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INTRAMEDULLARY NAILING OF GUSTILO TYPE II OPEN FRACTURES OF THE LEG: ABOUT 24 CASES IN THE ORTHOPEDICS-TRAUMATOLOGY DEPARTMENT OF THE DONKA NATIONAL HOSPITAL

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Abstract

Objective: To evaluate the management of Gustilo type II open fractures of the leg by intramedullary nailing in the Orthopedics-Traumatology department of the Donka National Hospital.

Methodology: This was a continuous retrospective study of forty-six months (46) from January 1, 2019 to October 30, 2023. We made Kuntcher type alignment nails without image intensifier. Patients were evaluated after a mean follow-up of 19.47 months according to the Johnner and Wruh evaluation criteria.

Results: A total of 24 Gustilo type II open fractures of the leg were collected. There were 19 men and 5 women with a sex ratio of 3.8 with an average age of 44.5 years with extremes of 20 and 69 years. The average time to treat fractures was 99.5 hours. The etiologies dominated by road traffic accidents (two-wheeled vehicles 95.84% and vehicles 4.17%). Workers were the most affected (9.16%). The average length of stay was 9.66 days. The complications encountered were late postoperative infection and knee pain. Our results were excellent in 65.21%, 30.43% good results and 4.34% fairly good results.

Conclusion: Open leg fractures are common injuries. Intramedullary nailing of these fractures gives good functional results. It can be done without an image intensifier provided you know its limits.

Keywords: Intramedullary nailing, type II open fractures, leg.

Introduction

First-line intramedullary nailing of open leg fractures remains controversial, particularly because of the risks of septic complications of these fractures.

The classic approach remains initial stabilization with an external factor, especially in cases of serious soft tissue injury and/or hemodynamic instability [2]. However, this treatment poses many problems with an infection rate on cards of up to 50% [3] a nonunion rate of between 10% [4] and 41%, as well as a risk of malunion of up to 71% [5].

Intramedullary nailing allows stable osteosynthesis, rapid reloading, simple skin coverage, and less strain on the patient.

The aim of this study was to analyze the results of treatment with early nailing without reaming of Gustilo type II open tibial fractures.

Methodology

This was a continuous retrospective study of forty-six months (46) from January 1, 2019 to October 30, 2023. Patients with a Gustilo type II open fracture treated with a nail were included in the study. Küntscher type alignment device without image intensifier.

Surgical technique and post-intervention follow-up protocol :

All patients received a preoperative assessment with x-rays of the leg, side and front.

Nail length was measured from the anterior tibial tuberosity to 2 cm above the medial malleolus and diameter was assessed where the canal was narrowest on full-size (100%) digital or standard images.

Patient placed on a standard table in dorsal decubitus, under spinal anesthesia, knee flexed to 90° on makeshift support. The reductions are made openly using two reducing forceps after careful debridement of the wound. The nailing performed was an alignment nailing without reaming with a Küntscher type nail.



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At the end of the intervention, knee flexion and ankle movements (dorsiflexion and plantar extension) were systematically tested. Double antibiotic therapy pre and postoperatively was instituted in all our patients, with treatment with LMWH for preventive purposes from the sixth hour after the operation, as well as analgesics.

Physiotherapy began the day after the operation. The session begins with bed exercises: activating circulation by making gentle movements of the knee to combat flexure, isometric contractions of the quadriceps and the flexor and extensor muscles of the ankle. The next day, first thing up, learning to walk unloaded. The walking distance gradually increases over the following days.

Analysis method

Each patient benefited from protocolized follow-up with a systematic consultation on D45 and D120, including a radiographic assessment (face and profile), a handwritten record of all incidents and complications. We used the Johnner and Wruh evaluation criteria to evaluate our patients [6]. The data was entered into Excel software.

Results

We had operated on twenty-four patients. The mean age at the time of surgery was 44 ± 15.73 years (20-69). There were 19 men and 5 women with a sex ratio of 3.8. The etiologies were dominated by road traffic accidents (two-wheeled vehicles 95.84% and vehicles 4.17%).

Pathologically, the fracture lines on the tibia were transverse (50.00%), common (20.84%), with an intermediate butterfly wing fragment (16.67%), oblique (12.50%). of cases), while on the fibula, the line was mainly transverse (41.67%), oblique (33.34%) and spiral (12.51%).

The average time to treat fractures was 99.5 hours.

Therapeutically, all patients underwent local surgical debridement followed by reduction maintained by a Küntscher nail, and generally antibiotic therapy, an antitetanus serum and an analgesic. We proceeded to stabilize the fibula by pinning in three patients (12.50% (**Figure 1 and 2**).



Figure 1: Preoperative image showing an open Fx type II of Gustilo of the 2 bones of the leg in a patient aged 42 years old ACR merchant (motorcycle)

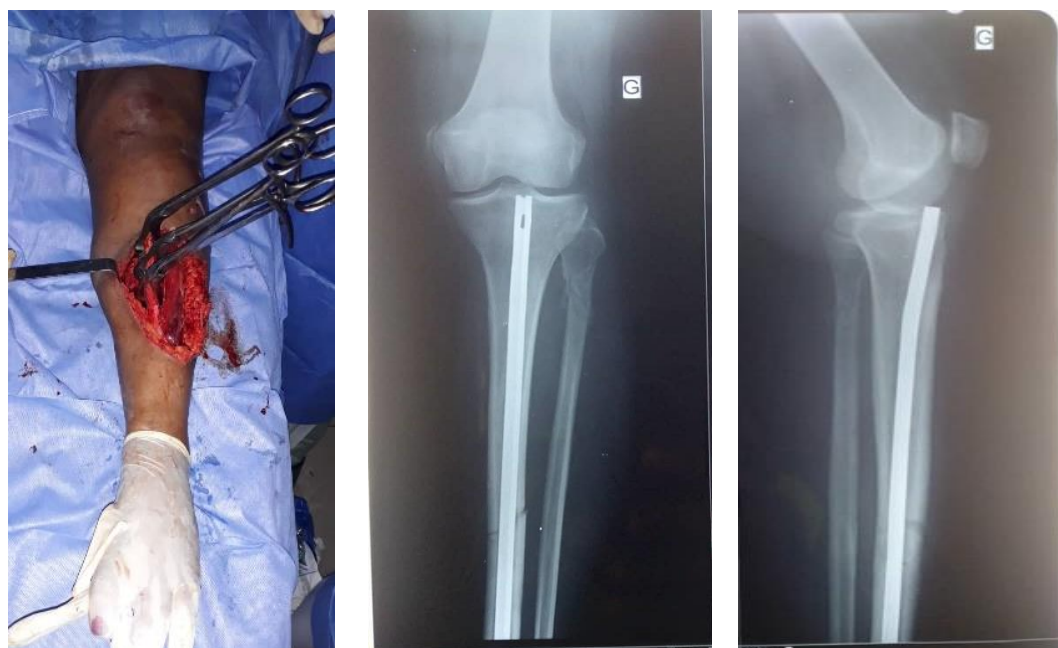


Figure 2: Intraoperative image and postoperative Rx

Union was achieved in an average time of 131.73 days (4 and a half months). We noted two cases of postoperative infections:

- Post-operative suppuration at two months requiring removal of the nail and placement of a plaster boot
- Knee pain in three patients requiring removal of the nail.

The average follow-up was 19.47 months with extremes of 5 and 67 months. Among the twenty-four patients, we evaluated twenty-three patients according to the Johnner and Wruh evaluation criteria. Our results were excellent in 65.21%, 30.43% good results and 4.34% fairly good results.

Discussion

Leg fractures are often open and largely expose the tibia, a cutaneous bone, poorly vascularized and easily infected [7] and are the most common open fractures of the limbs [8]. In Europe, they represent 20 to 30% of open fractures [9] and sometimes even reach 51.9% of open fractures [10].

Depending on age, the authors are unanimous that these fractures affect the young population, under 40 years of age [11,12]; This is confirmed by our results. Our average age was 44 ± 15.73 years with extremes of 20 and 69 years.

For our series, this could be explained by the fact that it is the most active sectoriel to meet multiple needs in a poor country like the Republic of Guinea where the population lives on around 1 dollar per day.

The etiologies were dominated by road traffic accidents (two-wheeled vehicles in 95.84% and vehicles 4.17%), this confirms the data published by several authors: Lawson [7] (78.28%), Magoumou [13] (86.7%), Noufanangu [14]. In our case, we noted that among the reasons for these public road accidents, are on the one hand the non-compliance with the highway code by drivers and on the other hand the appearance of motorcycle taxis which, 10 years ago hardly existed and who ride on the main streets without wearing helmets.

In our study, in fifteen patients the treatment was started within the first 24 hours while the other nine were admitted after the twenty-four hours. This would certainly be due to the geographical location of our hospital located in the city center. Delay in consultation after an open fracture is a factor of poor prognosis in the future. The rule of six hours post-injury for performing surgical debridement to avoid infection has been considered crucial in preventing infection [15, 16]; yet questioned by several authors [17, 18]; who did not find a correlation between the trimming time (beyond six hours) and infectious outcomes.



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According to the fracture line, it was mainly transverse on the tibia with 50.00% of cases; common in 20.84%, with an intermediate butterfly wing fragment (16.67%), oblique (12.50%), while on the fibula, the line was transverse (41.67%), oblique (33.34%) and spiral (12.51%). Madougou [19] on the other hand found a predominance of comminuted fractures on the tibia (36.1%) and transverse fractures on the fibula (27%). This difference can be explained by the small size of our sample.

Conclusion

Performing first-line intramedullary nailing of Gustilo type II open fractures of the leg appears to us to be a reliable technique. It allows effective stabilization of the fracture site, facilitates early resumption of weight-bearing and is less restrictive for the patient than osteosynthesis using an external fixator. This osteosynthesis technique must be accompanied by urgent treatment, combining early antibiotic prophylaxis, meticulous debridement, and rapid coverage of the fracture site.

Links of interest

The authors declare that they have no links of interest.

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Contribution of the authors

the authors all collaborated in writing the article.

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