

## OCCUPATIONAL THERAPY

### METHOD OF MAKING THE POLYETHYLENE WORKING SPLINT FOR THE WRIST

#### Equipment / Supplies Required:

- plaster hand cast (see OT11A-1)
- paper towels
- Wiss shears
- 1/16" & 1/31" low density polyethylene
- grease pencil
- baking tray
- baby powder
- fine sand paper
- 3/4" "D" ring
- 31 rivets
- 3/4" velcro
- hole punch
- anvil and hammer

#### 1. Making a Pattern

Using strong and flexible paper approx. 10 1/2" x 10 1/2" (a commercial paper towel is suitable). Fold 1" from the midline and on the fold draw a thumb hole approx. 1" in diameter, about 1" from the top of the paper. cut the hole out (fig. 1). Place the paper on the plaster hand cast, with the hole over the thumb and the opening on the dorsum of the forearm (fig. 2).

Pleat the paper to fit the cast and secure the pleats with tape. The back opening

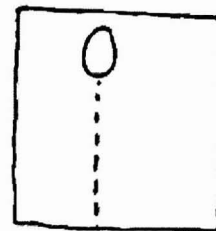


fig. 1



fig. 2

should be flush. Trim the pattern to extend from just below the MCP joints to 2/3 of the forearm length. Draw a centering mark on the volar surface of cast and pattern (fig. 3).

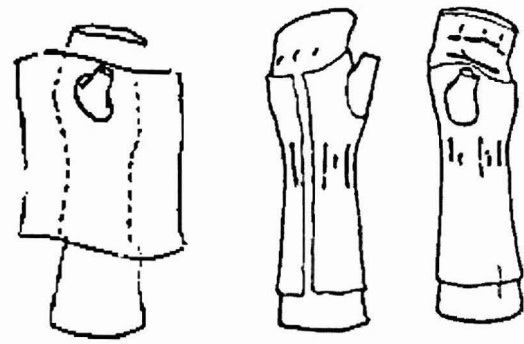


fig. 3

Take the pattern off the cast and place on 1/16" polyethylene sheet. Trace around the pattern with a grease pencil, transferring the centering mark to the polyethylene, from the pattern (fig. 4).

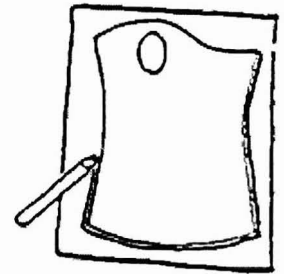


fig. 4

## 2. Forming the Splint

Preheat the oven to 250°. Cut the polyethylene with Wiss shears, remove all pencil marks except centering mark and place on a baking tray, lined with stockinette or a thick coating of baby powder.

Put in the oven until the plastic is just clear. (plastic will shrink if overheated). Prop the cast on 2 pieces of wood (fig. 5). Using gloves, quickly remove the plastic from the tray by picking it up at the proximal end. Do not let it fold or stretch. Drape over the thumb, line up the centering marks and ease the plastic downwards and towards the

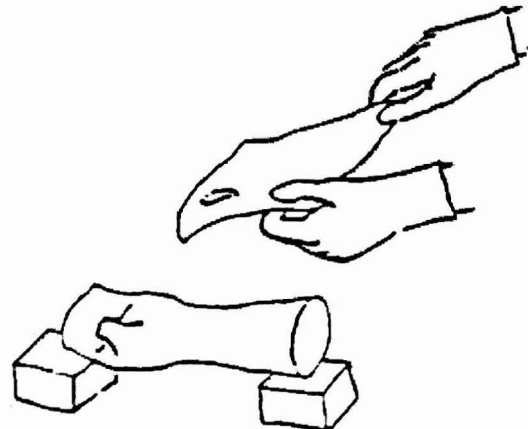
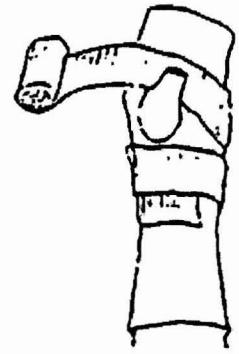


fig. 5

dorsum of cast.

Smooth palm and wrist areas, wrap a tensor bandage around to get a snug fit onto dorsum (fig. 6). Let cool 3 minutes before removing the bandage and plastic from the cast.



**fig. 6**

### 3. To Trim and Fit the Splint

When trimming and fitting the splint allow for:

- a) Comfortable opposition of the thumb to the base of the little finger. The thumb hole should be cut to conform with the base of the thenar eminence. With heat gun, flare edges away from thenar eminence.
- b) A comfortable thumb web. Using a heat gun, roll the thumb web piece so that it will be comfortable. It may have to be stretched as well as rolled. The thumb piece can be replaced by airline tubing, if comfort cannot be achieved however, this may reduce the stability of the splint.
- c) Comfortable MCP flexion and extension. Check for pressure points by, for example

grasping the handle of a hammer. Flare edges away from palm with heat gun.

- d) Comfortable pronation and supination of the forearm, and flexion and extension of the elbow.
- e) No pressure points, especially over the head of the ulna. These can be stretched out with bunion stretcher.
- f) A comfortable fit at the proximal border by flaring the border with the heat gun.
- g) No rough edges on splints. Finish all sharp corners with shears.

#### 4. Attaching Straps

Straps should be 5/8" wide, made from 1/32" polyethylene, and are secured with one well flattened No. 1 rivet. The straps should be fixed so that they tighten when pulled away from the body, closing on the ulnar side of splint. The centre strap closes with 3/4" "D" ring for greater support (fig. 7).

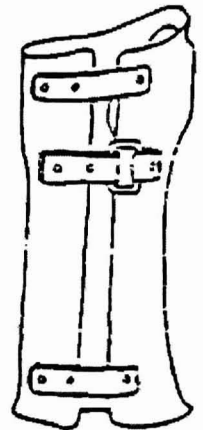


fig. 7

The Velcro on the straps should be 1 1/2" long, with the hook side on the strap. The straps should have the corners snipped to prevent catching on clothing. The middle strap should not be over the ulnar head

(preferably distal to it) and the bottom strap should be about 1-2” from the proximal edge of the splint. The rivets on the inside of the splint should be covered with clear nail polish to prevent rusting. Advise patient to replace polish every 1-2 weeks.

#### 5. Use of the Splint

Test the patient’s function when wearing the splint, especially in grasp, supination and opposition. Instruction for use and care of splint to be given to patient (OT11D-1). It can be worn for all functional activities when the patient has a flare up, but the patient is advised to take the splint off three times a day, to put the wrist through a full range of motion.

To assist compliance it is important that the splint be well finished and aesthetically pleasing. Check the look of the splint carefully: are the edges straight, are the markings removed, are the straps uniformly finished?