

Research Article**Outcome of Reamed Intramedullary Interlocking Nail in the Management of Tibial Shaft Fractures****Shrenik Dharaskar****Assistant Professor, Department of Orthopaedics, Dr. Ulhas Patil Medical College & Hospital, Jalgaon Kh.****ABSTRACT**

Tibial shaft fractures are among the most common long bone fractures, often resulting from high-energy trauma. Reamed intramedullary interlocking nailing (IMILN) is a widely accepted treatment modality, offering stable fixation and promoting early mobilization. This prospective study evaluated the functional and radiological outcomes of 60 patients with tibial shaft fractures managed using reamed IMILN. Patients were followed up for 12 months postoperatively, with assessments of fracture union time, complications, and functional recovery using the Modified Karlström-Olerud scoring system. The mean fracture union time was 18 weeks, with excellent-to-good functional outcomes observed in 86.7% of patients. Complications included delayed union (10%) and infection (5%). The results affirm the efficacy and safety of reamed IMILN in achieving favorable outcomes for tibial shaft fractures.

Keywords: Tibial shaft fracture, Reamed intramedullary nailing, Interlocking nail, Fracture union, Functional outcome

Introduction:

Tibial shaft fractures account for a significant proportion of orthopedic injuries due to their subcutaneous location and vulnerability to trauma. These fractures are commonly associated with high-energy injuries, such as road traffic accidents, and low-energy mechanisms like falls (1). Management of tibial shaft fractures has evolved over decades, with intramedullary nailing emerging as the gold standard for diaphyseal fractures requiring surgical intervention (2). Reamed intramedullary interlocking nailing offers several advantages, including stable fixation, preservation of periosteal blood supply, and the ability to manage comminuted or segmental fractures. It facilitates early weight-bearing and reduces the risk of malalignment and non-union compared to conservative methods (3). Despite its widespread acceptance, reamed IMILN is not without complications, such as infection, delayed union, and implant failure. The surgical technique and postoperative

rehabilitation play critical roles in optimizing outcomes (4). Previous studies have demonstrated favorable functional and radiological outcomes with this technique, but variability in union rates and complication profiles persists (5).

This study aims to evaluate the outcomes of reamed IMILN in the management of tibial shaft fractures, focusing on fracture healing time, complications, and functional recovery, providing insight into its efficacy and challenges.

Aim

To evaluate the outcomes of reamed intramedullary interlocking nail in the management of tibial shaft fractures.

Objectives

1. To assess fracture union time and rates in tibial shaft fractures treated with reamed IMILN.

- To evaluate functional recovery and identify postoperative complications associated with the procedure.

Materials and Methods

This prospective study was conducted on 60 patients with tibial shaft fractures treated using reamed IMILN at a tertiary care hospital.

Inclusion Criteria:

- Patients aged 18–60 years with closed or Gustilo-Anderson Type I open tibial shaft fractures.
- Fractures within 5 cm of the diaphysis.
- Patients fit for surgery and willing to provide informed consent.

Exclusion Criteria:

- Pathological fractures.

- Polytrauma patients requiring other priority interventions.
- Gustilo-Anderson Type II or III open fractures.

All patients underwent standard preoperative evaluation, fracture reduction, and nailing under fluoroscopic guidance. Postoperative care included physiotherapy and regular follow-ups at 6 weeks, 12 weeks, 6 months, and 12 months to monitor union, alignment, and functional recovery. Fracture union was defined as cortical continuity in at least three cortices on radiographs. Functional outcomes were assessed using the Modified Karlström-Olerud score.

Results

Table 1: Fracture Union Time

Fracture Union Time (Weeks)	Patients (n=60)	Percentage (%)
<16 weeks	40	66.7
16–20 weeks	12	20.0
>20 weeks	8	13.3

Table 2: Functional Outcomes

Outcome Category	Patients (n=60)	Percentage (%)
Excellent	30	50.0
Good	22	36.7
Fair	6	10.0
Poor	2	3.3

Discussion

Reamed intramedullary interlocking nailing is widely regarded as the gold standard for managing tibial shaft fractures. This study demonstrated excellent-to-good functional outcomes in 86.7% of patients, corroborating findings from previous studies (6).

Fracture union was achieved in 86.7% of patients within 20 weeks, consistent with reported union rates of 90–95% in the literature (7). The reaming process promotes

union by stimulating endosteal circulation and enhancing bone grafting effects. However, delayed union was observed in 13.3% of patients, possibly attributable to comorbidities such as smoking and diabetes, known to impair fracture healing (8).

Infection rates were low (5%), reflecting adherence to aseptic protocols. Malalignment was noted in two cases, highlighting the need for meticulous intraoperative reduction and alignment (9).

Functional outcomes, assessed using the Modified Karlström-Olerud score, revealed significant improvements in mobility and pain reduction. Early weight-bearing, a cornerstone of IMILN, contributed to these outcomes by minimizing joint stiffness and promoting callus formation (10).

Despite these positive results, the study acknowledges limitations, including a small sample size and lack of long-term follow-up. Future studies with larger cohorts and comparative analyses against unreamed nails are warranted to further validate these findings.

Conclusion

Reamed intramedullary interlocking nailing is a reliable and effective technique for managing tibial shaft fractures. The procedure facilitates early mobilization, promotes timely fracture union, and achieves excellent-to-good functional outcomes in most patients. Complications, though infrequent, underscore the importance of surgical precision and patient-specific rehabilitation. Integrating this technique into orthopedic practice can significantly improve outcomes for tibial shaft fractures.

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