

Surgical Outcome of Frontalis Brow Suspension In Simple Congenital Ptosis

Noman Ahmed,^{1*} Mariya Nazish Memon,¹ Asadullah Jatoi,¹ Ashok Kumar Narsani,¹
Mona Liza Mahesar¹

ABSTRACT

Objective To find the feasibility, functional and cosmetic outcome of frontalis brow suspension surgery in simple congenital ptosis.

Study design Descriptive case series.

Place & Duration of study Institute of Ophthalmology, Liaquat University of Medical & Health Sciences Jamshoro, from October 2019 to December 2020.

Methodology Patients visiting the outpatient department and meeting the inclusion criteria of having severe congenital ptosis with poor levator function <4mm, were included in this study. Patients with variable ptosis, diplopia, fair to excellent levator function and presence of Marcus Gunn Jaw winking ptosis were excluded. The variables assessed included margin reflex distance and palpebral fissure height. The outcome was graded as excellent, good or poor based on follow up at 6th month post-surgery. Statistical analysis was done by SPSS version 21.

Results Out of 52 patients, 32 (61.5%) were males and 20 (38.5%) females with the mean age of 14.18±5.43 year. Total of 56 eyes of 52 patients were associated with ptosis. We measured the functional outcome of the surgery by comparing mean preoperative and postoperative margin reflex distance (MRD) which was 0.5±0.98 mm, and 3.31±0.74 mm respectively. The mean preoperative and postoperative palpebral fissure height (PFH) was 4.96±1.35 mm, and 9.07±1.21 mm respectively. Majority of the patients had good to excellent cosmetic results. One (1.92%) patient had poor cosmetic outcome and required knot revision.

Conclusion Frontalis bow suspension surgery in case of congenital ptosis was found safe and effective in providing the better functional and cosmetic results, short hospital stay with minimal postoperative problems.

Key words Congenial Ptosis, Frontalis brow suspension, Cosmetic effect.

INTRODUCTION:

Ptosis in general is defined as abnormal dropping of the upper eye lid. Usually the upper eye lid is 1-2 mm beneath the upper limbus. Ptosis can be

classified in multiple ways as congenital and acquired, unilateral and bilateral and mild (2mm), moderate(3mm) and severe (>4 mm).^{1,2} Multiple causes of congenital ptosis may include under development or weakness of levator palpebrae superioris (LPS) or superior rectus (SR), elevation of chin at birth, the levator muscle may get some fibro-fatty infiltration, amblyopia and due to refractory errors.^{3,4}

¹ Institute of Ophthalmology Liaquat University of Medical & Health Sciences Jamshoro

Correspondence:

Dr. Noman Ahmed ^{1*}
Institute of Ophthalmology
Liaquat University of Medical & Health Sciences
Jamshoro
Email: drdnas@gmail.com

Vision is effected and as a result deprivation amblyopia in patients with congenital ptosis.⁵ The main aim of performing an early surgery on patients with ptosis is to correct the vision, achieve cosmetic

symmetry and psychological betterment of the patient, prevention of abnormal chin elevation and amblyopia as well. Performing frontalis brow suspension surgery is not as easy as it sounds but requires surgical expertise, anatomical knowledge of the operative area, precise clinical thinking for proper diagnosis and pre-hand planning of the surgery.

The frontalis suspension surgery for congenital ptosis is considered as a gold standard treatment worldwide requiring precise measurement of levator muscle as success of the procedure depends on this one specific muscle function.^{6,7} Various materials with a little bit of difference in surface smoothness, strength, and tissue reaction are being used for the procedure. This include biological tissues like fascia lata, or artificial material like PTFE, mersilene mesh, polypropylene, nylon and silicone bands. All of these material provide almost equivalent results.⁸

The difficulties encountered and complications that may occur with these materials include dissection in thigh with increased time of surgery and more chances of wound infection when fascia lata is harvested and granulation formation over the artificial material. Use of silicone tubes (conventional or self loaded) produced better results being less expensive, ease of application as it is smooth surfaced, less tissue reaction and more elastic in nature.^{9,10} This study was done to document overall results of the frontalis brow suspension surgery in patients with congenital ptosis.

METHODOLOGY:

This was a descriptive case series conducted in the Institute of Ophthalmology, Liaquat University of Medical & Health Sciences Jamshoro, from October 2019 to December 2020. Patients of congenital ptosis with poor levator function <4mm were included. Patients with variable ptosis, diplopia, fair to excellent levator function and presence of Marcus Gunn Jaw winking ptosis were excluded from the study.

History and examination were done. Variables assessed included age of the patient, time of onset of ptosis, its duration, symptoms of diplopia, variability of ptosis during the day and after excessive fatigue. Ptosis examination included lid fissure height, eyelid crease height, upper lid margin to reflex distance, palpebral fissure height, levator function, lagophthalmos, jaw winking and Bell's phenomenon, inspection for abnormal head posture (e.g. chin elevation). Written informed consent was obtained from each patient or parents.

Two horizontal incisions 3 mm above the lashes at the level of nasal/temporal limbus were made under local or general anesthesia. Further two stab incisions were made at the level of medial and lateral canthus respectively. At about 2 cm above the brow in the middle of the previously made brow incisions another stab incision made. Some blunt dissection with scissors then done to create space for passage of sling under the sub-orbicularis. The chosen (biological or artificial) sling material with a prefixed needle was used. The needle was passed from lateral to medial eyelid incision and then to nasal eyebrow incision in the created plane under the muscle. Another needle was passed from lateral eyelid incision to temporal eyebrow incision. Muscular plane intactness was ensured throughout the procedure. Both the needles were then taken out from the forehead incision and a small sleeve was passed through, to tighten and lift the lids up to the required level. Silicone tubes were cut at a little distance from the sleeves and both hidden under the submuscular plane. The forehead and brow stab were closed with vicryl 6/0 interrupted sutures. A frost suture was placed to prevent exposure. Postoperative oral and topical antibiotics along with lubricant drops were recommended for at least seven days.

The follow up was done at first postoperative day, one week, one month, three month, and six month after surgery. Functional results were graded as excellent, good or poor according to improvement in margin reflex distance and palpebral fissure height. Postoperative aesthetic results were evaluated according to the symmetry of the eyelids, the texture of the lid and the structure of the fold of the lid. Data were entered and analyzed with SPSS version 21. Descriptive statistics were used to present data.

RESULTS:

A total of 52 patients were included. There were 32 (61.5%) males and 20 (38.5%) females. The age of the patients was from 7 year to 25 years with the mean age of 14.18 ± 5.43 year (table I). All patients had ptosis. Refractive errors were found in 3 (5.35%) eyes and 1 (1.78%) had amblyopia. Functional outcome of the surgery was assessed by comparing mean preoperative and postoperative margin reflex distance which was 0.5 ± 0.98 mm and 3.31 ± 0.74 mm respectively.

The mean preoperative and postoperative palpebral fissure height was 4.96 ± 1.35 mm and 9.07 ± 1.21 mm respectively (table II). This showed that the good functional results were obtained. We observed postoperative excellent results in lid contour

Table I: Demographic Variables		
Variable	Frequency (n)	Percentage (%)
Gender (n=52)		
Male	32	61.5%
Female	20	38.5%
Age in years (n=52)		
05-10 years	16	30.76%
11-15 years	14	26.92%
16-20 years	12	23.07%
21-25 years	10	19.23%
Laterality of Ptosis (n=52)		
Right Eye	22	40.30%
Left Eye	28	53.84%
Bilateral	02	3.84%

Table II: Functional Outcome		
Functional Outcome	Mean pre-operative	Mean post-operative
Margin Reflex Distance MRD(mm)	-0.5±0.98	3.31±0.74
Palpebral Fissure Height PFH (mm)	4.96±1.35	9.07±1.21

Table III: Cosmetic Outcome			
Cosmetic Outcome	Excellent	Good	Poor
Lid contour	18 (34.61%)	34 (65.38%)	0
Symmetry	20 (38.46%)	31 (59.61%)	1(1.92%)
Lid crease	17 (32.69%)	35 (67.30%)	0

in 18 (34.61%) cases, symmetry in 20 (38.46%) and lid crease in 17 (32.69%) patients. Details are given in table III.

DISCUSSION:

This study was done on congenital ptosis patients. Congenital ptosis can be syndromic or isolated. In this study there is a defect in levator muscle function which can be treated with frontalis brow suspension surgery.¹¹ Many biological and artificial materials are used for the surgery with comparable results.¹² However, silicone suspension materials have been reported as best and with acceptable features of suspension material.¹³ In this study the focus was on the outcome of congenital ptosis by frontalis brow suspension surgery.

The age distribution of patients in this study was similar to what is reported in literature though slight

differences are noted in the range.¹⁴ Among 52 patients, more than 90% had unilateral ptosis while another study reported unilateral ptosis in 68% cases.⁵ In our study we measured the functional outcome of surgery by comparing preoperative and postoperative margin reflex distance palpebral fissure height. Similar approach was used and comparable results are reported in other studies.^{15,16} Cosmetic results are also in conformity with the reported literature.^{9,17,18}

In our study few acceptable minimal complications occurred that included postoperative swelling which did not require any treatment and resolved on its own. Few cases of lagophthalmos in this study were treated with lubricants and tapping the eye lid till it resolved. Under correction and over correction in few cases was reported for which knot revision was done. The wound infection was treated with systemic

antibiotics, as described in previous studies.¹⁹ Under correction and rupture of suture spontaneously is also reported as a complication.¹⁹ This did not happen in our study. Over correction which is another complication is reported by Baggio et al in 5% of eyes.¹⁰ Exposure keratopathy is also reported in literature.^{15,20} The limitations of this study included a small sample size and random pick of the patients but the results of this technique are encouraging which may set standards for future research on the subject from Pakistan.

CONCLUSIONS:

The frontalis brow suspension surgery for congenital ptosis was found safe. It produced good to excellent functional and cosmetic results. Complications were few and easily managed.

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Received for publication: 31-03-2021

Accepted after revision: 19-05-2021

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Author's Contributions:

Noman Ahmed: Manuscript writing, data collection and final approval.

Mariya Nazish Memon: Critical revision for important intellectual content & statistical analysis.

Asadullah Jatoi: Critical revision for important intellectual content & statistical analysis.

Ashok kumar Narsani: Critical revision for important intellectual content & data collection.

Mona Liza Mahesar: Data collection.

Conflict of Interest:

The authors declare that they have no conflict of interest.

Source of Funding: None

How to cite this article:

Ahmed N, Memon MN, Jatoi A, Narsani AK, Mahesar ML. Surgical outcome of frontalis brow suspension in simple congenital ptosis. *J Surg Pakistan.* 2021;26 (1):13-17. Doi:10.21699/jsp.26.1.4.