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RESEARCH ARTICLE

SURGICAL OUTCOME OF ANTERIOR LEVATOR RESECTION IN CONGENITAL PTOSIS

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ABSTRACT

Purpose: The aim of the study was to evaluate the success of levator resection in congenital ptosis. **Materials and Methods:** This was a prospective interventional study carried out at Postgraduate Department of Ophthalmology, Government Medical College Srinagar, a tertiary eye care facility in the state of Jammu and Kashmir, India. A total of 26 eyes with uncomplicated congenital ptosis of 20 patients were taken up for this study. During the study period, 20 patients (12 Male, 8 Female) underwent surgery. The age of operated patients ranged from 6-28 years with a median age of 12 years. 6 patients underwent bilateral anterior levator resections, whilst 14 underwent unilateral surgery. **Results:** Total of 26 eyes of 20 patients were operated upon. Out of 20 patients, 12 were males and 8 were females. The mean age of patients was 12 years (range: 6-28 years). Out of 20 cases, 6 had bilateral and 14 had unilateral ptosis. In majority (75%), results obtained were good to excellent with a well defined symmetry in lid height and shape. In four (20%), results were cosmetically acceptable and patients were satisfied and graded as fair. However residual ptosis occurred in 1 case (5%) and required further surgical procedure at a later date. **Conclusion:** Levator resection via anterior approach in congenital ptosis achieved good ptosis correction with cosmetically acceptable upper lid crease.

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INTRODUCTION

Ptosis is defined as an abnormal low lying upper eye lid margin with eyes in primary gaze (Beard, 1981). Ptosis can be congenital or acquired. Ptosis is considered congenital if present at birth or within the first year of life (Sakol *et al*., 1999). The most common cause of congenital ptosis is localized myogenic dystrophy of levatorpalpebraesuperioris. Few case of congenital ptosis result from genetic or chromosomal defects or neurological dysfunction (Guercio and Martyn, 2007). The characteristic feature of congenital ptosis is that the fibrotic levator muscle limits inferior mobility of the eye lid causing less ptosis in downgaze. Congenital ptosis can be associated with blepharophimosis syndrome (5 %) and synkinetic ptosis (5 %) which includes Marcus Gunn jaw winking ptosis and misdirected third nerve ptosis. Simple congenital ptosis is usually unilateral. In patients with congenital ptosis, reduced levator function, absent lid crease and lid lag are characteristic findings. Anterior levatorresection is the standard approach used to correct ptosis in those patients with atleast 4 mm of levatorpalpebrae superior muscle function (Beard, 1966).

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Maximal levator resection can also be used in cases with poor levator function, although this procedure can be complicated by post-operative lagophthalmos.

MATERIALS AND METHODS

This was a prospective interventional study carried out at Postgraduate Department of Ophthalmology, Government Medical College Srinagar, a tertiary eye care facility in the state of Jammu and Kashmir, India. A total of 26 eyes with uncomplicated congenital ptosis of 20 patients were taken up forthis study. Diagnosis was based on history, old photographs, and routine ophthalmic examination. Oculoplastic examination specific to ptosis was performed by the operating surgeon which included vertical palpebral fissure height, marginal reflex distance (MRD), levator excursion, lid crease height, Bells phenomenon, ocular motility, head position, chin elevation, brow position and brow action in attempted upgaze. All patients included were diagnosed as congenital ptosis. All the patients had detailed systemic evaluation to rule our secondary causes of the ptosis. All the surgeries were performed by a single surgeon. All patients were explained the procedure and informed written consent was obtained. During the study period, 20 patients (12 Male, 8 Female) underwent surgery. The age of operated patients ranged from 6-28 years with a medianage of 12 years. 6 patients underwent bilateral

anterior levator resections, whilst 14 underwent unilateral surgery.

Technique of surgical intervention

Anterior levator resection was carried out through skin approach (Everbusch technique). All the patients were operated under general anesthesia. After preparing and draping, an incision was marked at a level symmetric with the opposite eyelid crease, usually 8-10 mm above the lid margin. A cut was made along the marked line using no 15 scalpel blades. Blunt dissection was carried out towards the lid margin to expose the tarsal plate for reattachment 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 the globe resulting in popping up of aponeurotic fat under the septum. The septum was incised with sharp scissors and the attachments between the septum and aponeurosis were separated to prevent postoperative lagoph thalmos. The aponeurosis and Whitnall's ligament were revealed by brushing the pre-aponeurosis from the tarsus. Carrying blunt dissection, the muscle was dissected all the way to the Whitnall'sligament (Fig. 1). A 6-0 vicryl was passed through partial thickness of the tarsus, 3mm from its upper border and above the central pupil, posterior to the aponeurosis and retrieved through the ligament. Two additional sutures were added between the tarsus and Whitnall's ligament and placed medially and laterally. The three sutures were adjusted as needed. Finally, the skin incision was closed with running 6-0 vicryl sutures.

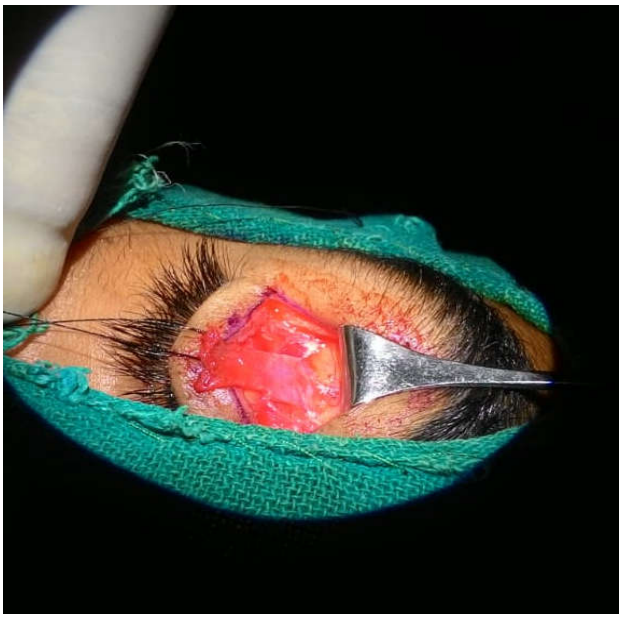

Fig. 1. Intraoperative picture of Levator muscle.

Follow up

Patients had a follow up on day 1, 2 weeks, 6 weeks, 3 months, 6 months and then at 18 months.

Definition of surgical outcome

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

RESULTS

Total of 26 eyes of 20 patients were operated upon. Out of 20 patients, 12 were males and 8 were females. The mean age of patients was 12 years (range: 6-28 years). Out of 20 cases, 6 had bilateral and 14 had unilateral ptosis. Goal was to adequately elevate the lid while minimizing the risk of lagophthalmos and exposure keratopathy. In majority (75%), results obtained were good to excellent (Table 1). With a well defined symmetry in lid height and shape. In four (20%), results were cosmetically acceptable and patients were satisfied and graded as fair. However residual ptosis occurred in 1 case (5%) and required further surgical procedure at a later date. Reoperation was uncomplicated and final outcome was successful. The significant post operative complications were over correction in one patient which was not significant to warrant re operation and two patients had suture related granuloma, treated with antibiotics, which did not influence the final outcome.

Table 1. Surgical Outcome of Levator Resection

Outcome	Number of Patients
Excellent	8(40%)
Good	7(35%)
Fair	4(20%)
Poor	1(5%)
Total	20(100%)

DISCUSSION

Developmental dystrophy of levator muscle is thought to be the cause of simple congenital ptosis. Normal muscle fibers are replaced by fibrous connective tissue which do not have contractile properties. Ptosis is more marked in up gaze and the upper lid is relatively retracted in down gaze (Meyer *et al*., 1991). Ptosis surgery in paediatric patients differs from adult surgery in that predictibility of lid height in later group can be enhanced by using local anesthesia or adjustable sutures (Collin and O'Donnell, 1994). As there was minimal authentic published data regarding time taken to reach final lid height stability in primary congenital ptosis patients, we chose a maximum follow up of 18 months as a stable end point for our patients. In ptosis surgery, a good cosmetic outcome is very important and this holds true for congenital myogenic ptosis as well. More than 100 techniques for the treatment of ptosis have been reported[7]. This means ptosis is difficult to treat, as the postoperative eyelid position may be unpredictable. Different surgical techniques have been laid out for the management of primary congenital ptosis. The choice of operative method for congenital ptosis depends on the age of patient,degree of ptosis, function of the levator muscle and the status of cornea. The accepted techniques for surgical repair of congenitalptosisare Fasanella-Servat procedure, mullerectomy, levatoraponeurosis resection and brow frontalis suspension. The determining factors as to which procedure is performed are the severity of ptosis and the amount of levator function. Levator function is the most important eyelid measurement in terms of surgical planning as the effectiveness of certain surgical procedure rests solely on the integrity of levator muscle function. About 70% to 80% ptosis repairs are done by this technique. This is the operation of choice in all cases with fair to good (more than 4mm) levator function. In our patients, anterior levatoraponeurosis resection gave the best results with excellent patient satisfaction. Usually, 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. The overall success rate in our series was 75% with poor results in 5% cases. The poor results could be due to improper evaluation of levator function. Cates and Tyes reported a success rate of 75% in 100 patients with congenital ptosis who underwent levator resection (Cates and Tyers, 2001). In their study, the most common complication was undercorrection (19%). They found that the preoperative amount of levator function was the strongest predictor of a favourable outcome following levator resection surgery. Berlin and Vestal reported 69% success rate in 58 cases of congenital ptosis (Berlin and Vestal, 1989). Blomgren and Holmstrom published a 52% success rate in cases having a single operation in 55 eyelids (Blomgren and Holmstorm, 1986). In a report by Jordan and Anderson on 228 cases of levator resection, the success rate was 43% (Jordan and Anderson, 1990). Most studies suggest that levator function and ptosis level before surgery are co related with the outcomes of levator resection.

Conclusion

In this series, 26 eyes of 20 patients with congenital ptosis were treated with anterior levatoraponeurosis resection. All the patients achieved desired results without any serious complications and it was concluded that levator resection via anterior approach achieved good ptosis correction with cosmetically acceptable upper lid crease.

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