

"H"-Shaped Wrist-Hand Orthosis

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Many patterns of wrist-hand orthoses available today are bulky, warm to wear because of the excessive amount of splinting material used to partially enclose the forearm, wrist, and hand.

The need for a simple wrist-hand orthosis that will fit properly with a minimum amount of time and skill has been sought for a good many years. Such a design is now available with use of an "H"-shaped pattern (Fig. 1) and a low-temperature splinting material known as Polyform.² The "H" pattern when properly used is applicable to either hand. It may be used as a dorsal, volar, or ulnar orthosis depending upon the patient's needs. Furthermore, the "H" pattern is simple in design, cosmetically acceptable to the patient, economical, lightweight, easy to fabricate, and maintains the normal arch of the hand. Since the orthosis is molded directly to the patient it makes a proper and comfortable fit easier to achieve.

PROCEDURE

Water is heated in an electric fry pan to 71.2 Celsius (160 Fahrenheit).

Each end of the longest section of the pre-cut splint blank is dipped into Polyform Solvent Cleaner² to a depth of approximately 2.54 cm (1-inch), and wiped off with a cloth to remove a coating from the Polyform so it will adhere to itself when heated and molded to the hand.

The widest end of the orthosis blank is inserted into the heated water for approximately 40 seconds, or when the right pliability has been reached.

Heating one section of the orthosis blank at a time permits easier fabrication and will also improve the fit. The Polyform should be soft enough so it does not spring back when being formed, but not so hot that it will stretch easily and destroy its molding properties. If this should occur the Polyform should be allowed to cool before attempting to mold it around the hand. Water adhering to the Polyform should be removed by blotting it with a towel.

The orthosis blank when used for dorsal splinting should follow the midline of

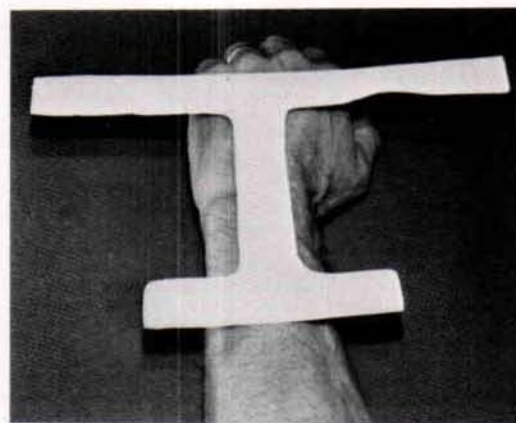


Fig. 1. Pre-cut "H" blank in position for fabrication of left dorsal wrist-hand orthosis



Fig. 2. Forming distal transverse arch

the forearm and be placed proximal to the metacarpophalangeal (MCP) joints of the hand (Fig. 1). Both ends are brought around to encircle the hand and are overlapped by about 2.54 cm (1 in.). When the overlap is more than 2.54 cm (1 in.) any excess material is cut off. Both ends are pressed together using the index finger and thumb so the ends will adhere to each other securely and to reduce the depth of the double thickness. The thumb is pressed and gently slid over the volar area of the cuff to maintain the distal transverse arch of the hand (Fig. 2). The Polyform is removed from the hand after a few minutes when it is cool enough so that it will not lose its new shape. The opposite end is inserted into the water. The middle section is not heated.

When the proximal end is heated sufficiently, the enclosed cuff is slid over the MCP joints, the splint is aligned on the forearm and the ends are molded around the forearm. The orthosis should be formed while the wrist is held in a neutral position. Upon cooling the device is removed, Velcro fasteners are attached, and the device is reapplied to the patient. Excess material is determined and trimmed away. The patient should be able to flex and extend fully without any interference at the MCP joints. The thumb web space should be checked for comfort and to insure that no pressure point areas are present. The wrist area needs additional support provided by an aluminum reinforcement bar attached with two-part rivets (Fig. 3). Desired wrist

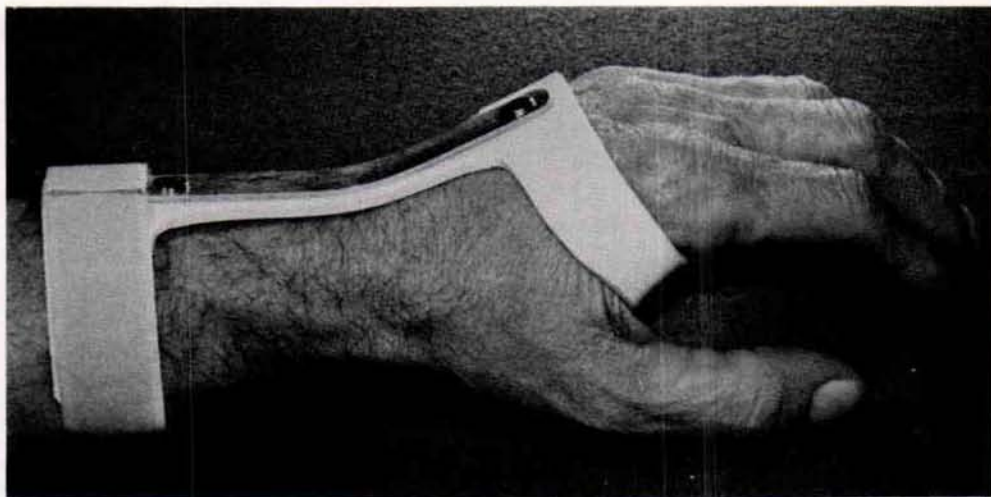


Fig. 3. Completed wrist-hand dorsal orthosis

extension may be changed at this time without heating the Polyform by bending the orthosis in your hands to provide the amount of extension needed at the wrist joint.

SUMMARY

Wrist-hand orthoses are used for many different purposes and for a variety of diagnoses. The main purpose is to support or rest the wrist joint, maintaining the wrist in a slight extension position, permitting finger and thumb movement.

This type of orthosis will also serve as a base for adaptations for activities-of-daily-living.

Footnotes

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²"H" shaped wrist-hand orthosis kit and Polyform solvent cleaner may be purchased from: Rolyan Medical Products, 14635 Commerce Drive, P.O. Box 555, Menomonee Falls, Wisconsin 53051.