

Technical Note

Three-Stage Impression Technique For The Upper Arm

A three-stage technique has been developed for accurate impressions of the arm for above-elbow prostheses. It has been used successfully in our laboratory for approximately two years, and experience indicates it can produce an accurate impression which requires little, if any, modification of the axilla border. The technique also is useful in orthotics.

The technique consists of a "stage" impression similar to the Fillauer method (1) for below-knee prostheses, in conjunction with a wire-reinforced latex tubing similar to that used by Thranhardt (2) for the diagonal posterior trim of below-knee prostheses. By combining these two methods the prosthetist-orthotist can give more time to the molding procedure.

The impression technique for an above-elbow prosthesis is illustrated in Figures 1 through 5. (For orthoses the technique must be altered to facilitate removal of the plaster from an intact limb. This is most easily accomplished by using plaster splints, instead of the plaster bandage shown in Figure 4, as with the Michigan technique (3) for ankle-foot-orthoses.) The limb is covered with Tubegauz® or stockinet and all skeletal landmarks are outlined (Fig. 1). Latex tubing reinforced with malleable wire is contoured to the axilla while the limb is in

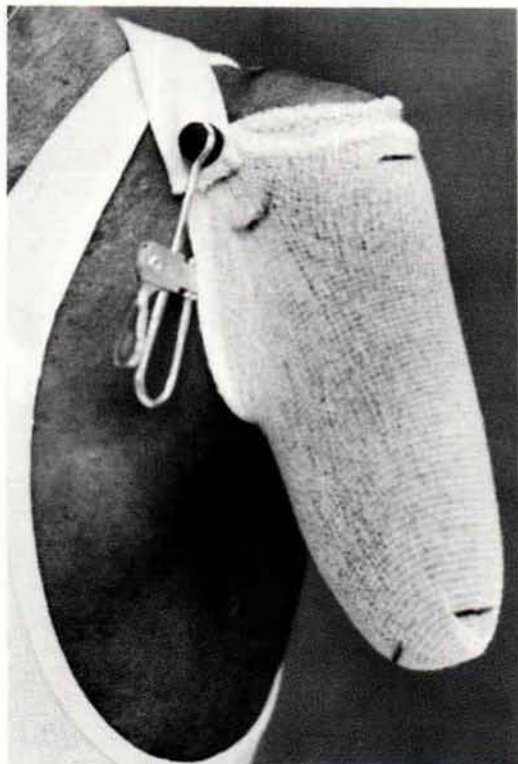


Fig. 1. Limb is prepared in the usual manner.

a flexed position and extended against resistance (Fig. 2) in order to accentuate the pectoral and latissimus tendons to

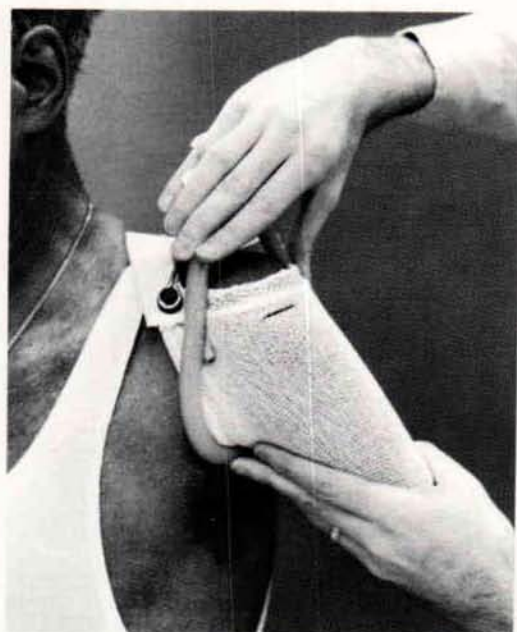


Fig. 2. Wire-reinforced latex tubing is contoured to the axilla.

their fullest. The medial border (anterior and posterior) of the socket can also be established with this tubing. Plaster-of-Paris splints, six layers thick, are used to cover the axillary portion of the tubing and encapsulate the end of the limb to permit accurate control of socket length. After the splints have hardened, the limb is covered distally from the axilla level with an elastic plaster bandage reinforced with regular plaster (Fig. 4). When this portion has set, the proximal impression is taken with splints nine layers thick (Fig. 5). At this time both hands are free to concentrate on molding the anterior and posterior wings in the deltoid area. Because the tubing requires minimal space in the axilla area, there is less chance of lateral gapping of the prosthesis resulting from too much shoulder abduction during the impression procedure.

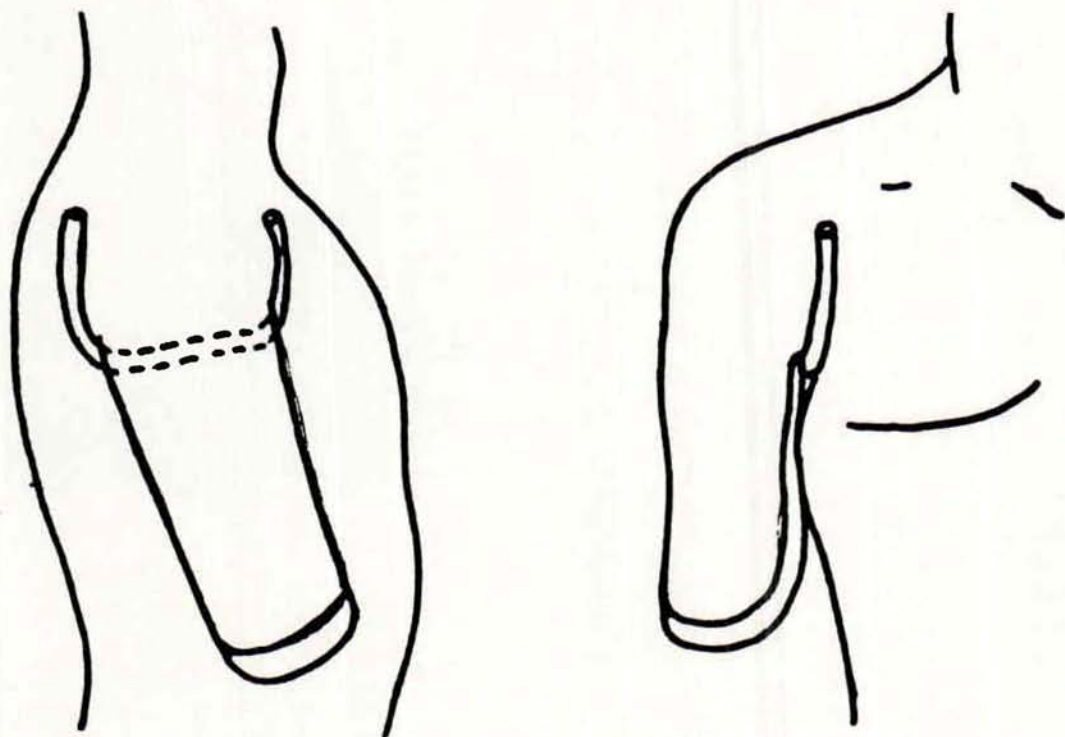


Fig. 3. Six layers of plaster splints form axilla border and "cap" distal end.

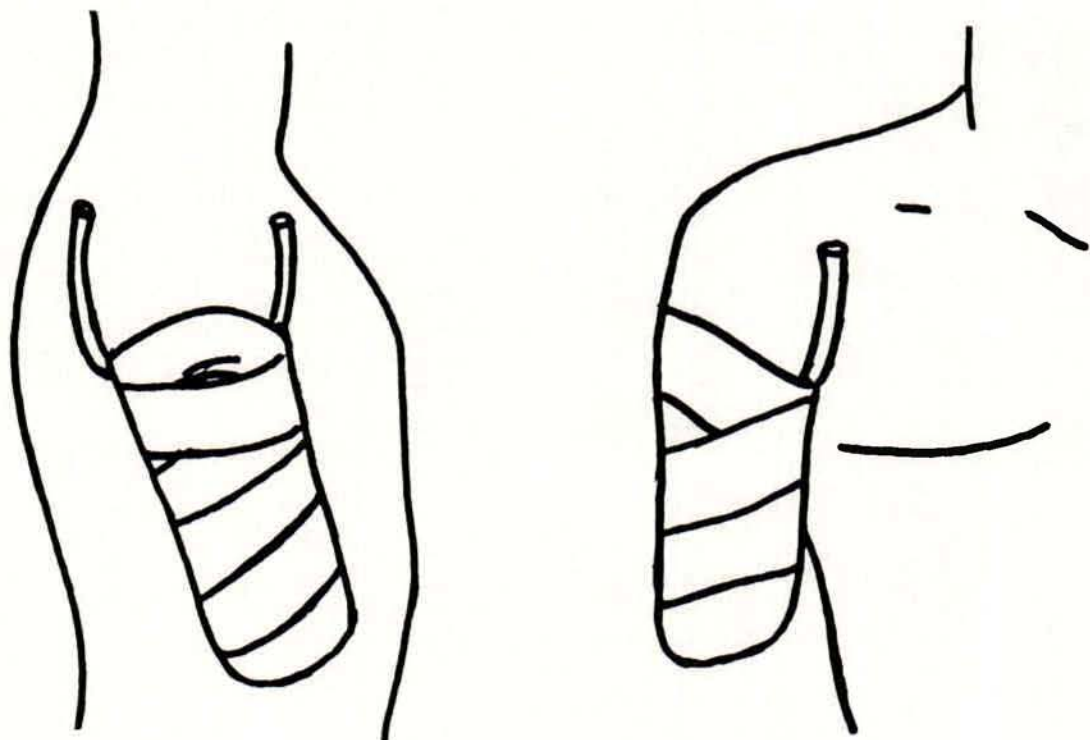


Fig. 4. Elastic plaster, reinforced with regular plaster, encases the distal limb.

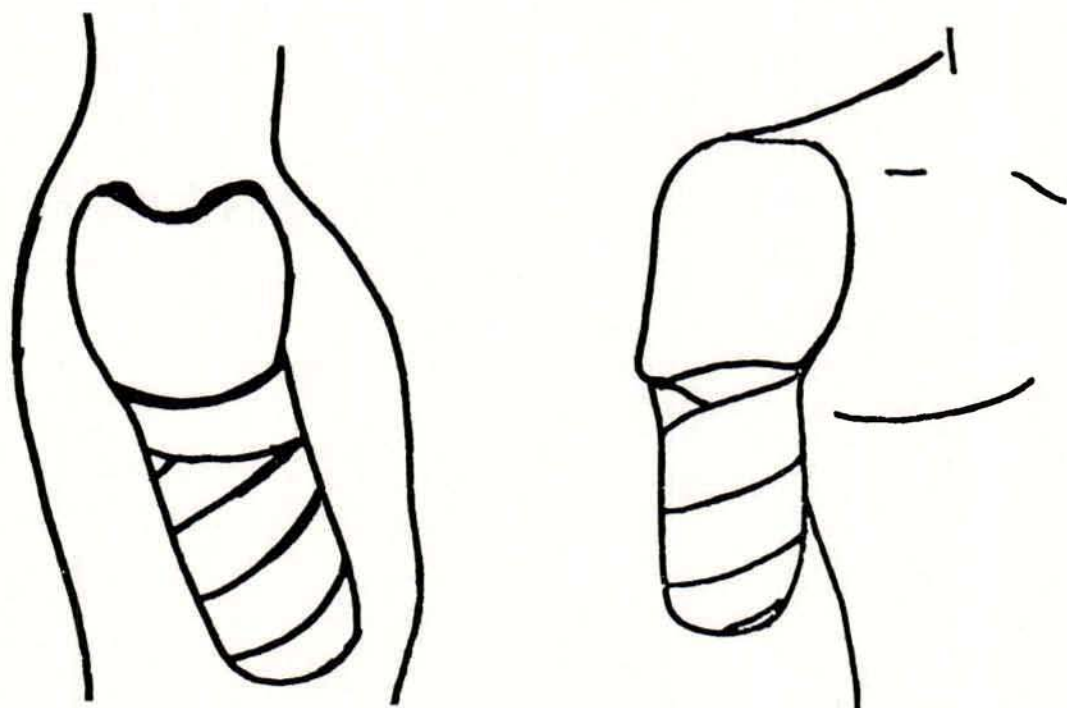


Fig. 5. Nine layers of plaster splint form the proximal section.

The impression technique described here produces an accurate model of the limb which requires little or no modification of the axilla area. The method also permits an accurate overall impression because the prosthetist-orthotist has good control during all aspects of the impression procedure. An orthosis or prosthesis can then be fitted to the patient with less chance of discomfort than is the case with more conventional methods.

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Literature Cited

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- (3) Tyo, J.H. and R.P. Koch, *Procedures for obtaining casts for ankle-foot orthoses*, *Orthotics and Prosthetics*, 32:2, pp. 12-20, June 1978.

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