

Management of Acquired Ptosis of a Patient with Ocular Prosthesis Using Ptosis Crutch Mounted to A Spectacle Frame: A Clinical Report.

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ABSTRACT

This paper deals with the Management of a patient with Anophthalmic socket having acquired ptosis following Scleral shell prosthesis placement managed using a ptosis crutch glass.

Introduction

Ptosis is a drooping of the upper lid, which is usually due to weakness, deficient development or absence of the levator palpebrae superioris muscle. The normal upper lid rests approximately 2 mm below the upper limbus when the eye is looking straight ahead. The lower lid normally rests 1 mm above the lower limbus. The palpebral fissure for adult males is between 7 and 10 mm and for females it is 8 to 12 mm. According to **Coles**¹, ptosis (bilateral or unilateral) may be (i) congenital when it is present at birth, or (ii) acquired when it develops after birth. Acquired ptosis may be a) senile or age related, b) a result of oculomotor (third nerve) palsy, c) due to intracranial tumor, or d) a result of trauma, as in intraocular surgery, e.g., after cataract surgery. Pseudoptosis can be simulated in a small globe due to injury or inflammation resulting in an abnormal Drooping of the upper eyelid (upper eyelid ptosis) may be minimal (1–2 mm), moderate (3–4 mm), or severe (>4 mm), covering the pupil entirely.

Ptosis can affect one or both eyes. Ptosis can be present at birth (congenital) or develop later in life (acquired). Ptosis may be due to a myogenic, neurogenic, aponeurotic, mechanical or traumatic cause. Risks of ptosis surgery infrequently include infection, bleeding, over- or under correction, and reduced vision. Immediately after surgery, there may be temporary difficulties in completely closing the eye. Although improvement of the lid height is usually achieved, the eyelids may not appear perfectly symmetrical.

But, in cases where surgery is not preferred or indicated as in elderly patients, a prosthetic device such as a ptosis crutch is often of great value. Till recently, in India, a small semi-circular piece cut from the periphery of an old gramophone record used to be glued to the inside of the upper portion of a plastic spectacle frame to lift and support the drooping upper lid. But the device was not cosmetically appealing and was also not comfortable. Moss⁴ reports on

the method of relieving ptosis with the use of a scleral contact lens. Either the superior flange of the shell is built up by increasing the mass, which will move the upper lid and improve ptosis, or a shelf is placed across the upper section of the scleral lens to support the upper lid. Moss also details the making of an improved crutch by utilizing steel orthodontic round wire of spring tempered quality and fixing it to the bridge of a modern plastic spectacle frame to improve cosmesis and give greater movement to the upper lid. The procedure is cumbersome and needs precision. A comparatively easier method of making a ptosis spectacle is by fixing support⁵ made of non-conspicuous nylon thread that is sturdy and comfortable, to a plastic frame. Sun et.al also described the use of 3D printing to customize the crutch and reduce the adjustment phase⁶.

Case Report

A 26-year-old male patient reported to the Department of Prosthodontics with the chief complaint of a non-motile artificial eye in his right socket (**Fig. 1**).



Fig. 1

He lost his right eye in a road traffic accident a year ago and has been wearing the scleral shell prosthesis ever since. Examination revealed enucleation of the right eye with a healthy socket mucosa. Evaluation of the socket depth was deemed enough to retain an acrylic orbital implant followed by a scleral shell prosthesis for optimal fit and aesthetics. The Ophthalmologist then carried out the peritomy surgery by opening the conjunctival sac and tenon's capsule under local anesthesia and placement of the 18 mm acrylic implant. The conjunctival sac was then closed with 5-0 vicryl sutures. The eye was then patched up and post-operative antibiotic coverage was prescribed. The patient was then recalled after an 8-week period for the fabrication of the ocular prosthesis. On examination after 8 weeks, the post-operative healing was deemed satisfactory and there were no signs of implant extrusion. The patient was then prepped for the impression procedure for the ocular prosthesis. Petroleum jelly was applied to the eyebrow, eyelashes and skin around the socket to prevent impression material from sticking to them. A thin mix of alginate impression material was mixed and loaded in a 2 ml plastic disposable syringe. Impression material was slowly injected into the socket. The impression was carefully removed from the socket, checked and invested in type III gypsum stone to make a two-part mold. Molten wax was poured in the mold to obtain the scleral wax pattern. It was tried in the patient and checked for proper contour and retention while performing the various eye movements. For iris positioning, the patient was asked to maintain a straight gaze at an object kept 6 feet away. Shade was selected as per the

patient's normal eye sclera. Flasking was done in a two-part metal flask followed by dewaxing, packing and curing. The retrieved prosthesis was trimmed, polished and inserted. Prior to insertion of the finished prosthesis, it was disinfected using 70% isopropyl alcohol and 0.2% Chlorhexidine solution. After thoroughly cleaning the prosthesis with saline solution to prevent chemical irritation, it was inserted and checked for fit, contour and movements.



Fig. 2

The eyelid of the right eye presented with ptosis and the patient was not pleased with his appearance (fig.2). It was then decided to use ocular crutch glasses which are regular eye frames with a nylon wire embedded into the superior rim in a semicircular fashion on the medial and lateral borders (Fig.3).



Fig. 3



Fig. 4



Fig. 5

This contraption would push the eye lid (Fig.4) and thereby create symmetry in the opening position of the eyelids (Fig.5). The limitations of using this crutch is the inability of the patient to be able to blink his eyelid on the affected side.

Discussion

The use of ptosis crutch can correct or provide considerable improvement of ptosis following ocular prosthesis. There is a startling cosmetic improvement with a definite emotional impact for the patient along with the possibility of a prolonged functional improvement because of mechanical stimulation of the eyelid⁷.

REFERENCES

1. Coles WH: Ophthalmology – A Diagnostic Text. 1989. Williams & Wilkins, Baltimore, U.S.A.
2. Lyle TK, Cross A G: May & Worth's Manual of Diseases of the Eye. 1959. Bailliere, Tindall and Cox, London, U.K.
3. DeSouza R, Spencer DA, Coe A: Infant's photograph cited in Optometry Today (India), Vol. 18, No. 1, 1992.
4. Moss HL: Prosthesis for blepharoptosis and blepharospasm. J Amer Optom Assoc 1982; 53: 661-667.
5. Ptosis spectacle is made/support is supplied by Optometry Today
kumars@vsnl.com
6. Michael G. Sun, Duangmontree Rojdamrongratana, Mark I. Rosenblatt, Vinay K. Aakalu & Charles Q. Yu (2019) 3D printing for low cost, rapid prototyping of eyelid crutches, Orbit, 38:4, 342-346
7. Walsh G, Rafferty PRM, Lapin J. A simple new method for the construction of a ptosis crutch. Ophthal Physiol Optics 2006; 26(4): 404-407.

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