Is radial nerve release necessary in upper limb lengthening? a retrospective study

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INTRODUCTION:

Humeral lengthening is commonly done for treatment of achondroplasia to improve activities of daily living. Available techniques include using a circular external fixator, monorail external fixators and most recently magnetic intramedullary lengthening nails. Common to all techniques is risk of radial nerve, leading some surgeons to prefer prophylactic radial nerve decompression. The aim of this study is to examine whether doing a prophylactic radial nerve release reduces the risk of radial nerve injury during or after surgery.

METHODS:

This is a retrospective analysis of patients undergoing humeral limb lengthening with either an Ex-fix or MILN a single institution. Patient charts were reviewed for the patient's demographics, indication of surgery, operative report, and operative and post-operative complications.

RESULTS:

26 patients were identified, 3 patients had MILN with the rest undergoing lengthening using Ex-fix,
either monorail or circular fixator, 9 patients had concomitant radial nerve release during lengthening. Average lengthening was 7.4 ± 2.3 cm, with 8.8 ± 1.5 cm of lengthening in patients with radial nerve release, and 6.3 ± 2.23 cm, with an average difference of 2.5 cm of more lengthening in the radial nerve release group ($P < .05$), and 3.5 ± 0.9 cm for MILN ($P < .05$). No patient had intra-op radial nerve injury, and 2 patients had nerve pain and numbness during lengthening, one of which had undergone radial nerve release during surgery and was treated with decrease of rate of lengthening to 0.5mm/d instead of 1mm/d, with complete symptom relief.

DISCUSSION AND CONCLUSION:

We can conclude that there is a lack of evidence in support of a radial nerve release for patients undergoing humeral limb lengthening, and that the choice of performing a release or not depends on the surgeon’s experience and intuition without the backing of evidence based medicine. For this reason we believe that bigger trials need to be done in order to evaluate the true benefit or lack thereof of adding this procedure, especially with the risk of iatrogenic nerve damage during release, increase in OR time and soft tissue disruption potentially increasing healing time.