



ISSN: 2395-6429

OUR EXPERIENCES IN HIP FRACTURES

Ayhan Kaydu¹, Ebru Tarıkçı Kılıç², Erhan Gökçek¹, Ömer Fatih Şahin³
and Yakup Aksoy³

¹Diyarbakır Selahaddin Eyyubi State Hospital, Department of Anaesthesiology and Reanimation,
Diyarbakır, Turkey

²Ümraniye Training and Research Hospital, Department of Anaesthesiology and Reanimation,
İstanbul, Turkey

³Diyarbakır Bismil State Hospital, Department of Anaesthesiology and Reanimation,
Diyarbakır, Turkey

ARTICLE INFO

Article History:

Received 9th May, 2017

Received in revised form 3rd

June, 2017

Accepted 27th July, 2017

Published online 28th August, 2017

Key words:

Hip fracture, anesthesia, spinal
anesthesia

ABSTRACT

OBJECTIVE: Hip fractures are usually seen in the elderly population associated with high mortality and morbidity. The purpose of this study is to analyze the mortality and morbidity; type of anesthetic technique and surgery applied to patients who underwent hip fracture surgery and admitted to intensive care unit postoperatively.

METHODS: We retrospectively reviewed the patients data underwent hip replacement surgery and then monitored hemodynamically in the intensive care unit postoperatively between January 2015- January 2016 according to the demographic characteristics, co-morbidities, type of surgery, anaesthetic method chosen, preoperative laboratory findings, intraoperative complications, timing of the operation, length of stay in hospital, in the intensive care unit (ICU), duration of the operation, mortality, admission to intensive care unit.

RESULTS: The 14 among 34 patients were female, 20 were male and mean age was 73.2 ± 13.2 years. There were %47.05 ASA III, %35.29 ASA II, %17.6 ASA IV according to ASA classification. The average time to the operation was of 3.05 ± 2.43 days, ICU 's stay in an average of 3.29 ± 2.17 days, average length of stay in hospital 7.35 ± 6.03 days. The 32 patients with spinal anesthesia, 2 patient with general anesthesia were administered. Mean operation time was 78.67 minutes, 3 patients developed tachycardia and hypotension as complications of the surgery intraoperatively. The mortality rate was %5, 8 (2 patients). The surgical treatments were %64, 7 PFN (proximal femoral nail), 20.5% arthroplasty, %14.7 DHS (Dynamic hip screw).

CONCLUSION: In conclusion, we found that most of the patients were advanced aged male, spinal anesthesia applied as anesthetic technique and the most commonly used surgical treatment was PFN. For elderly hip fracture patients postoperative monitorization must be performed due to the high mortality and morbidity.

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INTRODUCTION

The global morbidity arising from hip fractures has become an important health problem as the expected human life and the osteoporosis increase (1). The incidence of the hip fractures computed for people for the world regions are 65 years or more. The most common comorbidities were cardiovascular disease, chronic obstructive airways disease, hypertension, diabetes. In elderly hip fracture patients with these comorbidities have high risk of postoperative complications even resulting with high mortality rates. The associated risks of hip surgeries in this advanced age can't be tolerated as in

middle ages. In addition to the surgeries's high risks, anaesthetic agents also depress the limited cardiac and respiratory functions. Mortality was 9.6% at 30 days and 33% at one year. The most common postoperative complications were chest infection and heart failure. Mortality was %5 at admission, %10 at a month (2,3). The usage of regional and nerve blocks reduce blood loss maintains better intraoperative analgesia, whereas general anaesthesia requires mechanical ventilation and include many potential complications, it offers better hemodynamic conditions (4,5). The randomised trials comparing different methods of anaesthesia for hip surgeries found no difference according to mortality or morbidity (6).

Radcliff and his friends reported in his study that regional anaesthesia reduce the mortality (2).

The majority of the elderly hip fracture patients due to the existing comorbidities refer to the internal care units for monitorization (7). The trials about the hip fracture patients are limited. For this reason we aimed to evaluate the hip fracture patients' mortality, morbidity, anaesthetic choice, surgery type retrospectively.

METHODS

We retrospectively evaluated the hip fracture patients data who attended to the intensive care unit between January 2015-2016 after obtaining written consent from the hospital's ethic committee. Among 44 patients, 34 patients were included. Head of femur fractures, proximal fracture (neck of femur fractures, subtrochanteric and trochanteric) were defined as hip fractures. Intraoperative, postoperative period ICU data, demographic data, ASA classification, type of the surgery, anaesthetic choice (general or regional), ICU stay, blood need intraoperatively, duration of the operation, local anaesthetic dosage used in regional anaesthesia, preoperative and postoperative total blood count, hospital discharge, postoperative complications (chest, cardiovascular, cerebrovascular) were recorded. Patients aged under 40 were excluded. The surgery types were decided depending on the hip fractures type, patient's age, mental status and functional capacity before fracture, delay after the fracture, osteoporosis degree, and the comorbidities (8). For the patients with multiple instabil fractures, advanced aged patients, patients with severe osteoporosis were managed with arthroplasty.

Comorbid disorders were classified as, Cardiovascular diseases (myocard infarct, heart failure, arhythmies, cardiac valvular pathologies) diabetes mellitus (DM), hypertension, respiratory failures (COPD, asthma), urinary diseases (acute renal failure, chronic renal failure), gastroenterological diseases. Intraoperative complications were hypotension, hypertension, bradycardia, arhythmia, cardiac arrest.

Statistical Analysis

Sample size of 34 patients data were retrospectively evaluated. Statistical analysis was done using the SPSS software 16.0 (Statistical Package for Social Sciences SPSS Inc. Chicago, IL, USA). Confidence interval was 95%. *P* < 0.05 value was considered significant statistically.

RESULTS

The 14 of 34 patients (%41.1) were female, 20 of them (58.9) were male. 2 patients were excluded because of the lacking records. The mean age was 73.22 ± 13.2 (Table 1).

There were 16 patients %47.05 ASA III, 12 patients %35.29 ASA II, 6 of them %17.6 ASA IV according to ASA classification. 5 of the patients had cardiovascular diseases, 5 diabetes mellitus, 4 hypertension, 4 respiratory disease, 1 urinary disease, 2 cerebrovascular disorders as concurrent medical problems (Table 1).

Delay to surgery varied between 1-9 days mean 3.05 ± 2.43 days. The lenght of the stay at the hospital varied 1-10 days average was 7.35 ± 6.03 days. The average ICU stay was 3.29±2.17 days varied between 1-8 days (Table II). 32 patients admitted to ICU for hemodynamic monitorization.

Table 1 Demographic data of patients

Characteristics	
AGE (year)	73,2±13,2
GENDER	
Female	14 (%41,1)
Male	20 (%58,9)
ASA	
ASA II	12 (%35,29)
ASA III	16 (%47,05)
ASA IV	6 (%17,6)
Comorbid illnesses	
Cardiovascular	4
DM	5
HT	4
Chest diseases	4
Urinary diseases	1
Cerebrovascular	2
Others	9
Surgery Types	
PFN	22 (%64,7)
Arthroplasty	7 (%20,5)
DHS	5 (%14,7)

ASA: American Society of Anesthesiologists DM: diabetes mellitus
HT:hypertension PFN: Proximal Femoral Nail ,DHS: Dynamic Hip Screw

Table 2 Timing of the operation, Duration of the ICU stay, Lenght of the hospital stay

	Min.-Max.	Mean
Timing of the operation (day)	1-9	3,05 ± 2,43
Lenght of the ICU stay	1-8	3,29 ± 2,17
Lenght of the hospital stay	1-10	7,35 ± 6,03

ICU: Intensive Care Unit

Table 3 Patients Mortality Data

Mortality	n (%)
+	2 (%5,8)
-	32 (%94,2)

Table 4 Patient's Characteristics

TYPE OF ANAESTHESIA	3 (%8,9)
General Anaesthesia	31 (%91,1)
Regional Anaesthesia	78,67±30,58(45-150)
Mean operation time(min)	
Intraoperative volume (ml)	1619,11±547,44 (150-2300)
	12,48±1,75(8,5-16,6)
Preoperative Hemoglobin(g/l)	16,6
Postoperative Hemoglobin (g/l)	10,67 ± 1,7(7,8-14,4)
Intraoperative complications	14,4
Hypotension	3 (%8,9)
Bradycardia	3 (%8,9)

DISCUSSION

In our study we evaluated the elderly hip fracture patients who admitted to ICU unit ,surgery types, mortality, morbidity, anaesthetic management, Hip fractures has been a leading cause of death in elders (7,8). Age, gender, comorbidities, types of the fractures, timing of surgery, postoperative complications influence the mortality (9,10,11). Kannegaard and his friends showed the cumulative mortality rates %26.4 for female, %37.1 for male at 12 months (7). With the development of the aging society and the life expectancy increases the number of hip fractures is more and increase in the future. Simple trauma can be a reason for hip fractures in elder people with less functional capacity. A search of Hepgüler *et al* showed mean age for hip fractures were 75.3±9.9 in 1118 patients. Castronuovo reported the mean age 85, Holvik 85.1, Jamal *et al.* 67.1 (10,11,12,13,14). In our study we demonstrated the mean age 73.2±13.2. In various investigations it was demonstrated that female were more

prone to hip fractures. But in our study female patients were less than male patients.

%95 of hip fractures are repaired surgically (15). There has been a considerable debate about the anaesthetic choice for hip fractures effecting the mortality and morbidity but it is not clear yet. Şahin and friends found no difference between the regional and general anaesthesia (16,17). They reported regional anaesthesia has limited early effects on mortality. Opposite to this Rodgers *et al* pointed out the advantages of the regional anaesthesia on mortality (18). Regional anaesthetic techniques improve analgesic efficacy, decrease postoperative mortality, supports a reduction in pulmonary complications, it allows earlier mobilisation and oral intake. Great Britain and Irish Association support regional anaesthesia versus general (19,20,21). In our study we used mainly spinal anaesthesia (%91.1).

Hip fractures mainly consist of trochanteric and neck fractures. The mortality of trochanteric fractures in USA varies between %15-30. For this reason fixation with surgeries reduce the complications and the mortality (20,21,22).

The surgical repairs depend on the patient's age, activity, comorbid disorders, type of the fracture, quality of the bone. Within these surgeries PFN has advantages as, less complication, less blood loss. It has more success in fixation than the other procedures. In some studies it has been shown that the mortality of internal fixation is lower than hemiarthroplasty. Bhandari in his meta analysis compared the internal fixation and arthroplasty for displaced fractures of the femoral neck. He reported the arthroplasty procedures superior with the less infection, less blood loss, low risk of revision and lower duration of the surgery (20). In our study PFN for 22 patients, hemiarthroplasty for 7 patients, DHS for 5 patients were preferred depending on the patient's properties. We found no difference between the length of the operation and the surgery types. Due to the retrospective study we couldn't find any relation between the surgery types and blood loss.

In hip fracture patients operative delay beyond 48 hours after admission increases the 30 day cause of mortality, postoperative complications and the length of hospital stay. Undue delay can be harmful surgical timing must be fast as it can be. In our study mean time to surgery was 3.05 + 2.43 days. The factors effecting the surgery were comorbid disorders, the devices for the surgery (21,22).

Our study's one of the important limitations is the cost effectiveness. We didn't estimate the ICU costs. All of our patients admitted to ICU.

In conclusion, in our study most of our patients were male and elderly patients managed with PFN under spinal anaesthesia. For elderly hip fracture patients hemodynamic monitorization must be performed due to the high mortality and morbidity of these surgeries.

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