Abstract #19769:  
Anatomy of Terminal Branches in Targeted Muscle Reinnervation of the Brachium

Leo T. Kroonen, MD, Department of Orthopedic Surgery, Southern California Permanente Medical Group, San Diego, CA  
Christopher Renninger, MD, Department of Orthopedic Surgery, Naval Medical Center San Diego, San Diego, CA

**Purpose:** Targeted muscle reinnervation (TMR) offers enhanced prosthetic use by harnessing additional neural control from unused nerves from the amputated limb. The purpose of this study was to document the location and number of motor end-plates to each muscle commonly used in TMR in the brachium, relative to a proximally-based bony landmark.

**Methods:** 18 matched arms (9 fresh-frozen cadavers) were dissected. The locations of each of the terminal branches into the *medial biceps* and *brachialis* were measured with a standard tape measure relative to the anterolateral tip of the acromion. The terminal branches to the *lateral triceps* were measured relative to the posterolateral tip of the acromion. Both the number of branches and their locations were documented. Common descriptive statistics were used to describe the data.

**Results:** There were a median of 2 branches to the *medial biceps* located at 19.6 cm from the anterolateral tip of the acromion (range 15-25 cm). There were a median of 3.5 branches to the *brachialis* located at 24.2 cm from the anterolateral tip of the acromion (range 19-27.5 cm). There were a median of 2.5 branches to the *lateral triceps* located at 21.6 cm from the posterolateral tip of the acromion (range 11-29 cm). The mean distances to the main branch of the motor innervation to each muscle and the number of smaller branches were not significantly different when compared by sex or side.

**Conclusions:** TMR in the brachium requires localization of the major terminal branches to the target muscles, as well as denervation of any remaining branches. The data obtained from this study will assist the TMR surgeon in localizing the motor end-plates for the commonly used muscles in the TMR of the brachium.

**Figure 1:** Anterior Dissection. Two branches are seen going to the medial head of the biceps, and two to the brachialis.

**Figure 2:** Posterior Dissection. Three branches are seen to the lateral head of the triceps in this specimen.

**Disclaimer:** The views expressed in this poster are those of the authors, and do not reflect the official position of the Department of the Navy, Department of Defense or the United States Government.