

Results of Percutaneous Surgery of Distal Tibial Fractures by Screwed Plates in a Series of 4 Cases

Oufaska Kamal*, Kacimi Mehdi, El Idrissi Mohammed, Elibrahimi Abdelhalim, Elmrimi Abdelmajid

Osteoarticular surgery service B4, hospital Hassan II, FES, Morocco

Original Research Article

*Corresponding author
Oufaska Kamal

Article History

Received: 03.10.2018

Accepted: 09.10.2018

Published: 30.10.2018

DOI:

10.21276/sasjs.2018.4.10.8



Abstract: The management of distal tibia fractures can be challenging because of the scarcity of soft tissue, their subcutaneous nature, and poor vascularity. Classic open reduction and internal fixation require extensive soft tissue dissection and periosteal stripping, with high rates of complications. Minimally invasive plating techniques reduce iatrogenic soft tissue injury and bone damage and preserve the osteogenic fracture hematoma. The purpose of this study is to present the experience of the B4 osteoarticular surgery department, of CHU Hassan II of Fez Morocco, in the percutaneous surgery of tibial pound fractures by screwed plates. This is a retrospective study between mars 2017 and January2018, including 11 cases of tibial pilon fracture in adults treated with a percutaneous screwed plate.

Keywords: tibial, percutaneous screw plate, minimally invasive technique.

INTRODUCTION

We report the clinical and anatomical results of 04 patients, present a tibial puncture fracture, collected at the B4 trauma surgery department treated by a percutaneous fixation by screwed plate. The objective of this monocentric study is to focus on this surgical technique and present our experience and make a general review of the literary.

METHODS AND PATIENTS

We analyzed the results of the patients, present a fracture of the tibial pestle treated by a percutaneous screwed plate, by antero-intern through an incision of 2 to 3 cm is slipped the plate on the inner side of pestle after reduction under scopic control (Fig 1 and 2).

The functional evaluation is based on the AOFAS score and the consolidation is judged obtained on face and profile incidences. The average follow-up is 20 months. The evaluation parameters included radiological elements: angulation, alignment, rotation disorder. Clinic including the articular amplitudes.

RESULTS

We have 4 patients with an average age of 36 (34 to 38 years). Male predominance. The AO classification arose from efforts to produce a comprehensive system for fractures of the long bones. The distal segment of the tibia is classified as '43' and divided into three types as follows:

Type A, extraarticular fractures; Type B, partial articular fractures, which maintain some continuity between the shaft and the articular surface; and Type C, complete articular fractures. There were 3 AO 43A fractures, 1 AO 43B fractures. 2 patients with

fractures of the external malleolus were treated by reduction and fixation with plaque. 1 patient with poorly displaced fractures of the fibula diaphysis was followed by conservative treatment. We operated 3 patients (75%) in the first 24 hours, 1 (25%) in the first 72 hours. Mean post-operative stay of patients at the hospital was .3 days.

The average duration of fracture consolidation for patients was 17, 6 weeks. The postoperative evaluation was made by the AOFAS score with a mean of 76.3. There were 3 patients (75%) excellent, 3 (25%) good. We had no deep infection or osteomyelitis.

The complications identified were a vicious extra articular callus in 1 patient with 10 ° recurvatum, no.

Radiological results were good in 3 cases. (75% of cases), satisfactory in 1 cases (25% of cases).

Table-1: Overall results according bone and functional parameters

Variable	Number of patients
Bone results	
Union	4/4 (100%)
Angular deformities >7°	0/4 (0%)
Leg-length discrepancy > 1.1 cm	0/4 (0%)
Functional results	
Limp	1/4 (25%)
Range of motion of ankle > 20°	0/4 (0%)
Return to preinjury activities	4/4 (100%)
Deep infection	0/4 (0%)



Fig-1: aspect of minimally invasive percutaneous medial osteosynthesis



Fig-2: scopic control

DISCUSSION

Surgical fixation of distal tibia fractures can be difficult, and requires careful preoperative planning. Fracture pattern, soft tissue injury, and bone quality critically influence the selection of fixation technique [1]. Classic open reduction and internal plate fixation require extensive soft tissue dissection and periosteal stripping even in expert hands, with high rates of complications, including infection (range, 8.3%–23%) [2, 3] and delayed union and nonunions (range, 8.3%–35%) [2,3]. Several minimally invasive plate osteosynthesis techniques have been developed, with union rates ranging between 80% and 100% [4, 6, 7, 5]. These techniques aim to reduce surgical trauma and to maintain a more biologically favorable environment for

fracture healing. Nevertheless, complications, such as angular deformities greater than 7° (range, 7.1%–35%) [7], hardware failure (range, 0–10%) [7, 8], and nonunions (range, 0–20%) [4, 6] have been reported.

CONCLUSION

The percutaneous fixation of tibial puncture fracture by screwed plate is a minimally invasive surgical technique that respects the anatomical particularity (cutaneous and vascular) in the light of our result this procedure gives a good result if the indications are respected; we recommend this minimally invasive technique for tibial puncture fractures.

REFERENCES

1. Bedi A, Le TT, Karunakar MA. Surgical treatment of nonarticular distal tibia fractures. *JAAOS-Journal of the American Academy of Orthopaedic Surgeons*. 2006 Jul 1;14(7):406-16.
2. Im GI, Tae SK. Distal metaphyseal fractures of tibia: a prospective randomized trial of closed reduction and intramedullary nail versus open reduction and plate and screws fixation. *Journal of Trauma and Acute Care Surgery*. 2005 Nov 1;59(5):1219-23.
3. Janssen KW, Biert J, van Kampen A. Treatment of distal tibial fractures: plate versus nail. *International orthopaedics*. 2007 Oct 1;31(5):709-14.
4. Toms AD, McMurtie A, Maffulli N. Percutaneous plating of the distal tibia. *The Journal of foot and ankle surgery*. 2004 May 1;43(3):199-203.
5. Francois J, Vandeputte G, Verheyden F, Nelen G. Percutaneous plate fixation of fractures of the distal tibia. *Acta orthopaedica belgica*. 2004 Apr;70(2):148-54.
6. Helfet DL, Shonnard PY, Levine D, Borrelli J. Minimally invasive plate osteosynthesis of distal fractures of the tibia. *Injury*. 1997 Jan 1;28:A42-8.
7. Maffulli N, Toms AD, McMurtie A, Oliva F. Percutaneous plating of distal tibial fractures. *International orthopaedics*. 2004 Jun 1;28(3):159-62.
8. Khoury A, Liebergall M, London E, Mosheiff R. Percutaneous plating of distal tibial fractures. *Foot & ankle international*. 2002 Sep;23(9):818-24.
9. Available online at <http://sassociety.com/sasjs/>