En Bloc Resection of Stage 3 Giant Cell Tumor of the Distal Ulna and Immediate Reconstruction with a Distal Radio-Ulnar Joint Endoprosthetic Replacement

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Background:
Giant Cell Tumors (GCT) of the distal ulna are extremely rare, with a reported incidence of up to 0.45–3.2% [1]. These benign mesenchymal tumors are aggressive and present with high recurrence rates. Patients can present with soft tissue swelling, pain, mechanical dysfunction, and fractures due to osteolytic bone lesions[1]. The treatment for aggressive lesions consists of wide excision followed by stabilization of the radio-ulnar joint to preserve functionality. Joint reconstruction with the Scheker-constrained total distal radio-ulnar joint (DRUJ) prosthesis has shown low complication rates and excellent implant survival.

Purpose:
In this technique video, we present a complex en bloc resection of a stage 3 GCT of the distal ulna along with involved extensor carpi ulnaris tendon, ulnar nerve neurolysis, and DRUJ reconstruction with endoprosthetic replacement to address the neoplasm and restore upper extremity function.

Methods:
The anatomy, examination, diagnosis, and treatment options for GCT of the distal ulna are reviewed. We present a case of a 31-year-old female with evidence of a large destructive lesion of the right distal ulna, diagnosed as a giant cell tumor of bone by core needle biopsy. The patient exhibited no forearm supination and pronation, along with disabling pain. Given her clinical picture, she was indicated for en bloc resection and arthroplasty reconstruction to restore DRUJ function.

Results:
The post-operative clinical outcome showed a wrist range of motion of 45° extension, 50° flexion, and full pronosupination. Additionally, full wrist strength and sensation were observed. Furthermore, the hardware was intact upon follow-up, and no evidence of recurrence was found.