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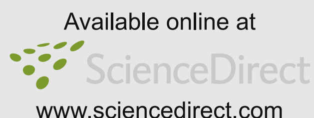

The same patient in various European countries

Hip fracture management and outcomes in Spain

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ABSTRACT

Background. – Hip fracture (HF) is associated with high mortality and disability rates in the elderly over the world. The aim of this study is to describe how a patient with this condition will usually be managed in Spain.
Methods. – A general description of the most frequent practices in Spain in the treatment of HF in the elderly is performed. The organization of the Ortho-Geriatric Unit in the Hospital General Universitario "Gregorio Marañón" in Madrid is described. A brief revision of cross-nationally analysis of costs is presented.
Results. – Many differences are seen in HF management between Autonomous Regions. The annual incidence of HF in the elderly is 511 per 100 000. Mean length of stay in the acute-care hospital is 15 days with a crude rate of in-hospital mortality of 5.3%. The model of care differs among hospitals, from consulting a geriatrician to the development of Ortho-Geriatric Units. The Ortho-Geriatric Unit in the "Gregorio Marañón" Hospital, with 500 patients admitted each year, includes the standardized treatment of the acute and rehabilitation phase and after-discharge outcomes and the result is a reduction in the in-hospital mortality rate or major complications.
Conclusions. – HF management in Spain is very heterogeneous because of our regional-based Health Care System. Probably, Ortho-Geriatric Units will be implemented in the future in many hospitals in Spain. To standardize the process of care in such units, by following international guidelines, will let us make comparisons between hospitals with similar characteristics.
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Hip fracture represents an important clinical problem over the world and is associated with high mortality and disability rates. Only 30% of older people who survive a hip fracture return to their previous level of independence, 50% require long-term help with routine activities and cannot walk unaided and 25% require nursing home care [1].

In Spain, the National Health Service is transferred to the regional governments, so the care of old people with hip fracture may change from one region to another.

In our country the annual incidence of hip fracture in the elderly is 511 per 100 000, with more than 35 000 cases every year [2]. Most of them are assisted in public hospitals and most of them are operated. The length of stay in the acute-care hospital is 15 days on average (range: 10.9–19.8) with a crude rate of in-hospital mortality of 5.3% (range: 1.8–7.6%). However, the management is heterogeneous, with important differences between hospitals, and there is not a National Registry of all the process, so we will present our experience and our knowledge of the most frequent practices in our country.

Ortho-Geriatric Units are emerging in Spain but currently there are only three units in public general hospitals in our country: Hospital General Universitario "Gregorio Marañón" and Hospital Universitario "La Paz", both in Madrid and the unit of the Hospital Monte Naranco in Asturias. There are many other transitional models of care in Spain, from consulting a geriatrician or an internist when medical problems appear to more organized ways of cooperation between specialties [3].

The Hospital General Universitario "Gregorio Marañón" is a public hospital of third level, and is the reference hospital for an area of near 450 000 inhabitants, 16% of them are 65 years old or older. The hospital has approximately 1600 beds and has an important Orthopedic Department, with hospitalization available for more than 100 patients.

In 2000 the Orthopedic and Geriatric Departments of the Hospital General Universitario "Gregorio Marañón" in Madrid, developed the first Ortho-Geriatric Unit in Spain, with an intervention only during the acute phase of the process. In 2005 a rehabilitation ward with a multidisciplinary team was added. This multidisciplinary unit manages the complex treatment of all the patients over 64 years of age, admitted to the hospital with a

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Table 1
Characteristics of 1638 patients with a hip fracture assisted in the Ortho-Geriatric Unit of the Hospital General Universitario "Gregorio Marañón", from 2004 to 2008 [7].

Age (years) mean (range)	83.5 (65–104)
Age ≥ 80 years (%)	70
Male (%)	18.4
Dementia (%)	30.5
Nursing home placement (%)	19.8
Number or Basic-ADL performed independently (mean ± SD)	3.9 ± 2.1
Ambulation independent (FAC 4-5) (%)	80
Osteoporosis treatment (%)	8
Previous hip fracture (%)	11.3
Extracapsular hip fracture (%)	56
ASA score III-IV (%)	52
Weight-bearing no authorized (%)	9
Delirium (%)	32.4
Pneumonia (%)	5.4
In-hospital mortality (%)	5.4
In-hospital rehabilitation (%)	63

hip fracture. This model includes the treatment of the whole process of care: acute phase, rehabilitation phase and after-discharge outcomes. Between 400 and 600 patients are admitted each year to this unit. Some demographical and clinical characteristics of our patients are shown in Table 1. The most important results of this cooperation are: a reduction in the in-hospital mortality rate or major complications, a partial increase in functional recovery at 3 months, a reduction of length of stay and an increase in the number of patients transferred to a rehabilitation facility [4,5].

The components of the multidisciplinary team are: a geriatrician, an orthopedic surgeon, a specialized nurse and a social worker. They take care of all the hip fracture patients since the first day of admission and during all the stay in the Ortho-Geriatric Unit. There is an initial assessment by the geriatric team to identify medical, psychosocial or functional problems and to elaborate a comprehensive therapeutic plan. The geriatrician is responsible of daily medical attention, preventing, if possible, and treating all the medical complications [4]. A Hip Fracture Clinical Pathway is now in the process of developing in our hospital, to reach the higher level of standardization and make a quality improvement in our proceedings of care, as it is recommended [6].

1. Treatment of hip fracture in the elderly in the Hospital General Universitario "Gregorio Marañón". Acute phase

Mrs. B. will spend some hours (6 on average in a public hospital of a big city) in the orthopedic area at the emergency room where a global medical assessment, pre-operative analyses, hip and chest x-radiology will be made. Pain relief treatment starts in the emergency room. Skin traction is not used in femoral neck fractures.

The patient will be transferred to the ward, where she will receive a complete geriatric assessment (this is a routine only in around 25% of the hospitals) and the pre-operative visit of the anaesthetist.

Timing to surgery is one of the aspects with higher variability between hospitals in our country. Emergency surgical procedures are very infrequent. Less than 25% of the patients are operated in the first 24 h. In our own registry of 2280 hip fracture patients from year 2003 to 2008, mean time to surgery was 81 ± 63 h, with 45% of the patients operated in less than 48 h. Main reasons for delay over 48 h were not related with the patient but administrative reasons (lack of operating room or surgery plan), only 11% were delayed because of a medical reason and 16% because of the presence of antiplatelet treatment. When the patient is under aspirin or dypiridamole treatment, the surgery is not delayed, but when the patient is under clopidogrel the surgery is delayed 5 to 7 days.

Venous thromboembolism prophylaxis is started in the first 24 h on admission, before surgery, with low molecular weight heparin. Antibiotic per-operatory prophylaxis is used in all the patients.

Mrs. B will be admitted to receive surgery. Less than 4% of the patients are excluded for surgery, even if they did not have independent ambulation previously. Main reason to be excluded is the complete immobility before the fracture, being the patient in bed almost all the day, frequently in the context of a severe dementia. Undisplaced intracapsular fractures, that some years ago were treated in a conservative way, are nowadays operated. There is a small group of patients admitted to be operated, whose surgery is delayed because of a co-morbid acute severe illness, but eventually results in death before surgery.

Mrs. B will receive surgery the third to forth day after admission under spinal anesthesia and would probably be corrected with hemiarthroplasty using Austin Moore prosthesis, probably cemented.

The standard surgical procedure for intracapsular fractures is hemiarthroplasty. The hemiarthroplasty most commonly used is unipolar (the Austin Moore type is the commonest in our hospital, followed by the Thompson model). The bipolar implant is used in about 30% of all the hemiarthroplasties (Exeter and Summit models are the most frequent), in younger and more active patients. Total hip replacement is used only in cases of severe osteoarthritis, in patients with mobility at least moderate, and a reasonable life expectancy.

Intertrochanteric and subtrochanteric fractures are corrected with intramedullar devices being the Gamma nail the most frequently used. In some cases of subtrochanteric fractures, the use of distal screws, to fix the intramedullar device, is necessary. Undisplaced intracapsular fractures are corrected with cannulated hip screws. In our own cohort of 2280 hip fractures, intramedullar devices (Gamma nail) were used in 57% of the cases, hemiarthroplasty in 36%, total hip replacement in 1% and cannulated hip screws in 4% of the cases. Ninety-five percent of patients were operated with spinal anaesthesia.

The first day after surgery she will start mobilization in bed and the second day she will start walking weight bearing on the injured leg, with help.

In the acute phase, special attention is given to prevent and treat the possible medical complications such as pain, delirium, urinary retention, constipation, pressure sores, anemia, malnutrition or infectious and cardiovascular events. If there are not medical complications, she will be transferred to the rehabilitation facility, located in a different building from the acute care hospital, 5 to 7 days after surgery.

In Spain, in-hospital mortality of hip fracture patients is approximately 5.3%. As the process of care is very heterogeneous in our country, there is a lot of variability in the crude mortality rates between Autonomous Regions, from 1.8% in Navarra to 7.6% in Aragón (year 2000–2002) [2]. A 5.4% of in-hospital mortality in our hospital was found in a previous study [7].

2. Treatment of hip fracture in the elderly in the Hospital General Universitario "Gregorio Marañón". Rehabilitation phase

After the acute phase, the geriatrician and the orthopaedic surgeon will decide if Mrs. B. will be transferred to the rehabilitation unit. In our setting, 60 percent of all patients admitted to the hip fracture acute care unit are transferred to a 14-bed in-hospital rehabilitation unit.

In this unit, the geriatrician and the physiatrist will evaluate the patient and decide the goals of treatment. The decision is based on the patient's potential of functional recovery. In this case seems to be very good because Mrs. B was previously near completely

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