

LETTERS TO THE EDITOR

Symptomatic carpal bossing caused by a styloid bone: Image-based diagnosis

Carpó giboso sintomático debido a hueso estiloideo: diagnóstico por imagen

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Introduction

Carpal bossing (CB) is a bone protuberance located over the dorsum of the wrist that is also referred to in the scientific literature as carpal beaking or hunchback carpus syndrome and carpometacarpal boss¹⁻³. Around two-thirds of the cases have a congenital origin resulting from the existence of a styloid bone, a persistent secondary ossification center that covers the dorsum of the carpometacarpal (CMC) joint, between the bases of the second and third metacarpal bones, the trapezoid and the capitate bones (the «quadrangular» joint of the carpus)⁴. This ossicle may present either as a separate unit, articulated with one or more bones (2%) or fused with the base of the third metacarpal (94%), the capitate (3,5%) or the trapezoid bones (0,5%)^{2,4}. In the remaining one-third of cases it seems to have an acquired origin, secondary to an unhealed or displaced fracture of the base of the third metacarpal, a dorsal ligament tear, posttraumatic periostitis or degenerative osteophytosis^{1,5}.

CB is often asymptomatic (8 to 26% of subjects), produces a painless mass and can often be misdiagnosed as a ganglion. Nevertheless, on some occasions it may become symptomatic, in which case it is called symptomatic CB (SCB), CB syndrome or painful styloid bone^{1,2}.

We present a case of SCB resulting from a styloid bone with mechanic stress-induced inflammatory changes that were unusually revealed by a magnetic resonance imaging (MRI) study. As the boss was refractory to medical treatment, a decision was made to subject the patient to surgery.

Case presentation

The patient is a 31-year-old male, with no history of previous trauma or relevant disease. He presented with a 2-month history of progressive pain in the central region of the dorsum of the hand, accompanied by a hard mass and snapping of the digital extensor tendons.



Figure 1 Radiograph of the hand. A) Lateral view with slight flexion and supination of the wrist showing an ossification that corresponds to an accessory bone (styloid bone) (arrow) between the base of the third metacarpal and the capitate. B) Lateral postoperative x-ray of the hand showing a slight residual deformity.

An anteroposterior x-ray view did not reveal any alterations. The lateral view showed an ossification with cortical margins that corresponded to an unfused accessory structure between the base of the third metacarpal and the capitate bone (styloid bone). An oblique view was performed which allowed optimal visualization of the ossicle (fig. 1). An MRI study was carried out with a surface extremity coil that included sagittal T1-weighted FSE (*fast spin echo*) sequences, axial fat suppressed proton density-weighted FSE sequences and coronal fat-suppressed proton density-weighted FSE sequences. The MRI study identified the ossification between the extensor tendons of the index finger and the extensor carpi radialis brevis, on the surface of the case of the third metacarpal; the study also revealed the presence of bony edema in the accessory bone and in the adjacent area of the base of the third metacarpal, as

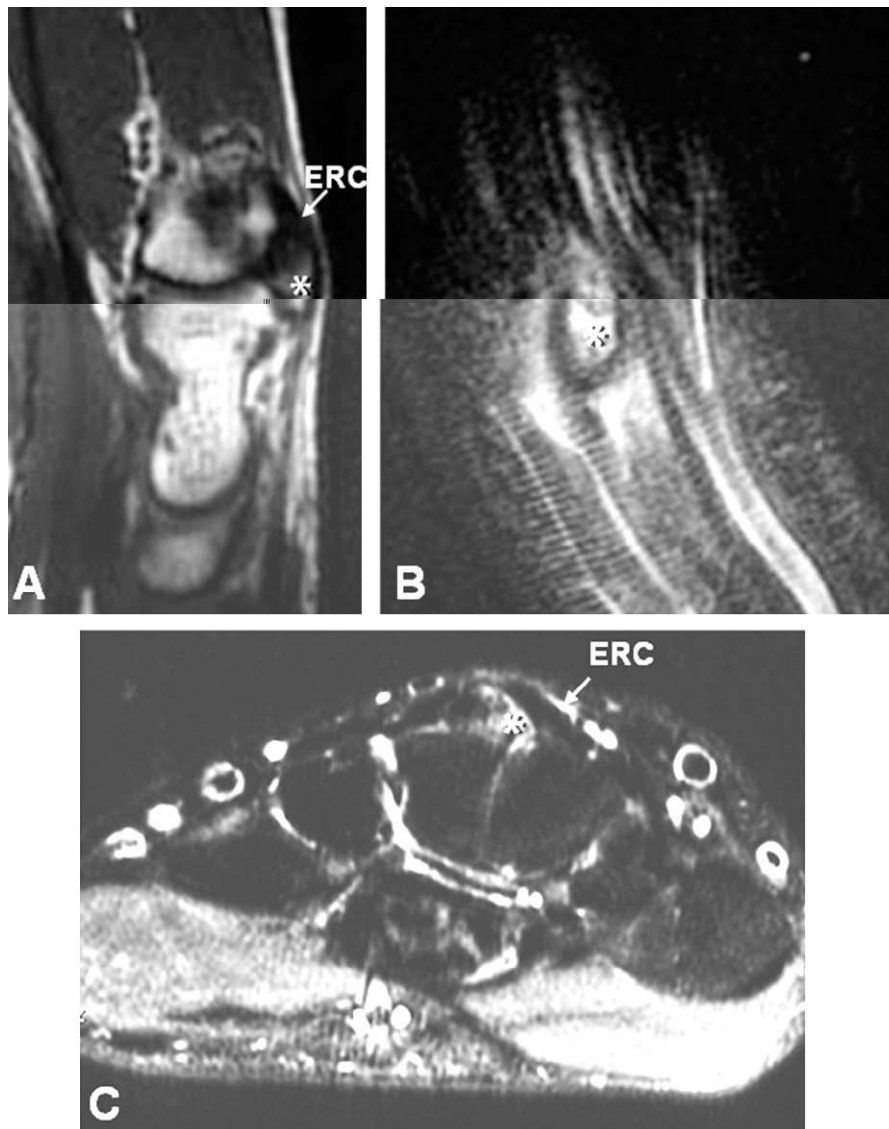


Figure 2 Magnetic resonance. A) Sagittal T1-weighted sequence showing the accessory bone (asterisk) articulating with the distal surface of the capitate bone and the base of the third metatarsal. Note that part of the entheses of the extensor carpi radialis brevis (ECRB) tendon lies slightly distal to the ossification area (arrow). The (B) and axial (C) fat suppressed proton density weighted sequences show the edematous hyperchoic styloid bone (asterisk) next to a small edema in the neighboring soft tissues and a peritendinitis-induced hyperchoic area surrounding the ECRB tendon.

well as a small reactive edema in the dorsal soft tissues, which included an extensor peritendinitis (fig. 2).

The patient's pain was refractory to conservative treatment with steroid anti-inflammatory drugs and severely interfered with his occupational and recreational activities. Therefore a surgical approach was indicated that consisted in periosteotomy and smoothing of the protuberance until it was flat. At present, 18 months after the procedure, the patient presents a small stable residual mass with no related symptoms.

Discussion

CB can become symptomatic in 0.3 to 3% of cases as a result of repeated mechanical stress on an abnormal wrist joint. This

predisposes the patient to a localized osteoarthritic process². CB is more frequent in the dominant hand of young individuals (mean age; 32 years)⁴ and tends to be accompanied by insidious pain normally elicited by activities involving extension and distraction of the second and third digits. The pain (or its exacerbation) is normally the result of some previous traumatic event³. Pain may be accompanied by dorsal tumefaction, restricted motion or a snapping sensation at the ECRB tendon⁴. The metacarpal stress test is helpful to elicit the pain. It is performed by distracting the index and middle metacarpals while simultaneously attempting to supinate and pronate them with the metacarpophalangeal joint held in flexion⁵.

Radiographic tests are useful to demonstrate the bony nature of the painful snapping. A lateral oblique radiograph, with 30° supination and 20° ulnar deviation, is the best view

to identify the styloid bone and any focal degenerative disorders at its articulation with the base of the third metacarpal such as sclerosis or small osteophytes that tend to occur in symptomatic cases and which explain an increased uptake of the tracer in a bone scan^{1,4,5}.

In spite of the fact that CGS is a well-known disease, there are hardly any studies that discuss its most characteristic MRI signs^{2,6}. MRI permits detection of bone edema in the styloid bone and in adjacent articular surfaces in symptomatic cases, which may arise as a result of the development of focal osteoarthritis or chronic distraction of the ECRB tendon. Associated alterations such as ganglia, adventitial bursitis, peritendonitis and subcutaneous cell tissue edema can also be observed in the soft tissues covering the area where the snapping tends to occur. The alterations found in our case are very similar to those presented by Zanetti et al in a study on MRI diagnosis of chronic wrist pain⁶ and in another one on acute trauma to the styloid bone². The efficacy of MRI as a diagnostic tool has been amply demonstrated in other accessory bones such as os acromiale, the bipartite patella, and the accessory scaphoid bone, which may become symptomatic as a result of a partial disruption of their synchondroses due to chronic overuse, which results in abnormal motion, friction and development of bone edema at the ossification site, which clinically correlates with pain⁷.

Differential diagnosis of SCB must also include other conditions that may cause a prominence or tumefaction in the dorsum of the hand, such as ganglia, extensor tenosynovitis, calcific tendonitis, solid tumors and an accessory extensor digitorum brevis muscle.

Surgical treatment of SCB is reserved for cases of disabling pain that is refractory to conservative treatment. It consists in a wedge-shaped resection of the protuberance and the adjacent arthritic cartilage⁵. Around 6% of operated cases of SCB may present with recurrence of pain or of the protuberance resulting from incomplete excision, ganglion formation or CMC instability caused by dorsal ligament disruption⁵. Nevertheless, other studies report pain recurrence in up to 50% of cases operated through simple excision⁸. An alternative to wedge-shaped

resection is arthrodesis, although it entails a high risk of pseudoarthrosis⁷.

In conclusion, a styloid bone may give rise to the formation of a painful mass over the dorsum of the hand. Imaging studies, specifically MRI, are extremely useful to confirm the diagnosis and demonstrate the existence of local inflammatory phenomena in symptomatic cases.

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Bilateral quadriceps tendon rupture in a healthy patient: case report and literature review

Rotura bilateral del tendón cuadricepsal en paciente sano. A propósito de un caso y revisión de la literatura médica

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Introduction

Spontaneous bilateral tears of the quadriceps tendon, although infrequent, have been reported in elderly patients

following minor trauma or as a consequence of renal dialysis and hyperparathyroidism¹. In young patients it appears as a complication further to burns, orthopedic surgery or anabolic steroid abuse². In this study, however, we present the case of a healthy patient with a complete spontaneous simultaneous bilateral tear of the quadriceps tendon. After a careful review of the literature, we have not found reports of any similar cases.

Case report

Our patient is a 58-year-old male (88 kg, 170 cm; BMI 30.44) who presented with a suprapatellar clicking noise as he was walking on an irregular surface. Physical examination revealed a bilateral suprapatellar depression and a functional extension lag in both knees; knee flexion was well preserved.