

# Compartment Syndrome

## Life in Orthopaedics Resource Hub

### What is Compartment Syndrome?

Compartment syndrome is a limb-threatening orthopaedic emergency caused by increased pressure within a closed fascial compartment, resulting in compromised tissue perfusion and ischemia.

### Why Does It Occur?

When compartment pressure rises above capillary perfusion pressure, blood flow to muscles and nerves decreases. Untreated ischemia can lead to irreversible tissue necrosis.

### Common Causes

- Tibial shaft fractures (most common)
- Forearm fractures
- Crush injuries
- Reperfusion injury
- Tight casts or dressings
- Burns and prolonged limb compression

### The Classical 6 P's

1. Pain
2. Pallor
3. Paresthesia
4. Paralysis
5. Pulselessness
6. Poikilothermia

### The Most Important Early Signs

- Pain out of proportion to injury
- Pain on passive stretch of involved muscles These are the earliest and most reliable clinical findings.

### Clinical Examination

- Tense swollen compartment
- Severe pain despite analgesia
- Pain worsened by passive stretch
- Progressive neurological symptoms

### Diagnosis

Compartment syndrome is primarily a clinical diagnosis. Compartment pressure monitoring may be

- useful in:
- Unconscious patients
  - Polytrauma patients
  - Equivocal cases

### **Treatment**

This is a surgical emergency. Immediate steps:

- Remove constrictive dressings or casts

- Keep limb at heart level
- Urgent orthopaedic review Definitive treatment: **Emergency Fasciotomy**

### **Complications of Delayed Treatment**

- Muscle necrosis
- Permanent nerve injury
- Volkmann ischemic contracture
- Infection
- Amputation

### **High-Yield Viva Questions**

1. What is compartment syndrome?
2. What is the earliest clinical sign?
3. Which fracture is most commonly associated?
4. What is the definitive treatment?
5. What is Volkmann contracture?

### **NEET PG / INICET Pearl**

The earliest and most sensitive clinical finding is: **Pain on passive stretch** Not pulselessness. Pulselessness is a late sign.

### **Memory Trick**

Think: "**Pain Before Pulse**" Pain appears early. Loss of pulse appears late.

### **Life in Orthopaedics Take Home Message**

Compartment syndrome is diagnosed at the bedside, not in the operating theatre. If you wait for paralysis or pulselessness, you have waited too long. Recognize pain early and decompress urgently.

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