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Case Report

Localized naviculocuneiform arthrodesis combined with osteosynthesis of fracture nonunion of the tarsal navicular bone using a locked plating system



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ABSTRACT

Aims: Navicular fracture is still challenging disorder to treat because there is a risk of nonunion, avascular necrosis and symptomatic osteoarthritis.

Patients (Methods and results): A 40-year-old woman with an ununited fracture of the tarsal navicular bone was treated with localized naviculocuneiform arthrodesis (arthrodesis of the navicular, the middle cuneiform, and the lateral cuneiform). Fusion with the navicular, the middle cuneiform, and the lateral cuneiform as well as union of fracture of the navicular was confirmed on the radiographs.

Conclusion: Localized naviculocuneiform arthrodesis using a locked plating system is one of the options to treat nonunion of the navicular bone.

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1. Introduction

Navicular fracture is still challenging disorder to treat because there is a risk of nonunion and avascular necrosis due to tenuous blood supply of the navicular and nonunion and avascular necrosis of the navicular bone result in symptomatic osteoarthritis.¹ In the present report, we successfully treated nonunion of the body of the navicular bone with localized naviculocuneiform arthrodesis (the arthrodesis of the navicular, the middle cuneiform, and the lateral

cuneiform), combined with osteosynthesis of fracture nonunion of the navicular using a locked plating system. The patient and the family were informed that data from the case would be submitted for publication and gave their consent.

2. Case presentation

A 40-year-old woman fell from a motorcycle and felt pain in the left foot, however, she did not consult any physicians.

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Fig. 1 – Radiographs of the left foot at first visit. Six months after injury, the anteroposterior (A), the lateral (B), and the oblique (C) views revealed an ununited fracture of the tarsal navicular bone with displacement of the bone fragment (arrow).

Six months later, she visited us. Tenderness and swelling with less local heat was detected over the dorsal midfoot and the active range of motion of the ankle was not limited. The radiographs of the foot revealed an ununited fracture of the tarsal navicular bone with an upward displacement of the dorsal bone fragment (Fig. 1). Computed tomographic (CT) scan revealed that the fracture site was located at the middle to lateral portion of the navicular with an upward displacement of the dorsal bone fragment (Fig. 2). We diagnosed the patient with nonunion of the tarsal navicular

bone and treated the patient surgically with internal fixation with two headless screws. However, the fracture did not unite.

Therefore, we planned the localized arthrodesis of the midfoot (the arthrodesis of the navicular, the middle cuneiform, and the lateral cuneiform) combined with osteosynthesis of fracture nonunion of the navicular as a salvage surgery, one year and six months after the initial injury (Fig. 3).

Through a curved longitudinal skin incision on the foot over the navicular, abnormal movement between the two

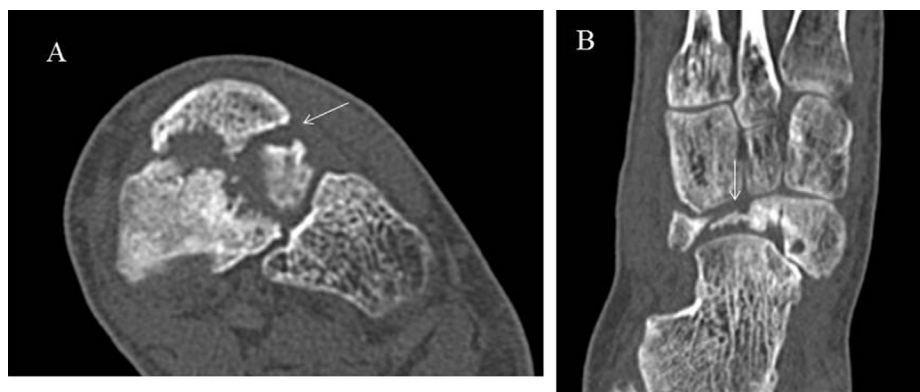


Fig. 2 – CT scan of the left foot before surgery. Fracture nonunion with an upward displacement of the dorsal fracture fragment was confirmed on the axial (A) and the coronal (B) plane of the CT scan.

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