RESEARCH PAPER

Comparative Outcomes of Chevron and Transverse Olecranon Osteotomy Fixed with Tension Band Wiring for Intra-Articular Distal Humerus Fractures: A Retrospective Cohort Study

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ABSTRACT

Background: Olecranon osteotomy is a widely used approach for exposing complete intra-articular distal humerus fractures (AO/OTA type 13-C) during open reduction and internal fixation. The osteotomy may be performed as either a transverse or a chevron (V-shaped) configuration and is commonly repaired using tension band wiring (TBW). Although both techniques provide satisfactory surgical exposure, evidence comparing their functional and radiological outcomes remains limited.

Methods: This retrospective comparative cohort study was conducted at the Department of Orthopaedics, Saveetha Medical College and Hospital, over two years. Forty-eight patients with AO/OTA type 13-C distal humerus fractures treated with open reduction and internal fixation through an olecranon osteotomy were included and divided into two groups of 24 each: transverse osteotomy with tension band wiring (TBW) and chevron osteotomy with TBW. Patients were followed for a minimum of 12 months. Functional outcomes were assessed using the Mayo Elbow Performance Score (MEPS), Quick Disabilities of the Arm, Shoulder and Hand (QuickDASH) score, and elbow range of motion, while radiological union and postoperative complications were also evaluated.

Results: Baseline demographic and injury characteristics were comparable between the two groups. Group B (chevron osteotomy) demonstrated significantly earlier radiological union than Group A (10.4 ± 1.4 vs. 11.2 ± 1.6 weeks; $p = 0.041$). MEPS and elbow range of motion were significantly higher, while QuickDASH scores were significantly lower in Group B at 3, 6, and 12 months (all $p < 0.05$). Implant-related complications, including implant prominence and hardware removal, were less frequent in Group B. At the 12-month follow-up, a higher proportion of patients in Group B achieved excellent functional outcomes compared with Group A (87.5% vs. 58.3%), with no poor outcomes observed in the chevron group.

Conclusion: Chevron olecranon osteotomy fixed with tension band wiring was associated with earlier radiological union, superior functional outcomes, and fewer complications than the transverse technique in the surgical management of intra-articular distal humerus fractures. These findings suggest that the chevron configuration may provide clinical advantages when an olecranon osteotomy is required for surgical exposure.

Keywords: distal humerus fracture; olecranon osteotomy; chevron osteotomy; transverse osteotomy; tension band wiring; Mayo Elbow Performance Score

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INTRODUCTION

Intra-articular distal humerus fractures are among the most challenging injuries encountered in orthopaedic trauma surgery. Although they account for a relatively small proportion of adult fractures, they are associated with considerable morbidity because of the complex anatomy of the elbow joint and the need to restore both articular congruity and columnar stability. These fractures demonstrate a bimodal age distribution, occurring after high-energy trauma in younger individuals and following low-energy falls in elderly patients with osteoporotic bone. Among these injuries, complete articular fractures classified as AO/OTA type 13-C present the greatest technical challenge owing to extensive articular comminution and disruption of both the medial and lateral columns.[1–3]

Open reduction and internal fixation remains the standard treatment for displaced intra-articular distal humerus fractures. Successful management depends on anatomical reduction of the articular surface, stable fixation of both columns, and early postoperative mobilisation to minimise elbow stiffness and optimise functional recovery. Achieving these goals requires adequate surgical exposure, particularly in fractures with complex articular involvement.[4,5]

The olecranon osteotomy has long been regarded as the preferred surgical approach for exposure of AO/OTA type 13-C distal humerus fractures because it provides excellent visualisation of the trochlea, capitellum, and distal humeral articular surface. Compared with triceps-splitting or triceps-reflecting approaches, olecranon osteotomy allows more extensive exposure while preserving the extensor mechanism, thereby facilitating accurate reduction and internal fixation.[4–7]

Two osteotomy configurations are commonly used in clinical practice: the transverse osteotomy and the chevron (V-shaped) osteotomy. Following fixation of the distal humerus fracture, the osteotomy is most commonly repaired using tension band wiring. The transverse osteotomy is technically straightforward and relatively easy to perform, whereas the chevron osteotomy creates a larger interlocking bony surface that may provide greater intrinsic stability and facilitate anatomical reduction during repair. Biomechanical studies have suggested that the chevron configuration offers improved resistance to rotational and shear forces, which may contribute to enhanced osteotomy healing and lower rates of fixation-related complications.[8–15]

Despite these theoretical advantages, the available clinical evidence comparing chevron and transverse olecranon osteotomies remains limited. Most published studies have focused on biomechanical analyses or cadaveric models, while relatively few clinical investigations have directly compared patient-reported outcomes, elbow function, radiological union, and complication rates between the two techniques. Consequently, the optimal osteotomy configuration for the surgical management of complex intra-articular distal humerus fractures remains a subject of ongoing discussion.[12–17]

The present retrospective comparative cohort study was undertaken to compare the functional outcomes, radiological outcomes, and postoperative complications associated with transverse and chevron olecranon osteotomy fixed with tension band wiring in patients undergoing open reduction and internal fixation for AO/OTA type 13-C distal humerus fractures. We hypothesised that the chevron osteotomy would result in earlier radiological union, superior functional recovery, and fewer osteotomy-related complications compared with the transverse osteotomy.

MATERIALS AND METHODS

Study Design

This study was designed as a retrospective comparative cohort study.

Study Setting

The study was conducted in the Department of Orthopaedics, Saveetha Medical College and Hospital, Chennai, a tertiary care teaching hospital. Institutional Ethics Committee approval was obtained prior to commencement of the study, and all procedures were carried out in accordance with the principles of the Declaration of Helsinki. Owing to the retrospective nature of the study, the requirement for informed consent was waived by the Institutional Ethics Committee. Patient data were retrieved from hospital electronic medical records, operative notes, radiographs, and outpatient follow-up records.

Study Duration

The study was conducted over a two-year period. All included patients had a minimum follow-up duration of 12 months following surgery. Clinical and radiological assessments were performed at 6 weeks, 3 months, 6 months, and 12 months postoperatively to evaluate fracture union, functional recovery, range of motion, and postoperative complications.

Sample Size

A total of 48 patients meeting the eligibility criteria were included in the study, with 24 patients in each group**.** As this was a retrospective cohort study, all eligible patients treated during the study period with complete clinical and radiological follow-up were included in the final analysis. No patients were excluded after group allocation.

Study Population

The study comprised patients diagnosed with complete intra-articular distal humerus fractures (AO/OTA type 13-C) who underwent open reduction and internal fixation using an olecranon osteotomy approach. During the study period, 72 patients were assessed for eligibility. Following application of the predefined inclusion and exclusion criteria, 24 patients were excluded, and 48 eligible patients were included in the final analysis (Figure 1).

Patients were categorized into two groups based on the type of osteotomy performed during surgery:

Group A (n = 24): Transverse olecranon osteotomy fixed with tension band wiring (TBW).

Group B (n = 24): Chevron olecranon osteotomy fixed with tension band wiring (TBW).

The choice of osteotomy configuration was based on the operating surgeon's preference, fracture characteristics, and intraoperative assessment. The fixation technique for the distal humerus fracture was not considered a study variable.

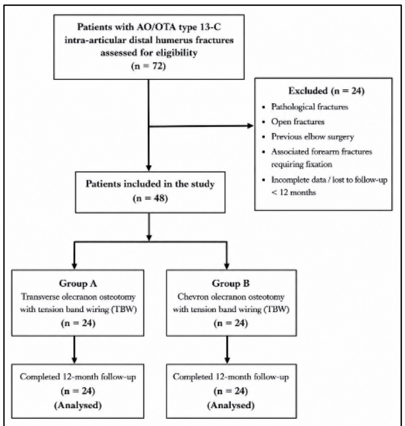

Figure 1: Patient Selection Flow Diagram. Selection of patients with AO/OTA type 13-C intra-articular distal humerus fractures, showing exclusions, group allocation, and completion of 12-month follow-up.

Age Group

Patients aged 18 years and above who sustained AO/OTA type 13-C distal humerus fractures were eligible for inclusion. There was no upper age limit, provided patients satisfied the study eligibility criteria and had a minimum follow-up of 12 months.

Inclusion Criteria

- Patients aged 18 years or older at the time of surgery
- AO/OTA type 13-C (complete intra-articular) distal humerus fractures treated with open reduction and internal fixation
- Olecranon osteotomy performed to facilitate surgical exposure
- Osteotomy repaired using tension band wiring, as either a transverse or chevron configuration
- Surgery performed within three weeks of injury
- Availability of complete clinical records, operative details and radiographic documentation
- Minimum postoperative follow-up of 12 months

Exclusion Criteria

- Patients younger than 18 years
- Extra-articular or partial articular distal humerus fractures (AO/OTA type 13-A or 13-B)
- Distal humerus fractures managed without an olecranon osteotomy
- Olecranon osteotomy fixed using a method other than tension band wiring, such as plate or screw fixation
- Previous fracture, surgery or significant deformity involving the affected elbow
- Pathological fractures
- Open (compound) distal humerus fractures
- Associated ipsilateral upper-limb fractures affecting postoperative rehabilitation or functional assessment
- Polytrauma patients requiring prolonged intensive care or precluding standardised rehabilitation
- Pre-existing neurological disorders affecting elbow function
- Active local or systemic infection at the time of surgery
- Incomplete medical records or follow-up shorter than 12 months

Surgical Technique

All procedures were performed by experienced orthopaedic trauma surgeons under either general or regional anaesthesia, with the patient positioned in the lateral decubitus or prone position according to surgeon preference. A standard posterior midline approach to the elbow was used in all cases. The ulnar nerve was routinely identified, carefully mobilised where necessary, and protected throughout the procedure.

In Group A, a transverse olecranon osteotomy was created at the bare area of the trochlear notch using an oscillating saw and completed with an osteotome to minimise articular cartilage injury. In Group B, a chevron (apex-distal V-shaped) olecranon osteotomy was fashioned at the same level using a similar technique. Following completion of the osteotomy, the olecranon fragment was reflected proximally to provide adequate exposure of the distal humeral articular surface.

The distal humerus fracture was anatomically reduced under direct visualisation and stabilised using precontoured distal humerus locking plates, with the fixation construct selected according to the fracture configuration. After definitive fracture fixation, the olecranon osteotomy was anatomically reduced and stabilised using the standard AO tension band wiring technique. This consisted of two parallel Kirschner wires inserted across the osteotomy into the anterior cortex of the ulnar shaft, supplemented with a figure-of-eight 18-gauge stainless steel wire passed through a transverse drill hole in the proximal ulna and tensioned over the posterior surface of the olecranon.

Following confirmation of fracture reduction, osteotomy alignment, and implant position, and elbow stability, meticulous haemostasis was achieved. The wound was irrigated and closed in layers over a closed-suction drain where indicated. A sterile dressing was applied, and the limb was immobilised in an above-elbow posterior plaster splint with the elbow in approximately 90° of flexion until the initial postoperative review.

Follow-up and Outcome Assessment

Patients were evaluated in the immediate postoperative period and subsequently at 6 weeks, 3 months, 6 months, and 12 months, with all patients completing a minimum follow-up of 12 months. Clinical and radiological assessments were performed at each follow-up visit.

Functional outcome was evaluated using the Mayo Elbow Performance Score (MEPS) at each follow-up. At the final 12-month assessment, outcomes were graded as excellent (90–100), good (75–89), fair (60–74), or poor (<60) according to the MEPS classification. Patient-reported upper-limb function was assessed using the Quick Disabilities of the Arm, Shoulder and Hand (QuickDASH) questionnaire, an 11-item validated instrument scored from 0 to 100, with lower scores indicating better functional status.[18]

Elbow range of motion, including the flexion–extension arc, was measured using a standard goniometer at each follow-up visit. Radiological evaluation was performed using serial anteroposterior and lateral radiographs. Fracture and osteotomy union were defined by the presence of bridging callus across the fracture site with obliteration of the fracture line in at least three of four cortices.

Postoperative complications, including superficial infection, implant prominence, loss of reduction, delayed union, nonunion, hardware failure, and the need for implant removal or revision surgery, were documented throughout the follow-up period. Delayed union, nonunion, and hardware failure were also monitored as potential complications but were not observed in either group during the study period.

Statistical Analysis

Data were entered into Microsoft Excel (Microsoft Corporation, Redmond, WA, USA) and analysed using IBM SPSS Statistics for Windows, Version 26.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages.

The normality of continuous data was assessed using the Shapiro–Wilk test. Between-group comparisons of continuous variables, including time to radiological union, Mayo Elbow Performance Score (MEPS), Quick Disabilities of the Arm, Shoulder and Hand (QuickDASH) score, and elbow range of motion, were performed using the independent samples t-test for normally distributed data. Categorical variables, including age group, sex, mechanism of injury, complications, and functional outcome grades, were compared using the Chi-square test or Fisher's exact test, as appropriate. A p-value < 0.05 was considered statistically significant.

RESULTS

Forty-eight patients met the eligibility criteria and were included in the analysis, 24 in Group A (transverse osteotomy with tension band wiring) and 24 in Group B (chevron osteotomy with tension band wiring). All patients completed the minimum follow-up period of 12 months.

Table 1. Age Distribution of the Study Population

Age Group (Years)	Group A (n=24)	Group B (n=24)	Total (n=48)
18–30	7 (29.2%)	6 (25.0%)	13 (27.1%)
31–40	6 (25.0%)	7 (29.2%)	13 (27.1%)
41–50	5 (20.8%)	5 (20.8%)	10 (20.8%)

Age Group (Years)	Group A (n=24)	Group B (n=24)	Total (n=48)
51–60	4 (16.7%)	4 (16.7%)	8 (16.7%)
> 60	2 (8.3%)	2 (8.3%)	4 (8.3%)

The majority of patients in both groups were in the 18–40 years age group, and the overall age distribution was comparable between Group A and Group B (chi-square test, p = 0.997).

Table 2. Gender Distribution

Gender	Group A	Group B	Total
Male	16 (66.7%)	15 (62.5%)	31 (64.6%)
Female	8 (33.3%)	9 (37.5%)	17 (35.4%)

Male patients formed the majority of the study population, and the gender distribution was similar between the two groups (chi-square test, p = 1.000).

Table 3. Mechanism of Injury

Mechanism	Group A	Group B	Total
Road traffic accident	12 (50.0%)	11 (45.8%)	23 (47.9%)
Fall on outstretched hand	9 (37.5%)	10 (41.7%)	19 (39.6%)
Direct blow	3 (12.5%)	3 (12.5%)	6 (12.5%)

Road traffic accidents were the most common mechanism of injury in both groups, and the overall distribution of injury mechanisms did not differ significantly between them (chi-square test, p = 0.953).

Table 4. Mean Time to Radiological Union

Group	Mean ± SD (Weeks)
Group A	11.2 ± 1.6
Group B	10.4 ± 1.4
p-value	0.041

Patients in Group B achieved radiological union significantly earlier than those in Group A, with a mean difference of 0.8 weeks (p = 0.041), indicating a statistically significant reduction in the time to union.

Table 5. Mean Mayo Elbow Performance Score (MEPS)

Follow-up	Group A	Group B	p-value
6 Weeks	63.5 ± 7.2	66.8 ± 6.8	0.112
3 Months	78.2 ± 6.3	82.6 ± 5.9	0.028
6 Months	87.5 ± 5.8	91.4 ± 4.7	0.019
12 Months	91.3 ± 4.9	95.2 ± 3.8	0.011

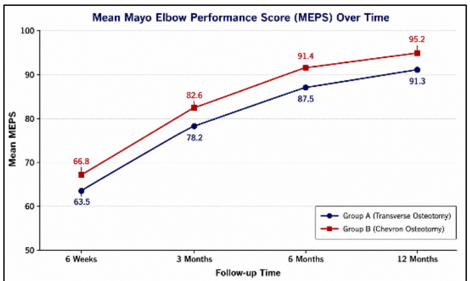

Figure 2: Mean Mayo Elbow Performance Score (MEPS) at different follow-up intervals in Group A (Transverse Osteotomy) and Group B (Chevron Osteotomy).

Both groups demonstrated progressive improvement in MEPS throughout the follow-up period. Group B achieved significantly higher MEPS than Group A at the 3-, 6-, and 12-month follow-up visits (p < 0.05 for all), whereas the difference at 6 weeks was not statistically significant (p = 0.112).

Table 6. Mean QuickDASH Score during Follow-up

Follow-up	Group A Mean ± SD	Group B Mean ± SD	p-value
6 Weeks	48.6 ± 8.4	45.1 ± 7.8	0.136
3 Months	31.8 ± 7.2	26.9 ± 6.5	0.024

Follow-up	Group A Mean ± SD	Group B Mean ± SD	p-value
6 Months	18.5 ± 5.6	14.2 ± 4.8	0.011
12 Months	10.6 ± 4.3	7.1 ± 3.6	0.008

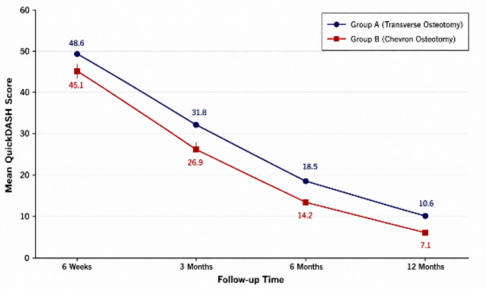

Figure 3: Mean QuickDASH score at different follow-up intervals in Group A (Transverse Osteotomy) and Group B (Chevron Osteotomy). Lower scores indicate better function.

The mean QuickDASH scores decreased progressively across successive follow-up visits in both groups, indicating improvement in upper-extremity function. Group B demonstrated significantly lower (better) QuickDASH scores than Group A at the 3-, 6-, and 12-month follow-up visits (p < 0.05 for all comparisons). No statistically significant difference was observed at the 6-week assessment (p = 0.136).

Table 7. Comparison of Mean Elbow Range of Motion during Follow-up

Follow-up	Group A (°) Mean ± SD	Group B (°) Mean ± SD	p-value
6 Weeks	90 ± 10	96 ± 8	0.068
3 Months	112 ± 8	118 ± 7	0.031
6 Months	126 ± 7	132 ± 6	0.017
12 Months	132 ± 6	138 ± 5	0.009

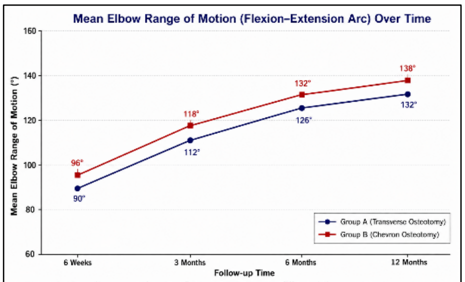

Figure 4: Mean elbow range of motion (flexion–extension arc) at different follow-up intervals in Group A (Transverse Osteotomy) and Group B (Chevron Osteotomy).

The mean elbow range of motion increased progressively across successive follow-up visits in both groups. Group B demonstrated a significantly greater flexion–extension arc than Group A at the 3, 6, and 12-month follow-up visits (p < 0.05 for all comparisons). No statistically significant difference was observed at the 6-week assessment (p = 0.068).

Table 8. Postoperative Complications

Complication	Group A (n = 24)	Group B (n = 24)
Implant prominence	5 (20.8%)	2 (8.3%)
Superficial infection	2 (8.3%)	1 (4.2%)
Loss of reduction	2 (8.3%)	1 (4.2%)
Implant removal	6 (25.0%)	3 (12.5%)
Patients without complications	9 (37.5%)	17 (70.8%)

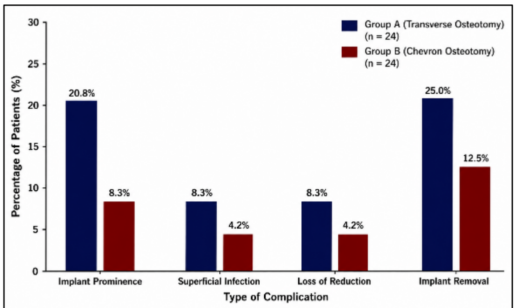

Figure 5: Comparison of overall postoperative complications between Group A (Transverse Osteotomy) and Group B (Chevron Osteotomy).

Overall complication rate: Group A, 15/24 (62.5%); Group B, 7/24 (29.2%) (p = 0.041, Fisher's exact test).

Implant prominence was the most frequently observed postoperative complication. Group B demonstrated a lower overall complication rate than Group A, with fewer cases of implant prominence, superficial infection, loss of reduction, and implant removal. The proportion of patients without postoperative complications was higher in Group B (70.8%) than in Group A (37.5%). The overall difference in postoperative complication rates between the groups was statistically significant (Fisher's exact test, p = 0.041).

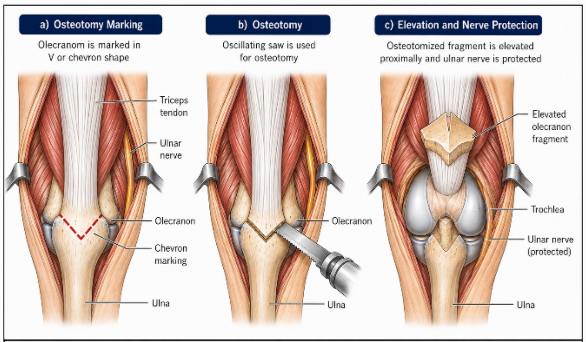

Figure 6: Chevron osteotomy approach of olecranon

Table 9. Overall Functional Outcome at 12 Months (MEPS Grade)

Outcome	Group A	Group B
Excellent (90–100)	14 (58.3%)	21 (87.5%)
Good (75–89)	7 (29.2%)	2 (8.3%)
Fair (60–74)	2 (8.3%)	1 (4.2%)
Poor (<60)	1 (4.2%)	0 (0%)

At the 12-month follow-up, the majority of patients in both groups achieved excellent or good functional outcomes according to the Mayo Elbow Performance Score (MEPS) grading system. A significantly higher proportion of patients in Group B achieved excellent functional outcomes compared with Group A (87.5% vs. 58.3%), while no patient in Group B had a poor outcome. The overall distribution of MEPS grades differed significantly between the two groups (Fisher's exact test, $p = 0.032$), indicating superior functional recovery in the chevron osteotomy group.

DISCUSSION

The present retrospective comparative cohort study evaluated the functional and radiological outcomes of transverse and chevron olecranon osteotomy fixed with tension band wiring in the surgical management of AO/OTA type 13-C distal humerus fractures. The principal findings of this study were that patients who underwent a chevron olecranon osteotomy demonstrated earlier radiological union, superior functional outcomes, improved elbow range of motion, and a lower incidence of postoperative complications compared with those who underwent a transverse olecranon osteotomy. These findings suggest that osteotomy configuration plays an important role in postoperative recovery and may influence both fracture healing and long-term elbow function.

Adequate exposure of the distal humeral articular surface is essential for achieving anatomical reduction and stable fixation in complex intra-articular distal humerus fractures. Olecranon osteotomy continues to be regarded as the standard approach because it provides excellent visualization of the trochlea and capitellum while preserving the extensor mechanism.[4–7] Although both transverse and chevron osteotomies are widely practiced, there has been limited clinical evidence directly comparing their outcomes. The present study therefore aimed to address this gap by evaluating both functional and radiological parameters in patients treated using the two commonly employed osteotomy configurations.

One of the important observations in the present study was the significantly shorter time to radiological union in the chevron osteotomy group. Patients who underwent a chevron osteotomy achieved union at a mean of 10.4 ± 1.4 weeks compared with 11.2 ± 1.6 weeks in the transverse osteotomy group. Although the absolute difference was modest, it was statistically significant and may be clinically relevant by facilitating earlier rehabilitation. The improved union observed with the chevron configuration can be explained by its V-shaped interlocking geometry, which increases the contact surface area between the osteotomy fragments and provides greater intrinsic stability. This design reduces shear and rotational forces across the osteotomy site, thereby minimizing micromotion during the early healing phase and promoting more predictable bone union.[12,14,15]

Functional recovery also consistently favored the chevron osteotomy group throughout follow-up. Patients in this group achieved significantly higher Mayo Elbow Performance Scores (MEPS), significantly lower Quick Disabilities of the Arm, Shoulder and Hand (QuickDASH) scores, and a greater flexion–extension arc from the third postoperative month onwards. Improvement was observed in both groups over time; however, the chevron group demonstrated faster recovery and superior functional performance at later follow-up visits. The agreement between clinician-based assessment using MEPS and patient-reported outcomes measured by the QuickDASH further supports the consistency of these findings. Better elbow function in the chevron group is likely related to the greater stability of the osteotomy, allowing more confident postoperative mobilization while maintaining osteotomy alignment.

The findings of the present study are in agreement with previous biomechanical and clinical investigations. Butala et al. reported favorable clinical outcomes following chevron olecranon osteotomy compared with transverse osteotomy during exposure of intra-articular distal humerus fractures.[13] Similarly, biomechanical studies by Petraco et al. and Beingessner et al. demonstrated that the chevron osteotomy provides greater resistance to displacement and rotational forces than a transverse osteotomy because of its interlocking configuration.[12,15] These biomechanical advantages appear to translate into improved clinical outcomes, as reflected by the earlier union and superior functional recovery observed in the present cohort.

Postoperative complications were less frequent in patients treated with a chevron osteotomy. Implant prominence remained the most common complication in both groups, but it occurred more frequently following transverse osteotomy. Likewise, implant removal was required more often in the transverse group. These findings are consistent with previous reports describing symptomatic hardware as one of the common complications associated with tension band wiring of the olecranon.[9,10] The relatively flat osteotomy surface in a transverse osteotomy depends predominantly on the fixation construct for stability, whereas the interlocking configuration of the chevron osteotomy contributes additional mechanical stability and may reduce stress on the hardware. Consequently, the likelihood of hardware irritation, migration, and subsequent implant removal may be lower with the chevron technique.

From a clinical perspective, the findings of this study support the routine use of chevron olecranon osteotomy when adequate surgical expertise and favorable olecranon anatomy permit its performance. Although the transverse osteotomy remains technically simpler and quicker to execute, the improved union rates, superior functional outcomes, and lower complication rates associated with the chevron configuration suggest that it may provide better overall clinical results in patients with complex intra-articular distal humerus fractures.[4,5] The choice of osteotomy should nevertheless be individualized based on fracture characteristics, bone quality, and surgeon experience.

The present study has several strengths. It compared two commonly performed osteotomy techniques using standardized clinical and radiological outcome measures, including MEPS, QuickDASH, and elbow range of motion, radiological union, and postoperative complications. All patients were managed at a single tertiary care centre using similar surgical principles and completed a minimum follow-up of 12 months, thereby reducing variability in postoperative assessment.

The present study has certain limitations. Its retrospective design and single-centre setting may have introduced selection and information bias, while the relatively small sample size may limit the generalisability of the findings. The choice of osteotomy was based on surgeon preference rather than randomisation, introducing the potential for treatment selection bias. Furthermore, the follow-up period was limited to 12 months, precluding assessment of long-term outcomes such as post-traumatic arthritis and late implant-related complications. Despite these limitations, the study provides valuable comparative clinical data on two commonly used olecranon osteotomy techniques.

Larger prospective multicentre studies with longer follow-up are required to validate these findings. In addition, fixation construct, fracture comminution, and time from injury to surgery were not analysed and may have acted as unmeasured confounders. No a priori sample size calculation was performed because all eligible retrospective cases were included. Multivariable adjustment was not feasible and should be considered in future studies.

Overall, the findings of the present study indicate that chevron olecranon osteotomy fixed with tension band wiring offers earlier radiological union, better functional recovery, improved elbow motion, and fewer postoperative complications than the transverse technique in the surgical management of AO/OTA type 13-C distal humerus fractures. These results support the use of the chevron configuration as a reliable and effective approach for achieving optimal surgical exposure and favourable clinical outcomes in appropriately selected patients.

CONCLUSION

In this retrospective comparative cohort study, chevron olecranon osteotomy fixed with tension band wiring was associated with earlier radiological union, superior functional outcomes, and fewer postoperative complications than transverse olecranon osteotomy in patients with AO/OTA type 13-C distal humerus fractures. These findings support the use of the chevron osteotomy as a reliable option for surgical exposure in appropriately selected patients. Larger prospective multicentre studies with longer follow-up are warranted to further validate these results.

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