



South County

Orthopedics Specialist

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Lisfranc injury

The Lisfranc ligament is critical in stabilizing the second metatarsal and maintenance of the midfoot arch. It is a thick structure composed of three portions running from the medial cuneiform to the base of the second metatarsal. The plantar portion of the ligament, which is the strongest, locks the metatarsals to the midfoot. Thus, if this portion of the ligament is torn the midfoot becomes grossly unstable.

A Lisfranc injury is a tarsometatarsal fracture dislocation between the articulation of the medial cuneiform and the base of the second metatarsal. The common mechanism for this injury is seen with an axial load through a hyperplantar flexed forefoot. This injury can range from mild sprains of the Lisfranc ligament to severe fractures and dislocations of the ligament and metatarsals.

Patients with Lisfranc injuries typically report pain and swelling in the midfoot and difficulty bearing weight. A distribution of ecchymosis on the plantar aspect the foot is an indication of severe soft-tissue distribution, even if an x-ray does not show a fracture. On physical exam dorsal subluxation at the tarsometatarsal joint and first and second metatarsal displacement medially and laterally suggests instability.

Subtle injuries can be missed in the midfoot. After an injury if there is difficulty walking, persistent swelling, or a notice of a drop in the arch a visit to the office is indicated. A stress x-rays may be done and are helpful in the office to assess stability of minimally displaced injuries.

X-ray findings consistent with Lisfranc injury include:

1. Discontinuity of a line drawn from the medial base of the second metatarsal to the medial side of the middle cuneiform
2. Widening of the interval between the first and second ray
3. Dorsal displacement of the proximal base of the first or second metatarsal
4. Medial side of the base of the fourth metatarsal does not line up with the medial side of the cuboid
5. Disruption of the medial column (first metatarsal, medial cuneiform, and its navicular facet)



Treatment

Operative treatment: Open reduction internal fixation vs primary arthrodesis

An incision over the top of your foot will be made, the bones will be reduced and an internal fixator, usually in the form of a bridge plate, will be placed over the top of the bones in order to maintain the alignment while healing occurs. Healing requires non-weightbearing for the first 6-8 weeks, transition into protected weight bearing for an additional 6 weeks. Total healing time is 6-8 months. After total healing, the plates may be removed to allow more mobility through the midfoot.

Primary arthrodesis of the midfoot is another surgical option which fuses the bones of the midfoot instead of the use of an internal fixations across the joints. In this surgical option similar plates may be used or screws to provide compression between the disrupted joints. This will cause the joints to heal fused together, and no removal of the hardware is necessary. Higher energy injuries with larger displacement and involvement amongst the articular cartilage will constitute a primary arthrodesis over an ORIF.



Post-operative care

You will wake up with a molded splint around your foot and ankle. You will not be putting any weight on this foot for the first 2 weeks. The use of a knee scooter, I-walk, crutches or wheel chair will assist with walking. During these first 2 weeks you are to keep the splint dry and clean. Please do not take the splint off until you are seen in the office for your first post-op appointment. The first appointment we will remove the splint and take out the skin sutures you will transition into a short leg cast or removable CAM walking boot, depending on comorbidities, with continued non-weightbearing until your next follow up appointment in 4 weeks. We will take x-rays of the foot at each follow up appointment with weightbearing progression at each follow up appointment. At 6 weeks post-op you will be able to begin walking with the protection of the CAM walking boot and at 12 weeks post-op you can transition out of the CAM walking boot into supportive athletic shoes. Final post-op check will usually occur between 4-6 months from surgery, with return to full activities.

FAQ

If my midfoot gets fused can I still walk?

Yes, the joints that are fused are part of the medial and middle column of the foot which function as a unit with very little motion seen across these articulations during gait.

Can I remove the hardware in my foot after the bones have healed?

If you have open reduction internal fixation the hardware may be removed in order to increase mobility through the joint in the midfoot. If you have a primary arthrodesis, there is no need to remove the hardware as the joints are fused together and removing the hardware will not provide any additional mobility through the midfoot.

Additional links

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5344858/>

<https://www.footcaremd.org/conditions-treatments/midfoot/lisfranc-surgery>

<https://www.footcaremd.org/conditions-treatments/midfoot/lisfranc-injury>

<https://orthoinfo.aaos.org/en/diseases--conditions/lisfranc-midfoot-injury/>

<https://www.orthobullets.com/foot-and-ankle/7030/lisfranc-injury>

<https://sci-hub.tw/10.1016/j.fcl.2016.09.002>