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7 Fractures of the foot
7.13 I Fractures of the navicular bone — Treatment with a functional boot

Indication **Navicular split/stress fracture**

1 Diagnosis

1.1 History

These fractures are often associated with jumping sports, like basketball. The patient presents with either immediate or delayed pain.

1.2 Physical exam

Often there is swelling and point tenderness. Usually there is no deformity present in split/stress fractures.

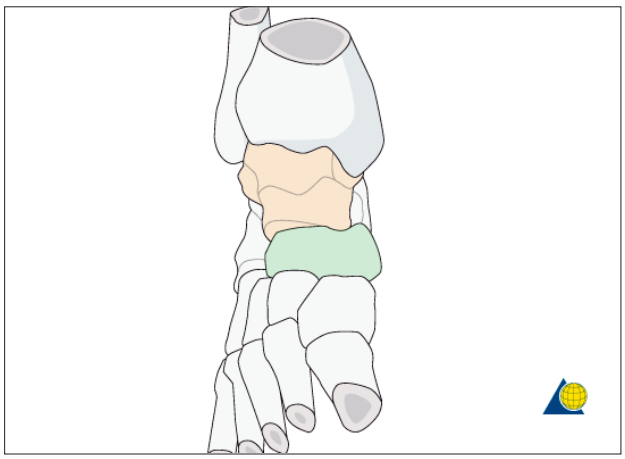
1.3 Imaging

Plain x-rays often show a linear fracture line in the central portion of the navicular.
If a fracture is clinically suspected, but not evident on the x-ray, then proceed to other means of imaging. The TC99 bone scan may show an area of increased uptake and a CT and an MRI may give you a more definitive answer.

2 Principles

2.1 Talonavicular joint function

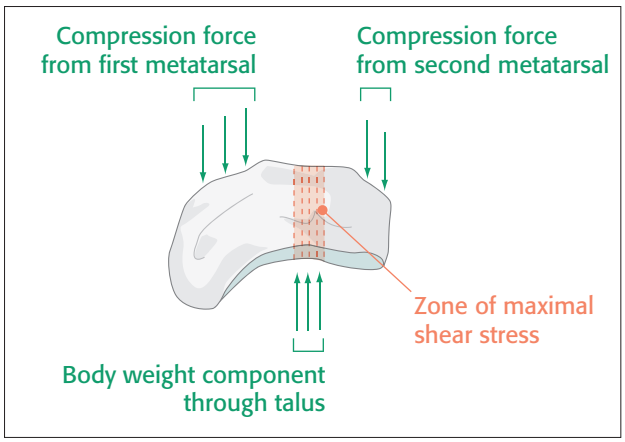
The talonavicular (TN) joint allows for hindfoot motion in all planes. Loss of TN motion results in loss of complex hindfoot circumduction. It is therefore extremely important to retain TN function as it has a protective function for the adjacent joints. Loss of TN motion leads to adjacent joint degeneration (DJD). Retaining even a small amount of motion is thought to be protective for the adjacent joint function. The TN joint, because of its extensive range of motion, is also known as the "coxa pedis".



2.2 Stresses in athletics

There is a 3-point bending force on the navicular (see diagram). This can result in a frank fracture, or an occult (stress) fracture.

The principle which guides treatment is the removal of bending forces or stresses. Therefore we use external immobilization like a cast or a removable orthosis.

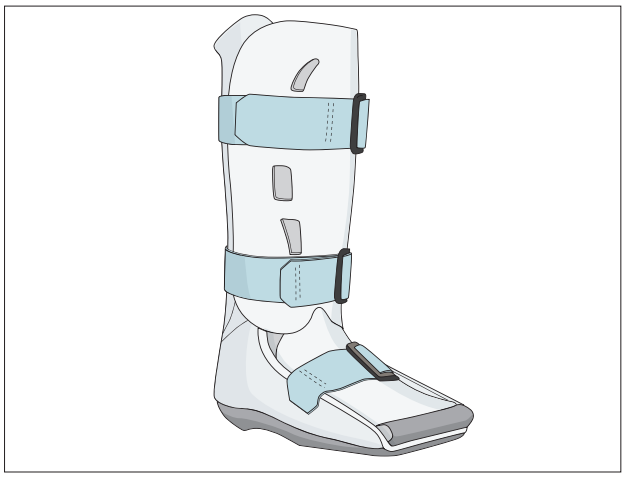


3 Nonoperative care

3.1 Immobilization

A functional boot can be used for support and immobilization. The advantage of a boot over casting is that the boot can be removed for personal hygiene.

In the acute phase while there is pain and swelling, weight bearing should be avoided. The boot can be removed for daily hindfoot circumduction. As healing progresses, protective weight bearing is allowed in the boot. The patient can then be progressed from the boot to cushioned running shoes.



4 Aftertreatment

4.1 Follow up

Return to sports is allowed when pain and swelling subside and there is evidence of healing on plane x-rays.