

One-year outcome of hip fracture patients admitted to a Singapore hospital: quality of life post-treatment

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ABSTRACT

Introduction: A prospective and consecutive documentation of hip fracture care was performed. Outcomes, including quality of life, mortality, complication rates, were documented; and mobility, ambulatory status, freedom from pain and activities of daily living one year before and after treatment, were compared.

Methods: We prospectively reviewed the medical records of 70 consecutive patients admitted to the Singapore General Hospital, following either a cervical or intertrochanteric femoral fracture from February 2004 to May 2004. Patients' progress was reviewed at one year post-treatment, and the EuroQOL was used to quantify the patients' quality of life. Description of any problems encountered was also recorded.

Results: The follow-up rate at one year for the 70 patients described in this report was 98.6 percent. Mortality rate was 27.1 percent. Early complication rate was 5.7 percent. Outcome was satisfactory in all but two patients. Mortality for surgically-operated patients was 25.4 percent. About a quarter of the patients had excellent ambulatory status and 40.0 percent were able to walk independently. Eight percent suffered from falls after discharge, but no recurrence of hip fracture was recorded. None was re-admitted under suspicion of hip fracture. The average self-scoring system (EuroQOL) yielded an average of 66.6 out of 100.

Conclusion: Hip fractures can be treated surgically with good results and low early complication rates, without drastically affecting patients' quality of life.

Keywords: fracture outcome, hip fracture, post-treatment outcome, quality of life

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INTRODUCTION

Hip fracture is a common serious injury affecting mainly elderly patients. The incidence of hip fractures increases with increasing age.⁽¹⁾ Generally, in women, the lifetime risk of hip fracture is about 18%, and in men, 6%.⁽²⁾ The age-stratified incidence has increased in some societies during the past 25 years, and incidence of fracture in each age group may have increased.⁽³⁾ There is a 2.5 fold increase, both in women and men in the over 75-year age group.⁽⁴⁾ There is an increase in mortality rate of patients who suffer from hip fractures.⁽⁵⁾ 20% of patients die in the first year after a hip fracture,⁽⁶⁾ and one in four elderly people require a higher level of long-term care after a fracture.^(6,7) Mortality and morbidity rates aside, hip fractures are costly and continue to generate significant costs throughout the one-year period after discharge.⁽⁸⁾ They demand considerable resources from our healthcare system.

METHODS

We prospectively studied 70 consecutive patients aged 55 years and older. We excluded those whose fractures were due to other pathological causes. Patients were admitted to the Singapore General Hospital following either a cervical (neck) or intertrochanteric femoral fracture. The study was conducted from late February to May 2004 over a three-month period. Informed consent was obtained. During their admittance, patients or their family members were interviewed to obtain baseline demographical information, history of comorbid illnesses, as well as information pertaining to the fracture. A year following admission, patients or their caregivers were interviewed again with regard to their quality of life, surgical procedures and outcomes, complications if any, mobility and ambulatory status, freedom from pain and level of activities of daily living. All radiographs of hip fractures for each patient was read by a member of the research team and classified into either a cervical or intertrochanteric femoral fracture. Post-surgery radiographs were reviewed to assess fracture

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condition and healing rate.

The EuroQOL was used as a yardstick for the assessment of quality of life. It comprised two parts: namely: EQ-5D descriptive system and the EQ-VAS. The EQ-5D required the respondent to indicate his/her state of health by ticking in the box, against the most appropriate statement in each dimension. The EQ-VAS offered a simple method for obtaining and scoring self-rating of current health status. It had endpoints of 100 (best imaginable health state) at the top and zero (worst imaginable health state) at the bottom. The respondent rated his/her current health status on the EQ-VAS by drawing a line from the box marked "your own health state today" to the appropriate point on the EQ-VAS.

RESULTS

The average age of our patients was 77.24 years ([70] n = 5,407) and this was comparable to the norm average age of 78 years.⁽⁹⁾ The average age of male patients was 77.20 years ([25] n = 1,930) and that of female patients 77.27 years ([45] n = 3,477). There were 45 females and 25 males (gender ratio of 2:1). Majority of the patients were Chinese (91.4%), followed by Indian (4.3%), Caucasian (2.9%) and lastly, Malay (1.4%). 44 patients received no education (62.9%) and the majority of these patients (30, 68.1%) did not carry out fall precautions. This was compared to the remaining 26 patients who received some form of education, and of which 53.8% of them carried out some form of fall precaution.

Most patients (92.9%) did not work. They were either retired (48.6%) or were housewives (44.3%). Most of our patients (80.0%) were elderly dependents. 17.1% were financially independent and 2.9% required social help. Most patients (70.0%) did not need to climb stairs to reach their homes. Hence, their movement in and out of their residence during rehabilitation (if they decided to return home) were not hindered by stairs. As our pool of patients was elderly, most of them suffered from at least one comorbidity (Table I). A sizeable fraction of hip fracture patients suffered from diabetes mellitus (27.3%), as compared to the general elderly population, where only 5.8% are diabetics,⁽¹⁰⁾ suggesting that diabetes mellitus may be a risk factor for hip fracture.⁽¹¹⁾ A large majority of our patients (87.1%) suffered from visual impairment.

Nine patients (12.9%) had previous hip fractures, of which eight were female (17.8%) and one was male (4.0%). 66 patients (94.3%) attributed their fracture to falls. Out of the remaining four patients who did not attribute their fracture to a fall, one had dementia and was unsure how she suffered from the fracture. Two others were admitted to hospital only after they felt pain in their hip area. They had no idea how their fractures came about. The last patient suffered from a fracture after she

was violently attacked by a robber but was too shocked to know what had happened then. Out of the 66 patients who fell, 46 (69.7%) fell at home. From our study results, we conclude that the major cause of hip fractures was due to falls, and supporting the intervention of falls was crucial to bring down the incidence of hip fractures.⁽¹²⁾ Contrary to common perception, the toilet is not the commonest area where falls occur (Table II). The majority of our patients fell before going to bed or after they had woken up in the bedroom.

Table I. List of coexisting illness(es).

Coexisting illness	No. of patients (%)
Hypertension	37 (52.9)
Cardiovascular problems	23 (32.9)
Diabetes mellitus	23 (32.9)
Dementia	7 (10.0)
Visual impairment	61 (87.1)
Renal problems	12 (17.1)

Table II. Location of fall.

Location	No. of patients (%)
Toilet	4 (8.7)
Bedroom	16 (34.8)
Living room	14 (30.4)
Kitchen	8 (17.4)
Public toilet	2 (4.3)
Others	1 (2.2)
Unsure	1 (2.2)
Total	46 (100)

Table III. Types of fracture.

Types of fracture	No. of patients (%)
NOF 1	10 (14.3)
NOF 2	6 (8.6)
NOF 3	20 (28.6)
NOF 4	11 (15.7)
IT 1	0
IT 2	10 (14.3)
IT 3	8 (11.4)
IT 4	5 (7.1)

IT: intertrochanteric fracture; NOF: neck of femur fracture

Most of our patients suffered from cervical fractures (67.2%) as compared to intertrochanteric fractures (32.8%) (Table III). Out of 70 patients, 69 (98.6%) were scheduled for surgery, while one was treated conservatively. However, two patients had their surgeries postponed due to renal problems and died before treatment. With the exception of very advanced-stage diseases, surgery is still the treatment of choice for patients with multiple comorbidities. Mortality rate for this group of patients at one year after surgery

was 24.6%. Bipolar hemiarthroplasties make up 60% of the total treatment, dynamic hip screws 30%, cancellous screws 7%, and intermedullary rods 3%. It is popularly thought that hip fracture patients should be operated within 24 hours of sustaining the injury. However, the overall mortality rate for our patients was not significantly increased, although the average time from admission to surgery for our patients was 3.1 days.

19 patients died, while one was uncontactable. The mortality rate after one year stands at 27.1%. Out of the 19 patients who died, 11 were female and eight were male. The calculated mortality rate for females was 24.4% whereas for males, it was 32.0%. Of those who died, 57.9% suffered from neck of femur fractures, while the remaining 42.1% suffered from intertrochanteric fractures. Two patients (2.9%) had their surgeries postponed due to advanced renal failure and died before surgery was carried out. The mortality for surgically-operated patients was 25.4%. Early complication rate was low, at 5.7%. Hence, hip fracture patients are advised to go for the surgery, if necessary, as the success rate is good. Four patients suffered from complications (5.7%), half of which had postoperative infections, resulting in one patient having to remove his surgical implant. One suffered from Steven-Johnson's disease but recovered well. The last of the four patients suffered a screw cut-out.

A fraction of patients recovered sufficiently to their previous ambulatory status (24.3%) and had unlimited ambulation. 33% of patients were community ambulant and 41.4% were home ambulant. One patient was uncontactable. 40% of our patients regained their independence. This figure is higher than the norm of 25% (Figs. 1 & 2). 57.1% of patients who were previously independently ambulant regained their previous ambulatory status. These are encouraging results because usually less than half of the study groups regain their prefracture status.^(13,14) However, one patient was bedridden. Four patients fell again after treatment. Out of the four of patients (5.7%) who fell, one fell more than twice. However, none of those who fell suffered from recurrent hip fractures. None of the falls were severe enough to warrant medical attention.

50 patients responded to the EuroQOL postoperatively. Half the respondents indicated that they had ambulatory problems, 42.0% had no problems, while 8.0% were confined to bed. As for self-care, 54.0% of patients encountered no problems, 28.0% had some problems and 18.0% required full assistance. The result for self-care was more than satisfactory.⁽¹⁵⁾ For activities of daily living, 38.0% had no problems, 26.0% had some problems, and 18.0% required full assistance in performing them. As for pain or discomfort, 44.0% indicated no pain or discomfort, 52.0% had some pain or

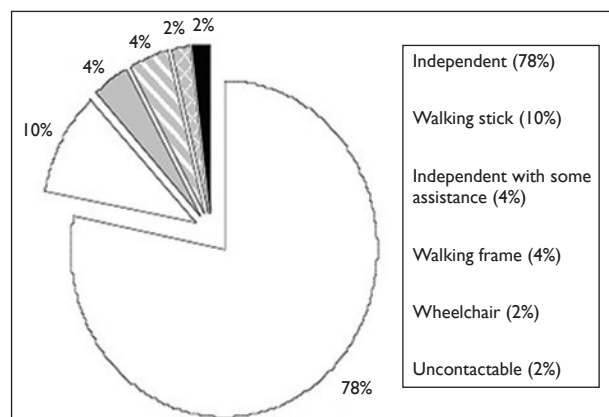


Fig.1 Prefracture ambulatory status of 70 patients.

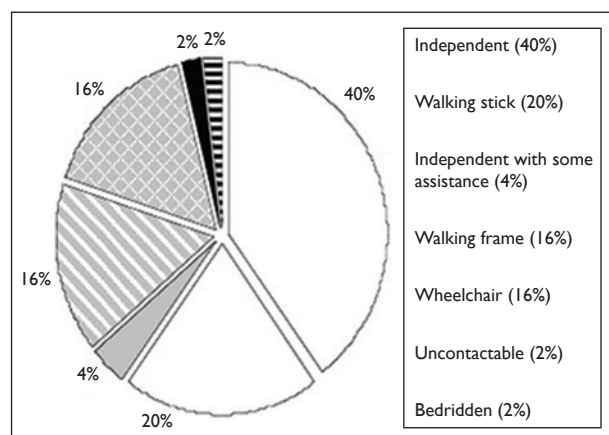


Fig.2 Current ambulatory status of 70 patients.

discomfort, 4.0% suffered from extreme pain or discomfort. Examination of their mental state revealed that more than half the respondents (58.0%) were not anxious or depressed. 34.0% were moderately anxious or depressed, and 8.0% were extremely anxious or depressed one year after their hip fracture.

Out of 50 respondents, three were incapable of self-evaluating their health status on the thermometer scale section of the EuroQOL. A mean score of 66.6/100 was generated from 47 patients. We looked at those with extremely low scores (40 and below) in an attempt to establish a relationship between the low scores and the patient's circumstances. There were four such patients. Their common complaint was the inability to ambulate independently. Two patients required painkillers to alleviate pain. Patients were asked to comment on their health in general in the open-ended questions segment of the questionnaire. Patients complained mostly about experiencing weird sensations, pain or numbness during walking. Another prevalent complaint was the inability to walk for long periods, as their legs were weak. A few suffered from aches not just in their knee joints, but also in the joints of their hands. Some expressed frustration at not being to walk as briskly and as long a distance as before. Unsteady gait was also one of their concerns.

DISCUSSION

No prospective study has been done on the quality of life of hip fracture patients postoperatively. This study can act as a pilot for the establishment of a more comprehensive study to examine the impact of hip fractures on the quality of life of patients. This study has a near excellent follow-up rate (only one patient was uncontactable) and this has allowed us to comment on patients' quality of life and to discuss the various factors crucial to hip fracture-mobility and ambulatory status.

The mortality rate (27.1%) of hip fracture patients one year postoperation corroborates with current statistics. We should, however, find ways to improve mortality rates. One way to do so would be to better manage the comorbidities of hip fracture patients.

Early complication rates for surgery were low at 5.7%. This also includes patients with multiple comorbidities. Hence, hip fractures can be treated surgically with good initial results. Mortality for surgically-operated patients is 25.4%, which is comparable to the norm. Mobility of patients one year post-surgery is more than satisfactory. Most hip fractures occur due to falls. Educating the elderly about taking necessary precautions against falling is important to preventing hip fractures. Awareness has to be raised, especially for the ageing population of Singapore. As the bedroom is the commonest location of falls at home, more must be done in the form of safety measures to ensure that this area of rest will not, ironically, contribute to hip fractures. A larger proportion of educated patients carried out fall precautions compared to those who were not educated. Scholastic education seems to be relevant to patients' fall education. Perhaps patients with a certain degree of education have a greater awareness of fall precautions. As a large fraction of our elderly are illiterate, educating the elderly and their caregivers about taking preventive measures to prevent falls is important.⁽¹²⁾

A large majority of our patients suffered from visual problems and this may indirectly contribute to the cause of hip fracture. It is found that the population attributable risk of hip fracture due to poor visual acuity was 40%.⁽¹⁵⁾ Thus, the risk of hip fracture may be decreased by improving visual acuity.⁽¹⁶⁾ The results generated from the EuroQOL showed that quality of life of hip fracture patients after one year was above average, contrary to some professional point of view that hip fractures are profound threats to quality of life.⁽¹⁷⁾ Of the patients

who were previously independently ambulatory, 57.1% regained their ability to walk independently. This figure is much higher than the norm. More than half are capable of self-care, hence decreasing the burden on their caregivers.

In conclusion, hip fractures can be treated surgically with good results and low early complication rates. The quality of life of hip fracture patients who undergo surgery is not as severely affected as compared to patients who would be rendered severely bed-bound had surgery not been offered. A limitation of this study design is that pre-fracture EuroQOL scores had not been obtained. It would have allowed a comparison of the quality of life of patients before and after their hip fractures. Nonetheless, this study has illustrated that post-fracture quality of life can be, contrary to common belief, above average.

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