

NEW APPLIANCES

Heel Cushion for Use on the Operating-table

Mr. THOMAS G. WADSWORTH, consultant orthopaedic surgeon, Metropolitan, St. Leonard's, and Hackney Hospitals, London, writes: The problem of deep-vein thrombosis continues to engage attention. The ^{125}I fibrinogen (Atkins and Hawkins, 1965; Kakkar *et al.*, 1969) and ultrasonic Doppler (Strandness *et al.*, 1967; Sigel *et al.*, 1968; Evans and Cockett, 1969) techniques, as well as phlebography (Borgström *et al.*, 1965) have shown that deep-vein thrombosis in the lower limb occurs even more often than is always clinically obvious. A figure as high as 30% has been recorded in a post-operative series (Kakkar *et al.*, 1969), and Evans and Cockett (1969) attribute 5% of all hospital deaths to massive pulmonary embolism.

The heel cushion described here has been designed to relieve pressure on the calf and heel during operative procedures. It has long been common practice to insist on leg

of the table, while the width of 17 in. (43.2 cm.) accommodates the footpiece of most operating-tables. The cushion can of course be placed at the end of the table or at any distance from it, depending on the height of the patient.

There are two adjacent troughs into which the ankles and heels fit, the distal aperture avoiding any pressure on the back of the heel. The backpiece maintains the feet at right-angles to the legs and the Velcro strap which is incorporated within the cushion fastens under the table to give stability.

indicates that the commonest site is the veins of the soleus. Whatever view one has it would seem that venous stasis is an important factor.

Deep-vein thrombosis in the lower limb is an undoubted and serious complication of surgery, carrying a significant morbidity and mortality. Medical treatment is sometimes hazardous and not always effective; thrombectomy and pulmonary embolectomy sometimes become necessary. It is therefore felt that prevention is worth aiming at, and particularly so in patients over the age of 40 (Allison, 1967).

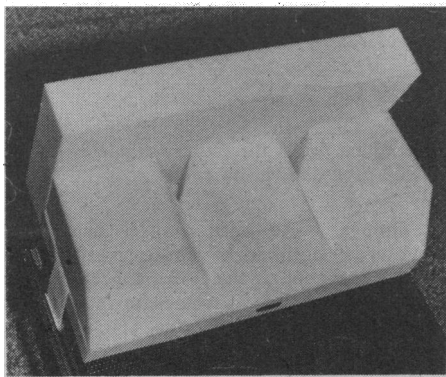


FIG. 1.—Heel cushion in position on operating-table. Ankle and heel troughs together with heel aperture and Velcro fastener can be seen.

mobilization in the postoperative period to prevent prolonged pressure on the calf in particular and to maintain muscle tone—an attempt is thus made to lessen venous stasis, a probable causative factor in deep-vein thrombosis. Nevertheless, little effort has been made in the direction of avoiding pressure on the calf and heel at operation while the patient is anaesthetized and the muscles are relaxed, a situation in which considerable pressure is applied to the calf veins with the probable result of increasing venous stasis consequent on lack of muscle tone. Avoidance of external pressure on the veins of the calf seems to be a precaution that merits attention, while lack of pressure on the heel during the operative period is important in attempting to lessen the incidence of heel sores in the elderly.

THE CUSHION

The heel cushion is made of polyurethane foam and the size at present manufactured maintains the calves of most patients clear

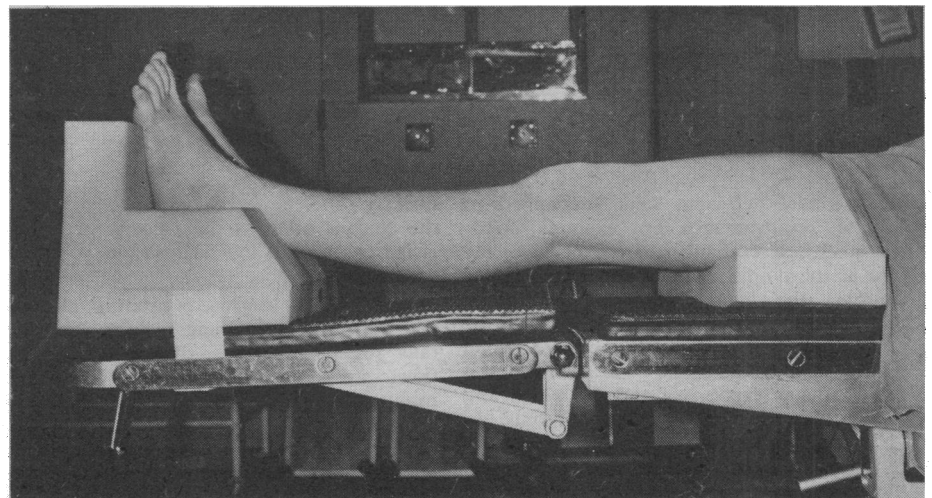


FIG. 2.—Heel cushion in use, calves being clear of table. A thigh cushion is necessary, particularly during prolonged operative procedures, to minimize strain on anterior cruciate ligament.

Use of the heel cushion during prolonged operative procedures may result in strain on the knee ligaments, particularly the anterior cruciate, and it is advised that a soft cushion be positioned under the thighs. A washable antistatic cover can be placed easily over the cushions.

DISCUSSION

Damaged endothelium, venous stasis, and increased coagulability of the blood for various reasons, including increase in number and stickiness of the platelets, have been cited as the probable major factors in the causation of deep-vein thrombosis. External pressure on the calf veins may well be of importance in the first two, and its avoidance during operative procedures is here advocated.

Flanc *et al.* (1968) have indicated that many cases of deep-vein thrombosis arise during operation, and Kakkar *et al.* (1969) state that high-vein thrombi often originate by central extension of thrombi in the calf veins. There is at this time no unanimity of opinion, and other authorities (Gibbs, 1957-8; Sevitt and Gallagher, 1960-61) subscribe to the belief that deep-vein thrombi may form independently in calf and thigh veins. Gibbs (1957-8), while holding this opinion,

The cushion has been designed in an effort to lessen the incidence of deep-vein thrombosis in the lower limb and also heel sores in the elderly patient.

The heel cushion and a thigh cushion, both covered with an antistatic plastic coating, are manufactured by Critchley and Veale Ltd., 21/22 Great George Square, Nelson Street, Liverpool, L1 5DY, England.

I would like to thank Mr. Robert Shiel, F.I.B.S.T., for his invaluable help.

Requests for reprints to be addressed to Mr. Wadsworth, at 313 Blodgett Medical Building, Grand Rapids, Michigan 49506, U.S.A.

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