International Journal of Research in Orthopaedics
Varun RSS et al. Int J Res Orthop. 2024 Sep;10(5):993-995
http://www.ijoro.org

DOI: https://dx.doi.org/10.18203/issn.2455-4510.IntJResOrthop20242393

Original Research Article

Functional outcome of intertan nailing in intertrochanteric fractures: a retrospective study utilizing Oxford hip score

Varun Roheet S. S.*, Mithun E. R., Muthukumar S.

Department of Orthopaedics, Parvathy Hospitals, Chennai, Tamil Nadu, India

Received: 12 June 2024
Revised: 11 July 2024
Accepted: 16 July 2024

***Correspondence:**
Dr. Varun Roheet S. S.,
E-mail: varun2712@hotmail.com

ABSTRACT

Background: This study evaluates the functional outcome of intertan nailing in intertrochanteric fractures in terms of the Oxford Hip Score (OHS).
Methods: Twenty-eight patients (10 males, 18 females, mean age: 75.2 years, range: 60-94 years) were analyzed. Mean follow-up period was 6 months (3–8 months) and 5 patients were lost to follow-up.
Results: The overall average OHS was 37.2, with scores varying from 22 to 47. Nine patients had OHS scores above 40, indicating satisfactory function, while 10 patients scored between 30-39, denoting mild loss of function. Four patients had OHS scores of 20–29, indicating a moderate to severe loss of function.
Conclusions: These findings indicate the varied functional outcomes of intertan nailing in intertrochanteric fractures and highlight the importance of individualized treatment strategies.

Keywords: Functional outcome, Intertan, Oxford hip score, Proximal femur fracture

INTRODUCTION

Intertrochanteric fractures are common in the elderly. The incidence of intertrochanteric fracture of the femur has increased significantly in recent years and is positively correlated with population aging.[1,2] Despite continuous development of surgical techniques, internal fixation technology needs to be optimized and improved1.[1] The Intertan Nail (ITN) uses an integrated two-screw system, providing increased stability and resistance to femoral head rotation compared with the conventional Gamma nails.[3] A randomized controlled trial with 5 years of follow-up demonstrated that the ITN performed better in functional outcome and length of hospital stay within 6-month follow-up however, no significant differences were recorded after 5 years of follow-up.[4] Therefore, no consensus has been reached on the functional recovery for patients with intertrochanteric fractures fixed by ITN and comprehensive evaluations of its functional outcomes using validated tools like the Oxford Hip Score (OHS) remain scarce. This retrospective study aims to analyze the functional outcomes of Intertan nailing in intertrochanteric fractures based on OHS assessments.

METHODS

This is a retrospective study conducted at a Tertiary Care Centre in the city of Chennai, India. The study included all patients of South Indian population with Intertrochanteric Fractures, with or without comorbidities who were treated with closed reduction + proximal femoral intertan nailing between September 2023 and April 2024. Patients with femoral neck fractures and patients who did not give consent for research were excluded from the study. Among the 28 patients, 2 patients expired and 3 patients were lost to follow up. OHS were collected by a blinded paramedical staff through telephonic survey. The OHS along with other parameters like age, sex and duration of follow-up was analyzed.

Figure 1: An intertan nail.

RESULTS

The data was collected from 23 patients which included 8 male and 15 female patients (Mean age 75.2, range 60-94). The average follows up duration was 6 months (range 3-8 months) The overall average Oxford score among all the 23 patients was 37.2 and the range varied from as low as 22 to as high as 47. 9 patients out of the 23 had Oxford hip scores above 40 which indicated satisfactory function. The average follows up duration among these 9 patients was 5.55 (range 4-7 months). 10 patients had Oxford hip scores between 30-39 indicating mild loss of function (mean follow up-6.4 months). 4 patients (2 male, age 85 and 75 and 2 female, age 86 and 60) had OHS between 20-29 indicating moderate to severe loss of function (Mean follow up-6 months) (Table 1).

Table 1: The Oxford hip scores and the number of patients in each category.

Oxford hip score	Number of patients
40 and above	9
30-39	10
20-29	4

DISCUSSION

The varying distribution of OHS scores among the patient population highlights the heterogeneity in functional outcomes following Intertan nailing. Factors such as age, gender, fracture severity, and comorbidities may influence these outcomes. While a substantial proportion of patients achieved satisfactory function post-operatively, a subset experienced moderate to severe loss of function, indicating the need for individualized management approaches. This study lacked a control group and no attempt was made to measure the degree of osteoporosis by the Singh index, as it involves a great interobserver variability and depends on good quality X-rays. All the fractures that occurred in patients were due to trivial fall. This supports the view that bone stock plays an important role in the causation of hip fractures in the elderly.[5] The Intertan nail has become a standard treatment device. Its characteristics include two integrated screws with a hybrid worm-gear mechanism, a trapezoidal proximal end, an oval footprint, a "clothes-pin" distal tip, a unique geometry and mechanism of action, and initial linear compression, which prevent uncontrolled shortening during healing and varus collapse, thus improving rotational instability (Figure 1).[6] Another study reported that the IT nail was 30 % stronger than the PFNA-II in the proximal region. They believed that it was likely related to the proximal square cross-section, and the strengthening rotational stability in the marrow cavity.[7]

There is a need for new treatment concepts and osteo synthetic implants because of the need for reduced peri-operative blood loss, and conservation of the natural hip joint 8. Published data has stated that PFNA was a very effective method in the treatment of different types of femoral fractures.[9,10] Intertan nail was introduced in 2005 and has become an increasingly popular option for treating intertrochanteric fractures.[11] Elderly patients with osteoporosis are more prone to moving of the screw or cutting of the femoral head, which can lead to failure of the fixation.[12] Therefore, implants should be chosen based on further scientific evidence.

CONCLUSION

In this study, we showed that the functional outcome of the Intertan nailing for intertrochanteric fractures was moderate. Although various studies show the biomechanical superiority of intertan nailing, an individualized approach depending on the fracture pattern and the general condition of the patient would be an optimal way to select an appropriate implant. These results can contribute to the literature supporting intertan nailing. Further prospective, long-term follow-up studies with larger sample sizes are needed to confirm these findings and thereby contribute to improved patient outcomes.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Von Rüden C, Hungerer S, Augat P. Breakage of cephalomedullary nailing in operative treatment of trochanteric and subtrochanteric femoral fractures. Arch Orthop Trauma Surg. 2015;135:179-85.
2. Yoon BH, Park SB. Insufficiency fracture occurring 3 years after union of an intertrochanteric hip fracture: a case report. JBJS. 2017;7:1.
3. Luo W, Fu X, Ma JX, Huang JM, Wu J, Ma XL. Biomechanical comparison of intertan nail and gamma 3 nail for intertrochanteric fractures. Orthop Surg. 2020;12(6):1990-7.

4. Berger-Groch J, Rupprecht M, Schoepper S, Schroeder M, Rueger JM, Hoffmann M. Five-year outcome analysis of intertrochanteric femur fractures. J Orthop Trauma. 2016;30:483-8.
5. Francis RM, Baillie SP, Chuck AJ, Crook PR, Daymond T, Dunn N, et al. Management of osteoporosis in patients with hip fractures. QJM. 2020;93(8):501-6.
6. Yu W, Zhang X, Zhu X, Hu J, Liu Y. A retrospective analysis of the InterTan nail and proximal femoral nail anti-rotation-Asia in the treatment of unstable intertrochanteric femur fractures in the elderly. J Orthop Surg Res. 2016;11:10.
7. Huang Y, Zhang C, Luo Y. A comparative biomechanical study of proximal femoral nail (InterTAN) and proximal femoral nail antirotation for intertrochanteric fractures. Int Orthop. 2013;37(12):2465-73.
8. Rupprecht M, Grossterlinden L, Ruecker AH, de Oliveira AN, Sellenschloh K, Nüchtern J, et al. A comparative biomechanical analysis of fixation devices for unstable femoral neck fractures: the Intertan versus cannulated screws or a dynamic hip screw. J Trauma. 2011;71:625-34.
9. Liu Y, Tao R, Liu F. Mid-term outcomes after intramedullary fixation of peritrochanteric femoral fractures using the new proximal femoral nail antirotation (PFNA) Injury. 2010;41:810-7.
10. Sahin S, Ertürer E, Oztürk I. Radiographic and functional results of osteosynthesis using the proximal femoral nail antirotation (PFNA) in the treatment of unstable intertrochanteric femoral fractures. Acta Orthop Traumatol Turc. 2010;44:127-34.
11. Ruecker AH, Rupprecht M, Gruber M. The treatment of intertrochanteric fractures: results using an intramedullary nail with integrated cephalocervical screws and linear compression. J Orthop Trauma. 2009;23:22-30.
12. Lee PC, Hsieh PH, Chou YC. Dynamic hip screws for unstable intertrochanteric fractures in elderly patients-encouraging results with a cement augmentation technique. J Trauma. 2010;68:954-64.

Cite this article as: Varun RSS, Mithun ER, Muthukumar S. Functional outcome of intertan nailing in intertrochanteric fractures: a retrospective study utilizing oxford hip score. Int J Res Orthop 2024;10:993-5.