



FUNCTIONAL AND COSMETIC OUTCOME IN SUPRABROW SINGLE STAB FRONTALIS SLING SURGERY IN CONGENITAL PTOSIS, OUR EXPERIENCE

Ophthalmology

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ABSTRACT

PURPOSE: Functional and cosmetic Outcome of supra brow single stab incision frontalis sling in congenital ptosis

Background- In addition to ptosis, the lack of eyelid crease is one of the main cosmetic problems of patients with poor levator function. In this study, we aimed to evaluate the effect of the single stab suprabrow incision frontalis sling

MATERIALS AND METHODS: 10 eyelids of 8 consecutive patients presenting to the dept. of ophthalmology, VSSIMSAR, Burla with congenital ptosis with poor levator function ≤ 4 mm. All the patients underwent suprabrow single stab (SBSS) frontalis sling surgery using Aurosling. Post operatively, patients were evaluated for lid and suprabrow edema, pain and discomfort and functional outcomes using parameters like vertical fissure height, MRD-1, lagophthalmos and lid closure. Follow up period- 3 months.

RESULTS: Lid contour and lid crease symmetry were good in 80% of the cases, eyelid crease formation was satisfactory in all the cases. There was less postoperative scarring and excellent cosmesis.

CONCLUSION: The Supra brow single stab frontalis suspension technique, while retaining the usual advantages and functional results of standard sling procedures, is associated with decreased intraoperative bleeding, reduced postoperative edema and scarring.

KEYWORDS

Supra brow single stab (SBSS) frontalis sling, Congenital ptosis, poor levator function

INTRODUCTION

Ptosis is defined as abnormally low position of upper lid; may be congenital or acquired^[1]

Simple congenital ptosis, which is the most common variant in children and young adults, is probably caused by failure of neuronal migration or development of LPS with muscular sequelae^[2]. The prevalence of congenital ptosis as described by various ophthalmic epidemiologists ranges from 62-88% among all types of ptosis^[3]. 92% of cases are unilateral while 8% are bilateral^[4].

The diagnosis is made on history indicating its presence from birth which can be confirmed by old photographs^[5]. On examination there is ptosis, absence of upper lid crease and moderate to poor levator function^[6].

Ptosis gives rise to two main problems. The commonest one is cosmetic while the other is rarer but more serious is stimulus deprivation amblyopia^[7] which usually affects children with a unilateral, severely ptotic lid. The treatment of ptosis is indicated in the pre-school age when accurate measurements can be obtained but however if ptosis is severe and there is a threat for image deprivation amblyopia then earlier intervention is indicated^[8].

The management of simple congenital ptosis is mainly surgical. The choice of procedure depends upon degree of ptosis and levator function^[9]. Usually congenital ptosis tend to occur with a poor levator function and in majority of cases frontalis muscle has to be included in the muscle syncytium to potentiate the elevation of lid. The tarsus of the upper lid is attached to the frontalis muscle by means of a sling, which can be obtained from various autologous and synthetic sources.

There are various techniques for frontalis sling procedures. The most commonly used is the fox pentagon technique^[10] which is usually reserved for artificial sling material. In conventional fox pentagon, there are a total of 5 stab incisions among which three are given superior to brow line.

The Fox pentagon acts by linking the tarsus of the upper eyelid to the frontalis muscle, thus resulting in a better eyelid position in primary gaze. Different materials, from autologous fascia lata to various suture materials, have been used as a sling. The most commonly used material worldwide is the Seiff silicone suspension set.

In our study we will perform a modified pentagon technique with a suprabrow single stab incision (SBSS) and study its functional and cosmetic outcome.

The advantage of this technique is that with minimal skin incisions and less surgical time, the clinical outcome of a conventional frontalis sling procedure is obtained. As compared with the supra- brow single-stab incision technique, the conventional procedure involves a total of five stab incisions (three supra-brow and two lid margin) and creates more bleeding intra operatively and more edema in the postoperative period. Postoperative lid edema, pain and suture-related complications due to multiple sutures can be avoided with the new technique^[11]. The technique can be performed in all eyes with ptosis and poor levator function that necessitate a frontalis sling. The stab incision used is only about 2 mm. The sling may be curved to pass smoothly in case of difficulty while changing the direction. The sling accurately follows the path of the Fox pentagon because it is anchored supero-medially and supero-laterally at the orbital septum. It thus creates a good physiological upward direction of traction that gives superior cosmetic results as compared with conventional sling techniques.

MATERIAL AND METHODS

Inclusion Criteria: All the patients reporting to out-patient department of ophthalmology in VSSIMSAR, Burla, diagnosed as having simple congenital ptosis with poor levator function (≤ 4 mm).

Exclusion Criteria: Patients having poor Bell's phenomena, associated pathology like jaw winking, 3rd nerve misdirection, squint, amblyopia, impaired corneal sensitivity and neoplastic lesions of the lids.

Study Design: Interventional case series.

Data Collection: Patients with simple congenital ptosis were diagnosed clinically on the basis of history, old photographs and clinical signs i.e. drooping of upper eye lid, absence of lid crease and poor levator function.

Pre-operative assessment included a proper history including personal biodata, relevant information and an informed consent. A detailed ocular and general examination was performed with special emphasis on the lid measurements such as Palpebral fissure height (PFH), Marginal reflex distance (MRD) and Levator function (LF). Pre-operative photographs were taken.

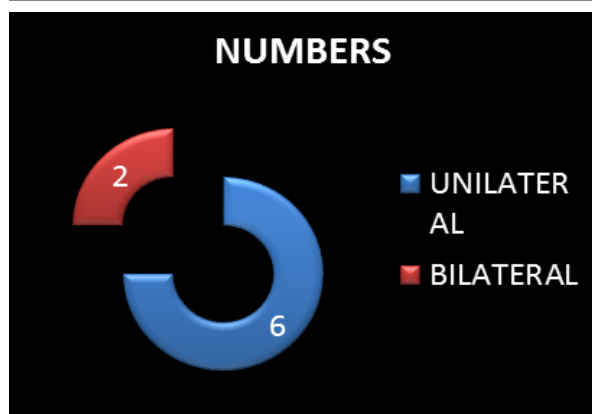
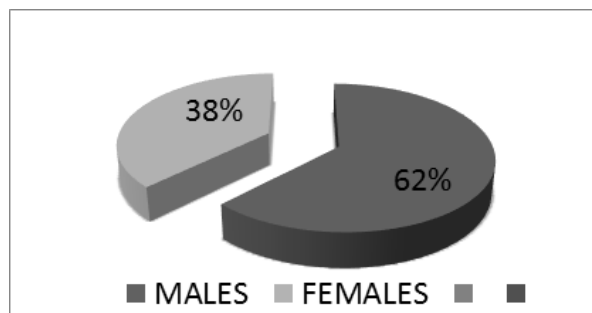
SBSS frontalis sling was done in 10 eyelids of 8 consecutive patients of congenital ptosis with poor levator action in our series. Single stab incision was given on the frontalis muscle with prior marking of pentagon and we used Aurosling for the procedure. Without making any lid margin incisions, the needle is pierced in through the medial mark on the lid margin to pass in the epi-tarsal tissue horizontally from medial to lateral and then pierced out through the lateral lid margin marking, about 2 mm above the lid margin. The lateral needle is reinserted through the skin puncture while taking care not to inadvertently cut the sling. It is advanced vertically upward, dipping behind the septum just below the orbital rim, and then upward to reach the upper lateral corner of the pentagon. Without exteriorizing the needle, the direction of the needle is turned toward the central mark of the pentagon and guided in the same surgical plane to be exteriorized through the central supra-brow incision. The same procedure is repeated on the other side of the pentagon such that the needle traverses upward to the upper medial corner of the pentagon and is then turned toward the central mark of the pentagon and exteriorized through the central supra-brow incision.

Post-operatively patients were given oral antibiotics and NSAIDs. Topical ointment containing antibiotics were prescribed to be applied over the wound. Frequent lubrication in form of artificial tears and gel was prescribed to counter lagophthalmos.

Follow up was done on 1st post-operative day, then at 1st week, 3rd week and 3rd month.

RESULTS

Age of the patients ranged from 11-25 yrs. Male to female ratio was 1.5:1. 25% presented with bilateral congenital ptosis. Levator function ranged from 0-4 mm (average 2.8 mm). Mean pre-operative MRD-1 was 1mm. 80% (8) eyes had good outcome (within 1 mm of normal), 20% had fair outcome (within 2 mm of normal) and no under correction with mean post-operative MRD-1 of 3mm at 3rd month of follow up. Lid contour and lid crease symmetry were good in 80% of the cases, eyelid crease formation was satisfactory in all the cases. There was less post-operative scarring and excellent cosmesis.



We noted minimal edema, pain and discomfort at the immediate post-operative period.

Lagophthalmos was noted in 2 patients. Frequent post-operative lubrication helped in avoiding exposure keratitis. All patients were followed up for 3 months and no significant delayed failure or sling material related complication such as extrusion, infection or granuloma formation were noted.



Fig1. Pre-operative photograph showing severe congenital ptosis

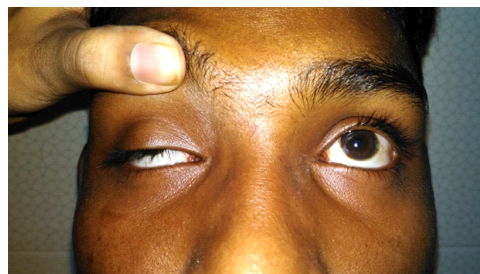


Fig2. Congenital ptosis with poor levator function



Fig3. Immediate postoperative photograph showing minimal edema



DISCUSSION

Suprabrow single stab incision (SBSS) frontalis sling is a novel modification of the conventional 3 stab incision fox pentagon, first described by Susan J and Agarwal A in 2012. This was appealing as the conventional pentagon was usually associated with three clear marks on the forehead which was limited to only one in SBSS technique. Also due to multiple incisions the forehead usually caused an irregular furrowing, which was cosmetically concerning for a lot of patients.

Susan J and Agarwal A used Seiff frontalis suspension set (BD Visitec) for sling.

The main cosmetic advantage of this modification apart from lesser number of incisions is the less amount of furrowing of the forehead which in turn is secondary to the single suture.

The surgical time was also observed to be less than the conventional technique as we have been doing it for a long time in our set up; however the surgical time was not included in the variables of this study.

None of the patient showed over correction with no evidence of knot failure or sling sensitivity. We did not notice any other complication such as extrusion, infection or granuloma formation.

Our study shows promising pattern for this new technique.

CONCLUSION

Suprabrow single stab incision technique is a promising modification of conventional fox pentagon for frontalis sling which allows for successful ptosis repair via a straightforward technique with a quick learning curve, superior cosmetic results and reduced operating time.

Future prospective studies would be valuable in comparing this method to conventional technique in our set-up.

Financial & competing interest disclosure

The authors do not have any competing interests in any product/ procedure mentioned in this study. The authors do not have any financial interests in any product / procedure mentioned in this study.

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