STANDARDS FOR EAR RESTORATIONS

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Although formalized standards and specifications have not been promulgated, criteria for high quality facial prostheses are generally recognized in VA prosthetic restorations centers. The establishment of standards depends on the clear identification of the most generally accepted criteria of quality in this field. Detailed below is a description of currently recognized requirements for high quality, soft ear restorations. Much of the development in this area was due to the work of Joseph Coppolino, Supervisor and Harvey Young, Technician.

A soft ear prosthesis, designed to replace a missing anatomical ear, must satisfy the following fundamental requirements: natural appearance, retention, comfort, and durability.

NATURAL APPEARANCE

Correct form and size in this type of prosthesis are essential for natural appearance. In these respects replication of the sound ear is the goal. The prosthesis should be made of a material that simulates normal healthy tissues with respect to: texture, translucency, weight, and color.

The texture of living tissue is best simulated by a material which imparts the normal, lifelike appearance of skin. Epidermal pores should be normally distributed. The material should feel soft and velvety to light finger pressure. It should closely simulate the flexibility of human tissue. To be lifelike, the molding material should have approximately the same flexibility as human tissue in order to blend the margins of the prosthesis to adjacent tissues.

Healthy human skin, being translucent, permits the passage of a certain amount of light. This is a difficult quality to duplicate in nonliving material. Prosthetic material should be sufficiently translucent to simulate skin effectively.

Naturally, the material of which the prosthesis is fabricated should be as light as possible. At most it should approximate the weight of the tissue being replaced. If it is too heavy it will distort tissue over which it is attached.

Color is one of the most important details in any facial prosthesis. Correct coloring requires matching the complexion of the wearer of the prosthesis. In a human ear, the intensity of coloring is never the same throughout. The color of the prosthesis must appear similar to the surrounding tissue.

It is quite clear that natural appearing qualities in a prosthesis are extremely difficult to achieve and require close study of the anatomical parts to be copied.

RETENTION

Natural appearance also depends on holding the completed prosthesis in its proper relation to the head. This is an important consideration in the preliminary planning stages of the prosthesis. It can be simplified by use of a full head cast as a model from which the total area of the defect can be studied in detail. There may be conditions about the defect itself such as undercuts or hollowed out areas that can be used to advantage for retention. However, when other means of retention are not available, surgical assistance is often helpful. Wherever possible, all aspects of preparing a suitable prosthesis should be discussed with the surgeon prior to the operation.

The simplest and best method for attaching the prosthesis is by use of a properly selected adhesive solution. To be most effective these solutions must be:

1. highly adherent;
2. nontoxic—that is, nonirritating to the tissues;
3. elastic at the point of contact to the skin;
4. noninjurious to the prosthesis;
5. highly durable;
6. easily cleansed from the surface of the prosthesis as well as from the soft tissue involved.

Even the best adhesive may be inadequate when used on oily skin or over areas that are prone to excessive perspiration. Excessive weight of a prosthesis may also be a problem. In the matter of oily skin or moisture, the wearer of the prosthesis can cleanse the tissues as well as the contact surfaces of the prosthesis to offset difficulties in the use of adhesives.

COMFORT

The wearer of the prosthesis must be able to depend on comfortable attachment of the prosthesis to the tissues for extended periods of time. The underside of the prosthesis must be formed to fit closely to the tissues and to be free of any rough areas that can cause irritation. The prosthesis should be comfortable enough to be worn for at least one full day. At bedtime the artificial ear should be carefully removed, properly cleansed, and stored for safekeeping. At this time the tissues are likewise to be cleansed and given rest during the night. This helps to maintain strong, healthy tissues in good condition for supporting the prosthesis normally from day to day.

DURABILITY

The durability of a facial prosthesis is primarily dependent upon both prosthetic and human factors. The selection of materials, patient attitudes, training, disease, and tissue change all affect the useful life of a prosthesis.

By selection of proper materials and fabrication techniques, the useful life of a soft ear prosthesis can be greatly extended. Durability of any facial prosthesis is also related to the mental attitude of the wearer. In a cooperative person, with a good mental attitude, the promise for success in wearing a prosthesis is excellent. A person with a poor mental attitude about wearing a prosthesis is a poor risk and for whom, unfortunately, all efforts in fitting a prosthesis will likely result in failure. A cooperative, well adjusted person will wear and care for the prosthesis in a way that will extend the useful limits of service and durability.

All users of prostheses must be properly trained and instructed in the wearing and care of the prosthesis at the time it is being fitted and delivered, a matter just as important as providing the restoration itself.

Disease in an area previously afflicted may recur causing tissue changes and requiring the rebuilding of the prosthesis. Tissue shrinkage in and around the area of a defect can be a cause for redesigning or replacing a prosthesis.

A soft prosthesis made of a vinyl material is the one of our choice. Used successfully for a considerable number of years, this is one of a limited number of useful materials for making a soft prosthesis. Like other plastics, the vinyls have important disadvantages along with advantages. With age, the prosthesis gradually darkens. Flexibility and elasticity diminish. The changes in the plastic are due to the gradual drying out of the plasticizer. Once started this change continues progres-

sively during exposure to the sun and air, limiting the useful life of the prosthesis.

The types of soft plastic molding materials that are currently useful for making soft facial prostheses are listed below in the order of their importance:

1. polyvinyl chloride;
2. vinyl elastomers;
3. soft methylmethacrylates;
4. silicones.

The soft acrylics and silicones are in need of further improvement for use in this field of fabrication. There is little doubt that this will take place in the future, and experimental work in the use of these plastic materials continues.