



Contents lists available at ScienceDirect

## The Journal of Foot &amp; Ankle Surgery

journal homepage: www.jfas.org



## Case Reports and Series

## Lisfranc Joint Ligament Complex Reconstruction: A Promising Solution for Missed, Delayed, or Chronic Lisfranc Injury Without Arthritis

Raúl De los Santos-Real, MD, PhD<sup>1,2</sup>, Fernando Canillas, MD, PhD<sup>2,3</sup>,  
 Jesús Varas-Navas, MD<sup>4,5</sup>, Patricia Morales-Muñoz, MD<sup>4,5</sup>,  
 Patricia Barrio-Sanz, MD<sup>4,5</sup>, Mónica Medina-Santos, MD<sup>1,2</sup>

<sup>1</sup> Orthopaedic Surgeon, Department of Orthopaedic Surgery, Hospital Central Cruz Roja, Madrid, Spain

<sup>2</sup> Associate Professor, Department of Orthopaedics, Universidad Alfonso X El Sabio, Madrid, Spain

<sup>3</sup> Head Physician and Orthopaedic Surgeon, Department of Orthopaedic Surgery, Hospital Central Cruz Roja, Madrid, Spain

<sup>4</sup> Orthopaedic Surgeon, Department of Orthopaedic Surgery, Hospital Universitario Infanta Sofía, Madrid, Spain

<sup>5</sup> Associate Professor, Department of Orthopaedics, Universidad Europea de Madrid, Madrid, Spain

## ARTICLE INFO

Level of Clinical Evidence: 4

## Keywords:

chronic Lisfranc  
 delayed Lisfranc  
 foot surgery  
 Lisfranc injury  
 missed Lisfranc  
 subtle Lisfranc

## ABSTRACT

The current classifications of “Lisfranc injury” can be purely ligamentous (low-grade midfoot sprains) or involve the osseous and articular structures (high-grade Lisfranc fracture displacements). The first type is often difficult to detect. If these patients are not properly treated, long-term disability can result. The rate of missed or delayed diagnoses has ranged from 13% to 24%, primarily owing to the subtlety of the radiographic findings. This is relatively more common in cases of subtle ligamentous injury (19%). The aim of the present report was to provide a new technique for missed or delayed Lisfranc injury without degenerative local signs. The Lisfranc ligament complex reconstruction is performed with a gracilis tendon graft and is protected by temporary screw fixation. We performed this technique in 3 patients. All 3 patients obtained good results, have been able to resume their previous activities, and have stated they would undergo this type of procedure again. The minimum follow-up length was 2 years.

© 2017 by the American College of Foot and Ankle Surgeons. All rights reserved.

The expression “Lisfranc injury” means the displacement of  $\geq 1$  of the metatarsal bones from the cuneiforms or cuboid bones (tarsal bones). According to current classifications, “Lisfranc injury” can be purely ligamentous (1) (i.e., low-grade midfoot sprains) or can involve the osseous and articular structures (2) (i.e., high-grade Lisfranc fracture displacements). The first type is often difficult to detect, and if these patients are not properly treated, long-term disability can result (3).

Lisfranc injuries are uncommon, constituting approximately 0.2% of all fractures. In the United States, the annual incidence has been reported to be 1 per 55,000 persons. However, this could be an underestimation (4,5). The rate of missed or delayed diagnoses has ranged from 13% to 24%, primarily owing to the subtlety of the radiographic findings (6). A missed or delayed diagnosis is relatively more common in the case of subtle ligamentous injury (19%) (2).

It has been generally accepted that patients with a diagnosis of a Lisfranc injury within 6 weeks of the causative trauma should undergo open reduction and fixation but those Lisfranc injuries

diagnosed  $\geq 6$  weeks after the event should be treated with tarso-metatarsal arthrodesis (7,8).

The aim of our report was to provide a new technique for missed or delayed Lisfranc injury without degenerative local signs. The Lisfranc ligament complex reconstruction is performed with a gracilis tendon graft and is protected by temporary screw fixation (Figs. 1 and 2).

To date, we have performed this technique in 3 patients (Table 1). All 3 have obtained good results. They have been able to resume their previous activities and have stated they would undergo this type of procedure again. The minimum follow-up length was 2 years. We believe our technique could be a promising solution for missed, delayed, or chronic Lisfranc injury without arthritis.

## Patients and Methods

From August 2013 to April 2014, we registered 3 prospective, consecutive patients from the outpatient department with a delayed Lisfranc lesion. The initial diagnosis at the causative trauma was “contusion foot” in 2 cases and “midfoot sprain” in the third (Table 1). The initial treatment was a cast with no weightbearing for 2 patients and a bandage for the third. All 3 patients were female, with a mean age of 33.3 (range 22 to 44) years. The affected side for all 3 patients was the right foot. The Lisfranc lesion was diagnosed 2, 3, and

**Financial Disclosure:** None reported.

**Conflict of Interest:** None reported.

Address correspondence to: Raúl De los Santos-Real, MD, PhD, Department of Orthopaedic Surgery, Hospital Central Cruz Roja, Secretaría de Cirugía Ortopédica y Traumatología, Avenida de la Reina Victoria 22-24, Madrid 28003, Spain.

E-mail address: raul.delossantos@gmail.com (R. De los Santos-Real).



**Fig. 1.** Weightbearing anteroposterior radiographs of the first patient (23-year-old female) (A) before surgery, (B) 4 months after surgery, and (C) 1 month after hardware removal.

4.5 months after the trauma. The findings from weightbearing radiographs were definitive (anteroposterior and lateral views). According to the current classification of low-grade (purely ligamentous) Lisfranc injuries (1), 2 patients had stage III and 1 had stage II. No degenerative signs were present on the radiologic images; thus, we decided to try to prevent the use of tarsometatarsal arthrodesis, the treatment of choice for such cases.



**Fig. 2.** Weightbearing lateral radiographs of the first patient (A) before surgery, (B) 4 months after surgery, and (C) 1 month after hardware removal.

The initial idea for the technique we performed was developed with the first patient (22 years old). The results were good; thus, we decided to perform the same technique for the other 2 cases that emerged later.

#### Indications

Lisfranc joint ligament complex reconstruction is a procedure indicated for patients with missed or delayed Lisfranc injury without degenerative local signs. The ideal candidate for this technique is an active patient with a normal body mass index with the Lisfranc lesion diagnosed >6 weeks after the causative trauma and without degenerative signs found on the radiographs.

#### Surgical Technique

##### Patient Positioning and Anesthesia

The procedure was performed with the patient under general anesthesia and placed in the supine position. An uninflated pneumatic tourniquet was applied to the thigh.

##### Harvest of Gracilis Tendon Autograft

The gracilis tendon of the ipsilateral knee was removed using a tendon harvester inserted through a medial knee skin incision that was approximately 3 cm long. A portion of the harvested gracilis tendon approximately 10 cm long was made into an autograft and conformed into a usable shape for reconstruction of the Lisfranc ligament complex. The knee incision was closed in the usual manner.

##### Incision and Exposure

The leg was then raised for 4 minutes and the tourniquet inflated to induce ischemia. Two longitudinal incisions were made in the foot: 1 medially, over the medial cuneiform (C1) and first metatarsal (M1), and 1 dorsally between the second and third metatarsals (M2 and M3, respectively), with the proximal end of the incision at the level of the base of the bones (Fig. 3A).

Download English Version:

<https://daneshyari.com/en/article/8603589>

Download Persian Version:

<https://daneshyari.com/article/8603589>

[Daneshyari.com](https://daneshyari.com)