Acute Unilateral Leg Swelling and Pain
After Orthopedic Surgery:
It’s Not Just a DVT

A Case of Intraoperative Tourniquet-Induced Rhabdomyolysis

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Orthopedic Pneumatic Tourniquets

Case Presentation

History
• 24yo male presented with left leg pain and swelling on POD #3 after arthroscopic ACL reconstruction and lateral meniscectomy.

Physical Exam
• Vital signs normal
• Left leg: diffusely and tensely swollen from thigh extending to foot with mild tenderness to palpation; mild warmth and minimal erythema along inner thigh. Sensation reduced along tibial nerve distribution.

Investigations
• Doppler ultrasound: acute left popliteal DVT
• CPK >50,000 U/L; serum Cr 1.7 mg/dL (Baseline Cr = 1.0 mg/dL)
• AST 4839 U/L; ALT 812 U/L
• Urinalysis: moderate blood with RBC <1/HPF

Hospital Course
• Patient was admitted with rhabdomyolysis and AKI.
• Both conditions resolved with aggressive IVF hydration.
• Orthopedic evaluation: no compartment syndrome, but... the rhabdomyolysis was likely due to prolonged intraoperative pneumatic tourniquet use as a result of an equipment malfunction in the OR.
• Total tourniquet inflation time = 4 hrs. (a 40-min deflation break between two 2-hr inflation periods)

Take-Home Points

1. Pneumatic tourniquets are commonly used in orthopedic/podiatric surgeries and can cause traumatic rhabdomyolysis. Clinician awareness is essential for prompt recognition and treatment.
   • Systems-based practice (to improve ‘clinician awareness’): Internists can work with surgical colleagues to create a more informative brief operative note to document whether or not a tourniquet was used and tourniquet time and pressure involved.

2. Although post-operative DVT is very common in patients presenting with unilateral leg pain and swelling, additional possibilities must be considered so that other serious complications are not overlooked.

Literature Review

• Only 7 reported cases describing rhabdomyolysis as a complication from the use of tourniquets during orthopedic and podiatric surgeries.
• One other case report: rhabdomyolysis after skin grafting surgery (burn patient) that also used a tourniquet.
• Risk of rhabdomyolysis seems well-correlated to increased tourniquet inflation time and inflation pressure.
   ➢ The optimal tourniquet inflation time and pressure are unclear and not standardized.
• Other predisposing factors not well understood, but may include patient’s age, limb size, obesity, presence of vascular disease, hypothyroidism, and pre-operative use of creatine supplements.

References