Original Article

Dynamic Hip Screw Fixation in Unstable Intertrochanteric Fractures: A Three-Year Retrospective Analysis of Clinical Outcomes and Complications

Prasanna Biradar[1], Audhithyan Satishbabu[2], Tarun Garg[3]

[1]Assistant Professor, Department of Orthopaedics, Kodagu Institute of Medical Sciences, Madikeri, Karnataka, India

[2]Senior Resident, Department of Orthopaedics, Ashwini Trauma Center, Cuttack, Odisha, India

[3]Senior Resident, Department of Orthopaedics, Yatharth Super speciality hospital, Noida extension, Uttar Pradesh, India

Abstract

Background: The study aims to evaluate the clinical outcomes and complications associated with Dynamic Hip Screw (DHS) fixation in unstable intertrochanteric fractures over a three-year period. **Material and Methods:** This retrospective study was conducted at Audithya Ortho Hospital, Palani, from 2020 to 2024, involving 115 patients with unstable intertrochanteric fractures treated with DHS fixation. Of these, 110 patients completed a one-year follow-up, with five patients lost to follow-up. Clinical outcomes were assessed using the Modified Hip Score and Oxford Hip Score at four key intervals: preoperatively, 6 weeks postoperatively, 6 months postoperatively, and 1 year postoperatively. The study also analyzed adverse outcomes, including fracture collapse, implant failure, non-union, and limb shortening, with a particular focus on body mass index (BMI) as a potential risk factor. **Results:** DHS fixation demonstrated favorable clinical outcomes, with significant improvement in hip function over the follow-up period as indicated by both hip scores. However, notable complications were observed in certain patients. Specifically, 3 patients (BMI > 35%) experienced excessive fracture collapse, 2 patients (BMI 25%–35%) showed moderate collapse, and 3 patients presented with implant failure. Additional complications included external rotation deformity in 2 patients, non-union in 2 patients, limb shortening (>2 cm) in 3 patients, and medialization of the shaft in 2 cases. Anterior spike malreduction was noted in 2 patients. Despite these adverse effects, DHS fixation remains an effective method for managing unstable intertrochanteric fractures. **Conclusion:** DHS fixation provides satisfactory clinical outcomes in unstable intertrochanteric fractures. However, complications such as fracture collapse, implant failure, and deformities were associated with higher BMI, suggesting a need for tailored surgical approaches in obese patients.

Keywords: Dynamic Hip Screw (DHS), Intertrochanteric Fractures, Clinical Outcomes, Retrospective Study, Hip Scores, Fracture Collapse, BMI.

Received: 05 May 2026 **Revised: 25 May 2026** **Accepted: 13 June 2026** **Published: 26 June 2026**

Introduction

Intertrochanteric fractures are difficult injuries to treat because of their complexity and the prevalence of comorbidities—especially in the elderly population.[1,2] These fractures are in the "head" of the femur (between the greater trochanter and the lesser trochanter) and are commonly caused by low energy trauma, which can include falling from a standing position. In younger patients, however, injuries resulting from high-energy trauma are also a cause of such fractures. The intertrochanteric fracture that shows instability has compromised integrity of the posteromedial cortex, which is the most crucial for the load transmission across the femur.[3] This is a structural instability and is a high-risk of mechanical failure during healing, which requires surgical correction to restore mobility, avoid deformity and reduce the risk of other complications such as deep vein thrombosis, pressure ulcers, and pneumonia related to long-term immobilization.[4,5]

For unstable intertrochanteric fractures, surgical intervention is the usual approach, with the intention of the surgery being to perform anatomical reduction and secure good internal fixation. There are several types of fixation, such as dynamic hip screw (DHS), intramedullary nails and locking plate systems.[6,7] Of these, DHS has become a standard procedure for treating intertrochanteric fractures because of its dynamic characteristics of fracture compression with controlled forces, allowing for fracture healing.[8] The construction of DHS, characterized by the big lag screw that is driven through the femoral neck into the head and a side plate to hold the structure to the shaft of the femur, is well known.[9] The lag screw can be used to allow

Address for correspondence: Dr. Tarun Garg, Senior Resident, Department of Orthopaedics, Yatharth Super speciality hospital, Noida extension, Uttar Pradesh, India.
E-mail: gargtarun9998@gmail.com

DOI:
10.21276/amit.2026.v13.i2.777

How to cite this article: Biradar P, Satishbabu A, Garg T. Dynamic Hip Screw Fixation in Unstable Intertrochanteric Fractures: A Three-Year Retrospective Analysis of Clinical Outcomes and Complications. Acta Med Int. 2026;13(2):841-846.

gradual compression of the fracture zone, but only during weight bearing, which can aid healing in stable fracture patterns.[10]

In unstable intertrochanteric fractures, however, the results of the DHS fixation are more mixed. Problems encompass malalignment, failure of the screw to engage, screw cut-out and fracture collapse, especially when there is significant comminution or decrepit bone. All of these complications are compounded by other factors such as patient comorbidities (obesity), delayed presentation, and osteoporosis. Although DHS is feasible, recent studies have shown that some patient groups may have a higher incidence of adverse complications – including excessive fracture collapse and non-union – in particular those with a higher body mass index (BMI).

The present study aimed to retrospectively analyze the clinical outcomes of DHS fixation in a group of patients with unstable intertrochanteric fractures treated in the department of orthopedics at Audithya ortho hospital, Palani, over three years (2020-2024). The primary aim was to assess functional outcome at three stages during the post-operative period: 6 weeks, 6 months and 1 year after surgery, using two scores (Modified Hip Score and Oxford Hip Score). There were 115 cases with 110 cases following up. The study also sought to evaluate the complications and their types with special regard to the risk factors, such as BMI, of the patient. Notably, this study explores the correlation between higher BMI and adverse outcomes, such as excessive fracture collapse, implant failure, and deformities, providing insights into the need for tailored approaches in managing unstable fractures in obese patients.

The purpose of this study is to provide clinical information on the clinical outcomes and complications of DHS fixation in the specific patient population to contribute to the existing body of knowledge and help guide surgical decisions and postoperative management in an unstable intertrochanteric fracture population.

Materials and Methods

Study Design: This is a retrospective observational study conducted at Audithya Ortho Hospital, Palani, from January 2020 to December 2024. The study aims to analyze clinical outcomes and complications of Dynamic Hip Screw (DHS) fixation in patients with unstable intertrochanteric fractures.

Study Duration: The study was conducted over a period of 3 years, from 2020 to 2024.

Participants: A total of 115 patients with unstable intertrochanteric fractures who underwent DHS fixation were included in the study. Of these, 110 patients completed the required follow-up over a period of 1 year, while 5 patients were lost to follow-up. Patients were selected based on predefined inclusion and exclusion criteria.

Inclusion Criteria:

- Patients aged 50 years and above with radiologically confirmed unstable intertrochanteric fractures.
- Patients who underwent DHS fixation at the hospital.
- Patients who were able to provide informed consent for participation in follow-up.

Exclusion Criteria:

- Patients with pathological fractures or multiple trauma.
- Patients who had undergone prior hip surgery.
- Patients with less than 6 months of follow-up data.

Surgical Procedure: DHS fixation was carried out for all patients, depending on their health status, under spinal anesthesia and general anesthesia. Closed reduction under image intensifier control and lag screw into the neck and head of the femur was the procedure used. A side plate was secured to the midshaft of the femur and the fracture properly compressed and stabilized. Post-op treatment consisted of early mobilization and rehabilitation, and weight bearing was implemented as tolerated by the patient.

Follow-Up Schedule:

Patients were evaluated at four specific intervals:

1. Preoperative assessment
2. Postoperative assessments at:

- 6 weeks
- 6 months
- 1 year

During these follow-ups, radiological evaluations were performed to assess fracture union, and clinical outcomes were evaluated using standardized scoring systems.

Clinical Outcome Measures:

- **Modified Hip Score:** This score assesses pain, function, and range of motion in the hip joint, providing a quantitative measure of recovery.
- **Oxford Hip Score:** This patient-reported outcome measure evaluates hip pain and function in everyday activities, with higher scores indicating better outcomes.

Data Collection: Medical records were reviewed and data was collected retrospective from patient preoperative, intraoperative and postoperative medical records. Data recorded consisted of the demographic data, body mass index (BMI), fracture classification, comorbidities, surgical parameters and modified hip score (MHSS) and Oxford hip score (OHS). Other complications included fracture collapse, implant failure, non-union, deformities and/or limb shortening.

Results

Demographic and Baseline Characteristics: A total of 115 patients with unstable intertrochanteric fractures were treated using DHS fixation during the study period. Out of these, 110 patients completed the follow-up, while 5 patients were lost to follow-up. The mean age of the patients was 72.5 ± 8.3 years, with a male-to-female ratio of 1:1.2. The majority of patients had comorbidities such as hypertension and diabetes mellitus. Body Mass Index (BMI) was an important factor in the study, with 5% of patients having a BMI above 35%, and 15% of patients having a BMI between 25% and 35%.

[Table 1] provides a comprehensive overview of the demographic and clinical characteristics of the patients involved in the study. The average age of the total patient cohort (n = 115) was 72.5 ± 8.3 years, while the subset that completed follow-up (n = 110) had a similar age distribution at 72.1 ± 7.9 years, indicating consistent age profiles across the study. The gender distribution shows a higher proportion of females (52/63 for total patients and 49/61 for completed follow-up). Body Mass Index (BMI) data reveals that the mean BMI was approximately 29.8 ±

4.7, with a slight decrease in the follow-up group (29.5 ± 4.6). The majority of patients had comorbidities, with 68% in the total cohort and 66% among those who completed follow-up, reflecting the typical profile of elderly patients with fractures. Finally, fracture classification was consistent across both groups, with all fractures classified as AO Type A2 and A3, indicating the study focused on unstable intertrochanteric fractures.

Table 1: Demographic and Clinical Characteristics of the Study Population

Characteristic	Total Patients (n = 115)	Completed Follow-Up (n = 110)
Age (mean ± SD)	72.5 ± 8.3	72.1 ± 7.9
Gender (Male/Female)	52/63	49/61
BMI (mean ± SD)	29.8 ± 4.7	29.5 ± 4.6
Comorbidities (%)	68%	66%
Fracture Classification	AO Type A2 and A3	AO Type A2 and A3

[Figure 1] compares key patient characteristics between the total patient group (n = 115) and those who completed follow-up (n = 110). The chart highlights the minimal difference in average age (72.5 vs. 72.1 years) and BMI (29.8 vs. 29.5) between the two groups. A slight decrease in the number of males in the follow-up group is observed (52 males in the total group compared to 49 in the follow-up group), indicating a consistent gender distribution across both groups. The prevalence of comorbidities remains high, with 68% in the total population and 66% in the follow-up group. The fracture classification (AO Type A2 and A3) was uniformly distributed, showing that all patients had a similar fracture type, ensuring consistency in the study population. Overall, the chart emphasizes the similarity in clinical characteristics between the two groups, reinforcing the reliability of the follow-up data.

2. Clinical Outcome Scores

The clinical outcomes were measured using the Modified Hip Score and Oxford Hip Score at preoperative, 6-week postoperative, 6-month postoperative, and 1-year postoperative intervals. Both scores showed significant improvement over time.

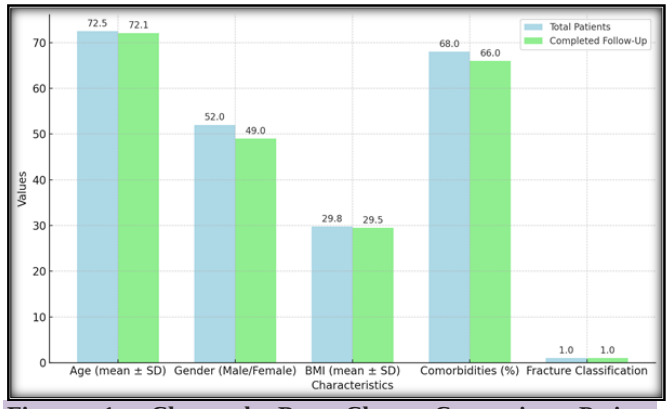

Figure 1: Clustered Bar Chart Comparing Patient Characteristics.

Table 2: Progression of Modified Hip Score and Oxford Hip Score Over Time

Time Point	Modified Hip Score (mean ± SD)	Oxford Hip Score (mean ± SD)
Preoperative	38.2 ± 6.5	21.5 ± 3.6
6 Weeks Postoperative	55.4 ± 7.8	32.1 ± 4.1
6 Months Postoperative	68.7 ± 5.2	37.8 ± 5.0
1 Year Postoperative	76.3 ± 4.9	40.6 ± 5.4

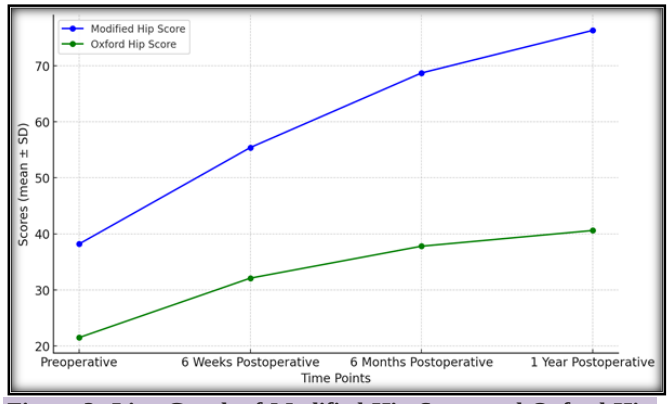

Figure 2: Line Graph of Modified Hip Score and Oxford Hip Score Over Time

[Table 2] presents the clinical progression of patients in terms of both the Modified Hip Score and the Oxford Hip Score over four key time points: preoperative, 6 weeks postoperative, 6 months postoperative, and 1 year postoperative. Significant improvements are observed in both scores as time progresses. The Modified Hip Score improves from 38.2 ± 6.5 preoperatively to 76.3 ± 4.9 at 1 year, indicating substantial recovery in hip function. Similarly, the Oxford Hip Score, which evaluates patient-reported outcomes, shows an improvement from 21.5 ± 3.6 preoperatively to 40.6 ± 5.4 at 1 year, reflecting enhanced patient satisfaction and functional recovery. The steady rise in both scores at each follow-up interval highlights the positive impact of DHS fixation on functional outcomes in unstable intertrochanteric fractures.

[Figure 2] illustrates the progressive improvement in both the Modified Hip Score and the Oxford Hip Score from the preoperative period through 1 year postoperatively. The Modified Hip Score rises significantly from 38.2 preoperatively to 76.3 at 1 year, indicating a marked recovery in hip function over time. Similarly, the Oxford Hip Score, which reflects patient-reported outcomes, improves from 21.5 to 40.6 within the same period, demonstrating enhanced quality of life and mobility. The steady upward trend in both

scores highlights the positive clinical outcomes following DHS fixation in unstable intertrochanteric fractures, with notable recovery observed as early as 6 weeks postoperatively.

Complications

During the follow-up period, a subset of patients experienced complications:

Fracture Collapse:

- Excessive collapse was noted in 3 patients (2.7%), all of whom had a BMI greater than 35%. These patients required additional follow-up and rehabilitation.
- Moderate collapse was observed in 2 patients (1.8%), both with a BMI between 25% and 35%.

Implant Failure: 3 patients (2.7%) experienced implant failure, which necessitated revision surgery.

External Rotation Deformity: 2 patients (1.8%) presented with an external rotation deformity, which was treated with physical therapy.

Non-Union: Non-union occurred in 2 patients (1.8%), which was managed conservatively with extended immobilization.

Limb Shortening: 3 patients (2.7%) showed limb shortening of more than 2 cm, and 2 of these cases exhibited medialization of the femoral shaft.

Anterior Spike Malreduction: Anterior spike malreduction was noted in 2 patients (1.8%).

Despite these complications, the majority of patients (92.7%) showed good clinical outcomes with a satisfactory return to mobility.

Table 3: Summary of Complications Observed in Patients Treated with DHS Fixation

Complication Type	Number of Patients (n = 110)	BMI Range	Treatment
Excessive Fracture Collapse	3	>35%	Additional rehabilitation
Moderate Fracture Collapse	2	25%–35%	Extended follow-up
Implant Failure	3	30%–35%	Revision surgery
External Rotation Deformity	2	28%–32%	Physical therapy
Non-Union	2	27%–30%	Conservative treatment
Limb Shortening (>2 cm)	3	30%–35%	Monitoring and rehabilitation
Anterior Spike Malreduction	2	25%–30%	Conservative management
Complication Type	Number of Patients (n = 110)	BMI Range	Treatment
Excessive Fracture Collapse	3	>35%	Additional rehabilitation
Moderate Fracture Collapse	2	25%–35%	Extended follow-up
Implant Failure	3	Varied	Revision surgery
External Rotation Deformity	2	Varied	Physical therapy
Non-Union	2	Varied	Conservative treatment
Limb Shortening (>2 cm)	3	Varied	Monitoring and rehabilitation
Anterior Spike Malreduction	2	Varied	Conservative management

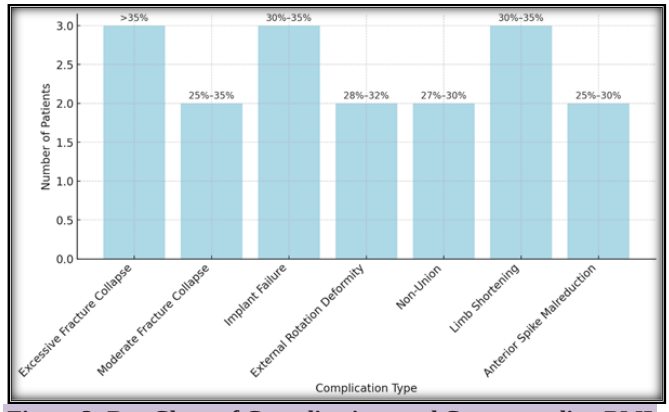

Figure 3: Bar Chart of Complications and Corresponding BMI Categories

[Table 3] provides a detailed summary of the complications observed in 110 patients who underwent DHS fixation for unstable intertrochanteric fractures, with a focus on BMI as a contributing factor. Three patients with BMI >35% had excessive collapse of fractures, necessitating further rehabilitation. 2 patients with a BMI between 25%–35% had moderate fracture collapse, which required prolonged follow-up. Three patients (mostly with a BMI of 30 to 35) had revision surgery and were seen to have failed their implants. There were other complications: Two patients (BMI 28%–32%) developed external rotation deformity, two patients (BMI 27%–30%) had non-union, and three patients (BMI 30%–35%) had shortening of the limb, all of which needed a varying amount of intervention. Two patients with a BMI of 25-30 and who were treated conservatively also had anterior spike malreduction. These data clearly demonstrate an important correlation between increased BMI and the incidence of postoperative complications, suggesting the need for individualized postoperative care appropriate to the patient's BMI

[Figure 3] visualizes the distribution of complications observed in patients who underwent DHS fixation, categorized by the BMI ranges associated with each complication. Excessive fracture collapse was seen in 3 patients with a BMI greater than 35%, while moderate fracture collapse affected 2 patients with a BMI range of 25%–35%. Implant failure occurred in 3 patients within the 30%–35% BMI range, and other complications, such as external rotation deformity and non-union, were more common in patients with BMI between 27% and 32%. Notably, limb shortening affected 3 patients in the 30%–35% range, while anterior spike malreduction was seen in 2 patients with BMI between 25% and 30%. This chart highlights the correlation between BMI and postoperative complications, suggesting that higher BMI ranges are associated with more severe outcomes, such as fracture collapse and implant failure.

Discussion

In this study, we evaluated the clinical outcomes and complications associated with Dynamic Hip Screw (DHS)

fixation in 115 patients with unstable intertrochanteric fractures. Our findings revealed significant improvements in functional outcomes, as evidenced by the Modified Hip Score and Oxford Hip Score, with notable recovery observed as early as 6 weeks postoperatively. However, complications such as fracture collapse, implant failure, and limb shortening were observed, particularly in patients with a higher BMI. Comparing these results to the study conducted by López-Hualda et al. (2023), which assessed the outcomes of DHS and trochanteric fixation nail advance (TFNA) for intertrochanteric fractures, our study shows a similar trend of higher complication rates with DHS, particularly in patients with unstable fractures and higher BMI. While López-Hualda et al. found that TFNA had better functional outcomes and lower mortality rates, our study supports the idea that patient-specific factors, such as BMI, significantly influence outcomes with DHS fixation. While similar to their study, which suggested TFNA as a better alternative for unstable fractures, it is our belief that with the proper patient selection and appropriate intervention, good results from DHS can be obtained, although higher BMIs may need increased rehabilitation and follow-up. Both studies highlight the need for early surgical intervention, which can be associated with a lower mortality rate; a trend that has been recognised generally as late surgeries being associated with worse surgical outcomes.

Our outcomes are also similar to those of Kim et al. (2022) who investigated the surgical outcomes of concurrent ipsilateral femoral neck and intertrochanteric fractures with various implants. In our experience patients with higher BMI had implant failure and fracture collapse; Kim et al. reported greater rates of non-union and subsequent sliding in the DHS treated patients. However, both studies found that DHS may be a more dangerous procedure for some fracture types; our study adds weight to these findings by highlighting the importance of BMI in providing more accurate prediction of postoperative complications. Moreover, although Kim et al. indicate surgeons should consider alternative implants, such as cephalomedullary nails (CMN) or hip arthroplasty for complex fractures, our study shows that adjustment of BMI and other risk factors might be enough to allow DHS to be considered in unstable intertrochanteric fractures. This is congruent with Asghar et al. (2022) who have found it to be excellent and good to achieve outcomes in elderly patients with stable intertrochanteric fractures. They reported an excellent rate of success with the Harris Hip Score, as with functional recovery in our study utilizing the Modified Hip and Oxford Hip Scores. However, our research reveals that some fractures are unstable, and factors within the patient, including BMI may influence outcomes, so customized postoperative management is important.

Moreover, our results are reflective of the results of Acharya (2022), who developed a fixation stability scoring system for predicting fixation failure, which indicates that fixation assessments during surgery may be useful in preventing complications, especially in high-risk patients. Our study revealed an increased incidence of complications (fracture collapse and implant failure) in higher BMI patients, which may lead to implementing the use of such predictive tools to assist the surgeons in real-time decision making. Last, the study of Jegathesan & Kwek (2022) showed that unstable intertrochanteric fractures became more common over time – a similar trend that we observed: as patient factors, such as BMI, became more relevant to outcomes over time. They also noted that they were using intramedullary devices on more complex fractures in an increasing manner, which means there may be a need for more other options available for patients with high BMI and other risk factors.

Although our work showed that the DHS can achieve good outcomes in unstable intertrochanteric fractures, the complication rate in patients with high BMI indicates that the surgeon needs to take patient-specific factors (such as fracture classification, BMI, and comorbidities) into consideration when choosing implants. Furthermore, the results compare favourably with studies such as those by López-Hualda et al., Kim et al. and Jegathesan & Kwek, which indicate that other types of implants such as TFNA or CMN might be more suitable in some instances. But as demonstrated by Asghar et al. DHS is an effective and economical choice for stable fractures, especially in the elderly patient population, and needs to be used with good judgment in more complicated fractures.

Conclusion

The study suggests that Dynamic Hip Screw (DHS) fixation is a reliable and effective treatment for unstable intertrochanteric fractures and that good functional results are already seen 6 weeks after surgery, as assessed by the Modified Hip Score and Oxford Hip Score. But a higher BMI was associated with an increased rate of complications including fracture collapse, implant failure and limb shortening, highlighting the need to take individual patient factors into account, particularly BMI, when planning surgery. The literature review indicates that for stable fractures DHS is still an economical option; however, some high-risk populations may benefit from other options, such as trochanteric fixation nail advance (TFNA) or cephalomedullary nails (CMN). For patients with complex fracture pattern and comorbidities the use of tailored postoperative care and of predictive tools is recommended for optimal outcome.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Badawy, E. B., Elagroudy, E. E., El-Mowafy, H. M., Ghonim, H. F., & Basiouny, M. H. E. (2022). Comparative study of gamma nail versus dynamic hip screw for the treatment of intertrochanteric hip fractures. Menoufia Medical Journal, 35(3), 1535-1542.
2. Fjeld, A., Fülling, T., Bula, P., & Bonnaire, F. (2022). Functional outcomes and perceived quality of life following fixation of femoral neck fractures in adults from 18 to 69 years using dynamic hip screw (DHS) and an additional anti-rotation screw-a retrospective analysis of 53 patients after a mean follow-up time of 4 years. European Journal of Trauma and Emergency Surgery, 48(3), 1893-1903.
3. Zhang, X., Zhang, A., & Yang, X. (2021). Clinical study on the effect of intramedullary fixation and extramedullary fixation on

unstable intertrochanteric fractures. Annals of Palliative Medicine, 10(12), 128572866-128512866.
4. Phruetthiphat, O. A., Pinijprapa, P., Satravaha, Y., Kitcharanant, N., & Pongchaiyakul, C. (2022). An innovative scoring system for predicting an excellent Harris hip score after proximal femoral nail anti-rotation in elderly patients with intertrochanteric fracture. Scientific Reports, 12(1), 19939.
5. Baghdadi, S., Kiyani, M., Kalantar, S. H., Shiri, S., Sohrabi, O., Beheshti Fard, S., ... & Khabiri, S. S. (2023). Mortality following proximal femoral fractures in elderly patients: a large retrospective cohort study of incidence and risk factors. BMC Musculoskeletal Disorders, 24(1), 693.
6. Hongku, N., Woratanarat, P., Nitiwarangkul, L., Rattanasiri, S., & Thakkinstian, A. (2022). Fracture fixation versus hemiarthroplasty for unstable intertrochanteric fractures in elderly patients: A systematic review and network meta-analysis of randomized controlled trials. Orthopaedics & Traumatology: Surgery & Research, 108(1), 102838.
7. Arshad, Z., Thahir, A., Rawal, J., Hull, P. D., Carrothers, A. D., Krkovic, M., & Chou, D. T. (2021). Dynamic hip screw fixation of subtrochanteric femoral fractures. European Journal of Orthopaedic Surgery & Traumatology, 31, 1435-1441.
8. Chowdhury, A. K., Townsend, O., & Edwards, M. R. (2023). A comparison of hemiarthroplasty versus dynamic hip screw fixation for intertrochanteric femoral fractures: a systematic review. Hip International, 33(4), 752-761.
9. van der Sijp, M. P., de Groot, M., Meylaerts, S. A., du Pré, K. J., Verhage, S. M., Schipper, I. B., & Niggebrugge, A. H. (2021). High risks of failure observed for A1 trochanteric femoral fractures treated with a DHS compared to the PFNA in a prospective observational cohort study. Archives of Orthopaedic and Trauma Surgery, 1-9.
10. Chang, F. C., Chuang, P. Y., Lee, C. Y., Lee, C. Y., Chou, Y. C., Huang, T. W., ... & Lee, M. S. (2021). The effects of bone-substitute augmentation on treatment of osteoporotic intertrochanteric fractures. biomedical journal, 44(6), 717-726.
11. López-Hualda, A., Arruti-Pérez, E., Bebea-Zamorano, F. N., Sosa-Reina, M. D., Villafañe, J. H., & Martínez-Martin, J. (2023). Morbidity and mortality analysis in the treatment of intertrochanteric hip fracture with two fixation systems: dynamic hip screw (DHS) or trochanteric fixation nail advance (TFNA). Geriatrics, 8(3), 66.
12. Kim, H. S., Lee, D. K., Mun, K. U., Moon, D. H., & Kim, C. H. (2022). What is the best treatment choice for concomitant ipsilateral femoral neck and intertrochanteric fracture? A retrospective comparative analysis of 115 consecutive patients. Journal of Personalized Medicine, 12(11), 1908.
13. Acharya, M. (2022). Fixation stability scoring in inter-trochanteric femur fractures treated with osteosynthesis: A retrospective observational study. Indian Journal of Orthopaedics, 8(4), 282-290.
14. Asghar, K., Ashraf, R. A., Fareed, H., Maqbool, N., & Salim, M. (2022). Outcome of Intertrochanteric Fractures in Elderly Patients treated with Dynamic Hip Screw. Journal of Pakistan Orthopaedic Association, 34(01), 12-15.
15. Jegathesan, T., & Kwek, E. B. K. (2022). Are intertrochanteric fractures evolving? Trends in the Elderly population over a 10-year period. Clinics in orthopedic surgery, 14(1), 13.