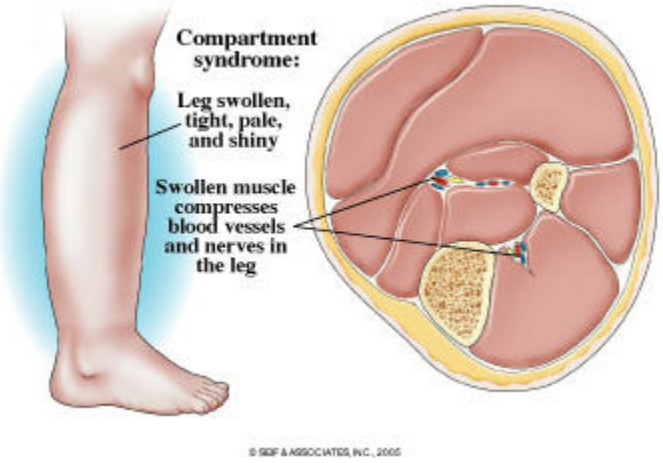
Compartment Syndrome

Arms and legs are made up of muscles, nerves and blood vessels. These are wrapped in tough layers of tissue, called *fascia*. This creates separate spaces, or *compartments*. Sometimes, something goes wrong. Sometimes the problem is an injury. Swelling and pressure develop in a compartment. The pressure buildup is called compartment syndrome. This can become a serious problem very quickly.



The fascia does not stretch very much. The pressure has no way to get out. In time, the pressure will push on whatever is inside the compartment. When a muscle in the compartment moves, you will feel severe pain. If pressure continues to increase, it can block the flow of blood in the smallest blood vessels, the capillaries. Then, the nerves and muscles in the compartment cannot get enough oxygen and nutrients (substances needed for survival). They will start to die. That is why the pressure needs to be relieved immediately.

CAUSES

Various things can lead to compartment syndrome. Possible causes include:

- Injury. Some injuries can cause swelling or bleeding in a compartment. This can lead to compartment syndrome. Injuries that may cause this problem include:
  - Broken bones.
  - Crushing injuries.
  - Something punctures the skin and tissue underneath (*penetrating injuries*). An example is a knife wound.
  - Badly bruised muscles.
  - Poisonous bites (snake).
  - Severe burns.
- Blocked blood flow. This could result from:
  - A cast or bandage that is too tight.
  - A surgical procedure. Blood flow sometimes has to be stopped for a while during an operation, usually with a tourniquet.
  - Lying for too long in a position that restricts blood flow. This can happen in people who have nerve damage. They might not feel tingling or pain. It also can occur in people who are very drunk or who have overdosed on drugs.
  - Drugs used to build up muscles (*anabolic steroids*).
  - Drugs that keep the blood from forming clots (*blood-thinners*).

SYMPTOMS

Compartment syndrome usually develops in the lower leg. It also can occur in the upper leg, arms, hands, feet and buttocks.

- The most common symptom is pain:
  - Pain that gets worse when moving or stretching.
  - Pain that is worse than it should be for an injury.
  - Pain that comes along with a feeling of tingling or burning.
  - Pain that is worse when the area is pushed or squeezed.
  - Pain that is unaffected by pain medicine.
- Other symptoms include:

- A feeling of tightness or fullness.
- A loss of feeling.
- Weakness in the area.
- Loss of movement.
- Skin that becomes pale, tight and shiny over the painful area.

DIAGNOSIS

To decide if you have compartment syndrome, your healthcare provider will probably:

- Do a physical exam. This will include questions about any recent injury (*trauma*).
- Measure the pressure inside the compartment. This is a very important test. A needle is put through the skin and into the compartment. The needle is attached to a meter. The device will show if pressure is building. It also will show how high the pressure has gotten.
- Order other tests, such as:
  - X-ray. This will show bone damage or a fracture.
  - Blood tests. They can tell if muscles are damaged.
  - *Ultrasound*. This test uses sounds waves to create a picture inside the painful area.

TREATMENT

Compartment syndrome can be a surgical emergency. It should be treated very quickly.

- First-aid treatment is given first. This would include:
  - Promptly treating the injury.
  - Loosening or removing any cast, bandage, or external wrap that may be causing pain.
  - Raising the painful arm or leg to the same level as the heart.
  - Giving oxygen.
  - Giving fluid through a plastic tube that is put into a vein in the hand or arm (*intravenous line* or *IV*).
- Surgery to treat compartment syndrome is call a *fasciotomy*. This is needed to relieve the pressure. It also can help prevent permanent damage.
  - A cut (*incision*) is made through the skin over the painful area.
  - Long incisions are made through the fascia. This relieves the pressure in the compartment.
  - The incisions may be left open. They would be covered with medicine and a bandage (*dressing*). After 2 to 3 days, the skin would be closed. Sometimes a special suction dressing called a VAC is applied for a few days to remove fluid before closing the wound.
  - Sometimes a *skin graft* is needed. Skin over the incision would be replaced with skin from another part of the body.

PROGNOSIS

Serious problems can result from compartment syndrome. You might not be able to use the arm or leg like you once did. Sometimes feeling goes away. Severe cases could lead to loss of the limb. Identifying the condition early and treating it quickly can prevent most problems. Then, the outlook for a full recovery is very good.

Document Released: 12/06/2010 Document Re-Released: 03/14/2011
ExitCare® Patient Information ©2011 ExitCare, LLC.