**TITLE:** Effect of distal ulna osteochondroma excision and distal ulnar tether release on forearm deformity in preadolescent patients

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**INTRODUCTION:** Multiple hereditary exostosis is a benign condition that can lead to significant forearm deformity secondary to physeal disturbances. As the child grows, the deformity can worsen as relative shortening of the ulna causes tethering, which can lead to increased radial articular angle, carpal slippage, and radial bowing. Worsening of forearm deformities often require corrective reconstructive osteotomies to improve anatomical alignment and function. The purpose of this study is to evaluate the protectiveness of osteochondroma excision and distal ulnar tether release at preventing worsening clinical function, radiographic anatomic forearm alignment and need for corrective osteotomies

**METHODS:** A prospective cohort study of preadolescent patients who underwent distal ulna osteochondroma resection and ulnar tethering release. Patients were invited back and evaluated in clinic for post-operative range of motion testing, pain scores, self-reported and parent reported DASH and PODCI scores. Additionally, to objectively quantify anatomical alignment, a radiographic review was completed to compare the patients’ pre-surgery and final post-surgical follow up forearm x-rays.

**RESULTS:** A total of 6 patients and 7 forearms were included in our study with an average age of 7.9 years at time of surgery. The average final follow-up was 7.4 years. With respect to range of motion, only passive radial deviation demonstrated improvement -20degrees to 14degrees (P= 0.01). While there was not statistically significant change in radial articular angle, this study did find an improvement in carpal slip 75.7% to 53.8% (P = 0.03). At final follow up DASH scores were found to be 5.71 (σ = 5.35), PODCI Global Function Score was 95.2 (σ = 5.81) and PODCI - Happiness Score 98 (σ = 2.74). VAS appearance and VAS pain assessment was found to be1.67 (σ = 1.21) and 1.00 (σ = 1.26) respectively at final follow-up. No patient in the cohort developed a radial head dislocation. Only one out of seven forearm required correctional osteotomy within the study’s follow up time period.

**DISCUSSION/CONCLUSION:** Surgical excision of forearm osteochondromas with ulnar tether release in the preadolescent patients improves carpal slip, may help to prevent subsequent surgical reconstruction and provides satisfactory clinical results at an average seven year follow up.