Immediate Postsurgical Prosthetics Fitting of a Bilateral, Below-Elbow Amputee, a Report

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The application of immediate postsurgical prosthetics fitting procedures in the management of lower-extremity amputees has been reported as providing a number of advantages, notably control of postsurgical edema, a marked reduction in pain, and a material reduction of the period of hospitalization *(1,2,3,4)*.

Although somewhat different considerations are involved in upper-extremity cases, immediate postsurgical prosthetics fitting of upper-extremity amputees is a logical progression in the application of these procedures. Upper-extremity amputations are considerably less frequent and are usually in a younger age group. Adequate wound healing is usually not a problem, local factors being the most important determinant. Still the application of a rigid dressing is a sound surgical concept.

Unilateral amputees have a high rejection rate for actual use of their prostheses. It is believed that immediate postsurgical fitting of prostheses to upper-extremity amputees permits rehabilitation from the earliest possible moment and, hopefully, a higher acceptance rate. As used in this report, the term "immediate fitting" means the application of a rigid surgical dressing with terminal device at the time of surgery or in the immediate postoperative period. This is in contrast with "early fitting," which is applied at some time after the removal of sutures.

During the past two years, the authors have had the opportunity to apply immediate prosthetics fittings to three patients, with four upper-extremity amputations. The case reported here is that of a bilateral, below-elbow amputee.

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CASE HISTORY

LMW, a 26-year-old employee of an electric power company, sustained electrical burns of both upper extremities on March 7, 1967, the result of receiving 19,000 volts of current through both wrists. One month later he was seen in the hospital by a consulting group (general surgeon, plastic surgeon, and orthopaedic surgeon) for consideration of possible reconstructive measures. It was the consensus of the group that no useful hand or part thereof could be salvaged (Fig. 1). As a result, on April 17, 1967, bilateral midforearm amputations were carried out. At the time of surgery extensive muscle necrosis was found—as expected—proximal to the apparent skin defect. This required loose closure of the amputations. Drains were placed in the wounds and compression dressings were applied. On April 20, 1967, the patient was returned to the operating room so that the wounds could be viewed, and they appeared to be clean. At this time rigid surgical dressings with terminal devices and harnessing were applied. From that time on, a marked improvement in the emotional status of the patient was noted (Fig. 2). The patient wore his temporary prostheses until May 26, 1967, when he was fitted with permanent prostheses. The patient made an excellent recovery, returning to full-time work in November 1967.

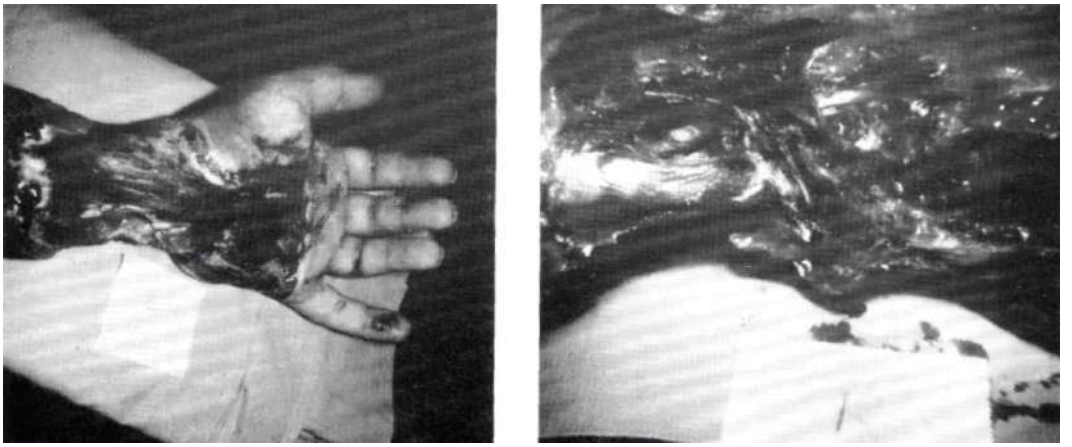

Fig. 1. Neither the left nor the right hand was considered salvageable.

APPLICATION OF TEMPORARY PROSTHESES

Some details in the application of the rigid dressings and temporary prostheses may be of interest.

Autoclaved lamb's wool was applied over the suture lines, and Orion Spandex socks were then rolled into place and held under tension.

To satisfy two somewhat conflicting considerations—that is, to ensure that the rigid surgical dressing would not be displaced when the patient flexed and extended his elbows, and to avoid immobilization of the elbow joint with plaster—Ace bandages were applied about 3 in. below the elbow and continued proximally to encase the elbow joint. Elastic plaster bandages were then applied, and the Ace bandages were incorporated into the plaster wrap. The plaster wrap extended to a point just below the condyles of the joint. Thus the rigid dressing was held in contact, and at the same time limited movement was permitted to the joint.

Steel straps attached to WE-500 wrist units were then applied to the rigid dressing with regular plaster for reinforcement.

A retainer plate riveted to an anchor plate was attached to the socket for cable attachment.

A standard bilateral ring harness with plastic triceps pad and flexible leather hinges completed the setup.

Two 5XA hooks were applied with one rubber band each.

Fig. 2. From the time of the application of the rigid dressings and temporary prostheses, there was an upturn in the patient's emotional status.

On April 25, 1967, sufficient atrophy had occurred to warrant new rigid dressings. The foregoing procedure was repeated. At this time, extra rubber bands were added to the terminal devices, and the patient demonstrated proficiency at a number of activities.

On May 9, 1967, the second cast change was made, and a wrist-flexion unit was applied to the right side. Again, more rubber bands were applied.

PERMANENT PROSTHESES

"Definite prostheses" were prescribed for the patient on May 18, 1967. The prostheses were fabricated and subsequently fitted on May 26, 1967. The prescription included:

Bilateral below-elbow plastic prostheses.
Double-wall sockets.
Flexible joints.
5XA hooks.
Dorrance No. 4 hands.
Two wrist-flexion units.
One driving ring.
One button hook.

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