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Low-Profile Dual Plating in Olecranon Fractures: Reliable Union with Minimal Implant Irritation

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Introduction and Background

Tension band wiring and 3.5-mm plates are commonly used for olecranon fractures but may cause soft-tissue irritation or complications, especially in elderly or osteoporotic patients. This study evaluated the outcomes of dual mini-fragment plating using 2.0-mm or 2.4-mm plates applied to the medial and lateral columns of the olecranon.

Material and Method

A retrospective review was performed on patients who underwent olecranon fracture fixation with dual 2.0-mm or 2.4-mm plates between July 2023 and July 2025. All procedures used a standard posterior approach. After manual reduction, plates were applied to the medial and lateral sides of the olecranon. No biological augmentation such as BMP-2, PTH, or other osteoinductive agents was used to promote bone healing. Clinical data, Mayo classification, operative time, union time, range of motion (ROM), MEPS, qDASH, screw numbers, and postoperative complications were analyzed.

Results

Twelve patients (7 females, 5 males) were included. Mean age was 62.7 ± 17.2 years, BMI 22.5 ± 2.83, and fracture types included 9 Mayo IIA and 3 Mayo IIB cases. Mean operative time was 76.4 ± 14.1 minutes. Radiologic union was achieved at a mean of 10.3 ± 8.3 weeks. Final elbow ROM averaged 120° ± 12.9°, with mean MEPS 93.6 ± 8.02 and qDASH 9.09 ± 13.1, demonstrating excellent function. Screw numbers averaged 4.29 ± 1.25 proximally and 5.71 ± 1.50 distally. One patient required plate removal for irritation. No nonunion, infection, or other major complications occurred.

Conclusions

Dual 2.0-/2.4-mm mini-fragment plating for olecranon fractures provided stable fixation, reliable union, and excellent functional recovery with minimal implant irritation. This low-profile technique may be a useful alternative to conventional tension band wiring or 3.5-mm plating, especially in patients with soft-tissue concerns or osteoporotic bone. Larger comparative studies are needed to validate these findings.

Figure & Table 1.

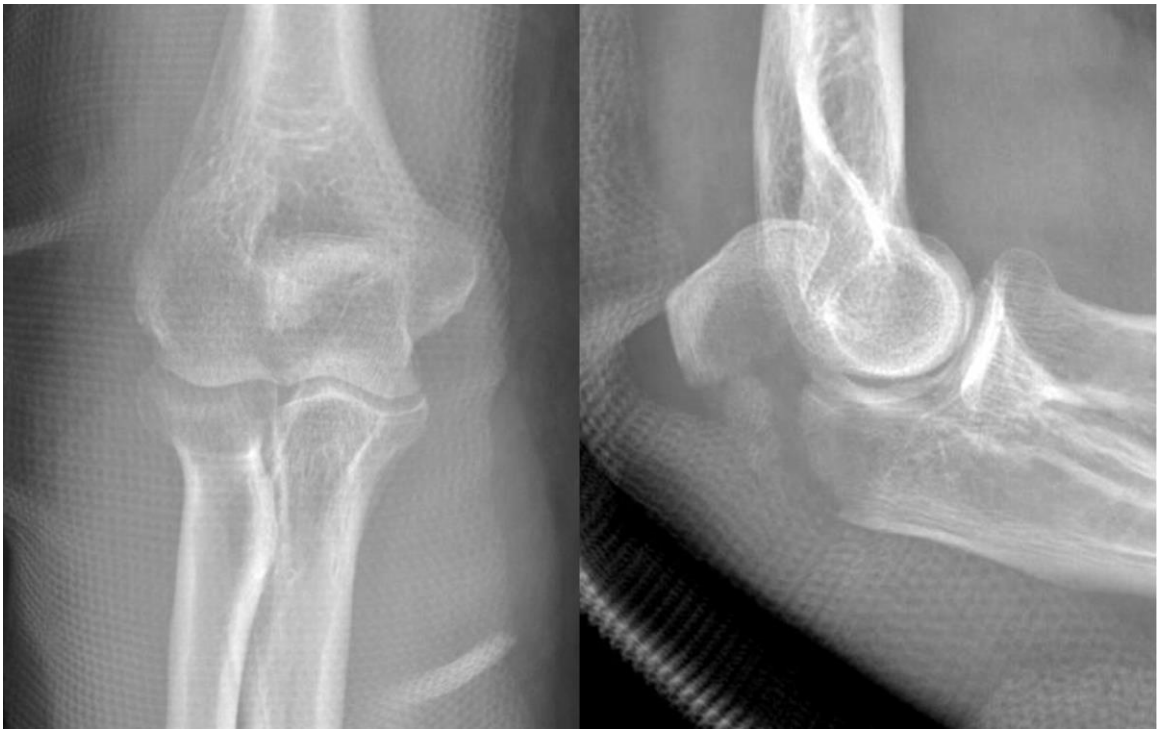

Figure & Table 2.