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Intercallary prosthesis-joint sparing for humerus malignant bone tumors

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Introduction: The aim of our study is to present our experience with intercallary joint sparing prostheses in limb salvage surgery of malignant bone tumors of humeral diaphysis with emphasis in clinical and functional outcome.

Methods: We present two cases of high-grade (stage IIB Enneking) bone sarcomas of humeral diaphysis extending to the supracondylar region which were treated with limb salvage surgery. Through a two incision approach (dorsolateral and posterior) we performed wide resection of tumors. The bone defect was reconstructed with a custom-made intercalary tumor endoprosthesis. The proximal stem was cemented into the medullary canal. The distal end had a short stem and hydroxyapatite-coated extracortical plates which were secured to the residual remaining metaphysis using unicortical screws. The prostheses had HA collars at the bone interface to improve fixation.

Results: Both excisions had tumor-free margins and no local recurrence was noted. No neurovascular complication or infection was noted and patients were able to comfortably perform most activities of daily living with an excellent range of elbow motion. Radiographic evaluation revealed varying amounts of extracortical bone formation around hydroxyapatite collar and plate.

Conclusions: Segmental resection of malignant bone tumors in the humeral diaphysis and subsequent limb reconstruction with custom made prostheses with extracortical HA plates, achieves a good clinical and functional outcome without compromising the oncological principles.