

One Year Review Comparing Mortality Following DHS Vs PFN

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Abstract

Objective: The objective of my study is to compare the mortality following DHS vs PFN.

Study Design: Observational retrospective study.

Place of study: Department of Orthopedic & Spine Surgery, Dr. Ziauddin Hospital.

Duration: January 2020 to December 2021.

Methodology: Patients were divided into 2 groups according to the surgical implant used. Group A with DHS implant, Group B with PFN and mortality is being checked in each group till 1-year post-operative time period by contacting each patient. Age, Gender, co morbidities, surgical procedure performed, fracture pattern (extracapsular, intracapsular) time of injury data was collected from registry of the hospital after taking permission from the authorities involved.

Results: The study included 94 patients. Minimum age was 40 years and maximum age was 95 years, and mean age was 71.11. Out of which 61 (64.8%) patients are included in group A in which DHS was done, 33(35%) patients in group B with PFN implants, (Table 1) Mean age in group A is 72.9 (SD 14.0), group B 67.7 (SD 13.3), (Table 1) In group A 16 patients (26.2%) had mortality within 1 year. In group B 2 patients (6%) has mortality within 1 year. (Table 2) There is significant association of increased mortality in patients with DHS implants (group A) with p value <0.005. (Table 2) Mortality was raised in males that is 10 (22.7%) and in females 8 patients (16%). However, no significant association was found p(0.33). (Table 3) Out of 94 patients 54 patients are ASA III with multiple comorbid and other are ASAII and ASA I. Mortality was higher in patients with ASA III 54 patients (57%) and it was not statistically significant with p (0.168). (Table 4)

Conclusion: This study shows increased mortality in patients with DHS implants as compared to patients with PFN implants.

Keywords: Hip fractures, mortality, surgical delay

Introduction

Fractures of hip joint have high rates of mortality and morbidity among general population. The c of hip fractures in elderly is expected to be 6.26 million patients per year globally by 2050. Hip fractures are managed through surgical intervention, treating without surgery has high mortality and morbidity.¹

Our population is steadily getting older as a result of advancements in medical care. Osteoporotic fractures are becoming more common; in the UK, hip fractures affect 65,000 patients annually. According to the literature, between 33 and 50% of these are trochanteric hip fractures, for which the intramedullary nail and sliding hip screw are the primary surgical options. [2] My study's purpose is to determine the mortality rates associated with PFN and DHS surgical implants, which are used to fix hip fractures. by discussing our patients' postoperative outcomes. Merely selecting an appropriate implant will help to reduce mortality.

Methodology

To begin with, approval was given by the Ethical review board. A Total number of 150 patients were included. Inclusion criteria is all adult patients above 40 years till 90yrs admitted through Emergency or OPD with hip fractures. Exclusion criteria are Age below 40 years and above 90yrs and cases admitted with hip pathological fractures. It is Retrospective observational study. We will conduct this retrospective study in the department of Orthopedic and Spine Surgery of Dr. Ziauddin hospital Clifton campus. Data is retrieved from hospital registry from January 2020 to December 2021 in patients with hip fractures age, gender, comorbidities, date of injury, date of procedure, and mortality was checked. This is a tertiary care hospital in which patients get admit through 2 means, One through emergency department. Secondly, patient can directly arrive in orthopedic consultant OPD and get admit from there directly. In hip fractures, we received extra capsular and intra capsular fractures

Intra capsular fractures include sub-capital, transcervical and Basicervical neck of femur fractures whereas in extracapsular type of fractures pertrochanteric, intertrochanteric and subtrochanteric femur fractures are included.

In intracapsular fracture if patient's age is more than 60 years and has limited mobility then we usually perform bipolar hemiarthroplasty. In patient's age less than 60 years and with good mobility and activity level then Total hip Replacement was done but none of the patients were included in our study. For extra capsular fractures Dynamic Hip screw and proximal femur nail were done and included in our study.

2 groups of patients were formed, based on the type of surgical implant used. Group A with DHS implant, Group B with PFN and mortality is being checked in each group till 1-year post-operative time period by contacting each patient. Age, Gender, co morbidities, surgical procedure performed, fracture pattern (extracapsular, intracapsular) time of injury data was collected from registry of the hospital after taking permission from the authorities involved.

SPSS 24 will be used to compile and calculate all of the data. For categorical variables, percentages and frequencies were determined. For continuous variables, the descriptive measure, such as mean \pm standard deviation, was computed. To compare categorical variables, the chi-square test was utilized. P values less than 0.05 were deemed significant.

Results

This study was conducted in Dr. Ziauddin Hospital, Karachi, the surgeries were performed by four experienced surgeons with minimum of 8 years and maximum of 25 years of experience. The study comprised of 94, with patients' ages fluctuating between 40 and 95 years, mean age of 71.11. Out of which 61 (64.8%) patients are included in group A in which DHS was done, 33(35%) patients in group B with PFN implants, (Table 1)

1. Age

Procedure	Mean	N	Std. Deviation
DHS	72.92	61	14.061
PFN	67.76	33	13.398
Total	71.11	94	13.980

Mean age in group A is 72.9 (SD 14.0), group B 67.7 (SD 13.3), (Table 1)

2. Procedure

		Mortality period			Total
		mortality within 6 months	mortality 6 months to 12 months	alive	
Procedure	DHS	8	8	45	61
	PFN	1	1	31	33
Total		9	9	76	94

There is significant association of increased mortality in patients with DHS implants (group A) with p value <0.005. (Table 2); In group A 16 patients (26.2%) had mortality within 1 year. In group B 2 patients (6%) has mortality within 1 year. (Table 2)

3. Gender

Count		Mortality period			Total
		mortality within 6 months	mortality 6 months to 12 months	alive	
GENDER	MALE	6	4	34	44
	FEMALE	3	5	42	50
Total		9	9	76	94

Mortality was raised in males that is 10 (22.7%) and in females 8 patients (16%). But there was no significant association with p(0.33). (Table 3)

4. Comorbidities

Count		Mortality period			Total
		mortality within 6 months	mortality 6 months to 12 months	Alive	
Comorbidities	NKCM	2	0	11	13
	HTN	0	1	8	9
	DM	0	0	3	3
	PARKINSON	0	1	0	1
	IHD	0	0	1	1
	ASTHMA	0	0	2	2
	MULTIPLE COMORBIDITIES	7	5	42	54
	Psych/dementia	0	0	6	6
	other	0	2	3	5
Total		9	9	76	94

Out of 94 patients 54 patients are ASA III with multiple comorbid and other are ASAII and ASA I. Mortality was higher in patients with ASA III 54 patients (57%) and it was not statistically significant with p-value (0.168). (Table 4)

Discussion

Patients over 60 are frequently diagnosed with intertrochanteric fractures, which are typically the result of minor trauma. The main causes of the rise in incidence are the longer life spans and more sedentary lifestyles brought about by urbanization. Since conservative techniques increased the number of deaths and complications, Stable The usual course of treatment has been internal fixation and early mobilization. The most popular device for fixing intertrochanteric fractures is the DHS with side plate assembly. PFN is the most recent implant used to treat intertrochanteric fractures. This implant has numerous potential benefits and is a cephalomedullary device. [3]

Generalized linear models with incremental case-mix adjustment for patient, non-surgical and surgical characteristics, and socioeconomic factors were used to analyze data on 82,990 patients from the National Hip Fracture Database. When treating trochanteric hip fractures, the use of an intramedullary nail carries a 12.5% higher risk of 30-day mortality when compared to a sliding hip screw. [4]

A short proximal femoral nail (PFN) may be advised for unstable fractures and a dynamic hip screw (DHS) for stable fractures. Since the 1-year mortality risk and complication rate were significantly higher than those of femoral neck fractures, trochanteric fractures remain a challenge [5]. When comparing PFN to DHS, the risk of peri-implant femoral fractures was more than three times higher. Mortality rates and surgical revision do not seem to be rising. [6]

Patients who underwent DHS had a 31.81% mortality rate. Regarding surgical methods, comorbidities, and demographic data, there was no discernible difference between the living and deceased patients. Regarding the average of all aspects of the patients' general, mental, and physical health as well as gender, there was no correlation. The length of hospital stays, the amount of bleeding during surgery, and the mean state of physical and mental health did not significantly correlate. In these patients, a history of smoking, high blood pressure, or diabetes did not correlate with QOL or death. The primary risk factor for death following DHS surgery is the patient's age. [7]

It has been noted that PFN technical difficulties can affect any patient, regardless of their age, gender, or socioeconomic standing.[8] When compared to the PFN group, the functional recovery scores in the DHS group at three- and six-months following surgery were significantly lower from preoperative baseline scores ($p=0.007$). [9] The surgical management of per trochanteric fractures involves the use of proximal femoral nail (PFN), hemiarthroplasty (HA), and dynamic hip screw (DHS). Nonetheless, compared to other techniques, the minimally invasive PFN has been shown to have a lower risk of postoperative complications and mortality. [10]

Unstable when compared to PFN and DHS, bipolar hemiarthroplasty for intertrochanteric fractures may be the optimal surgical method in terms of reduced surgical failure and reoperation. Nonetheless, PFN outperformed Bipolar hemiarthroplasty in terms of long-term Harris Hip Score [11]. Because fewer issues arose during PFN use, this implant is the most secure.[12] An excellent substitute for the DHS is PFN. Because of this, we thought it might be the preferred implant for surgeons with prior experience with interlocked femoral nailing systems when treating trochanteric fractures. [13]

In our opinion, the PFN is a good option for stabilizing fractures that are subtrochanteric. Furthermore, we think it's excellent that the PFN is being used for unstable trochanteric fractures.[14] In terms of less blood loss, shorter surgical times, earlier weight bearing and mobilization, shorter hospital stays, lower risk of infection, and fewer complications, PFN is superior to DHS in type II intertrochanteric fractures [15]. Hip fractures are linked to unfavorable consequences, such as death. Patients with hip fractures have been reported to have a one-year mortality rate of up to 20–24%.[16]

Study Limitations

Duration of surgery, large surgical incision, blood loss will play important role in contributing the mortality a part from surgical implant which is not discussed in this study.

Conclusion

This study shows increased mortality in patients with DHS implants as compared to patients with PFN implants.

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