Extensor Digitorum Brevis Manus, a Differential Diagnosis

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ABSTRACT
The extensor digitorum brevis manus muscle is a variant of the hand extensors. It is a supernumerary muscle on the dorsum of the wrist, located in the fourth extensor compartment. It is usually asymptomatic, but when it causes discomfort, it manifests as a painful mass. When it is symptomatic, surgical treatment is recommended, which may include muscle excision or extensor retinaculum release. We present a 30-year-old patient with a painful mass on the dorsum of the left hand; clinically, a ganglion was suspected and scheduled for surgical resection. She underwent surgery and was diagnosed with symptomatic EDBM, which was treated with extensor retinaculum release. EDBM was found incidentally in a cadaveric dissection; therefore, its true incidence is unknown. EDBM originates in the wrist joint capsule, below the dorsal radiocarpal ligament; its distal insertion is the ulnar side of the extensor mechanism in the metacarpophalangeal joint where it is present. Innervated by the posterior interosseous, research has shown that its purpose is to extend and deviate the finger towards the side where it is inserted. This case is particularly interesting given the scarcity of information on its incidence and prevalence, with the majority of that information coming from postmortem reports.
Keywords: Myotomy; hand surgery; muscles.
Level of Evidence: IV

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RESUMEN
El músculo *extensor digitorum brevis manus* es una variante de los extensores de la mano. Se trata de un músculo supernumerario en el dorso de la muñeca ubicado en el cuarto compartimento extensor. Suele ser asintomático, pero ocasionalmente se presenta como una masa dolorosa; en estos casos, está indicado el tratamiento quirúrgico que consiste en la resección del músculo o la liberación del retináculo extensor del cuarto compartimento.
Presentamos a una paciente de 30 años, con una masa dolorosa en el dorso de la mano izquierda. Según las evaluaciones clínica y ecográfica, se sospechó un ganglión y se programó la resección quirúrgica. En la cirugía, se encontró tejido muscular compatible clínicamente con el *extensor digitorum brevis manus*, y se liberó el retináculo extensor. Los estudios publicados sobre su incidencia y prevalencia son escasos y, en su mayoría, se trata de informes *post mortem*, por lo que este caso presentado reviste particular interés.
Palabras clave: Miotomía; cirugía de mano; músculos.
Nivel de Evidencia: IV

INTRODUCTION

The *extensor digitorum brevis manus* (EDBM) was first described by the anatomist Bernhard Albinus in the 18th century, who referred to it as the *extensor brevis digiti indicis vel medii in*.[1] The term EDBM was first used in 1875 and has since become the most widely accepted name.[2] The EDBM is an uncommon accessory muscle of the dorsum of the hand, located in the fourth extensor compartment of the wrist, with a low incidence, varying between 1% and 10%. [3]

EDBM patients are usually asymptomatic, so its incidence is likely underestimated and primarily based on *postmortem* findings. [4]

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From an embryological perspective, the precursor muscle of the hand extensors differentiates into superficial, deep, and radial portions. The deep portion undergoes the most changes, leading to the greatest number of anatomical variants, including the EDBM, which arises from the unstable and deep portion of the extensor precursors.[2]

We present an atypical case of a symptomatic EDBM, diagnosed incidentally after a false positive diagnosis of a dorsal ganglion of the wrist.

CLINICAL CASE

A 30-year-old woman consulted the Hand Surgery Service with a four-month history of a painful mass on the dorsum of her left hand. Given the clinical suspicion of a dorsal ganglion of the wrist, confirmed by ultrasound, and due to the symptoms, surgical resection was scheduled.

During the operation, macroscopic evaluation revealed a mass of muscle tissue located on the dorsum of the hand, clinically compatible with the EDBM muscle (Figure). The pathology study revealed the presence of striated muscle tissue in longitudinal bundles of typical appearance, confirming the suspicion of an accessory extensor muscle.

Figure. Images of accessory extensor muscle tissue compatible with *extensor digitorum brevis manus*.

DISCUSSION

The EDBM is an aberrant extensor of the fingers, located on the dorsum of the hand or wrist, and is detected in approximately 2-3% of the population, with a slight predominance in males.[5] The most common presentation involves a fascicle of the extensor tendon of the index finger arising from the dorsal radiocarpal ligaments. The second most common presentation is the muscle inserting into the third finger. [3]

Classifications of this accessory muscle have been developed. Ogura and Gama's classification categorizes EDBM into three groups based on its insertion relative to the extensor indicis proprius: Group I, EDBM attached to the index finger at the dorsal aponeurosis, without the extensor indicis proprius; Group II, EDBM attached to the index finger along with the extensor indicis proprius; and Group III, EDBM attached to the third metacarpal, contributing to the extension of that finger. [2]

The presence of this accessory muscle does not usually cause symptoms, as reported by Shereen et al.[2] However, it can occasionally cause pain and a palpable mass, with mechanical restriction primarily during wrist extension, as seen in our patient. [3]

In 1999, Hayashi et al. coined the term "fourth compartment syndrome" to describe dorsal wrist pain with five possible causes: EDBM, dorsal ganglion, abnormal extensor indicis muscle, tenosynovitis, and carpal bone abnormalities or deformities. In our case, EDBM emerged as the differential diagnosis during surgery, since the initial diagnosis was a dorsal ganglion of the wrist.[2]

Few cases of surgical management of symptomatic EDBM have been described. Surgical options include decompression of the extensor retinaculum or complete resection of the muscle.[6] If retinaculum decompression is chosen, another intervention may be required due to persistent symptoms, as noted by Waterman et al. Ogura et al. proposed a management algorithm based on their classification: for groups I and IIA, where the extensor indicis proprius is absent, retinaculum release is recommended without complete muscle resection; for groups IIB, IIC, and III, complete muscle resection is advised.[2]

CONCLUSIONS

Based on the information presented in this clinical case, we can conclude that there is a notable lack of information in the literature regarding abnormal extensor muscles of the wrist that can cause symptoms and lead to consultations with orthopedic specialists. Furthermore, this gap in knowledge means there is no established evidence on the ideal management of these patients.

Conflict of interest: The authors declare no conflicts of interest.

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