Retroequatorial myopexy in the management of adult-onset cyclic esotropia

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A 65-year-old otherwise healthy female, with bilateral normal visual acuity, presented with a unique pattern of strabismus. She complained of esotropia and diplopia occurring after every 24 h. There was no history of previous injury or ocular surgery. Other differentials were ruled out and the patient was diagnosed as adult-onset cyclic esotropia. The patient underwent right eye medial rectus retroequatorial myopexy, which tackled both diplopia and strabismus, without causing exotropia on nonsquint days.

Key words: Cyclic esotropia, faden, management of cyclic esotropia and adult onset cyclic esotropia. retro equatorial myopexy, posterior fixation

Cyclic esotropia is a rare but interesting variety of strabismus with obscure pathogenesis.

The management is conventionally done according to the deviation on squinting days, but this can lead to a consecutive exo-deviation on the nonsquinting days. Hereby, we present a case of cyclic esotropia which was managed by retro equatorial myopexy of medial rectus and did not lead to a consecutive exo-deviation.

Case Report

A 65-year-old female patient presented to the squint clinic of a tertiary eye hospital with complaints of diplopia and esodeviation occurring every alternate day since the last 1 year, there was no history of trauma, previous ocular surgery, or any systemic illness. The cycles followed a fixed pattern of 24 h, which was confirmed during the patient’s stay at our center. On examination, the patient had a best-corrected visual acuity of 6/6 on both squint and nonsquint days. The deviations on manifest days were 35 prism diopter (PD) on prism bar cover test for both near and distance. The deviation was consistent on all the manifest days, on nonsquint days patient was orthotropic with a near-stereopsis of 40 arc sec on Randot stereoacuity test [Fig. 1].

There was no limitation of extraocular movements on either days. There was no significant refractive error. Anterior and posterior segment examination was unremarkable.

Magnetic resonance imaging of brain and orbit, thyroid function test, and electromyography were within normal limits. Neostigmine test showed no improvement in signs, and ice pack test was negative. A diagnosis of adult-onset cyclic esotropia was made and right eye medial rectus retroequatorial myopexy was performed under local anesthesia, using 5-0 nonabsorbable mersilene suture, (Ethibond, Ethicon, Irvine CA). In the postoperative period she had anexotropia of 8PD, for distance and nearon all days, with no diplopia. The findings were consistent at post operative 3 weeks [Fig. 2] and one year [Fig. 3].

Discussion

Cyclic strabismus is a rare but an interesting entity of strabismus. As the name suggests, it is characterized by a 24–48 h fixed cycles of orthotropia and heterotropia.

The exact etiology and pathogenesis of adult-onset cyclic esotropia is not known; however, various etiologies have been reported to cause cyclic esotropia such as traumatic aphakia,[1] retinitis pigmentosa,[2] Grave’s disease,[3] ocular myositis,[4] scar stretch after squint surgery,[5] craniofacial surgeries,[6] and after brachytherapy for intraocular tumors.[7]

Figure 1: Preoperative pictures on, (a) esotropic days and (b) orthotropic days

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Most of the cases reported managed cyclic esotropia according to the deviation on manifest days, by recession and resection of horizontal muscle. It was believed that, although the surgery done corrects esotropia on manifest days, it does not cause exotropia on nonsquint days. But this belief is not always true for adult-onset cyclic esotropia and there are few case reports of consecutive exotropia in the post-operative period on nonsquint days. Management thus remains tricky! Retroequatorial myopexy, or posterior fixation suture is an easily reversible procedure done with a nonabsorbable suture, thus creating a new insertion of muscle without actually disinserting it, and selectively reducing the torque in the direction of the action of the muscle. Retroequatorial myopexy is usually indicated in nonaccommodative convergence excess esotropia, nystagmus blockade syndrome, for additional weakening effect over a recessed muscle and in cases of dissociated vertical deviation and for fixation duress procedures. The procedure weakens the action of muscle in its field of action, and if recession is not performed along with retroequatorial myopexy, the length–tension relation is not altered, hence not affecting the deviation in primary position. This would help to control esotropia on esotropic days, without causing exotropia on orthotropic days.

In a previous case report by us, cycles of esotropia and exotropia, respectively, were managed by retroequatorial myopexy of medial rectus and recession-resection of lateral rectus which acted as faden.

Conclusion

To the best of our knowledge, there have been no other reports stating the application of retroequatorial myopexy as a primary procedure in the management of cyclic esotropia.

We suggest this may be a good option in cases of adult-onset cyclic esotropia.

Literature search

PubMed was searched without date restriction on 25th April 2020 using keywords cyclic esotropia, management of cyclic esotropia and adult-onset cyclic esotropia.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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Ichthyosis is a rare condition characterized by increased formation of epidermal scales and extreme dryness of the skin. Progressive subepithelial cicatrization and abnormal keratinization of the epidermis. Cicatricial ectropion is the most common ophthalmic feature of congenital ichthyosis. Progressive corneal dryness and exposure keratopathy.

Surgical cornification of eyelid skin results in progressive ectropion in both eyelids, leading to lagophthalmos and corneal exposure. Surgical correction of cicatricial ectropion in these cases is challenging because of its difficulty in harvesting the graft, and it is poor survival and recurrence.

Combined medical and surgical management for cicatricial ectropion in lamellar ichthyosis: A report of three cases. All patients had extremely good surgical outcomes, with none of the patients requiring repeat surgery. Proper processing of the donor and recipient sites for 2 weeks. Lower lid ectropion correction was done with FTSG after 2 weeks of therapy. Postoperatively, the ectropion had corrected well with minimal lagophthalmos.

Case 1: An 8-year-old male child with lamellar ichthyosis presented to the Department of Oculoplasty, M N Eye Hospital, Chennai, Tamil Nadu, India with complaints of inability to close both eyes since birth. He was then started on liquid paraffin around the donor and recipient site to prepare both the areas for grafting. The donor and recipient sites had improved after 2 weeks of therapy. The patient was advised to continue with liquid paraffin and 0.1% isotretinoin ointment locally for 4 weeks. He was also started on oral isotretinoin for a short duration followed by surgery. The patient was then planned for split-thickness skin graft (SSG) from the inner thigh. He was started on a 2-week course of liberal liquid paraffin all over the body and 0.1% isotretinoin ointment locally.

Case 2: A 6-year-old male child with lamellar ichthyosis also presented with cicatricial ectropion of lower lids of both eyes causing lagophthalmos. He was started on liquid paraffin and ocular lubricants and was kept under regular follow-up. He had corrected well, and there was no lagophthalmos.

Case 3: The patient was advised to continue with liquid paraffin and 0.1% isotretinoin ointment locally. The patient was planned for split-thickness skin graft (SSG) from the inner thigh. He was started on a 2-week course of liberal liquid paraffin all over the body and 0.1% isotretinoin ointment locally. The donor and recipient sites were pretreated medically with lubrication and 0.1% isotretinoin ointment for 2 weeks. The patient was then advised to continue with liquid paraffin and 0.1% isotretinoin ointment locally for an additional 2 weeks. The patient was then started on 0.1% isotretinoin ointment for a short duration followed by surgery. The patient was then planned for split-thickness skin graft (SSG) from the inner thigh. He was started on a 2-week course of liberal liquid paraffin all over the body and 0.1% isotretinoin ointment locally.

All patients had extremely good surgical outcomes, with none of the patients requiring repeat surgery.

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