

Introduction: Wide resection proximal humerus for malignant bone tumor often require sacrifice of abductor mechanism and axillary nerve. Restoration of shoulder stability and mobility is challenging. Reconstruction using constrained reversed bipolar glenohumeral prosthesis provided good stability, with satisfactory long term results.

Methods: Between 1992 to 1998 Six patients, Male(5) female(1), age 10 to 45 years with high grade malignant bone tumors Osteosarcoma(5) metastatic leiomyosarcoma (1) underwent wide resection proximal humerus and replacement by reversed bipolar modular custom prosthesis. The resection included the abductor mechanism and axillary nerve. Surgical free margin obtained in all patients. The prosthesis employs constrained reversed ball and socket where a metal spherical head is attached to the glenoid by screws, a reversed bipolar cup is snapping into the head secured by polyethylene ring. Proximal humeral segment is attached through Morse taper attachment with pres-fit stem.

Results: During the follow-up period three patients with osteosarcoma died from metastatic disease. One patient at follow-up of 8 years had prosthesis failure requiring revision by allograft prosthesis. The two remaining patients at follow-up of 23 years remained disease free regained good passive limited stable and painless range of motion. Emotionally and esthetically satisfied from the surgical outcome.

Discussion and Conclusion: high grade malignant tumor with large extraosseous extension at the proximal humerus often requires wide resection including abductor mechanism and axillary nerve. In such cases restoration of mobility and stability is challenging. Attempt to resolve this problem using constrained bipolar prosthesis proved to be effective. The procedure proved to provide adequate long-lasting function of the upper extremity emotionally and aesthetically accepted.