

Study of Cosmetic and Functional Outcome in the Various Surgical Procedures for Blepharoptosis

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Abstract: AIM & OBJECTIVE: The aim of the study is to evaluate the cosmetic and functional outcome and compare the complications of various ptosis surgeries done for correction of blepharoptosis at a tertiary care hospital.

METHODS: 23 patients with 25 eyelids who had undergone ptosis surgery for blepharoptosis were included in our study. Patients of all age groups and either sex who post-operatively completed a follow-up period at 1, 3, 6 months were included in the study and grouped under five groups-levator resection, levator advancement, silicon rod sling, Fascia Lata sling, Fasanella Servat surgery. The postoperative outcome and complications were noted in all cases.

RESULTS: Out of 25 eyelids operated for blepharoptosis, 21 cases (84%) had good, and 4 cases (16%) had fair post-operative outcome. Though on applying the chi square test there was no significant difference observed in the cosmetic and functional outcome between all the groups but the maximum number of complications was noted in the silicon sling group.

CONCLUSION: With the selection of the right surgery depending on amount of ptosis and levator muscle action we could achieve good cosmetic correction and minimal complications in most of our cases.

Keywords: Ptosis, blepharoptosis, levator resection, levator advancement, fascia lata sling, silicon rod sling, Fasanella Servat surgery.

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I. Introduction

Ptosis, an abbreviation for the term blepharoptosis, refers to vertical narrowing of the palpebral fissure secondary to drooping of the upper eyelid to a lower than normal position. Treatments of blepharoptosis have been under development for more than 100 years and are still being refined. Management is still challenging for the oculoplastic surgeon as there are different circumstances and guidelines relevant to the repair of upper eyelid ptosis. The original surgical technique for the correction of ptosis utilized resection of upper lid skin to more effectively allow the frontalis muscle to elevate the eyelid. Failure of skin excision methods led to the modern, muscle-based surgical techniques. Maintenance of correct eyelid position is an important consideration when selecting a technique to correct congenital ptosis. Other considerations which have shaped the evolution of these surgical techniques include the need for cosmetically acceptable results, preservation of the normal eyelid crease, maintenance of the normal tear film, and prevention of exposure keratopathy by prevention of over correction. In this study we aim to evaluate and compare the surgical outcome and complications of following surgeries being done for blepharoptosis: levator resection, levator advancement, fascia lata sling, silicon rod sling, Fasanella Servat surgery.

II. Original Article

Materials and Methods

This was a prospective nonrandomised interventional single center study. The study was conducted at Department of Ophthalmology, Government general Hospital, Kadapa. An appropriate consent from the patients were taken prior to surgery. Ethical guidelines were followed and a no objection certificate was sought from the institution for publication of this data. In this study 23 patients of all ages and sex who were operated for blepharoptosis by the same consultant and followed upto a postoperative period of minimal 6 months were

included in the study to analyse the postoperative complications of various surgical techniques. A routine ophthalmological examination including a visual acuity measurement, a detailed slit lamp examination and a fundus examination was done preoperatively for all the patients. A detailed ptosis analysis regarding its amount, type and severity was assessed and measured preoperatively. All preoperative data regarding palpebral fissure heights, marginal reflex distance (MRD1), absence or presence of lid crease, levator function, Bells phenomenon, were entered in the case records prior to any surgical intervention. The kind of surgical procedures to be done in ptosis depended on the amount of ptosis and the amount of levator action.

Ptosis was graded as follows

1. Mild ptosis-drooping of lid was 2mm or less from the normal position of rest in primary gaze.
2. Moderate ptosis -drooping of lid between 2mm to 4mm from the normal position of rest in primary gaze.
3. Severe ptosis -drooping of lid equal to more than 4mm from the normal position of rest in primary gaze.

Post-operatively the data regarding amount of ptosis correction achieved, presence of any complication of visual significance and cosmetic appearance were evaluated to define success of the surgery. The post-operative correction in amount of blepharoptosis in our study was defined as:

1. Good: If postoperative correction is equal to the amount of preoperative ptosis or overcorrection or under correction of 1 mm with normal lid crease and no to less than 2mm lagophthalmos.
2. Fair: Under correction or overcorrection up to 2 mm with cosmetically acceptable lid crease and 2 to 3 mm lagophthalmos.
3. Poor: Under correction or overcorrection by more than 2 mm with cosmetically unacceptable lid crease and gross lagophthalmos.

All complications of blepharoptosis were noted in form of cosmetic appearance, under correction, lid fold, and bell's phenomenon, synkinetic movement, lid lag, lagophthalmos, lid notching, entropion, prolapsed of fornix, over correction, exposure keratitis, fat prolapse, sling exposure, granuloma and infection. A note was made on every visit at 1, 3 and 6 months regarding the amount of palpebral fissure height obtained and the other associated complications as given above. An excel sheet was made and the results were tabulated and analysed.

III. Results

A total of 23 patients with 25 eyelids were enrolled for the study. Age of the patients ranged from 8-60 years. Maximum number of patients were in the 40-60 years age group. 21 patients had unilateral presentation and 02 patients had bilateral presentation. There were 12 males and 11 females in the study. 04 patients had mild ptosis (Less than or equal to 2mm), 11 had moderate ptosis (Between 2 -4 mm) and 10 had severe ptosis (Equal to or more than 4mm).

Table .1 Shows the various types of surgeries performed for different level of levator function.

TYPE OF SURGERY	LEVATOR FUNCTION				TOTAL	PERCENTAGE
	Excellent	Good	Fair	Poor		
Levator Resection	01	04	01		06	24%
Levator Advancement	02	02	01		05	20%
Fasanellaservat	04				04	16%
Fascia lata sling				06	06	24%
Silicon rod sling				04	04	16%

In our study we found that in the levator resection group 4 cases out of 6 patients(66.66%) had a good postoperative outcome, and 2 cases(33.33%) had a fair postoperative outcome. All 4 cases (100%) that underwent a FasanellaServat Surgery and 5 cases (100%) that underwent levator advancement had a good correction of ptosis. Amongst the patients operated for sling surgeries, 5 cases out of 6 patients(83.33%) who underwent fascia lata sling surgery had good correction and 1 case(16.66%) had fair outcome, whereas in patients where silicon rod sling was performed 3 out of 4 cases(75%) had a good correction whereas 1 case(25%) had fair correction. A chi-square test was applied to find if there was any significant difference in the postoperative outcomes in all the five groups. The p value was 0.72 and was not significant. From the chi-square test it can be concluded that the outcome difference between these five surgeries is not significant statistically.

Fig.1 Depicts pre-operative and post-operative pictures of patient who underwent Levator advancement surgery.



Fig.2 Depicts pre-operative and post-operative pictures of patient who underwent Levatorresection surgery.



Fig.3 Depicts pre-operative and post-operative pictures of patient who underwent Fascia-Lata sling surgery.

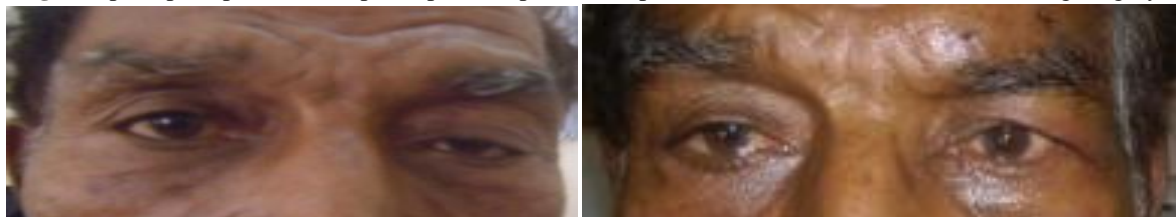


Fig.4 Depicts pre-operative and post-operative pictures of a patient with Marcus gunn jaw winking who underwent Brow suspension with Fascia lata sling.

PRE-OP PICTURES



POST-OP PICTURES



Fig.5 Depicts pre-operative and post-operative pictures of patient who underwent Fasanellaservat surgery.



Fig.6 Depicts pre-operative and post-operative pictures of patient who underwent Brow suspension with silicon rod sling.



Table.2 Post-operative outcomes of lid elevation achieved at the end of 6months

TYPE OF SURGERY	POST-OPERATIVE OUTCOME		
	Good	Fair	Poor
Levator Resection	04	02	-
Levator Advancement	05	-	-
Fasanella Servat	04	-	-
Fascia Lata Sling	05	01	-
Silicon Rod Sling	03	01	-

Table.3 Complications noted in post-operative period (6months) after various surgeries

Complications	Levator resection	Levator advancement	Fasanellaservat	Fascia lata sling	Silicon rod sling
Lagophthalmos	02	-	-	01	01
Suture Granuloma	-	-	-	-	-
Silicone Sleeve Slippage	-	-	-	-	-
Lid notching	-	-	-	01	-
Prolapse of fornix	-	-	-	-	-
Fat prolapse	-	-	-	-	-

IV. Discussion

Cosmesis and visual improvement were the predominant indications for the surgery in our study. Depending on the levator function and amount of ptosis, surgery was performed. In case of excellent levator function with mild ptosis Fasanella-Servat surgery was done on 04(16%) eyelids. In case of good-fair levator function with mild-moderate ptosis we performed levator resection surgery and levator advancement surgeries on 6 (24%) and 5 (20%) eyelids respectively. In case of poor levator function with severe ptosis fascia lata sling surgery was done on 6(24%) eyelids, silicone rod sling surgery was performed on 04(16%) eyelids.

In a similar kind of study, Geoff M Whitehouse performed retrospective study of visual and surgical outcome following the surgical correction of isolated congenital ptosis, at The Children's Hospital, Camperdown, Australia. In their study 30(37.5%) eyes underwent levator resection procedure, 40(50%) eyes underwent a brow suspension using donor stored fascia lata, and in 10(12.5%) eyes a brow suspension was performed using mersilene mesh.

In our study 25 eyelids of 23 patients were included. In Geoff study total 80 eyelids of 65 patients were included.

We also noted especially in the poor socio-economic class of our patients, as youngsters approach a marriageable age group only then generally for cosmetic concern medical help is sought for.

Amongst all the five groups, a good postoperative correction was achieved in 100% of the subjects in Fasanella-Servat and Levator Advancement surgeries.

In another study by Pang et al. The authors retrospectively reviewed 169 charts of 2 surgeons from patients who had undergone a Fasanella-Servat procedure for mild to moderate ptosis. Surgical success was defined as lid symmetry within 0.5 mm or correction of eyelid contour abnormality from previous surgery or trauma. With a mean follow-up of 7 months, success was achieved in 89.5% of cases (137/153). Postoperative problems included dry eye symptoms (6/144 patients), contour abnormalities in 12 lids, and dermatochalasis in 10 lids.

In our study we also noted that maximum number of patients operated for Levator Resection and Fascia lata Sling surgery also achieved and maintained either a good or fair surgical outcome 6 months postoperatively.

Wilson and Johnson reported that the success rate decreased gradually and reached 50% by 9 years after fascia lata surgery.[16] Wasserman et al. reported that the recurrence rate was 4.2% with autogenous fascia lata and 51.4% with banked fascia lata.

Synthetic materials are also used in frontal suspension, but the success and the complication rates are different in different studies. Carter et al. performed frontal suspension with silicon bands in a total of 61 eyes (17 of them congenital) and reported excellent and good results after a mean follow-up period of 22 months, with only 4 eyes requiring revision. Silicon band extrusion, however, was reported in 3 (5%) eyes.

In our study out of 04 silicone sling surgeries, only 01(25%) patient had undercorrection. In Geoff's study, in fascia lata sling surgery 4% patients had suture granuloma and 2% patients had infection. In mersilene mesh sling surgery, 35% patients had suture granuloma. In levator resection 3.3% patients had wound dehiscence and 6.6% patients had excess skin.

Hence, from our observations during study the few conclusions we could summarise are as given below:

- Good Bell's phenomenon is an essential prerequisite to prevent postoperative corneal exposure and associated complication if full correction of ptosis is aimed at.
- In case of mild ptosis with excellent levator function (>12mm) Fasanella-Servat surgery gives good cosmetic and functional result.
- In case of mild to moderate ptosis with good to fair levator function (4-11mm) levator muscle resection or levator advancement surgery gives good result.
- The result of LPS resection by measurement may not give proper functional result, hence over/under corrections are possible. While doing LPS resection it is preferable to decide the amount of LPS to be resected on table.
- While doing LPS resection, it is preferable to leave small length of LPS tendon beyond its anchoring to tarsal plate, so that future over corrections can be tackled easily.
- In case of poor levator function (<4mm) fascia lata sling surgery or silicon rod sling surgery gives good result. Brow suspension with fascia lata is easy procedure compared to LPS resection.
- In case of synkinetic ptosis-It is preferable to do LPS extirpation at the level of Whitnall's ligament than LPS disinsertion.
- In Bilateral severe ptosis-Surgical correction gives good satisfaction to the patient, irrespective of adequate cosmetic outcome.
- In case of unilateral ptosis-patients are mostly dissatisfied because of disproportionate matching with other eye.

For severe congenital ptosis repair silicon sling material instead of fascia lata can be also be safely used. We also recommend that sling material should be placed in deeper tissue plane to decrease the incidence of infection, extrusion and granuloma formation.

V. Conclusion

Ptosis surgery has to be customised according to the amount of ptosis, levator action, and the clinical and surgical experience. Familiarity with the advantages and disadvantages of each of these techniques, as well as meticulous patient selection is the key to achieve a successful outcome with a low rate of complications.

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