

A NEW APPROACH TO STUMP SHRINKAGE FOR ABOVE-KNEE AMPUTEES

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PREFACE

The suggested method and principles of stump shrinkage by compression outlined below are only an attempt to solve a recognized problem. This problem is relative to the initial fitting of a permanent socket to the stump of an above-knee amputee. The method evolved from dissatisfaction on the part of the writer with results obtained from presently employed techniques used to accomplish a preformed stump for incorporation in a permanent socket.

This technique has been used only on a small number of geriatric amputees where amputations were performed because of circulatory complications. The initial evaluation of this method produced the following observations: the stump was less subjected to bruises, the suture line was maintained in the transverse plane, and suture line breakdowns were practically eliminated, facilitating the healing process.

Understanding that these observations are subjective and probably prejudiced, it is recommended that an agency with research funds and staff available conduct objective statistical assessments provided that they are indicated or necessary. Also, it is realized that the fabrication and the materials used should be and can be improved; therefore, it is suggested that funds be spent on perfecting this method of stump compression for shrinkage.

INTRODUCTION

In a previous article (1) a method of stump bandaging was described. This method of bandaging was utilized to cope with the problem of displacement and shrinkage of the soft tissues on the medial-proximal aspect of the stump or the adductor roll. A constant deterrent to satisfactory fitting of a prosthesis to a stump is the distribution of soft tissue resulting from a poorly shaped stump.

A modified method of conventional stump compression is the result of a critical analysis with suggestions from prosthetists and physicians interested in amputee rehabilitation. This analysis plus requests from the field led to the development of the information contained in this article.

A METHOD FOR SHRINKING AND SHAPING THE STUMP

This approach to shrinking and shaping the stump is based on the philosophy that compression to the stump be applied in such a manner that it would correspond in principle with the quadrilateral shape of the present day socket. This attempt to obtain a well-formed stump through compression is procured by casting the stump after the sutures are removed.

The fabrication of the cast is accomplished by casting the stump with plaster wrap while the amputee is in a supine position with the stump flexed approximately 30 deg. (Fig. 1). Equal and constant tension is applied to the wrap at all times during the casting. While the plaster is still wet, the technician molds the cast by hand displacing the soft tissues while forming the cast in a quadrilateral shape (Fig. 2). During this time of molding, the amputee moves the stump through a range of motion from 0 deg. to 90 deg. hip flexion. The cast is flanged at the anterior proximal rim so that the amputee can sit comfortably without a cutting or rubbing effect from the cast. At 0 deg. hip extension, the posterior rim of the cast is also flanged to allow comfort during standing or crutch ambulation. After approximately 10 min. drying time, the cast is removed to set overnight.

The cast is then applied to the stump over a thin stockinet. The cast is again removed and cut in half through a lateral plane. Both halves of the formed cast are lined with a soft glove leather to eliminate uneven edges, to increase comfort to the wearer, and to decrease the circumference (Fig. 3). The two parts of the cast are then placed in a commercially purchased stump shrinker. This complete unit is then applied to the



FIGURE 1. Plaster wrap applied to the stump over a stockinet liner. The patient is in a supine position with the stump flexed 30 deg. at the hip joint.



FIGURE 2. Molding the cast while it is still wet to form a quadrilateral shape by displacement of soft tissue.

stump of the amputee for shrinkage and shaping. If necessary, a Silesian bandage can be used to maintain or support the unit in suspension (Fig. 4).

COMMENTS

After surveying the literature, it is noteworthy to find that there has been little change in methods and techniques used in stump bandaging. Most experts agree that the pre-prosthetic care of the stump is a prerequisite for successful prosthetic fitting. With research funds available and new materials being developed, attention should be focused on this area of amputee care.

DISCUSSION

Proper shrinking and shaping of the stump in the pre-prosthetic care of the above-knee amputee lead to a more successful fitting of a permanent prosthesis (2). While compression bandaging has always been used to shape the stump in a cylindrical fashion, this new method of compression allows for shrinking and shaping to approximate the quadrilateral form of the present day socket.

A constant complaint of the prosthetist has been that after the permanent socket has been completed, shrinkage of the stump is most frequently observed in the soft tissue of the groin area. This can cause pressure with resultant complications. It can also cause instability on the prosthesis which will force the amputee to assume an abducted gait pattern. The

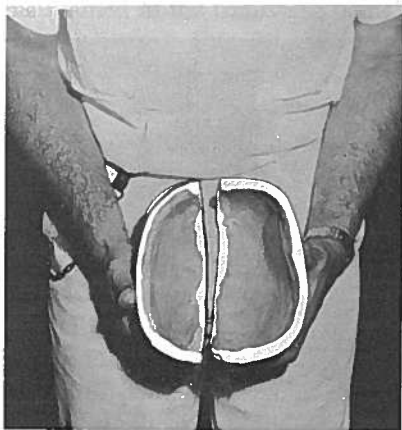


FIGURE 3. After the cast is cut, both halves are lined with a soft leather.



FIGURE 4. Both halves of the cast are placed in an elastic stump shrinker which is then applied to the stump. This ensemble is held in place by compression and the aid of a Silesian bandage.

correction necessitates a rechecking of the socket by the prosthetist and adjustments made where indicated.

REFERENCES

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2. ANDERSON, M., BECHTOL, C., AND SOLLARS, R.: Clinical Prosthetics for Physicians and Therapists. Charles C Thomas, Springfield, Illinois, 1959.