

Original Article

Outcomes of Maximum Levator Resection in Severe Upper Eyelid Ptosis at a Tertiary Oculoplastic Service

Mohammad Idris¹, Hassan Yaqoob², Hadia Sabir³, Hera Fahim⁴, Muhammad Jamshed⁵
^{1,3,4,5}Lady Reading Hospital, Medical Teaching Hospital, ²North West Teaching Hospital, Peshawar

ABSTRACT

Purpose: To investigate the surgical outcomes of maximum Levator resection in cases of severe upper eyelid ptosis at a tertiary oculoplastic service.

Study Design: Interventional case series.

Place and Duration of Study: Department of Ophthalmology, Lady Reading Hospital, Medical Teaching Hospital, Peshawar January 2013 to December 2017.

Methods: One hundred and twenty three eyes of 107 patients, who underwent maximum levator resection for severe congenital ptosis were included. Patients with missing or incomplete notes, patients with previous ptosis surgery and ptosis other than congenital were excluded. Maximum levator resection of the muscle above the Whitnall ligament was performed under local/general anesthesia. All patients had a minimum of 6 months and maximum of 5 years followup. The postoperative complications were recorded and followed. Post operative followup was done at day one, week one and at four weekly intervals till the end of the study.

Results: Out of 123 eyes, satisfactory results (excellent or good) were obtained in 111 (90.1%) eyes. Majority of the patients (56.09%) were females. Mean Preoperative Levator function was 2.3 ± 1.1 mm. Mean Preoperative MRD1 was -0.1 ± 1.5 mm and mean postoperative MRD1 was 3.9 ± 0.1 mm. The commonest complication was over correction which occurred in 5 (4.06%) cases, under correction in 4 (3.25%), crease abnormality in 2 (1.62%) cases and entropion was seen in only one (0.81%) case. Success rate was 90.1% at 6 months to 5-years followup.

Key Words: Blepharoptosis; Levator resection; Levator function.

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Correspondence: Mohammad Idris
Department of Ophthalmology
Lady Reading Hospital
Medical Teaching Hospital, Peshawar
Email: idrisdaud80@gmail.com

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INTRODUCTION

Ptosis is a common and challenging oculoplastic procedure because of cosmetic and physiological implications, which depend on surgeon's own experience when deciding about choice of procedure. Greek word "ptosis" means falling and refers to drooping of eyelid when eye is in primary position.¹ One of the commonest causes is simple congenital ptosis but sometimes it is associated with a life-threatening condition.² Most of the cases referred to

our oculoplastic clinic are benign but systemic examination is important to exclude any systemic disease; for example myasthenia gravis and Horner syndrome.³

Ptosis is not only a major cosmetic concern but it can be an important cause of amblyopia in young children as well.⁴ Decision in such cases is based on severity of ptosis. Severe ptosis need early correction to prevent sight-threatening amblyopia. Severe congenital ptosis with poor levator function of ≤ 4 mm is not easy for the oculoplastic surgeon to deal with.⁵ The type of Surgery for the correction of congenital ptosis is based on surgeon's choice which may be frontalis suspension (FS) or MLR, Different studies are available which support both types.⁶ In both choices, the surgery is a challenge because of cosmetic and physiological implications.⁷

FS with different synthetic material is used to lift the droopy eyelid. This procedure is simple but there are certain issues which include bilateral surgery for symmetrical results, lack of crease formation, use of synthetic material in very young children and significant lagophthalmos leading to exposure.⁸ MLR is useful alternative in selected patients with severe ptosis which refers to resection of the muscle above the Whitnall ligament.⁹

In our present analysis, maximum levator resection (MLR) was done by a single surgeon. Rationale was to investigate the results of MLR in our set up. Such type of surgical audit is a useful tool to assess shortcomings and are important source to guide and improve results.¹⁰ It is beneficial both for the surgeon as well as the patients. We compared our results with different studies.

METHODS

One hundred and twenty three eyelids of 107 patients, who underwent maximum levator resection for severe congenital ptosis at oculoplastic service were included in this study. Twenty-one patients were lost to followup and excluded. Informed consent was taken. Newly diagnosed patients were included. Complete history and ocular examination was performed. A single consultant performed all the surgeries. Maximum levator resection of the muscle above the Whitnall ligament was performed under local/general anesthesia. The end-point of the surgery was to have the eyelid margin rest 1 to 2 mm below the super

limbus with the patient under general anesthesia. All the patients had a minimum of 6 months and maximum of 5 years followup. Their success rate, postoperative complications and final outcome were assessed. Satisfactory surgical outcome was defined as postoperative MRD1 of 3 mm in each eye and difference in MRD1 of 1 mm between the two eyes at 6months after surgery. The postoperative complications were recorded and followed. Success of surgery was defined on the basis of absent complications like lid abnormality, over or under correction and lid elevation with 1mm lid covering the limbus at least at 6 months. Sutures were removed after two weeks. Complicated cases were assessed as to whether further surgery is required or not. Post operatively followup was done at day one, week one and at four weekly intervals till the end of the study.

RESULTS

Out of 123 eyes, satisfactory results (excellent or good result) were obtained in 111 (90.1%). Sixteen cases were bilateral and 91 were unilateral out of 123 (107 patients) eyelids. Majority of patients 56.09 % (n = 69) were females and males were 43.90% (n = 54). Patients were divided into three age groups. Maximum patients were in the age group of 7 – 27 years (55.28%, n = 68), patients of age 28 – 48 years were 34.95% (n = 43), while age groups > 48 years were 9.75% (n = 12) patients. Preoperative and postoperative lid measurements for maximal levator resection was noted (Table 1). Different postoperative

Table 1: Eye Lid Measurements Before and After Maximal Levator Resection in Millimeter.

S. No.	Upper Eyelid Measurements	Mean \pm SD
1.	Preoperative LF	2.3 \pm 1.1 mm
2.	Preoperative MRD1	-0.1 \pm 1.5 mm
3.	Postoperative MRD1	3.9 \pm 01.0 mm

LF = Levator Function, mm = Millimeter, LF = Levator Function, MRD1 = Upper Lid Marginal Reflex Distance, SD = Standard Deviation

complications are shown in table 2 and the commonest complication was over correction which occurred in 5 (4.06%) cases. Successful cases were 90.1%. These results were shown and compared with published literature (Table 3).

Table 2: Frequency of Complications and successful cases (n = 123).

Post-op Complication	Frequency	Percent
Under Correction	4	3.25
Over Correction	5	4.06
abnormal Crease	2	1.62
Upper lid Entropion	1	0.81
Successful cases	111	90.1
Total	123	100

Table 3: Comparison of our results with previous studies.

S. No.	Author	Followup	No. of Cases	Success Rate
1	Cruz, <i>et al</i> ¹¹	5 – 85 Months	35	91.4
2	Mauriello, <i>et al</i> ¹²	18 Months	32	87.5
3	Press and Hübner ¹³	NA	44	81.8
4	Al-Mujaini and Wali ¹⁴	2 – 24 Months	7	100
5	Decock, <i>et al</i> ¹⁵	> 1 Year	11	63.6
6	Mete, <i>et al</i> ¹⁶	10 – 36 Months	29	69.6
7	Lee, <i>et al</i> ¹⁷	40.9 Months	210	93.0
8	Present study	6 Months – 5 Years	123	90.1

NA = Not Available

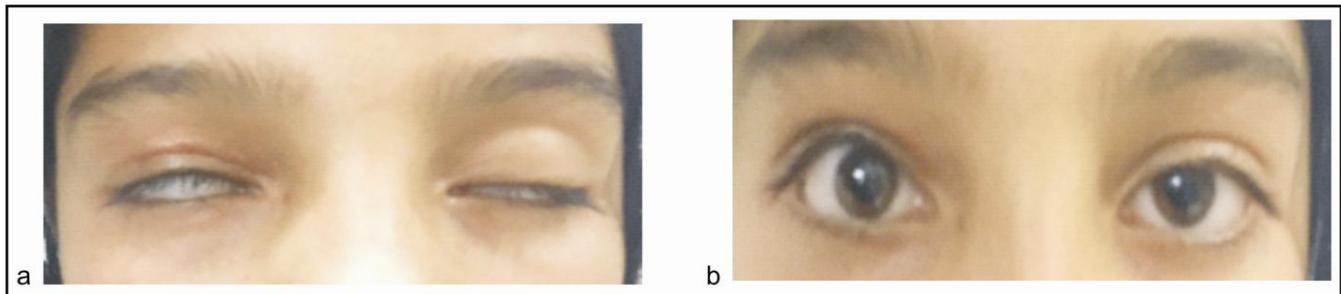


Figure 1: Common Postoperative Complications: a) Lagophthalmos in the Early Postoperative Period, b) Over Correction at One Month Followup.



Figure 2. a) Right severe congenital ptosis, b) First Postoperative day, c) At one month after surgery.



Figure 3: Severe congenital ptosis before and after surgery.

DISCUSSION

In a study by Bernardini *et al*,⁹ amount of levator resection was based on the severity and levator muscle function. The aim was to keep eyelid margin 1 to 2 mm below the super limbus with the patient under general anesthesia and concluded that supra-maximal levator resection has become the procedure of choice for unilateral, poor levator function congenital ptosis.”

This audit was used to assess outcome of this procedure which is beneficial for both surgeon and patient as surgical repair of upper lid ptosis correction is a challenging oculoplastic procedure. We compared our results with similar cases in published literature. According to these studies, MLR for severe ptosis was found favorable option with good cosmetic and functional outcome.

Cruz *et al*¹¹ studied 35 cases of severe ptosis after MLR with a success rate of 91.4%. Similarly, Mauriello *et al*,¹² Press and Hübner,¹³ Al-Mujaini and Wali¹⁴, Decock *et al*¹⁵ and Mete *et al*,¹⁶ have results of successful outcome ranging from 63.6 to 100%. The largest cases operated were by Lee *et al*,¹⁷ who operated on 210 cases with a success of 93% at followup of 40.9 months. In the present audit, which included 123 eyelids operated by MLR, success rate was 90.1 % after 6 month to 5 years followup. These results are comparable to the above mentioned studies.

Both FS and MLR have postoperative complications. In a study by Gazzola R *et al*,¹⁸ MLR had fewer complications as compared to FS. Similar finding in favor of MLR was mentioned by Young SM *et al*.¹⁹

According to Lee *et al*,⁶ common postoperative complications were exposure keratopathy, lid crease asymmetry, entropion, overcorrection, eyelash ptosis, temporal eyelid droop, suture abscess and conjunctival prolapse. With proper followup, most of such complications can be managed. In our present audit, 12 cases had different complications. Most common was, overcorrection and under correction. These cases were later managed with conservative treatment and secondary surgery performed to get satisfactory outcome.

Finally long-term followup is important in these cases as postoperative lagophthalmos is common, and needs to be treated at proper time.²⁰ Lagophthalmos and exposure keratopathy are common problems after surgery. Commonly known risk factors for lagophthalmos after levator surgery are the severity of the ptosis, LF, and degree of levator complex resection.^{21,22}

Young SM *et al*, concluded that MLR was an effective alternative to FS in congenital ptosis with poor LF.¹⁹ The risk of postoperative lagophthalmos was related to postoperative lid height rather than preoperative LF. No case of lagophthalmos developed significant exposure keratopathy in the present analysis. Cases with Mild lagophthalmos in initial postoperative period were advised lubricants and massage to reduce over correction.

CONCLUSION

Maximum levator resection for congenital severe ptosis is a safe and cosmetically acceptable procedure. Followup is important to address postoperative

complications at an early time to improve success rate of surgery.

Ethical Approval

The study was approved by the Institutional review board/Ethical review board (**Ref: No.14**).

Conflict of Interest

Authors declared no conflict of interest.

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Authors' Designation and Contribution

Mohammad Idris; Assistant Professor: *Concepts, Design, Literature Search, Data Acquisition, Data Analysis, Manuscript Preparation, Manuscript Editing, Manuscript Review.*

Hassan Yaqoob; Associate Professor: *Concepts, Design, Literature Search, Data Acquisition, Manuscript Preparation, Manuscript Editing.*

Hadia Sabir; Trainee: *Literature Search, Data Acquisition, Statistical Analysis, Manuscript Preparation, Manuscript Editing.*

Hera Fahim; Trainee: *Literature Search, Data Acquisition.*

Muhammad Jamshed; Trainee: *Data Analysis, Manuscript Review.*

