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## Original Research Article

## Challenges in discharging elderly patients post hip fracture – Functional outcomes

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## ABSTRACT

The purpose of this study is to realize the challenges experienced by elderly patients with hip fracture and their caregivers after discharge. A total of 65 files of elderly hip fracture operated patients were assessed and out of them responses from 53 patients collected through telephonic conversation over a period of 3 weeks. The responses received from the patient and their attendants were evaluated using the EQ-5D quality of life tool and their challenges noted

**Background:** The most common fractures reported in the elderly are at the wrist, spine and hip. Hip fractures in elderly generally occur after a simple fall. If timely medical attention is not provided or appropriate care not taken the future of the patient after a hip fracture is certain – a dramatic reduction in the quality of life and possibly the beginning of the end of life. The purpose of this study is to evaluate the outcomes of elderly patients with hip fracture following surgery and the challenges they experienced after discharge from the hospital.

**Materials and Methods:** A total of 53 patients were selected for the study who underwent hip surgery at Indian Spinal Injuries Centre. This is a descriptive study carried over a period of 13 months from August 2019 to August 2020. EQ-5D is used to characterize current health status of the patients. It consists of five domains and a visual analogue score. Feedback was collected from the patients and their attendants over telephone with a minimum follow up of 3 months. VAS score was calculated for every patient individually. Collected data was entered in MS Excel sheet. Challenges faced by the patients and their caregivers were documented.

**Results:** Out of 53 patients, 12 had died (22.6%), 07 patients responded themselves to the call and 34 calls were responded by the care givers. Most of the patients had intertrochanteric fractures 56.6% (30 patients) followed by neck femur fracture 24.5% (13 patients). On average every patient was suffering from a minimum of two comorbidities. The average length of hospitalization was 6.8 days.

**Conclusions:** This study suggests that integrated care involving geriatricians in pre-operative optimization of the patient should come in immediate practice. The role of post-surgery rehabilitation is invaluable but often an underestimated modality. The concerns of the patients and their family members regarding home care after discharge are genuine and need to be addressed. Information sharing is the key to reducing anxiety. Consideration for a cost-effective step-down facility must be considered by private institutes and government authorities.

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## 1. Introduction

The hip is a ball and socket joint of the body where the ball is the femur head [the upper part of thigh-bone (femur)] and the socket is the acetabulum that is the part

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of pelvis. Ageing affects bone quality and muscle strength negatively. Apart from weakening the bone structure (low bone mineral density) slow reflexes and unsteadiness of gait too are implicated in falls and fracture. The most common fractures reported in the elderly are at the wrist, spine and hip. Hip fractures in elderly generally occur after a simple fall i.e., fall from standing height. Hip fracture is one the most clinically relevant injury due to its significant impact on the quality of life. Hip fractures in elderly people affect them in many ways: physical, mental and social. Physically they become immobile (bed-ridden), mentally they are dependent on others for most activities of daily living (feeding, cleaning, brushing teeth) and socially by losing dignity and lower self-esteem, i.e., toiletry needs.

If timely medical attention is not provided or appropriate care not taken the future of the patient after a hip fracture is certain – a dramatic reduction in the quality of life and the beginning of the end of life.

Patients require urgent medical management and surgical care to fix the broken hip. The importance of rehabilitation is unfortunately grossly underestimated. It is probably equivalent in importance to the operative intervention. Surgery is performed within a limited time-frame of 60 to 100 minutes. Rehabilitation, on the other hand, extends over a prolonged period of time of a few months. Hospitals are cutting down cost by reducing the length of stay in hospital. With economic factors being the focus during the in-hospital stay, comprehensive care of the patient is at times overlooked. The administrative metric for successful surgery is the length of stay; the shorter the stay the more efficient is the surgical team. The packages offered by the government for hip fractures fixation are paltry and the rates frozen for almost 20 years. The casualty is rehabilitation and the sufferer, the operated patient. The burden of caring for the patient falls on the attendants. Multiple co-existing comorbidities amplify the challenges.

In urban India, many elderly are now living independently. During hip fracture crisis, family support becomes crucial. Unfortunately, the social fabric is disintegrating. Family support is reducing and, in some cases, we have seen that it is almost non-existent. The family fears to take their patient home. This may be due to apprehensions; lack of information about home care and their own busy lifestyles and commitments. To help the family take better care of their beloved elderly we feel information is the key; information on the aids needed for toileting, mobilization aids, feeding and possible complications prior to discharge.

It is estimated that by 2030, almost 25% of the Indian population will be over 60 years old. The annual incidence of hip fractures is increasing and is expected to touch one million in a year or two. Current western data suggest that over 40% of the patients with hip fractures will die within a year of the injury. This is with their superior

primary care facilities, multidisciplinary management and subsequent step down to rehabilitation facilities for the continued care to optimize functional recovery.

One wonders the true outcomes in our country with extreme diversity and scarcity of resources. Does a wonderful surgery with a beautiful x-ray of a fixed broken hip translate to superior functional outcomes? The purpose of this project is to evaluate the challenges faced by the patient and their attendants after discharge from the hospital.

## 2. Materials and Methods

This retrospective, cross-sectional, descriptive study was carried out on the outcomes of elderly patients with hip fractures who underwent treatment at Indian Spinal Injuries Centre, Vasant Kunj, New Delhi from August 2019 to August 2020. In this study there were three inclusion criteria, (1) age greater than 60 years, (2) patients having hip fractures and (3) a minimum follow-up period of 3 months post-surgery. Exclusion criteria were patients with age less than 60 years, those managed conservatively and patients with whom contact could not be established.

### 2.1. Step I - Getting approval from EuroQol research foundation

EQ-5D is an instrument which evaluates the generic quality of life in Europe and is used worldwide. It is a measure used to characterize current health status of the patients and consists of five domains and a visual analogue scale. The EQ-5D descriptive system is an inclination-based health related quality measure with one question for each of five dimensions that include mobility, self-care, usual activities, pain/discomfort and anxiety/depression. It contains a visual analogue scale (VAS) by which patients can report their present health status with grade ranging from 0 (the worst) to 100 (the best).

### 2.2. Step II - Data collection

1. Medical records department was requested to provide the files of all patients admitted under trauma unit with hip fractures above the age of 60 years. The demographic data was noted along with comorbidities, diagnosis, surgery performed and the length of stay. The study period was from August 1, 2019 to August 31, 2020.
2. The contact details provided by the attendants of the patient at the time of admission (landline numbers, mobile numbers) were noted. In case of discrepancy or inability to contact the patient, the UHID number was used to access information provided in the subsequent out patient department visits.
3. Every patient was contacted over the telephone. The first author enquired into the current health status of the patient and thereafter proceeded according to the script

for the telephonic interview. The average conversation lasted about seven to eight minutes. This information was collected over a period of three weeks.

- The information provided was entered in the excel sheet. 64 files were accessed.

### 3. Results

A total of 65 files of patients with hip fracture were assessed and communication with only 53 was established. Twelve patients had died. The data revealed a higher proportion of female patients; male - female ratio was 21:32. The average age of the patients included in the study was 80 years (64-98).

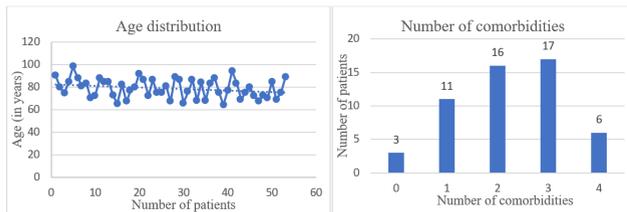


Fig. 1: Depicting the age distribution and number of comorbidities

Co-morbidities varied from hypertension, diabetes mellitus, coronary artery disease, chronic kidney disease, parkinsonism, rheumatoid arthritis, bronchial asthma, urinary tract infection, prostate hypermtrrophy. Only three patients didn't have any co-morbidity. Classification of hip fracture indicated intertrochanteric hip fracture, neck of femur fracture, subtrochanteric fracture and non-union of intertrochanteric femur fracture 36 patients underwent intramedullary interlock nailing and rest 17 underwent bipolar hemiarthroplasty. The minimum length of hospitalization was 1 day and maximum was 28 days with an average of 6.8 days.

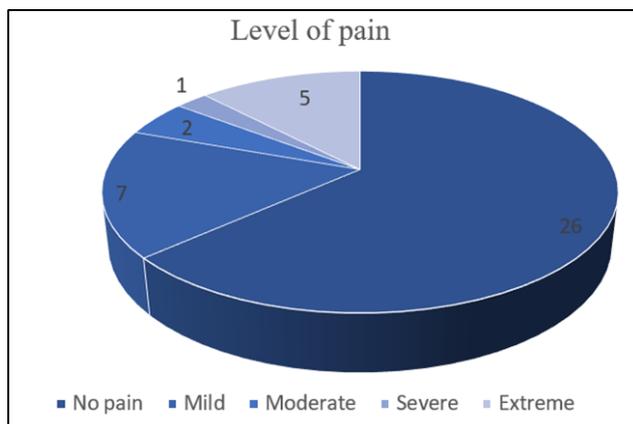


Fig. 2: Signifies the level of pain ranging from mild to severe after hip fracture surgery

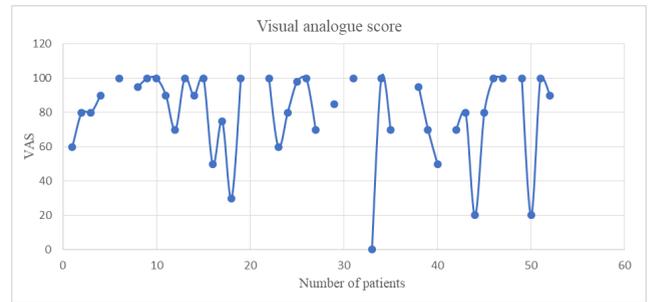


Fig. 3: EQ-5D, VAS (visual analogue score) to represent current status of the patients

The level of pain was assessed on the scale of 0 to 5 at follow up post-surgery. At 0 there is no pain whereas 5 represents extreme pain. 26 (49.055) patients reported no pain with a reading of 0.in t.

VAS (visual analogue score) was calculated for every patient to determine their present health status. Out of 53 patients, 14 patients gave a 100 percent score followed by 12 patients who gave 80 percent and more.

### 4. Discussion

Life expectancy is increasing in India. People are living longer. It is estimated that India's population will touch 1.5 billion by 2030. Of this, 350 million (25%) will be older than 60 years. The incidence of hip fractures in the elderly is increasing worldwide and will do so too in India.

Of the 53 families contacted, 12 (22.6%) had already lost their beloved. Sadly, in the developed world with the best evidence-based practices and infrastructure about 40% patients die within a year of the injury. This statistic could be gloomier in India. At present there are no clear strategies on urgent care of the patients. Most are discharged after acute surgical care within two or three days of the surgery. In-hospital care post-operatively helps in improving the quality of life and restore dignity in toileting privileges. Apart from surgery all the elderly need rehabilitation too. Rehabilitation is a time-consuming, poorly compensated service and essentially left to the family to manage.

Literature suggests a higher incidence of female patients. This study too had a majority of female patients – 32 (60%). This is probably due to higher life expectancy and increased risk of osteoporosis. Osteoporosis is a condition that weakens bone with aging. Women are more prone to this condition and hence the incidence of hip fractures is reportedly higher in women.

The average age of the study population was 80 (64 to 98) years. With better qualities of life and medical care, people are living longer with active lifestyles. However, with reducing bone health, weakening muscle strength and coordination, the risk of falls increase. Most of the falls were reported at night whilst going to toilet. In the study from

Sydney, Zeltzer et al. reported an average age of 84 years.<sup>1</sup>

Most of the patients had intertrochanteric fractures 56.6% (30 patients) followed by neck femur fracture at 24.5% (13 patients). This is consistent with the pattern of fractures reported in literature. With increasing age, the incidence of intertrochanteric fractures increases. With advancing age patients tend to lose more cancellous bone than cortical bone. The loss of trabecular network around the trochanter predisposes the ageing femur to fail at the intertrochanteric region. Most of the patients are now on anti-osteoporotic treatment. One of the major drugs in the fight against osteoporosis is bisphosphonates (anti-resorptive). With long term use of this drug the incidence of atypical femur fractures is increasing. Although sporadic, this complication is now being reported from across the globe. In our study seven patients (13%) had this pattern. Three patients unfortunately had to undergo repeat surgery for a failed fixation earlier.

Most of the patients had co-morbidities – 50 (94%). These included hypertension, diabetes mellitus, coronary artery disease, thyroid disorders, bronchial asthma, cerebrovascular insults (stroke), chronic kidney dysfunction, tuberculosis, rheumatoid arthritis, anaemia, Alzheimer's, Parkinsonism, cancer with metastasis, obesity, acute lung infection, urinary tract infection and prostate hypertrophy. Eleven patients had a single co-morbid condition, 16 had two, 17 had three co-morbid diseases and six patients had four or more debilitating medical conditions. This indicates that most elderly are not optimally healthy at the time of injury. The fracture only worsens their quality of life that takes a sudden and dramatic down-spiral. It is believed that urgent optimization of the medical conditions and prompt surgical fixation of the fracture helps in partial arrest of this down spiral. If the fracture is well managed the medical conditions will manage themselves. The role of a multidisciplinary team in delivering this care is indispensable. Review of literature suggests the involvement of the following in the integrated care of the elderly – orthopaedic surgeon, general physician, orthogeriatrician, cardiologist, urologist, endocrinologist, anaesthetist, nutritionist, physiotherapist and most importantly, nursing care. The role of the family cannot be overlooked. They must be involved in taking care of their patient during the hospital stay. The burden of care is essentially going to fall back on them after a few days.

Primary osteosynthesis was performed in 36 (68%) patients and replacement done in the others. This pattern is consistent with the higher incidence of intertrochanteric fractures that are amenable to reconstruction. In patients with neck femur fractures the best option is replacement as a standard of care. This enables early mobilization reducing the risks of recumbency (being bed-ridden).

The average length of stay was 6.8 (1 to 23) days. This is far lower than the reported stay in literature. Kondo from

Japan<sup>2</sup> reported an average stay of 33 (10 to 107) days. Zeltzer from Sydney<sup>1</sup> reported an average length of 30 days in patients who had in-hospital rehabilitation. Those who were not rehabilitated were discharged at an average of 11 days. This prolonged length of stay emphasizes the importance of rehabilitation in the first month following surgery. In our study, the stay is significantly shorter compared to western studies. The reasons are manifold. Those patients paying for their treatment opt to go back home early to reduce the financial burden of prolonged hospitalization. Those patients covered under various reimbursement schemes tend to stay longer. Another reason for delayed discharge was the presence of three or more co-morbidities. One patient without any known co-morbidity from rural background deteriorated post-operatively due to poor chest function and had to be intubated and then put-on tracheostomy. He unfortunately died during the hospital stay after 21 days of surgery. This event reiterates the relevance of multidisciplinary care and the need to exercise caution in the prognosis of such fragile individuals.

Most of the patients and their care-givers (85%) were happy with their mobility status. They had either mild or no problem in moving around at home. They continued use of walking aids such as walker or cane. Four patients were bedridden at the time of interview. One had a stroke causing hemiplegia, the other was above 90 years old with past history of stroke, the third lady had bipolar disorder with fixed flexion deformity at knees and severe lumbar canal stenosis and the fourth patient had very poor cardiac function. The overall mobility status improved with time. We observed that dedicated rehabilitation definitely improves the quality of life. The duration of support must extend at least to about 10 weeks post-surgery.<sup>3,4</sup>

Thirty-three (80%) patients were very comfortable in taking care of their essential needs such as bathing, dressing and grooming. They reported a definite benefit of surgical fixation and the subsequent rehabilitation at home. The family played an important role in the faster recovery of the elderly.

During the interview on the comfort in doing usual activities such as work, study, housework, family or leisure activities 33 (80%) patients reported minimal or no issues at all. Most of them were able to return to their pre-injury status.

The pain and helplessness experienced by the patients after trauma was significantly reduced by medical care. Almost two-thirds (63%) patients reported no pain at the time of interview. Mild pain was reported in 7 (17%) patients. This however, did not interfere much in their household activities. The attendants of the bedridden patients reported moderate to severe pain in their patients.

Bedridden patients at home aggravate anxiety in the patient and their family. The atmosphere at home is not positive and this confounds the fears and worries of the

patient. Being totally dependent on others for activities of daily living robs them of their dignity and self-esteem. These patients had multiple co-morbidities to begin with. Their quality of life pre-injury may have already been poor and the fracture happened to push them over the edge. However, most of the patients who were able to walk and look after themselves – 35 (85%) were able to overcome their initial anxieties eventually.

Finally, on the subjective rating of the present health status on a virtual analogue score from zero to hundred, the score varied from zero to hundred. Fourteen (34%) patients reported a perfect hundred and another twelve (29%) rated their status above 80.

Families with robust social fabric tend to look after their much-loved elderly much better compared to others. Financial wellbeing and superior social status do not necessarily translate to superior care for the elderly. In fact, at follow-up we observed more favourable outcomes from the semi-urban background and rural areas. Elderly from rural backgrounds usually have an active lifestyle with low body mass index and healthy muscles. The co-morbidities too were lower. In patients from the neighbourhood or urban areas, most had co-morbidities and were obese with limited activities prior to the fall. The burden of additional care with unrealistic expectations from surgery further confound the tragedy. In male's, alcoholism added to the woes of the family.

Most of the elderly are retired and money definitely matters. The direct cost of acute care in a tertiary care private hospital for a broken hip is about two lakh rupees. The indirect costs are not measurable and sometimes exceed the direct cost. These include cost of transportation, medicines, attendants, days of absence from work, purchase of commodities like commode chair, walker, urine pot and medicines. Follow up visits and investigations such as urine cultures, blood tests add to the cost.

Concerns on rehabilitation back to the pre-injury status is worrisome especially in the initial few days. Early discharge is not conducive to instil confidence among the patient and their relatives to continue the supportive care at home as in the hospital. Their expectation is to reach the pre-injury status. This is reasonable but takes time. In the context of fragile physiology and recent surgery most of the patient's and their family desire continued support from the hospital. Although western literature supports prolonged stay for rehabilitation, we must explore the need for step down facilities at a reasonable cost.

#### 4.1. Suggestions for optimizing the outcomes

1. Prevention is better than cure. Community education on how to reduce falls. Example to check vision regularly and get cataract surgery done in time.

2. Increase intake of dairy products and vitamin D to improve bone health.
3. Regular physical activity to maintain muscle health.
4. Regular health check- up to minimize the adverse events of co-morbidities.
5. Counselling on the needs for taking care at home.
6. Information pamphlets.
7. A bridge between hospital and home – rehabilitation center with geriatrician consults.

#### 5. Conclusion

1. The study shows that urgent multidisciplinary efforts at medical optimization and surgical fixation of the broken hip help elderly patients in recovery.
2. The role of post-surgery rehabilitation is invaluable but often underestimated modality.
3. The concerns of patients and their family members regarding home care after discharge are genuine and need to be addressed.
4. Information sharing is key to reducing the anxiety.
5. Consideration for a cost-effective step-down facility must be considered by local and government authorities.

#### 6. Source of Funding

None.

#### 7. Conflict of Interest

None.

#### 8. Acknowledgement

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