



## ORIGINAL ARTICLE

# Open reduction and internal fixation of displaced ankle fractures in patients older than 65 years of age. Analysis of results at five-year follow-up<sup>☆</sup>



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Received 7 April 2015; accepted 12 November 2015

### KEYWORDS

Ankle fracture;  
Open reduction,  
Internal fixation;  
Elderly;  
Complications;  
Comorbidities

### Abstract

**Objective:** The aim of this study was to evaluate the long term outcome of surgical treatment for displaced ankle fractures in patients over 65 years of age, and determine the influence of age and comorbidity in the occurrence of complications.

**Material and method:** Retrospective descriptive study on 40 patients, with a mean age of 72.7 years (range: 65–88), who underwent open reduction and internal fixation for the treatment of a displaced ankle fracture. The patients were clinically evaluated according to the AOFAS criteria (functional outcome). Data collection also included the presence of comorbidities, radiographic evaluation, the occurrence of postoperative complications, and a questionnaire on satisfaction with treatment received. The mean follow-up was 5.73 years.

**Results:** At the end of the follow-up, according to the AOFAS criteria, excellent/good results were obtained in 75% of the patients ( $n=30$ ), with 38 patients referring to be quite/very happy with the result. Wound skin problems and metal work migration were the most common post-operative complications. No statistically significant relationship was found between increased age or a high number of comorbidities and an increased occurrence of postoperative complications ( $p>.05$ ). Only 3 patients needed postoperative rehabilitation, and 95% of the patients ( $n=38$ ) returned to their activities of normal daily living.

**Conclusions:** Surgical treatment of displaced ankle fractures in the elderly patient facilitates the early resumption of the activities of daily living.

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<sup>☆</sup> Please cite this article as: Tomé-Bermejo F, Santacruz Arévalo A, Ruiz Micó N. Resultado a los cinco años del tratamiento quirúrgico de las fracturas desplazadas de tobillo en los pacientes mayores de 65 años. Rev Esp Cir Ortop Traumatol. 2016;60:99–105.

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**PALABRAS CLAVE**

Fractura de tobillo;  
Reducción abierta;  
Síntesis interna;  
Anciano;  
Complicaciones;  
Comorbilidades

## Resultado a los cinco años del tratamiento quirúrgico de las fracturas desplazadas de tobillo en los pacientes mayores de 65 años

**Resumen**

**Objetivo:** Evaluar el resultado a largo plazo del tratamiento quirúrgico mediante reducción abierta y fijación interna de las fracturas de tobillo en los mayores de 65 años, y determinar la influencia de la edad y enfermedades previas en la aparición de complicaciones.

**Material y método:** Estudio descriptivo retrospectivo sobre 40 pacientes, con una edad media de 72,7 años (rango: 65-88) intervenidos mediante reducción abierta y fijación interna por presentar fractura de tobillo desplazada. Los pacientes fueron valorados según criterios de la AOFAS, que valora el resultado funcional del tratamiento. También fueron evaluadas la presencia de comorbilidades, parámetros radiográficos, complicaciones y valoración subjetiva del paciente. Seguimiento medio de 5,73 años.

**Resultados:** Al final del seguimiento, según criterios de la AOFAS se obtuvieron excelentes/buenos resultados en el 75% de los pacientes (n=30); 38 pacientes refirieron estar bastante/muy contentos con el resultado. Las complicaciones más frecuentes fueron la migración del material de osteosíntesis y los problemas cutáneos de la herida. No se pudo demostrar relación estadísticamente significativa entre una mayor edad o un mayor número de enfermedades previas y una mayor frecuencia en la aparición de complicaciones ( $p > 0,05$ ). Únicamente 3 pacientes necesitaron tratamiento de rehabilitación postoperatoria; el 95% de los pacientes (n=38) refirieron haber regresado a sus actividades de vida diaria con normalidad.

**Conclusiones:** El tratamiento quirúrgico de las fracturas desplazadas de tobillo en el paciente anciano facilita la pronta reanudación de las actividades de la vida diaria.

Nivel de evidencia IV.

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**Introduction**

Ankle fractures are amongst the most common bone injuries of the lower limb<sup>1,2</sup> and are a major source of morbidity.<sup>3</sup> It is estimated the incidence of ankle fracture is 184 per 100,000 inhabitants a year, of which approximately 20% to 30% occur in the elderly.<sup>4</sup>

Recent epidemiological studies have demonstrated a significant increase in the number and severity of ankle fractures in people aged over 65,<sup>3,5-7</sup> and therefore these fractures can be considered to have a second peak in incidence in patients aged between 65 and 84, and this incidence peak is even higher in women. This increase in incidence could be due to higher life expectancy, but is also certainly due to the increased activity of people aged over 65.<sup>8</sup>

Despite its increase in incidence, medical literature has not evaluated ankle fractures in the elderly in as much depth as those of the hip or wrist,<sup>8</sup> and therefore there is still debate as to the ideal treatment.<sup>3,8,9</sup>

In the last 30 years, the treatment of unstable ankle fractures has become predominantly surgical, with several studies which demonstrate the benefits of this type of treatment.<sup>10-16</sup> However, several authors recommend conservative treatment for ankle fractures in the elderly because of the poor surgical results obtained in relation to poor bone quality due to the presence of osteoporosis, diabetes, peripheral vascular disease and problems with the skin and healing.<sup>3,8,9,12,17</sup> And therefore in general, ankle fractures in this group of patients are still treated conservatively.<sup>12</sup>

Conservative treatment of a poorly reduced joint can result in bone-healing defects,<sup>11</sup> the need for prolonged immobilisation,<sup>3</sup> post traumatic arthrosis, deformity, reduced joint mobility range, chronic pain and functional limitation.<sup>9,10</sup> And in elderly patients, prolonged immobilisation and discharge can result in a permanent change in their physical and systemic status and walking ability. Therefore the study of ankle fractures in the elderly merits special care due to their frequent presentation, severity and variability, and the repercussions of treatment on the patient's health, functionality and independence.

The objective of our study was to evaluate the long-term result of surgical treatment by open reduction and internal fixation of unstable ankle fractures in people aged over 65, and to determine the influence of age or the presence of prior disease on the appearance of surgical complications.

**Patients and methodology**

An observational, descriptive and retrospective study performed on consecutive patients over the age of 65, operated between January and December 2008 due to displaced ankle fracture.

The patients included had undergone open reduction and internal fixation after presenting with displaced and unstable ankle fracture on entry, or due to failure of treatment by closed method due to a subsequent displacement of fragments during the first weeks. Patients aged und 65 at the time of surgery, non ambulant patients, patients with tibial pilon fractures, concomitant lower limb fractures, patients

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