Proposed Method of Alignment for Knee Disarticulation Prosthesis

Among the disadvantages and problems of the knee disarticulation prosthesis cited by critics is that there is no adequate method to achieve proper alignment. In this brief article it is our intention to propose a method by which alignment of the knee disarticulation prosthesis can be accomplished by means of standard equipment.

We, at the University of Virginia, have not had the opportunity to employ this procedure, and therefore cannot comment on its efficacy. It is our intention only to suggest a possible means of alignment for the consideration and trial by other prosthetists.

We feel confident that if a number of prosthetic facilities throughout the country were to explore independently the possibilities of this procedure and compare experiences through this *Journal* and other means, a feasible technique can be developed.

This paper can, then, be said to propose not only a technical procedure, but also an informal way to accelerate development and evaluation.

Some may say that this is better left to centers and agencies set up for this purpose. While we support this viewpoint in cases of more complex and expensive research, we feel that the nature of this suggested procedure lends itself to a less formal approach and immediate implementation and trial. Moreover, as professionals it is our ever present duty to experiment seriously with new and innovative means of accomplishing our common goal.

THE PROPOSED TECHNIQUE

The proposed technique features the use of the standard above-knee adjustable leg and vertical fabrication and transfer machine, both available from Hosmer . We have been using the vertical fabrication and transfer machine routinely for over a year and have found it superior to the older horizontal transfer device in ease, speed, and accuracy of operation. It specifically allows for the use of foam as a structural material in the fabrication of prostheses. While the suggested procedure is no doubt possible in the horizontal machine, we do not consider it practical.

The individual steps involved are:

1. Using as thin a section of wood as possible, set the socket up on the above-knee adjustable leg in bench alignment.
2. Ignoring the obvious knee center discrepancy for the moment, carry out static and dynamic alignment. At the conclusion of the session correct knee center height is determined by measurement and observation to provide the best possible cosmetic result.
3. The prosthesis is transferred into the vertical fabrication and alignment machine in accordance with standard procedure.
4. Medio-lateral width of the socket at the proposed knee-center height is determined. The lower section of a pair of knee disarticulation joints are set into a block of wood as usual at this previously determined medio-lateral width.
5. The stand is then adjusted to obtain proper knee center height.
6. The proximal shank section is set into the knee center holding screws and is adjusted so that the joints lie on either side of the socket. The proximal shank section is joined to the ankle piece by foam or wood.
7. The upper joint sections are cut to length, contoured, and then assembled in lower joint sections. The upper joint sections are set on to the socket with Solka flox and polyester resin.

At this point transfer is complete and the prosthesis can either be finished or tried on the patient.

SUMMARY

A method is suggested for aligning and transferring the alignment to the knee disarticulation prosthesis using currently available equipment. It is proposed that this technique be developed and evaluated informally by prosthetists in the field.

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