

CUSTOM-FOAMED TOE FILLER FOR AMPUTATION OF THE FOREFOOT

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In the fabrication of orthopedic shoes for the transmetatarsal, Chopart, and other forefoot amputations, provision of the toe filler is time-consuming, and therefore it is sometimes not fabricated as accurately as might be desired. Pressure point problems then arise, and often they are difficult to correct.

In the fabrication of orthopedic shoes, a last

and usually a cast of the stump are available (Fig. 1). From the combination of these two, a very accurately fitting toe filler can be fabricated.

Apply a light coat of either petroleum jelly or green soap to the front part of the last. Wrap the last with one roll of 3-in. or 4-in. wide plaster-of-Paris bandage from the toe to a point at least 1 in. posterior to the end of the stump (Fig.2). Allow

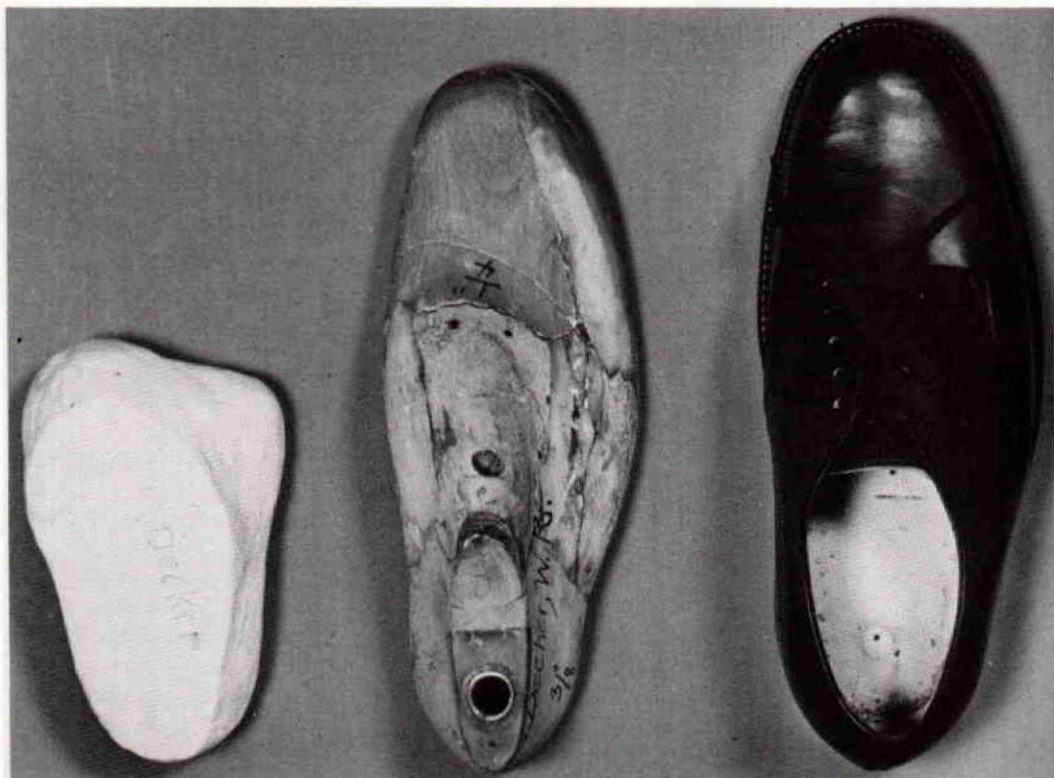


Fig. 1. Positive model, or cast of Chopart amputation stump; last for the orthopedic shoe; and the orthopedic shoe.

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the plaster to just set. Make two alignment marks on each side of the last, proceeding from the upper to the sole side. With a sharp knife, cut through the plaster bandage at the division line of

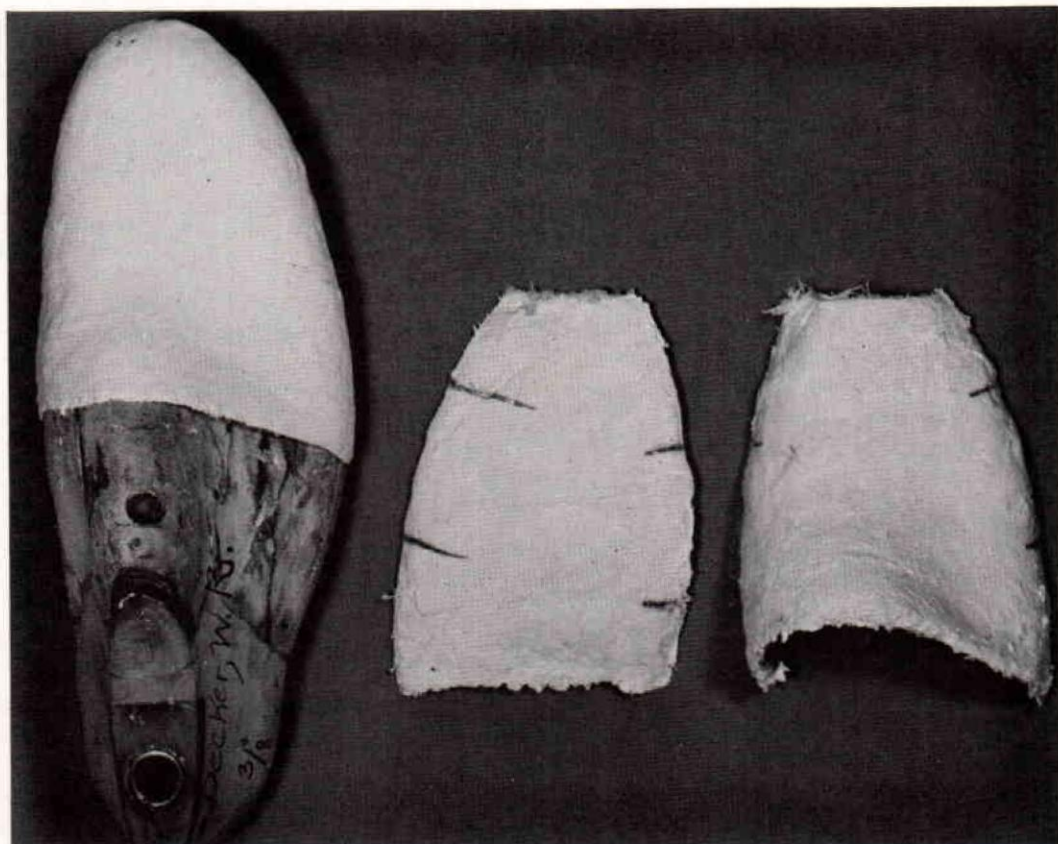


Fig. 2. *Left*, plaster-of-Paris bandage wrapped over the forefoot of the last. *Right*, the two parts of the mold removed from the last. Note the alignment marks.

the sole, leaving about an inch of the toe attached. Allow plaster to harden before trying to separate it from the last so that the cast will not be distorted.

Carefully remove the cast from the last. The two parts removed are shown in the right part of Figure 2. Glue a piece of orthopedic cow- or horsehide, smooth side to the plaster, to the inside of the sole of the plaster mold. (Rubber cement works well.) Trim the leather liner to the margin of the plaster. Coat the upper part of the mold with Modern Foil³. Align the marks, and wrap with another 3-in. or 4-in. wide plaster bandage.

After the plaster has hardened, saw 1/2 in. off

the toe of the cast, forming a hole through which foam can be poured.

The cast of the foot is cleaned and any large holes on the forward portion are filled. It is not necessary for the cast or mold to be dry when these procedures are carried out. A piece of thin orthopedic cow- or horsehide is stretched and tacked, with the rough side out, over the forward part of the cast, and the excess part is stretched around the heel. Enough leather should be available to cover the heel portion of the insert.

The mold is now aligned on the cast. When alignment is correct, the two parts are tacked or stapled together (Fig. 3), and the proximal edge is wrapped tightly with contact-type vinyl tape.

Mix an estimated amount of 384 Dow Corning RTV rubber and about 5 percent 386 foam. Thin with up to 10 percent 360 medical fluid. This ratio

³Modern Foil: A brand of dental mold release available from Patterson Dental Supply, 5315 North Central Expressway, Dallas, Texas 75205.

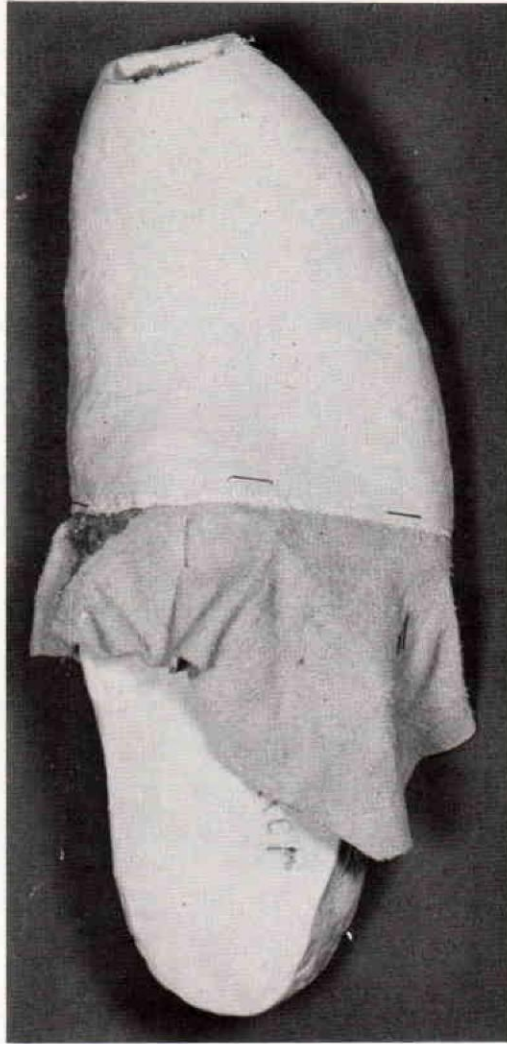


Fig. 3. The assembly, consisting of positive model of the stump, leather covering over distal portion of model, and plaster mold, ready for pouring of the foam.

has a low ratio of expansion, and if the mold is not filled a second pouring will be necessary, but it will bond satisfactorily.

Clamp the foot in the toe-up position in a vise. Add to the foam 384 activator in accordance with the manufacturer's directions, and then add 3 or 4 drops of 386 activator. If too much activator is used, the mixture will foam excessively and the resulting filler will be too soft. Stir thoroughly but quickly, and pour into the mold. Allow the foam

to set for 10 to 15 minutes after it has hardened because at first it is very tender.

Carefully remove the mold so that it can be saved for use again. Trim the leather flush to the edge of the foam. The foam edge can be sanded to achieve feather edges where necessary. The filler can be glued to the insole with a Silicone adhesive recommended by the manufacturer, or if the horsehide is incorporated in the sole of the filler (Fig. 4, *right*), contact cement may be used.

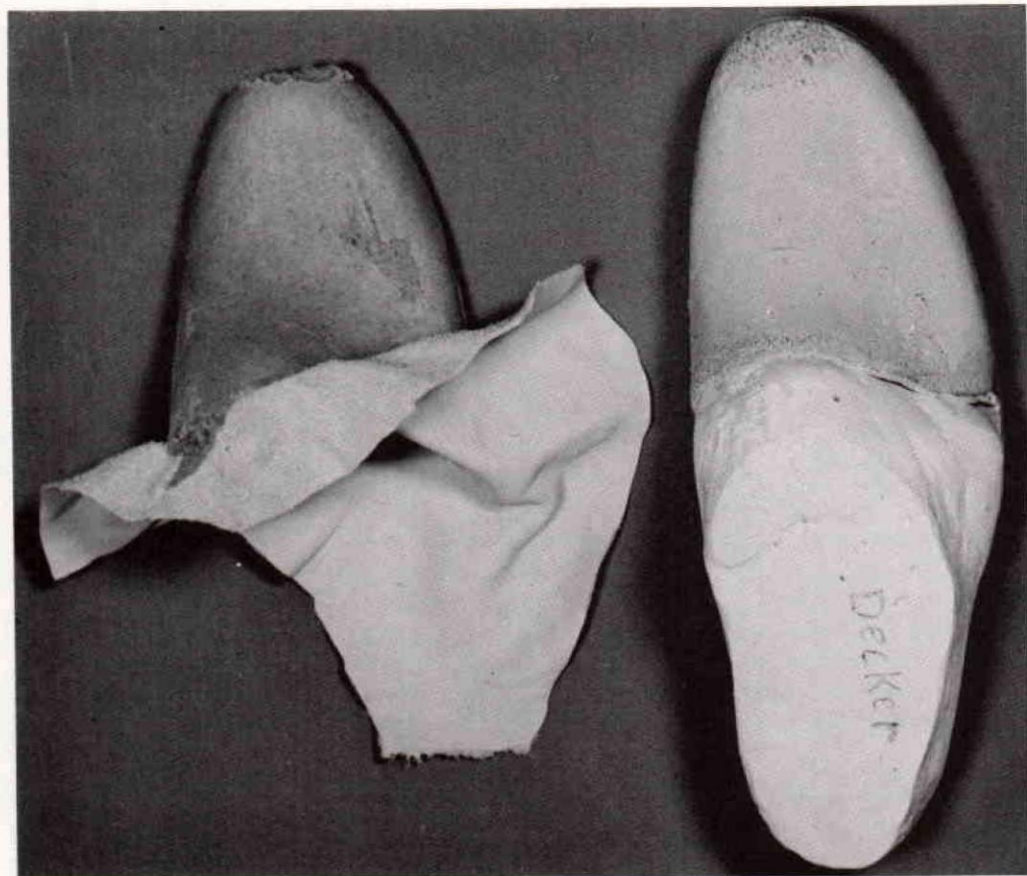


Fig. 4. *Left*, the filler and leather liner before trimming. *Right*, the finished insert fitted to the positive model.

The leather that was covering the cast of the foot can be trimmed and fastened to the heel portion of the inner sole with a contact cement.

With this method, we have not had the usual problem of forefoot pressure points, because an accurate impression of the foot is molded into the toe filler. If it is felt some relief is necessary, the cast of the foot may be modified before foaming to provide for the relief.

Softer density foam in contact with the foot has

not proven to be any more successful than when all of the filler is of the firm density.

The procedure may be used in shoes other than orthopedic types by using a standard shoe last of the proper size or a SACH foot for the model, and then aligning on a leather insole that has been fitted to the shoe. In most cases a longitudinal support built into the insole will be needed. Also, a toe-to-heel shank should be installed in the shoe.