

## Compartment syndrome

<b>Definition</b>	<ul style="list-style-type: none"> <li>Acute compartment syndrome is a potentially devastating condition in which the pressure within an osseofascial compartment rises to a level that decreases the perfusion gradient across tissue capillary beds, leading to cellular anoxia, muscle ischemia, and death</li> <li>One of red flags</li> </ul>		
<b>types</b>	<b>Acute compartment syndrome</b> ⇒ Most common cause by fractures		<b>Chronic compartment syndrome</b> ⇒ Repetitive muscle use during vigorous exercise
<b>Pathophysiology</b>	<pre>                 graph TD                     A[Increased pressure from blood and intracompartmental swelling] --&gt; B[Decreased venous drainage Decreased lymphatic drainage]                     B --&gt; C[Intracompartmental pressure greater than perfusion pressure]                     C --&gt; D[Muscle and nerve anoxia]                     D --&gt; E[Acidosis]                     D --&gt; F[Muscle and nerve necrosis]                     G[Transudation into tissue surrounding compartment] --&gt; A                     H[Leaky basement membranes] --&gt; G                 </pre>		
<b>Etiology</b>	<b>Increase the Compartment Volume</b> <ul style="list-style-type: none"> <li>Close soft tissue injury/ crush injury</li> <li>Close fracture</li> <li>Open fracture</li> <li>Hemorrhage:</li> <li>Vascular injury</li> <li>Coagulopathy (anticoagulation therapy)</li> <li>Increased capillary permeability after burns (especially circumferential)</li> <li>Infusions or high-pressure injections (eg, regional blocks, paint guns)</li> <li>Reperfusion after prolonged periods of ischemia</li> </ul>	<b>Reduction in Volume of Tissue Compartments</b> <ul style="list-style-type: none"> <li>Tight circumferential dressings (eg, can occur with cotton cast padding alone)</li> <li>Cast or splint</li> <li>Prolonged limb compression, as in Trendelenburg and lateral decubitus or from alcohol or drug abuse</li> <li>Risk factors (general):</li> <li>Head injury</li> <li>Decreased consciousness (Late diagnosis)</li> <li>Hypotension</li> </ul>	
<b>Clinical features</b>	e		
	early presentation and most sensitive	late signs:	
	<ul style="list-style-type: none"> <li>➤ Pain out of proportion to the injury Exacerbated by movement not relieved By analgesic</li> <li>➤ Pain with passive stretching of the Muscles in the compartment</li> </ul>	<ul style="list-style-type: none"> <li>➤ 4Ps:                             <ul style="list-style-type: none"> <li>⇒ Paralysis</li> <li>⇒ Paresthesia</li> <li>⇒ Pallor</li> <li>⇒ Pulslessness</li> </ul> </li> <li>Pulseness usually not common very high Pressure to cause it.</li> <li>➤ Tight (woody compartment) tense</li> <li>➤ Tender compartment</li> <li>➤ Reduced two point discrimination</li> <li style="text-align: center;"><u>In pediatrics:</u></li> <li>➤ 3As:</li> </ul>	

		<ul style="list-style-type: none"> <li>⇒ Anxiety</li> <li>⇒ Agitation</li> <li>⇒ Increase Analgesic requirement</li> </ul>	
Diagnosis	<ul style="list-style-type: none"> <li>➤ Usually we do not need investigations BC it is <u>clinical diagnosis</u></li> <li>➤ Intramuscular pressure (IMP) measurement            Needed for comatose or otherwise non evaluable patient :           <ul style="list-style-type: none"> <li>⇒ Aesthesia and sedated</li> <li>⇒ Head injury</li> <li>⇒ Intoxicated</li> <li>⇒ Pediatric patients</li> </ul> </li> </ul>		
treatment	<p><b>Non operative</b></p> <p>Remove constrictive dressing (cast, Splint )          +elevate limb at level of heart</p>	<p><b>Operative</b></p> <p><b>1-Urgent fasciotomy</b></p> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> <p style="text-align: center;"><b>indications</b></p> <ul style="list-style-type: none"> <li>● Absolute Compartment pressure &gt;30 mmHg or &lt;30 mm Hg difference from diastolic pressure.</li> <li>● 6 hours of total ischemia time (ex: arterial embolism)</li> <li>● Significant tissue injury.</li> <li>● Worsening initial clinical picture.               <ul style="list-style-type: none"> <li>• Delayed presentation with a picture of developed compartment syndrome.</li> </ul> </li> </ul> </div> <p>⇒ 48 -72 h post-operative:          Wound closure +necrotic tissue          Debridement</p> <p><b>2-Escharotomy : Burn</b></p> <p><b>3-limp amputation:</b>          Sever tissue necrosis</p>	
Complications	<pre> graph TD     A[Ischemic Myonecrosis] --&gt; B[Myoglobinuria]     A --&gt; C[Loss of function of the involved compartment secondary to muscle contracture]     B --&gt; D[Kidney tubular damage]     D --&gt; E[Acute renal failure]     F[Ischemic Neuropathy] --&gt; G[Paralysis]     F --&gt; H[Loss of sensation]     I[Crush Injury] --&gt; J[Rhabdomyolysis]     I --&gt; K[Renal failure]           </pre>		

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