CASE REPORT

Subconjunctival epithelial inclusion cyst complicating strabismus surgery: Early excision is better

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Abstract Epithelial inclusion cysts can occur following otherwise-uncomplicated strabismus surgery. Because of their tendency to grow posteriorly into the orbit, they should be monitored closely or treated when relatively small. We report and discuss an illustrative case.

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1. Introduction

Epithelial inclusion cysts can occur following otherwise-uncomplicated strabismus surgery. Because of their tendency to grow posteriorly into the orbit, they should be monitored closely or treated when relatively small.

2. Case report

In early 2008, a 10-year-old girl underwent an uneventful strabismus surgery in the form of 6.7 mm medial rectus recession in both eyes via conjunctival fornix incisions for a 55 prism diopters non-accommodative esotropia at near. The surgery was done under general anesthesia with sterile preparation and surgical draping. 6-0 vicryl suture was used to close both conjunctival incisions. Maxitrol ointment was applied in the superior fornix for both eyes at the end of the procedure and was prescribed to be used at bed time for one week postoperatively. First visit in the clinic was 7 weeks after surgery during which the slit-lamp examination was normal and there was a six prism diopters of esotropia at near with an excellent cosmetic result.

The patient’s second visit was 5 months after surgery. The parents had recently noted a bulging nasal to the cornea in the right eye only when their child looked in gaze left (Figs. 1 and 2). There was no pain or discharge. Globe position and movements were not affected by this mass. When the eye was in the primary position the mass was not apparent (Fig. 3). Subconjunctival inclusion epithelial cyst was considered the most likely diagnosis. Surgical excision was considered. Topical steroid (optipred 1% QID) was initiated and the patient was given a 4 weeks follow-up.

After one month of topical treatment, cyst excision was decided for cosmetic reasons as topical steroids had no effect. The cyst was excised in one piece (Fig. 4) and sent for histopathology. Before excision isolation of the right medial rectus muscle was performed and the cyst was found to originate from the external muscular surface about 2 mm proximal to the new medial rectus insertion and no pseudotendon was found.
Histopathology revealed a cyst measuring $7 \times 8 \times 11$ mm lined by a non-keratinized stratified squamous epithelium with few goblet cells (Figs. 5 and 6) as well as muscular tissue adherent to the external cyst surface (Fig. 7).

On first postoperative day the patient had no complaint, both eyes were straight and ocular movements were full and normal in all directions of gaze. Three months after the excision her exam remained stable.

3. Discussion

Subconjunctival cysts are infrequent complication of strabismus surgery and can present as late as 35 years after surgery.
A noticeable mass (as in our patient), strabismus, restriction of ocular movements, proptosis (when it grows posteriorly) or combination of these are the usual presentation (Kushner, 1992; Basar et al., 1998; Metz et al., 1999; Song et al., 2006; Curtis et al., 2006). If cyst infection occurs the patient can present with a subconjunctival abscess-like picture and preseptal cellulitis (Khan et al., 2007).

Subconjunctival epithelial cells implantation within the muscle (probably as in our patient) and/or within the scleral tunnel formed by the needle while suturing the muscle in its new scleral insertion is the most likely pathophysiology for cyst formation (Kushner, 1992; Song et al., 2006). During the primary surgery careful retraction of conjunctiva and Tenon tissue from scleral tunnels before tying can help to prevent cyst formation (Kushner, 1992). If the cyst originates from the scleral tunnel it can form between the muscle and sclera and as it grows it might detach the muscle from the sclera leading to the formation of a pseudotendon between the sclera and the muscle (Fig. 8). This pseudotendon can easily be mistaken for the muscle during surgery. Excising the cyst to which the actual muscle is attached will lead to a loss of the rectus muscle inside the orbit (Kushner, 1992; Basar et al., 1998).

Imaging in the form of orbital ultrasound or computerized tomography (CT) can be helpful in establishing the diagnosis as well as planning and performing the surgical excision especially in cases where the cyst cannot be seen clearly or entirely with slit-lamb examination (Song et al., 2006).

The indications for surgical excision include improving the cosmetic appearance, restoring the ocular alignment, release of ocular restriction, remove any pressure effect on the globe and infection (Kushner, 1992; Basar et al., 1998; Metz et al., 1999; Song et al., 2006; Curtis et al., 2006; Khan et al., 2007). Performing the surgery under the microscope is advisable in order to not mistaken the pseudotendon for the actual muscle (Basar et al., 1998). Thinning of the involved muscle and excessive scar tissue are expected intraoperative findings, especially with long standing cysts (Metz et al., 1999). Looking for muscular tissue in the pathology slides is important whenever a doubt exists whether the rectus muscle has slipped back into the orbit during cyst excision or not as well as when the patient develops a post operative strabismus suggestive of muscle slippage (Kushner, 1992). The presence of such muscle fibers in a case were a cyst originate from the outer surface of the rectus muscle is normal and expected.

Observing the cyst if it is small and not bothering the patient is acceptable; however, follow-up is mandatory. Small cysts tend to enlarge and extend posteriorly into the orbit and the larger the cyst the more difficult surgical excision will be (Metz et al., 1999). Small anterior cyst (less than 2 mm) can be treated on slit-lamb using a portable thermal cautery and local anesthesia, although the long term effect of such a treatment is not yet established (Hawkins and Hamming, 2001). Some clinicians suggest injection of the cyst with alcohol but this too has not been studied. We recommend treatment of any cyst with documented clinical or radiological growth.

References