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High Complication and Reoperation Rates Following Periprosthetic Humeral Fractures After Shoulder Arthroplasty: A Multicenter Retrospective Study

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Introduction and Background

The utilization of shoulder arthroplasty (SA) has increased in recent years, leading to a corresponding rise in periprosthetic humerus fractures (PPHF). This study aimed to evaluate the clinical and radiographic outcomes, as well as complications, following various treatment strategies for PPHF.

Material and Method

A total of 26 PPHF cases after SA were retrospectively reviewed from 5 institutions. Fractures were categorized using the Wright and Cofield and Worland classification systems. Subsequent outcomes and complications according to treatment modalities were analyzed. The mean follow-up period was 50.3 months (range, 6–252 months).

Radiographic assessments were performed using serial plain radiographs. Clinical outcomes were evaluated with the VAS pain score, UCLA score, ASES score, and subjective shoulder value (SSV). Complication and reoperation rates were also recorded.

Results

The cohort included 21 female and 5 male patients with a mean age of 73.8 years. PPHF occurred at a mean of 49.1 months after SA (21 reverse total shoulder arthroplasties, 5 hemiarthroplasties). According to Wright and Cofield, 57.7% (n = 15) of fractures were classified as type B. Similarly, the majority were type B1 (n = 10) or B2 (n = 5) based on the Worland classification. Sixteen patients (61.5%) underwent open reduction and internal fixation (ORIF), eight (30.8%) received conservative treatment, and two (7.7%) underwent revision arthroplasty. All patients achieved bony union except one case of nonunion following conservative management. Final VAS, ASES, and SSV scores averaged 1.3, 71.3, and 66.4%, respectively. Age was negatively correlated with final VAS pain score. Type A fractures, uncemented stems, and shorter intervals from arthroplasty to injury were associated with better final range of motion. Complications occurred in eight shoulders (30.7%), including stem loosening (n = 2), radial nerve palsy (n = 2), nonunion with stem loosening (n = 1), malunion (n = 1), infection (n = 1), and refracture (n = 1). Five shoulders (19.2%) required reoperation.

Conclusions

PPHF after SA can be managed effectively with conservative treatment, ORIF, or revision arthroplasty; however, these injuries are associated with high complication and reoperation rates. Treatment strategies should be individualized based on fracture pattern, implant stability, and patient factors.