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Analysis of outcome of proximal femur fracture in patients having cardiac diseases: An institutional based study

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Abstract---Background: The majority of proximal femur fractures (PFFs) affects the elderly. The present study was conducted to analyze the functional outcome of proximal femur fracture in patients having cardiac diseases. Materials and Methods: A prospective medical record of 50 cases that underwent surgery at Department of Orthopedics, LG Hospital and AMC MET College, Ahmedabad, Gujarat (India) were selected who were having proximal femur fracture with cardiac diseases. The preliminary history, examination details and functional outcome was assessed using Harris Hip score. After taking detailed history and examination, the patients were followed up after 4-6 weeks and 3-4 months. All statistical calculations were done using SPSS (Statistical Package for the Social Science) SPSS 21 version statistical program for Microsoft Windows. Results: The mean HHS at 4-6 weeks was 42.33 and at 3-4 months was found to be 65.43 and the p value found to be 0.0001 which is a significant value. The maximum mean HHS found in patients having LV dysfunction was 43.45 and minimum mean HHS found in patients having an old MI i.e. 30.23. At 3-4 months, mean HHS was found to be maximum in patients with H/O CABG that i.e. 69.45 and found to be minimum in patients having an old MI that was 69.45. It was found that mean

HHS found in patients with perioperative complications was 38.34 and those without any complications, the mean was found to be 43.38 and p value was found to be significant. Similarly at 3-4 months, the mean HHS found in patients with and without post-op complications was found to be 57.87 & 71.42 respectively and p value was found to be significant. Conclusion: The present study concluded that patients with proximal femur fracture, the maximum mean HHS found in patients having LV dysfunction was 43.45 and minimum mean HHS found in patients having an old MI i.e. 30.23. At 3-4 months, mean HHS was found to be maximum in patients with H/O CABG that i.e. 69.45 and found to be minimum in patients having an old MI that was 69.45.

Keywords---LV Dysfunction, Proximal Femur Fracture, Cardiac Diseases.

Introduction

Proximal femur fractures are common injuries in elderly patients. Based on the anatomic classification, PFFs are subdivided into fractures of the femoral head, the femoral neck, and intertrochanteric or subtrochanteric fractures.^{1,2} Proximal femur fractures correspond to a large percentage of hospitalizations due to orthopedic conditions and are associated with high morbidity and mortality rates. It is estimated that the number of cases can reach up to 6.26 million by 2050, mostly because of the population pyramid inversion worldwide. The affected patients are usually older than 70 years of age, Caucasian, and postmenopausal females. The most common mechanism is low-energy trauma, and it is related to clinical conditions such as malnutrition, decreased visual acuity and reflexes, chronic use of medications, and, most importantly, the progressive decrease in bone mineral density.^{3,4} The prevalence of cardiovascular disease increases with age.⁵ In addition, 65 year age group is the age group in which the largest number of surgical procedures is performed.⁶ Nearly one fourth of these major intra-abdominal, thoracic, vascular, and orthopedic procedures have been associated with significant perioperative cardiovascular morbidity and mortality.⁷ Preoperative cardiac evaluation of patients who have sustained a proximal femur fracture can delay operative treatment. Previous investigators have reported that proximal femur fracture morbidity and mortality are affected by the interval between injury and operative fixation.^{5,6} The present study was conducted to analyze the functional outcome of proximal femur fracture in patients having cardiac diseases.

Materials and Methods

The present study was conducted to analyse the functional outcome of proximal femur fracture in patients having cardiac diseases. A prospective medical record of 50 cases that underwent surgery at Department of Orthopedics, LG Hospital and AMC MET College, Ahmedabad, Gujarat (India) were selected who were having proximal femur fracture with cardiac diseases managed with PFN. The study was conducted over a period of 2 years. Before the commencement of the

study the ethical clearance certificate was taken from the ethical committee of the institute and a written informed consent was taken from the patients. Patients with proximal femur fracture managed by PFN, Patients having cardiac diseases were included in the study. Pregnant patients, patients with open fractures, patients managed with hip replacement, patients without any cardiac diseases were excluded from the study. The complete demographic, personal, clinical history and cardiac history was taken in detail. History of co-morbidities such as hypertension, diabetes was determined. The preliminary history, examination details and functional outcome was assessed using Harris Hip score. After taking detailed history and examination, the patients were followed up after 4-6 weeks and 3-4 months. Data was described in terms of range; mean, standard deviation (SD), frequencies (number of cases) and relative frequencies (percentages) as appropriate. All statistical calculations was done using SPSS (Statistical Package for the Social Science) SPSS 21 version statistical program for Microsoft Windows.

Results

In the present study, 30% patients belonged to <70 yrs age group, 55% belonged to age group 70-80 yrs and 15% belonged to age group >80yrs. In the study majority of patients were females i.e. 60%.

The mean HHS at 4-6 weeks was 42.33 and at 3-4 months was found to be 65.43 and the p value found to be 0.0001 which is a significant value.

The maximum mean HHS found in patients having LV dysfunction was 43.45 and minimum mean HHS found in patients having an old MI i.e. 30.23. At 3-4 months, mean HHS was found to be maximum in patients with H/O CABG that i.e. 69.45 and found to be minimum in patients having an old MI that was 69.45.

It was found that mean HHS found in patients with perioperative complications was 38.34 and those without any complications, the mean was found to be 43.38 and p value was found to be significant. Similarly at 3-4 months, the mean HHS found in patients with and without post-op complications was found to be 57.87 & 71.42 respectively and p value was found to be significant.

Table 1
of HHS among the subjects at 4-6 weeks and 3-4 months

	HHS (Mean $\pm$ SD)	p-value
At 4-6 weeks	42.33 $\pm$ 11.56	0.0001
At 3-4 months	65.43 $\pm$ 12.78	

Table 2
Relationship between HHS & IHD among the subjects at 4-6 weeks & 3-4 months

IHD	HHS (MEAN±SD)	
	At 4-6 weeks	At 3-4 months
LV dysfunction	43.45±12.67	62.45±8.98
Old MI	30.23±8.92	56.76±9.55
Post angioplasty	40.21±11.26	64.63±8.76
Post CABG	41.87±13.32	69.45±8.87

Table 3
Relationship between HHS and perioperative complications among the subjects at 4-6 weeks & 3-4 months

Complications	At 4-6 weeks		At 3-4 months	
	(Mean ±SD) HHS	p-value	(Mean ±SD) HHS	p-value
Present	38.34±11.34	0.023	57.87±9.67	0.025
Absent	43.38±10.78		71.42±12.56	

Discussion

Taking the increasing life expectancy into account, the total number of PFFs is estimated to increase tremendously within the next decades. In 1992, Cooper et al. predicted a total global number of hip fractures of 3.94 million in 2025 and 6.26 million in 2050.⁸

In the present study, 30% patients belonged to <70 yrs age group, 55% belonged to age group 70-80 yrs and 15% belonged to age group >80yrs. In the study majority of patients were females i.e. 60%. The mean HHS at 4-6 weeks was 42.33 and at 3-4 months was found to be 65.43 and the p value found to be 0.0001 which is a significant value. The maximum mean HHS found in patients having LV dysfunction was 43.45 and minimum mean HHS found in patients having an old MI i.e. 30.23. At 3-4 months, mean HHS was found to be maximum in patients with H/O CABG that i.e. 69.45 and found to be minimum in patients having an old MI that was 69.45. It was found that mean HHS found in patients with perioperative complications was 38.34 and those without any complications, the mean was found to be 43.38 and p value was found to be significant. Similarly at 3-4 months, the mean HHS found in patients with and without post-op complications was found to be 57.87 & 71.42 respectively and p value was found to be significant.

White et al examined a British population and found that the majority of cases occur in the age group of 85-89 years, with an annual age-related incidence of 2237 per 100,000 inhabitants.⁹

Parsurampuriya VK et al. found that the ratio of women: men range from 2:1 to 8:1 likely because of post-menopausal osteoporosis.¹⁰

Singh K et al did final follow up of all 32 patients which were included in the study managed by PFN. Modified HHS was accessed at 4-6 weeks and 3-4 months and found to be 41.19 (SD =12.89) & 64.66 (SD =13.35) respectively. No mortality was observed during the follow up. Presence of cardiac comorbidities increased the chances of hip fracture and poor HHS was observed among the patients in the study. Although no significant difference on HHS was observed among the subtypes of cardiac diseases. Most common cause of delay in surgery was the use of antiplatelet agents and delay in surgery affected the HHS significantly in a way that more the delay, poor was the HHS. Presence of comorbidities like hypertension, diabetes mellitus decreased the mean HHS. Occurrence of complications also affected the HHS. More the complications, poor was the HHS.¹¹

Conclusion

The present study concluded that patients with proximal femur fracture, the maximum mean HHS found in patients having LV dysfunction was 43.45 and minimum mean HHS found in patients having an old MI i.e. 30.23. At 3-4 months, mean HHS was found to be maximum in patients with H/O CABG that i.e. 69.45 and found to be minimum in patients having an old MI that was 69.45.

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