Acute repair of traumatic pan–brachial plexus injury: technical considerations and approaches

Hussam Abou-Al-Shaar, MD, Michael Karsy, MD, PhD, Vijay Ravindra, MD, MSPH, Evan Joyce, MD, and Mark A. Mahan, MD

Department of Neurosurgery, Clinical Neurosciences Center, University of Utah, Salt Lake City, Utah

Particularly challenging after complete brachial plexus avulsion is reestablishing effective hand function, due to limited neurological donors to reanimate the arm. Acute repair of avulsion injuries may enable reinnervation strategies for achieving hand function. This patient presented with pan–brachial plexus injury. Given its irreparable nature, the authors recommended multistage reconstruction, including contralateral C-7 transfer for hand function, multiple intercostal nerves for shoulder/triceps function, shoulder fusion, and spinal accessory nerve–to–musculocutaneous nerve transfer for elbow flexion. The video demonstrates distal contraction from electrical stimulation of the avulsed roots. Single neurorrhaphy of the contralateral C-7 transfer was performed along with a retrosternocleidomastoid approach.

The video can be found here: https://youtu.be/GMPfno8sK0U.

KEYWORDS pan–brachial plexus injury; C-7 nerve transfer; avulsion; neurorrhaphy; video