



TO EVALUATE FUNCTIONAL OUTCOME OF INTERTROCHANTERIC FRACTURES OF FEMUR TREATED BY PROXIMAL FEMORAL NAIL HELICAL BLADE

Orthopaedics

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ABSTRACT

Introduction: Intertrochanteric fracture is one of the most debilitating injuries in the elderly. The incidence of these fractures increases with advancing age. Non-operative treatment is mainly reserved for poor medical candidates and non-ambulant patients with minimal discomfort after fracture. Today operative treatment has largely replaced conservative measures and the goal of treatment is to achieve accurate, acceptable and stable reduction with rigid internal fixation in order to achieve early mobilization of patients and prevent complications of prolonged recumbence. **Aim & Objectives:** 1 To evaluate Functional outcome of Intertrochanteric fractures of femur treated by Proximal Femoral Nailing helical blade, 2 To evaluate the functional outcome by assessing various parameters using HARRIS HIP Score. **Methods:** The study was conducted in Department of Orthopaedic, Muzaffarnagar Medical College and hospital during the period 2020- 2022. A total of 30 patients were admitted and closed reduction and internal fixation with proximal femoral nail (Helical blade) was done. All patients were followed up on 6weeks, 12weeks and 24weeks. **Result:** The HARRIS HIP SCORE grading was done and 5 patients were graded excellent, 21 as good, 4 as fair and none as poor. The patient's grade was satisfactory despite the bilateral trochanteric fracture. **Conclusion:** We conclude that the use of Proximal femoral nail Helical Blade, has the distinct advantages of closed reduction, preservation of the fracture hematoma, little soft tissue trauma during surgery, early rehabilitation, and prompt return to work. Proximal femoral nail with helical blade prevents the rotational complications and implant failures like cut out and 'Z' effect.

KEYWORDS

INTRODUCTION:

Intertrochanteric fracture is one of the most debilitating injuries in the elderly. The incidence of these fractures increases with advancing age^[1]. 50 % of fracture around hip patients in elderly is of intertrochanteric fracture and these 50 % of fracture are unstable type of trochanteric fractures. They are usually complicated with associated co-morbidities like osteoporosis, diabetes, hypertension, renal failure. In such circumstances, non-operative treatment is mainly reserved for poor medical candidates and non-ambulant patients with minimal discomfort after fracture. Today operative treatment has largely replaced conservative measures and the goal of treatment is to achieve accurate, acceptable and stable reduction with rigid internal fixation in order to achieve early mobilization of patients and prevent complications of prolonged recumbence.

Despite marked improvements in implant design, surgical technique and patient care, intertrochanteric fractures continue to consume a substantial proportion of our health care resources and remain a challenge to date^[2]. Complications with intertrochanteric fractures arise primarily from fixation rather than union or delayed union, because the intertrochanteric area is made up of cancellous bones^[3].

PFNA-II uses a helical blade rather of the two screws that are typically utilised. The fracture is thought to be stabilised, compressed, and rotated under the control of the helical blade. It has a greater cut out strength than other devices because, when it is inserted into the neck, the bone is compressed. In contrast, the mediolateral angle is increased from 5 degrees to 6 degrees. Therefore, there is a lower likelihood of implant failure, particularly in aged, osteoporotic bones.

METHODS:

The study was conducted in Department of Orthopaedic, Muzaffarnagar Medical College and hospital during the period 2020-2022 to evaluate the functional outcome of intertrochanteric fractures of femur treated by proximal femoral nail helical blade.

Inclusion Criteria :

Patients age > 18 years of age, Both displaced and Undisplaced fractures, Fractures less than 1week duration, Without any other associated fractures except Bilateral Trochanteric fracture.

Exclusion Criteria:

Fractures with non union changes, Old malunited intertrochanteric fracture, Patients with arthritic changes in hip joint, Pathological fractures, Compound trochanteric fractures, Medically unfit patients. Clinical and radiographic examinations were conducted on admission

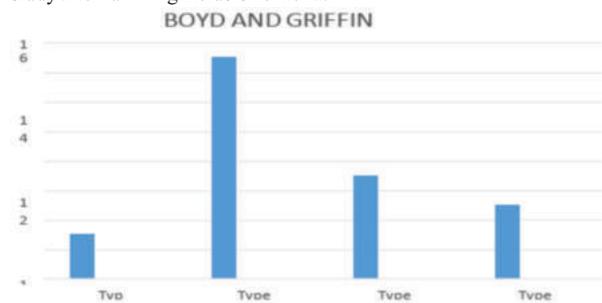
to the hospital. Routine investigations and pre-anesthetic checkups were done. Using the HARRIS HIP SCORE^[4] intertrochanteric fractures treated by proximal femoral nailing Helical Blade were analysed for functional outcome.

The image shows a 'HARRIS HIP SCORE' form. It includes sections for:

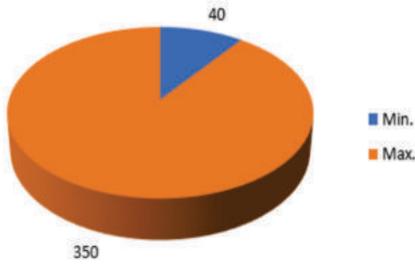
- GENERAL INFORMATION: Patient initials, visit date, operative side (Right/Left), and visit duration.
- PAIN: Questions about pain intensity and its effect on activities.
- FUNCTIONAL CAPABILITY: Questions about walking, stairs, support, distance walked, and sitting.
- DEFORMITY: Questions about limb length discrepancy and rotation.
- RANGE OF MOTION: A grid for measuring flexion, extension, abduction, adduction, and internal/external rotation.
- COMMENTS: A space for additional notes.
- INVESTIGATOR NAME (PRINT) and SIGNATURE: Fields for the clinician's details.

RESULTS:

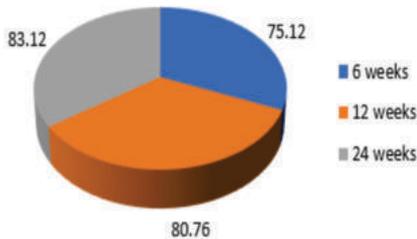
30 cases of unstable intertrochanteric fractures were included in our study after fulfilling inclusion criteria.



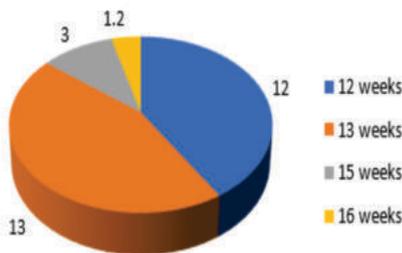
Graph 1: Boyd and Griffin Fracture Types



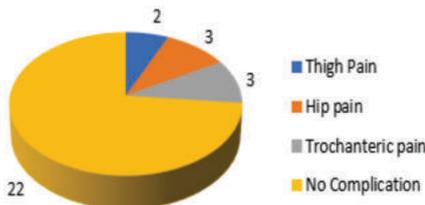
Graph 2: Intra-operative blood loss



Graph 3: Comparison of mean Harris Hip Score (HHS) between different time intervals



Graph 4: Time for Union in weeks



Graph 5: Complications

Case 1



Pre-op 6-Weeks follow up 12-Weeks Follow up

Case 2



Pre-op 6-Weeks follow up 12-Weeks Follow up

DISCUSSION:

The Helical Blade is a load-sharing intramedullary device that is well-designed. In terms of biomechanics, Helical Blade is more rigid, has a shorter moment arm (from the tip of the helical blade to the centre of the femoral canal). Helical Blade has several advantages over other implants for elderly osteoporotic patients, including minimal blood loss, shorter surgical times, early weight bearing, lower chances of implant failure, minimal fluoroscopy time, easier helical blade insertion (compared to difficult lag screw and derotation screw), lower chances of post-operative hip pain, and better performance than any other implant. The union rate in the current research was 100%. There were no instances of femoral fractures both before and after surgery. Patients who used the Helical Blade nail experienced blood loss that ranged from 40 to 350 ml, with an average loss of 122.5+67.2 ml.

The outcomes were equivalent to those of the research by Levent Karapinar et al.(5) The average HARRIS HIP SCORE[4] in our patients was 80.7 (at the end of three months) and 83.12 (at the end of six months). In present study mean duration between trauma and surgery was 4+2.64 days. This time duration is comparable to kulkarni et al.(6) in their study reported this duration to be 4.33 and 3.77 days in two groups. In present study trochanteric pain (10%) and thigh pain (6.7%) were complication encountered. In study of park et al (7) mild persistent pain around operation site and greater trochanteric area (21.7%) was the only reported complication. It was seen that mean Harris hip scores reached to > 80 with in 12 weeks of follow up. Similar to findings of present study , Bajpai et al (8) in their study too reported achievement of Harris hip score of 88.73 that had followed up period of 12 to 24 weeks.

CONCLUSION:

When treating elderly, osteoporotic unstable intertrochanteric fractures, intramedullary nailing with the Helical Blade considered as a safe, simple and reliable device. Minimal soft tissue dissection, less intraoperative blood loss, significant improvement of pain, early mobilization and minimal postoperative complications make the device minimally invasive implant. It has better bone purchase because of less bone removal. Proximal femoral nail with helical blade prevents the rotational complications and implant failures like cut out and 'Z' effect. Though the sample size of study is small and period of follow up to assess the result and complication is short even it can be concluded that the use of Proximal femoral nail Helical Blade, has the distinct advantages of closed reduction, preservation of the fracture hematoma, little soft tissue trauma during surgery, early rehabilitation, and prompt return to work.

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