

Characterizing the Risk Factors and Demographics in Pediatric Sports-Related Compartment Syndrome Requiring Fasciotomy

INTRODUCTION: No study to date has characterized the demographics of pediatric sports-related compartment syndrome (CS) requiring decompression fasciotomy.

METHODS: The Kid's Inpatient Database (KID) was queried to identify all pediatric patients admitted due to a traumatic sport injury from 2003 to 2012. The identified pool was refined by selecting patients with traumatic CS who underwent fasciotomy for the treatment of CS. Descriptive analytics assessed incidence of CS among different sports, concurrent injuries, demographic data, and postoperative adverse events. Multivariate logistic regression analyses were used to identify independent risk factors for sports-related CS, necessary fasciotomy, and adverse events following fasciotomy.

RESULTS: Of the 10,096 patients admitted for traumatic sport injury, 143 (1.4%) were documented with CS (mean age = 15.5 years). Team sports had the highest incidence of CS (105, 73.4%), specifically American tackle football (47, 32.9%). A majority of CS cases were in the lower extremity (117, 81.8%), and the most common concurrent injury was fracture of the tibia and fibula (28, 38.9%). 72 (50.7%) patients underwent fasciotomy. Postoperatively, 4 (5.6%) patients suffered complications, consisting of anemia (3, 4.2%) and hematoma (1, 1.4%). Multivariate logistic regression revealed sports-related traumatic patients age 15-17 (OR=2.4 [95% confidence interval (CI): 1.3-4.2]; p=0.003) and age 17-20 (OR=2.2 [95%CI: 1.2-3.9]; p=0.01), were twice as likely to have CS compared to patients age 11-14. Males were twice as likely of sports-related CS compared to females (OR=2.0 [95%CI: 1.1-3.8]; p=0.027).

DISCUSSION: Male and >14-year sports-related pediatric trauma patients are more likely to present with CS. The rate of CS is the highest in team sports, specifically high-contact sports such as American football. A majority of patients had lower extremity CS, and the most common concurrent injury was fracture of the tibia and fibula.