarely symptomatic. We report a unique case of an anomalous extensor indicis proprius causing a painful snapping wrist. Intraoperative examination revealed a disproportionately large muscle belly under the extensor retinaculum causing subluxation of the ring and small extensor tendons creating a painful snapping phenomenon. Following excision, the subluxation and pain resolved.

Keywords Muscle · Anomalous · Pain · Wrist · Snapping Wrist · Tendons · Para-Articular

Introduction

Variations in extensor muscles of the hand are common [9]. These are rarely symptomatic; however, there are several reports published implicating these variants in cases of wrist pain [5, 7]. We report a unique case of an anomalous extensor indicis proprius (EIP) muscle resulting in a painful, clicking wrist.

Case Report

A 26-year-old right-handed nurse practitioner student complained of a 2-year history of painful clicking of his

right wrist. He first noticed the wrist pain after sustaining a hyperextension wrist injury while playing basketball. He was seen by an outside orthopedic surgeon diagnosed with a “wrist sprain” and sent for occupational therapy. This failed to improve his symptoms, which progressed to include “locking” of his wrist necessitating use of his contralateral hand to regain full extension.

He presented to our clinic approximately 2 years after the initial incident. At this time, the “locking” had resolved but was replaced with an audible and palpable click along the dorsal ulnar aspect of his wrist associated with pain. There was no pain at rest and no loss of grip strength or alteration in sensation. On physical exam, he was nontender to palpation. He was able to voluntarily reproduce the click by rolling his wrist in a circular pattern from an ulnar-flexed position to a radial-extended position. The click was localized to the ulnar aspect of the fourth dorsal compartment at the level of the radiocarpal joint.

Initial plain films at this time were unremarkable other than narrowing of the lunotriquetral joint with some evidence of degeneration. His wrist was stable, however, and testing for scapholunate and lunotriquetral instability was unremarkable. He had a negative scaphoid shift test and lunotriquetral shear test as described by Watson et al. and Reagan et al., respectively [6, 10].

Nonoperative treatment consisting of occupational therapy, bracing, and nonsteroidal medications failed to provide any relief. A magnetic resonance imaging was obtained, which demonstrated a substantially enlarged EIP muscle with the majority of the muscle belly at the level of the extensor retinaculum. The degeneration at the lunotriquetral joint was again seen with evidence of a subchondral cyst. The lunotriquetral ligament was not specifically identified.

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Figure 1 Anomalous extensor indicis proprius deep to reflected extensor retinaculum.

There was no evidence of injury at the scapholunate joint.

The exact etiology of his painful snapping was still in question. He was given the option of surgical exploration under local anesthesia so as to directly visualize the cause of his symptoms, assuming he could recreate the snap after the initial exposure. Following this, a possible wrist arthroscopy to directly visualize the lunotriquetral joint would be considered.

At surgery, the extensor retinaculum was reflected revealing an enlarged EIP with the majority of the muscle belly beneath the extensor retinaculum (Fig. 1). Under direct observation, the patient was asked to recreate the snapping phenomenon. The tendons of extensor digitorum communis to the ring and small fingers were subluxing over the hypertrophic EIP muscle creating a snapping phenomenon.

The aberrant muscle was excised completely (Fig. 2). The origin was poorly developed and attached to the distal interosseous membrane. The insertion was along the ulnar border of the index extensor hood. After excision, the patient was asked again to recreate the snapping event but was unable to. The overriding and subluxation of the ring and small extensor digitorum communis had resolved. The extensor retinaculum was then repaired, and the patient was immobilized for 1 week.

Passive range-of-motion exercises were begun at 1 week, reserving active extension until postoperative week 4. Postoperatively, the patient was unable to snap his wrist, and his pain had completely resolved.

Discussion

There is considerable variation in the extensor muscles of the hand and in particular EIP. Several anatomic studies

have documented variations in the number of tendons slips, their insertions, and the location of the musculotendinous junction [3, 4]. A study by the senior author found a variation of the EIP tendon at the level of the metacarpophalangeal joint in 19% of cadaveric specimens [2]. Cauldwell et al. observed the musculotendinous junction of EIP within the fourth dorsal compartment in 75% of specimens, and 4% were distal to the extensor retinaculum [1].

The clinical importance and incidence of pathology associated with this anatomic variation is unknown. Ritter and Inglis, in 1969, defined EIP syndrome by describing two patients that complained of dorsal wrist pain with localized swelling to the fourth compartment. Surgical exploration revealed marked synovitis and a distal muscle belly of EIP extending into the fourth compartment [7]. The classic exam finding of pain with wrist flexion and resisted extension of the index finger was described by Spinner and Olshansky in 1973 [8]. While our patient's surgical findings were similar, clinically, his pain was immediately following the characteristic snap. Otherwise, his pain was not associated with prolonged activity as the classical EIP syndrome is.

Our patient's initial complaint of triggering and catching of his wrist is similar to a case of true trigger wrist as reported by Lemon and Engber [4]. In their case, the patient had also sustained trauma with subsequent complains of pain and decreased range of motion with an associated click. Surgical findings revealed a hemorrhagic nodule in the extensor carpi radialis longus tendon as it entered the second dorsal compartment, which was treated with reduction tenoplasty. The exact reason why our patient was asymptomatic prior to his hyperextension injury remains unknown.

Figure 2 Excised anomalous extensor indicis proprius with underdeveloped origin.

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