Causes, Characteristics, and Outcomes of Acute Compartment Syndrome-Related Medical Malpractice

Haad Arif, Jose A Morales¹, Emmanuel Brito, Simon Thomas Moore, Carol Lin²

¹School of Medicine, University of California, Riverside, ²Cedars-Sinai Medical Center INTRODUCTION:

Acute compartment syndrome (ACS) is an uncommon surgical emergency that carries with it significant morbidity and mortality. Further understanding of predictors for litigation and outcomes may help orthopaedic surgeons avoid lawsuits for compartment syndrome-related cases.

METHODS: The Westlaw database was queried for cases involving compartment syndrome from 1980 to 2023 using the term "compartment syndrome". Cases were reviewed for inclusion and categorized on the basis of litigation. Inclusion criteria for case relevance were defined as litigation resting on a claim of medical malpractice surrounding ACS. RESULTS:

A total of 374 out of the initial 755 cases were included for further analysis (Figure 1). There was a mean of 9 cases per year, with a slight increase in annual case burden across the study period (r = 0.4581, p = 0.0026). The most commonly cited basis of litigation were delayed diagnosis and treatment (n = 132, 35%), negligent postoperative monitoring (n = 59, 16%), and negligent medication administration/peripheral line maintenance (n = 47, 13%). The most commonly cited damages as a result of the alleged negligence were muscle loss and nerve damage (n = 133, 36%), persistent pain and suffering (n = 65, 17%), and amputation (n = 60, 16%). The mean time from initial presentation to fasciotomy was 42 hours (SD = 32 hours). Out of the 39 (10%) cases that disclosed ACS workup, only three mentioned documentation of compartment checks and intracompartmental pressures (ICP). Improper pain management (escalation of analgesic medication without a compartment check) was cited in 27 (7%) cases. Zero cases were levied due to unnecessary fasciotomy or solely on the basis of fasciotomy scars. The most common physical symptoms were severe pain (n = 146, 39%), numbness and paresthesia (n = 105, 28%), and swelling (n = 88, 24%).

Malpractice claims were divided into two groups based on the specialty of the primary defendant: orthopaedic surgeons (n = 150, 40%) and non-orthopaedic physicians (n = 224, 60%). Cases levied against orthopaedic surgeons involved significantly younger patients (31 years vs 38 years, p = 0.0158) and relatively higher indemnity payments overall (\$3,219,519 versus \$1,456,842 in non-orthopaedic cases), however this did not reach statistical significance (p = 0.2360). Out of 374 cases, 212 (57%) resulted in a defendant verdict, 91 (24%) resulted in a plaintiff verdict, and 71 (19%) resulted in a settlement (Table 1). Compared to non-orthopaedic physicians, orthopaedic surgeons were more likely to be named in cases due to ACS caused by surgery (p < 0.0001) and fracture (p < 0.0001), and due to ACS of the lower leg (p = 0.0066). There was no difference in the likelihood of a defendant or plaintiff favorable verdict based on defendant specialty (p = 0.2522), however orthopaedic surgeons were more likely to face ACS-related litigation due to an alleged delay in diagnosis/treatment (p = 0.0455), negligent postoperative monitoring (p = 0.0010), as well as alleged procedural error (p = 0.0443) and improper cast/splint application (p = 0.0004) leading to ACS (Table 2). Meanwhile, non-orthopaedic physicians were more likely to be named on the basis of alleged misdiagnosis of patient symptoms (p = 0.0009) and failure to obtain a specialist consult (p = 0.0009).

DISCUSSION AND CONCLUSION: Despite increased awareness, ACS-related medicolegal action is increasing in modern day medicine, with orthopaedic surgeons comprising nearly half of all ACS-related litigation. Due to the relative absence of cases that mentioned ICP measurements and compartment checks, documentation of close monitoring for symptoms specifically related to compartment syndrome may serve as a valid method to mitigate ACS-related medicolegal risk.