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Limb salvage surgery using 3D-printed custom-made implants after partial scapulectomy

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INTRODUCTION

The shoulder girdle is a common location for bone sarcoma. The development of 3D-printing technology allows the use of custom-made implants and navigation templates for minimally invasive surgery and personalized reconstruction after tumor excision. The aim of this study is to present the functional and oncological outcome of patients underwent partial scapulectomy and reconstruction of the glunohumeral joint with 3D-printed custom-made endoprostheses.

METHODS AND MATERIALS

Three patients with chondrosarcoma of the scapula (glenoid ,coracoid process) were treated with a modified extra-articular partial scapulectomy (Malawer type V) and a custom-made 3D-printed endoprosthesis (MUTARS Reverse Proximal Humerus Prostheses and custom-made glenoid component) (fig.1) . There were two females and one male, with median age of 55 years old. Oncological and functional outcome were assessed using the Musculoskeletal Tumor Society (MSTS) score.

RESULTS

Minimum follow-up was 2 years. Negative surgical margins (R0) were obtained in all patients, based on histopathological examination of the excised specimens. No recurrence or metastases were observed. No complications were reported.
The MSTS score was 85%, 55% and 60% .

CONCLUSIONS

The use of 3D-printed custom-made implants for reconstruction of the glenohumeral joint after resection of bone sarcomas is a viable option with satisfactory oncological and functional outcome.

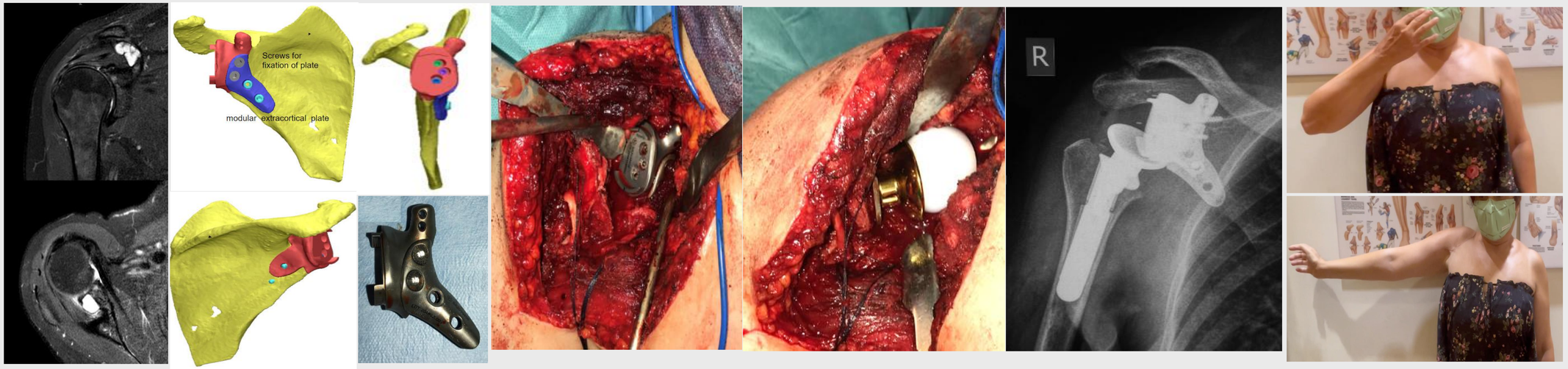

Figure 1. 56 yo Female, Grade 2 Chondrosarcoma, Coracoid Process and Glenoid. She had partial scapulectomy & reconstruction using a 3D printed glenoid implant & reverse shoulder arthroplasty

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