Compartment Syndrome and Crush Injury

REFRESHER

RECOGNIZE IT

- Compartment syndrome: excessive tissue pressure exceeds a closed muscle compartment, decreasing blood flow to muscle and nerves — ischemia and cell damage
- Crush injury: prolonged continuous pressure on large muscles (legs, arms) causing muscle disintegration
- Damaged skeletal cells release myoglobin, potassium, uric acid, and phosphorus into the blood — systemic injury: rhabdomyolysis

ASSESS

- Causes: crush injuries, extremely vigorous exercise, blood vessel surgery, constricting bandages, prolonged compression of a limb, blood clot, burns, incorrect splinting
- Symptoms: deep leg or arm pain, pain greater than expected from the injury, visible bulging of muscle, tingling or burning, discoloration, numbness or paralysis, cardiac dysrhythmias
- Abdominal compartment syndrome (critically ill, often with respiratory dysfunction): distended or tense abdomen, pain or wincing when touched, low or no urine output, low blood pressure

ACT — FIRST MOVES

1. Recognize the mechanism early — prolonged compression and constricting dressings or splints are on the cause list
2. Watch for cardiac dysrhythmias as potassium reaches the bloodstream

PEARLS

- Pain out of proportion to the injury is the symptom to catch
- Compartment syndrome is rare — but the causes (crush, compression, tight bandaging, bad splinting) are everyday EMS scenes

Take Home Message:

Pain greater than expected after crush or compression is compartment syndrome until proven otherwise — and its fallout is systemic: potassium and rhabdomyolysis.