Original Article

Outcome of Levator Resection in Congenital Ptosis with Poor Levator Function

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Purpose: Purpose of the study is to evaluate the success of levator resection in congenital ptosis with poor levator function.

Material and Methods: It was a single center, prospective, interventional case series. The study was carried out at Department of Ophthalmology, Bahawal Victoria Hospital, Bahawalpur from March 2008 to November 2010. We selected 50 cases from outdoor department by universal sampling technique. Levator resection was carried out in all 56 cases (eyes) of congenital Ptosis (with 06 bilateral cases) with poor levator function (less than 4mm) after taking informed written consent. Patients were subjected to general anesthesia. Data was collected on special proforma and was analyzed with the help of SPSS.

Results: The study population comprised of 56 eyes of 50 cases of congenital ptosis. Male to female ratio was 3:1. Two bilateral cases were females and four were males. Age ranged between 04-32 years (Mean = 14 years). About 75% patients were between 13 and 24 years. The results were excellent in majority (67.8%) with complete lid closure. Good results were seen in 17.85% with only 7.14% with fair and poor outcome each. The major cosmetic defect in all cases was lid lag on extreme downward gaze. The operation is extremely laborious but fully justified by the good results.

Conclusion: Levator resection in congenital Ptosis with poor levator function is a viable option for cosmesis especially in unilateral cases.

Ptosis is an abnormal low position of the upper eyelid which may be congenital or acquired. It is a common problem and is found in all age groups. Primary congenital ptosis is present at birth and tends to be non progressive. It may be bilateral, isolated, or part of an associated syndrome. There is harmony between its severity and levator function. It is often due to the poor development of the levator muscle or its replacement by fibrosis, fat, or areolar tissue[1]. Amblyopia is rare in congenital ptosis unless it is associated with severe unilateral ptosis, anisometropia, or strabismus[2]. Anatomically ptosis may be classified as neurogenic (third nerve palsy, Horner syndrome, and Marcus Gunn Jaw-winking syndrome), myogenic (myasthenia gravis, myotonic dystrophy, ocular myopathy, simple congenital, or blepharophimosis syndrome), aponeurotic (involutional, postoperative), and mechanical (dermatochalasis, tumors, edema, anterior orbital lesions, and scarring)[3]. To classify a ptosis into one of these categories, a thorough medical history and physical examination must be performed and certain tests may be necessary. There are three classic al surgical procedures for the treatment of Ptosis; frontalis suspension, levator resection and Muller muscle-conjunctival resection. Frontalis sling is considered as only option for poor levator function Ptosis. We conducted this study to observe the usefullness of levator resection as primary surgical procedure in all congenital ptosis patients with poor upper lid excursion.

MATERIAL AND METHODS

Study Design: It was a single centre, prospective, interventional case series. The study was carried out in duration of more than two calendar years starting from March 2008 to November 2010.

Setting: The study was conducted at the Department of Ophthalmology, a tertiary eye care and teaching facility, at Bahawal Victoria Hospital, Bahawalpur, affliated with Quaid-e-Azam Medical College Bahawalpur.

Sample: We treated 56 eyes of 50 patients. All had poor levator function, good Bell's phenomenon, normal pupil size and reaction to light and normal corneal sensitivity. Males were 36 and 14 were female. Age range was 04-32 years (Mean: 14 years).

Diagnosis was based on history, old photographs, and routine ophthalmic examination. Oculoplastic examination specific to ptosis was performed by the operating surgeon, this included, vertical palpebral fissure height, Marginal reflex distance (MRD), levator excursion, lid crease height, Bells phenomenon and ocular motility. All patients included were diagnosed as congenital ptosis. It also included checking head position, chin elevation, brow position, and brow action in attempted up gaze. All the patients had detailed systemic evaluation to rule out secondary causes of the ptosis.

Exclusion criteria were, absent Bell's phenomenon, disturbed or absent corneal sensitivity and dry eyes. Surgery was performed by single surgeon (RRQ). All patients were explained about the procedure and informed consent obtained.

Definitions

Excellent: 0 and +/- 0.5 mm and complete lid closure.

Good: +0.5 mm and +1.00 mm and complete lid closure.

Fair: + 1.00 mm and + 1.5 mm and complete lid closure.

Poor: greater than + 1.5 mm.

Technique of Surgical Intervention: Levator Resection was carried out through skin approach (Blascovics technique). All patients were subjected to general anesthesia. After preparing and draping, an incision was marked at a level symmetric with the opposite eyelid usually 8-10 mm above the lid margin. A cut was made along the marked line using #15 scalpel blades. A blunt dissection was carried out towards lid margin to expose tarsal plate for re-attachment of levator at the end of the surgery. The post orbicular facial plane was entered and orbital septum was exposed and confirmed by applying inward pressure at lower part of globe and pre aponeurotic fat popped up under septum. The septum was incised with sharp scissors and the attachments between the septum and aponeurosis were separated to prevent postoperative lagophthalmos. The aponeurosis and Whitnall's ligament were revealed by brushing the pre aponeurotic fat pockets upward. This was followed by disinsertion of the aponeurosis from the tarsus. Carrying blunt dissection, the muscle was dissected all the way to the Whitnall's ligament. A 6.0 vicryl was passed through partial thickness of the tarsus, 3 mm from its upper border and above the central pupil posterior to the aponeurosis and retrieved through the Whitnall's. Two additional sutures were added between the tarsus and Whitnall's and placed medially and laterally. The three sutures were adjusted as needed. Finally, the skin incision was closed with running 6.0 vicryl sutures.

Complications: Major per operative complications faced were loss of proper facial plane, hemorrhage while separating aponeurosis from conjunctiva and button holes in conjunctiva.

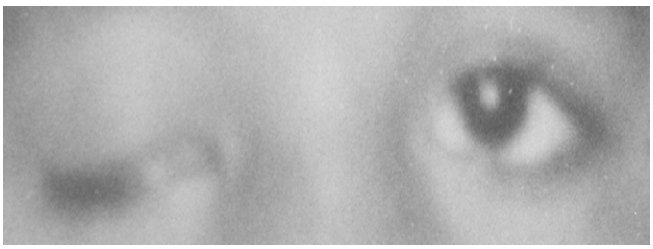
Follow-ups: Patients had a follow-up on day one, at 4 weeks, 6 months and then last follow up at 2 years.

RESULTS

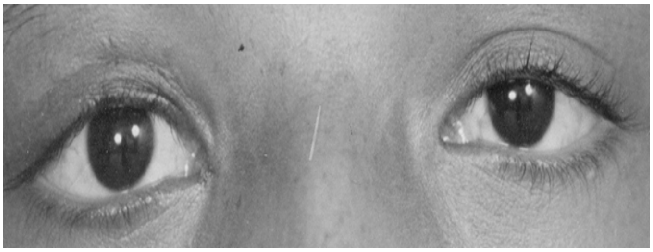
Goal was to adequately elevate the lid while minimizing the risk of lagophthalmos and exposure keratopathy/ulceration. In majority (85.65%) results obtained were good to excellent (Table 1) with a well-defined symmetry in lid height and shape (Fig 1-3). In four (7.14%) cases, results were cosmetically acceptable and patients were satisfied although graded as fair, however residual ptosis occurred in four cases (7.14%) and required further surgical procedure at a later date. Reoperation was uncomplicated and final outcome was successful. The significant postoperative complications were over correction in one patient which was not significant to warrant reoperation. One female patient had forniceal prolapsed (Fig 4) which was sutured and two patients had suture related granuloma, treated with antibiotics, which did not influence the final outcome.

DISCUSSION

Embryologically, most of the connective tissue of upper lid is derived from mesenchyme[15-17,21]. The orbital septum is derived from mesenchyme of second arch[15]. Suborbicularis fibro adipose tissue consists of multiple fibrous septa that merge posteriorly with the orbital septum and give orbital septum a multilayered quality, augmenting the contour of superior sulcus[6,22]. Simple congenital ptosis is thought to be the result of



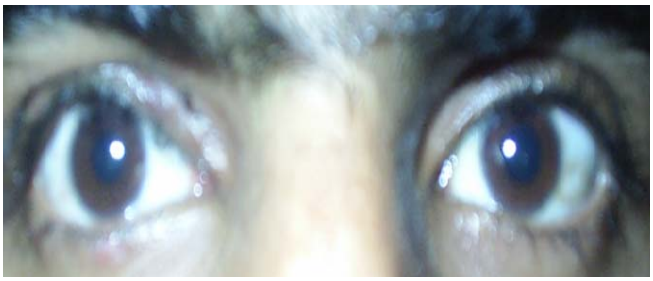
Pre-op



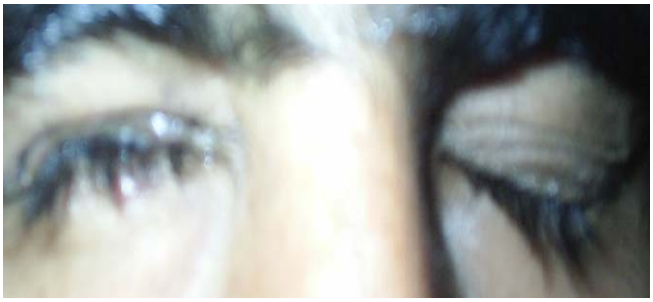
Post-op

Fig 1:

Pre-op

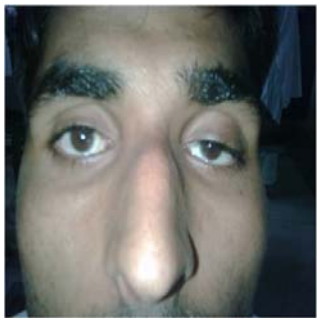


Post-op



Post-op lid closure

Fig 2:



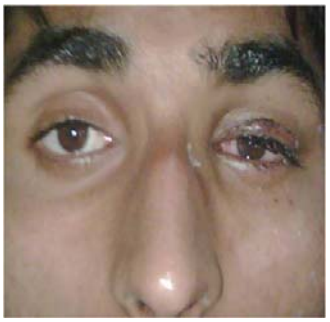


Fig 3: Pre-op Post-op

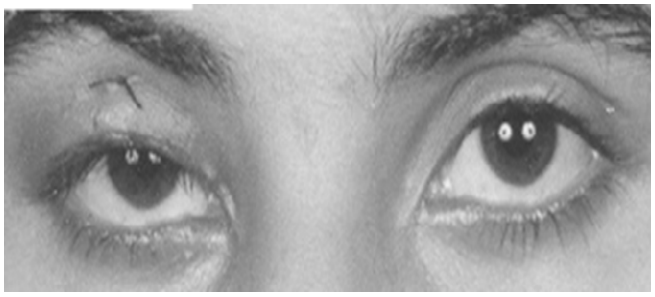


Fig 4: Suture to forniceal prolapse

Table 1:

Outcome	No. of patients n (%)
Excellent	38 (67.8)
Good	10 (17.85)
Fair	04 (7.14)
Poor	04 (7.14)
Total	56 (100)

developmental dystrophy of levator muscle. Normal muscle fibres are replaced by fibrous connective tissue without contractile properties. Ptosis is more marked in an up gaze and the upper lid is relatively retracted in a down gaze[16].

Ptosis can have a marked impact on a patient's functional status[9] and lead to poor visual development in childhood with its damaging social and financial consequences in later life[2]. The goal of ptosis surgery was once described as one with elusive perfect result[10]. Ptosis surgery in paediatric patients differed from adult surgery in that predictability of lid height in later group could be enhanced by using local

anaesthesia or adjustable sutures[11,12]. As there were no authentic published data regarding time taken to reach final lid height stability in primary congenital ptosis patients, we chose a maximum follow-up of 2 years as a stable end point.

In ptosis surgery, a good cosmetic outcome is very important, this holds true for congenital myogenic ptosis as well. More than 100 techniques for the treatment of ptosis have been reported[4-6]. This means ptosis is difficult to treat, as the postoperative eyelid position may be unpredictable[20]. Different surgical techniques have been laid out for the management of primary congenital ptosis. This depends upon severity of ptosis, laterality, and levator function. The surgical approach may include posterior resection for mild ptosis with normal levator function or levator aponeurosis resection for moderate-to-poor levator function and frontalis suspension for bilateral ptosis with poor to absent levator function[8]. In our patients, levator aponeurosis resection has given the best results with excellent patient satisfaction despite the fact that the levator function was extremely poor (<4 mm).

Although it has been reported that extra-large levator resection may lead to lagophthalmos, none of our patients has experienced this complication. The lagophthalmos may not be a problem as it depends on the orbicularis tone and function. Every ptosis surgery has goals such as controlled height, contour, lid crease, lash position, and symmetry. We found that our patients achieved almost all such targets.

In ptosis surgery, use of adjustable suture technique is popular in adults but not well tolerated in children. It is therefore important to consider an approach that gives good ptosis correction with cosmetically acceptable upper lid skin crease[19]. The ideal procedures in ptosis surgery are those that disturb normal anatomy the least and also allow for good results[17]. In this study an anterior approach was selected, thus avoiding conjunctiva, lacrimal gland and tarsus. In all cases, after incising skin, blunt dissection in a proper facial plane was carried out to reveal septum. Incising septum gave the hold of aponeurosis and separation of it from underlying conjunctiva is critical to avoid bleeding from peripheral vascular plexus and saving conjunctiva from button holling. Finally, muscle is attached to tarsus with 6-0 vicryl suture and skin is closed with the same type of suture. This technique appears to enhance the overall cosmetic outcome.

CONCLUSION

In this series we treated 56 eyes of 50 patients with primary congenital ptosis and poor levator function with levator aponeurosis resection. All the patients achieved the desired result without any complications. Although recent findings have shown the frontalis suspension technique is a commonly performed surgical correction of congenital ptosis, used widely in the repair of Ptosis with poor levator function, we recommend that levator resection procedure to be considered as primary procedure for the correction of congenital ptosis with very poor levator function.

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