legal as well as safe. If you meet standards to drive in your state Singular Vision Outreach (SVOR) and TOC Eye and Face hope that you will find the following tips helpful.

Devices for the automobile available from the dealer, local auto part stores, or online:

- **Convex bubble mirrors** can be a valuable addition to a side-view mirror; especially on trucks and vans. Be aware that objects viewed are closer than they appear in such mirrors.
- Obtain **panoramic rear view mirrors** that offer multiple or wide angle views behind the vehicle.
- **Back-up warning beepers** can be installed to alert others that your car is in reverse.
- Clear plastic **prism lenses**, mounted in the rear window, allow the driver to view nearly straight down behind the vehicle.
- If purchasing a new car consider a **rear view camera, front and rear acoustic parking sensors**, and **side assist blind spot sensors** as important safety options.
- Items such as **hood ornaments, hoods with a center ridge**, and **antennas** can be used as reference points on your vehicle to aid in lane position, locations of curbs, etc.
- Use **double or triple bladed windshield wipers.**
- Have a **rear window wiper** and **defogger.**
- **Liquid window treatments** that repel water, such as **Rain-X®,** can be applied to windshields to reduce "beading' and to aid in water removal.
- **Quartz halogen** or **LED headlamps** for increased night visibility.
- Equip motorcycle helmets with a **bubble-type facemask.**

Hints for driving and parking:

- To enhance depth perception, as in viewing a photograph, consider larger objects as closer than smaller objects.
- Objects that rapidly increase in size are getting closer. Slow down!
- To maintain safe distances, be able to see the pavement between the hood of your vehicle and the rear bumper of the vehicle in front of you.
- Never switch lanes without turning your head. If you are unsure of what is in your blind spot, avoid lane changes.
- Stay in the middle lane of the highway to avoid merging with exiting traffic on your right. For those who have lost vision on the left, travelling in the far left lane can eliminate concern for cars on your limited-sighted side. Be sure; however, that you follow the law regarding lane travel.
- Enlist the help of your passengers as spotters when navigating difficult driving situations.
- Leaving windows slightly open can enable the driver to hear cars before they can be seen.
- Use a point of reference when pulling into a garage. For example, paint a mark on the side of the wall or use a window for a guide.
- When parallel parking, sight the parking meter in your rearview mirror and use it as a reference point.
- If use of mirrors is difficult when parallel parking, turn and raise your body to view the rear of the car when backing up.
- Know your vehicle's capabilities and limitations. Avoid dangerous situations.
- Avoid having tinted or smoked glass windows on your vehicle.
- Keep windows and windshields clean and clear.
- Keep wipers in good condition and the washer fluid tank full.
- Do not put decals on windows.
- Do not hang items or decorative devices from the rear view mirror.
- Avoid drinking from a glass or cup while driving. If you do drink, use a straw.
- Slow down early for stop signs and traffic signals.
- Travel on well lighted streets.

CONCLUSION

This brochure is intended as an introduction to artificial eyes and living as a monocular patient. More information can be found at **www.artificialeyes.net, www.asingularview.com,** and **www.austinocularprosthetics.com.** You can also visit our website at **www.toceyeandface.com** or call to schedule an appointment with one of our TOC surgeons.

TOC EYE AND FACE

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ARTIFICIAL EYES AND LIVING AS A MONOCULAR PATIENT

TOC EYE AND FACE

Information Series

OCULOFACIAL PLASTIC SURGERY

Oculofacial Plastic or Ophthalmic Plastic Surgery is a surgical subspecialty of Ophthalmology that seeks to improve physical appearance and function, or minimize disfigurement resulting from accidents, disease, or birth defects. The word plastic comes from the Greek meaning "molding" or "giving form".

GENERAL INFORMATION

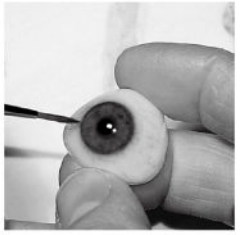
Anophthalmia is the medical term given to a patient who has lost an eye from trauma, surgery, or disease. Enucleation and evisceration are procedures to remove an eye. The muscles and other tissues around the eye are not removed and remain behind. Following enucleation or evisceration, the remaining tissue forms a pocket called the socket. This brochure explains the condition anophthalmia and wear of an artificial eye *(ocular prosthesis)*.

The loss of an eye from injury or other causes is unpleasant and emotionally upsetting. After an eye has been removed, inability to wear an artificial or prosthetic eye comfortably or with a pleasing "natural" look can make this transition even more difficult. In order to wear an artificial eye successfully, a person must have firm, healthy eyelids to retain the prosthesis, and spacious mucous membrane pouches, called fornices, behind the eyelids. The fornices are the areas of the socket in which the artificial eye rests. Also necessary is an *orbital implant*, which must be of adequate size to replace the volume of the removed eye, the goal being to prevent development of a "sunken" appearance to the artificial eye. The orbital implant is fixated deep in the orbit at the time the eye is removed and cannot be seen following surgery. The orbital implant also imparts movement to the artificial eye. The implant may be either a plastic or, in some instances, fatty tissue transplanted from other parts of the body. Newer implants include porous material that allows the body's tissue to grow into the middle of the implant, thus increasing stability and improving motility.

Artificial right eye

FITTING THE NEW ARTIFICIAL EYE (OCULAR PROSTHESIS)

Following socket surgery of any type, a person will need to be fitted with an artificial eye or ocular prosthesis by an *Ocularist* (a highly trained professional specializing in the manufacture of artificial eyes). Fortunately we have one of the very best ocularists in Texas right here in Austin. We usually advise waiting one month or slightly longer before being fitted by the ocularist. We check the socket prior to the fitting to be sure the time is right for the work to be done. Occasionally a patient's original ocular prosthesis can be revised to fit the new socket.



Painting ocular prosthesis

CARE OF THE ARTIFICIAL EYE AND SOCKET

We recommend the ocular prosthesis be removed no more than once a month for cleaning. The mucous from the socket is removed with a mild, water rinse. Alcon® Eye-Stream®, Bausch & Lomb Advanced Eye Relief® Eye Wash, or contact lens solutions are good products for this purpose, although your Ocularist may have other suggestions. They are available without prescription in most pharmacies. The ocular prosthesis can be cleaned with lukewarm water and OCuSOFT® Hand Soap or Johnson's® Baby Shampoo. It can be buffed with a very soft cloth and then replaced in the socket. The prosthesis should never be cleaned with an abrasive or alcohol based substance. Those who wear artificial eyes may benefit from an artificial teardrop two to three times per day. The drops keep the surface of the artificial eye well lubricated, maintain comfort, and give the eye a more normal luster. The ocular prosthesis should be polished by the Ocularist every 6-12 months to remove protein deposits that build up on the back of the prosthesis. It is recommended that an ocular prosthesis be replaced with a new prosthesis by your Ocularist every 5-10 years.

PROBLEMS ASSOCIATED WITH ANOPHTHALMIA AND ARTIFICIAL EYES

Drooping of the upper eyelid (ptosis): Over time the upper eyelid may start to droop causing ptosis. Ptosis can occur in any patient as they get older, but can often occur in individuals with artificial eyes because of orbital soft tissue settling or stretching of eyelid muscles at the time of the original injury. Mild ptosis can be corrected with enlargement of the prosthesis by the Ocularist. More often the ptosis is corrected surgically by strengthening and tightening the upper eyelid muscle.

Sagging lower eyelid (ectropion): As time passes, following removal of the eye, the weight of an ocular prosthesis can cause sagging of the lower eyelid. Sagging in turn leads to socket discharge, tearing, and discomfort. In most cases the tendon that holds the eyelid to the surrounding bone can be tightened bringing the lid back up against the ocular prosthesis.

Contracture or shrinkage of the fornix or socket:
The fornices are the spaces or pouches behind the upper and lower eyelids. Of these, the lower fornix is the most important because without it, a person cannot retain an ocular prosthesis. The upper fornix is important also, but to a lesser degree. The upper fornix allows for blinking and closure of the eyelid over the top of the prosthesis. For a variety of reasons, the fornices can "shrink" or contract. The initial injury or reason for removal of the eye may play a role. Infection of the socket or irritation from a poorly fitting artificial eye may also be a factor. Contraction also occurs if an ocular prosthesis or conformer is not worn for an extended period of time. When contraction or loss of the fornix occurs, it can be reformed surgically. In cases where there has been loss or severe shrinkage of tissue, a thin graft of mucous membrane taken from the mouth can be used to reconstruct the fornix. Most people can eat normal meals within a day of surgery. The mouth heals rapidly (within one to two weeks). Following surgery the socket is splinted with a plastic *conformer* or "spacer" in the shape of an ocular prosthesis. This allows the eye socket to heal and retain or achieve the proper shape. The eyelids are generally sutured together over the conformer for one or more weeks.

Secondary replacement of a socket implant:
The orbital implant that should stay buried deep in the socket may *migrate,* become exposed, or even extrude from the socket. This occurs for a variety of reasons including infection, damage to the socket tissue that weakens the ability of the tissue to hold the implant, and chronic pressure from the overlying ocular prosthesis. Migration is the tendency for an implant to shift in position within the tissues of the socket. Exposure and then extrusion occurs when the implant shifts and breaks through the tissue holding the implant in place. Orbital implants can be successfully replaced with a new implant soon after extrusion, or years later if desired. The implant is positioned in the space between the eye muscles and behind the mucous membrane of the socket. Replacement of an implant can dramatically improve the sunken appearance of an artificial eye that develops in patients following extrusion. In some cases it is better to place the patient's own tissue, such as a dermis-fat graft, to replace lost orbital volume or to expand the fornices in order to wear a larger prosthesis. *Dermis-fat grafts* are usually taken from the upper buttocks or abdominal area.

Sunken appearance *(enophthalmos)*: As time passes, tissue in the anophthalmic orbit settles to some degree. This may result in the development of a "sunken" appearance to the artificial eye and socket. We term this sunken appearance enophthalmos. Enophthalmos is most evident in the upper eyelid where a deep sulcus or furrow forms. This settling and loss of volume in the orbit can be corrected by adding plastic material, bone grafts, or other implants to the orbit. The tissues of the orbit then move forward and eliminate, as much as possible, the sunken appearance. Socket augmentation for the correction of enophthalmos can also be accomplished with larger orbital implants or dermis-fat grafts. A non-surgical option might include the injection of soft issue fillers into the orbit and/or upper lid hollow.

DRIVING TIPS FOR THE MONOCULAR PATIENT

Many of our patients who have lost an eye or have lost vision in one eye are concerned about their ability to drive. Of course, the decision to drive is a personal one. Before you make the decision, you should ask your physician and check with the Texas Department of Public Safety, or the Department of Motor Vehicles of your state, to see if you meet the eligibility criteria to drive. You want to be sure you are