

## Post-operative Complications of Ptosis Correction: A Study in a Tertiary Care Hospital

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**Introduction:** Blepharoptosis is one of the most challenging of the commonly encountered oculoplastic problems. Ptosis is a common eye disease entity causing cosmetic disfigurement and sometimes visual deprivation. Brow suspension surgery by harvested fascia lata is a relatively common oculoplastic procedure in our country. Most often, under correction is caused by inadequate resection of the levator tendon owing to inadequate preoperative evaluation. Overcorrection in moderate or severe congenital ptosis is rare.

**Aim of the study:** To observe the post-operative complications of ptosis correction.

**Material & Methods:** This prospective observational study was conducted on 30 consecutive patients of  $\leq 4$  mm ptosis with poor LPS function in the dept. of Oculoplasty, NIO & H, Dhaka during the period of January 2009 to December 2009. Patients were surgically treated with frontalis brow suspension with harvested Fascia lata according to the following exclusion and inclusion criteria. Patients less than 15 years of age were anesthetized by administration of general anesthesia. Sampling technique was non-randomized and purposive. Study patients were explained in details about the disease process, benefits of evaluation, methods and risks of evaluation techniques and then written consent were taken before conducting the study maintaining the principles of Helsinki declaration.

**Results:** In this study, age distribution of 30 study subjects show that age ranged from 5 years to 45 years with a mean age  $21.53 \pm 10.27$  (SD) years. Out of 30 cases, 17 (56.7%) were male and 13 (43.3%) were female. Types of ptosis among study subjects reflects that out of 30 cases, 19 (63.3%) cases were congenital ptosis, 05 (16.7%) cases were Blepharophimosis, 3 (10%) cases were third nerve palsy and 3 (10%) cases were Chronic progressive external ophthalmoplegia (CPEO). Out of 30 cases, 04 (13.33%) cases developed under-correction, 01 (3.33%) case developed overcorrection, 02 (6.67%) cases developed corneal abrasion, 02 (6.67%) cases developed peaking of the lid, 01 (3.33%) case developed lid lag, 01 (3.33%) case developed exposure keratopathy; but no cases developed diplopia.

**Conclusion:** In the current study, complete cosmetic success was achieved in 25 (83.33%) cases and no recurrence was observed in 6 months follow up.

**Keywords:** Blepharoptosis, Complication, Correction, Ptosis, Oculoplastic.

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### I. Introduction

Blepharoptosis is one of the most challenging of the commonly encountered oculoplastic problems. Ptosis is a common eye disease entity causing cosmetic disfigurement and sometimes visual deprivation. Brow suspension surgery by harvested fascia lata is a relatively common oculoplastic procedure in our country. Though post-operative complication of this procedure is minimum, even few studies are available on this issue. Postoperative haematoma and small muscle herniation's have occurred.<sup>1-6</sup> Brow suspension surgery requires much less (1.5 cm  $\times$  12-15 cm strip) fascia lata excision; so less complication. The scar is also a long term problem. It is a minor cosmetic concern in 38% of patients.<sup>7</sup> Under correction of a ptotic lid is the most common complication. Most often, under correction is caused by inadequate resection of the levator tendon owing to inadequate preoperative evaluation. Unfortunately, occasional under corrections occur even when proper preoperative evaluation and excellent surgical technique are used. Overcorrection in moderate or severe congenital ptosis is rare. It can occur if the lid is unintentionally sutured to the Whitnall ligament or to an excessively shortened orbital septum, but it is very difficult to produce by any reasonable amount of levator resection. A poor or improperly positioned lid crease may occur if the skin incision is placed incorrectly or if the skin and orbicularis muscle are not fixated to the levator aponeurosis during the skin closure. Peaking of the lid rarely occurs with levator resection if the tarsus is left intact, since its width serves to stabilize the lid contour.

Mild exposure keratitis is frequently noted for the first few weeks after surgery. This seems to cause little or no problem in children, since the epithelium soon heals and the patient readjusts to the new situation. In adults, corneal staining may persist and be significant. Tear function must be reevaluated. Corneal abrasion can result from sutures inadvertently placed through the tarsus or conjunctival surface. After suture placement, evert the lid to check that a suture is not exposed. Lid lag, like lagophthalmos, is an expected compromise of congenital ptosis surgery that must be accepted. Infection is extremely rare following levator surgery. It may occasionally occur with frontalis sling procedures, since an avascular, possibly foreign material is introduced. Usually, postoperative diplopia is due to direct damage to the superior rectus muscle and sometimes the superior oblique muscle; rarely, it is due to direct nerve damage. Finally, authors remarked that after fascia lata harvesting, most patients had no cosmetic complaints or functional complications. The technique of harvesting fascia lata using a Crawford stripper seems to be safe and satisfactory.

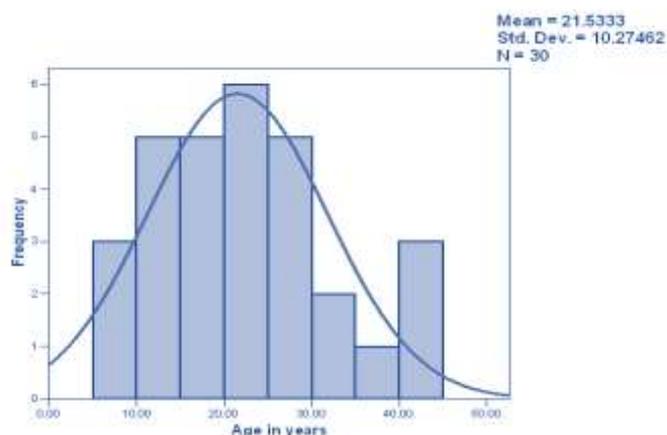
## **II. Methodology And Materials**

This prospective observational study was conducted on 30 consecutive patients of  $\leq 4$  mm ptosis with poor LPS function in the dept. of Oculoplasty, NIO & H, Dhaka during the period of January 2009 to December 2009. Patients were surgically treated with frontalis brow suspension with harvested Fascia lata according to the following exclusion and inclusion criteria. Patients less than 15 years of age were anesthetized by administration of general anesthesia. In other patients, local anesthesia was used and monitoring by an anesthesiologist. In patients where surgery was done under local anesthesia, they were sedated ten minutes before the surgery. Afterwards, 4 ml of lignocaine 2% with adrenaline was injected sub muscularly in upper lid to ensure that proper informed written consent was taken. The hospital record was checked and only after that anesthesia was administered. In all of the patients, two skin incisions 1 cm in length and 10 cm apart were made on the temporal aspect of the thigh after general anesthesia. Identification of the fascia was made by its white glistening appearance and parallel fibers. When the dissection and decollation over and below the fascia was well completed, two longitudinal cuts parallel to each other were made on the length of the fascia and finally a transverse cut was made on its distal end and about 12cm of fascia, 1-1.5 cm in width was removed. We divided the fascia longitudinally into four or two equal strips and at the end of the procedure sutured the leg incisions with 4-0 absorbable suture subcutaneously and 5-0 nylon suture for skin. Data were collected in a pre-designed data collection sheet. Data were analyzed by appropriate tests. Sampling technique was non-randomized and purposive. Study patients were explained in details about the disease process, benefits of evaluation, methods and risks of evaluation techniques and then written consent were taken before conducting the study maintaining the principles of Helsinki declaration.

- **Inclusion Criteria:** Patients with blepharoptosis–
  - Age 5-60 years
  - Either sex
  - Ptosis  $\leq 4$  mm
  - Poor LPS function
- **Exclusion Criteria:** Patients beyond the selected age group, adults unfit for general anaesthesia, patients unwilling to have fascia lata harvesting.

## **III. Results**

In this study, age distribution of 30 study subjects show that age ranged from 5 years to 45 years with a mean age  $21.53 \pm 10.27$  (SD) years (Figure I). Out of 30 cases, 17 (56.7%) were male and 13 (43.3%) were female (Table I). Types of ptosis among study subjects reflects that out of 30 cases, 19 (63.3%) cases were congenital ptosis, 05 (16.7%) cases were Blepharophimosis, 3 (10%) cases were third nerve palsy and 3 (10%) cases were Chronic progressive external ophthalmoplegia (CPEO) (Table II). Distribution of amount of ptosis show that out of 30 cases, 13 (43.3%) had 3 mm ptosis, 09 (30%) had 3.5 mm ptosis and 08 (26.7%) cases had 4 mm ptosis. Mean ptosis was  $3.41 \pm 0.41$ (SD) mm (Table III and Figure II). Distribution of complication related to ptosis correction show that out of 30 cases, 04 (13.33%) cases developed under-correction, 01 (3.33%) case developed overcorrection, 02 (6.67%) cases developed corneal abrasion, 02 (6.67%) cases developed peaking of the lid, 01 (3.33%) case developed lid lag, 01 (3.33%) case developed exposure keratopathy; but no cases developed diplopia. In the current study, complete cosmetic success was achieved in 25 (83.33%) cases and no recurrence was observed in 6 months follow up (Table IV).



**Figure I:** Histogram showing age distribution of study subjects. (n=30)

**Table I:** Sex distribution of study subject. (n=30)

Sex	No. of cases (%)
Male	17 (56.7)
Female	13 (43.3)
Total	30 (100)

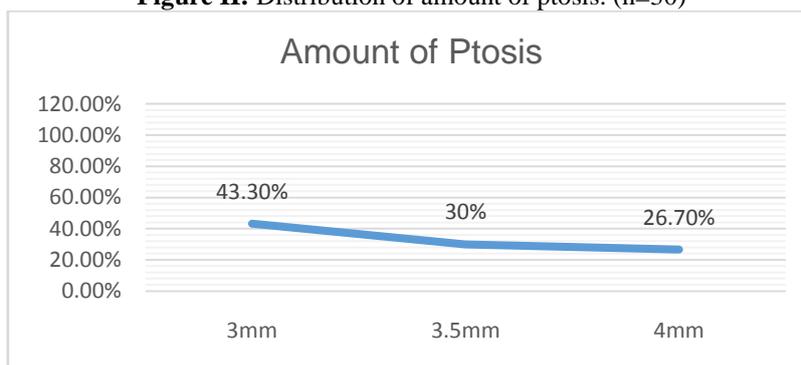
**Table II:** Types of ptosis. (n=30)

Diagnosis	No. of cases (%)
Congenital ptosis	19 (63.3)
Blepharophimosis	05 (16.7)
Third nerve palsy	03 (10)
Chronic progressive external ophthalmoplegia	03 (10)

**Table III:** Distribution of amount of ptosis. (n=30)

Amount of ptosis	No. of cases (%)	Mean value ± SD
3 mm	13 (43.3)	3.41 ± 0.41
3.5 mm	9 (30)	
4 mm	8 (26.7)	

**Figure II:** Distribution of amount of ptosis. (n=30)



**Table IV:** Complication related to ptosis correction.

Name of complication	No. of cases (%)
Undercorrection	04 (13.33)
Overcorrection	01 (3.33)
Corneal abrasion	02 (6.67)
Peaking of the lid	02 (6.67)
Lid lag	01 (3.33)
Exposure keratopathy	01 (3.33)
Diplopia	00

#### IV. Discussion

In the present study, the age distribution of 30 study subjects was ranged from 5 years to 45 years with a mean age  $21.53 \pm 10.27$  (SD) years. Bleyen *et al* (2009)<sup>8</sup> evaluated the long-term results of frontalis suspension by harvesting of autogenous fascia lata for in ptosis correction. In their case, series mean age of the patients was 7 years (range, 1-15). Other available studies also showing this surgery at a lower age. Though Crawford<sup>9</sup> mentioned that best ages for surgery is between 3-1/2 and 6 years of age, in our country, these patients consult with ophthalmologists at relatively older age due to some superstitions; in some cases, lack of awareness and lack of facilities are also responsible. Out of 30 cases, 17 (56.7%) were male and 13 (43.3%) were female. Wheatcroft *et al*<sup>7</sup> reported in their study 48% male and 52% female ptosis patients. Sex distribution has no uniform value in these types of studies. Many studies have shown variable sex predisposition. In case of the types of ptosis among study subjects, 19 (63.3%) cases were congenital ptosis, 05 (16.7%) cases were Blepharophimosis, three (10%) cases were third nerve palsy and three (10%) cases were chronic progressive external ophthalmoplegia (CPEO). Esmaeli *et al*<sup>10</sup> studied the long-term rate of recurrence of ptosis and other postoperative complications after frontalis suspension. In their study, preoperative diagnoses included severe congenital ptosis (83%), blepharophimosis (10%), third nerve palsy (4%), and chronic progressive external ophthalmoplegia (3%). In the present study, the distribution of amount of ptosis, 13 (43.3%) had 3 mm ptosis, 09 (30%) had 3.5 mm ptosis and 08 (26.7%) cases had 4 mm ptosis. Mean ptosis was  $3.41 \pm 0.41$ (SD) mm. Wheatcroft *et al*<sup>7</sup> conducted a study on ptosis patients having ptosis of  $\leq 4$ mm; this is similar to the current study. Regarding the distribution of complications related to ptosis correction, 04 (13.33%) cases developed under-correction, 01 (3.33%) overcorrection, 02 (6.67%) corneal abrasion, 02 (6.67%) peaking of the lid, 01 (3.33%) lid lag, 01 (3.33%) exposure keratopathy; but no cases developed diplopia. Yoon and Lee<sup>11</sup> assessed long-term functional and cosmetic outcomes after frontalis suspension using fascia lata auto grafts for congenital ptosis in Asian children. Functional success was assessed by review of photographs and medical charts. Functional success was defined as improvement of eyelid position above the pupillary margin without serious complications. Similar procedures were utilized in the current study. The functional success rates were 100% at 1 month after surgery and 94% at the last follow-up. Authors remarked that the use of fascia lata auto grafts yields a high functional success rates in both the short-term and long-term. Whitehouse *et al*<sup>12</sup> conducted a study to determine the visual and cosmetic outcome following the surgical correction of isolated congenital ptosis. In their study, the recurrence rates for the primary procedures were 16.7% for levator resection procedures, 35% for brow suspension procedures using donor fascia lata, and 30% for brow suspension surgery using mersilene mesh. An acceptable functional result was achieved with one operation in 75.3% of cases. In 20.8% of cases, a second operation was required and in 3.9% of cases three or more operations were required. Our results of functional success support these studies.

#### V. Limitations Of The Study

Even after all efforts, there are still some limitations in the present study. Among the limitations, small sample size and shorter follow-up period could not be overcome due to time limitation of dissertation period.

#### VI. Conclusion And Recommendations

Ptosis surgery is a challenging oculoplasticsurgical procedure that require correct diagnosis, thoughtful planning, thorough understanding of eyelid anatomy and a good surgical technique. In the current study, complete cosmetic success was achieved in 25 (83.33%) cases and no recurrence was observed in 6 months follow up. It would be more conclusive if the study would be conducted on larger sample and for longer period. So that, this study recommends that frontalis brow suspension surgery with harvested fascia lata for the patients of  $\leq 4$  mm ptosis with poor LPS function is a safe and effective procedure provided the surgery is done very skillfully and maintaining proper technique.

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**Conflict of interest:** None declared

**Ethical approval:** The study was approved by the Institutional Ethics Committee

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