Division of Acute Care Surgery Clinical Practice Policies, Guidelines, and Algorithms: Management of Peripheral Compartment Syndrome
Clinical Practice Policy

Original Date: 03/2015
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Purpose: To delineate management of peripheral compartment syndrome in multiply injured patients.

Trauma patients with combined orthopedic and vascular injuries are immediately evaluated by the trauma service. Any patient in the ED with suspected vascular injury and/or compartment syndrome should have prompt consultation with the trauma service prior to definitive imaging or compartment pressure evaluation. The coordination of multiple surgical services (Trauma, Orthopedic, Vascular, and Plastics) to expedite patient care is paramount for optimal outcome and is the responsibility of the Trauma Service. Patients are taken to the general trauma or hybrid OR (not HVI) at the discretion of the trauma faculty and orthopedic service with a vascular surgery consult as determined by the trauma attending.

Indications for fasciotomy
Since it is common to underestimate the time from injury to restoration of blood flow, by default, all complicated extremity injuries will receive a complete fasciotomy unless all involved faculty members believe the fasciotomy is unnecessary based on known ischemic time and physiology.

The involved faculty should have a brief but focused discussion regarding priorities of care and the need for fasciotomy. Ultimately, the final decision to perform a fasciotomy is the responsibility of the attending trauma surgeon. At the conclusion of the case, the primary surgeon will call the trauma faculty if a fasciotomy was not performed prior to leaving the OR.

Absolute indications for fasciotomy:
- ischemic time of 4-6 hours
- compartment syndrome unequivocally diagnosed on physical exam
- \( \Delta p < 30 \text{ mmHg} \) (\( \Delta p = \text{diastolic blood pressure} - \text{compartment pressure} \))
- compartment pressure > 25 mmHg
- unknown ischemic time

Relative indications for fasciotomy:
- combined skeletal and vascular trauma
- ischemic vascular injury associated with shock
- combined arterial and venous injury
- Inferior vena cava ligation
- crush injury

Which service performs the fasciotomy?
Orthopedic service – any extremity with a fracture or dislocation
Trauma service – all other patients
Vascular service - may perform the fasciotomy at the time of vascular repair if trauma surgery is not immediately available
Potential pitfalls:
- Failure to recognize in compartments other than the calf – i.e., thigh
- Incomplete fasciotomy
- Damage to nerves
- Complications of rhabdomyolysis and severe electrolyte derangements – i.e., hyperkalemia, hyperphosphatemia

Resources:
- **Leg (calf) compartment syndrome:**
  - [https://www.orthobullets.com/trauma/1001/leg-compartment-syndrome](https://www.orthobullets.com/trauma/1001/leg-compartment-syndrome)
- **Thigh compartment syndrome:**
- **Hand and forearm compartment syndrome:**