Comparative Prospective Study between Medial and Anterolateral Plating for Distal Tibial Fractures

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Abstract: ***Distal tibia fractures pose significant challenges for orthopaedic surgeons due to the region's complex anatomy and biomechanical demands. Medial and anterolateral plating are two prominent surgical techniques developed to address these fractures, each with distinct advantages. Medial plating aims to stabilize the fracture while minimizing soft tissue disruption, whereas anterolateral plating leverages load distribution for enhanced stability. Both methods are effective in fracture reduction, stability, and tissue preservation; however, debate persists regarding their relative benefits. Tibial pilon fractures, which affect the weight-bearing surface of the distal tibia, can lead to extended recovery times and impose substantial socioeconomic costs. These fractures, though rare (1% of lower limb fractures), can result from low-energy torsional forces or high-energy trauma, the latter causing significant bone fragmentation and soft tissue damage. Conservative treatments, such as traction and early mobilization, have proven insufficient for complex fractures. This study compares the outcomes of medial and anterolateral plating for distal tibial fractures, focusing on fracture reduction, implant positioning, union rates, complications, and functional recovery. Using the AO/OTA 43 and Ruedi-Allgower classification systems, we aim to provide insights into the optimal fixation strategy based on fracture type and severity.***

Keywords: Distal Tibia Fractures, Medial Plating, Anterolateral Plating, Tibial Pilon Fractures, Orthopaedic Surgery Techniques

1. Introduction

Fractures of the distal tibia pose significant challenges to orthopaedic surgeons due to the complex anatomy and the biomechanical demands of this region. These fractures often result from high-energy trauma, such as motor vehicle accidents or falls, and can vary in severity, ranging from simple cracks to complex, comminuted fractures involving joint displacement. Effective treatment is crucial as these injuries can lead to complications such as joint stiffness, non-union, infection, and impaired mobility. Over the years, surgical interventions have been refined to ensure optimal fracture stabilization, with medial and anterolateral plating emerging as two prominent techniques.[1]

Medial plating involves placing a metal plate along the inner side of the tibia, accessed through an incision on the medial lower leg. This approach is preferred for fractures involving the medial aspect of the tibia, such as medial malleolar or tibial plafond fractures. It offers good alignment and stability while minimizing risks to major arteries and nerves, which are laterally situated. However, complications such as soft tissue damage, skin irritation, and infection may arise due to the plate's proximity to the surface. Despite these risks, medial plating is widely used due to its reliability in achieving effective bone stabilization.[2]

Anterolateral plating, in contrast, involves placing a plate along the front and lateral aspect of the tibia. This approach is particularly beneficial for fractures on the lateral side of the tibia or those involving the fibula. It provides greater flexibility in screw placement, making it ideal for managing complex or comminuted fractures. Additionally, this technique avoids risks to the posterior tibial nerve and vascular structures. However, it can increase the risk of superficial peroneal nerve injury and soft tissue complications. Anterolateral plating also often results in more visible scars, which may concern some patients.[3]

Both techniques are associated with unique advantages and limitations. Medial plating minimizes lateral soft tissue risks and is better suited for central or medial fractures, while anterolateral plating provides superior fixation for lateral and complex fractures. The choice of technique largely depends on the fracture's location, complexity, and the surgeon's expertise. The study aims to compare the radiological and functional outcomes of these two methods to guide surgical decision-making and optimize patient outcomes.[4]

Distal tibia fractures represent a small but significant portion of orthopaedic injuries. They often involve the tibial plafond, a critical load-bearing structure at the ankle joint. Pilon fractures, a subset of distal tibia fractures, are particularly complex, comprising only 1% of all lower limb fractures and 3-10% of all tibial fractures. These injuries are classified into two categories based on their mechanism: low-energy injuries, often caused by torsional forces leading to spiral fractures with minimal soft tissue damage, and high-energy injuries, resulting from direct trauma and characterized by severe comminution, soft tissue injuries, and potential bone loss.[5]

Historically, conservative treatments such as traction and early range of motion were used for distal tibia fractures. These methods relied on ligament taxis, where soft tissue connections facilitated fracture reduction. However, they proved inadequate for managing comminuted fractures, which required robust fixation strategies. Advances in orthopaedic techniques have led to the development of plating systems that stabilize fractures effectively, reducing hospitalization and recovery times.[6] The comparison of medial and anterolateral plating has become a focal point in

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fracture management research. This study assesses key outcomes, including fracture reduction, implant positioning, union rates, complications, range of motion, and return to pre-injury activities. Medial plating is often associated with lower rates of nerve injury and offers effective stabilization for fractures involving the medial tibia. In contrast, anterolateral plating provides superior fixation for more complex fractures and ensures greater flexibility in hardware placement.[7]

Radiological outcomes play a significant role in evaluating the efficacy of these techniques. Accurate fracture reduction and proper implant positioning are critical for long-term success, as misalignment can lead to joint stiffness and impaired function. Functional outcomes, such as range of motion, pain levels, and patient satisfaction, further highlight the effectiveness of the chosen surgical approach. The study aims to elucidate the comparative advantages of these methods, providing evidence to support the selection of the most suitable technique for each patient.[8]

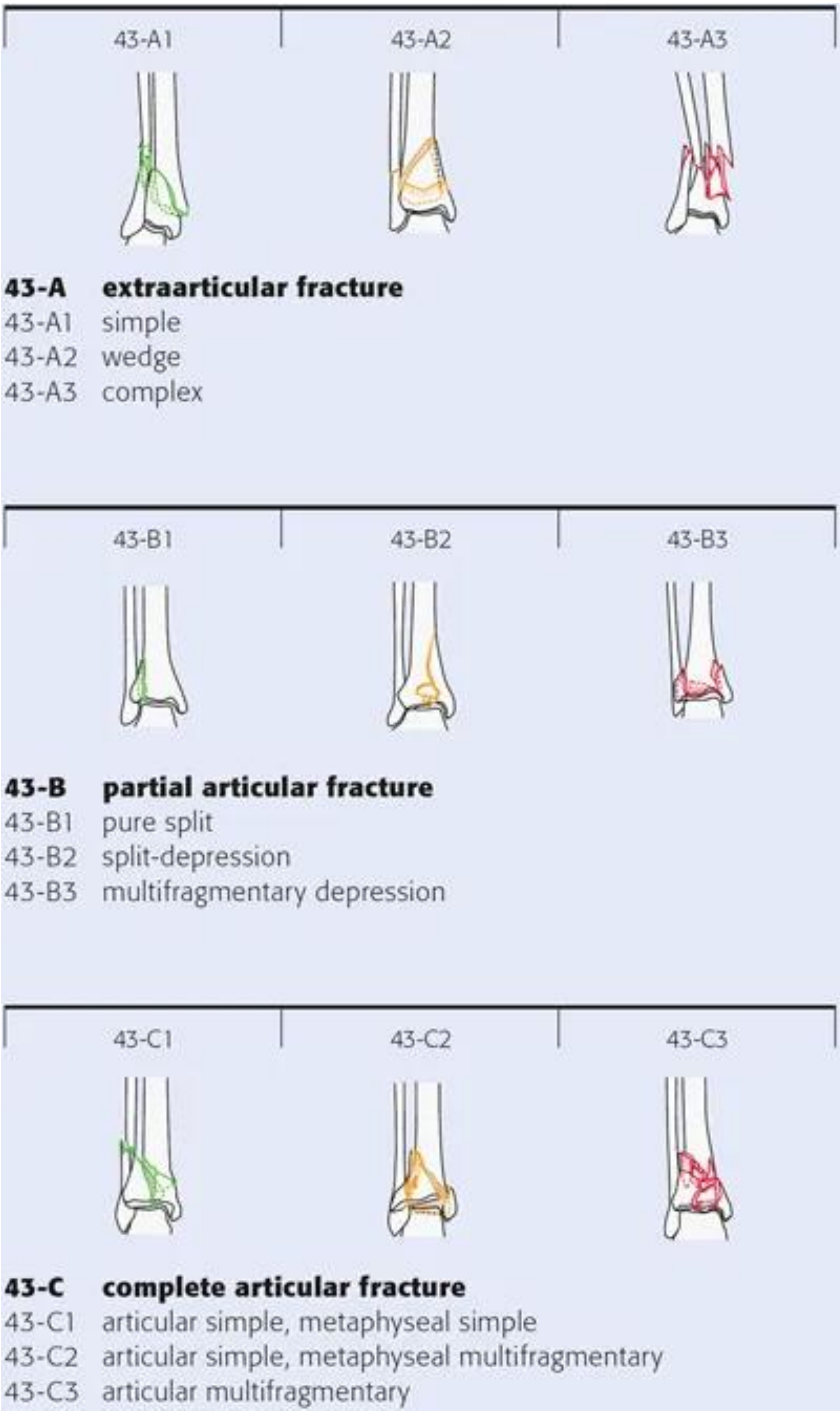
Pilon fractures, particularly open fractures, present additional challenges, as they are prone to infections and complications like compartment syndrome. High-energy trauma cases often require more extensive surgical intervention, including bone grafting or external fixation. Addressing these complications necessitates meticulous surgical planning and postoperative care.[9]

The findings of this study hold promise for advancing the management of distal tibia fractures. By analyzing radiological and functional outcomes, the research seeks to inform surgeons about the long-term efficacy of medial and anterolateral plating. This evidence-based approach aims to optimize fracture stabilization, reduce complications, and enhance patient satisfaction. Ultimately, the study contributes to the ongoing effort to improve orthopaedic practices, ensuring better recovery and quality of life for patients with distal tibia fractures.

2. Classification

The image is a classification chart for different types of fractures around the distal tibia (lower leg bone near the ankle), specifically according to the AO (Arbeitsgemeinschaft für Osteosynthesefragen) classification. This system categorizes fractures based on the location and nature of the fracture. The chart is divided into three main categories (43-A, 43-B, and 43-C), each with subtypes.[10]
1. 43-A: Extra articular Fracture
43-A1 (Simple): A simple extra articular fracture where the bone is broken without any additional fragments.
43-A2 (Wedge): A wedge-shaped fracture where part of the bone is displaced, forming a triangular fragment.
43-A3 (Complex): A complex fracture with multiple fragments outside the joint space.
2. 43-B: Partial Articular Fracture
43-B1 (Pure Split): The fracture is confined to part of the joint surface, creating a split but with no depression.
43-B2 (Split-Depression): A fracture with both a split and a depression, where the bone is partially collapsed at the joint.
43-B3 (Multifragmentary Depression): A more severe fracture with multiple fragments and significant depression within the joint.

AO/OTA Distal Tibia Fracture Classification
3. 43-C: Complete Articular Fracture
43-C1 (Articular Simple, Metaphyseal Simple): A complete fracture that involves the joint surface with a single break in the metaphyseal area (the neck of the bone).
43-C2 (Articular Simple, Metaphyseal Multifragmentary): A complete articular fracture with a simple joint fracture but multiple fragments in the metaphyseal area.
43-C3 (Articular Multifragmentary): The most severe type in this category, with multiple fragments in both the articular (joint) and metaphyseal areas.
This classification helps in planning surgical approaches and predicting outcomes for fractures near the ankle.



Aims and Objectives

AIM

1) The aim is to evaluate and compare the radiological and functional results of medial versus anterolateral plating for distal tibial fractures.

Objective:

1) The goal is to evaluate the radiological and functional results of medial and anterolateral plating for distal tibial fractures.
2) The objective is to assess the radiological and functional results of medial versus anterolateral plating for distal tibial fractures.

3. Materials and Methods

Patient Selection:

We designed this prospective, randomized study to evaluate and compare the functional outcome of union among tibial fracture patients treated with mesial and anterolateral plating. The duration of study was of two years, from November 2022 to November 2024. After obtaining their voluntary informed consent, the study enrolled all patients who met the inclusion criteria and none who met the exclusion criteria.

Inclusion and Exclusion Criteria

Inclusion criteria:
1) Skeletally mature patients with distal tibial fractures, with or without associated fibular fractures.
2) Closed fractures of the distal tibia.
3) Patients requiring revision surgery due to the failure of previous implants.

Exclusion Criteria:
1) Open fractures of distal tibia
2) Patients with concomitant vascular injury
3) Pathological fractures

The study enrolled all patients who met the inclusion and exclusion criteria.

Method
1) When a patient arrives at the emergency department or outpatient department, we inquire about their clinical history, the mechanism of their injury, the severity of their injury, any concomitant injuries, and the time elapsed since their injury, and their functional requirements. We conducted vital signs and comprehensive systemic and general exams.
2) We performed an X-ray and confirmed it with radiographic assessment, which included both standard and specialized views. We evaluated the intra-articular extent of fracture geometry using thin-slice CT scans in ambiguous situations.
3) To assess anteroposterior alignment, the angle was measured between a line parallel to the proximal fragment and a line parallel to the distal fragment on lateral radiographs.
4) Varus-valgus alignment was evaluated by calculating the angle between lines that are perpendicular to and bisect the tibial plateau and proximal medullary canal, as well as the line bisecting the distal medullary canal and tibial plafond on anteroposterior radiographs. Misalignment in the varus-valgus plane was identified when the fracture gap was less than 5° in either plane, internal rotation was less than 10°, external rotation exceeded 15°, or shortening was less than 2 cm.
5) All patients underwent the same rehabilitation regimen.
6) Physiotherapy in the form of gentle passive range of motion was started after 3-4 weeks once pain was reduced and the patient cooperated.

Primary outcome –
1) We evaluated the functional outcome for distal tibial fractures using the Ovadia-Beals clinical scoring system.

Clinical Case Illustrations

Case–1
Case- 50year'soldmale
Mode- Road Traffic Accident
Fracture- closed 43A1fracture distal tibia left side
Procedure- Open Reduction and internal fixation with Locking plate with medial surgical approach.
Surgery duration – 130minutes
Radiological union of fracture site: 7 weeks

Ankle Range of Movement:
Ankle Dorsiflexion– 19 degrees
Ankle Plantar flexion–27 degrees
Ovadia – Beals score–9
Result Grading –Excellent

Case 1 Radiograph:

Pre-operative x-ray:

(A) 1 month post-operative-ray:

(b) Functional Outcome

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Case–2
Case- 44year'soldmale
Mode- Road Traffic Accident
Fracture- closed 43A3fracture distal tibia left side
Procedure- Open Reduction and internal fixation with Locking plate with anterolateral surgical approach.
Surgery duration – 125minutes
Radiological union of fracture site: 10 weeks
Ankle Range of Movement: Ankle Dorsiflexion–25 degrees, Ankle Plantarflexion–32 degrees
Ovadia-Beal score–8
Result Grading –Good

Case 2 Radiograph:

Pre-Operative x-ray:

1 month post op x-ray:

Functional Outcome:

4. Observations and Results

Table 1: Distribution of Patients among Two Groups

	N	%
Group1:(Anterolateral plating)	10	50
Group 2: (Medial plating)	10	50

The data compares two groups based on the plating method used for fracture treatment, with each group comprising 10 cases. Group 1, which used anterolateral plating, represents 50% of the total cases, while Group 2, which used medial plating, also represents 50%. This balanced distribution allows for a direct comparison between the two plating techniques to evaluate their outcomes or effectiveness without any skewed sample sizes.

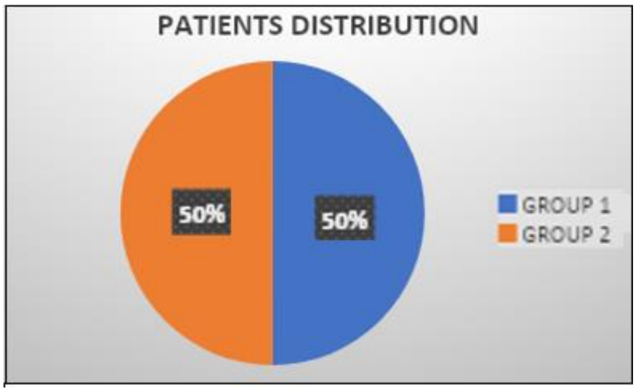


Table 2: Mean Age of Patients among Two Groups

	N	Mean	Std. Deviation	P value
Group 1	10	39.100	9.5853	0.236, ns
Group 2	10	46.400	16.2152	

The table-2 compares the mean values for a certain variable between two groups (Group 1 and Group 2), each containing 10 cases. Group 1 has a mean of 39.1 with a standard deviation of 9.5853, while Group 2 has a higher mean of 46.4 with a larger standard deviation of 16.2152. The p-value of 0.236 indicates that the difference in means between the two groups is not statistically significant (denoted as "ns"). This suggests that there is no meaningful difference in the measured variable between the two plating groups at a significance level typically set at 0.05.

Table 3: Gender Wise Distribution

			Gender		Total
			Female	male	
group	Group 1	n	3	7	10
		%	30%	70%	100%
	Group 2	n	4	6	10
		%	40%	60%	100%
P value					0.500, ns

The table-3 presents a gender distribution for two groups, each containing 10 individuals. In Group 1, 30% are female (3 individuals) and 70% are male (7 individuals). In Group 2, the gender distribution shows 40% female (4 individuals) and 60% male (6 individuals). The p-value for comparing gender distribution between the groups is 0.500, indicating no statistically significant difference (denoted as "ns") between the two groups in terms of gender composition. This suggests that gender distribution is similar across both groups.

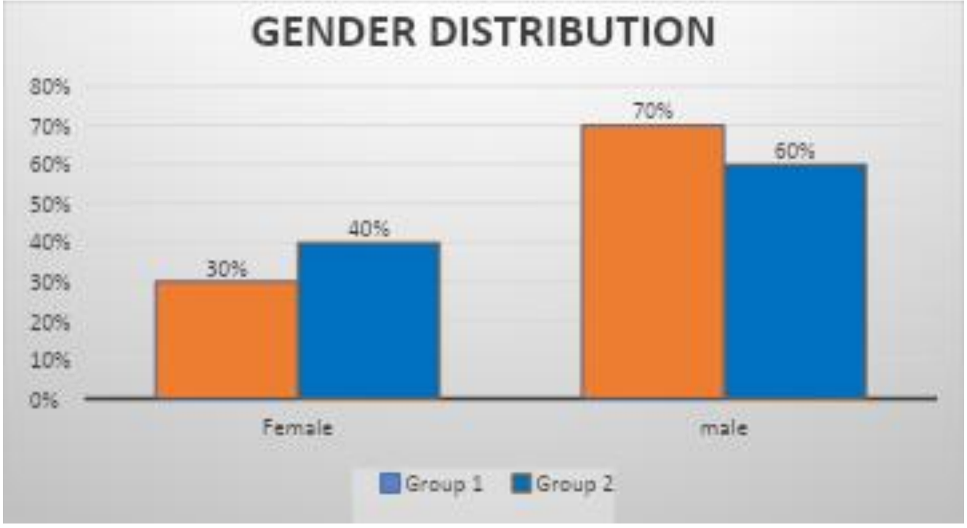


Table 4: Side Wise Distribution

1			Side of Injury		Total
			Left	Right	
Group	Group 1	n	4	6	10
		%	40%	60%	100%
	Group 2	n	5	5	10
		%	50%	50%	100%
P value				0.500, ns	

The table-4 compares the side of injury (left vs. right) between two groups, each consisting of 10 individuals. In Group 1, 40% of injuries occurred on the left side (4 cases) and 60% on the right side (6 cases). In Group 2, the distribution is equal, with 50% of injuries on the left side (5 cases) and 50% on the right side (5 cases). The p-value of 0.500 indicates that there is no statistically significant difference (denoted as "ns") between the two groups regarding the side of injury. This suggests that the distribution of left and right side injuries is similar across both groups.

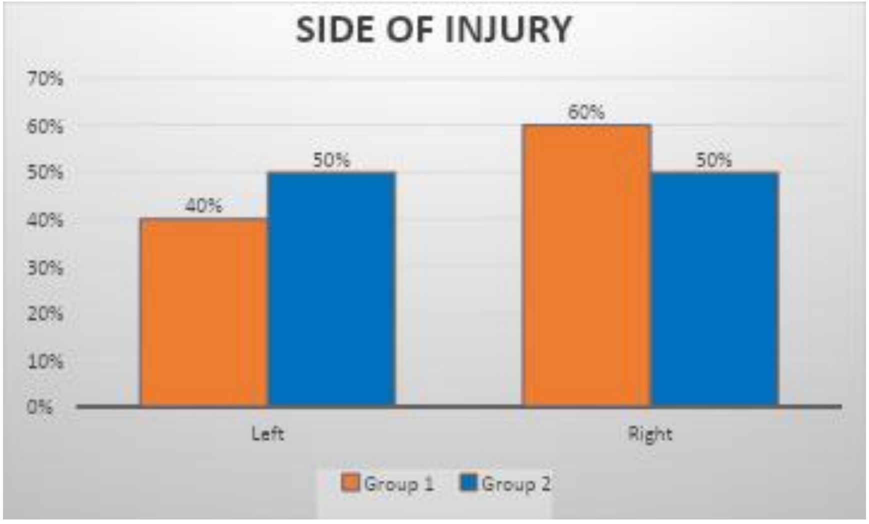


Table 5: AO Classification Distribution

			AO Classification			Total
			A1	A2	A3	
Group	Group 1	N	3	3	4	10
		%	30%	30%	40%	100.0%
	Group 2	N	3	2	5	10
		%	30%	20%	50%	100.0%
P value				0.856, ns		

The AO classification table-5 displays the distribution of fracture types (A1, A2, and A3) across two groups, each with a total of 10 cases. In Group 1, fracture types are distributed as follows: A1 and A2 each account for 30% (3 cases each), while A3 comprises 40% (4 cases). In Group 2, the distribution is slightly different, with A1 representing 30% (3 cases), A2 at 20% (2 cases), and A3 at 50% (5 cases). A statistical analysis reveals a p-value of 0.856, indicating that the difference in fracture type distribution between the two groups is not statistically significant. This suggests that fracture patterns are similar between the groups, with no substantial variation in the distribution of fracture types A1, A2, and A3.

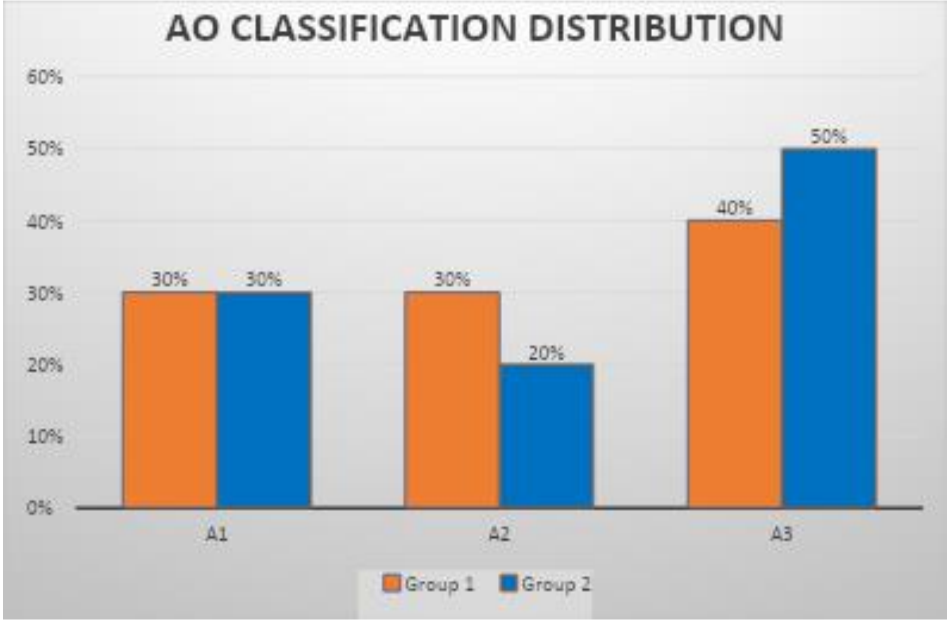


Table 6: Distribution of Patients according to Result Grading

			Average	Good	Excellent	Total
Group	Group 1	n	0	3	7	10
		%	0%	30%	70%	100.0%
	Group 2	n	2	5	3	10
		%	20.0%	50%	30%	100.0%
		P value	0.251, ns			

The table-6 displays the distribution of performance ratings (Average, Good, Excellent) across two groups, each containing 10 individuals. In Group 1, none are rated as Average (0%), 30% are rated as Good (3 individuals), and 70% are rated as Excellent (7 individuals). In Group 2, 20% are rated as Average (2 individuals), 50% as Good (5 individuals), and 30% as Excellent (3 individuals). The p-value of 0.251 indicates that the difference in performance ratings between the two groups is not statistically significant (denoted as "ns"), suggesting similar performance distribution patterns across the groups.

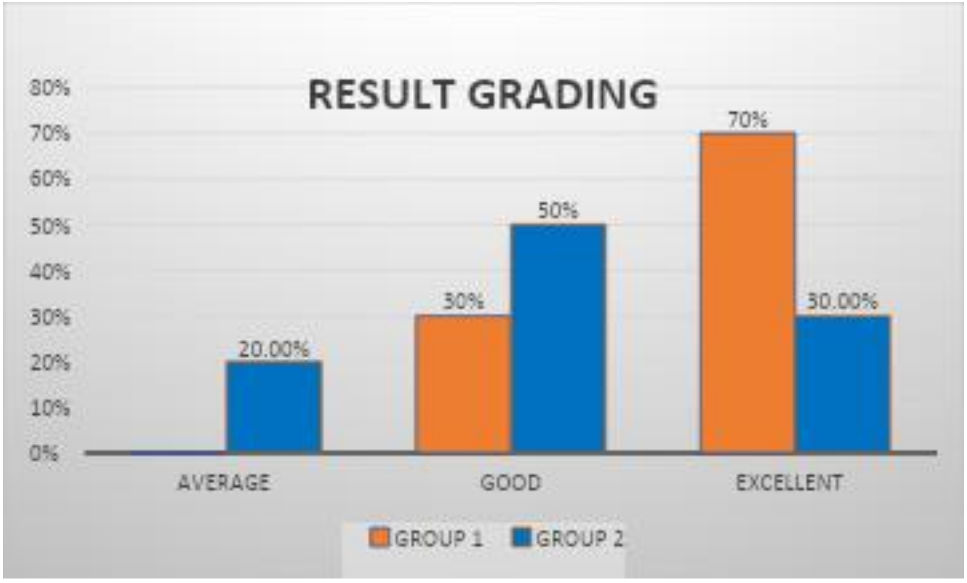


Table 7: Comparison of Flexion Degree among Two Groups

		N	Mean	Std. Deviation	P value
Dorsi Flexion	Group 1	10	23.700	2.2136	0.021, SIG
	Group 2	10	19.700	4.4734	
Plantar Flexion	Group 1	10	31.900	2.5144	0.045, SIG
	Group 2	10	27.700	5.6382	

The table-7 presents a comparison of dorsiflexion and plantar flexion ranges between two groups, each with 10 individuals. In terms of dorsiflexion, Group 1 has a mean of 23.7 (standard deviation of 2.2136), while Group 2 has a lower mean of 19.7 (standard deviation of 4.4734). The p-value for dorsiflexion is 0.021, indicating a statistically significant difference between the groups. For plantar flexion, Group 1 has a mean of 31.9 (standard deviation of 2.5144), compared to Group 2's mean of 27.7 (standard deviation of 5.6382), with a p-value of 0.045, also indicating statistical significance. These results suggest that Group 1 has a significantly greater range of motion in both dorsiflexion and plantar flexion compared to

Group 2, implying potentially better flexibility or function in the joint for Group 1.

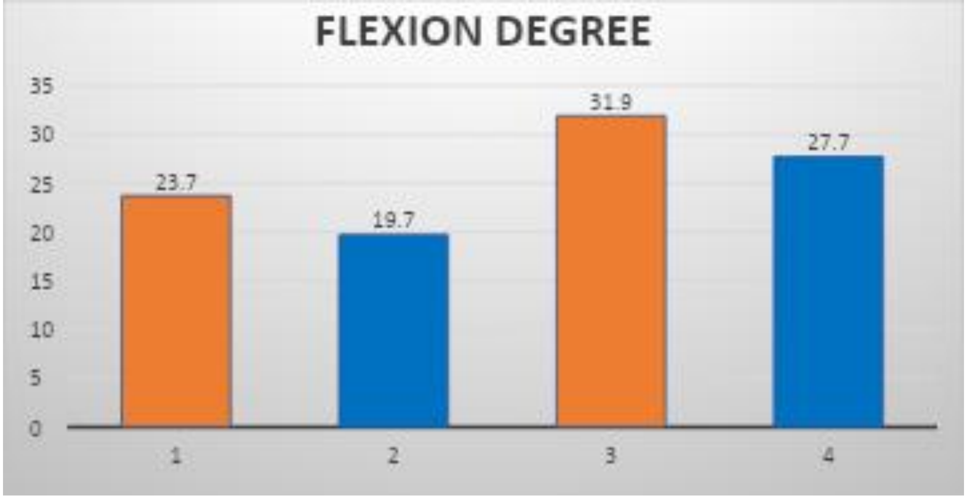
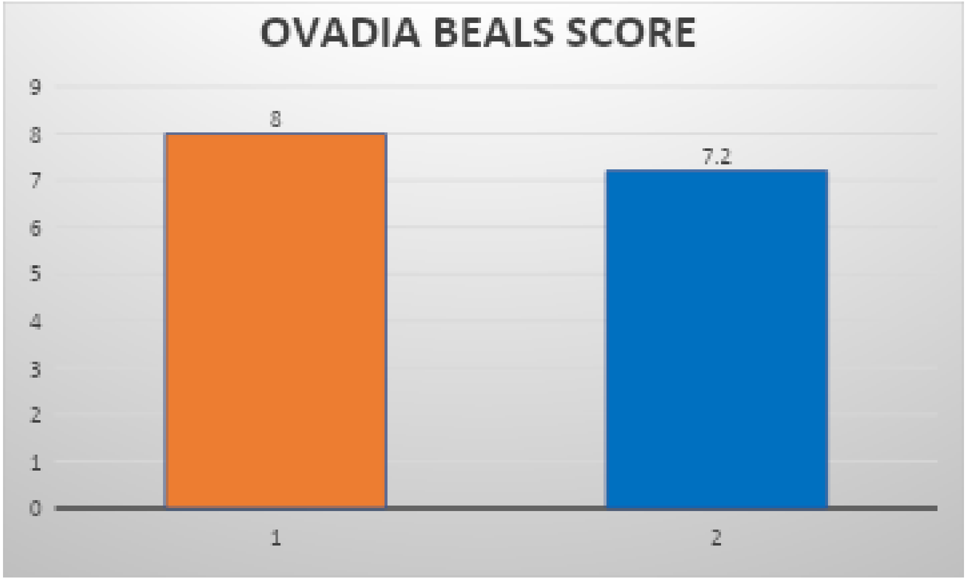


Table 8: Comparison of Ovadia Beals Score among Two Groups

		N	Mean	Std. Deviation	P value
Ovadia Beals Score	Group 1	10	8.000	0.0000	0.001, SIG
	Group 2	10	7.200	.6325	

The table-8 compares the Ovadia-Beals score between two groups, each consisting of 10 individuals. Group 1 has a mean score of 8.000 with no standard deviation (0.0000), indicating consistent scoring among all participants. Group 2 has a slightly lower mean score of 7.200 with a standard deviation of 0.6325, reflecting some variability in scores. The p-value is 0.001, which is statistically significant (denoted as "SIG"). This result indicates a meaningful difference between the two groups, with Group 1 achieving significantly higher Ovadia-Beals scores compared to Group 2, suggesting potentially better outcomes in the measure assessed by this score.

Mann Whitney, u test, level of significance set at $p < 0.05$
Ns: non-significant, sig: significant



5. Discussion

Managing distal one-third tibial fractures, whether with or without articular involvement, poses challenges due to various factors. A range of treatment methods exists, each with its own advantages and disadvantages, open reduction and plating are commonly used and can provide effective fixation and maintenance of alignment. However, controversy surrounds the optimal surgical approach.

Despite providing adequate visibility of the tibia, conventional anterior plating increases the risk of wound problems and nonunions, particularly with medial plating. An extra incision on the lateral side of the leg indicates the need for fibula fixation. In recent years, a single lateral approach known as lateral plating has emerged as an alternative technique for treating distal tibial and fibular fractures. While some studies have reported favourable outcomes with this approach, many of these studies involve small series, highlighting the need for further research and larger-scale studies to validate its efficacy and safety.

In this study, 20 patients were divided equally between the medial and anterolateral plating groups. The mean (SD) age

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for Group 1 was 39.10 (9.58) and for Group 2 was 46.4 (16.21), showing no significant difference (p = 0.236) between the two groups. Similarly, Encinas-Ullán et al. (2013) conducted research on 40 patients, with a mean age of 53 years, comprising 24 males and 16 females.[11] Garg et al. (2017) evaluated the outcomes of medial and lateral locking compression plates for distal third tibial fractures in patients with a mean age of 38.9 years.[12] Furthermore, Jain et al. (2020) included 58 patients with distal tibia fractures treated using anterolateral and medial plating, with mean ages of 49.26 ± 15.73 years and 39.77 ± 13.22 years, respectively. [13]

In the study by Singh VP and Patil SR (2023), the mean age of patients was 46.05 ± 15.47 years in Group 1 and 44.35 ± 13.22 years in Group 2. In our study, Group 1 consisted of 30% females and 70% males, while Group 2 comprised 40% females and 60% males. The gender distribution between the two groups was comparable (p=0.500). Similarly, Encinas-Ullán et al. (2013) reported a gender distribution of 24 males and 16 females in their study.[11]

In the present study, Group 1 consisted of 30% A1, 30% A2, and 40% A3, while Group 2 included 30% A1, 20% A2, and 50% A3. The comparison between these groups showed no significant difference (p = 0.856). According to Encinas-Ullán et al. (2013), 17 of the injuries were due to high-energy trauma, with 8 cases classified as open fractures (3 type I, 4 type II, and 1 type III). Additionally, 12 of the closed injuries were categorized as grade II or III based on the Tscherne classification. Associated injuries were observed in six patients (15%). Jain RK, Deshpande M, Mahajan P, Jain S (2020), AO 43A1 was more common type of fracture seen in the anteromedial plating group (31.42%), while 43A3 fracture was more common in anterolateral plating group (34.78%).[13] Singh VP, Patil SR (2023) The outcomes of treating extra-articular distal tibia fractures with different types of plate fixation, specifically anterolateral and medial distal tibia locking plates, were assessed. Out of 40 patients enrolled in this study, 15(37.5%) had AO/OTA 43A1 type fracture, 20(50%) had AO/OTA 43A2 type fracture, and 5(12.5%) AO/OTA 43A3 type fracture of distal tibia. [15]

In the present study, group 1, there were 0% average, 30% good and 70% excellent. In group 2, there were 20% average, 50 % good and 30% excellent. It was comparable among two groups. This is in accordance to findings of Encinas-Ullán CA et al (2013), Garg et al. (2017) reported that in the medial plating group, the distribution of cases based on outcome grading was 1 excellent, 8 good, and 7 fair, whereas in the lateral plating group, it was 3 excellent, 7 good, and 7 fair. Similarly, Saidy et al. (2023) noted two cases of superficial infection, one case of deep infection, and two cases of nonunion in their study. We graded 3 instances as outstanding, 7 as good, 8 as fair, and 1 as bad in the medial plating group. In the lateral plating cohort, there were 2 instances classified as outstanding, 6 as good, 7 as fair, and 1 as bad. [16]

In the current study, the mean (SD) score for DORSI FLEXION was 23.7 (2.21) for Group 1 and 19.70 (4.47) for Group 2. Group 1 had a considerably greater value than group 2 (p = 0.021). Conversely, Garg et al. (2017) reported that the medial plating group had a final range of motion of 17.2° in ankle dorsiflexion, whereas the lateral plating group demonstrated a somewhat greater range of 19°. The writers came to the conclusion that lateral plating for distal tibia fractures is a safe and effective method that can provide biological fixation and may reduce the soft tissue issues that are often associated with medial plating methods. [12]

In the current investigation, the average (SD) plantar flexion score was 31.9 (2.51) for Group 1 and 27.7 (5.63) for Group 2, with Group 1 showing a significantly higher value than Group 2 (p = 0.045). In contrast, Garg et al. (2017) reported that the medial plating group achieved a final ankle plantar flexion range of 0.7°, while the lateral plating group showed a significantly greater range of 34.2°. Their findings suggested that lateral plating for distal tibia fractures is a safe and effective fixation technique, offering biological fixation that may help mitigate the soft tissue complications often linked with medial plating methods. Additionally, Singh and Patil (2023) found that the mean dorsiflexion range in the anterolateral group was 12.75 ± 4.44 degrees, compared to 11.25 ± 4.55 degrees in the medial group. The average plantar flexion range in Group 1 was 32.25 ± 4.44 degrees, whereas it was 28.25 ± 6.93 degrees in Group 2. The mean time to fracture union was 21.15 ± 1.33 weeks in Group 1 and 20.14 ± 1.23 weeks in Group 2.[15]

The current study reports the mean (SD) Ovadia Beals score for Group 1 as 8 (0.0) and for Group 2 as 7.2 (0.63). Group 1 exhibited a considerably greater value than group 2 (p = 0.001). According to these findings, Juneja J., Pradhan M., Prakash M., Saini N., Talesra A., Sen R., et al. (2023) reported that, of the 20 patients in the medial plating group, 11 achieved an outstanding Olerud and Molander Ankle Score (OMAS), while nine attained a good OMAS at the final follow-up. Among 20 patients in the anterolateral plating group, 13 had an outstanding OMAS score, while seven attained a favourable OMAS score.

The mean OMAS score for Group A was 88.5, while for Group B it was 90.[14]

In the present study, the mean (SD) follow-up score for Group 1 was 7.10 (1.79), and for Group 2 it was 9.60 (3.86). No significant difference was observed between the groups (p = 0.663, ns). Similarly, the average time for fracture union was 24.6 weeks in the medial plating group and 24.2 weeks in the anterolateral plating group.

In this study, medial plating for distal tibial fractures demonstrated superior radiological and clinical outcomes compared to anterolateral plating. Patients who underwent medial plating had higher mean scores for dorsiflexion and plantar flexion, as well as better Ovadia-Beals scores. Furthermore, these patients experienced less blood loss and shorter operation times.

6. Summary

- There were 10 (50%) patients in each group, with no loss to follow-up
- The mean (SD) age for Group 1 was 39.10 (9.58), and for Group 2, 46.4 (16.21). It was comparable (p=0.236)

- In Group 1, there were 30% females and 70% males, and in Group 2, there were 40% females and 60% males. It was comparable (p=0.500)
- In Group 1, there were 40% left and 60% right; in Group 2, there were 50% left and 50% right. It was comparable (p=0.500)
- In Group 1, 30% A1, 30% A2 And 40% A3 and in Group 2, 30% A1, 20% A2 And 50% A3. It was comparable (p=0.856)
- In group 1, there were 0% average, 30% good and 70% excellent. In group 2, there were 20% average, 50 % good and 30% excellent. It was comparable among two groups.
- ANKLE DORSI FLEXION, The mean (SD) score for Group 1: 23.7 (2.21) and for Group 2: 19.70 (4.47). It was significantly higher in group 1 as compared to group 2 (p=0.021)
- ANKLE PLANTAR FLEXION, The mean (SD) score for Group 1 is 31.9 (2.51); for Group 2, it is 27.7 (5.63). Group 1 scored significantly higher than Group 2 (p = 0.045).
- The mean (SD) OVADIA BEALS SCORE AMONG TWO GROUPS score for Group 1: 8 (0.0) and for Group 2: 7.2 (0.63). It was significantly higher in group 1 as compared to group 2 (p = 0.001).
- In the present study, the mean (SD) follow-up score for Group 1 is 7.10 (1.79), and for Group 2 it is 9.60 (3.86). It was comparable across both groups (p = 0.663, ns).

7. Conclusion

Research has shown that among patients aged 18 years and above, ANTEROLATERAL plating of distal tibial fractures resulted in superior radiological and clinical outcomes when compared to MEDIAL plating. The surgeon's careful analysis of the patient's overall clinical condition and fracture pattern is crucial in achieving these positive results. Patients who received ANTEROLATERAL plating had higher mean scores for ANKLE DORSI FLEXION and PLANTAR FLEXION, as well as OVADIA BEALS FUNCTIONAL SCORE. Additionally, these patients experienced less blood loss and shorter operation times.

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