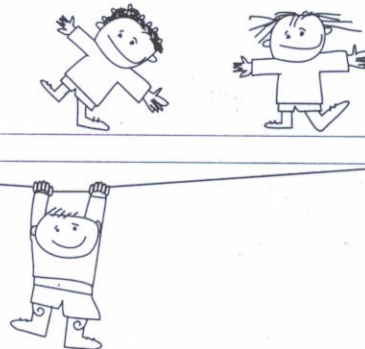


Short Subjects



Botulinum A Toxin Treatment of a Deviated Orbital Implant

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ABSTRACT

We report a case of progressive deviation of an implant that resulted in conjunctival thinning and an inadequately fit prosthesis. Such a case may have been treated with conjunctival grafting or replacement of the implant with an hydroxyapatite sphere. In this case, injection of botulinum A toxin (Botox) into the contracted medial rectus muscle contributed to the successful refitting of a new and stable prosthesis and improvement of the conjunctival integrity. Possible explanations of the progressive shift in the position of the implant and its postinjection stability are discussed.

INTRODUCTION

We report a case of progressive deviation of an implant that resulted in conjunctival thinning and an inadequately fit prosthesis. Such a case may have been treated with conjunctival grafting or replacement of the implant with an hydroxyapatite sphere. In this case, injection of botulinum A toxin (Botox) into the contracted medial rectus muscle was proposed as a simple and safe method to obtain a shift in the position of the implant, hence sparing of conjunctival dehiscence and allowing successful refitting of a new and stable prosthesis.

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CASE REPORT

A 38-year-old man presented with progressive tilting of his buried wire-mesh-covered spherical implant 30 years after enucleation following a traumatic injury to the left eye. Progressive medial rotation of the implant was noted in office records for several years, eventually precluding a comfortable and cosmetically acceptable prosthetic fit (Fig 1). Preinjection motility examination with the prosthesis in place showed approximately 25 Δ of left esotropia. Attempted forced duction testing was inconclusive. Slit-lamp microscopic examination of the tissues overlying the most anterior edge of the implant revealed an area of conjunctiva approximately 1 cm in diameter that appeared to be extremely thin and tenuous. The thinning appeared to progress over the course of several months in spite of modifications to the prosthesis. The mesh-covered spherical implant could be well visualized through this area of diaphanous tissue using slit-lamp microscopy. Five units of botulinum A toxin was injected into the left medial rectus using the standard procedure described by Scott.¹ One month following injection, the implant appeared permanently realigned toward abduction by approximately 10° and the previously thinned conjunctiva had thickened such that the implant was less well visualized. A modified prosthesis was fit comfortably and resulted in a more acceptable cosmesis with little change in its motility. Three years later, the patient remained comfortable, the conjunctiva regained its integrity, and the implant maintained its postinjection alignment (Figs 2 and 3).

DISCUSSION

Botulinum A toxin binds unmyelinated areas of the nerve terminal, paralyzing the muscle by inhibiting quantal release of acetylcholine. Although not as predictable and stable as traditional strabismus surgery, botulinum A toxin may be effective in treating specific types of strabismus including small angle deviations, sensory deviations, transient acute sixth nerve palsies, subacute dysthyroid

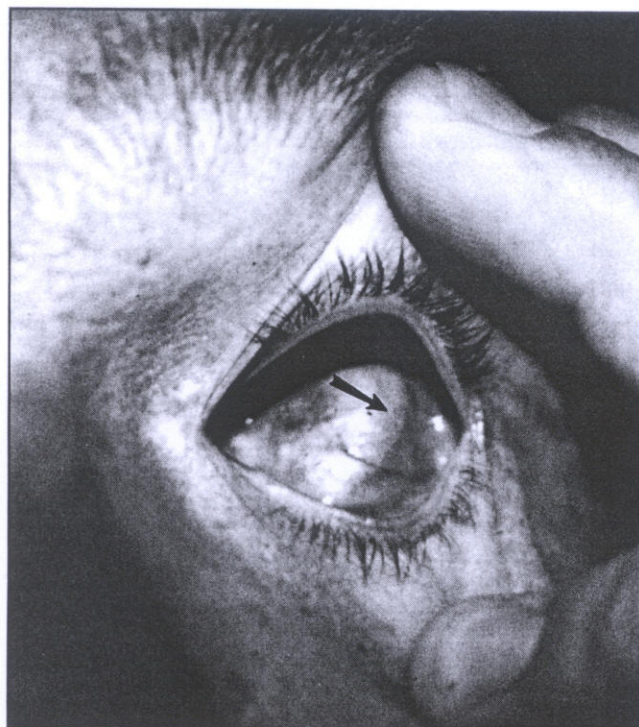


FIGURE 1: Preinjection photograph of the deviated orbital implant, left eye, taken in primary gaze. Arrow denotes the rim of the implant shifted medially. Wire mesh is not readily seen in photo.

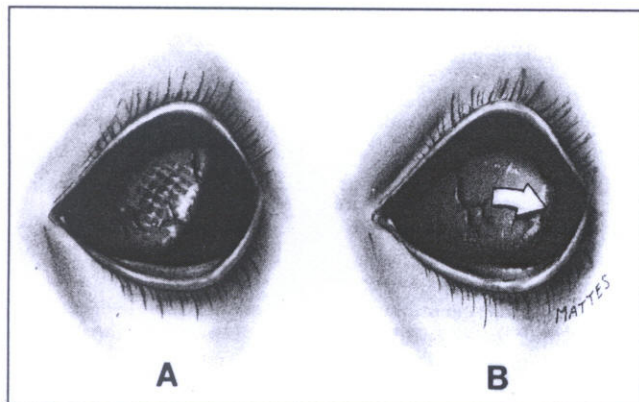


FIGURE 2: (A,B) Illustration depicting pre- and postinjection position of the orbital implant. Note improvement of the conjunctival integrity as seen by slit-lamp microscopy.

ophthalmopathies, overcorrections, residual deviations after strabismus surgery, strabismus following retinal detachment surgery, and cases of strabismus not amenable to surgical correction.²⁻⁴ Although at times requiring repeated injections, the advantages of botulinum A toxin over surgery are several, including its relatively low cost, ease of administration, and rapid postoperative recovery. Side effects of botulinum A toxin injections are ptosis (seen in one third of patients with medial rectus injections), transient diplopia, and transient vertical deviations (seen in larger doses).



FIGURE 3: Postinjection photograph of the orbital implant, left eye, taken in primary gaze. Arrow denotes the rim of the implant shifted laterally.

The progressive deviation of the prosthetic eye in our case may have several explanations, though little is known about the surgical technique employed in the enucleation procedure 30 years prior. It is possible that the medial rectus muscle may have been surgically repositioned more anteriorly than its preoperative position. Furthermore, the lateral rectus muscle may have been inordinately weakened or damaged during the surgery. Although excessive fibrosis of the horizontal recti muscles is unlikely, given the response to the botulinum A toxin injection, the wire-mesh-covered spherical implant could have migrated enough to contribute to the deviation.

In spite of the gradual deviation of the implant, this patient demonstrates the relative long-term oculomotor stability of an implant following enucleation. There is evidence that proprioceptive (nonvisual) knowledge of eye position exists for a prosthetic eye. Periorbital structures, including the extraocular muscles and retrobulbar fascia, contain receptors that may inform the brain about the orientation of the eye in its orbit.⁵ The application of botulinum A toxin in this case may have contributed to the reorientation of the proprioceptive mechanisms leading to realignment of the implant.

Clinical evaluation prior to the botulinum A toxin injection suggested the conjunctiva was thinning to the point of dehiscence. This appeared to be caused by a progressively deviated implant that precluded an anatomically stable prosthetic fit. In spite of adjustments to the prosthesis, it was felt that persistent friction overlying the thinned conjunctiva would inevitably lead to extrusion of the implant, requiring surgical reconstruction or

replacement.

To our knowledge, the use of botulinum A toxin in the treatment of progressive deviation and distortion of an ocular implant has not been reported. Compromise of the conjunctival integrity overlying an implant may necessitate reconstruction or replacement of the implant, in addition to conjunctival grafting. Prosthetic discomfort that precludes a proper fit may in itself lead one to consider surgical manipulation of the implant or eyelids. In this setting, we recommend consideration be given to the injection of botulinum A toxin into the appropriate

extraocular muscle.

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