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Research Article

Femoral Neck Fracture in Elderly: Management and Prevention

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Abstract

Background: Hip fractures in the elderly patients are common injuries because of multiple risk factors in this population such as osteoporosis, comorbidities, vision problems and muscular weakness.

Objective: To analyze epidemiology and particularity in the treatment of femoral neck fracture of elderly patients.

Patients and Methods: We present a retrospective study concerning nonpathological femoral neck fracture in elderly patients managed between January 2016 and January 2019.

Results: This study included 98 patients with a mean age of 80 years (range, 65 - 90 years). The distribution showed 59% of females and 41% of males, about 50% of patient had FN fracture grade IV and more than 70% of our treatment was cemented hemiarthroplasties, followed by total hip arthroplasty and open reduction internal fixation, treatment was selected based on many criteria essentially the age, autonomy and morbidities.

Conclusion: Femoral neck fracture in elderly is a real problem, and expected to grow in the future, prevention is essential to avoid this injury and its consequences on the patient's social life an economic cost.

Keywords: *Arthroplasty; Elderly; Hip Fractures; Mortality*

Introduction

Hip fractures are the most frequent fracture in elderly patients after that of distal radius, with an incidence of approximatively 300,000 new cases per year in the United States, and its incidence is projected to increase in the future related to the old age of population [1].

It has a high mortality rate of 25% at one year [2]. With substantial repercussions such as functional, economic and social consequences.

Prevention and treatment of risk factors are important to decline femoral neck fracture rates in patients belongs to this category of age.

Objective of the Study

The objective of the present study was to analyze the epidemiologic profile of hip fractures in elderly patients, there prevention and treatment.

Patients and Methods

We report the results of retrospective study concerning geriatric patients more than 65 years old, managed for a femoral neck fracture in our orthopaedic department between January 2016 and January 2019.

Pathological fractures and fractures with preexisting osteosynthesis material were excluded. We have registered 98 patients, among them 34 patients had between 65 and 75-year-old while 64 patients had more than 75 years with a mean age of 80 years (range, 65 - 90 years). There was 58 females and 40 males, the right side was frequently fractured in 60 cases. Concerning medical history 20 patients had cardiovascular disease, 35 had a non-insulin dependent diabetes, four patients were known to have Parkinson disease, one had epilepsy and the one others Alzheimer dementia, whereas no medical past was noted in the rest of the patients. Bone density and quality was estimated on the pelvic X-rays, most important number of our patients had osteoporosis essentially in women.

Results

Front hip and pelvic radiographs were realized systematically in all patients, fracture was sorted following Garden classification; there was 12 patients Garden I, 15 Garden II, 25 Garden III and 46 patient Garden IV (Figure 1).

Figure 1: *X-rays showing femoral neck fracture Garden IV (arrow).*

Only 2 patients (2,04%) were managed without operation because of inoperability, whereas the majority had surgery in the form of hemiarthroplasty (Figure 2) in 76 cases (77,5%) concerning elderly patients over 70 years old, however total hip arthroplasty was implanted in 14 patients (14,2%) in cases of low elderly patients between 65 and 70 years or patients who had Parkinson and epileptic diseases to avoid dislocations, furthermore, there was 5 cases of cannulated screw fixation (5%) and 3 cases of dynamic hip screw fixation (3%) related to garden I or II femoral neck fracture.

Figure 2: *X-rays showing hemiarthroplasty of femoral neck fracture.*

The average time of the intervention was from 24 hours to 5 days. The intervention was performed 70 times under general anesthesia, 20 times under spinal anesthesia and peridural anesthesia in the rest of the patients. We tried to reduce duration of hospitalization to promote rapid social reintegration, our average time of hospitalization was 2 weeks (range: 1 to 8). All the fourteen total hip arthroplasties were implanted via Moor approach as like the major hemiarthroplasties (Figure 3); however, some hemiarthroplasties (15 patients) were operated through Hardinge approach.

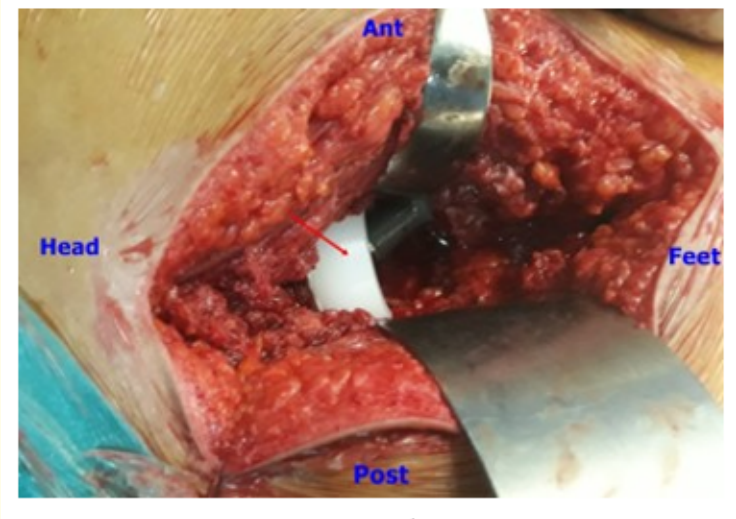

Figure 3: *Operative view showing Moore approach of the hip with prosthesis in place (arrow).*

All patients were reviewed with a mean follow-up of 12 months. Patient outcomes were evaluated based on physical examination and the Harris Hip Score; the mean score was 83 (range 40 - 90). Despite secondary complications such as post-operative dislocation in one patient with hemiarthroplasty operated via postero-lateral approach, septic complication in one other patient suppressed by antibiotic treatment, urinary complication in a single patient and a case of postoperative hematoma whose development was favorable under drainage. Functional result was evaluated according to Harris Hip Score, they were excellent and good in 85%, fair and poor in 15% of the cases.

Discussion

Hip fractures in elderly patients are universal public health problem, and its frequency is projected to increase in the future due to the ageing population and improvement in living quality and working conditions. United States have the highest incidence of hip fracture rates worldwide [1-3].

These fractures are the most expensive fracture to treat on per-person basis, consequently, they have an important economic cost to the public health system. They are most of the time managed surgically allowing earlier mobilization and autonomy ensuring successful return home [4].

In low elderly patients (<70 years) with femoral neck fracture classed Garden I or II, closed reduction and internal fixation (CRIF) is routinely performed, while other types are generally operated via hip arthroplasty, either by hemiarthroplasty (HA) or total hip arthroplasty (THA), the use of cements for implant fixation depend on osseous density and surgeon preferences. However, in height elderly patients (> 70 years) they are treated exclusively through arthroplasty most often a cemented hemiarthroplasty. In contrast, some surgeons especially in low developed countries treat older patients similar to younger ones by CRIF using cannulated screws or devices like the sliding hip screw. Hence, the optimal treatment of this patient population is still under debate [5].

The mortality rate following hip fractures in this population was high in several studies. it is estimated between 25 and 30% at one year especially in the first 6 months [6,7]. This mortality is higher in men even if risk factors of hip fracture are higher in women because of the osteoporosis [8,9]. In our study, no difference was found between gender mortality.

Risk factors of mortality are related to existence of comorbidity such as pulmonary or cardiac diseases, low activity level before surgery, and patient with higher American Society of Anesthesiologists score (ASA) of 3 or 4 [10]. Furthermore, delayed time of surgery worsen the prognosis, literature suggests that lower mortality and postoperative complication rates are obtained when treatment is provided within the first 24 - 72h of fracture. There is consensus that an early surgery is beneficial, and it is recommended that surgery should be performed as early as possible [11].

Postoperative complications increase mortality rate by acute kidney failure, surgical site infection, deep venous thrombosis (DVT), and pulmonary embolism. the most common postoperative complication in our study was pulmonary embolism.

Prevention of femoral neck fracture in elderly and osteoporotic patients is very important it can be primary to avoid a first femoral neck fracture or secondary avoiding a second contralateral hip fracture. However, the incidence of new contralateral hip fractures in elderly osteoporotic patients ranges from 7 to 12% within 2 years after the first fracture.

Primary prevention aims to reduce the risk of fall in houses essentially bathrooms, preventing osteoporosis progress essentially in women, and correct all visual problems. With all these prevention programs, there would be potential saving of lives, suffering, and economic costs [12].

Secondary prevention can be divided in pharmacologic therapy based on the prescription of anti-osteoporotic drugs and non-pharmacological therapy which is based on modification of environmental risk factors, on a healthy diet with daily supplements of calcium and vitamin D and calcium and on the use of hip protectors [13].

Recently a new form of prevention is surgical prevention increasing the resistance of the femoral neck by percutaneous insertion of stainless-steel nails under local anesthesia or by Gamma nail, also some authors use injection of poly-methyl-methacrylate inside osteoporotic femoral neck [14,15].

Conclusion

Femoral neck fractures in geriatric populations are one of the major causes of morbidity and mortality worldwide. Therefore, they must be surgically corrected as quickly as possible. Prevention is very important to decrease risks of first or second fracture in elderly patients.

Conflict of Interest

Nothing to report.

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