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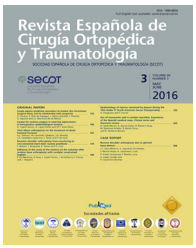

ORIGINAL ARTICLE

Risk-factors for surgical delay following hip fracture☆

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KEYWORDS
Hip fracture;
Timing of surgery;
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Abstract
Objective: To identify pre-operative risk factors for surgical delay of more than 2 days after admission in patients older than 65 years with a hip fracture.
Material and methods: A prospective observational study was conducted on 180 hip fractures in patients older than 65 years of age admitted to our hospital from January 2015 to April 2016. The data recorded included, patient demographics, day of admission, pre-fracture comorbidities, mental state, level of mobility and physical function, type of fracture, antiaggregant and anticoagulant medication, pre-operative haemoglobin value, type of treatment, and surgical delay.
Results: The mean age of the patients was 83.7 years. The mean Charlson Index was 2.8. The pre-fracture baseline co-morbidities were equal or greater than 2 in 70% of cases. Mean timing of surgery was 3.1 days. At the time of admission, 122 (67.7%) patients were fit for surgery, of which 80 (44.4%) underwent surgery within 2 days. A Charlson index greater than 2, anticoagulant therapy, and admission on Thursday to Saturday, were independently associated with a surgical delay greater than 2 days.
Conclusions: The rate of hip fracture patients undergoing surgery within 2 days is low. Risk factors associated to surgical delay are non-modifiable. However, their knowledge should allow the development of protocols that can reduce surgical delay in this group of patients.

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PALABRAS CLAVE
Fractura de cadera;
Demora quirúrgica;
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Factores de riesgo para la demora quirúrgica en la fractura de cadera

Resumen
Objetivo: Identificar los factores al ingreso relacionados con una demora quirúrgica mayor de 2 días en pacientes mayores de 65 años con fractura de cadera.
Material y métodos: Estudio de una base de datos prospectiva de pacientes mayores de 65 años con fractura proximal de fémur entre enero de 2015 y abril de 2016. Se incluyeron en el estudio 180 pacientes. Se registraron variables demográficas, día de ingreso, comorbilidades asociadas, estado mental, nivel de deambulación y dependencia, tipo de fractura, toma de medicación anticoagulante o antiagregante, valor de la hemoglobina al ingreso, tipo de tratamiento, y demora quirúrgica.
Resultados: La edad media de los pacientes fue de 83,7 años. El valor medio del índice de comorbilidad de Charlson era de 2,8; con un 70% de pacientes con al menos 2 comorbilidades. La demora quirúrgica media fue de 3,1 días. En el momento del ingreso, 122 pacientes (67,7%) se consideraron aptos para la intervención quirúrgica. De ellos, 80 pacientes (44,4%) fueron intervenidos en los 2 primeros días tras el ingreso. El análisis multivariante mostraba el índice de comorbilidad de Charlson mayor de 2, la anticoagulación, y el ingreso hospitalario de jueves a sábado, como factores independientes asociados a la demora quirúrgica mayor de 2 días.
Conclusiones: El porcentaje de pacientes con fractura de cadera intervenidos en los 2 primeros días del ingreso hospitalario es bajo. Los factores asociados a la demora quirúrgica no son modificables. Sin embargo, su conocimiento debería permitir el desarrollo de protocolos de actuación que consiguieran reducir la demora quirúrgica en este grupo de pacientes.

Introduction

Since surgery is the treatment of choice in hip fractures, the influence of the time to surgery on morbimortality following a hip fracture has been extensively studied with a view to identifying the optimal moment for the procedure in order to obtain the best results. Nonetheless, the results published have been contradictory. Various studies and systematic reviews report an association between a time to surgery of less than 48 h and morbimortality following hip fracture,[1–8] not mentioned by others.[9,10] Despite this, some clinical guidelines for the handling of patients with hip fracture recommend that surgery be carried out during the first 2 days following admission to hospital.[11–14] The National Health System in Spain establishes surgery for hip fractures in the first 48 h following admission to hospital as an indicator of care quality for our hospitals.[15]

The scenario of a healthy patient with a hip fracture is infrequent. Patients may present significant anaemia and alterations in their hydro-electrolytic balance that must be corrected.[12] They generally associate comorbidities requiring stabilization, or else take anticoagulant or anti-platelet medication that must be withdrawn prior to surgery. In consequence, we consider the hypothesis that the percentage of patients with a time to surgery of less than 2 days is low, bearing in mind the characteristics of our patients with hip fracture and the organization of our care services.

The goal of the present study was to investigate the reasons for times to surgery in excess of 48 h in patients over 65 years of age with a hip fracture at our department, and to assess the performance of hip fracture surgery procedures in the first 48 h following admission to hospital.

Material and method

The patients over 65 years of age and recorded on our prospective database for proximal femur fractures between January, 2015, and April, 2016, were identified. The exclusion criteria were: aged under 65 years, pathological fracture, polytraumatized patients, simultaneous fractures of both hips, a prior history of hip fracture, and no indication of surgery.

On admission, the age, gender, weight, height, and provenance of the patient and the day of the week were recorded. A body mass index value in excess of 30 was deemed to be obesity. The types of proximal femur fracture were classified as subcapital, intratrochanteric or subtrochanteric.

The presence of associated comorbidities was determined by anamnesis on admission, or through the review of episodes for previous hospital admissions. The comorbidities recorded were: high blood pressure, atrial fibrillation, heart failure, coronary disease, cerebrovascular disease, dementia, epilepsy, Parkinson's disease, chronic obstructive pulmonary disease, asthma, diabetes, rheumatic disease, kidney failure, hypothyroidism, peripheral vascular insufficiency, lung tumour, gastric or duodenal ulcer, liver disease, leukaemia, lymphoma, metastasis, AIDS.[4,11–14] The number of comorbidities was determined, as well as the Charlson comorbidity index (CCI),[16] and the age-adjusted CCI.[17] The taking of anticoagulant and anti-platelet medication was also noted.

The patients' cognitive status was evaluated using the *Mini-Mental State Examination*,[18] where the maximum score is 10, and a score of 6 or less was indicative of dementia.