New Appliances

A METHOD OF APPLYING TRACTION TO THE CHEST WALL

Dr. J. A. MILLIGAN, Stobhill General Hospital, Glasgow, writes: There has been a steady increase in the incidence of serious chest injuries in recent years. The basic principles of treatment have been established, and it is agreed on all sides that early and adequate ventilation is a prime factor. Majority opinion favours the use of controlled respiration after intubation, but surgical treatment is still required in the presence of serious intrathoracic injury and flail-chest with gross paradoxical respiration. There is some doubt about the best method of immobilizing the chest wall and the indications for surgery for this purpose. However, it is clear that sometimes, with or without operative fixation of ribs and sternum, it is necessary to employ traction to control paradoxical respiration. The purpose of this contribution is to describe an apparatus we have designed and which we believe to be an effective method of immobilizing the sternum.

Such an apparatus should be simple to apply, adaptable to different types of fractures of the sternum, stable after application, and non-traumatizing to the tissues. An attempt has been made to meet these requirements in the design.

The equipment consists of a pair of articulated tongs (Fig. 1), the blades of which can be disengaged and inserted separately as with obstetric forceps. The sharp points of the clips are driven into the sternum through a small incision in the skin and fixed by a ratchet or screw clip. In this way soft-tissue trauma is minimized (Fig. 2). After insertion and

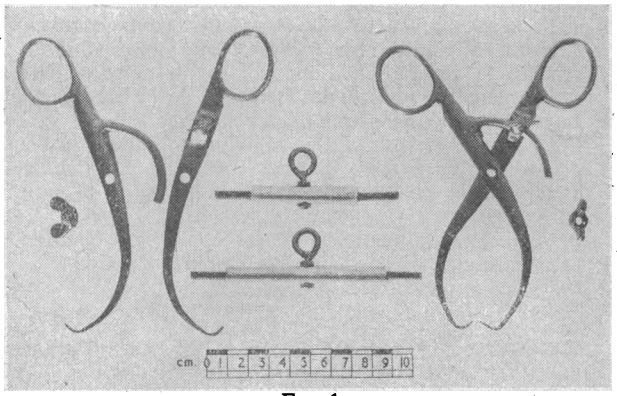

FIG. 1

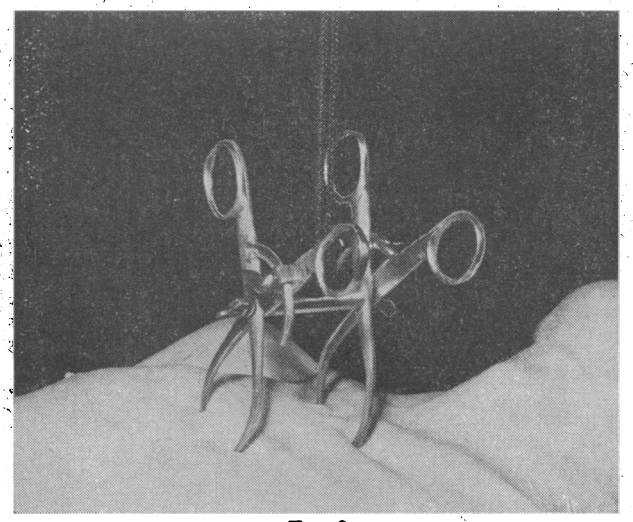

FIG. 2

articulation the two tongs are linked by a metal rod which provides rigidity and prevents rotation. The metal rods are supplied in various sizes, so that the correct length may be selected to bridge the distance between the tongs, which are inserted in the intercostal spaces. A metal loop is fitted to the mid-point of the connecting rod, and traction is effected by threading a nylon cord through this loop.

The application of traction has presented difficulty in the past. A variety of methods have been used, such as plaster-of-Paris casing, bed cradles, Balkan frames, etc., but it is difficult to achieve stability with adjustability and at the same time allow free access for nursing attention. In this unit such cases are nursed in the recovery room, where special trolley beds and other facilities are available, and a suspension rod has been designed which can be readily fitted into a socket in the side of the trolley. The mechanism consists of a tube (⅝ in.; 1.6 cm.) bent to a right angle which can be raised, lowered, or rotated as required. A solid rod with pulley attached is inserted into the open end of the tube and locked with a thumb-screw. It can therefore be rotated in its long axis or telescoped into the hollow tube. It is thus possible to make adjustments so that the pulley can be situated in any position above the patient and direct traction can be effected in precisely the required direction (Fig. 3). Traction of the order of 10–14 lb. (4.5–6.4 kg.) may be necessary, but by using a double pulley the load attached to the cord is halved.

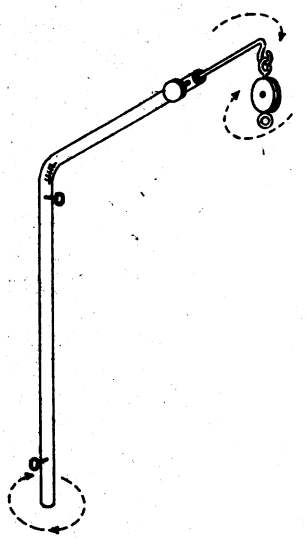

FIG. 3

This equipment is compact. There are no overhead beams or cords and it is easily adjusted to the changing position of the patient. The suspension rod may be used for any situation requiring an adjustable pulley system.

I am indebted to Mr. John Hutchison for allowing me to publish this article, and for his great help and encouragement in designing the apparatus. My thanks are also due to Mr. James Strachan and his assistant, Mr. Victor Ba Maung, engineers, Stobhill General Hospital; to Mr. P. S. Waldie, hospital clinical photographer, for the photographs; and to Mr. H. Dawson, architect, for the drawing.

This apparatus is to be produced by Charles F. Thackray Ltd., of Leeds, and a bedside clamp will be available so that the suspension rod may be attached to any hospital bed.

Dulwich House was recently opened in Cardiff for the Board of Governors of the United Cardiff Hospitals. The building, known as the Lord Pontypridd Hospital, was formerly used for the care of children suffering from rheumatic heart disease. In 1960 the Board of Governors, who administer the hospital, agreed that it should be adapted for the care of patients—aged approximately from 15 years to 50—with chronic neurological disorders. Extensive renovations were made and there is accommodation for 20 patients, most of whom suffer from multiple sclerosis. There is a fully equipped physiotherapy department, three acres of lawns and gardens, and all the appropriate equipment for caring for disabled patients. The hospital is being used to provide symptomatic treatment, rehabilitation after a first attack or relapse of multiple sclerosis, and temporary care of the very seriously disabled so that relatives can have a rest. Dr. J. D. Spillane is the consultant neurologist.