

## Mid-foot pain: Is it a Lisfranc injury?

Injuries to the tarsometatarsal joints of the foot, also known as the Lisfranc joint, are common workplace injuries, yet they are often difficult to detect. The cause of these injuries can be as innocuous as missing a step or as severe as a motor vehicle incident. Minor degrees of injury might sprain the joint, while more serious injuries may sublux or dislocate the joint, and may be associated with a fracture. In order to avoid being misdiagnosed, patients suspected of having such an injury require thoughtful and precise clinical examination.

During the past 20 years WorkSafeBC has seen approximately 220 claims from workers with this potentially devastating injury. More than 85% of these workers were male, with a mean age of 40. Recovery from these injuries is often long and complex. On average, workers with such injuries spent 222 calendar days away from work and almost 65% were left with a functional impairment and received a long-term disability award.

### Anatomy of the joint

The Lisfranc joint is another name for the tarsometatarsal joints of the foot. This includes the first and second tarsometatarsal joints, which are most commonly involved in Lisfranc injuries. The first metatarsal is the larger of the two but the second, more important bone forms the keystone of the transmetatarsal arch and is wedged more proximally to articulate with the middle cuneiform bone. The function of the Lisfranc joint is to transfer stress from forefoot to mid-foot.

The bone anatomy of the Lisfranc joint is extremely stable, with strong

ligaments securing the region. When an abnormal load of low- or high-energy activities impacts the joint, destabilization can occur.

### Diagnosing Lisfranc injuries

In seemingly low-energy injuries Lisfranc abnormalities may be underdiagnosed. Patients may complain of mid-foot pain and exhibit subtle

**Recovery from these injuries is often long and complex. On average, workers with such injuries spent 222 calendar days away from work and almost 65% were left with a functional impairment and received a long-term disability award.**

swelling but may produce normal X-rays. Diabetics in particular may complain of very little or no pain. Primary care providers must keep a possible Lisfranc diagnosis in mind whenever a patient complains of mid-foot pain after an injury.

Lisfranc injuries can also be underdiagnosed in high-energy injuries, especially when the patient has multiple injuries and may not receive a foot examination. All patients with multiple injuries require a secondary and tertiary survey, which includes palpation of the Lisfranc joint.

A CT scan is an extremely useful tool to diagnose subtle Lisfranc injuries. While a bone scan is a reasonable option in lieu of an easily available CT, false negatives can occur if the bone scan is done too soon after an injury.

### Treating Lisfranc injuries

Patients with proven or suspected Lisfranc injuries with no bone displacement may be treated in a removable boot and allowed to weight-bear on the heel while on crutches for the balance of a 6-week recovery. They may then progress to full weight-bearing in the boot for another 6 weeks. At 10 to 12 weeks postinjury they may transition to a regular shoe.

All patients with a displaced Lisfranc injury need orthopaedic referral and will likely require surgery to stabilize the region. Surgical exceptions might only include diabetics with a Charcot arthropathy involving the Lisfranc joint.

Despite surgery Lisfranc patients will typically have chronic pain in their mid-foot and possibly require special orthotics and footwear adjustments. In some cases they will require further surgery to fuse the mid-foot.

### Further information

If you require further information or assistance regarding a patient with a suspected work-related Lisfranc injury, please contact a medical advisor in your nearest WorkSafeBC office.

— Alan Baggoo, MD, FRCSC  
WorkSafeBC Visiting Specialist,  
Orthopedic Surgery

*This article is the opinion of WorkSafeBC and has not been peer reviewed by the BCMJ Editorial Board.*