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Arthroscopic Bilateral Autologous Iliac Bone Grafting for Bipolar Bone Loss in Anterior Shoulder Instability: Clinical Outcomes from a Case Series

Weihong Zhu [1], Shiqi Xiang [1], Yuchen He [1]
Department of Orthopaedics, the Second Xiangya Hospital, Central South University , China[1]

Introduction and Background

Recurrent anterior shoulder instability with bipolar bone loss—characterized by combined defects of the glenoid and humeral head—significantly increases the risk of failure after isolated soft-tissue repair. This study introduces a dual-sided anatomical reconstruction concept using arthroscopic bilateral autologous iliac bone grafting to simultaneously restore both glenoid and humeral head defects. We aimed to evaluate the feasibility, radiological healing, and clinical outcomes of this technique in patients with recurrent shoulder instability.

Material and Method

A retrospective case series was conducted on six male patients who underwent arthroscopic bilateral autologous iliac bone grafting between January 2024 and February 2025. Inclusion criteria were recurrent anterior shoulder instability with >20% glenoid bone loss and off-track Hill–Sachs lesion. Preoperative and postoperative imaging (radiographs, CT, MRI) and functional scores (VAS, ASES, Constant, UCLA, Rowe) were collected. The primary outcomes were postoperative stability and graft union. Secondary outcomes included functional improvement and return to sports. Pre- and postoperative scores were compared using paired t-tests.

Results

All Six male patientspresented with recurrent anterior instability, with an average of 4.8 dislocation episodes. Preoperative imaging confirmed substantial bipolar bone loss, with a mean glenoid defect of 23.2% and a humeral head defect width of 21.0 mm. At a mean follow-up of 11.7 months, CT scans demonstrated complete graft union in all cases with satisfactory positioning.

Clinical outcomes improved significantly. VAS decreased from 2.83 to 0.67; Rowe improved from 40.3 to 86.7; UCLA from 24.3 to 32.2; ASES from 55.0 to 87.5; and Constant from 55.0 to 84.2 (all $P < 0.01$). No redislocation, subluxation, or revision surgery occurred. All patients returned to normal daily activities, and four (66.7%) regained their pre-injury level of function.

Conclusions

Arthroscopic bilateral autologous iliac bone grafting is a feasible and effective technique for managing recurrent anterior shoulder instability with bipolar bone loss.

Figure & Table 1.

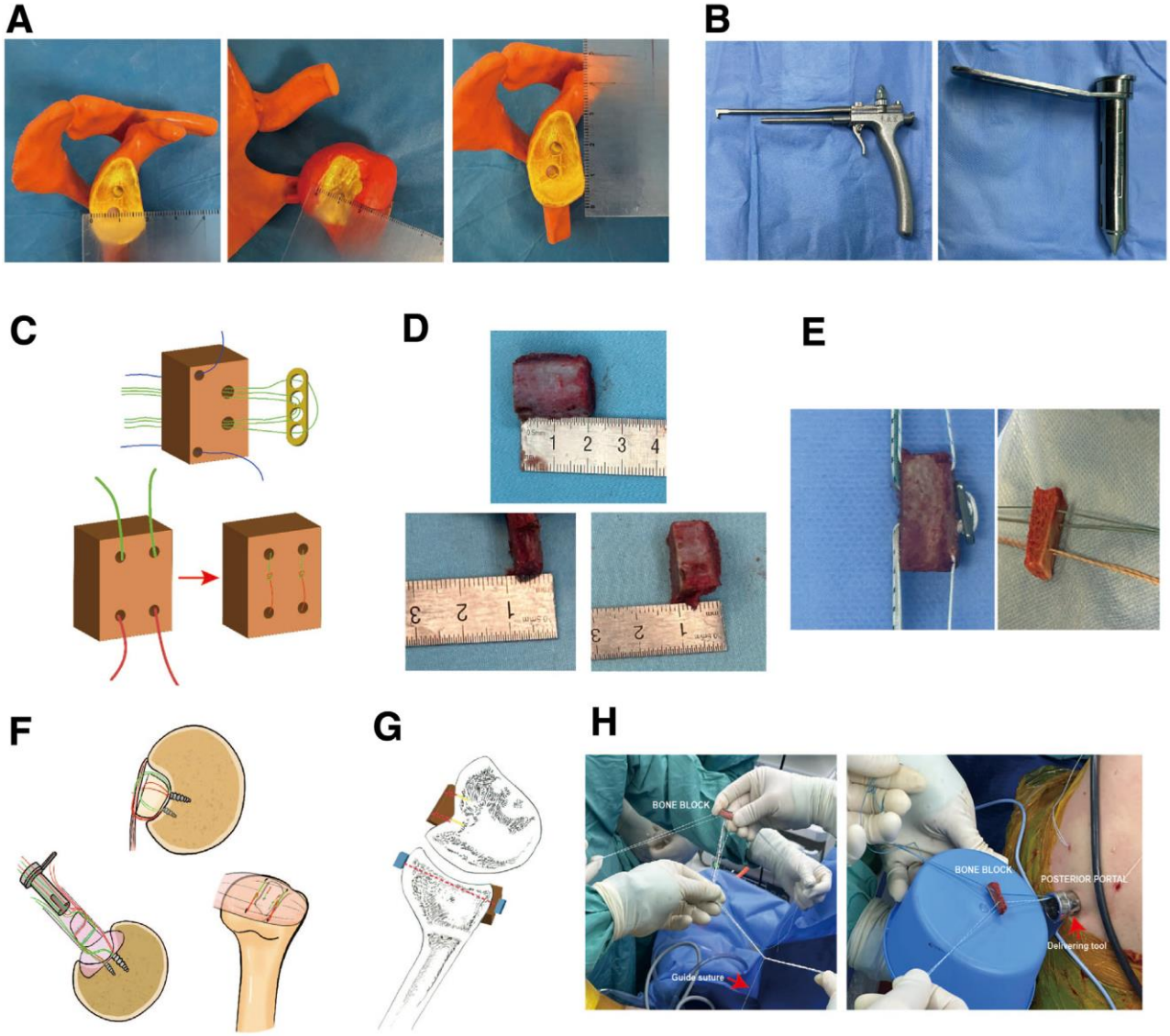

Figure & Table 2.