

A Single Center Experience with Surgical Management of Radial Nerve Injuries Associated With Humeral Shaft Fracture

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Introduction

Often, radial nerve injuries occur in conjunction with humeral shaft fractures. The outcomes of modern surgical procedures to treating these injuries are still mixed. In this work, we describe the results of 77 patients treated at the Clinic for Neurosurgery, Clinical Center of Serbia, over a 20-year period, and examine the patient, clinical, and surgical procedure-related characteristics and factors that may influence the overall outcome. US and EMNG confirmed the nerve damage. Only a few individuals were treated with direct suture, whereas the rest were treated with neurolysis or sural nerve grafting. Muscle strength was assessed and MRC was used to classify the final recovery. The wrist was extended, the fingers, including the thumb, were extended, and the thumb was abducted. Following treatment, there was a statistically significant difference in MRC grade. Out of all the patients tested, 69 (89.61 percent) had a beneficial functional recovery, with 20 (28.99 percent) having an outstanding recovery, 26 (37.68 percent) having a good recovery, and 23 (33.33 percent) having a fair recovery. Only 8 (10.39%) of the total number of patients studied had a poor recovery. The wounded nerves that were preserved in continuity, acquired by a low-energy trauma, and treated sooner than 6 months after the surgery had a better functional prognosis. Furthermore, there was a trend toward higher functional improvement with age, despite the fact that the elderly were exposed to less energy damage. The time between expectant care and surgery for radial nerve injury associated with a humeral shaft fracture should be roughly three months, and the surgical nerve repair should not be done later than six months following the injury. The trauma's energy may be a factor in forecasting a patient's final recovery after treatment [1-3].

The humeral shaft fractures account for roughly 1–3% of all skeletal fractures, and they are among the most prevalent bone injuries. The rate of occurrence rises with age and has been linked to high in-patient mortality and health-care expenses. Furthermore, even after surgery, patients are unable to return to work for an extended period of time, which is a big socioeconomic concern.

Peripheral nerve injuries are frequently linked with these injuries, and radial nerve injuries occur in between 2 and 18 percent of cases with humeral shaft fracture due to the tight topographic linkages between neural, skeletal, and vascular tissues. This high rate of combined injuries is likely due to their close anatomic relationship in the spiral groove (sulcus nervi radialis - SNR) on the posterior side of the humeral shaft, as well as the rigidity of the radial nerve as it exits the groove and pierces the lateral intermuscular septum. Despite the fact that fracture treatment is frequently effective, radial nerve injury can result

in long-term functional impairment of the hand (wrist drop) and subsequent complications. The majority of patients find the loss of hand function to be a terrifying experience, and the fact that most of them contribute considerably to the family and community exacerbates their own and their families' pain and creates a major socioeconomic concern [4,5].

Conclusion

Experts are split on when surgery for related radial nerve damage should be performed and whether it is necessary. According to certain studies, these lesions have a high incidence of good spontaneous healing; however most patients take longer than a year to return to work. When the nerve is wounded by bone fragments, early exploration is only recommended in open fractures, and primary nerve restoration is only advised if the nerve has a clean-cut margin, both of which are uncommon. A clear strategy was devised to treat these patients based on contemporary surgical procedures and a wealth of personal knowledge, and we treated 77 patients over the last 20 years. Apart from the results, we wanted to look at the patient, clinical, and surgical procedure-related variables and factors that could affect the overall outcome.

Conflict of Interest

None.

References

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