



The Timing of Surgery for Hip Fracture: the Case for Early Repair

Motti Klein MD¹ and Gad J. Velan MD²

¹Division of Anesthesiology and Critical Care and ²Department of Orthopedic Surgery, Soroka Medical Center and Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer Sheva, Israel

Key words: hip fracture, elderly, timing of surgery, femoral neck fracture, prior medical stabilization

IMAJ 2006;8:661

Hip fractures are an important cause of morbidity and mortality in the elderly [1]. Elderly individuals fall more frequently than young people and are more susceptible to hip fracture after minor trauma such as falling while standing up or getting out of bed [2,3]. This is because they have weaker reflexes, which makes it difficult for them to protect themselves from impact, and weak bones due to osteoporosis. The worldwide incidence of hip fractures in the elderly in the 1990s was about 1.3 million cases per year [4], occurring in 340,000 patients in the United States [5] and accounting for about \$14 billion in annual healthcare expenses [6].

Hip fracture is associated with prolonged confinement to bed. Theoretically, a delay in surgical repair and subsequent mobilization can increase the risk of bed rest-related complications such as thromboembolism, urinary tract infection, atelectasis, and pressure ulcer [7].

Surgical repair is associated with improved quality of life when performed within 6 hours of the fracture in stable patients, or within 24 hours in patients requiring medical stabilization [8]. There is a lower rate of vascular necrosis when reduction and internal fixation of sub-capital hip fracture is performed within 12 hours of the event in patients 60 years old or more [9].

Hip fracture in the elderly is commonly associated with delirium, with incidence rates as high as 61% [10]. Delirium is directly related to a waiting time of more than 48 hours for surgery and is an important source of complications and mortality in elderly hip fracture patients [11]. Patients with delirium after fracture of the femoral neck have more prolonged hospitalization and poorer functional recovery. Fewer patients with delirium return to their previous independent living arrangements [12] than those without. Moreover, postoperative delirium *per se* is associated with the development of dementia and increased mortality in elderly patients who were not delirious prior to hospitalization for treatment of hip fracture [13].

Conservative treatment of hip fractures in the elderly should not be considered an alternative to surgical fixation. The overall immediate postoperative mortality in surgically treated patients is 1.6% compared to 8.9% in patients treated conservatively, despite the high percentage of chronic disease (71.2%) in patients who underwent surgical repair [14].

While many authorities view early surgical repair of femoral neck fractures as an important determinant of reduced mortality,

Table 1. American Society of Anesthesiologists classification

ASA class	Disease characteristics
1	Healthy patient, no medical problem
2	Mild systemic disease
3	Severe systemic disease, but not incapacitating
4	Severe systemic disease that is a constant threat to life
5	Moribund, not expected to live 24 hours irrespective of operation

An "e" is added to the ASA class number to designate an emergency operation.

Organ donors are usually designated as Class 6.

the exact timing for surgery is not clear. Bredahl et al. [15] found a significant decrease in mortality when surgical repair of femoral neck fractures was performed within 12 hours of admission. They suggested that a fractured femoral neck in an otherwise fit elderly patient should be regarded as a surgical emergency.

Hamlet et al. [16] found that the relative risk for death was 4.5 times greater if surgery was delayed by 24 hours from admission in patients classified as ASA I or II in accordance with the American Society of Anesthesiologists classification system [Table 1]. They also reported that ASA classification is a good predictor of mortality and that patients who underwent surgery within 24 hours of admission had a lower mortality rate than patients who underwent surgery at a later time, regardless of their preoperative ASA classification [16].

Casaleto and Gatt [17] showed that 1 year survival is better when medically fit patients undergo surgery on the day of admission. This advantage is more pronounced in patients over the age of 80. McGuire and associates [18] analyzed 18,209 Medicare recipients aged 65 or older who had surgical treatment for a closed hip fracture. Patients for whom the delay between admission and surgery was 2 days or more had a 17% higher chance of dying by day 30. Using instrumental variables analysis, they found a similar 15% increased risk of mortality in patients with delays of 2 or more days until surgery. Based on these results, they suggest that a delay of 2 or more days significantly increases the mortality rate, but delaying surgery for 1 day after admission does not influence the 30 day mortality rate. Other authors also accept this "magic number" [19,20].

In conclusion, there are sufficient data in the literature to justify surgery within 48 hours of admission for femoral neck fractures. In medically fit patients, surgery should be performed on the day of admission.