

compartment syndrome

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muscles surrounded by fascia.

compartment syndrome ^[نادر ليعتقل على الحرق]

- Compartment syndrome is a serious condition that occurs when there's a large amount of pressure inside a muscle compartment.

→ outer causes → cast
متى

→ inner cause → hematoma, edema
swelling, displacement

- Compartments are groups of muscle tissue, blood vessels, and nerves in your arms and legs surrounded by a very strong membrane called the fascia. Fascia does not expand, so swelling in a compartment can result in an increase in pressure inside the compartment. This results in injury to the muscles, blood vessels, and nerves inside the

Epidemiology

Location

- compartment syndrome may occur anywhere that skeletal muscle is surrounded by fascia, but most commonly
 - leg
 - forearm
 - hand + intra abdominal
 - foot • Thigh • buttock • shoulder • paraspinal muscle

Clinical picture (

5 p_s

بالترتيب

- ① pain (out of proportion) → ^{نفسه عن التبريد} pain filter ^{ياقظ} ^{كس قطة} ^{وسجلت كاديه}
- ② paresthesia. (numbness) [⊕] ^{ك نفل} ^{passive extension} ^{on the toes} ^{شده في} ^{severe pain}
- ③ pallor.
- ④ paralysis.
- ⑤ pulsless

Causes of damage to muscle compartments

- Compartment syndrome can develop when there's bleeding or swelling within a compartment.
- This can cause pressure to build up inside the compartment, which can prevent blood flow. It can cause permanent damage if left untreated, as the muscles and nerves won't get the nutrients and oxygen they need. Not treating the condition may lead to amputation.

Types of compartment syndrome

Acute compartment syndrome

This type of compartment syndrome typically occurs after you experience a major injury. In rare cases, it can also develop after a minor injury. For example, you may develop acute compartment syndrome:

- following a fracture
- after an injury that crushes your arm or leg
- as a result of a severely bruised muscle
- from wearing a cast or tight bandage

Chronic (exertional) compartment syndrome

- Exercise, especially when it involves repetitive motion, can cause this form of compartment syndrome. It occurs most frequently in people under 40, but you can develop it at any age.
- You're more at risk for developing chronic compartment syndrome if you do activities such as swimming, playing tennis, or running. Intense or frequent workouts can also increase your risk.
- The link between exercise and chronic

symptoms of compartment syndrome

Acute compartment syndrome

- The most common symptom of acute compartment syndrome is severe pain that doesn't improve after keeping the injured area elevated or taking medication. Your leg or arm may feel worse when you stretch it or use the injured muscle.
- Other symptoms may include a feeling of tightness in the muscle or a tingling or

The five “P”s describe the signs and symptoms of acute compartment syndrome to look out for including:

- ✓ **Pain:** the most common sign that people describe as being extreme and out of proportion to the injury. It is persistent, progressive, and does not stop. It is made worse by touch, pressure, elevation, and stretching.
- ✓ **Passive stretch:** muscles lacking in blood are very sensitive to stretching, so extending the affected limb leads to extreme pain.
- ✓ **Paresthesia:** this is a weird sensation, such as

Chronic compartment syndrome

Pain or cramping when you exercise is the most common symptom of chronic compartment syndrome. After you stop exercising, the pain or cramping usually goes away within 30 minutes. If you continue to do the activity that's causing this condition, the pain may start to last for longer periods.

Other symptoms may include:

diagnosis of compartment syndrome

by ① clinical
② intra compartmental pressure

compartment syndrome
اذا اقل من 30 ← compartment

- based primarily on physical exam in patient with intact mental status.

- a physical exam to check for signs of acute or chronic compartment syndrome. They may squeeze the injured area to determine the severity of your pain.

Most common compartment is leg.
ant. part. ←

كيف نقيس
144

ونقيس
diastolic pressure

diastolic pressure - intra compartmental pressure

اذا اقل من 30

→ indicate for fasciotomy

misdiagnosing new compartment is bi

ed

Deep post-compartment of leg.

- Measurement of compartment pressure
Diagnosis of compartment syndrome must be made and treatment started before pallor or pulselessness develops, indicating necrosis.
- Compartment syndrome is confirmed if compartmental pressure is more than about 30 mm Hg or within about 30 mm Hg of diastolic blood pressure (BP).

Treatment

□ Nonoperative observation

□ indications

- diastolic differential pressure (delta p) is > 30
- presentation not consistent with compartment syndrome

□ bi-valving the cast and loosening circumferential dressings

□ indications

- initial treatment for swelling or pain that is NOT compartment syndrome

- splinting the ankle between neutral and resting plantar flexion (37 deg) can also decrease intracompartmental pressures

□ hyperbaric oxygen therapy

- works by increasing the oxygen diffusion gradient

= conservative

① Analgesia.

② Cast or bandage
↓
bi valve (نقطة من الجب) decompression

③ correct electrolyte dysbalance + correct edema

④ ice application

⑤ Venous return
من فلات + قدام

Davilon

Embesin

- Operative
- **emergent fasciotomy of all four compartments**
(release of fascia after skin incision)
- **indications**
direct join closure or skin graft
 - clinical presentation consistent with compartment syndrome
 - compartment pressures within 30 mm Hg of diastolic blood pressure (delta p)
 - intraoperatively, diastolic blood pressure may be decreased from anesthesia
 - must compare intra-operative measurement to pre-operative diastolic pressure
 - attempt to restore systemic blood pressure prior to measurement
- **Contraindications**
 - missed compartment syndrome

Special considerations

➤ pediatrics

ما يقدروا يحدوا وصفهم فبنفوسهم لمريم
pain out of proportion
①
بالمزاج حيات كيرمه
②
analgesia

- children are unable to verbalize feelings
- if suspicion, then perform compartment pressure measurement under sedation

➤ hemophiliacs

- give Factor VIII replacement before measuring compartment pressures



Prevention

- For acute compartment syndrome, early diagnosis and treatment can prevent further complications, but there is no definite way to prevent it.
- People with casts should be aware that if pain and swelling increases even after taking medication, they should see their healthcare provider immediately.
- Gradually building up your endurance may prevent chronic compartment syndrome. Wearing the right shoes, altering gait pattern in runners,

Long-term complications

Acute compartment syndrome

- Acute compartment syndrome requires immediate medical attention to relieve pressure. Permanent damage to your muscles and nerves can develop within hours. This is a surgical emergency and could necessitate an amputation if not addressed immediately.



Chronic compartment syndrome

- Chronic compartment syndrome isn't considered an emergency.
- But the patient should let you to know if patients experiencing any symptoms. Don't try to exercise when you're in pain, as this can cause permanent damage to your muscles, blood vessels, and nerves.

Summary

- Once the process triggering compartment syndrome begins, compartment syndrome tends to increase in severity.
- Consider compartment syndrome if pain appears to be out of proportion to the severity of injury and is increased by passive stretching of muscles within the compartment or if the compartment is tense.
- Measure compartment pressure to confirm the

palcs

thank
you