Abstracts

Compartment syndromes and the burnt patient

A. G. G. BATCHELOR B.Sc., M.B., B.S., F.R.C.S.
City Hospital, Nottingham

Soft tissue swelling within an unyielding osteofascial compartment may lead to Volkmann's contracture. This may result from a variety of direct insults to the compartment in the burned patient. It may also arise from the contraction, or apparent contraction, of the walls of the compartment.

Volkmann's ischaemic contracture represents a middle course in the response to such an insult, the mildest course being undetected and leading to complete recovery, the most severe distal gangrene, necrosis and even a full crush syndrome.

Circumferential full-thickness burns may locally compress a compartment over sufficient length to raise the pressures pathologically. Appropriate treatment is escharotomy. Proximally situated circumferential burns may lead to distal ischaemia and give rise to a compartment syndrome. Ischaemia in excess of 4 hr produces sufficient swelling within muscle to lead to pressure problems. Where the burn is one aspect of multiple trauma, the overwhelming visual aspect of the burn may lead to neglect of apparently minor soft tissue injuries.

There is a group of patients who could perhaps be considered to have iatrogenic compartment syndrome. The volume of interstitial fluid in unburnt tissue increases in association with the fluid load administered during resuscitation of a burn. This may convert a sub-clinical compartment syndrome into one which requires intervention. Dressings may give rise to problems as may prolonged periods of immobilisation.

The clinical signs comprise Pain, Paraesthesia, Pulselessness, Paralysis, Pallor and Peripheral coolness, but are inadequate for a number of reasons. They are only present when the compartment syndrome is established, and they do not apply when the patient is unconscious. In the patient with the distally burnt, completely insensitive limb, it is impossible to palpate meaningfully.

Compartment pressures may be measured directly. Refinements of technique permit more accurate measurement. The critical pressure, around 30 mmHg, is accepted as that at which ischaemic changes are occurring in the compartment. A technique for such measurements is described which is

simple and quick. Setting up the apparatus takes a few minutes, the measurement a few seconds.

The technique of intra compartment pressure measurement by direct puncture

The apparatus is extremely simple. It consists of a 23 gauge needle connected via a Y connector to a pressure transducer and a 1 ml syringe. A 3-way tap is also useful so that the system may be flushed with ease. The system is completely filled and flushed with saline for injection. The zero point is calibrated with the needle in contact with but not puncturing the skin over the desired compartment. All measurements should be taken with the patient supine and relaxed. The compartment is punctured and a small volume of saline (0.1 ml) is infused rapidly causing a sharp rise in the pressure trace. This pressure trace rapidly falls to a new level which is higher than the original zero. This procedure may be repeated 2 or 3 times for each puncture and the end point found to be reproducible. It is suggested that this is a reliable measure of the pressure within that compartment. This technique has been compared with that of the Wick Catheter and the results found to be statistically comparable particularly over the range from 10 mm of mercury to 45 mm of mercury which is the clinically important range.

The indications for such measurements are not numerous but they must be considered in the unconscious patient or the patient with severe limb burns or complex multiple trauma. There is no reason why with vigilance ischaemic contracture should not become a dinosaur of trauma surgery.

Problems of haemostasis in burns surgery

E. HAZARIKA M.S., F.R.C.S. & J. MASON M.B.
F.F.A.R.C.S.
City Hospital, Nottingham

A 26-year-old male patient, with full thickness burns to 35% of his body surface area, was treated by excision and meshed split-skin grafting on the 7th day post-burn. Postoperatively, he developed persistent bleeding which was finally halted by clamping, removal, bipolar coagulation of bleeding points, replacement of the meshed skin graft and the application of a layer of oxidised regenerated cellulose. The treatment was effective and the patient