

ORIGINAL ARTICLE

# Initial support with no immobilisation as therapy of choice for fractures of the fifth metatarsal<sup>☆</sup>



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## KEYWORDS

Fifth metatarsal;  
Forefoot;  
Fracture;  
Weight bearing;  
Conservative  
treatment;  
Functional treatment

## Abstract

**Aim:** To demonstrate the effectiveness of early weight bearing with no immobilisation (functional therapy) applied to fractures of the fifth metatarsal.

**Materials and method:** A retrospective case and control observational study was performed among 382 fractures on the fifth metatarsal comparing functional, conservative-orthopaedic and surgical treatments. Fractures were classified according to the settlement on the distal, diaphyseal or proximal part of the bone, the recommended therapy and the treatment performed. Influence of age, profession and characteristics of the injury were considered and results were measured using the parameters incapacity for work and number and intensity of complications.

**Discussion:** Fractures of the fifth metatarsal are the most common injuries of the foot. Whether conservative or surgical treatment is recommended depends on the sort of fracture, the trend nowadays is to use non-invasive methods.

**Conclusions:** Functional treatment for metatarsal fractures provides earlier healing and fewer adverse effects than conventional therapies, and becomes first choice for non-displaced fractures and most displaced fractures of the fifth metatarsal.

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## PALABRAS CLAVE

Quinto metatarsiano;  
Antepié;  
Fractura;  
Apoyo;

## El apoyo inicial sin inmovilización como terapia de elección en las fracturas del quinto metatarsiano

### Resumen

**Objetivo:** Comprobar la efectividad del tratamiento de las fracturas del quinto metatarsiano mediante la aplicación de la carga precoz del miembro afecto sin inmovilización (tratamiento funcional).

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Tratamiento conservador;  
Tratamiento funcional

*Material y método:* Estudio analítico observacional retrospectivo de casos y controles realizado sobre 382 fracturas del quinto metatarsiano en el que se compararon los resultados del tratamiento funcional con los tratamientos ortopédico y quirúrgico. Las fracturas se clasificaron en base a su localización distal, diafisaria o proximal, a la recomendación terapéutica y al tratamiento finalmente efectuado, y se estudió la influencia de las variables edad, actividad profesional y característica de cada fractura, evaluándose los resultados mediante la duración de la incapacidad temporal y el número y la gravedad de las complicaciones.

*Discusión:* Las fracturas del quinto metatarsiano son las lesiones más frecuentes del pie. El tratamiento puede ser conservador o quirúrgico dependiendo de cada tipo de fractura, existiendo en la actualidad una tendencia a utilizar métodos no invasivos.

*Conclusiones:* El método funcional proporciona una curación más temprana, así como menos complicaciones y de menor gravedad que los tratamientos clásicos, siendo de primera elección en las fracturas sin desplazamiento de los fragmentos y en prácticamente todas las fracturas desplazadas del quinto metatarsiano.

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## Introduction

Based on studies that have generically demonstrated the effectiveness of functional treatment of metatarsal fractures,<sup>1-3</sup> we retrospectively studied the effects of the different existing treatments for fractures of the fifth metatarsal (functional, orthopaedic and surgical) and the influence of other variables that might affect the results.

The functional method consists of exerting early pressure with full load on the affected limb within the three weeks following the injury, with no bandage or immobilisation, just a flat-soled, post-operative shoe.

Given the hypothesis that this method for fractures of the fifth metatarsal is an alternative to conventional treatments, we decided to check its effectiveness comparing the results of the different metatarsal fracture treatments in terms of temporary disability and number and severity of complications, and to evaluate these results according to the type of fracture, age and occupation of the patients.

## Materials and method

This was a retrospective, observational, analytical case and control study performed on 382 patients who had suffered closed fractures of the fifth metatarsal between January 2004 and December 2012 in a mutual insurance hospital.

The case group comprised patients treated using the functional method ( $n = 179$ ), and the control group patients treated by immobilisation in a cast or another device and initial non-load-bearing ( $n = 186$ ), either by closed reduction with percutaneous needles or osteosynthesis with interfragmentary screws, cerclage wires or screwed plates ( $n = 17$ ).

Patients of both sexes were included in the sample, with no distinction as to race, aged between 16 and 65 years (in active employment), diagnosed with acute isolated or multiple closed fractures of the fifth metatarsal, displaced and undisplaced, articular and extra-articular, resulting in sick leave. Patients outside the 16–65 age range, and whose

injuries were not closed and acute, diagnosed late or of onset exceeding 21 days were excluded from the study. Cases where there was a concomitance of conditions that might have masked or lengthened the process, and injuries that did not cause temporary disability were also excluded.

With a view to avoiding the typical errors of case and control studies,<sup>4,5</sup> all the cases whose clinical histories contained inaccuracies or a lack of information were excluded from the study, and all the patients treated for metatarsal fractures in the hospital were included, except those who did not meet the inclusion criteria. All of the patients adhered to their treatment and none were lost to follow-up.

The patients attended by the author of this paper were treated using the functional method, irrespective of whether the traditional indication criteria recommended surgical treatment, while the remainder were treated by other doctors who opted indiscriminately for either the functional or conventional methods, depending on their clinical experience and confidence in the method.

The fractures were classified based on the location of the fracture line (distal, diaphyseal or proximal in their different Dameron zones 1, 2 and 3) following the classification of the American Orthopaedic Trauma Association<sup>6</sup> and that of Dameron and Lawrence-Botte,<sup>7,8</sup> taking into account the degree of shortening, rotation or angulation of the fragments, showing the initial therapeutic indication as well as the treatment given (Fig. 1).

We took the classical recommendations of fragment diastasis, shortening, rotational deficit and angulation into account to establish suitable conservative or surgical treatment criteria.<sup>9-12</sup>

A series of parameters were studied to compare each treatment method:

- Independent variable: treatment given.
- Control variables: type of fracture, age and usual occupation characteristics.

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