

Ultrasound based macroarchitecture delineation and injection of complex residual limb neuroma

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CASE DESCRIPTION

- ❖ 43-year-old woman with a history of GSW to the RUE had constant, reproducible stump pain for 12 years managed by opioids.
- ❖ Combination of the injury mechanism, history and physical exam findings suggested stump neuroma diagnosis with associated neuropathic pain (Fig. A)
- ❖ Scheduled for **ultrasound-guided steroid injection**.

SIGNIFICANCE

- ❖ Novel case of a patient with stump pain who **underwent two ultrasound-guided neuroma injections** via **different approaches** with each producing **different durations of analgesia**.



Neuroma's are difficult to treat. Using ultrasound, intraneural mechanical disruption of peripheral nerves feeding into the neuroma via hydrodissection achieved long lasting relief.

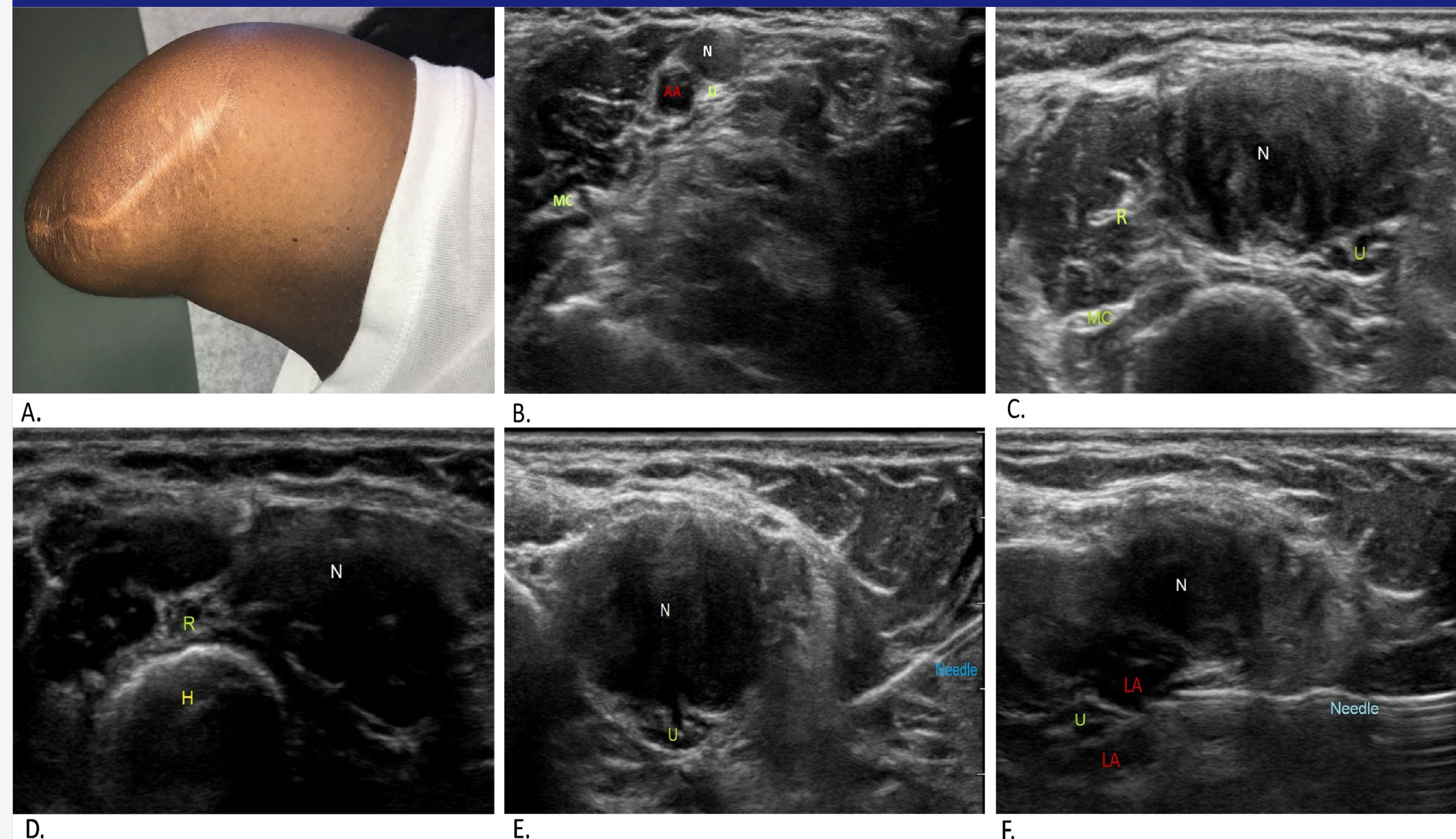
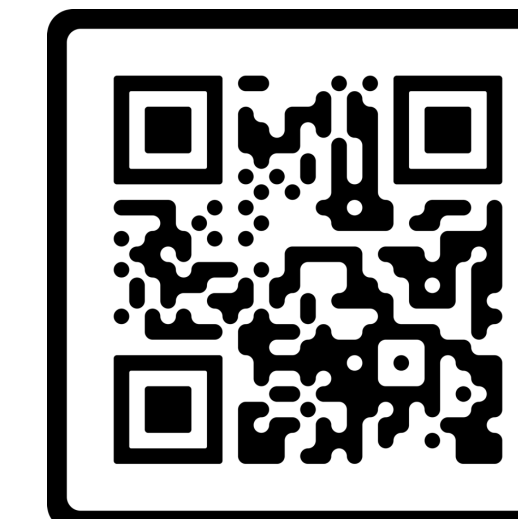


Figure 1: Gross extremity image and intervention under sonographic guidance: (A) Gross image of RUE stump, (B) N - neuroma, MC - musculocutaneous nerve, AA - axillary artery, (C) R - radial nerve, U - ulnar nerve, (D) H - humerus, (E-F) injection sonography.

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FIRST INTERVENTION

- ❖ An ovoid hypoechoic structure was revealed maximally at 1 cm × 2 cm with the ulnar nerve in close approximation to and eventually transitioning into the neuroma (Fig. B-D).
- ❖ Solution was **injected surrounding the ulnar nerve stalk and partially dissecting it away** from the neuroma (Fig. E+F).

SECOND INTERVENTION

- ❖ Lost to follow-up for 2.5 years, represented to the pain clinic requesting second injection and reported 24 months of 100% pain relief
- ❖ Injectate **deposited peribulbarly** without mechanical nerve stalk disruption.
- ❖ Patient reported 100% pain relief within 20 min but subsequently reported her pain returned to 50% of her pre-procedure level after 24 hr.

DISCUSSION

- ❖ Separating physiologic nerve from areas of disorganized axonal regeneration may have disrupted pain transmission on the first injection.
- ❖ On the second injection, the shorter duration of relief suggests that mechanical disruption between normal and abnormal nerve may be required to achieve long-lasting results.