Primary Repair Versus Coaptation by Anterior Interosseous Nerve Transfer in Proximal Ulnar Nerve Injuries

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Purpose: Proximal ulnar nerve lacerations are challenging to treat due to the complex integration of sensory and motor function in the hand. The purpose of this study was to compare primary repair and primary repair plus anterior interosseous nerve (AIN) reverse end-to-side (RETS) coaptation in the setting of proximal ulnar nerve injuries.

Methods: A prospective cohort study was performed of all patients at a single, academic, Level I trauma center from 2014 to 2018 presenting with isolated complete ulnar nerve lacerations. Patients underwent either primary repair (PR) only or primary repair and AIN RETS (PR+RETS). Data collected included demographic information, QuickDASH (an abbreviated version of the Disabilities of the Arm, Shoulder and Hand [DASH] questionnaire), Medical Research Council (MRC) scores, grip and pinch strength, and visual analog scale pain scores at 6 and 12 months postoperatively.

Results: 60 patients were included in the study—28 in the PR group and 32 in the PR+RETS group. There was no difference in demographic variables or location of injury between the 2 groups. Average QuickDASH scores for the PR and PR+RETS groups were 65 $\pm$ 6 and 36 $\pm$ 4 at 6 months and 46 $\pm$ 4 and 24 $\pm$ 3 at 12 months postoperatively, respectively, and were significantly lower in the PR+RETS group at both points. Average grip and pinch strength were significantly greater for the PR+RETS group at 6 and 12 months.

Conclusion: This study demonstrated primary repair of proximal ulnar nerve injuries plus AIN RETS coaptation yielded superior strength and improved upper-extremity function when compared to primary repair alone.