

# A Modified Spine Brace

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The medical literature of the past two decades is well endowed with descriptions of various types of spine braces. The majority of these are quite adequate and are as comfortable as an appliance of this type is expected to be. The brace to be described is the result of modifications of previously described braces; thus I claim little originality. In 1937, Arnold(1) described an efficient back brace. Using Arnold's brace as a pattern, I have made a number of modifications designed to increase the range of usefulness of the appliance and to increase patient comfort. In 1942, Baker(2) described a brace that he used on patients with arthritis of the spine, and Williams(3) described a brace for use in flexion management of low back conditions. Some of the ideas embodied in these two braces have been incorporated in the apparatus herein described.

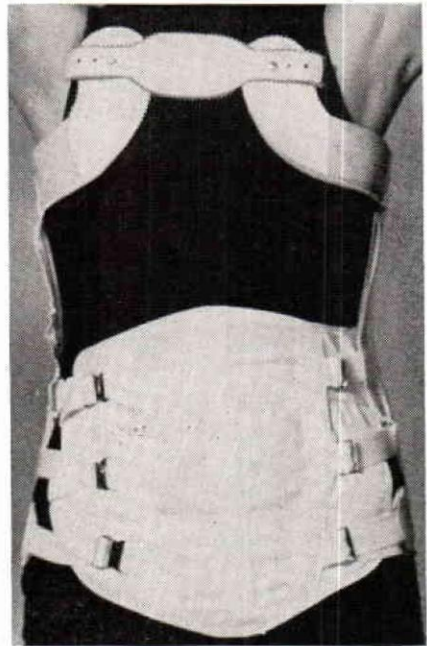
## Uses

As do most orthopedic appliances, this brace has its limitations, and it is not intended for the treatment of all conditions involving the spine. It is designed primarily for immobilization or stabilization of the spine from the sacrum to the seventh thoracic vertebra and is not intended for the support of the cervical and first seven thoracic vertebrae. Lumbosacral fusions can be adequately supported by shorter braces, and consequently this apparatus is not intended for that purpose. I have used this brace for the treatment of fractures of the thoracic spine distal to the seventh thoracic vertebra, thoracic kyphosis caused by juvenile epiphysitis, rheumatoid spondylitis, and incorrect posture. It has been an excellent brace for the treatment of fractures of the thoracic and upper part of the lumbar spine and has been successfully used post-operatively for fusions of the thoracic and lumbar spines. It has been used to support the spine during recovery of patients from poliomyelitis and is particularly useful in those instances in which the respiratory musculature is involved, as in bulbar poliomyelitis.

## Advantages

This brace has a number of distinct advantages from the point of view of patient comfort. The apparatus is constructed from measurements taken on a flexible jig, and all components are built to conform to the contours of the patient's body. Accurate measurements can be taken in the hospital or in the doctor's office, and rarely are more than minor adjustments necessary after the brace is completed. The brace is lightweight, easily adjusted, and may be put on in the operating room and adjusted to meet individual

Fig. 1. (A) Anterior view: Chest pieces may be made lower and transverse strap may be removed.



requirements at any given moment (see figure A). The axillary portion of the brace does not extend high enough into the axillas to be uncomfortable and allows freedom of movement of the upper extremities (see figure B). The lower or pelvic band is form-fitted and grips the pelvis in such a manner that the brace does not ride up or down when the patient moves. The posterior longitudinal bars (see figure C) are placed 4 inches apart, 2 inches on either side of the spinous processes, to allow for a surgical dressing in the event that the brace is being used after a spinal fusion. Furthermore, placing the longitudinal bars in this way decreases pressure over the spine itself and adds considerably to the patient's comfort. The lack of constricting bands about the lower part of the chest makes the brace a useful appliance both in injuries in which there has been damage to the chest wall and in conditions in which there is concomitant respiratory embarrassment without injury to the patient. For instance, the brace has been used on a 6-year-old boy recovering from bulbar poliomyelitis; it supported the spine and shoulders without respiratory interference. The absence of over-the-shoulder straps makes this brace useful in instances in which there is an injury to the shoulders with concomitant injuries to the spine.

### Description

The brace is a singularly uncomplicated appliance. It consists of a pelvic band molded to the contours of the sacrum and ending immediately beneath the anterior superior iliac spine. Thus, the pelvic band fits well, does not slide around when the patient moves, and becomes a well-stabilized point of fixation for the lower portion of the brace. The upper circumferential band fits snugly against the upper portion of the back and varies considerably in its contours depending upon the degree of immobilization

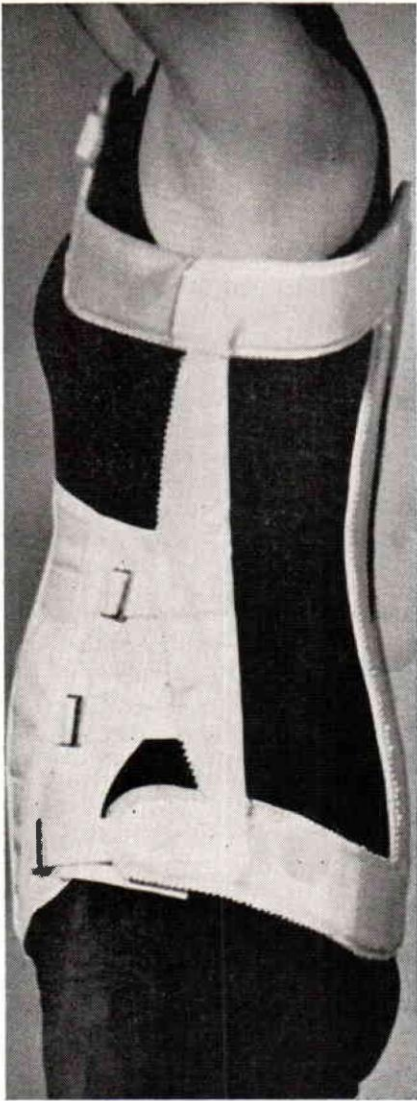


Fig. 2. (B) Lateral view.

Fig. 3. (C) Posterior view: Note space between upright bars.

required. It extends anteriorly beneath the axillas on each side and then curves upward to end in a wide flare that conforms to the anterior chest wall in the pectoral region. There are four longitudinal or upright bars; two are placed posteriorly 4 inches apart and the remaining two lie in the mid-axillary line, one on each side. A light leather strap connects the two anterior chest pieces to prevent separation.

#### Fabrication

The construction of this brace is quite simple, but its usefulness is dependent upon careful and exact fitting. Therefore, I have found it best to take measurements with a flexible jig. The flexible jig is made to conform to the patient's body and then taken to the brace shop where component

