



Radiological & Functional Analysis on Proximal Femur Fixation with Nailing Vs Stabilisation with Dynamic Screw for Hip: Comparative Analysis for Fracture of Intertrochanteric Region

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ABSTRACT: Introduction: Fracture of Intertrochanteric region represent a significant challenge in orthopaedic trauma due to their prevalence among the elderly population and associated morbidity and mortality. Handling of the fractures with surgical intervention playing a crucial role in achieving optimal outcomes. This study was undertaken to critically evaluate the result for fracture of intertrochanteric region managed by DHS & PFN, assessing factors such as surgical complications, functional recovery, postoperative pain, and long-term mobility.

Aim and Objectives: Radiologically & functionally analyse the outcome of fracture of intertrochanteric region fixed with PFN & DHS.

Materials and Methods: A prospective study was done for 1 year at VMKVMCH Salem on 50 patients. Patients admitted for Intertrochanteric fracture with Unstable, comminuted intertrochanteric and sub trochanteric fracture, Age more than 20years and Assesed for fixation were included in the study. Patients less than 20yrs, Old wound / Osteomyelitis, surgically operated fractures, implant in the same extremity and Pathological fractures, reverse oblique were excluded from the study.

Results: Boyd and Griffin type I nearly 24% of the group has to be managed with DHS more than PFN which is only 12%. Boyd & Griffin type II 68% of the group managed with PFN which is more than DHS 60%. Boyd and Griffin type III 20% of the group managed with the PFN more than DHS which is 16%. Good outcome is nearly equal in both the groups. Fair outcome is more in DHS group. Poor outcome is 16 % in PFN and 12% in DHS

Conclusion: PFN demonstrates advantages in terms of biomechanical stability and lower rates of implant-related complications. However, DHS remains a viable option, particularly in less complex fractures and in patients with osteoporosis where bone quality may affect surgical outcomes.

Keywords: *orthopaedic trauma, Fracture of Intertrochanteric region, Dynamic hip screw fixation, proximal femoral nailing.*

INTRODUCTION

Fracture of Intertrochanteric region represent a significant challenge in orthopaedic trauma due to their prevalence among the elderly population and associated morbidity and mortality. Handling of the fractures with surgical intervention playing a crucial role in achieving optimal outcomes. Among the various surgical



techniques available, dynamic screw for hip and proximal femur fixation with nailing have emerged as conventional treatments, offering distinct advantages based on fracture type, patient demographics, and surgeon preference. Dynamic hip screw fixation, introduced by Smith-Petersen in 1934, remains a widely accepted technique for stabilizing intertrochanteric fractures. It involves the placement of dynamic screw for the hip, promoting fracture compression and stability. Alternatively, proximal femoral nailing has gained popularity for its biomechanical advantages, particularly in unstable fractures and those involving osteoporotic bone. This method utilizes an intramedullary nail inserted through the femoral neck and head, providing stable fixation and early mobilization. The choice between DHS and PFN depends on various factors such as pattern of the fracture, patients age, quality of bone & skill of surgeon. Despite extensive research and clinical experience with both techniques, controversies persist regarding the superiority of one method over the other in specific clinical scenarios.

This thesis aims to critically evaluate the result for fracture of intertrochanteric region managed by DHS & PFN, assessing factors such as surgical complications, functional recovery, postoperative pain, and long-term mobility. By synthesizing current literature and presenting institutional data, this study seeks to provide evidence-based recommendations for optimizing surgical management and improving patient outcomes in intertrochanteric fractures. Through a comprehensive review of surgical techniques, biomechanical principles, and clinical outcomes, this thesis contributes to the ongoing discourse in orthopaedic trauma care, aiming to enhance treatment algorithms and refine surgical decision-making strategies for intertrochanteric fractures. This introduction sets the stage by discussing the significance of the topic, introduces the two main surgical techniques (DHS and PFN), outlines the rationale for their use, and previews the objectives and structure of the thesis. Adjustments can be made based on the specific focus and scope of your research.

AIM AND OBJECTIVES:

Radiologically & functionally analyse the outcome of fracture of intertrochanteric region fixed with PFN & DHS.

MATERIALS AND METHODS:

A prospective study was done for 1 year at VMKVMCH Salem on 50 patients. Patients admitted for Intertrochanteric fracture with Unstable, comminuted intertrochanteric and sub trochanteric fracture, Age more than 20years and Assesed for fixation were included in the study. Patients less than 20yrs, Old wound / Osteomyelitis, surgically operated fractures, implant in the same extremity and Pathological fractures, reverse oblique were excluded from the study.

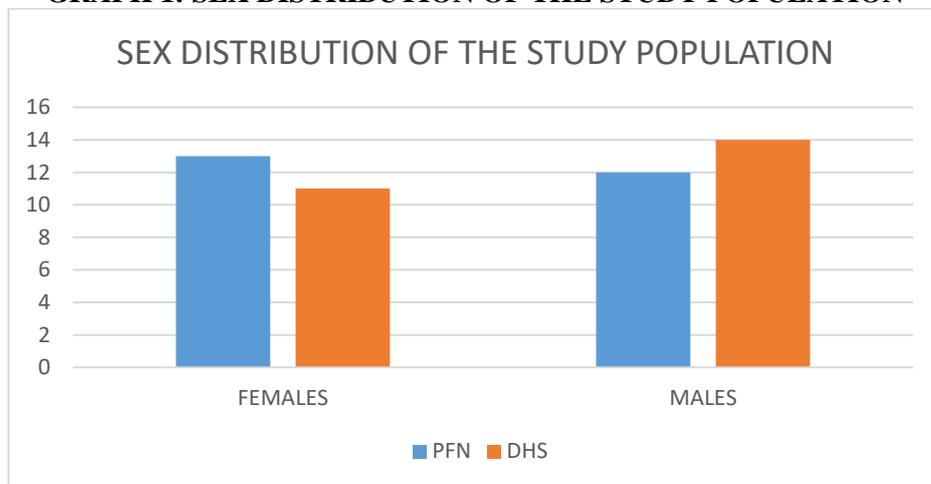
RESULTS:

TABLE 1: AGE DISTRIBUTION OF THE STUDY POPULATION

		GROUP				P value
		PFN		DHS		
		Count	Column N %	Count	Column N %	
AGE	<40	2	8.0%	0	0.0%	0.27
	41- 50	2	8.0%	3	12.0%	
	51 - 60	4	16.0%	9	36.0%	
	61 - 70	11	44.0%	10	40.0%	
	>71	6	24.0%	3	12.0%	



GRAPH 1: SEX DISTRIBUTION OF THE STUDY POPULATION



GRAPH 2: BOYD AND GRIFFIN CLASSIFICATION TYPE

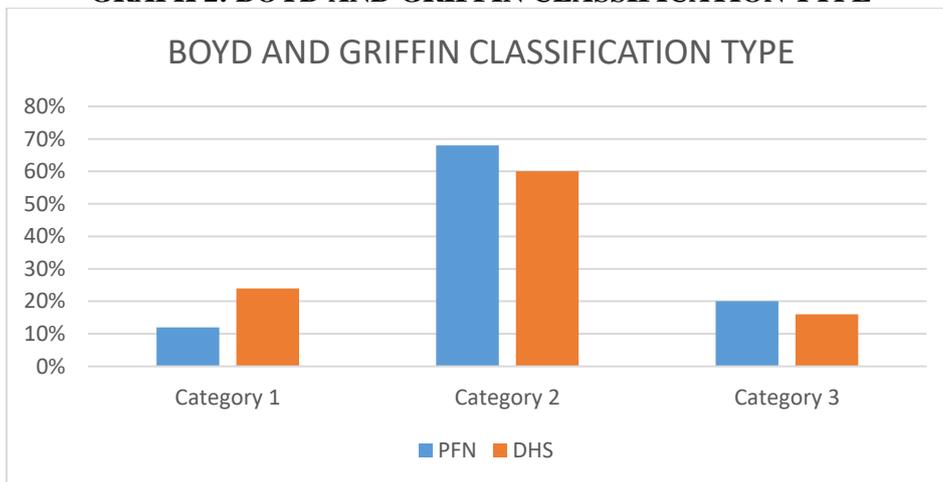


TABLE 2: INTERVAL BETWEEN SURGERY IN DAYS IN THE GROUPS

		GROUP				P value
		PFN		DHS		
		Count	Column N %	Count	Column N %	
INTERVAL BETWEEN SURGERY IN DAYS	1	1	4.0%	0	0.0%	0.299
	2	6	24.0%	3	12.0%	
	3	10	40.0%	16	64.0%	
	4	8	32.0%	6	24.0%	

TABLE 3: COMPLICATIONS POST OP

		GROUP				P value
		PFN		DHS		
		Count	Column N %	Count	Column N %	
COMPLICATION	AVN	1	4.0%	0	0.0%	0.138
	Bedsore	4	16.0%	4	16.0%	
	Delayed Union	1	4.0%	0	0.0%	
	Superficial Infection	2	8.0%	4	16.0%	
	Varus Union	0	0.0%	3	12.0%	



Z-Effect	4	16.0%	0	0.0%
Nil	13	52.0%	14	56.0%

GRAPH 3: 3- MONTH FOLLOW UP

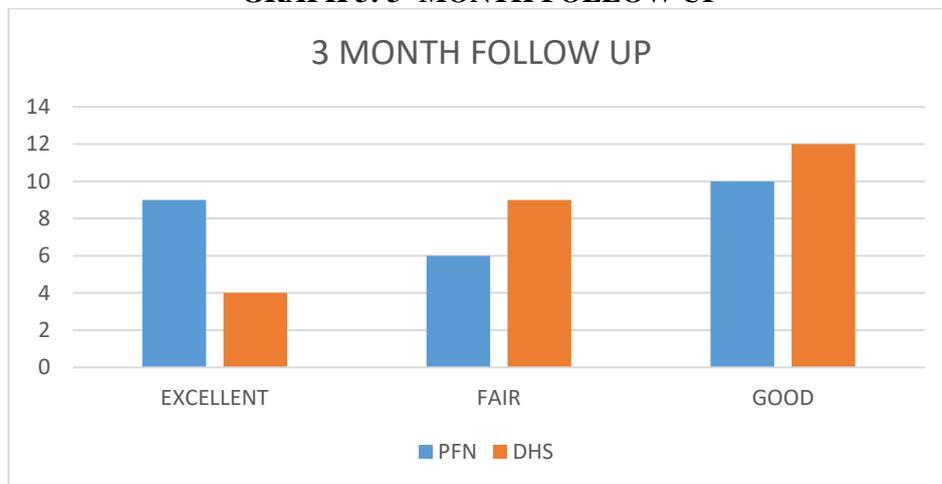


TABLE 4: HARRIS HIP SCORE AT 6 MONTH

		GROUP				P value
		PFN		DHS		
		Count	Column N %	Count	Column N %	
Harris Hip Score At 6 Month	EXCELLENT	9	36.0%	4	16.0%	0.128
	FAIR	1	4.0%	6	24.0%	
	GOOD	11	44.0%	12	48.0%	
	POOR	4	16.0%	3	12.0%	

DISCUSSION:

Discussion on radiological & functional analysis of the PFN & DHS in trochanteric region fracture. 50 patient selected with intertrochanteric fracture of Type 1,2,3 Boyd’s - Griffin classification .2 groups were separated 25 patients in each group to treated with PFN in one group and DHS in another. Boyd and Griffin type I nearly 24% of the group has to be managed with DHS more than PFN which is only 12%. Boyd & Griffin type II 68% of the group managed with PFN which is more than DHS 60%. Boyd and Griffin type III 20% of the group managed with the PFN more than DHS which is 16%. Interval between the surgery to perform is 3 days 40% in PFN & 64 % in DHS. Bedsore is the more common complication seen in both the groups. Superficial infection is 16% in DHS group Z- effect is 16% in PFN group. No. of c-arm shots is more in PFN. Excellent outcome according to harris hip score follow up is 36% in PFN group. Good outcome is nearly equal in Both the groups. Fair outcome is more in DHS group. Poor outcome is 16 % in PFN and 12% in DHS It's crucial to consider several factors including the nature of the fracture, patient demographics, and the specific goals of treatment. Both PFN and DHS are commonly used methods, and each has its own set of advantages and potential complications. PFN is typically done with less invasive technique, which may result in less soft tissue disruption compared to DHS. PFNs can provide good stability for both unstable and stable fractures, including those with significant comminution or when the fracture is at risk of non-union. PFNs can provide good stability for both unstable and stable fractures, including those with significant comminution or when the fracture is at risk of non-union. PFNs generally require smaller incisions and may be associated with a reduced risk of infection due to less extensive soft tissue dissection. DHS is a more straightforward procedure with a long history of use and a well-understood technique. It may be preferred in cases where the fracture is less complex. There can be complications such as implant-related issues (e.g., screw cut-out, implant breakage) and difficulties in achieving proper fracture reduction in PFN. Patients may need to wait longer before they can bear weight on the affected leg, potentially leading to a slower recovery in functional outcomes, the procedure needs big incision and extensive dissection, increased consequences like infection in DHS.



CONCLUSION:

PFN demonstrates advantages in terms of biomechanical stability and lower rates of implant-related complications. However, DHS remains a viable option, particularly in less complex fractures and in patients with osteoporosis where bone quality may affect surgical outcomes. Ultimately, the choice between PFN and DHS should be tailored to individual patient factors, fracture characteristics, and surgical expertise, ensuring the best possible functional recovery and long-term outcomes.

CONFLICT OF INTEREST: NIL

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