

FUNCTIONAL AND RADIOLOGICAL OUTCOME IN SUBTROCHANTERIC FRACTURES OPERATED WITH RECON INTRAMEDULLARY NAILING - A PROSPECTIVE STUDY

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ABSTRACT

Subtrochanteric fracture of the femur is a challenging fracture due to complex biomechanics, fracture instability and difficulty in achieving satisfactory reduction. Seventeen patients with subtrochanteric femoral fractures were reconstructed with intramedullary nailing, and this prospective observational study examined functional and radiological results. Functional recovery was evaluated by the Harris Hip Score (HHS), and radiographic healing was evaluated by the Radiographic Union Score for Hip (RUSH) at 6, 12 and 24 weeks after surgery. Fracture union, operative characteristics and postoperative complications were also recorded. Functional improvement on the Mean HHS was statistically significant ($p < 0.001$) and went from 48.59 at 6 weeks to 85.00 at 24 weeks. Progressive radiographic consolidation was observed as Mean RUSH increased from 11.94 to 26.00. The radiographic union was achieved in 15 patients (88.2%) with a mean time of 14.13 weeks. In 2 patients, there was incomplete consolidation. There were significant positive correlations between functional scores and radiological scores at all time points during follow-up. There were no serious implant failures or re-operations reported. The results of the reconstructed IM nail were encouraging in terms of functional and radiological outcomes in the short term. Larger comparative trials with longer duration of follow-up are needed, however, to provide evidence of long-term effectiveness, safety, and generalizability in a broader range of patient populations.

KEYWORDS: Subtrochanteric femoral fractures; Reconstruction intramedullary nailing; Harris Hip Score; Radiographic union; Functional outcomes.

INTRODUCTION

Subtrochanteric femoral fractures are a difficult type of proximal femoral fracture as there is often significant mechanical force, multiple fracture planes, and limited capacity for cortical healing, which can make reduction and fixation difficult. The fractures are directly below the lesser trochanter and are seen in young people who have suffered a high-energy blow and in the elderly who have poor bone quality. Restoration of length, alignment and rotation, along with adequate stability for biological healing and functional rehabilitation, are required in their management. The deforming forces of the muscles that persist and the high stresses placed on this area make satisfactory outcomes difficult despite recent improvements in implant technology (Garrison et al., 2021).

Intramedullary nailing has gained popularity as a treatment option because it offers good mechanical support and does not expose large amounts of soft tissues. However, the key factors of successful nail osteosynthesis are to identify the correct entry point, to restore the medial cortical support, to choose the right nail size and to achieve a proper fixation on the proximal and distal ends. An incomplete reduction may leave overlying varus alignment, fracture distraction or rotational malalignment, which can lead to augmented mechanical stress and delayed fracture healing. So the role of technical planning and careful execution continues to be fundamental in today's treatment (Kasha & Yalamanchili, 2020). Comparative evidence has investigated intramedullary versus extramedullary fixation, highlighting the need for an appropriate construct to match fracture morphology and patient needs and not to assume that one construct is always superior (Wang et al., 2020).

Reduction is especially significant in displaced, comminuted and unstable subtrochanteric fractures. The principles of minimally invasive techniques are to preserve periosteal circulation and fracture biology, but indirect manipulation is not always able to address the typical flexion, abduction and external rotation of the proximal fragment. Properly reducing them and using limited open techniques may then be needed to get a good alignment prior to definitive fixation (Brewer et al., 2024). Recent consensus recommendations also emphasize the interplay between reduction quality, implant selection, fracture stability, and rehabilitation planning (Keny et al., 2025).

Technical pitfalls are clinically important, as gaps between the fractures, positioning of the implants, and lack of stability (Mercer et al., 2026) can compromise the apparent good fixation.

Other factors must be taken into account when implant configuration. Both short and long IM nails are options for the fracture, and the choices need to be made with consideration of the fracture extension, fixation requirements, and the possible stress concentration along the femoral shaft (Viberg et al., 2021). Additionally, there are different designs for proximal fixation in different cephalomedullary constructs, and the mechanical properties of these single and dual-screw fixation designs remain unclear and require clinical testing to determine which is superior (Ablett et al., 2025). Continued debate exists about the best treatment for each fracture pattern, as illustrated by comparisons of locking plate fixation and intramedullary nailing. However, there remains some confusion regarding the best method of treatment for each fracture pattern, as demonstrated by comparisons of locking plate fixation with intramedullary nailing. Shorter nails can be accomplished in certain cases, but this is only applicable to subtrochanteric fracture anatomy and fixation requirements (Polo et al., 2024). Selection of the device should therefore be considered together with reduction quality and operative technique, as treatment results can vary depending on the implant design and the setting (Kleinsmith et al., 2024).

Success of treatment should be assessed beyond just radiographically positioning the implant. Functional recovery is an indicator of pain relief, mobility, independence and hip performance recovery, while serial radiographs show progressive fracture consolidation. The Harris Hip Score provides a structured assessment of postoperative hip function, and the Radiographic Union Score for Hip gives a standardized way to assess hip healing progress. A combined assessment of these measures could help to understand if there is radiological improvement going hand in hand with meaningful functional improvements during rehabilitation. This hybrid approach is especially relevant because of the heterogeneity of clinical and radiographic outcomes, which could be affected by different complication rates at the implant site, delayed union, and/or differences in fracture stability. Comparative implant research shows that such complications should be monitored alongside patient-centred outcomes (Panteli et al., 2022a).

Based on this, the present prospective study aimed to assess the performance of reconstruction intramedullary nailing in adults with subtrochanteric fractures with prospective evaluation at 6, 12 and 24 weeks after surgery. Together, the functional and radiological results were analyzed in order to identify the clinically relevant patterns of recovery after the same fixation method, and to describe the short-term recovery.

OBJECTIVES

- □ To evaluate the changes in Harris Hip Score at different intervals of time after surgery.
- □ To compare radiographic healing as determined by serial RUSH scores, fracture union status and time to union.
- □ To record operative findings and complications, and to investigate the relationship of functional recovery and radiological healing.

2.1. Study Design and Setting

This is a prospective observational study conducted in the Department of Orthopaedics, Mahatma Gandhi Medical College and Research Institute, Puducherry, India from April 2024 to December 2025. The study assessed the functional and radiographical recovery after reconstruction with intramedullary nailing in subtrochanteric femur fracture. Clinical and radiological results were then evaluated at 6, 12 and 24 weeks after surgery, in a prospective fashion. Functional recovery was assessed using the Harris Hip Score (HHS) and radiographic healing was assessed using the Radiographic Union Score for Hip (RUSH) as primary endpoints.

2.2. Study Population and Eligibility Criteria

Patients included were 17 skeletally mature patients (18 years or older) with a radiographically confirmed subtrochanteric femoral fracture that were reconstructed using intramedullary nailing. Fractures within 5 cm distal to the lesser trochanter were defined as subtrochanteric fractures. Patients were included if they underwent the indicated surgical procedure and gave informed consent in writing. Hip pathology and/or pathological fractures were excluded, as were severe polytrauma with ISS more than 15 (which precluded functional assessment), neurological disorders which hindered postoperative evaluation and Gustilo–Anderson grade II or above open fractures. All patients enrolled were evaluated at the predetermined postoperative follow-up intervals.

2.3. Preoperative Evaluation

Before surgery, detailed clinical examination and radiological assessment were conducted in all patients. Demographic data, mechanism of injury, any associated comorbidities and fracture characteristics were recorded. The anteroposterior and lateral hip X-rays were taken to determine the fracture configuration and displacement. The fractures were evaluated by the Seinsheimer and the Russell–Taylor classification systems. Preoperative investigations comprised a complete blood count, coagulation profile, serum electrolyte profile, renal function tests, blood grouping and crossmatching, and electrocardiography. Medical optimization was carried out in patients with associated comorbidities prior to operative intervention.

2.4. Surgical Intervention

Surgery was performed under spinal or general anaesthesia, with all patients undergoing fixation of the fracture with the use of a femoral reconstruction intramedullary nail. Patients were placed in a supine position on a fracture table, and initial fracture reduction was accomplished by longitudinal traction under fluoroscopic guidance. After sterile preparation, a proximal incision was made over the greater trochanter, and an entry point was established under C-arm visualization. First, a guidewire was inserted into the medullary canal across the fracture site and sequentially reamed to accept the diameter of the nail. A reconstruction nail of an appropriate size was inserted, and the proximal fixation was obtained with two screws aiming towards the head and neck of the femur. Distal interlocking was then done to give rotational and axial stability. Intraoperative fluoroscopy was used to confirm reduction quality, fracture alignment and implant placement. When indicated by the fracture pattern, other reduction methods were used, such as cerclage wiring.

2.5. Postoperative Management and Rehabilitation

The treatment after surgery consisted of three doses of intravenous antibiotics and analgesics based on the hospital protocol. Immediate physiotherapy was begun on the first day after surgery, including active and passive range of motion. Partial weight-bearing was started on the walker at about 6 weeks with stability of fracture reduction and early signs of healing on X-ray. Radiological evidence of fracture union was used to guide progression to weight-bearing. Postoperative monitoring consisted of wound healing, pain, functional mobility, neurological status and complications of fracture fixation.

2.6. Follow-up and Functional Outcome Assessment

Patients were clinically assessed at 6, 12 and 24 weeks after the surgery. Functional recovery was evaluated by the Harris Hip Score, which includes pain, functional capacity, deformity and range of motion. Total HHS scores are from 0 to 100 and higher scores represent improved hip function. Functional outcomes were classified as excellent (90–100), good (80–89), fair (70–79), or poor (below 70). The scores from the successive follow-up visits were used to describe postoperative functional recovery. Other clinical evaluations performed were pain, mobility, neurological exam and postoperative complications.

2.7. Radiological Outcome Assessment

Radiological healing was assessed at each follow-up visit with serial anteroposterior and lateral radiographs obtained. Cortical bridging, disappearance of the cortical fracture lines, trabecular consolidation and disappearance of the trabecular fracture lines were evaluated using the Radiographic Union Score for Hip. The total RUSH score is between 10 and 30 points; the higher the score, the more radiographically healing. In addition, serial radiographs were evaluated for fracture alignment, consolidation progression and implant location. Follow-up records were made of time to radiographic union and final fracture healing status. Radiographic healing after reconstruction intramedullary fixation was characterized by the changes in the RUSH score performed over the course of time.

2.8. Outcome Measures and Data Collection

The main outcome measures were functional recovery at 6, 12, and 24 weeks after surgery measured by HHS and fracture healing at 24 weeks measured by RUSH. Secondary outcomes were time to radiographic union, postoperative complications, time to weight-bearing ambulation, pain control, and return to pre-injury activity level. Data collected included patient demographics, fracture type, concomitant injuries, surgical time, blood loss, type of implant, cerclage wiring, and postoperative data, all on a standardized case record form. Data were entered into Microsoft Excel 2019 and checked for completeness and accuracy before statistical analysis of the data.

2.9. Statistical Analysis

IBM SPSS Statistics version 26.0 (IBM Corp., Armonk, NY, USA) and Microsoft Excel 2019 were used to perform statistical analysis. Means and SDs were used for continuous variables (HHS, RUSH) and frequencies and percentages were used for categorical variables. Paired t-tests or appropriate nonparametric statistics were used to compare values at the end of the postsurgical period. A statistical significance level of $p < 0.05$ (two-sided) was used.

2.10. Ethical Considerations

The study was carried out after approval from the institutional ethics committee of Mahatma Gandhi Medical College and Research Institute, Puducherry. All participants signed informed consent before they were enrolled and underwent surgery. Coded clinical records and limited access to identifiable information were used to ensure patient confidentiality. The clinical evaluations and follow-up after surgery were carried out according to the institutional ethical guidelines.

3. RESULTS

3.1. Demographic and Clinical Characteristics

17 patients with subtrochanteric femur fractures were reconstructed using intramedullary nailing and had 6-week, 12-week, and 24-week follow-up evaluations. The mean age was 54.47 ± 17.34 years (range: 19–84 years), with a median age of 57 years. There were 11 patients (64.7%) who were males and 6 (35.3%) females. The 61–70-year-old age group had the largest percentage (23.5%). Table 1 gives a summary of the demographic distribution.

Table 1. Baseline Demographic Characteristics of Patients Undergoing Reconstruction Intramedullary Nailing (n = 17)

Characteristic	Value
Age, mean $\pm$ SD (years)	54.47 ± 17.34
Age, median (years)	57
Age range (years)	19–84
Male	11 (64.7%)
Female	6 (35.3%)
18–30 years	1 (5.9%)
31–40 years	3 (17.6%)
41–50 years	3 (17.6%)
51–60 years	3 (17.6%)
61–70 years	4 (23.5%)
71–80 years	2 (11.8%)
81–90 years	1 (5.9%)

3.2. Operative Characteristics

A femoral reconstruction intramedullary nail was used to fix all patients. The mean operative time was 88.2 ± 13.8 minutes, and the mean blood loss was 248.5 ± 63.7 mL. Five patients (29.4%) received cerclage wiring to aid in the reduction of complex fracture configurations, including three Seinsheimer Type IV fractures, one Type IIIa fracture and one Type V fracture. There were no significant implant-related complications reported intraoperatively.

3.3. Functional Outcomes During Follow-up

Progressive improvement in functional recovery was shown during the entire time span of observation after surgery. Mean Harris Hip Score (HHS) increased from 48.59 ± 8.22 at 6 weeks to 66.71 ± 6.98 at 12 weeks and 85.00 ± 5.49 at 24 weeks. Overall, the mean gain between 6 and 12 weeks was +18.12 points, and between 12 and 24 weeks was +18.29 points. The Friedman test was performed, and the result showed that there was a significant difference between the three follow-up assessments ($\chi^2 = 31.18$, $df = 2$, $p < 0.001$). The results of the HHS studies are summarized in Table 2 and depicted graphically in Figure 1.

Table 2. Longitudinal Changes in Harris Hip Score at Postoperative Follow-up Intervals (n = 17)

Follow-up	Mean HHS ± SD	Median	Range
6 weeks	48.59 ± 8.22	50	35–67
12 weeks	66.71 ± 6.98	67	56–84
24 weeks	85.00 ± 5.49	84	75–97

HHS, Harris Hip Score; SD, standard deviation. Reported Friedman test: $\chi^2 = 31.18$, $df = 2$, $p < 0.001$.

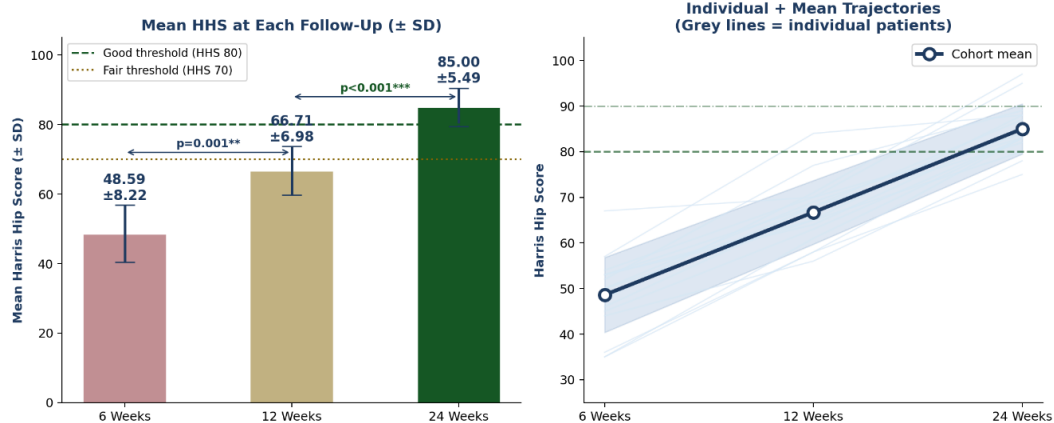


Figure 1. Longitudinal Changes in Harris Hip Score at 6, 12, and 24 Weeks Following Reconstruction Intramedullary Nailing

3.4. Final Functional Outcome Classification

Functional outcome was determined at 24 weeks by applying the Harris Hip Score grade. The detailed functional grading table showed excellent results in 2 patients (11.8%), good results in 11 patients (64.7%), fair results in 2 patients (11.8%) and poor results in 2 patients (11.8%). So 13 patients (76.5%) were classified as having good to excellent functional outcomes. The final distribution is shown in Table 3 below.

Table 3. Functional Outcome Classification According to Harris Hip Score at 24 Weeks (n = 17)

Outcome category	HHS range	Patients, n (%)
Excellent	90–100	2 (11.8%)
Good	80–89	11 (64.7%)
Fair	70–79	2 (11.8%)
Poor	Below 70	2 (11.8%)
Total		17 (100%)

3.5. Radiological Healing and RUSH Score Progression

Significant improvement occurred during follow-up for radiological healing. Mean Radiographic Union Score for Hip (RUSH) increased from 11.94 ± 1.52 at 6 weeks to 16.88 ± 2.78 at 12 weeks and 26.00 ± 2.26 at 24 weeks. The mean RUSH scores increased overall from the first to last assessment by 14.06 points. These results suggest progressive radiographic consolidation after reconstruction and intramedullary fixation. Table 4 and Figure 2 show the longitudinal measurements for the RUSH.

Table 4. Radiographic Union Score for Hip at Scheduled Postoperative Follow-up Intervals (n = 17)

Follow-up	Mean RUSH $\pm$ SD	Reported range
6 weeks	11.94 $\pm$ 1.52	10–15
12 weeks	16.88 $\pm$ 2.78	13–21
24 weeks	26.00 $\pm$ 2.26	21–30

RUSH, Radiographic Union Score for Hip; SD, standard deviation.

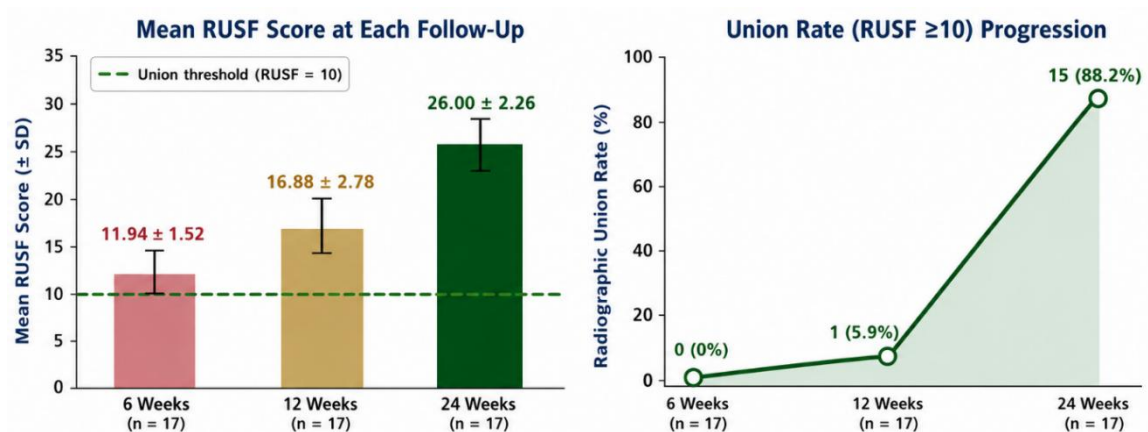


Figure 2. Progression of Radiographic Union Scores at 6, 12, and 24 Weeks Following Reconstruction Intramedullary Nailing

3.6. Fracture Union and Time to Radiological Healing

Radiographic union was documented in 15 (88.2%) patients at the last examination at 24 weeks, and two patients (11.8%) had incomplete union with growing callus. For patients who did achieve union the mean time to radiological union was 14.13 ± 1.92 weeks (range 12–18 weeks). Five patients united in 12 weeks, nine in 13–16 weeks, and one in 17–18 weeks. No nonunion was reported in the observation period. The distribution of radiological union and postoperative complications is summarized in Table 5 and final fracture union status is shown in Figure 3.

Table 5. Radiographic Union, Healing Time, and Postoperative Complications (n = 17)

Outcome	Value
Union within 12 weeks	5 (29.4%)
Union at 13–16 weeks	9 (52.9%)
Union at 17–18 weeks	1 (5.9%)
Radiographic union at 24 weeks	15 (88.2%)
Incomplete union at 24 weeks	2 (11.8%)
Mean time to union among united patients	14.13 $\pm$ 1.92 weeks

Established nonunion	0 (0%)
Deep surgical-site infection	0 (0%)
Implant failure or cut-out	0 (0%)
Varus collapse or malunion	0 (0%)
Reoperation	0 (0%)
Mortality during follow-up	0 (0%)

Union-time percentages are based on the total cohort (n = 17). Mean time to union applies to the 15 patients classified as united.

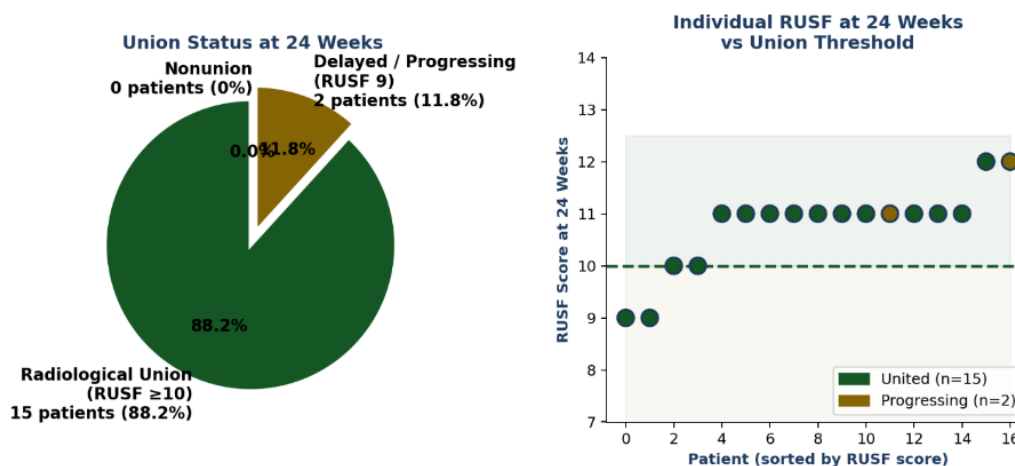


Figure 3. Radiographic Fracture Union Status at the Final 24-Week Follow-up

3.7. Postoperative Complications and Functional–Radiological Association

There were no major complications or re-operations reported in the 24 weeks of observation related to the implant. There were no deep surgical-site infections, implant breaks, varus collapse, clinically significant differences in leg length, thromboembolic events, periprosthetic fracture, or deaths reported. In two patients, the radiographic consolidation was delayed and there was no nonunion. Significant positive correlation between HHS and RUSH was found at 6 weeks ($\rho = 0.943$, $p < 0.001$), 12 weeks ($\rho = 0.944$, $p < 0.001$), and 24 weeks ($\rho = 0.859$, $p < 0.001$), using Spearman's rank correlation analysis. These results suggest that better functional outcomes were seen in the higher scores for radiographic healing throughout the post-operative follow-up. The relationship is displayed in Figure 4.

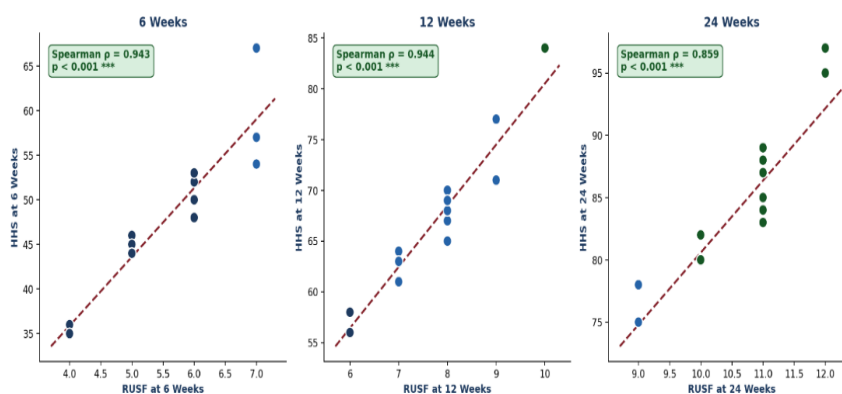


Figure 4. Spearman Rank Correlation Between Harris Hip Score and Radiographic Union Score for Hip During Postoperative Follow-up (n = 17)

3.8. Representative Case Illustration

The radiological appearance of the subtrochanteric fractures before surgery and the radiological appearance after bone reconstruction intramedullary fixation were illustrated by representative clinical cases. The fracture configuration was documented in the pre-operative images and the fixation construct and implanted reconstruction nail in the postoperative images. For illustration of the surgery that was performed in the study population, one representative case is included in Figure 5.

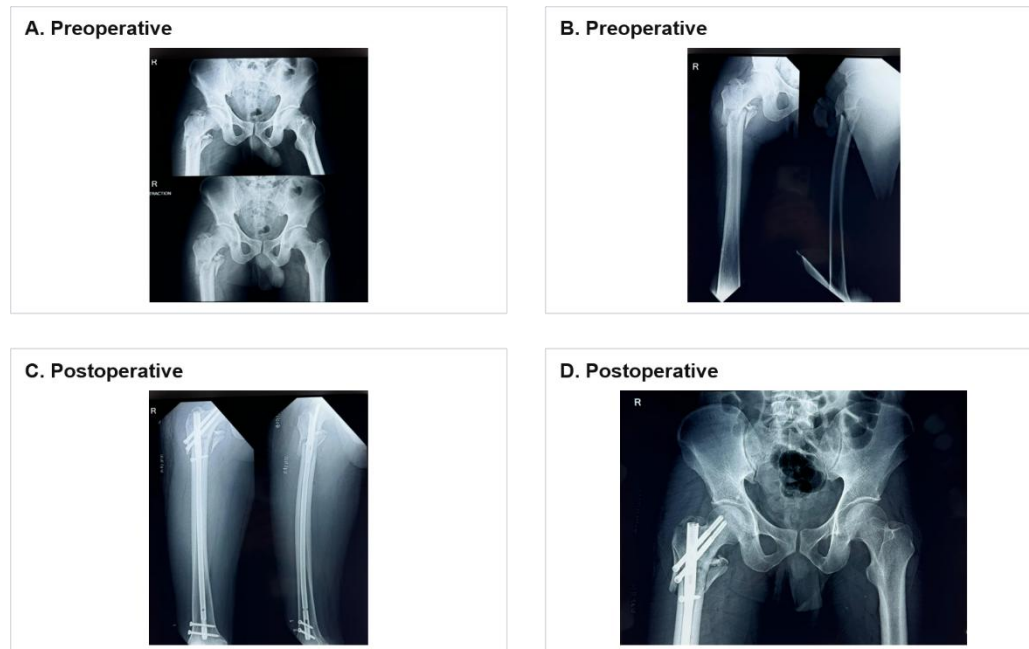


Figure 5. Representative Case of Subtrochanteric Femoral Fracture Treated with Reconstruction Intramedullary Nailing: (A–B) Preoperative Radiographs and (C–D) Postoperative Radiographs Demonstrating Internal Fixation

3.9. Summary of Results

The study comprised 17 patients who suffered a subtrochanteric femoral fracture and were treated with reconstruction intramedullary nailing, receiving full follow up at 24 weeks. Functional recovery was gradually improving with the mean HHS rising from 48.59 ± 8.22 at 6 weeks to 85.00 ± 5.49 at 24 weeks. When evaluating for mean RUSH, a significantly higher mean RUSH was found for radiological healing (26.00 ± 2.26) than before treatment (11.94 ± 1.52). Final follow-up revealed that 15 patients (88.2%) had achieved radiographic union, with a mean union time of 14.13 ± 1.92 weeks for patients with union. No nonunion, significant complications with the implants or reoperations were reported, and two patients showed incomplete consolidation. There were strong positive correlations between the functional and radiological scores at all follow-up time points ($\rho = 0.859\text{--}0.944$; $p < 0.001$). These results reflect progressive functional recovery with radiographic healing at 24 weeks after the surgery.

4. DISCUSSION

The functional and radiologic outcome of the reconstruction intramedullary nailing in 17 patients with subtrochanteric fractures was analyzed in a prospective study. Harris Hip Score rose from 6 weeks (48.59) to 24 weeks (85.00) and Radiographic Union Score for Hip rose from 6 weeks (11.94) to 24 weeks (26.00). A radiographic union was observed at 24 weeks in 15 patients with no major implant failure or reoperation reported. These results indicate recovery in this group in the short term, but it is not possible to conclude superiority, due to the small sample size and the lack of a comparator group.

Continued functional improvement is expected because of stable intramedullary fixation and rehabilitation, consistent with clinical rationale. Functional and radiological outcome were used as a complementary measure of treatment success in a prospective study of long proximal femoral nailing (Lakhani et al., 2024). Studies of the use of intramedullary locked nails in elderly patients have highlighted the importance of fixation technique and postoperative results (Bonfiglio et al., 2022). However, there are some inherent differences in fracture morphology, baseline mobility, patient age, and rehabilitation protocols, which preclude direct numerical comparison. This improvement must therefore be seen as recovery over time, not as an indication of the superiority of reconstruction over other devices.

There was radiological progression because of functional improvements. However, Mean RUSH rose on each of the three visits, and the mean time to union of the 15 patients who united was 14.13 weeks. Standardized

radiographic assessment is valuable because subjective assessments of healing can vary between observers; this measurement concern was explored in research examining the agreement in RUSH assessments (Zhou et al., 2024). The type of reduction and the amount of fracture displacement that remains could influence clinical and radiographic outcomes (White et al., 2025). Further fracture gap reduction strategies have been studied in subtrochanteric fixation, leading to focus on cortical contact and construct stability (Park et al., 2022). Importantly, radiographic improvement does not indicate full union in all patients, with two patients having incomplete union at final follow-up.

Overall, five patients needed cerclage wiring to help reduce complex configurations. This selective application is relevant as cerclage may enhance fragment control, while raising concerns about soft tissue handling and procedural complexity. This is an adjunct described in challenging subtrochanteric fractures using investigations of long InterTAN nails and cable cerclage (Bei et al., 2024). Comparative studies have been conducted for irreducible spiral fractures (Guo et al., 2024), and meta-analyses have been performed to identify potential differences in fracture reduction, union and complications (Hantouly et al., 2023; Hoskins et al., 2022). Another distinction between cables and wires adds to the idea of cerclage technique not being uniform (Kook et al., 2024). The evidence is continuing to come in that evaluates it with intramedullary nailing (Oun et al., 2025). Due to the limited number of patients who received cerclage, this study is not able to determine if cerclage alone was beneficial for healing.

Reduction quality continues to be a fundamental issue in the evaluation of postoperative results. Evidence focusing on open reduction indicates that direct exposure should be considered in the context of fracture complexity and achieving fracture alignment and should not be used as the only predictor of poor outcome (Panteli et al., 2022b). The importance of residual varus correction during nailing has been highlighted during investigations of hip positioning during nailing (Kook et al., 2025). When deforming forces make satisfactory alignment difficult, there are options such as minimally invasive clamp-assisted reduction and blocking screw techniques (Wu et al., 2023; Yoon et al., 2024). All of these strategies apply to surgical planning but have not been compared in this patient population.

There was no documentation of established nonunion, implant failure or deep infection or revision procedure within 24 weeks. Two patients, however, had incomplete radiographic consolidation, and the follow-up interval may not have been long enough to assess healing. Subtrochanteric nonunion has been studied in the literature, and it has been shown that there are some difficult cases that may require revision constructs and methods to restore stability (Dheenadhayalan et al., 2024; Gavaskar et al., 2026; Trikha et al., 2026). Therefore, it is important to understand that the non-use of revision surgery in short-term follow-up does not mean that there will be no future complications.

There were strong positive correlations between HHS and RUSH at 6, 12 and 24 weeks, indicating that improvements in radiologic healing led to improvements in hip function. Correlation is still no proof of causation, though and observations from a small group of people reduce the level of precision. The study also has the following limitations: it is single center, not randomized, does not have a comparison group, and has a short follow-up. Further comparative studies with more follow-up and standardized outcome measures are required to define durability, complications, and patient-centred recovery.

5. CONCLUSION

This prospective observational study shows that reconstruction nailing of subtrochanteric femur fractures results in progressive functional and radiographic healing. The mean Harris Hip Score (HHS) improved from 6 weeks to 24 weeks in 17 patients (48.59 at 6 weeks to 85.00 at 24 weeks), suggesting significant improvement in postoperative hip function. The mean Radiographic Union Score for Hip in turn rose from 11.94 to 26.00, which indicated progressive consolidation of fractures. During the observation period, 15 patients (88.2%) had radiographic union, and the mean time to union for patients with united fractures was 14.13 weeks. No major implant failures, deep infections or reoperation were reported and two patients showed partial consolidation at final follow-up. Positive correlations between functional and radiological scores indicate the positive relationship of progressive fracture healing with clinical recovery. Reconstruction intramedullary nailing is thus a viable method of fixation for subtrochanteric fractures provided appropriate reduction, stable fixation and structured rehabilitation are achieved. However, the small number of participants, single center setting, lack of a comparison group, and the brief follow-up limit the generalizability. Larger prospective comparative studies with longer follow-up periods should be performed to define long-term functional results, fracture union durability and complication rates for various fixation techniques and patient groups.

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