

# 2022 NEHS Annual Meeting Abstract Submission

COMPLETE

NEHS Vice President, Daniel Mastella, M.D., is currently accepting abstract submissions for presentation at our Annual Meeting on December 2, 2022.

This meeting will be held at the Sturbridge Host Hotel in Sturbridge, MA.

Therapists, NPs, and PAs are also encouraged to submit.

THE DEADLINE FOR SUBMISSION IS OCTOBER 15, 2022

RESIDENTS AND FELLOWS ONLY. Please indicate if you want your paper to be considered for the prestigious H.Kirk Watson, M.D. Founder's Award. The abstracts for award consideration will be presented in the morning and the award will be presented in the afternoon.

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## CREATED

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## \* ABSTRACT TITLE

Ulnar Nerve Transfer for Triceps Insufficiency

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## \* Name of who will present abstract at NEHS meeting on December 2, 2022 Please note that the same person cannot present more than one abstract at the meeting.

Frank Yuan, MD

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## \* Please indicate if the presenter is:

Fellow

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## \* List full names of abstract authors

Keith B Diamond, MD  
Frank Yuan, MD  
Kevin Kim, MD  
Daniel J Mastella, MD

**\* ABSTRACT - should include background information and a description of methods, programs, or practices.**

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Background: Nerve transfers serve as a viable option when direct nerve repair, reconstruction, or tendon transfer may not be indicated. While primary nerve reconstruction may be slow and sometimes unreliable over long distances, nerve transfers can provide expedited reinnervation, particularly when considering wide zones of injury, irreparable nerve endings, and densely scarred anatomic regions. In a patient with radial motor palsy following a failed axillary mass excision complicated by iatrogenic brachial plexus injury, limited surgical options exist to restore triceps extension. Few published case reports exist in the literature that discuss the current operative technique, and the majority of those cases involve traumatic brachial plexus injuries. We aim to describe a novel application of a direct nerve transfer of the ulnar nerve fascicle to flexor carpi ulnaris (FCU) to the radial nerve fascicle of the long head of the triceps for triceps insufficiency in the setting of iatrogenic brachial plexus injury during excision of neoplasm.

Case Presentation: A 75-year-old right hand dominant male with history of a benign axillary mass and failed attempt at surgical excision due to its proximity to critical neurovascular structures and associated iatrogenic brachial plexus injury, presents with right upper extremity weakness and loss of dexterity. On exam, he had grade M0 triceps, intact wrist extensor function, and grade M0 extensor digitorum communis (EDC) and extensor indicis proprius (EIP) function. An EMG confirmed severe radial motor neuropathy, with greatest denervation at the triceps and EIP. Using an approach at the inferior border of the pectoralis major tendon along the medial border of the humerus (Figure 1), the patient underwent a nerve transfer of the FCU fascicle of the ulnar nerve to the radial nerve fascicle to the long head of the triceps in an end-to-end fashion (Figure 2). The patient was immobilized for 4 weeks in a sling and began passive range-of-motion exercises with physical therapy at 2 weeks. At 4 weeks post-operatively, the patient had grade M1 elbow extension and M4 FCU function. He had an index and long finger extension lag of 20 degrees, with ring and small finger extension lags of 40 degrees each. At 20 weeks post-operatively, the patient had grade M2 elbow extension, along with improved index and long finger function. There were no complications, and the patient only had continued difficulty of fine motor movements of the ring and small finger.

Conclusion: Nerve transfer using the ulnar fascicle to FCU may be considered as an effective option to restore elbow extension in patients with triceps insufficiency. This technique has only been described in limited case reports previously, and only in the setting of traumatic brachial plexus injuries. Our case report, to the best of the author's knowledge, is the first to highlight the potential benefits of nerve transfer on both proximal and distal motor nerve function, in the setting of neoplasia and iatrogenic injury. While the primary goal of this procedure was to stabilize the elbow via reinnervation of the triceps extensor mechanism, the patient had recovery of wrist and finger extension within a short post-operative time interval as well.

**Please attach files with diagrams and/or photos to support your abstract (10 MB limit)**

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ulnar\_nerve\_transfer\_figures.png

**\* Please attach the abstract presenter's CV**

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frank\_yuan\_cv.doc



**Figure 1.** The axillary approach along the inferior border of pectoralis major, extending along the medial border of the humerus.



**Figure 2.** The ulnar nerve tagged with a vessel loop, with the biceps and brachialis retracted anteriorly.