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COMPARATIVE STUDY BETWEEN DHS AND PFN IN THE MANAGEMENT OF TROCHANTERIC AND SUBTROCHANTERIC FEMORAL FRACTURES

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ABSTRACT **Background:** The of aim treatment of these fractures is prevention of malunion and early mobilization.There are various treatment options available, the ideal choice of treatment is internal fixation. Most common used device used for fixation is DHS with side plate assemblies. The best suited implant for management is PFN.

Aim and Objectives: (A) Comparative study of PFN AND DHS. (B) Evaluation of effectiveness andstrength of PFN and DHS.

Material and methods: The present study was carried out in Orthopaedics Unit of Usha Hospital, Muzaffarpur, Bihar. The study consisted of total 40 adult patients of peritrochanteric fractures of femur. Out of this 20 patients were treated with PFN and DHS 20.This was a comparative study. All the peritrochanteric fractures were considered except grade 4 type of intertrochanteric fracture as per Boyd and Griffins classification and grade 5 according to seinsheimer classification. Minimum of 6 months of follow up.

Observation and Result: We have done follow up examination at the end of 6 weeks, 12 weeks, 18weeks. Average time for which patients were admitted was 3 weeks i.e. 21 days. Average time of union in all our 40 patients was 18 weeks (range 12 to 20 weeks).

PFN is better treatment modality considering its biomechanical properties. The claimed advantage with PFN is that a smaller exposure is required than for a sliding screw it may therefore be associated with less blood loss, shorter operating time and less morbidity. Also in osteoporotic bone PFN fixation carries definitive advantage over DHS fixation device.

KEYWORDS : PFN, Management of unstable fracture and osteoporotic bone, Rotational stability, DHS

INTRODUCTION

Trochanteric and Subtrochanteric fractures occur most commonly due to high velocity trauma and trivial trauma. This is also due to sedentary lifestyle brought on by urbanization. The ideal choice is treatment with internal fixation. Two most commonly used methods are DHS and PFN.DHS with side plate assemblies is a collapsible fixation device seeking its own position of stability. PFN is also a collapsible device but has additional rotational stability. This implant is a centromedullary device, biomechanically more sound and a load bearing device.

MATERIAL AND METHODS

This study was conducted in Orthopaedics Unit of Usha Hospital, Muzaffarpur, Bihar. Consent of all patients was taken. The study consisted of total 40 patients out of which 20 were treated by DHS and 20 by PFN. Patients from age group 18yrs above were selected. All the peritrochanteric fractures were considered except grade 4 type of intertrochanteric fracture as per Boyd and Griffin's classification and grade 5 according to seinsheimer classification.

INCLUSION CRITERIA:-1) Type I, II and III of fracture pattern. a) Boyd and Griffin's classification. b) Evans classification. c) Seinsheimers classification. d) Tronzo's classification. e) AO classification/OTA. 2) Radiologically fractures with intact lateral cortex and Intact entry point i.e. greater trochanter. 3) Minimum 6 months of follow up. B) Exclusion Criteria:-1) Patients with type IV and V fracture pattern and patients who were unfit for surgery. C) Choice of nail used:-Hollow tubular nail was chosen. The nail was made up of AISI 316L stainless steel. Nail was of uniform of 25mm in all 20 cases. Proximal diameter of nail was 17mm while distal diameter ranging from 9 to 12mm.Proximal femoral nail of 130 and 135 degrees with 10 degree of anteversion was used. Measurement of diameter of nail was done by taking conventional radiographs of normal femur and by measuring the inner diameter between the cortices of the level of the isthmus of femur. We also took help of ruler provision from the PACS system of X-rays which was used in our hospital.

RESULT AND OBSERVATION

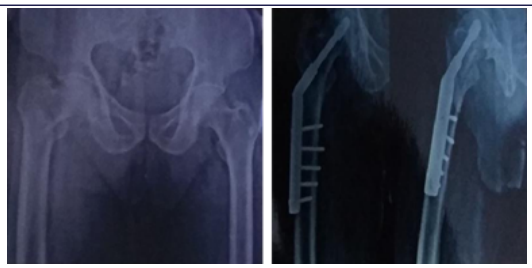
Comparative study of both the techniques showed that average time for which patient was admitted in our wards was 3 weeks. Average time of union in all our 40 patients was 18 weeks with an average range of 12 to 20 weeks. Harris Hip Scoring System (modified) was used.

1) Maximum Points Possible:-100. 2) Pain Relief:-44. 3) Function:-47. 4) Range of Motion:-5. 5) Absence of Deformity:-4.

	Score	**Rating**
	1) 90-100.	Excellent.
	2) 80-89.	Good.
	3) 70-79.	Fair.
	4) <70.	Poor.
Stability Pattern of Intertrochanteric Fractures:-		
Type of Fracture	**PFN**	**DHS**
Stable	06(42.85%)	10(62.5%)
Unstable	08(57.14%)	06(37.5%)
Total	14	16

With PFN, malrotation and deformity is less. PFN is useful in difficult fractures with subtrochanteric extension or reversed obliquity. The rotational stability was higher with PFN. Also, we did not encounter any secondary femoral fracture in patients managed by PFN as compared to DHS. All the patients were followed up at an interval of 6 weeks till fracture union. Then after once in 3 months till 1 year. Modified Harris Hip Scoring System was used for evaluation. PFN proved to manage unstable fracture more than DHS.

Pre-operative and Post-operative X-ray (PFN).



Pre-operative and post-operative X-ray (Dynamic Hip Screw).

DISCUSSION

In this comparative study PFN proved to be better device with satisfying results. PFN has been recently introduced in 1996 by AO/ASIF has began to compete with DHS. It has many advantages over DHS like:-1) Addition of 6.4mm of antirotation screw. 2) Greater implant length.3) Small Valgus angle of 6 degrees. 4) Small diameter with flutting tip reducing stress riser effect below distal tip of nail. 5) More proximal positioning of distal lock to avoid abrupt changes in stiffness of implant constructs.

Surgical Technique of PFN:-Pre-op planning:-Consent of patient was taken. a) Determination of nail diameter. b) Determination of neck shaft angle. c) Length of the nail. d) Administration of prophylactic antibiotic. Spinal/Epidural anaesthesia was given. Some required general anaesthesia. Supine position was given to patient. Adduction of the affected limb by 10 to 150 degree and closed reduction was done by traction and gentle rotation. Palpation of the tip of greater trochanter (GT) in thin patients was done, obese patients required image intensifier and 5 cms longitudinal incision taken proximal from the tip of GT. Parallel incision in fascia lata was taken to expose the tip of GT. Determination of the entry point and insertion of guide wire was done in AP view of C-arm. Opening of femur was done and Insertion of proximal femoral nail was done after confirming satisfactory fracture reduction and appropriate size nail. Guide wire was inserted for neck screw and Hip pin. Finally, distal locking and closure was done.

CONCLUSION

Numerous modalities are available for treatment of proximal femoral fractures however PFN appears to be better treatment modality considering its biomechanical properties. Though there are some of the disadvantages like, High learning curve, Occurrence of "Z" effect and reverse "Z" effect producing varus collapse, limited indications due to presence of excessive communition at lateral cortex and fracture site. Some uncommon incidences of implant failure have been noticed. Despite of these disadvantages PFN has began to compete with DHS and claimed as a better procedure due to less intraoperative blood loss, smaller incision, less intraoperative time and rotational stability.

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