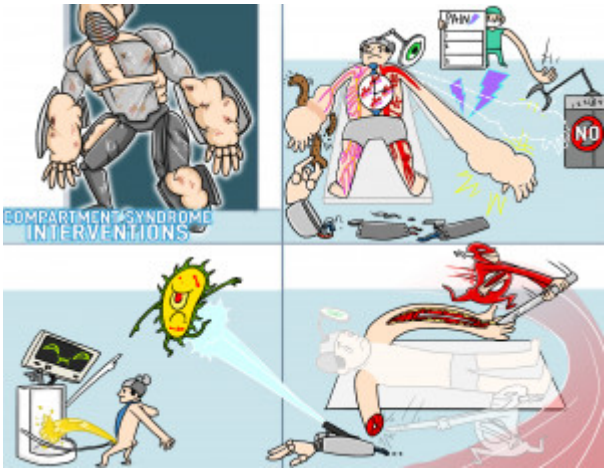
Compartment Syndrome Interventions

Compartment syndrome develops when swelling and increased pressure compromises the normal function of blood vessels, nerves, and tendons in a limited space. Promptly detecting symptoms of compartment syndrome is critical for preventing muscle and nerve damage (refer the Picmonic on "Compartment Syndrome Assessment").



PLAY PICMONIC

Interventions

Frequent Neurovascular Assessments
Frequent-clock with Nerve-vessel Assess-man
Frequent neurovascular assessments are necessary in patients with compartment syndrome. Increased pressure caused by vasoconstriction may result in tissue ischemia. Late signs of compartment syndrome include pulselessness and paralysis. Early assessment is imperative for early intervention to prevent permanent damage to muscles and nerves.

Evaluate Pain
Pain-bolt Evaluator
Determine the location, quality, and intensity of the patient's pain and evaluate the level of pain on a scale of 0 to 10. Pain that is not relieved with medications or is inconsistent with the level of injury may indicate impending compartment syndrome. Increased or excessive pain should be reported immediately to the healthcare provider.

Do Not Elevate Extremity
No Elevation of Extremity
Do not elevate the extremity with compartment syndrome. The extremity should be kept at or below the level of the heart to promote arterial flow and circulation in the affected extremity.

Remove or Loosen Restrictive Items
Removing Restrictive-belt
Items such as casts or bandages should be loosened or removed to prevent vasoconstriction and further complications of compartment syndrome. The cast may be split into half (bivalving the cast) to decrease the possibility of impaired circulation in the extremity. If the patient is in traction, reducing the amount of traction weight will help decrease external pressure surrounding the extremity.

Fasciotomy
Fascia-Flash with Scalpel
A fasciotomy is a surgical decompression of the extremity used in compartment syndrome; often performed for patients with burn injuries. For several days after the procedure, the operative site is left open ensuring adequate soft tissue decompression. Delayed wound closure following a fasciotomy increases risk for infection. Wound closure or skin grafting is often employed about 1-5 days post fasciotomy, with skin grafting indicated if more than 7 days elapsed since closure.

Amputation
Amputated-limb
Severe cases of compartment syndrome may require amputation due to significant and permanent nerve and muscle damage. It is important to ensure patient or representative understanding and consent prior to this procedure, and intensive emotional support during rehabilitation.

Considerations

Infection

Infectious-bacteria

After a fasciotomy, the surgical site is initially left open to ensure adequate tissue decompression, increasing the patient's risk for developing an infection. If tissue is necrotic in the affected limb, there is a greater increase in infection risk, and a fasciotomy may be contraindicated due to the risk. It is important to understand how long an extremity has been affected by compartment syndrome when considering proper management.

Monitor Urine Output

Monitor Urinal

Damaged muscle cells release myoglobin and cause renal tubular obstruction progressing to acute tubular necrosis and kidney injury. This condition is known as rhabdomyolysis, characterized by dark reddish brown urine. Assessing the patient's urine output, color and consistency is critical when determining renal function.