

ORIGINAL ARTICLE

**Consequences of quality of reduction on  
osteosynthesis complications and quality of life  
in elderly patients with subtrochanteric fracture**☆



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**KEYWORDS**

Subtrochanteric  
fracture;  
Reduction;  
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**Abstract**

**Objective:** To compare results in terms of orthopaedic complications and quality of life in elderly patients with subtrochanteric fracture treated with intramedullary nailing according to fracture reduction status.

**Patients and methods:** A prospective cohort study including 90 elderly patients with subtrochanteric fractures of the femur treated with a cephalomedullary nail, with a minimum 1-year follow up. The inclusion criteria were: aged 60 years or older, without severe cognitive dysfunction and independent ambulatory capability before the fracture. We defined 3 different groups in relation to fracture reduction status: good, acceptable and poor, according to modified criteria from Baumgartner et al. We compared clinical and surgical characteristics and healthy quality of life, social function and mobility according to the EQ-5D, Jensen Index and Mobility Score of Parker and Palmer questionnaires.

**Results:** We found differences in time to union, better in the good reduction group ( $p = .002$ ); need for open reduction, more frequent in the good reduction group ( $p < .001$ ), and in post-operative complications, more frequent in the poor reduction group ( $p = .001$ ). We found no significant differences between the 3 groups regarding scores in quality of life, social function and mobility.

**Conclusions:** Reduction in subtrochanteric fractures in older people is key to obtaining better clinic and surgical results, improving time to union and decreasing surgical complications. Exposure of the focus fracture seems to be a safe manoeuvre. Quality of life had substantially deteriorated in these patients, but there was a tendency, although not statistically significant, for it to improve in patients after good surgical reduction.

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**PALABRAS CLAVE**

Fractura  
subtrocantérea;  
Reducción;  
Calidad de vida;  
Complicaciones

## Consecuencias de la calidad de reducción sobre complicaciones en la osteosíntesis y calidad de vida en pacientes adultos de edad avanzada con fractura subtrocantérea

**Resumen**

**Objetivo:** Comparar el resultado en cuanto a complicaciones traumatológicas (osteosíntesis) y calidad de vida en pacientes adultos de edad avanzada con fracturas subtrocantéreas tratados con enclavado intramedular según el estado de reducción de la fractura.

**Pacientes y métodos:** Estudio de cohortes prospectivo de 90 pacientes con fractura subtrocantérea con mínimo de un año de seguimiento. Los criterios de inclusión son: edad mayor de 60 años, sin disfunción cognitiva y capacidad de deambulación independiente previa fractura. Se establecen 3 grupos según la calidad de reducción: bueno, aceptable y malo, de acuerdo con los criterios modificados de Baumgartner et al. Comparamos grupos en cuanto a características clínicas y quirúrgicas, y los cuestionarios de calidad de vida, función social y movilidad de EQ-5D, Jensen Index y Mobility Score de Parker y Palmer.

**Resultados:** Encontramos diferencias estadísticamente significativas en tiempo de consolidación, menor en el grupo «bueno» ( $p = 0,002$ ); en apertura del foco de fractura, más frecuente en el grupo «bueno» ( $p < 0,001$ ) y en complicaciones quirúrgicas, más frecuentes en el grupo «malo» ( $p = 0,001$ ). No hemos encontrado diferencias estadísticamente significativas en puntuaciones de calidad de vida, función social y movilidad.

**Conclusiones:** La reducción en fracturas subtrocantéreas en adultos de edad avanzada es clave a la hora de obtener los mejores resultados, mejorar el tiempo de consolidación y disminuir las complicaciones quirúrgicas. La exposición del foco de fractura parece ser una maniobra segura. La calidad de vida de estos pacientes se deteriora de manera ostensible, con una tendencia, estadísticamente no significativa, a mejorar en aquellos pacientes en los que se consigue una buena reducción.

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**Introduction**

Subtrochanteric fractures comprise between approximately 5% and 20% of all extracapsular hip fractures. They still pose a surgical challenge due to their particular instability and configuration, with the proximal fragment in abduction, external rotation and flexion, which makes them difficult to reduce and synthesise. Osteoporosis and comorbidities present in elderly patients further complicate treatment of these fractures.<sup>1-4</sup>

In recent years, various research studies have established that surgery with intramedullary nails is optimal due to the biomechanical advantages that they offer over other devices, with rates of pseudoarthrosis and reoperation of approximately 10%.<sup>5-11</sup> However, major reductions in the quality of life of these patients have been observed.<sup>12,13</sup>

Intramedullary nailing has traditionally been considered not to be an invasive technique, since it is not considered necessary to open the focus fracture to reduce it, and other indirect methods of reduction are used on the traction table or with external elements. Furthermore, there is the potential risk of infection and pseudoarthrosis due to manipulation of the focus fracture. The concept of stabilising and reducing pain in the elderly patient over that of reduction and functionality appeared to be sufficient when treating these fractures given to the dangers that direct manipulation of the focus fracture seemed to entail.<sup>14-18</sup> However, recent

studies have shown no further complications, even when reduction elements such as clamps and cerclage wires are used.<sup>19-26</sup>

Some studies<sup>12,13</sup> have shown reduced scores in terms of quality of life in these patients, although, to our knowledge none of them directly relate quality of life with fracture reduction.

The aim of this study was to compare results and prognosis in terms of orthopaedic complications (reoperations and pseudoarthrosis) and the quality of life of patients with subtrochanteric fractures treated with intramedullary nailing according to the reduction status of the fracture.

**Patients and methods**

This was a prospective cohort study which included 90 patients with subtrochanteric fractures from a series of 726 extracapsular hip fractures treated with intramedullary nailing in our hospital from January 2009 to December 2012, with a minimum of one year's follow-up. The inclusion criteria were: aged over 60 years, with no severe cognitive dysfunction and able to walk independently with or without the aid of a stick or crutches before the fracture. Pathological, tumour and atypical fractures were excluded. This series belongs to a line of research into subtrochanteric fractures in our department that has already been described in other papers.<sup>26</sup>

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