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## Long term outcome of Endoprosthetic Replacement of the Proximal Humerus

Tom Cosker<sup>1</sup>, Phil Lechler<sup>1</sup>, Chris Taylor<sup>1</sup>, Lee Bayliss<sup>1</sup>, Duncan Whitwell<sup>1</sup>, CLM Gibbons<sup>1</sup>

<sup>1</sup>Nuffield Orthopaedic Centre, United Kingdom

### Background

The proximal humerus is commonly affected by primary and secondary bone tumours. Developments in oncologic treatment strategies have resulted in a substantial increase in life expectancy and associated functional demands. The present study reports on the clinical outcome of proximal humeral endoprosthetic replacement using a modular implant.

### Methods

20 patients (male 6, female 14) were included in the study. We examined clinical outcome, patient and implant survival in patients with primary or secondary bone tumours. Patients were treated between November 2001 and December 2012 in a high volume sarcoma unit. Preoperative staging, tumour histology and grade as well as operative and adjuvant treatment was assessed. Postoperative complications, recurrence rates, and revision surgery were documented, as well as shoulder function was assessed.

### Results

Mean age at operation was 53 years (19-84). Histology revealed high grade osteosarcoma (n=4), low/intermediate grade chondrosarcoma (n=8), metastatic disease (n=5) and three cases of high grade soft tissue sarcomas affecting the proximal humerus. At final follow up, mean overall survival was 75%. In eight patients a gore-tex sleeve was applied to optimize soft tissue management. In four patients plastic reconstructive measures with free or local flaps were performed. Local tumour recurrence was noted in 3 cases, two of which were re-excised. Superficial infection appeared in one case, one patient developed deep infection which was controlled by single stage debridement and lavage. Furthermore, one case of revision surgery was performed because of recurrent glenohumeral subluxation. Functional outcome revealed mean forward active flexion of 23 degrees, abduction of 27 degrees and active external rotation of 33 degrees.

### Conclusions

The present oncologic cohort showed reasonable functional results after endoprosthetic replacement of the proximal humerus. Risk analysis showed acceptable overall and implant related revision rates. There are opportunities both at implantation in terms of surgical strategy, and moving forwards, in terms of implant design, for improved outcome in these difficult cases.

E-mail (main author): [tomcosker@gmail.com](mailto:tomcosker@gmail.com)