

Chapter 4:

Compartment Syndrome and Gas Gangrene

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COMPARTMENT SYNDROME:

There are general and local complications of fractures. Shock, fat embolism, blood loss cardiorespiratory failure are general complications. Local complications can be divided into early and late depending upon their appearance. Compartment syndrome is an early complication fractures of a limb. This gives rise to severe ischaemia even if there is no damage to vessels. When fracture occurs, it causes bleeding and oedema on affected limb. This may increase the pressure within one of the osseofascial compartment. This leads to reduced capillary flow which results in muscle ischaemia and further oedema, increase in pressure and more profound ischaemia of limb. A vicious cycle sets up which causes necrosis of nerve and muscle in that compartment. Muscle once infarcted, can never recover and is replaced by the fibrous tissue. (VIC-Volkmann's Ischaemic Contracture) This syndrome can be caused by tight plaster applied on fractured limb. As Ischaemia occurs at capillary level, so pulses may still be felt and skin may not be pale. The classical features of compartment syndrome are FIVE 'P's.

- Pain
- Paraesthesia
- Pallor
- Paralysis
- Pulselessness

The earliest feature is pain which may be bursting in nature with altered sensibility and paresis. Skin sensation should be checked repeatedly. Ischaemic muscles are highly sensitive

to stretch. If affected limb is unduly painful, swollen, or tense, the muscles should be tested by passive stretching. On passive hyperextension of fingers and toes, there will be pain in the calf or forearm. Confirmation of diagnosis can be done by measuring the intracompartmental pressure. A differential pressure- the difference between diastolic pressure and compartment pressure, if it is less than 30 mmHg is an indication for emergent compartment decompression.

Treatment:

If three or more signs are present, the diagnosis is always certain. If clinical signs are soft, then affected limb should be examined at an interval of 30 minutes. The affected limb should be promptly decompressed. Any cast, bandage and dressings should be completely removed. The affected limb should be lie flat, because elevating the limb may further decrease in end capillary pressure. In All impending compartment syndrome cases open fasciotomy should be done immediately. If there is no improvement within 2 hours of splitting dressings then fasciotomy should be performed.

GAS GANGRENE

This necrotising situation of limb is mainly caused by an anaerobic organisms especially *Clostridium welchii*. This organism survive and multiply in tissues having low oxygen tension and dirty wound. Toxins are produced by the bacteria, destroy cell wall and produce tissue necrosis, thus spreading of this disease. Usually patients complain of intense pain with swelling with brownish discharge from wound in 24 hours of injury. Gas formation is not usually marked. Patients may have a peculiar smell with little and no pyrexia. It has to be distinguished from anaerobic cellulitis (superficial gas formation). This differentiation could survive the patient from unnecessary amputation of limb.

Treatment:

Early diagnosis is of prime importance for saving life of patient. The prompt surgical decompression of wound is utmost important. All dead tissue should be excised

completely and wound should be left open. General measures like fluid replacement and intravenous antibiotics should be started immediately. Hyperbaric oxygen has limits the spread of disease. In advanced and fully blown cases, amputation of limb is the only choice to save life of patient.