



OCULAR PROSTHETICS

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Artificial eyes can be dated back to approximately 2500 BC, during the Egyptian Fourth through Sixth Dynasty. At this time artificial eyes were used in the mummification process and were made of gold, silver, marble and other luxurious materials. There is also evidence that artificial eyes were present in Ancient Rome, Greece and China, but it was a French surgeon, Ambrose Paré, who in the mid-1500's was a military surgeon and was the first to document the use of artificial eyes in humans. He first made eyes of glass, but during WWII, there was a shortage of glass and other materials were experimented with, such as gold, silver and porcelain.

It is said that during in 1944, a dentist created an acrylic eye for his son. His theories that this new material was more resistant to scratches, breakage and attack by lacrimal secretions were proved true and W.D. Barker continued to develop his ideas and soon was able to produce large quantities of eyes by making half spherical eyes pressed in molds and hand painted. Today, 99% of ocular prosthetics are made of an acrylic plastic. Only in cases of irritation due to allergies to plastics or as an attempt to cure reoccurring conjunctivitis will an artificial eye be made out of glass.

GLASS EYES

Usually have to be replaced every 12 months.
Socket Secretions and tears will scratch the surface of the glass eye creating imperfections that cannot be polished off.

ACRYLIC EYES

Can be cut, polished and adjusted for comfort.
The color is more easily matched to the existing eye.
They do not shatter like glass eyes and are easier to care for.

ENUCLEATION – Removal of the Eyeball

This operation has been around since the 1500's, but was not in general practice until the mid 1800's with ocular/orbital implants introduced in the late 1800's. The process of enucleation begins with anaesthetizing the eye in order to ensure the absence of pain during the operation. Each person has a thin layer of material called the conjunctiva that covers the front of the eye. This layer is removed before removal of the eyeball so that it can later be placed over the orbital implant. The extra-ocular muscles are detached from the globe/eyeball and the optic nerve is clamped and severed, thus allowing the globe to be removed. Once the eyeball has been taken out, in most cases, an orbital implant is inserted and the muscles are reattached, allowing for movement. A layer of tissue, the Tenon's Capsule, is inserted to separate the implant from other orbital tissue. Also other surrounding tissues and the conjunctiva are placed

around and over the implant, therefore creating the new "socket" which will later hold the artificial eye. A clear oval shaped plastic shell is worn in the socket during the 6-8 week healing period.

TYPES OF OCULAR PROSTHETICS

The Half Sphere

Also called a "stock eye", this artificial eye is a prefabricated light-weight eye made of Poly-methyl-methacrylate, or Acrylic Plastic. It is a half globe that is carefully cut, shaped, ground and polished to size. It is available in various sizes with varying Iris and Sclera colorings. This eye is generally used as the first prosthesis after an eye has been removed; therefore it is not completely customized to the individual. Once the closest match has been determined, the Half Sphere is cut and shaped – during the production of the eye, the Half Sphere can be tried on in intermediate stages in order to make any necessary adjustments. Once the fit has been perfected, the eye is polished with a special compound to ensure a smooth surface.



The Mold Eye

This is considered the ideal artificial eye because it is produced specifically for each patient. In order to customize the fit of the Mold Eye, an impression tray is inserted between the person's eyelids and a liquid mixture is injected which sets to a rubbery consistency in 90 seconds. This impression is cast into plaster of paris which creates a mold in which the prosthetist pours a special wax to create a wax model of the artificial eye. The model can be carved, smoothed and rounded and tried by the patient to assess shape, curvature and also the appearance of the eyelids. Once any alterations have been made, the actual plastic eye is cast and hand painted in front of the patient to ensure matching eyes. This artificial eye has more obvious movement than the Half Sphere because it fits the patient's socket exactly, therefore detecting more of the muscle movements seen in the socket. Another benefit of the Mold Eye is the typical moisture, or secretions from the socket, which can gather and get trapped behind the Half Sphere, will have less of a build up behind the Mold Eye because it has a closer fit. Overall, the Mold Eye is the best achievable fit and most natural and lifelike in appearance.