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The same patient in various European countries

Hip fracture management and outcomes in Italy

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ABSTRACT

Hip fractures are a major health care problem in Italy since more than 90,000 such fractures per year occur among elderly people. Nowadays, in several boroughs, orthopaedic wards are being restructured, overcoming the traditional model of care towards heterogeneous liaison models between the orthopaedic staff and medical-geriatric staff. However, the care pathway changes considerably from one area to another of the country. Wide differences in the choice of treatment, surgical delays, length of in-hospital stay and the availability of rehabilitation services and intermediate care in the sub-acute period have been reported over the country. The authors described the orthogeriatric model of Arcispedale Santa Maria Nuova (ASMN) Hospital, the main hospital of the province of Reggio Emilia (Emilia-Romagna region), implemented in 2007 for all patients aged 75 years and older admitted with a hip fracture. During hospital stay each patient is comanaged by an orthopedic surgeon and a geriatrician with different responsibility and using a number of evidence-based protocols and standardized procedures. Even without dedicated trauma theatre, comparing data before and after the implementation of the Ortho-Geriatric model, a 50% reduction of waiting time to surgery was observed and the mean hospital stay decreased about 5 days. The Ortho-Geriatric approach should include all those strategies and interventions that have been shown to improve outcomes in well-designed and strictly evidence-based studies and the ASMN model need to be improved in several critical aspects such as standardized approaches in the management of the patients with very high level of comorbidity in the preoperative phase and the coordination of all the medical staff in the presurgical period.

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Hip fractures (HF) are a major health care problem in developed countries, being associated with significant mortality, disability and reduced quality of life. In Italy, more than 90,000 such fractures occurred among people older than 65 years in 2005, with a 28% increase over 6 years [1].

As the Italian Health Service is organised on a regional basis, the care pathway of HF older adults may considerably change from one area to another. Indeed, the Italian Department of Health outlines the national frame of priorities and interventions, and ensures similar standard of care in the different regions, in order to avoid inequities in the access to health care resources.

Nowadays, in several boroughs, orthopaedic wards are being restructured, overcoming the traditional model of care towards heterogeneous liaison models between the orthopaedic staff and medical-geriatric staff [2,3]. Long lasting surgical delays and

extended immobilizations after surgery are now rarely observed, even if the profile of care varies across hospitals. In a recent survey, undertaken in nine centres from different Italian regions, the proportion of hip fractured patients undergoing surgery after 48 h ranged from 3 to 94%, with an average of more than 60% [4]. Even the choice of conservative treatment seems to vary among regions. Usually, the conservative approach is reserved to less than 10% of patients, but in some areas it is still the choice in up to the 20% of HF elderly, particularly in patients older than 85 years [5].

The Arcispedale Santa Maria Nuova (ASMN) Hospital is the main hospital of the province of Reggio Emilia (Emilia-Romagna region), with a catchment area of approximately 300,000 inhabitants. About 270–300 patients are admitted to the ASMN Hospital each year, with an osteoporotic fracture of the proximal femur. The number of surgical procedures (elective or emergency) performed every year by the Orthopedic staff is on average 1300.

In 2007, in recognition of the special needs of elderly people experiencing a fragility fracture of the proximal femur, a co-managed ortho-geriatric project was implemented, for all patients aged 75 years and older admitted with a hip fracture.

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1. The ortho-geriatric model of Arcispedale Santa Maria Nuova hospital

All the elderly patients with a hip fracture are firstly evaluated and admitted through the emergency department of the ASMN hospital, and thereafter are transferred to the orthopedic ward. During hospital stay each patient is comanaged by an orthopedic surgeon and a geriatrician. The ortho-geriatric team also includes a physiatrist, a nurse trained in the care of older adults and a social worker. The team provides a comprehensive multidisciplinary evaluation of patients at the admission, and has daily joint meetings to discuss problems and patients' daily schedule. The orthopaedic surgeon is responsible for fracture management and operating decisions, while the geriatrician visits the patients daily and is responsible for medical care. The geriatrician has a key role in optimizing and stabilizing the health status preoperatively, and coordinates the timing of surgery with the orthopaedic surgeon, in order to achieve the goal of surgical repair within 48 h from admission. Surgery is usually performed from Monday to Friday in daylight hours and sometimes Saturday morning. However, the ASMN hospital has no dedicated trauma theatres, and the same operating rooms serve elective and emergency orthopaedic surgical procedures. Thus, surgical delays may be related, not only to the medical problems of the patient, but even to the organization or surgery schedule. Before the implementation of the ortho-geriatric model, the time to surgery (from admission) was of about 4.9 days. Actually, the mean waiting time to surgery is 2.4 days, representing a significant improvement, but only 50% of the patients are operated within 48 h from admission with a small difference between stable and unstable patients at the admission. It is likely that a greater priority given to patients with hip fracture could further reduce the time to surgery, therefore improving short- and long-term outcomes.

Preoperative clinical abnormalities that may justify a surgical delay are discussed among the team including the anaesthetist,

taking into account the available guidelines [6], with the aim of minimize surgical delays. If compelled by the clinical conditions, a non-invasive cardiac test or the introduction of a temporary pacemaker may be performed within 24 h from admission.

In Table 1, are shown the surgical and in-hospital characteristics of patients managed by the ASMN ortho-geriatric team during the year 2008. The vast majority of hip fracture patients underwent surgical procedures. Conservative treatments were reserved only to instable patients with very poor life expectancy or to bed bound patients with an undisplaced intracapsular fracture. In 2008, less than 1% was treated conservatively.

A number of evidence-based protocols and standardized orders have been implemented, including pain relief, reversal of warfarin anticoagulation and bridging to low-molecular-weight heparin, fluid and electrolyte balance, oxygen therapy, urinary catheterization and prevention of pressure ulcers. All patients receive pharmacological thromboprophylaxis and antibiotic preoperative prophylaxis. Specific attention is given to the nutritional status, as the nutritional assessment is a part of early and daily comprehensive evaluation of the patients. A nutritional support is ensured to all patients at risk or already malnourished, even if a formal protocol has not been yet implemented. Particularly, nurses record daily dietary intake and offer two caloric supplement drinks per day to all the patients. A short education program, including the management of delirium and behavioural symptoms in cognitive impaired patients, has been provided to all the members of staff. However, the environmental features of the ASMN orthopedic unit do not differ from other hospital wards, and are not appropriate for the management of a frail older adult with a hip fracture and delirium (e.g., very few rooms with a single bed).

The rehabilitation began during hospital stay following the principle that patients should get out of bed and should recover ambulation as quick as possible [3]. A physiatrist plans the schedule and the intensity of physical therapy, generally dedicating longer time to patients in the first postoperative days. Except for the patients for which a restricted weight-bearing order due to fixation instability is prescribed by the surgeon (less than 10%), on the first post-operative day, all the subjects are mobilized out of bed, are allowed to bear weight as tolerated, and start on ambulation training, irrespective of the surgical treatment. More than a half of previous ambulating patients are able to maintain the standing position on the first post-operative day and more than 80% ambulate with assistance within 3 days.

Most of the patients followed by the ortho-geriatric team of the ASMN hospital are frail and present several co-morbid conditions, with more than 60% of them suffering of some mental impairment or manifest dementia. Almost the half of them experiences some medical complication in the early postoperative phase, including minor disorders such as mild urinary infections, electrolyte imbalances or dehydration. Fifteen percent develops major cardiovascular events such as heart failure, myocardial infarction or stroke and about 7% experiences a chest infection. The geriatrician has the main task of preventing such postoperative complications, and, when they develop, provides medical care together with other specialists (when needed), even if subspecialty consultations are minimized.

2. Discharge planning, sub-acute and rehabilitative care

The length of in-hospital stay (Table 1) in our population demonstrated to be, to some extent, longer than expected on the basis of available literature, but similar to previous reports from other Italian regions [3,7,8]. However, comparing the mean in-hospital stay before and after the implementation of the ortho-geriatric model, the hospitalization time results reduced of about 5 days. Indeed, the reasons of this longer hospital stay may be

Table 1

Baseline and in-hospital characteristics of patients admitted with a hip fracture and managed by the Arcispedale Santa Maria Nuova Ortho-Geriatric team in 2008 (Italy).

Number ^a	268
Age (mean years \pm SD)	85.5 \pm 5.7
Male (%)	22.3
Living in institution (%)	9.7
Fracture type (%)	
Intracapsular	42.5
Trochanteric	52.2
Subtrochanteric	5.2
Conservative treatment (%)	0.7
Time to surgery (mean days \pm SD)	2.7 \pm 2.2
Clinically stable patients ^b	2.5 \pm 1.1
Clinically instable patients ^b	3.1 \pm 3.6
Spinal/epidural anesthesia (%)	96
Type of surgical procedure (%)	
Hemiarthroplasty	41.7
Total hip arthroplasty	1.8
Sliding hip screw	50.5
Others	6.0
Restricted or no weight bearing after surgery (%)	7.5
In-hospital stay (mean days \pm SD)	14.4 \pm 6.1
In-hospital mortality (%) ^c	7.1
30 days mortality (%)	8.2

^a The figure represents all the patients consecutively admitted within 1 ear, with a hip fracture and aged 75 or older. All the data, including mortality, refers to this group of patients.

^b Clinical severity on admission was measured by the acute physiology score (APS) of the APACHE II scale. Patients with an APS score greater than 3 were considered clinically instable.

^c In-hospital mortality for the whole group of hip fractured patients (including those less than 75) was 6.2%.

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