

Evaluation of Concomitant Carpal Tunnel Release with Forearm Fasciotomy for Acute Compartment Syndrome

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INTRODUCTION: Acute compartment syndrome (ACS) of the forearm is an emergent condition with potential for significant morbidity in the upper extremity. There are many reported mechanisms for forearm ACS, requiring multiple specialties to perform surgical treatment with fasciotomy. There is not a clear consensus whether carpal tunnel release (CTR) at the time of fasciotomy is universally indicated. Our purpose was to determine the incidence of simultaneous CTR and forearm fasciotomy by surgical subspecialty and document the need for subsequent CTR if needed. In addition, we wanted to evaluate surgical morbidity of performing a concomitant CTR in terms of surgical complications and time to definitive closure.

METHODS: Retrospective chart review was performed across three large academic institutions for patients between 2017 and 2022 who underwent forearm fasciotomy for ACS. Patient demographics, mechanism of ACS, subspecialty of treating surgeon, inclusion of simultaneous CTR, postoperative complications, reoperations, time until and method of definitive closure, as well as need for later CTR were documented.

RESULTS:

In total, 171 patients were included. The most frequently reported mechanisms for ACS were vascular injury (including reperfusion), fracture, blunt trauma, intravenous line infiltration, and infection. Sixty-three percent of fasciotomies were performed by surgeons trained in orthopaedics, 27.8% in plastic surgery, and the remainder in general/vascular surgery. Orthopaedics and plastics trained surgeons were more likely to perform CTR, however this did not achieve statistical significance ($p=0.13$). One-hundred-eight (63.5%) patients in total had a concomitant CTR. Of the 62 patients that did not have a release at the time of fasciotomy, 14.5% would later require a CTR at a mean of 232 days. Among patients without CTR, 6.4% had residual hand paresthesias at final follow up versus 3.7% in those with initial CTR. Although this trended toward an increased rate, it did not achieve statistical significance ($p=0.42$). Mean time to definitive closure of the fasciotomy site was 6.7 days; this did not vary significantly between patients who underwent CTR and those who did not ($p=0.47$). There was no correlation between CTR at the time of fasciotomy and surgical complications ($p=0.40$).

DISCUSSION AND CONCLUSION:

Performing concomitant CTR at the time of forearm fasciotomy reduces the need for a secondary surgery in a moderate number of patients, and lowers the risk of residual hand paresthesia, without increasing complications nor time to definitive closure of the fasciotomy site.