Perioperative management of hip fracture patients- are we following the AAGBI guidelines? - a retrospective observational study

Abstract

Objective

Several guidelines are available for management of hip fracture patients. Western nations conduct annual audits to regulate their practises. There is lack of studies done at institutional or national level in our country. So this study was done to evaluate the adherence to the recommendations at our centre.

Methods

Records of patients operated for proximal hip fracture from January 2020 to January 2021 were examined to extract the details of perioperative care, postoperative complications and 30 day outcomes. The compliance with the recommendations was assessed. Twelve key performance indicators were identified. Score of 1 was assigned for adhering to each indicator and total score for each patient was calculated.

Results

One hundred and twenty eight patents were included in the final analysis. Seventy one percent of the patients were operated in <48 hours of admission. Less than 40% of the patients received a nerve block for postoperative analgesia. Mortality at 30 days was 7.03%.

Conclusion

Several areas of perioperative care showed good compliance with the recommendations though some areas with major deficits were identified. The high mortality associated with hip fracture patients was also seen in our study.

Keyword : Geriartrics, Hip Fractures, Key indicators, Mortality, Postoperative outcomes

Introduction

Hip fracture is one of the commonest reason for an elderly frail patient to undergo a surgery. Guidelines by Association of Anaesthesiologists of Great Britain and Ireland (AAGBI) have been updated in 2020 with no major modifications to the 2011 version and they can help optimise our perioperative care.[1,,2] The guidelines implied the need for early surgery within 48 hours of admission to improve the patient outcomes. Western nations conduct national audits annually.[3] Literature search demonstrates a paucity of studies done at institutional levels, especially in our country. This study was designed to assess the compliance with the recommendations at our tertiary care centre. The primary objective was to look for the adherence to the AAGBI 2011 guideline on management of proximal femoral fractures. The secondary objectives were to evaluate the postoperative complications and outcomes as well as to explore the variations in the anaesthetic management.

Methods

This study is being reported in accordance with the Strengthening the Reporting of Observational studies in Epidemiology (STROBE) guidelines. Institutional ethical committee approval was obtained. Since it was a retrospective study using only the patient data obtained from medical records, the need for informed consent was waived. The trial was registered in Clinical Trials Registry – India. The Hospital Information System was used to obtain the data. All patients posted for the proximal hip fracture surgeries from January 2020 to January 2021 and of age >65 years were included. Patients with missing data were excluded. The records of the included patients were examined to collect details of the in-hospital care pathway. A predefined proforma was used to collect the necessary information. Age, sex, American Society of Anaesthesiologists (ASA) physical status, type of fracture and surgery performed, details of perioperative care, postoperative complications and outcomes, length of

critical care and hospital stay were noted. The records were followed up till thirty days to assess the 30 day outcome. Twelve key performance indicators were identified from the guidelines and a score of 1 was assigned for adherence to each indicator. The total score for each patient was calculated. The key performance indicators were: Patients should be admitted to ward within 4 hours of reaching Emergency Department (ED), should be given a nerve block from ED**,** assessed by a geriatrician, undergo a preoperative cognitive assessment, should receive falls and nutritional assessment, operated within 48 hours of admission, should be managed by Consultant Anaesthesiologist, should receive a nerve block for postoperative analgesia, intraoperative hypotension defined as decrease in blood pressure >20% of baseline should be avoided ,should receive thromboprophylaxis and ambulation must be done on the first postoperative day.

The sample size was calculated using the proportion method. A previous audit had shown that 71 % of the patients were operated in <48 hours of admission. With α error kept at 5% and absolute precision kept at 8% the calculated sample size was 123.

Statistical analysis was done using statistical package for social sciences version 21.0. Descriptive statistics was performed. Continuous data was represented as mean with standard deviation. Categorical data was represented as frequency with %age.

Results

One hundred and fifty two patients were posted for surgery during the study period. Two patients were excluded since they were not operated as they refused to consent for surgery. Of the 150 patients who were operated 22 were excluded as they had missing data and 128 patients were included in the final analysis. Table 1 shows the demographics and surgical characteristics of the included patients.

Table 1: Demographics of patients and surgical characteristics

Variable	
Age in years (Mean± SD)	68.5±4.95
Sex (Number, %) Male Female	 49 (38.2) 79 (61.7)
ASA class (Number, %) 2 3 4	 80 (62.5) 44 (34.3) 4 (3.9)
Type of fracture (Number, %) Intertrochanteric Neck of femur Basicervical	 65 (50.7) 62 (48.4) 1 (0.8)
Surgery (Number, %) Proximal Femoral Nail Antirotation Hemiarthroplasty Distraction Hip Screw Total hip replacement	 65 (50.7) 60 (46.9) 1 (0.8) 2 (1.6)
Comorbidities (Number, %) Hypertension Diabetes mellitus Coronary artery disease Arrhythmia Malignancy Chronic obstructive airway disease Chronic kidney disease Stroke	 62 (48.4) 56 (43.8) 68 (53.1) 12 (9.4) 21 (128) 30 (23.4) 16 (12.5) 19 (14.8)

The adherence to the key performance indicators is shown in Figure 1. The total scores of the key performance indicators achieved for each patient is displayed in Figure 2. None of the patients achieved the full score of 12. The mean duration of time from admission to surgery was 35.5 ± 16.2 hours. All the surgeries were performed by consultant orthopaedicians. Among the patients who had a delayed surgery, antiplatelet drugs were the most common cause of delay (Figure 3). Twelve patients with hip fracture had COVID-19 infections of which three patients had delayed surgery. None of the patients were refused surgery by the anaesthesiologists.

Figure 1: Adherence to Key Performance Indicators

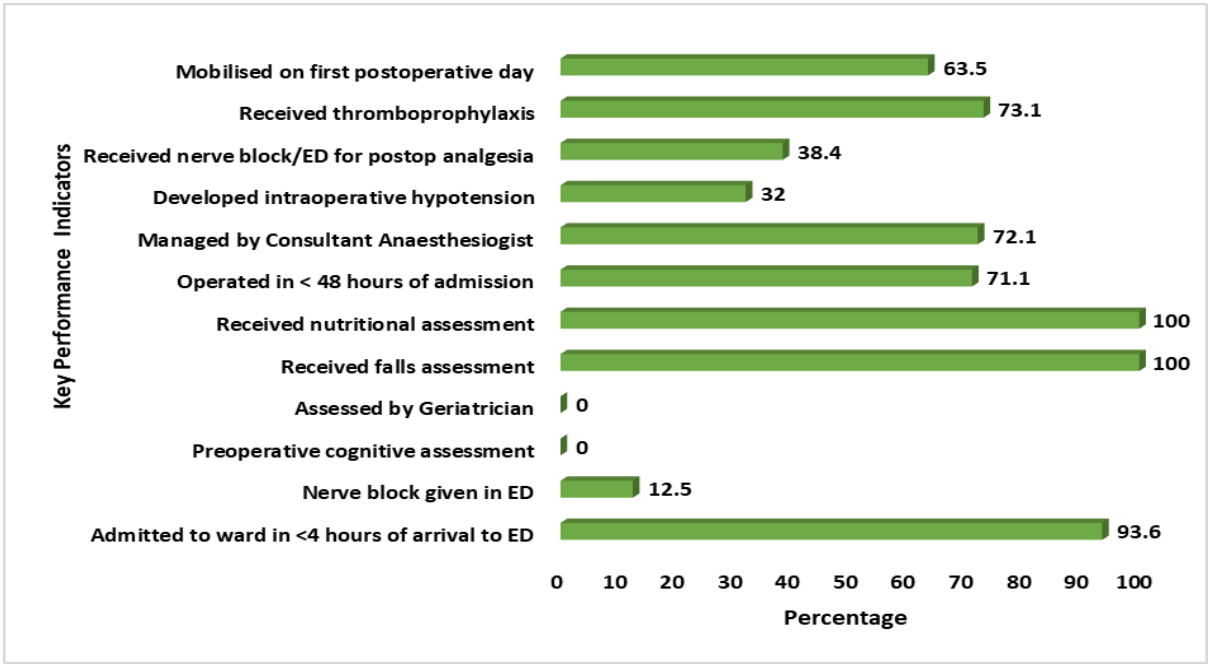


Figure 2: The total scores for the Key Performance Indicators

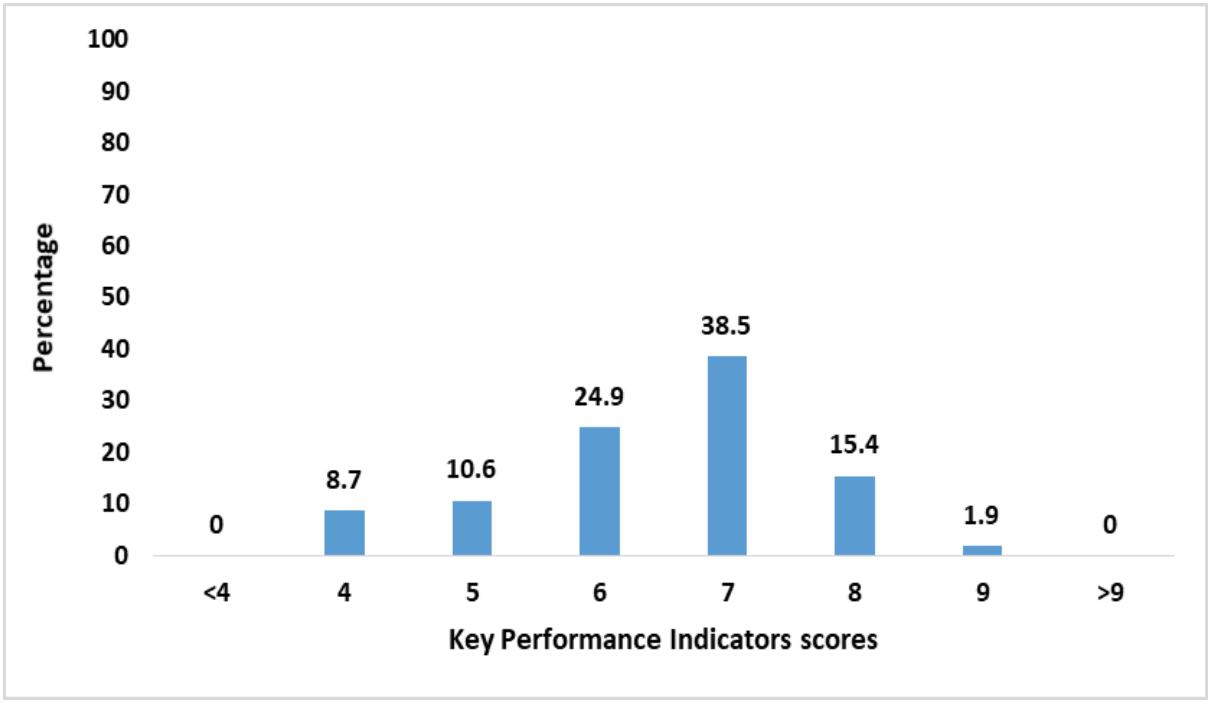
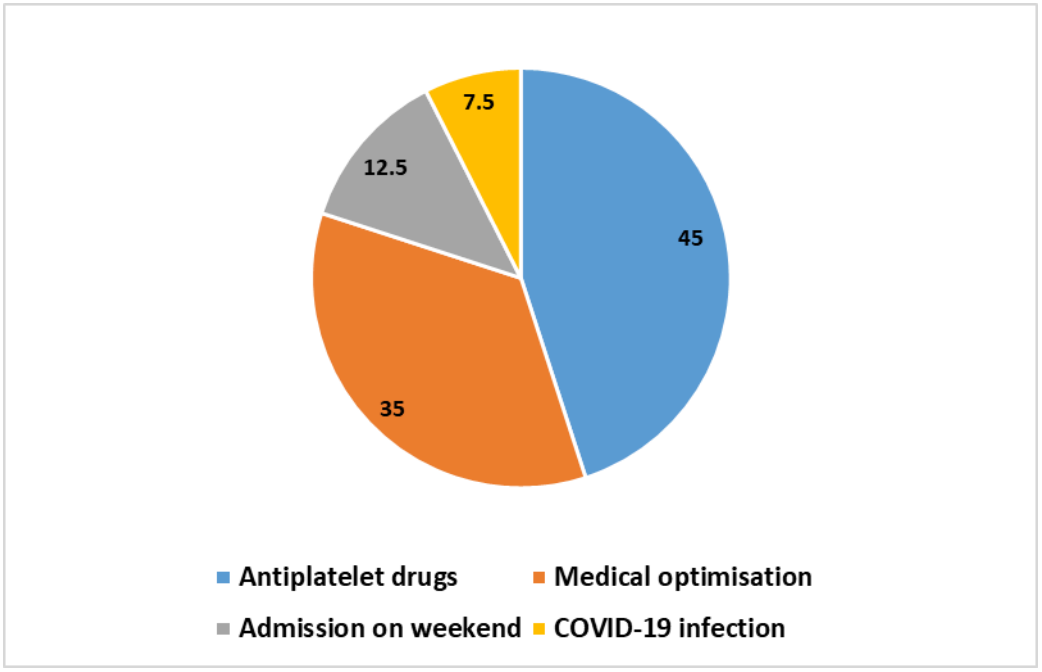
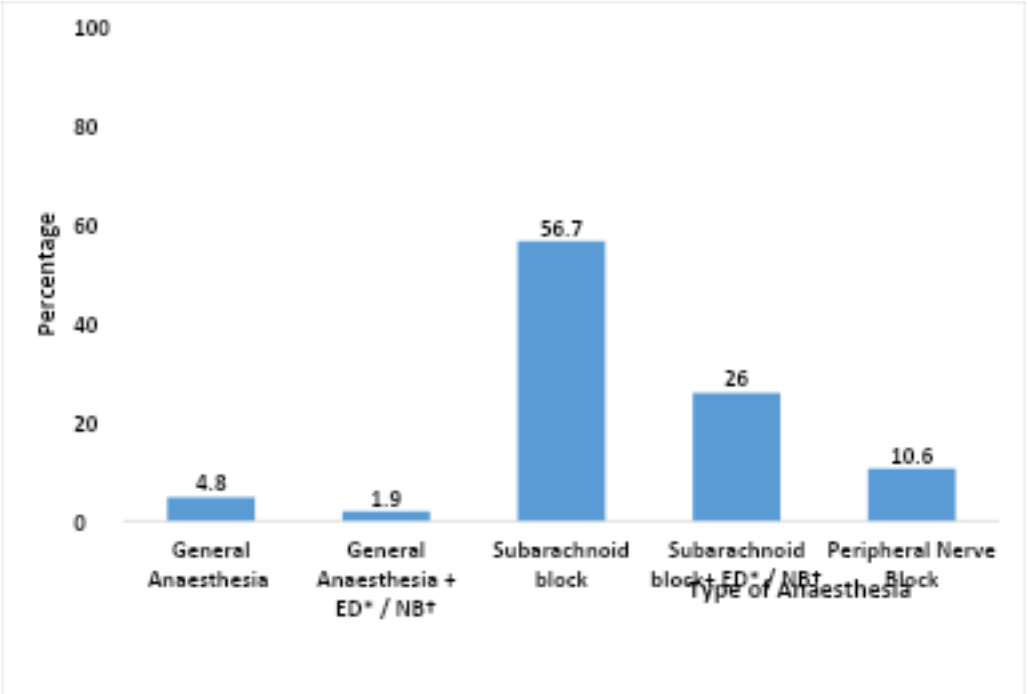


Figure 3: Reason for delayed surgery



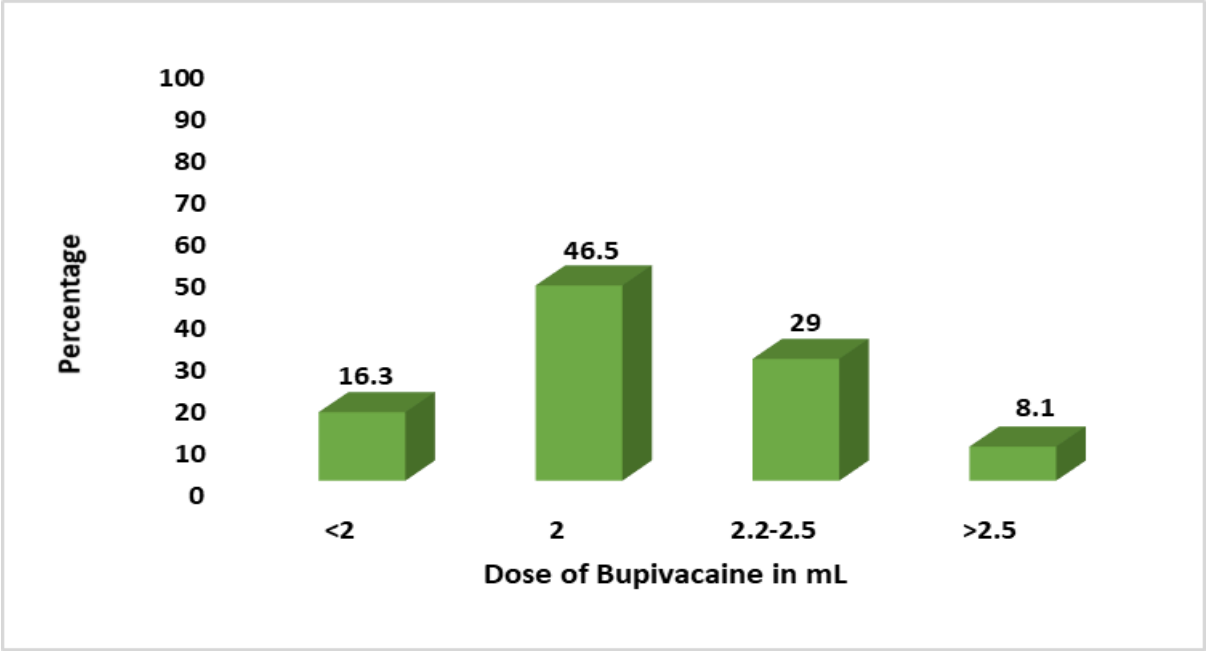
Large majority (93.3 %) of the patients received regional anaesthesia (Figure 4). Majority of the patients (71 %) received subarachnoid block alone, 11.5 % received a combine spinal and epidural anaesthesia, 6.7 % were done under general anaesthesia and 10.6 % were done under a combined lumbar and sacral plexus blocks. Of the thirty one patients with coronary artery disease (CAD) 19.4 % were taken up with a haemoglobin level <10 gm/dL and of the 97 patients without CAD 15.5 % had levels <9gm/dL. Up to 40 % of the patients who received a subarachnoid block were given a drug dose higher than the recommended dose of 10 mg of hyperbaric bupivacaine which made them prone for significant hypotension (Figure 5). Fentanyl was the only opioid used as intrathecal adjuvant.

Figure 4: Type of anaesthesia administered to the patients



*ED- Epidural anaesthesia, † NB- Nerve block

Figure 5: Dose of Hyperbaric Bupivacaine administered in Subarachnoid block



Fifty two patients (40.6 %) required postoperative critical care admission. The most common reason for critical care admission was the preoperative comorbidities while sixteen

patients (12.5 %) developed postoperative complications. Fourteen (10.9 %) patients developed pressure sores. There were no cases of venous thromboembolism, bone cement implantation syndrome or in hospital falls. Twelve patients (9.4%) developed aspiration pneumonia, three (2.3 %) suffered acute coronary syndrome and one patient developed metabolic encephalopathy. Most common complication was aspiration pneumonia. Nine patients died in the postoperative period. Mortality at 30 days was 7.03%. Mean length of hospital stay was 3.5 ± 0.7 days and mean length of critical care stay was 1.8 ± 0.5 days.

Discussion

The perioperative management of hip fracture patients showed good compliance with many of the recommendations. Some deficits were identified which included nerve blocks for postoperative analgesia, preoperative cognitive assessment and involvement of a geriatrician. Our perioperative management was at par with the 2020 report from the National Hip Fracture Database of United Kingdom (UK) in several areas of management. Sixty eight % were operated in the optimal time and 81 % were mobilised on first postoperative day compared to 71.1 % and 63.5 % in our study. Their 30 day mortality was 6.5 % while it was 7% in our hospital.[4]

Higher doses of intrathecal bupivacaine used by some practitioners can make the patient prone to develop significant hypotension which itself is associated with poor outcomes.[5] There was wide variation in the type of anaesthesia administered as seen in western audits.[6] The standardisation of anaesthetic practice is the need of the hour, and will help to improve the safety and efficacy of health care given to these frail patients.[7] It was seen that no patient was denied surgery because of COVID-19 infection and majority of them were operated without delay. Zhong *et al* found a higher number of nonoperative management and delayed surgeries in the time of this pandemic.[8]

The importance of observational studies is being increasingly recognised.[9] National audits done in UK and other countries have helped develop databases and guidelines.[1,2] Moppett *et al*, in their editorial underlines the importance of these observational data and audits in improving the patient care and we as anaesthesiologists can be proud of being the team leaders of these projects.[10]

Retrospective study design is a major limitation. The sample size was small despite including all patients operated in the study period. The follow up was limited to 30 days. The study reflects the practises at a single centre only.

Conclusion

Despite good adherence in several areas, major flaws in the perioperative management of hip fracture patients were observed in our study. We can improve our practises only by reviewing them. Multicentric audits can help us build our national databases and formulate our own guidelines tailored to our resources.

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