

# Audit of perioperative management of patients with fracture neck of femur

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## **Introduction**

Fracture neck of femur is the commonest reason for surgery in sick, elderly patients. For many of them, hip fracture is said to be the beginning of the end of their journey of life. Early surgery may lead to better outcomes. The aim of this audit was to study current practice and adherence to safety guidelines published by the AAGBI (Association of Anaesthetists of Great Britain and Ireland) UK, as no local guidelines are available at present.

## **Method**

A retrospective audit was carried out at Colombo North Teaching Hospital Ragama in 10 wards on all patients above 60 years (n=41) and had surgery for fracture neck of femur from 15<sup>th</sup> January to 15<sup>th</sup> June 2014. Data were extracted from patient records using a data collection form.

## **Results**

Mean age of the population was 75.8 years and 72.9% were females and 27% were males. Only four patients (11%) had surgery within the recommended period of 48 hours after admission. 50% of patients had surgery only after 7-8 days. Delays were compounded by late admission to hospital following injury. One patient died of a probable acute coronary event or pulmonary embolism. Lack of close monitoring of these patients due to inadequate intensive care beds, complicates the postoperative management. None of these patients received thrombo-prophylaxis despite current guidelines.

## **Conclusions and Recommendations**

Adherence to standard practice guidelines for management of patients with fracture neck of femur is found to be unsatisfactory at CNTH, Ragama. The delays are due to late admission, late referral to orthopaedic team and anaesthetists and lack of dedicated theatre time and intensive care beds. Thromboprophylaxis in this high risk category of patients is not carried out. There is an urgent need to address these issues and plan perioperative management of these patients according to available standard practice guidelines.

**Keywords:** fracture neck of femur; delay in surgery; safety standards

## **Introduction**

Hip fracture is one of the commonest reasons for a frail older person to undergo surgery and anaesthesia. Around 1.6 million hip fractures occur annually worldwide and this is projected to increase and reach 4.5-6.3 million by 2050.<sup>1</sup> No annual data are found for Sri Lanka. But the International Osteoporosis Foundation which published the Asian osteoporosis audit has predicted the incidence of hip fractures to rise from nearly 2070 in 2006 to 4900 in 2020 and 6900 in 2041. These figures could become higher in Sri Lanka as those aged over 70 years will rise from 1.1 million in 2013 to 3.8 million by 2050.<sup>2</sup>

One study using FRAX (Fracture Risk Assessment Tool) estimated the 10yr probability of a major osteoporotic fracture in Sri Lankans aged over 65 years to be 11% in men and 14% in women.<sup>3</sup>

These fractures occur in the area between the edge of the femoral head and five centimeters below the lesser trochanter. Fractures occur mainly due to osteoporotic bone.

Surgery is the definitive treatment of fracture neck of femur, as well as the best option for pain relief.

The outcome is affected not only by age and gender, but also by co - morbidity, delay to surgery and peri - operative care. These patients have significant co- morbidities. About 25% of these elderly patients have at least moderate cognitive impairment. They are at risk of various complications related to immobility.

Mortality rate for this group at one year is 30%, of which one third is directly attributed to the surgery. Effective preparation for surgery and timely operation by experienced personnel may improve the outcome.

The available guidelines on anaesthetic management of these patients lack guidance based on evidenced based best practices, as randomized controlled studies are difficult to perform in this group of patients. The AAGBI has published “Safety Guidelines on Management of Proximal Femoral Fractures” in June 2012 to address this issue.<sup>4</sup> This guideline while reviewing current evidence regarding best practice anaesthesia, also makes recommendations in the circumstances where current evidence is controversial or incomplete, based on expert consensus opinion.

In Sri Lanka, there are no guidelines on the management of patients with hip fracture and most of the junior medical staff does not consider this surgery to be urgent, and patients also do not get admitted early as some of them initially seek native treatment.

The aim of this audit was to assess the compliance of our hospital in some of the suggested indicators of an efficient specialized service for patients with hip fracture and to make recommendations to improve standards of care.

**Method**

This audit was carried out at Colombo North Teaching Hospital, Ragama, Sri Lanka. All patients over 60 years who underwent surgery for fracture neck of femur were recruited from all ten surgical and orthopaedic wards. Details of patients were located from the theatre registers and clinical records were traced from the hospital record room. Data was collected from 15<sup>th</sup> January to 15<sup>th</sup> June 2014 by means of a data collection form prepared by the investigators. The data collection form was filled by the investigators. We were able to collect data from 37 out of 41 patients who underwent surgery for fracture neck of femur

during this period. Clinical records for 4 patients could not be traced.

Data form contained the following details:

1. Basic demographic data of the patient (age, gender)
2. Co-morbidities
3. Time from injury to admission and admission to surgery and reasons for delays
4. Major in- hospital complications
5. In hospital mortality
6. DVT Prophylaxis

**Results**

We managed to track records of 37 patients out of 41 from the hospital record room. The study population was 37, with a mean age of 75.8 years. All patients had undergone spinal anaesthesia.

**Demographic data**

Out of the 37 patients, 27 were female (72.9%) and 10 were male (27%). (Table 1)

**Table 1:** Gender distribution

	Number of patients
<b>Male</b>	27
<b>Female</b>	10

Out of 37 patients the majority (11 patients– 30%) were between 70-74 years. (Table 2)

**Table 2:** Age distribution

Age in years	Number of patients
<b>60-64</b>	01
<b>65-69</b>	06
<b>70-74</b>	11
<b>74-79</b>	08
<b>80-84</b>	06
<b>85-90</b>	05

**Table 3:** Distribution of patients according to their ASA grade and comorbidities

ASA group	Number of patients
1	13
2	19
3	05

Co-morbidity	Number of patients
Hypertension	17
Coronary artery Disease	06
Diabetes Mellitus	06
Bronchial asthma	03
Anaemia (Hb< 8g/dl on admission)	01
Psychiatric illness	01
Hypoalbuminaemia	01

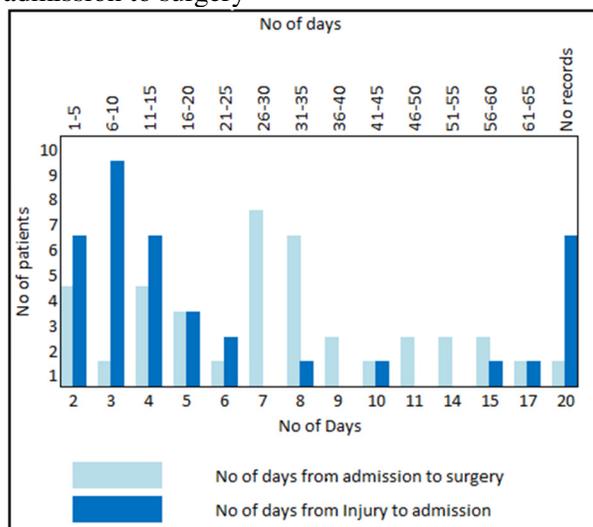
Patients in this audit belonged to ASA 1 to ASA 3. There were no patients from ASA 4 and 5.

Analysis of data relevant to co-morbidities shows that the highest number of patients- 17 (45%) suffered from hypertension.

### Time from admission to surgery

Most of the patients had their operation after 7-8 days of hospital admission (50% of study population). Eleven patients (30%) had to wait longer than this period. Only four patients (11%) had surgery within 48 hours of admission. (Chart 1)

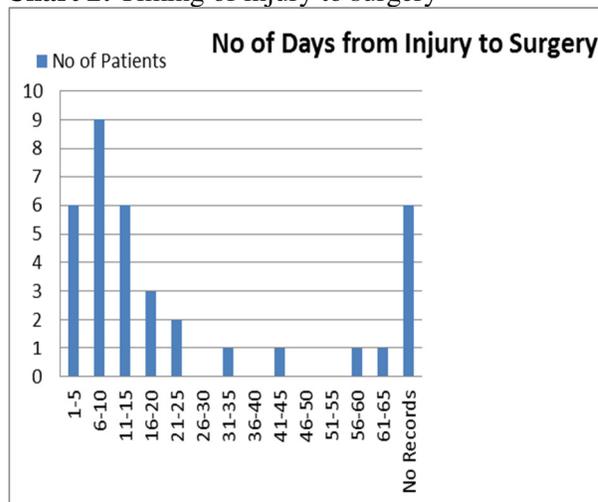
**Chart 1:** Timing of injury to admission and admission to surgery



Not all patients got admitted immediately after injury. Only 15 patients (40.5%) got admitted within 24hrs of injury. The records of 5 patients

did not indicate the time from injury to admission. (Chart 2)

**Chart 2:** Timing of injury to surgery



### Reasons for delays in performing surgery

#### a. Lack of theatre time

Three patients (8%) were postponed after preparing for surgery due to lack of theatre time.

#### b. Postponement by anaesthetist due to medical reasons

Two patients (5%) were postponed by the anaesthetic team. One of the patients had uncontrolled diabetes mellitus, hypertension and was also suffering from coronary artery disease. This patient had a long hospital stay postoperatively due to chest infection, heart failure, renal dysfunction and poor glycaemic control. The other patient was ASA3, who also had hypertension, coronary artery disease and was postponed due to lack of an intensive care bed.

#### c. Delayed referral to orthopaedic team

Three patients (8.1%) were referred to the orthopaedic team after 24 hours of admission.

### 2. Major in hospital complications

One patient developed pneumonia while waiting for surgery and two patients had acute coronary events in the postoperative period. None of these patients had clinically evident DVT or pulmonary embolism.

### 3. In-hospital mortality

One ASA 3 patient who had coronary heart disease died on the same night after surgery. The probable cause of death was an acute coronary event or pulmonary embolism. No postmortem

was performed. This patient had been sent to the ward due to lack of an intensive care bed.

#### **4. DVT Prophylaxis**

None of the patients received DVT prophylaxis pre- or postoperatively.

#### **Discussion**

The perioperative care of these high risk group patients seem to lack protocol driven management at all stages from admission to discharge. No guidelines are published in Sri Lanka to manage these patients. The target for best practice as recommended by both NICE<sup>5</sup> and AAGBI guidelines is to operate within 48 hours of admission. Delay in surgery is compounded by development of pneumonia, DVT/ pulmonary embolism and poor quality of life due to pain. 50% of study population had their operation performed after 7-8 days, which is unsatisfactory.

The common reasons for failure to meet standards were due to delayed referral to orthopaedic and anaesthetic team and lack of theatre time. There are no direct admissions to the orthopaedic unit and patients are generally admitted to the casualty surgical unit and then referred to the orthopaedic team. 8.1% of patients admitted to the surgical casualty units were referred to the orthopaedic team after the first 24hrs of admission. Even when referred to orthopaedic unit, most of the patients were scheduled for “next week”. This may have been due to lack of theatre time as other trauma patients get priority over old fragile patients, who are currently not managed using a protocol.

Two patients were postponed due to medical reasons. They were not optimized medically as they were not referred to anaesthetic preoperative assessment clinic or to a physician. The hospital has a preoperative anaesthetic clinic and instructions had been given to the orthopaedic team to refer these patients as soon as they diagnose hip fracture and decide to operate, to enable the anaethetists to assess and optimize. The lack of knowledge on urgency of surgery according to current guidelines among junior staff may contribute to delays.

Another reason for delay in surgery from time of injury is late admission to hospital. Some patients opt for native treatment and later decide to attend a government hospital seeking surgical treatment. There is a lack of awareness among general

population regarding the benefits of early surgery and mobilization of these patients.

One patient developed pneumonia while waiting for surgery and two patients had an acute coronary event in the postoperative period. The patient who died within about 10 hours after surgery was a high risk patient who would have benefited from more intensive monitoring. This patient was on aspirin and clopidogrel which had been discontinued on admission without consulting the cardiologist. It may have been the cause of death, although a postmortem was not performed.

The other patient who had a positive troponin in the post-operative period had developed significant hypotension following spinal anaesthesia.

These patients have high risk of complications in the early postoperative period and require closer monitoring. Currently, 8.4% of patients die within 30 days of surgery.<sup>6</sup> This is increased for older, sicker, male patients. According to a mortality analysis for hip fractures, up to 50% of postoperative deaths are preventable.<sup>7</sup>

The Working Party of AAGBI recommends that hip fracture patients should receive ward care with a nurse: patient ratio of 1:4, with regular input from physicians specialized in medicine for the elderly.<sup>4</sup> This is not practical in our set up and therefore we had to postpone one patient’s surgery until an intensive care bed was available and one patient who would have benefited from closer monitoring died a few hours post op after admission to the ward.

None of the patients were given thromboprophylaxis.

Clinical symptoms are only seen in 1-3% of DVTs and 0.5% -3% of pulmonary embolisms in patients with hip fracture. But venogram and ventilation / perfusion studies have shown a prevalence of 37% for deep vein thrombosis (DVT) and 6% for pulmonary embolism.<sup>8</sup>

Both NICE and AAGBI recommend thromboembolism stockings or intermittent compression devices intra-operatively, in addition to ensuring the patient remains warm and well-hydrated. Expedited surgery and mobilisation, and

regional anaesthesia, may reduce the risk of DVT further.

There are no epidemiological data regarding incidence of thromboembolism in Sri Lanka. Some published audits in critically ill patients<sup>9</sup> and general surgical population indicate deficiencies in venous thromboembolism (VTE) risk assessment. According to an audit done in general surgical patients, 98% of moderate to high risk patients did not receive thromboprophylaxis.<sup>10</sup>

### Conclusion

This audit indicates significant deviations from recommended standard management of patients with fracture neck of femur. The best practice target from time of admission to surgery is 48 hours. But 89% of patients had surgery after 48 hours. None of the patients in this high risk group received mechanical or pharmacological thromboprophylaxis.

### Recommendations

There is an urgent need for a local guideline for management of patients with fracture neck of femur. The orthopaedic and anaesthetic teams should jointly formulate a guideline to ensure early referral by the surgical team, early anaesthetic referral to expedite assessment and optimization, thromboprophylaxis for all patients and to reorganize the orthopaedic lists to prioritize surgery for fracture neck of femur. An awareness programme should be carried out to educate all orthopaedic and general surgical doctors.

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