

**Narcotic Requirement Is Not Predictive of Adult Traumatic Compartment Syndrome**

*Ehsan Jazini, MD<sup>1</sup>; Ebrahim Paryavi, MD, MPH<sup>1</sup>; Christine Helou, MD; Joshua Abzug, MD<sup>2</sup>; <sup>1</sup>University of Maryland, Baltimore, Maryland, USA; <sup>2</sup>University of Maryland Orthopaedics, Timonium, Maryland, USA*

**Background/Purpose:** The diagnosis of compartment syndrome is often difficult to make, especially in the nonverbal or obtunded patient. In the pediatric trauma population, increased narcotic requirement has been thought to be a predictor of compartment syndrome. However, the presence of these signs and symptoms may be unreliable. The purpose of this study was to assess the presence of classic physical examination findings, pain medication requirements prior to fasciotomy, and changes in vital signs to identify predictors of compartment syndrome. We sought to assess if narcotic requirement is a predictor of adult compartment syndrome in the trauma patient and hypothesized that it is not.

**Methods:** A case-control study of patients, admitted to a Level I trauma center between 2007 and 2012, who were diagnosed with compartment syndrome and underwent fasciotomies (n = 47) compared to a randomly selected control group of trauma patients (n = 47) matched for age, extremity, and mechanism of injury, was conducted. Objective data including heart rate, systolic blood pressure (SBP), pain score (based on visual analog scale), narcotic requirement prior to surgery, and time from injury to fasciotomy (cases) or open reduction and internal fixation (controls) were obtained from the medical record. In addition, the presence of the “6 Ps” (pain, paresthesia, pallor, paralysis, pulselessness, and poikilothermia) was recorded. Differences in these parameters were compared between cases and control patients.

**Results:** 17.4% of cases had 2 of the “6 Ps” compared with 2.1% of control patients (P < 0.05). Patients with compartment syndrome presented with pain on passive stretch in 43% of cases compared to none of the controls (P < 0.05) as well as significantly more frequent decrease in sensation and “firm/tight” compartments. There was a significant difference in the mean heart rate in the last 4 hours and mean heart rate during the interval period between the cases versus controls by approximately 10 beats per minute (99.95 vs 87.9, 98.6 vs 89.4, respectively; P < 0.05). The mean SBP in the last 4 hours prior to surgery was also different in cases versus controls by approximately 10 mm Hg (142 vs 130, P < 0.05). The mean narcotic requirement in the cases versus controls in the last 4 hours prior to surgery was not significantly different. We also did not find an increased rate of narcotic administration in the cases or controls.

**Conclusion:** In our patient population, a score of at least 2 out of the “6 Ps” was predictive of compartment syndrome compared to a score of less than 2. Heart rate, SBP in last 4 hours, presence of “tight compartments,” and decreased sensation were also significantly associated with fasciotomy. Narcotic requirements and patient reported pain scores were not significant predictors of compartment syndrome. In an adult trauma population the classic “6 Ps” in addition to pulse rate and SBP may be more useful indicators of developing compartment syndrome and should be closely monitored in the at-risk patient.

The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice.