Joint-sparing Corrections in Malunited Lisfranc Joint Injuries

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KEYWORDS

• Lisfranc malunion • Neoligamentplasty • Midfoot deformity

KEY POINTS

- An asymmetric midfoot with incongruent joints changes the normal foot shape leading to shoe wearing problems and gait disorders.
- Significant deformities cannot be corrected with ligamentplasty or endobutton stabilization; the latter should be reserved for subtle instabilities with ligamentous disruption and without arthritic changes.
- Neoligamentoplasty allows for reconstruction of 3 types of ligamentous disruption and the endobutton technique primarily reconstructs the Lisfranc ligament.
- Dorsal bridging plates can provide rigid fixation and allow for correction of greater deformities of the midfoot but require a large exposure of the tarsometatarsal joints.
- It is preferable to have an incomplete correction than to close the incision under tension.

INTRODUCTION

Ligament injuries and fracture–dislocations of the intercuneiform and tarsometatarsal (TMT) joints (Lisfranc) are relatively uncommon.[1,2] The seemingly low incidence is probably owing to misdiagnosed or overlooked injuries (20% and 40%, respectively) treated as foot sprains.[3,4] The subtle injuries represent a major source of initially missed or misinterpreted lesions, which may lead to chronic pain and functional loss owing to deformity, residual ligamentous instability, or arthritis.[5,6] It is generally accepted that displaced or unstable Lisfranc injuries are treated with anatomic reduction and stabilization of the Lisfranc joints to achieve good outcomes and avoid deleterious sequelae. If overlooked or not treated correctly, TMT fracture–dislocations frequently result in painful malunion and impaired function.

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Inveterate Lisfranc fractures or dislocations are defined as being more than 6 to 12 weeks old and these injuries can be anatomically reconstructed only in rare cases.[7] A key issue in determining whether a reconstruction should be performed is whether the joint is viable and without degeneration.

PATIENT ASSESSMENT

Disability assessment and treatment are difficult because of the presence of different symptoms, which cause overlapping syndromes. Patients complain of pain, walking limitations, and necessity to change their lifestyle. A careful and detailed clinical assessment followed by an extensive radiologic investigation will usually reveal 1 or more of the following problems.

LISFRANC JOINT MALALIGNMENT

Lisfranc joint malalignment can occur in multiple planes and depends on the type of primary injury. Most commonly, planus or planovalgus deformities associated with forefoot abduction are seen but cavus deformity with forefoot adduction may also be encountered[8–10] (**Fig. 1**).

Zwipp[7,11] staged a Lisfranc joint malposition with or without osteoarthritis:

1. Lisfranc ligament instability without osteoarthritis (**Fig. 2**).
2. Medial (cuneiform I-III/metatarsal I-III) Lisfranc osteoarthritis and/or malposition.
3. Lateral (cuboid/metatarsal IV-V) Lisfranc osteoarthritis and/or malposition.
4. Lisfranc osteoarthritis medially and laterally in pes planovalgus with abduction.
5. Lisfranc osteoarthritis medially and laterally with pes cavovarus.

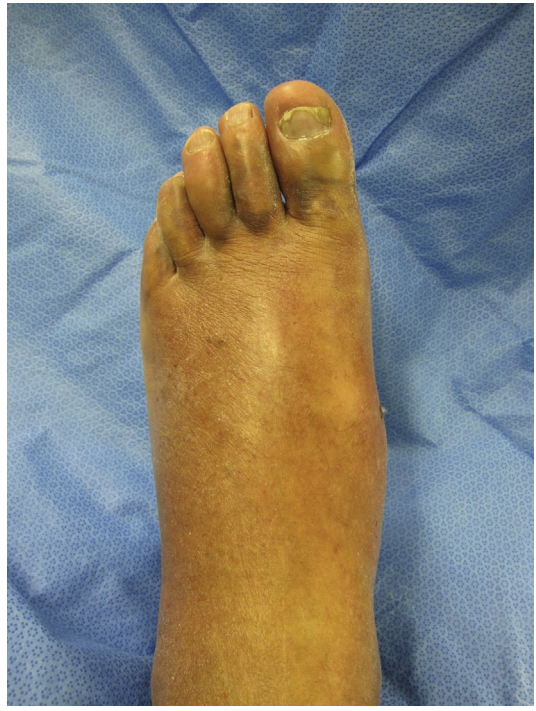

Fig. 1. Forefoot abduction with medial bump after a missed Lisfranc injury.