

AUXILIARY APPLIANCES FOR PATIENT TREATMENT^a

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INTRODUCTION

The Technician of the Plastic Eye and Restorations Clinic, because of the skill he has developed in his field and his aptitude and experience in the handling of various materials, is often called upon to construct items that are slightly out of the realm of his normal field of work. This is as it should be, for our prime obligation is to the patient—whether we assist him directly, as in the construction of a prosthesis, or indirectly through our aid to other departments or physicians, wherever the need may be. Further, we can increase our value by making ourselves available to all departments and open to their problems involving the need for unusual appliances.

Some of these appliances must be custom made; others may be constructed as a stock item. Many cannot be purchased on the open market while others can be constructed in the clinic at less cost than when purchased from an outside source. When time is of importance, that time can be decreased in some instances by having the article made in our own clinic.

This paper is not meant to go into great detail on how each item is constructed or the materials used but rather to impart some suggestions and ideas of the various ways a clinic can assist other departments. The following are examples of some of the devices and appliances that our clinic has devised in response to requests from other departments.

APPLIANCES

Ring Conformer

The plastic ring conformer was the answer for a need for medicating or irrigating the eye or eye socket. It is especially advantageous for medicating over an extended period of time.

^a Based on a paper presented at the Intra-VA Training Conference, Plastic Eye and Restorations Clinic Chiefs, Nov. 16-20, 1970, held at the Prosthetic and Sensory Aids Service, New York City.

Previously, these procedures were done by either a syringe for irrigation or by the dropper method for medication. This may not always be practical due to the extended period of time needed for some medicating treatments or the risk involved of the exudate material accidentally splashing and affecting either the other eye of the patient or spraying on the professional person caring for him.

With the ring conformer, treatment can be carried on with less risk of spreading infection.

This conformer is constructed by embedding a polyethylene tubing into a methyl methacrylate ring (Fig. 1). This ring is thin enough so that it fits under the lid without irritating the sclera or surrounding tissue. The tubing enters the conformer at the lateral canthus extending superiorly to the medial line. The opening is usually found at this point, but the opening may be placed wherever it is more desirable to introduce the medication. The same gravitational action that draws the medication from the bottle to the conformer ring also allows the medication to flow from the top of the socket to the lower canthus; thus all the area between can be treated. The rate of medication is controlled by a valve which is attached to the larger tube midway between the medicating bottle and the smaller tubing of the ring conformer.

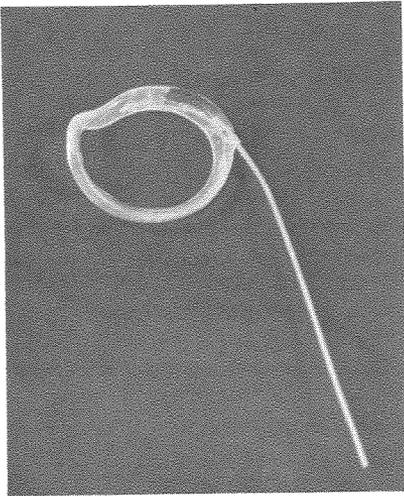


FIGURE 1.—Ring conformer.

These conformers can be custom made to fit many socket variations or medicating problems. Also, they can be constructed in selected standard sizes in advance and maintained as stock items.

Suction Ring

Another device constructed by our clinic for the Ophthalmology

Department is the suction ring for use in withdrawing exudate from the conjunctival sac. This is made of a soft silicone material, is circular in shape, and fits around the iris and over the sclera allowing the eye to be closely observed during treatment.

A full circle groove creating a suction area is on the side of the ring which is in contact with the sclera (Fig. 2). This suction draws the exudate into a polyethylene tube leading to the lateral canthus and onward to the suction apparatus. This suction ring can be custom made, or made as a stock appliance.

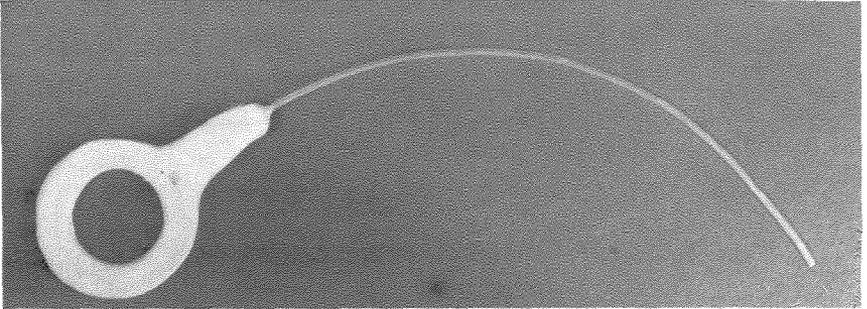


FIGURE 2.—Suction ring.

Flexible Conformer Ring

Another type of conformer that we have made, is a flexible ring conformer (Fig. 3). This is a continuous wire embedded in silicone. It is used as a temporary conformer to maintain the shape of the eye socket after enucleation. Its shape can easily be molded and adjusted by the physician.

The flexibility of this conformer allows adjustments to be made rapidly. For this reason, the number of regular-type conformers the

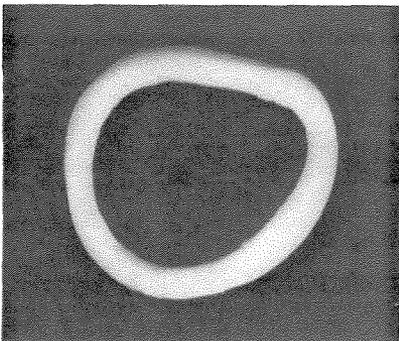


FIGURE 3.—Flexible conformer ring.

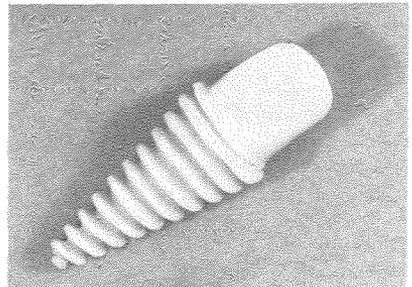


FIGURE 4.—Mouth prop.

physician needs to have on hand is greatly reduced. Grinding and polishing procedures required for reshaping the familiar preformed solid plastic conformers are eliminated.

Mouth Prop

Physicians as well as dentists are sometimes confronted with the problem of a patient having difficulty in opening his mouth due to trismus. When surgery is not advocated for the health of the patient but the alleviation of the trismus is necessary, our Restorations Clinic has devised a mouth prop (Fig. 4). This is a cone-shaped, methyl methacrylate screw approximately 2½ in. long and with tapering spiral ridges. These ridges are constructed wide enough to fit between the incisal edges of the anterior teeth. The patient, periodically, gently applies pressure onto this prop gradually forcing the mandibular jaw open. This process is repeated until the patient's normal mandibular excursions are restored.

Berry Button

In the Neurology Department, there is the special problem related to paraplegics, that is, urinary incontinence. There are appliances of various shapes that we construct but the one we most commonly make is the Berry prosthesis (Fig. 5). This resembles a small rolling pin and is made of methyl methacrylate. A hole is drilled through each end for suturing onto the appropriate muscles so that some form of urinary control can be exercised by the afflicted veteran. This prosthesis can be constructed in various sizes and can be considered a stock item.

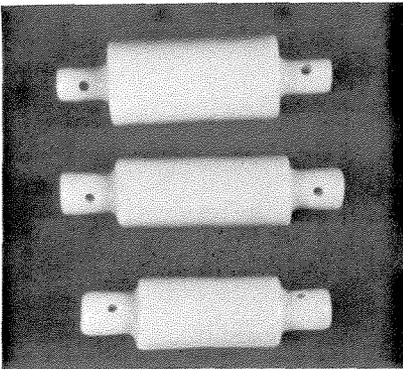


FIGURE 5.—Berry button.



FIGURE 6.—Silicone sleeve for protection of arthritic toe.

Podiatry Appliances

We are able to assist the podiatrist by constructing an appliance to

protect an arthritic toe. A silicone sleeve is used to prevent trauma from the friction of the toe rubbing against the shoe (Fig. 6).

Another item found useful is a toe wedge which prevents the overlapping of toes. This also can be constructed of a silicone material.

Toenail plates, in cases of ingrown toenails, are made of methyl methacrylate with an underturned edge to establish the lateral sulcus. This prevents the nail from growing into the tissue.

Cineplasty Pin

For the Prosthetic Department, we construct the cineplasty pin (Fig. 7). This is usually a replacement pin which fits in the biceps for operating an artificial hand or hook. This is constructed of methyl methacrylate, covering a stainless-steel bar, welded to the ball connections which fasten to the connecting cables leading from the terminal device. When a new pin is being constructed, care must be taken in determining the curvature. This curvature is the deciding factor in determining whether there will be an equal pull on the cables for proper manipulation, thus enabling the existing muscles to impart motion and direction to the artificial limb.



FIGURE 7.—Cineplasty pin.

Larynx Plug

We assist the PM&R Department quite often with prostheses for post-operative treatment when the larynx has been removed. Because of medical reasons, the opening is not always closed. To permit the patient to perform the normal intake functions of eating and drinking, we construct a silicone plug from an impression taken of the area. This plug is fastened to an elastic band by a snap which allows it to be easily removed for cleaning. The two ends of the elastic band are held together by Velcro. This allows the patient to tighten the band as necessary to eliminate seepage (Fig. 8 and 9).

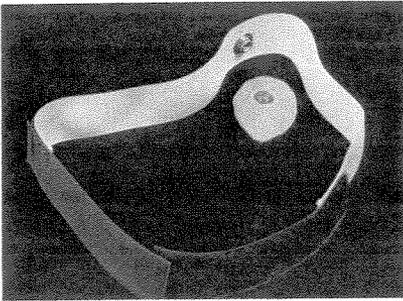


FIGURE 8.—Larynx plug.



FIGURE 9.—Larynx plug on patient.

Eating Utensils

For patients who have limited hand grip, the PM&R Department asked our assistance in developing equipment that would enable them to handle their own eating utensils. To do this, we take an impression of the hand as the patient closes his grip as best he can. From this impression, we make a plastic handle for his fork, spoon (Fig. 10), and knife.

When the patient is unable to control his reflexes, we make a plate

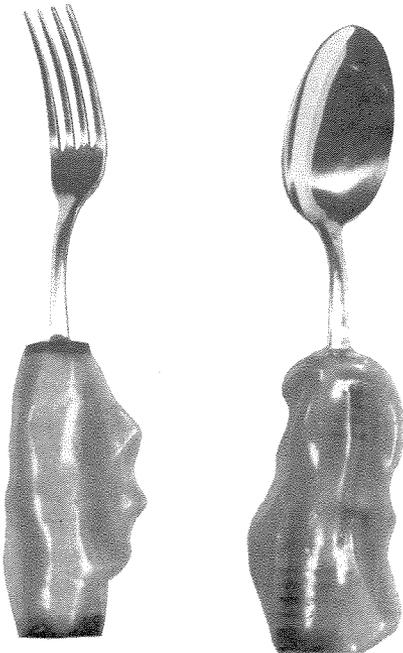


FIGURE 10.—Plastic handles on fork and spoon molded to fit hands with limited grip.

holder (Fig. 11) which assists in the manipulation of food onto his utensils. A standard size plate and a $\frac{1}{4}$ in. sheet of plastic, approximately 3 to 4 in. larger than the plate, are used. Fastened to this sheet is a clear plastic strip extending approximately 1 in. higher than the plate. This is used as a backstop for the food. To hold the plate secure against this plastic wall is a rim or block which fastens to the plastic sheet and fits snugly against the base of the plate but allows the plate to be easily removed.

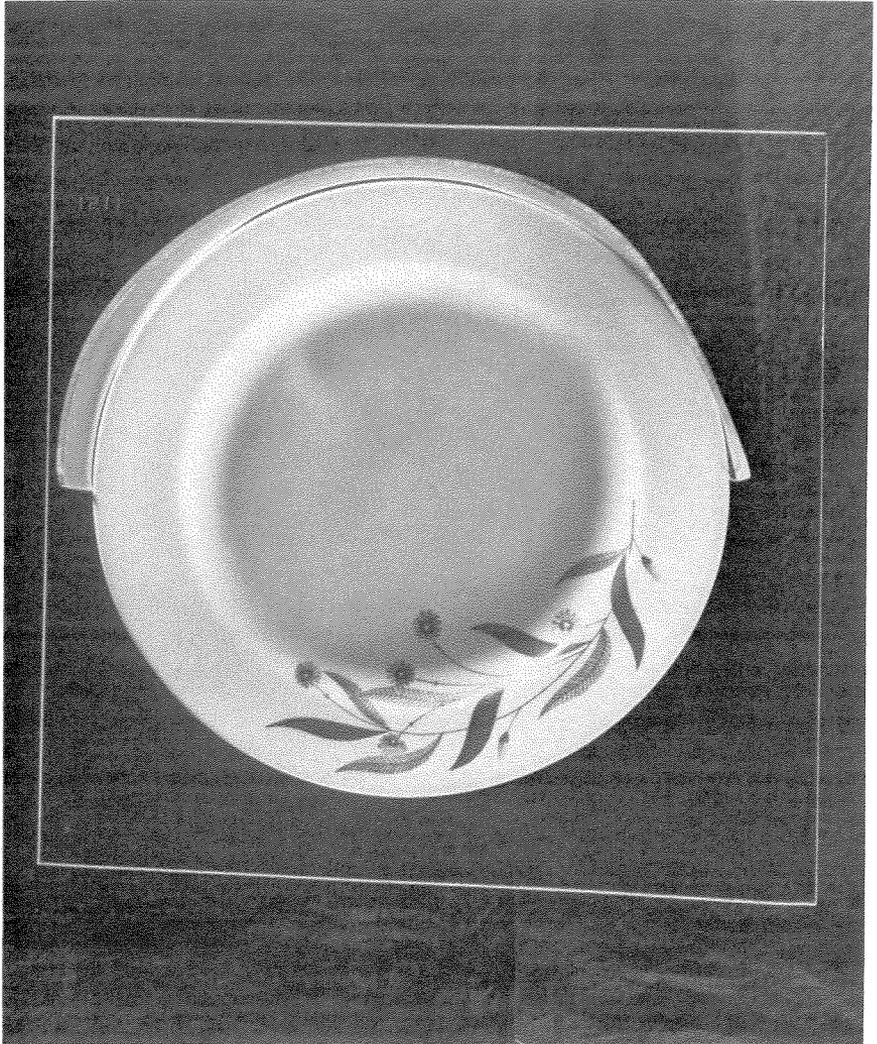


FIGURE 11.—Plate holder.

Bolus

The Radiology Department uses our services for the construction of a custom-made bolus which is used in the radiotherapy treatment of carcinoma. An impression is taken of the area to be treated in order to attain an accurate fit. A solid block of wax is then constructed from this impression with a radius of about 6 in. This wax block must be free of bubbles or impurities so that it can perform its function of dispersing the rays evenly throughout the treatment area (Fig. 12).

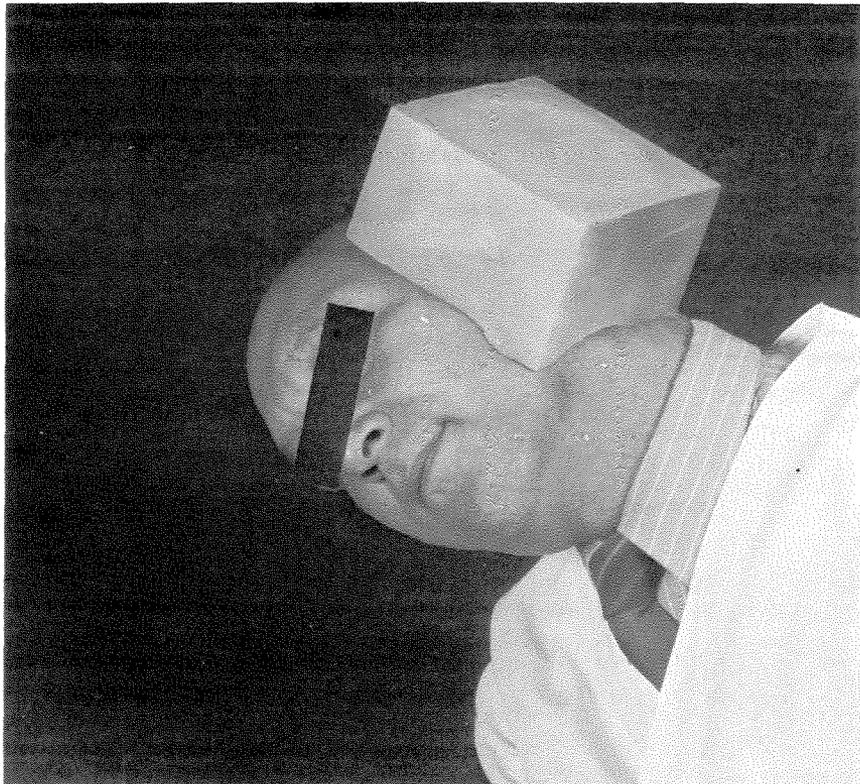


FIGURE 12.—Bolus.

CONCLUSION

I have cited some of the ways in which we have been useful to other services in our hospital in the interest of the patient. Undoubtedly, there are many other areas of patient care in which the skills of Restorations Technicians can be utilized in the treatment of the disabled.