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## **FITTING TECHNIQUE OUTLINE FOR HEMI-PELVECTOMY SOCKET**

**JOHN MITCHELL, C.P.  
ROBERT MITCHELL, C.P.**

The following series of pictures clarify the socket fitting techniques which have been developed in Orthopedic and Prosthetic Laboratories of the Institute for the Crippled and Disabled. The technique is for the Hemi-Pelvectomy amputation as described by Dr. Shyh-Jong Yue and Mr. Charles Goldstine in the preceding article, "An Improved Prosthesis for Hemipelvectomy." The explanation of the procedure requires considerably more detail than space allows us to present at this time. The technician's time required is exceedingly high but results justify the extensive labors.

It is obvious that we are not attempting to explain the entire mechanical setup; however, the same procedures in socket fitting can be applied to the conventional or Canadian type prosthesis.

It is further assumed that the reader is totally familiar with the fabrication procedure to successfully laminate the plastic socket. It cannot be emphasized enough as to the importance of obtaining a perfect plaster check socket so as to assure a totally satisfactory final plastic socket.

Figure 1 indicates the severity of the amputation. In addition, it shows the frequent distortion of anatomy in the stump area. This must be considered by the prosthetist in the design of the socket.



Figure 1. Fitting Technique Outline for Hemi-Pelvectomy Socket.



Figure 2. Fitting Technique Outline for Hemi-Pelvectomy Socket.

The loops around the axilla are support for the patient so that the cast may be taken in the standing position. This position is advantageous because the stump and opposite gluteal fold will have the normal contours of weight bearing.

Figure 2 shows the lateral anterior view of the plaster wrap being applied to the stump. Stockinette is first put on the stump and pulled tightly so as to confine loose tissue. A section of 6" stockinette approximately 30" long has been used in the illustration. Prior to removal of the cast, the plaster bandage will be carried over to include the gluteal fold on the sound side. A minimum of 4 layers of plaster bandage are used on this cast.

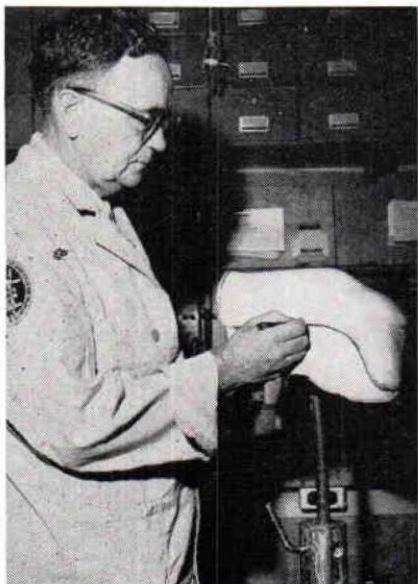


Figure 3. Fitting Technique Outline for Hemipelvectomy Socket.



Figure 4. Fitting Technique Outline for Hemipelvectomy Socket.

Figure 3 shows the male mold which has been taken from the first plaster wrap and has been corrected in the following manner:

1. The height of the mold is above the level of the distal ribs.
2. The proximal border has been flared to give comfort.
3. The plaster has been sculptured from the anterior portion of the mold to assure firm fit of the socket. This is determined by the prosthetist's initial examination.
4. To accommodate any remaining protuberance of the coccyx, plaster has been added to this area of the mold to relieve pressure.

Figures 4 and 5 show the posterior and anterior fitting of a plaster bandage check socket. This socket is approximately  $\frac{1}{4}$ " thick. The bridge to the opposite gluteal fold is approximately  $\frac{3}{8}$ " thick. All adjustments must be made in the plaster check socket. Material may be cut away with a rasp or other tools or built up by adding Plaster of Paris.





Figure 5. Fitting Technique Outline for Hemi-Pelvectomy Socket.



Figure 6. Fitting Technique Outline for Hemi-Pelvectomy Socket.

Figure 6 illustrates a trial leather pelvic belt which is fitted to the check socket for the purpose of determining fit when patient is sitting. This belt will ultimately be finished and used on the permanent prosthesis.

Figures 7 and 8 show the posterior and anterior view of the final socket fitting procedure. It is sometimes advisable to allow the patient to wear this socket for a limited period of time. During this time, he will evaluate the fit and become accustomed to wearing the socket. At this fitting, the



Figure 7. Fitting Technique Outline for Hemi-Pelvectomy Socket.

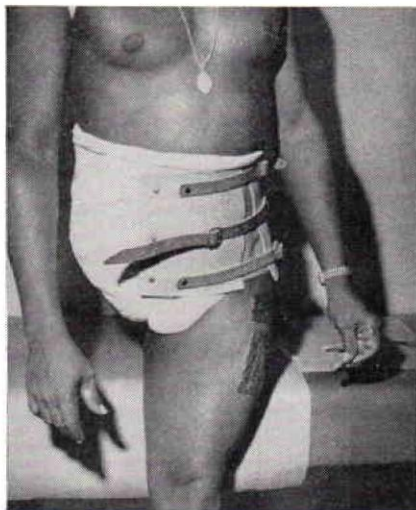


Figure 8. Fitting Technique Outline for Hemi-Pelvectomy Socket.

prosthetist establishes the contours for the outer shell. This outer shell incorporates the lateral aspects of the socket. In this manner a good cosmetic appearance is established and the attachment point for the completion of the prosthesis is provided.



Figure 9. Fitting Technique Outline for Hemi-Pelvectomy Socket.

Figure 9 shows the first step in the actual fabrication of the plastic laminated socket. A second male mold has been taken from the final check socket. The mold is covered with a coat of petroleum jelly which serves as a moisture barrier. A PVA sheet has been drawn over the mold as a separative for the plastic and is easily drawn into the concavities by use of a vacuum pump. The plastic to be used is the Bakelite C-8 Resin (A ERL-2795 and B ERL-2793). It is necessary to use 8 layers of treated glass cloth in all areas except for a required addition of 4 extra layers to reinforce the gluteal bridge. The finished socket wall is only approximately three-sixteenth inch thick. This construction has been found to be totally adequate for patients weighing in excess of 200 pounds.