

CARPAL BOSS SYNDROME

M. Keupers, G. Gelin, J. Vandevenne, M. Grieten¹

Carpal boss is a bony prominence located dorsally on the base of the second and/or third CMC joint. We describe the imaging findings of the pathology in two patients and the relative contributive role of the different modalities and stress the decisive role of MRI.

Key-word: Wrist, MR.

Carpal boss is a bony prominence located dorsally on the base of the second and/or third carpometacarpal (CMC) joint (1-8). An overlying ganglion cyst or tenosynovitis can obscure an underlying carpal boss (4). We describe two patients with symptomatic carpal boss who underwent a wrist magnetic resonance imaging (MRI) examination.

Case reports

Our first patient is a 33-year-old man who complained of pain at the dorsal side of the wrist during and after playing tennis. Clinical examination revealed a swelling at the dorsal aspect of the third CMC joint. X-rays of the hand (posteroanterior (PA) view and oblique view) were negative (Fig. 1). No lateral view of the wrist was obtained.

The second patient is a 26-year-old woman with pain at the dorsal aspect of the third CMC joint. X-rays obtained in another hospital were interpreted as normal, but also in this case no lateral view of the wrist was obtained.

A wrist MRI examination was performed in our hospital, and both cases (Fig. 2 and 3) showed a bony prominence at the dorsal aspect of the third CMC joint with bone marrow edema (BME), small subchondral cysts and infiltration of the adjacent soft tissues. In the first case (Fig. 2), a small bone fragment (os styloideum), at the dorsal aspect of the base of the third CMC joint together with extensive BME was seen.

Based on the imaging findings, carpal boss was diagnosed in both cases. Treatment consisted of wrist immobilization and use of non-steroidal anti-inflammatory drugs (NSAIDs) (2).



Fig. 1. — Plain X-rays of the hand (oblique and PA view) fail to reveal the carpal boss syndrome.

Discussion

Carpal boss is a bony prominence located dorsally on the base of the second and/or third CMC joint (1-8) and pathophysiologically it can be caused by one of the following entities: a separate bone (os styloideum), a non-union fracture, an osteophyte (osteoarthritis) or an osseous prominence (exostosis) (2).

Patients with symptomatic carpal boss complain of local tenderness and pain at the dorsal aspect of the base of the second and/or third CMC joint (3). A bony, hard lump in this

region can be seen during clinical examination. However, it can be clinically misinterpreted as a ganglion cyst, bursitis or tenosynovitis and can obscure an underlying carpal boss (4).

A standard X-ray of the hand or wrist does not always reveal the carpal boss (4-5). Plain X-rays should include a lateral view in which the wrist is supinated 20-30° and deviated ulnarly 30° to differentiate between exostosis, an os styloideum, a non-union fracture or an osteophyte (2-7).

Ultrasound can reveal or exclude an overlying ganglion cyst or a tenosynovitis of the extensor carpi radialis brevis (ECRB) tendon insertion site at the base of the CMC joint (3).

Computed tomography (CT) scan can differentiate between an exostosis, an os styloideum, a non-union fracture or an osteophyte (2, 3). In

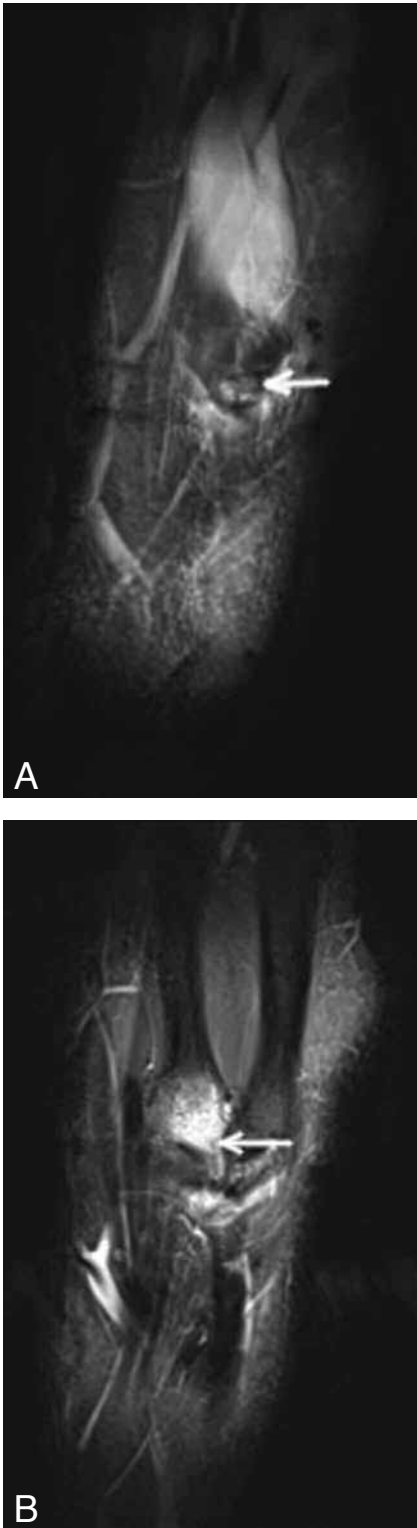


Fig. 2. — The coronal shortT1 inversion recovery (STIR) (A) and the coronal gradient-echo (GE) (B) MRI images showed an os styloideum (white arrow) with extensive BME at the base of the third CMC joint.



Fig. 3. — The coronal (A) and the sagittal (B) proton density (PD) MRI images with fat saturation (FS) showed a bony prominence dorsally on the base of the third CMC joint with osteophyte formation, small subchondral cysts and BME.

addition, MRI can show BME and abnormalities of the adjacent soft tissues, like distal ECRB insertional tendinopathy or dorsal ligament tears (2, 5).

Initial treatment is conservative including wrist immobilization and use of NSAIDs (2). In patients with persistent pain, a surgical wedge excision may be indicated (1, 2).

Conclusion

Carpal boss is a bony prominence located dorsally on the base of the second and/or third CMC joint (1-8) and can be symptomatic. Plain radiographs should include a lateral view in which the wrist is supinated 20-30° and deviated ulnarly 30° to reveal a carpal boss (2-7). Ultrasound can reveal or exclude an overlying ganglion cyst or a tenosynovitis (3). CT scan can differentiate between an exostosis, an os styloideum, a non-union fracture or osteophyte formation (2, 3). In addition, MRI can show BME and abnormalities of the adjacent soft tissues (2, 5).

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