

Osteochondritis Dissecans of the Tarsal Navicular

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ABSTRACT

A 27-year-old male athlete presented with chronic right dorsal midfoot pain and limitation in midfoot movements. Computed tomography and magnetic resonance imaging demonstrated a nondisplaced osteochondral fragment within the proximal articular surface of the tarsal navicular. Imaging findings of this disease are presented and discussed.

Key Words: Osteochondritis Dissecans; Tarsal Navicular Bone; CT; MRI

INTRODUCTION

Osteochondritis dissecans (OCD) of the tarsal navicular is an uncommon cause of midfoot pain in adolescents and young adults. The exact cause of OCD of the tarsal navicular bone is unknown radiographic findings can be subtle. CT or MRI helps confirm the diagnosis. OCD of the tarsal navicular is limited to the proximal articular surface. Tarsal navicular OCD demonstrates the classic radiological findings of OCD: focal lucency that disrupts the sharp subchondral line, the presence of sclerosis, and cortical depression. There have been few cases describing the MRI findings of patients with OCD of the tarsal navicular.¹⁻⁴ We report the imaging findings of an OCD of the tarsal navicular.

CASE REPORT

A 27-year-old male athlete presented with chronic right dorsal midfoot pain and limitation in midfoot movements. Laboratory studies including erythrocyte sedimentation rate

and complete blood count were within normal limits. A lateral radiograph of the right foot showed subtle cortical depression and sclerosis in the proximal articular surface of the tarsal navicular (Figure 1). CT of the right foot demonstrated a nondisplaced osteochondral fragment within the concavity of the tarsal navicular (Figure 2). MRI revealed an osteochondral fragment that had low signal intensity on T1-weighted images and high signal intensity on T2-weighted images (Figure 3). Conservative treatment was successful in this patient.

DISCUSSION

OCD is rarely located in concave articular surfaces such as the proximal articular surface of the tarsal navicular. All the reported tarsal navicular OCDs were located in the articular surface and had similar radiographic findings to those of our case. Osteochondral lesions may appear normal on conventional radiographs. A focal lucency that disrupts



Fig. 1: Lateral radiograph of right foot showing subtle cortical depression and sclerosis in the proximal articular surface of the tarsal navicular (arrow).

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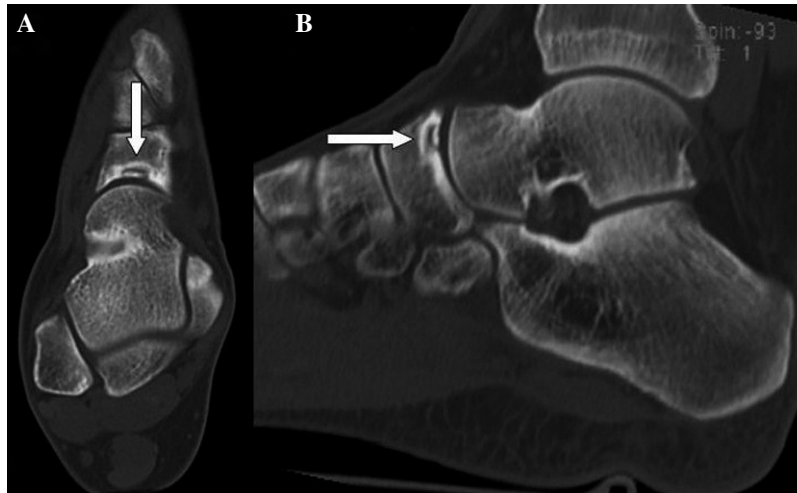


Fig. 2: CT scans in the axial (A) and sagittal (B) planes show a nondisplaced osteochondral fragment within the cocavity of the tarsal navicular (arrows).

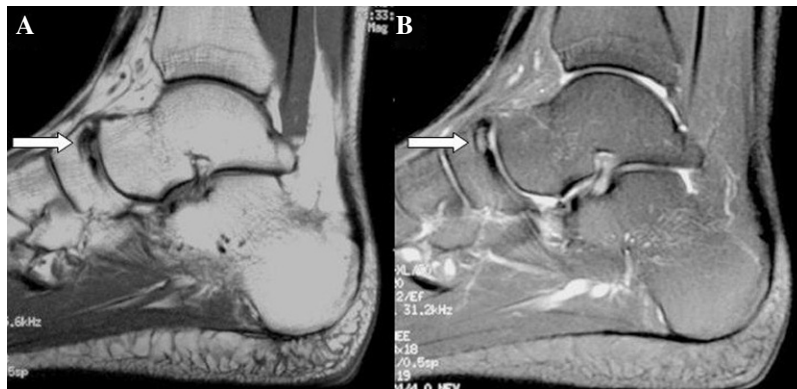


Fig. 3: MRI of the tarsal navicular OCD in the sagittal plane. The osteochondral fragment (arrows) has low signal intensity on T1-weighted image (A) and high signal intensity on T2-weighted image (B).

the sharp cortical line, focal sclerosis, or cortical depression can be seen in some cases. CT and MRI help to confirm the diagnosis. The exact location and the extent of the lesion can be easily demonstrated on CT and MRI. MRI can detect occult lesions that may not be evident on CT. Short tau-inversion recovery (STIR) images are the most sensitive sequence for detecting bone marrow edema associated with OCD. To our knowledge, MRI appearance of tarsal navicular OCD has been described in only one article.¹ However the CT appearance of tarsal navicular OCD has not been reported in the literature.

The differential diagnosis of tarsal navicular OCD includes osteonecrosis, stress fracture and the Mueller-Weiss syndrome. Our patient had no risk factors for osteonecrosis. CT of the right foot showed no fracture line. Our patient did not have typical radiographic findings of Mueller-Weiss syndrome.

The cause of tarsal navicular OCD is unknown. Repetitive trauma to the poorly vascularized tarsal navicular is thought

to be the primary cause of osteochondritis dissecans. Our patient had experienced repetitive trauma as an athlete.

The treatment of patients with tarsal navicular osteochondritis dissecans is primarily determined by the stability of the lesion. Conservative treatment, which consists of activity modification, is usually reserved for individuals with stable osteochondritis dissecans. Stable osteochondritis dissecans lesions will heal with nonoperative therapy.⁴ However, unstable osteochondritis dissecans lesions, even if nondisplaced, will rarely heal. Surgical intervention is indicated for individuals with stable osteochondritis dissecans lesions who do not respond to initial conservative treatment and for individuals with unstable osteochondritis dissecans lesions. Surgical intervention usually consists of debridement of the osteochondritis dissecans lesion and drilling or microfracture of the adjacent subchondral bone. Internal stabilization of an acute osteochondritis dissecans lesion consisting of a single large fragment may be performed using bioabsorbable or metallic implants.

CONCLUSION

The tarsal navicular is a rare location for OCD. Plain radiographs, CT and MRI can be diagnostic; however, MRI seems to be more accurate. Although rare, the possibility of tarsal navicular OCD should be kept in mind in assessing patients with midfoot pain.

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