

Fracture Luxation of Lisfranc: Study of 20 Cases

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Abstract

Original Research Article

Trauma of the joint of LISFRANC, is a rare but serious entity insofar as it can lead to disabling sequels even at the standing station. Our study focuses on a series of 20 cases of LISFRANC dislocation fractures over a 5-year period from 2014 to 2018. In our series, 3 cases received orthopedic treatment after reduction under spinal anesthesia, and 17 cases were treated surgically with location of osteosynthesis material. Both types of treatment were supplemented by immobilization plastered for 6 weeks followed by rehabilitation. After a follow-up of 18 months, the progression was poor in 30% of cases, 10% due to insufficient orthopedic treatment, and 20% of bad surgical cases that presented certain complications. Fractures of frank lilies are lesions of poor prognosis. They must be diagnosed and treated urgently while respecting a good anatomical reduction of the joint.

Keywords: LISFRANC joint; fracture-dislocation; traitement.

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INTRODUCTION

The interlining of LISFRANC includes the cuneo-metatarsal and cuboid-metatarsal joints. It constitutes a line of weakness of the foot, which during trauma most often at high energy, may be the seat of a subluxation-dislocation and / or fracture may have gone unnoticed. This type of lesion is often seen in violent accidents and causes serious bone and articular lesions that evolve into disabling sequels of the foot. These sequels are in the form of foot pain, joint stiffness, trophic disorders and defective step. These traumas are rare, their frequency is estimated at 0.2% of all fractures. However, this figure is probably underestimated because of their frequent misdiagnosis, estimated at 20% by most authors, especially when the lesions are purely ligamentous or when they fit into a context traumatic traumatic

METHODS

This is a retrospective study of a series of 20 cases of fracture dislocations of LISFRANC over a period of 5 years stretching from 2014 to 2018, collected in the orthopedic traumatology unit of Avicenna Hospital in Rabat. The medical records of each patient were consulted, and we gathered different information: clinical, radiological and therapeutic demographic data of the 20 patients. Our study aims to compare the management of dislocation fractures of

LISFRANC with the Avicenne orthopedic traumatology department of Rabat with data from the literature and to highlight the appropriate diagnostic and therapeutic means.

RESULT

Our study includes 20 patients, all diagnosed and treated in emergencies. 17 men or 85%; 3 women or 15%. This predominance of men has been found in the majority of statistics previously compiled. The average age is 33 years old with extremes of 18 years old and 67 years old. It is therefore a question of young people of age to practice physical activities justifying to make every effort to limit the functional deficits consecutive to their fractures. The right side was hit 11 times. So we notice a predominance of the right side especially in the context of road accidents, as the right-hander tends to use his right side to protect himself. This is usually violent trauma. In our series, we found as circumstances of accidents of the public road in 17 cases. and a fall from a high place in 3 cases. And this is consistent with the statistics already made. The pain was constant in all patients. Functional impotence of the affected limb was absolute in 18 patients, and partial in the other two. The local clinical examination found the following signs: the deformity of the foot presents in 5 patients is 25%. Localized edema present in 17 cases is 85%. Localized bruising found in 10 cases or 50%. The

palpation pain found in all patients is 100%. There is no evidence of acute ischemia in all patients.

In search of lesions associated in our series, we found cutaneous lesions in 7 patients is 35% of our series. On the other hand, the other 13 cases, 65%, had dislocation fractures. 6 patients had fractures dislocations associated with 30%, are polytraumatized, 2 patients, 10% of the cases, had associated regional bone lesions, mainly represented by malleolar fractures. 1 case or 5% had a head injury with fractures at a distance: fracture of the leg, femur, and the face. However, we did not notice any vascular or nerve lesions in all our patients. Conventional radiology is the only radiological method required in all patients in our series.

The incidences face, strict profile and the cliché of ¾ are requested in all the patients (Figure-1). According to the classification of QUENU and KUSS we found in our series: partial fractures in 6 cases is 30% and total fractures in either 70%. According to the classification of TRILLAT and LERAT our series consists of 4 ipsilateral spatular dislocation fractures, 8 fractures ipsilateral columno-spatular dislocations, 2 fracture dislocation columnaire divergente. 6 fractures dislocations columno-spatular divergent. In our series, all patients were treated urgently. The therapeutic modalities recommended were: Orthopedic treatment. Surgical treatment with possible rehabilitation after.

Two cases benefited from orthopedic treatment: reduction by external maneuver under spinal anesthesia, followed by a plaster cast for a period of 6 weeks. 1 case benefited from a percutaneous racking after reduction of dislocation by external maneuver under spinal anesthesia. 17 cases were surgically

treated: open reduction followed by pin fixation. The surgical procedure in all our patients consisted of placing a pneumatic tourniquet at the root of the affected limb after anesthesia to facilitate hemostasis. The joint was approached by double incision: the 1st at the 1st intermetatarsal space and the 2nd at the 4th metatarsal space. The approach was deep from the start after dissection of the elements of these two spaces. The two incisions meet after a deep detachment without the need to dissect the elements of each space (Figure-2). Immobilization by plaster cast or posterior splint for 6 weeks was systematic, then removing the latter with the pins at a time.

All our patients have benefited from clinical monitoring and radiological checks periodicals in consultation. Rehabilitation has been indicated systematically, but most of our patients have preferred to pursue her home or even neglect her. For the purpose of our results, we have adopted the criteria of GAY and EVRRAD (Table-1). After a decline of 18 months, we judged that the results are good in 14 cases or 70% and bad in 6 cases or 30% of which 10% secondary to insufficient orthopedic treatment. 20% bad surgical cases.

The early complications are due to the violence of the traumas that give this type of fracture. We noticed: Six patients with multiple trauma (30%), 2 patients or 10% had associated bone fractures, represented by malleolar fractures. In our series, 20% of septic complications were reported. Nonunion is rare or even exceptional, according to the authors. We did not find any in our series. Vicious calluses can be seen after insufficient reduction and after secondary displacement, 2 cases were found or 10%.



Fig-1: X-ray of a Fracture luxation of Lisfranc

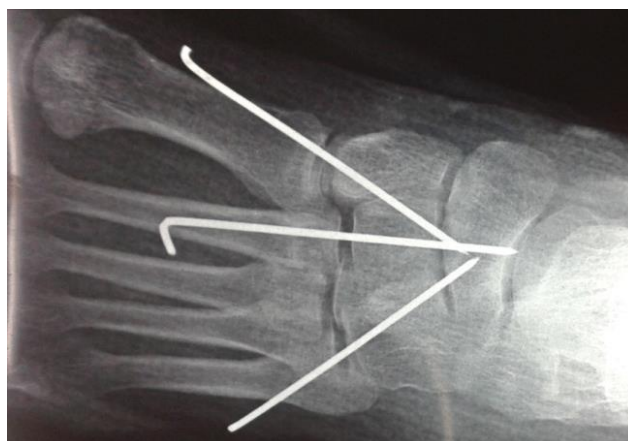


Fig-2: X-ray control after reduction and stabilization by pins

Table-1: Postoperative evaluation criteria of GAY and EVRRAD

| Pains | Stability | Mobility | Trophic disorders | Profession |
|-----------------------------|-----------------------------|----------|-------------------|------------|
| 0 permed | unstable | 0 | +++ | stop |
| 1 To the function | insecurity | +1/2 | walking | Change |
| 2 Fatigue irregular terrain | Irregular light instability | - 1/2 | light | Restreint |
| 3 null | stable | normal | null | identical |

DISCUSSION

Traumatic involvement of Lisfranc's interligne many work on classification and processing. It is a rare lesion (the frequency of which is would not exceed 0.2% of fractures). It has two major risks: be misunderstood in a context of low-energy trauma because the movements are small, neglected (or insufficiently taken into account) when it fits, as is often the case, into a polytrauma life-threatening [1]. In all cases, the lesion is responsible for functional sequelae very annoying on two levels: local, articular on the interline tarso-metatarsal, with type of mechanical pains and deformations of the back of the foot (backbone) responsible for conflicts with the shoe; remotely, through repercussions on the metatarsal support bar where it can generate areas of hyper-support in report with a misalignment of heads and disorders architectural anomalies by distribution of pronosupination [2]; the latter being likely to resonate on the whole of the foot. Standard radiography is the diagnostic element of based. Clichés always have an incidence of strict profile of the whole foot and an incidence of dorsoplantar face centered on the tarsometatarsal junction (ideally comparative) These pictures can not be replaced by three-quarters impacts [3-5].

These have no role in architectural evaluation; however, they are very useful for clearing the lateral sector of the line (cuboidal joints) lateral and medial) which are poorly on the dorso-plantar incidence.

The architectural normality is evaluated on four parameters [6]:

- Morphology and congruence in the two planes of tarsometatarsal spacing;

- Sagittal and frontal orientation of the metatarsals;
- Rectilinear aspect of the collateral edges;
- Sagittal alignment and parabolic dorsoplantar metatarsal heads.

Careful examination of the proximal part of the columnospatular junction is essential, at the search for a diastasis between the 1st cuneiform and the base of the 2nd metatarsal translating a rupture of the ligament of Lisfranc and the severity of the trauma [7]. You have to know how to be alerted by small disturbances of a or more of these criteria, rather benign superficial examination and give all its value:

- Irregularity of the cuneometatarsal line or cuboid-metatarsals, especially in the presence small peripheral fragments [8, 9];
- At a diastasis between the first cuneiform and the base of the 2nd metatarsal;
- Excessive overflow of the base of the 5th metatarsal.

It is necessary to resume the clinical examination, to look for a pain abnormal palpation and especially constraints [10].

For serious sprains the problems are essentially diagnostic, risks focusing on ignorance [11]. Once recognized and given the risk of instability residual pain, this injury justifies immobilization by molded resin boot for a period of at least 6 weeks (4 in discharge). Proven disasters require emergency reduction. Several problems must be discussed [12].

Closed reduction is discussed. The series of the literature conclude that this is possible if it is carried out of extreme urgency and if the restitution of joint

congruence is perfect. Percutaneous pinning stabilization is possible [13, 14].

In the majority of cases, reduction and stabilization to heaven open are recommended. Pathways, for a usual columnar-spatular lesion, are vertical in line with the 1st and 4th spaces [15]. It is necessary make the most of the longitudinal venous return pathways, and beware of the termination of the dorsal artery of the foot in the 1st space.

The line spacing is exposed over its entire width after detachment subperiosteal jointing the two incisions, the device stent being protected by a malleable blade. After exposure and inventory of lesions, the reduction is carried out step by step by reference to the criteria of joint reduction (restoration of frontal congruence and in profile) [16].

The duration of the contention is a problem that arises in each case, considering the risk of displacement secondary after removal of the pins. Several points seem established: any support is forbidden on the boot, the pins being in place (risk of fatigue failure and / or dismantling); and the removal of the pins must not be programmed always on a fixed date.

CONCLUSION

Lisfranc dislocation fractures are lesions of poor prognosis, they must be suspected in front of any ecchymotic or oedematous foot, the positive diagnosis is made after a good radiological examination. The treatment must be instituted urgently.

The anatomical reduction of articular congruence must be sought because it is the most important controllable factor. As a result, open reduction seems to be the best option.

The result of our treatment depends on the time of care, the associated injuries, and the quality of care. A non-negligible failure rate with complications may be disabling for patients.

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Contributions of the authors: All authors have read and approved the final version of the manuscript.

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