

ORIGINAL ARTICLE

## Risk factors for trochanteric and femoral neck fracture<sup>☆</sup>



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Hip fracture;  
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fracture;  
Risk factors;  
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### Abstract

*Introduction and objectives:* The differences between the two main types of fracture of proximal end of the femur, trochanteric and cervical fractures, are still a subject of study, and could be the key to a better understanding of its pathophysiology and prevention. The aim of this study is to determine whether epidemiological differences in the distribution of risk factors associated with hip fracture exist between these two entities.

*Patients and method:* A descriptive cross-sectional study of 428 patients over the age of 65 admitted for trochanteric or cervical fractures in 2015, in which gender, age, previous diagnosis, external causes associated with fracture and place of the event were recorded.

*Results:* There were 220 patients with a cervical fracture (51.4%) and 208 patients with a trochanteric fracture (48.6%). The average age was higher in the trochanteric fracture, observing a constant increase with age only in women with trochanteric fractures. Cervical fracture showed a significant association with cerebrovascular disease ( $p=0.039$ ) and trochanteric fracture with accidental falls ( $p=0.047$ ) and presence of 5–9 previous diseases ( $p=0.014$ ). A regression analysis maintained this association in the case of a cerebrovascular disease (OR 2.6, 95% CI 1.1–6.4) and the presence of 5–9 diseases (OR 1.5, 95% CI 1.1–2.3).

*Conclusions:* Trochanteric fractures are associated with women patients of more advanced ages, 5–9 previous diseases and accidental falls. Cerebrovascular disease shows a higher prevalence in cervical fractures.

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**PALABRAS CLAVE**

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Comorbilidades;  
Estilo de vida

**Factores de riesgo en fracturas de cadera trocantéricas y de cuello femoral****Resumen**

*Introducción y objetivos:* Las diferencias entre los dos tipos principales de fractura de la extremidad proximal del fémur, trocantérica y cervical, siguen siendo un tema de estudio, pudiendo ser clave para un mejor conocimiento de su fisiopatología y prevención. El objetivo de este trabajo es determinar si existen diferencias epidemiológicas en la distribución de factores de riesgo asociados a la fractura de cadera entre estas dos entidades.

*Pacientes y método:* Estudio descriptivo transversal que incluyó 428 pacientes mayores de 65 años ingresados por fractura trocantérica o cervical durante 2015, de los cuales se registraron el sexo, edad, diagnósticos previos, causas externas asociadas a la fractura y lugar del suceso.

*Resultados:* Presentaron fractura cervical 220 (51,4%) y trocantérica 208 (48,6%) pacientes. La edad media fue superior en la fractura trocantérica, viéndose un aumento constante con la edad únicamente en dicha fractura y en mujeres. La fractura cervical presentó asociación significativa con la enfermedad cerebrovascular ( $p=0,039$ ) y la fractura trocantérica con la caída accidental ( $p=0,047$ ) y presencia de 5-9 patologías previas ( $p=0,014$ ). El análisis de regresión logística mantuvo esta asociación en el caso de enfermedad cerebrovascular (OR 2,6, IC95% 1,1-6,4) y presencia de 5-9 patologías (OR 1,5, IC95% 1,1-2,3).

*Conclusiones:* La fractura trocantérica se asocia a edades más avanzadas en mujeres, 5-9 patologías previas y caída accidental. La enfermedad cerebrovascular muestra mayor prevalencia en fracturas cervicales.

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**Introduction**

Hip fracture has a great impact on survival, morbidity and quality of life for those people who suffer from it. It leads to considerable health and social costs and is on the increase in developed countries such as Spain,<sup>1</sup> due to the progressive ageing of the population and the close link between these fractures and age. Greater knowledge of these fractures is essential, including its pathophysiology and risk factors, so that effective preventative measures to control this trend maybe put into place.

Proximal femoral fracture (PFF) is a complex pathology the aetiology of which has been associated with multiple risk factors such as advanced age, female gender, Caucasian, physical inactivity, alcohol and tobacco consumption, benzodiazepines, anticonvulsant drugs, cerebrovascular accident, diabetes, osteoporosis, hyperthyroidism and other chronic illnesses.<sup>2</sup> However, most studies consider patients with a hip fracture as a homogeneous population without discriminating between the two main types of fracture depending on its anatomical location, trochanteric fractures (extracapsular) and cervical fractures (intracapsular), with increasing proof as to the important differences in risk factors which have an impact on the aetiopathogenesis of these two entities.

Trochanteric fractures are usually associated with elderly patients,<sup>3</sup> with previous vertebral fractures and with a lower bone density. There is a greater relationship with osteoporosis,<sup>4</sup> to a poor health status prior to the fracture,<sup>3</sup> low levels of vitamin D, higher levels of PTH in response to hypovitaminosis D,<sup>5</sup> previous cerebrovascular accident<sup>6</sup>

or tobacco habit.<sup>7</sup> Furthermore, cervical hip fractures have been associated with taller<sup>8</sup> and heavier<sup>9</sup> patients, to a lower raising of PTH in response to hypovitaminosis D, Parkinson's disease,<sup>5</sup> oestrogenic therapy,<sup>3</sup> high blood pressure, antihypertensive therapy<sup>6</sup> and to variations in hip morphology<sup>4,9</sup> instead of hip bone density.

All of the above data appear to indicate that trochanteric and femoral neck fractures respond to different pathophysiological processes, which these risk factors may affect in different ways.

**Study objectives**

The main objective of this study was to determine whether there were epidemiologic differences in the distribution of risk factors associated with PFF between trochanteric and cervical fractures in patients admitted to Hospital in 2015, so as to gain a better knowledge of the risk of suffering from a trochanteric or cervical hip fracture and exercise the specific and effective means for its prevention.

The secondary objective of this study was to analysis whether demographic variables such as age and gender or certain life style habits associated with PFF differed between these two entities. We observed whether some of the comorbidities played a more relevant role between the PFF risk factors, and the external causes associated with fracture and the location in which they occurred, and resulted in a higher association with the trochanteric or cervical hip fracture.

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