



4926 E Yale Ave, Suite 102 • Fresno, CA 93727-1561

(559) 252-1770 • (559) 252-1781 Fax

www.ddanzandsons.com • Email: customerservice@ddanzandsons.com

THE NECESSITY OF AN ARTIFICIAL EYE

1. DO NOT PLACE THE OPHTHALMIC PROSTHESIS (ARTIFICIAL EYE) IN MOUTH; COULD CAUSE CHOKING AND/OR DEATH.
2. DO NOT PLACE/ALLOW THE OPHTHALMIC PROSTHESIS (ARTIFICIAL EYE) TO COME IN CONTACT WITH ALCOHOL OF ANY FORM. ALCOHOL WILL ABSORB INTO AND CAUSE CRAZING IN THE PROSTHESIS WHICH WILL CAUSE IRREPARABLE DAMAGE.
3. IF THE PROSTHESIS CAUSES PAIN, REMOVE PROSTHESIS AND RETURN TO YOUR OPHTHALMOLOGIST AND/OR PHYSICIAN IMMEDIATELY.
4. HANDLE WITH CARE. IE: DON'T DROP, SCRATCH, SCRAPE, OR THROW THE PROSTHESIS. KEEP AWAY FROM SOLVENTS AND CHEMICALS, WHICH CAN BE ABSORBED INTO PROSTHESIS.
5. LIFE EXPECTANCY OF AN OCULAR PROSTHESIS IS 4.8 YEARS.
6. PROSTHESIS CAN BE MODIFIED UP TO TWO (2) YEARS FROM DATE MANUFACTURED.
7. PROSTHESIS SHOULD BE POLISHED BI-ANNUALLY BY A TRAINED PROFESSIONAL.

MATERIALS & NOMENCLATURE OF ARTIFICIAL EYES

MATERIALS. Although fabricated from many different materials in the past, at present, all artificial eyes are composed of acrylic (methylmethacrylate resin). This transparent material is tinted and colored by metallic oxides to the desired colors by manufacturers or the ocularist.

METHODS & PROPERTIES. Acrylic artificial eyes are molded and may be altered or shaped; they also may be made larger by the addition of new plastic. Plastic artificial eyes may be polished when needed and, under normal circumstances, are unbreakable.

CUSTOM MADE & STOCK. It is important to differentiate between custom made and stock artificial eyes. Custom made or made-to-order artificial eyes are recommended for the majority of artificial eye wearers. Because the individual characteristics and physical requirements of the patient are taken into consideration, custom made artificial eyes of either plastic or glass will provide the patient with more comfort, mobility, and a superior cosmetic result. Stock artificial eyes of either material are “ready-made” or taken out of stock. Many of these are mass-produced and are an attempt to standardize size, shape, iris color, etc., which often is not possible. Stock artificial eyes are less costly and are generally less satisfactory.

There are many purposes for the wearing of an artificial eye following enucleation and some of the more obvious reasons might be stated as follows: 1) Support of the eyelids; 2) the replacement of weight and volume and aid to muscle tonicity of the facial muscles; 3) the promotion of drainage from the orbit and the reduction of orbital secretions 4) cosmetics and psychological well-being of the patient.

BACKGROUND AND QUALIFICATIONS OF THE TECHNICIAN

In almost every case the ocularist will be a member of the American Society of Ocularists, which is an organization of specialists in this field. At least 5 years of full-time practice in the production and fitting of artificial eyes are required, including recommendations from 5 sponsoring ophthalmologists. The approval of the membership is also required and each applicant must fulfill the requirements of the Examining Board before being considered for the American Society of Ocularists.

Because of the limited and specialized nature of this type of work, there is no formalized training in this country for those entering the field. As a consequence, most technicians acquire their skill and experience through 10,000 hours of apprenticeship under the tutelage of a Board Certified Ocularist *NEBO. College training and supplemental technical courses are becoming increasingly expected of the ocularist, something not true in the past.

The ocularist is expected to know the gross anatomy of the eyeball and its associated structures as they apply to procedures of enucleation, evisceration, and exenteration. He should know the types of orbital implants employed by the eye surgeon as well as being familiar with the fitting techniques of microphthalmia, anophthalmia, disfigured eyes, and other anomalous conditions. Finally, an acceptable aseptic technique should be followed by the ocularist when handling the patient.

SPECIAL INFORMATION FOR THE OPHTHALMOLOGIST

PROBLEMS OF THE ARTIFICIAL EYE WEARER. Some of the major problems encountered might be described as follows; *

1) Excessive shrinking of orbital tissues; 2) retraction of upper lid sulcus; 3) ptosis; 4) chemosis of conjunctiva; 5) loss of upper fornix; 6) orbital cellulites and marked edema of lids; 7) sagging of lower lids; 8) obliterated lower fornix; 9) displaced implant; 10) adhesions.

Needless to say, when these conditions are not of a medical nature, the treatment of these problems will depend a great deal on the ability and ingenuity of the ocularist, and on the absence of the limiting factors already mentioned.

SPECIAL EFFECTS. The patient may make the artificial eye less noticeable simply by avoiding extreme eye movement and by learning to turn the head and shoulders instead of the eyes. Glasses with a rather heavy frame will help to distract the attention of any observer and will also help to cover an upper sulcus depression if present. Tinted lenses will sometimes improve the cosmetic effect. In patients where it has been impossible to achieve a correct palpebral fissure on the affected side, a carefully prescribed plus or minus lens over the artificial eye will produce a balance that cannot be obtained otherwise.

IMPRESSIONING. Most cases are impressioned for maximum conformation and contact with the tissues of the eye socket. In this way, space is filled in, eliminating fluids that ordinarily would accumulate behind the artificial eye, and, what is even more important, maximum integration is effected with the ocular muscles and implant. Impressions should be used except in rare cases where the impression will not be useful. This is a judgment the ocularist must make in these rare cases an Empirical fit is necessary.

Trimmed



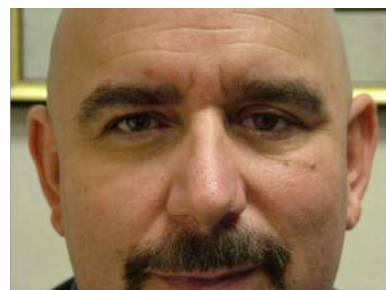
Polished



**Sterilized/Antiseptically
Cleaned**



Delivered to Patient



Once the patient has been presented with the completed custom artificial eye; a brief instruction is given to properly inform the artificial eye wearer/responsible caregiver proper handling of the artificial eye and instruction on hygiene. Each artificial eye wearer/responsible care giver must prove by example their ability properly remove and insert the artificial eye in front of the ocularist before being released from the office.

The patient is given a follow up appointment 6-8 weeks later, and referred back to the ordering physician. **ALL** patients receive the following items (*when a new prosthesis is created*):

- A plastic jar is provided for storage.
- Custom conformer, to be used as emergency back-up.
- Latex rubber suction cups. (*A tool for removal/placement of prosthesis.*)
- Lubrication, eye drops.
- Necessity of an artificial eye booklet.

1. Leave the prosthesis in and leave it alone.

The more it is handled, the greater chance of excess mucus and irritation.

2. Wipe the prosthesis in and up; temple toward nose.

Wiping down and out could dislocate or dislodge prosthesis.

3. Do not place the prosthesis in alcohol.

This will ruin the prosthesis on contact!

4. Do not place the prosthesis in any person(s) mouth.

This could cause choking and possible death.

5. When handling the prosthesis use clean hands.

Use common sense to alleviate irritation or infection.

6. Mucus and orbital secretions are generally remnants of aqueous fluid used to lubricate artificial eye, eyelids, and socket. Three components to tear production:

1. Mucus

2. Oil

3. Water

Remember that while you sleep most eyelids do not close completely, and aqueous film will dry on the surface.

7. If modification is required due to orbital change, which is related to edema and/or recession of orbital tissues, within a six month time period of when the ocular prosthesis is made, there will be an additional charge, as will cleaning and polishing. If changes are made which are solely for the cosmetic appearance of the ocular prosthesis, IE: color veining, etc., there may be a minimal charge.

SPARE PROSTHESIS. Spare artificial eyes are generally not necessary, and are expensive. Artificial eyes are occasionally lost or destroyed. Being without an artificial eye, even for a short period of time can cause orbital irritation more importantly it can cause orbital contraction which may cause the patient a great deal of anxiety and may force surgical procedures to be necessary. If the artificial eye wearer has been wearing an artificial eye over a period of years, it is very likely they will have an old artificial eye; this should not be used due to possible bacterial growth in the plastic. For this reason a clear custom conformer should be provided with each artificial eye.

ADVISABILITY OF NIGHT PROSTHESIS. The usual artificial eye made for both day and night wear will have a pupil range of 3 to 4 millimeters (with the exception of children). An effective pupil size for the night artificial eye should be near 7 or 8 millimeters and the individual patient can be tested in varying degrees of darkness. The discrepancy of the pupil, especially in a light-colored artificial eye, is a problem to which there is no complete answer; however, if the patient wishes to go to the expense of a night artificial eye, this can be a partial solution.

STORAGE OF PROSTHESIS. Plastic artificial eyes should be stored in a water-tight container of distilled water or sterile saline to avoid drying out and subsequent delamination. Storage for long periods in strong solutions should be avoided because of the possibility of absorption** of these agents.

* Bethke, E.G.: Criteria & Guide for Evaluation of Ocular Prostheses. American Journal Opth. Vol.35. Not 4, 4/52

** Water absorption of methylmethacrylate – 0.3 to 0.5, 24 hours at 25 degrees Centigrade

CARE OF THE PLASTIC PROSTHESIS

CLEANING OF PROSTHESIS. The frequency of cleaning the artificial eye is one area in which many doctors do not agree. Many eye doctors will instruct the patient to remove the artificial eye at regular intervals for cleaning, perhaps once or twice a day. Others hold the view that handling the artificial eye only when necessary will minimize the chance of infection, resulting in less discharge and build-up of eye secretions. What invariably happens is that the patient will find the best compromise in his/her own case.

POLISHING OF PROSTHESIS. Plastic artificial eyes should be polished by the ocularist bi-annually or more often if a special condition is present (excessive discharge, poor eyelid action). Polishing not only cleans the surface but brings back the luster that will provide a more realistic appearance to the plastic artificial eye.

ENLARGEMENT OR BUILD-UP. Plastic artificial eyes may be enlarged or to some extent changed in shape by the addition of new polymer. This procedure is most often used in new cases, especially at some time the first year following enucleation when a great deal of tissue recession is to be expected. There is a risk in subjecting artificial eye that are 2 years old or more to the pressures needed for this procedure due to structural weakness of the older artificial eye; also, new plastic does not bond well to older, saturated material.

METHOD OF CLEANING. The plastic artificial eye may be washed in mild soap and water by rubbing the surface with a soft cloth. This will remove most of the surface accumulations and reduce the irritation to the eyelids, which is a common complaint of the artificial eye wearer. If the artificial eye shows a dull film or encrustation, it may need polishing by the ocularist.

Cleaning of the artificial eye with agents containing abrasives (cleansers, polishing compounds) should be avoided. Sterilizing agents such as alcohol, Lysol, iodine (staining only) and other chemical solvents will attack the acrylic plastic. Boiling or autoclaving should not be attempted.

REMOVAL OF PROSTHESIS AT NIGHT. Removing the artificial eye at night is not generally recommended except for patients with special problems. Before the advent of the plastic artificial eye most eye doctors advised the patient to remove the artificial eye at night, the theory being that it was necessary “rest” the tissues of the eye socket and also that the artificial eye would last longer. The artificial eye was generally made of glass and was not as well fitted as today. In view of this, this was very good common sense for the time; however, today, the greater number of patients do not follow this practice. If removed, the artificial eye should be kept in distilled water or sterile saline so that the eye secretions will not dry on the surface.

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Revision 2008

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The following pages are provided to show the process to make an ocular prosthesis from start to finish.

To make a single custom ocular prosthesis from lab preparation to completion is approximately 50.5 hours.

Step-by-step custom ocular prosthesis procedure:

1. Verbal history is discussed.
2. A visual inspection of the orbit takes place.
3. A template or fitting stent is used to enable impression procedure.



IMPRESSION TAKEN



PLASTER MOLD CAST

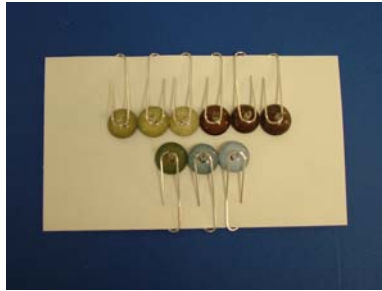


Orbit is then cleansed to remove any foreign matter.

Custom conformer produced and placed in orbit.

If you have an existing prosthesis it of course will be cleaned, polished and placed back into the socket.

Custom Iris stent then selected & prepared.



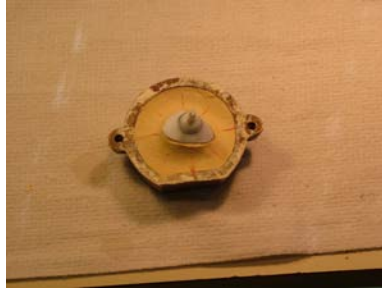
The plaster mold is then spaced and the wax fitting stent is poured.



The wax fitting stent and iris stent are then incorporated & shaped.



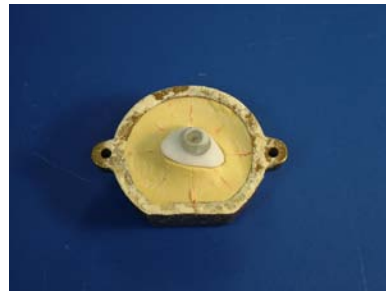
This is done so we can control sagittal depth of iris and control iris positioning IE: angle of gaze, alignment and fullness.



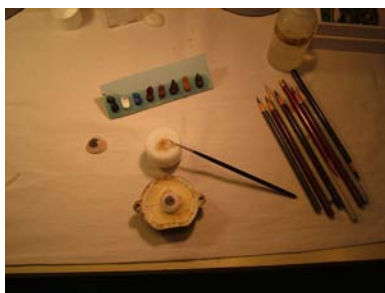
A new top is then poured to secure iris position.



Then the iris is invested in plastic, processed & burred.



Painted



Cleared



Processed

