



## SUCCESS OF EARLY AGE FRONTALIS FLAP ADVANCEMENT SURGERY FOR CONGENITAL BLEPHAROPTOSIS WITH POOR LEVATOR FUNCTION: A CASE REPORT.

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### ABSTRACT

Congenital blepharoptosis is a well-known condition presenting with abnormal low-lying upper eyelid margin when eye is in primary gaze. Its often challenging to lift upper eyelid, usually due to congenital impairment in the levator function, namely levator muscle dysgenesis. Congenital blepharoptosis results in partial or complete obstruction of visual axis due to descended eyelid margin and this eventually develops various habits in patients like extending head, frowning, and shrugging when they attempt to look at an object. Congenital blepharoptosis affects normal development of the cervical spine as well with possible dysfunctions like deprivation amblyopia, myopia and astigmatism. Frontalis suspension is considered surgery of choice for blepharoptosis, particularly with poor levator function. This procedure involves creating a linkage between frontalis muscle and tarsus. Here we report an interesting case with severe bilateral congenital blepharoptosis in younger patient who underwent frontalis flap advancement surgery achieving excellent outcome. Written informed consent was obtained from patient's parents to publish this case report.

**KEYWORDS :** Congenital blepharoptosis, Frontalis flap advancement surgery, Frontalis suspension

### INTRODUCTION:

Blepharoptosis, refers to vertical narrowing of the palpebral fissure secondary to drooping of the upper eyelid to lower than normal position. Ptosis is an abbreviation for the term Blepharoptosis. When present at birth or diagnosed within the first year of life, its referred as congenital Ptosis. Simple congenital ptosis is the most common form of congenital ptosis (81%) with slight Male preponderance.<sup>[10]</sup> Most common unilateral but bilateral involvement was seen in 4%.<sup>[10]</sup> Embryologic failure of development of the levator muscle is frequent cause of development of blepharoptosis and due to descended upper eyelid margin, it commonly obstructs, either partially or completely, the visual axis. Patient with Congenital ptosis may gradually develop a habit of extending the head, frowning and shrugging while looking at objects as view obstructed, which may affect the normal development of the cervical spine and cause deprivation amblyopia, myopia and astigmatism. These condition can seriously impact on the physical and psychological development of children. In the majority of cases surgical correction is needed.

Frontalis suspension is a common surgery indicated in patients with blepharoptosis with poor levator muscle function.<sup>[11]</sup> It involves formation of a linkage between frontalis muscle and the tarsus of the upper eyelid. Fascia lata used in procedure is considered gold standard fixation material to transmit the force.<sup>[2-4]</sup> However, many other alloplastic materials (silicone, non-absorbable sutures,) or autologous tissues (the palmaris longus tendon, the temporalis fascia) have been used as slings.<sup>[3,5-6]</sup>

Historically, there have been various procedure undertaken in different part of the world to correct congenital blepharoptosis. *Fergus et al* introduced direct transposition of the frontalis muscle onto the lid margin via a brow incision for treatment of eyelid ptosis in 1901.<sup>[7]</sup> Song and Song subsequently reintroduced the concept in 1982.<sup>[8]</sup>

It is also indicated in cases of severe ptosis with poor levator palpebrae superioris muscle function which is seen in congenital ptosis.<sup>[9]</sup> The frontalis flap is another procedure which can also be used for patients who have failed prior levator advancement procedures.<sup>[6]</sup> However, it is to be noted

that poor frontalis function due to any reason such as facial nerve palsy or prior trauma is a contraindication to frontalis flap advancement and it should also be avoided in comorbidities like myasthenia gravis.<sup>[8]</sup>

There has been consensus that a careful ocular surface examination and evaluation for adequate Bell's reflex is vital before performing surgery. Here we are reporting our experience of the early frontalis flap surgery in a male child who presented with congenital blepharoptosis and poor levator function.

### Case Report:

We assessed a 18 months old Male child, born of full term normal vaginal delivery, brought by parents to tertiary care teaching hospital with complaints since birth that he has drooping upper eyelid in both eyes when chin elevated. There was no any alteration of eyelid position during feeding. The drooping has been progressively getting worse and prominent deterioration noticed since child started sitting and with chin elevation at age around 8-9 months. There was no history of birth trauma and he achieved all developmental milestones as expected. No history of any significant systemic illness. No family history of congenital ptosis is known.

On eye examination, both eyes fix and follow objects without any fixation preference. No evidence of any significant astigmatism on retinoscopy noted. Bilaterally pupils were normal size and reacted to light. No any anisocoric feature and relative afferent papillary defect noted. Motility of both eyes was full and free.

On dilated Fundus examination, both eyes within normal limits. Upper eyelid crease was absent in right eye & shallow in left eye. Palpebral Fissures height in right eye was 5mm and in left eye was 6mm. Margin to Reflex Distance 1 (MRD1) for right eye was 0mm and in left eye was 1mm. Bilaterally, eyelid lag was noted on downgaze. Bells phenomenon bilaterally was normal. Both eyes levator Function was <4mm which was poor. Anterior segment examination with corneal sensitivity was normal in both eyes.

Overall, clinical features and examination findings were

consistent with bilateral, moderate-severe simple congenital blepharoptosis with poor levator function.



**Image 1: On initial presentation in clinic**

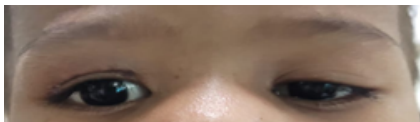
#### **Surgical technique:**

Corrective surgical procedure were performed under general anesthesia. Bupivacaine 0.5% with epinephrine 1:200,000 were infiltrated locally to improve hemostasis and analgesia.

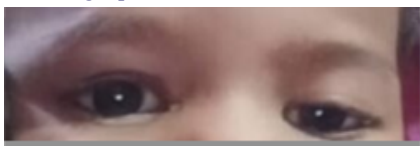
To start with, supraorbital neurovascular bundle was clearly marked to avoid intraoperative injury. A blepharoplasty-type incision was marked and made in upper eyelid where the lid crease would be created with use of no. 15 blade. Dissection carried to anterior tarsal plate and it was exposed well. Further on, suborbicularis dissection was carried out superiorly above septum to reach orbital rim. The orbital septum was opened, and any extruded fat was cauterized and excised. Frontalis muscle was identified between the skin and the periosteum. The frontalis muscle was separated from the orbital part of the orbicularis muscle by subcutaneous separation at the lower edge of the eyebrow. Then blunt dissection with Stevens scissors was made between the anterior and posterior plane of the frontalis muscle to free the muscle up to 0.5cm above the eyebrow, taking precaution to prevent damage to neuro vascular bundle especially on medial side and rectangular flap created.

Muscle flap was sutured for anterior 1/3 of tarsal plate with 6-0 Prolene at medial and lateral manner. Lid height was titrated to keep lid margin just above superior limbus. Lid crease forming suture was taken with 6-0 vicryl. Finally, skin was closed with 6-0 Prolene in continuous fashion. A Frost suture and compressive patch was applied for 24 hours.

Follow-up consultations were carried out in the outpatient clinic after the surgery, examined at week 1 and then 1- 2 months after surgery.



**Image 2: Post Surgery- 1 week**



**Image 3- Post Surgery- 2 months**

#### **RESULT:**

Overall patient achieved excellent benefit from surgery. There was satisfactory eyelid height, folds, contour improvement and MRD 1 increased by 4mm. Correction of blepharoptosis appeared satisfactory. Unfortunately, patient developed Lagophthalmos after surgery which was resolved at 2 months follow-up. There were no any complications such as Entropion, Exposure keratitis, Frontalis muscle paralysis, Frontal hypoesthesia or hematoma were noticed. We planned similar surgical procedure in another eye in one to two months' time.

#### **DISCUSSION:**

Congenital ptosis correction may be challenging. The choice of surgical method usually depends on the severity of ptosis and the function of the levator muscle. Frontalis suspension is

widely used to correct congenital ptosis with poor Levator Palpable Superioris function and good frontalis muscle function.<sup>[11]</sup> Autogenous, allogenic, synthetic graft materials have been widely used for brow suspension. The most commonly used autogenous materials are fascia lata, palmaris longus tendon, and temporal fascia. Allogenic material used is banked fascia lata. The disadvantage of autogenous fascia lata harvesting is associated with scars, hemorrhage, postoperative hematoma, superficial phlebitis, infection and muscle damage.<sup>[12]</sup> Whereas allogenic material banked fascia lata may lead to a relatively high recurrence rate.<sup>[3]</sup> Synthetic graft materials associated with risk of recurrence, extrusion, infection, granuloma formation and breakage after trauma.<sup>[3]</sup> Synthetic graft materials used are polypropylene suture, nylon suture, silicone rod, mersilene mesh, gore-tex.<sup>[1]</sup>

The Frontalis muscle is well-developed by 2 years of age whereas fascia lata maturation may take an additional year.<sup>[13]</sup> So frontalis flap advancement can be performed earlier. Frontalis muscle flap advancement has advantages as (a) an autogenous tissue with good innervation and abundant blood supply, (b) not easily susceptible to infection and granulation formation, (d) avoids the side effects of fascia lata transplantation, (e) leads to a more powerful and longer-lasting suspension than that achieved with other materials, (f) muscle contraction can produce a direct and effective eyelid lifting motion.<sup>[14]</sup> Frontalis flap advancement technique require single skin crease incision than more incisions in other frontalis suspension techniques.

In our patient we used Frontalis Flap advancement as correction method to avoid side effects of brow suspension materials. Our patients' age also was factor which favored choosing advancement method based on available evidences and our clinical experience. As discussed above in case report, we achieved overall encouraging outcome for our patient except development of lagophthalmos after surgery. However this also resolved with promising progress two months after surgery. Hence we strongly recommend this technique when patient's factors are favorable as our case.

#### **CONCLUSION:**

For the cases with severe Congenital Blepharoptosis with poor Levator function in children, although we have choice of two surgical correction methods like Frontalis suspension and Frontalis flap advancement, we recommend correction using Frontalis flap advancement surgery under general anesthesia as this has provided satisfactory correction in our case of Blepharoptosis in early age children.

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