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A new technics in sutures for surgical ptosis correction

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Abstract
Objective: There are many ways to correct ptosis surgery. A new sutures technics for surgical ptosis correction with indication and contraindication was described as details.
Methods: A new sutures technics: modified Fascanella Servat.
+ The levator aponeurosis was bifolded (by doubling over) inversely by the first suture, followed by a second and third suture. (F.1)
+ The lid crease was recreated by three vertical sutures tied with round gauze (1.5 cm in diameter) at the superior eyebrow postoperatively. (F.2)
+ For the loosen lid crease by removing the gauze for over- correction, or
+ For the tighten lid crease by replacing the original gauze with a bigger gauze (eg >2cm) in the case of under-correction.
Discussion & Conclusions: This new less invasive procedure with adjustable sutures may be the easy choice for indicated ptosis correction on early age and older age with some advantages and disadvantages mentioned.

Keywords: ptosis surgery, a less invasive procedure, new sutures technics, adjustable sutures post surgery

1. Introduction

Congenital Ptosis: This condition is present at birth, may be mild or severe, and affects one or both eyes. Although the cause is often unknown, the most common cause is thought to be improper development of the levator muscle. This muscle is responsible for elevation of the upper eyelid. In some cases, the child may need to tilt their head right back and elevate their eyelid or eyebrow in order to see out of the affected eye(s). A thorough ophthalmic assessment is vital and must include visual acuity. Other problems that may be present include amblyopia, strabismus, refractive errors, astigmatism, or blurred vision. Treatment is surgical and, in non-severe cases, will be performed when the child is 3 to 5 years old. However, surgery will be performed earlier if the ptosis interferes with visual development [1].

Acquired Ptosis: Acquired ptosis is the most common form of upper eyelid ptosis. It is generally due to stretching of the levator muscle and may occur as a result of ageing, diabetes, trauma, muscular or neurological disease. Ptosis may be one of the first presentations of myasthenia gravis, a condition in which the muscles become weak and tire easily [2]. Adults may also notice a loss of vision, especially in the upper field. If the underlying problem is muscular or neurological disease, this must first be treated. If a tumour is identified, surgical removal may be possible. If no underlying problems are identified, surgical correction is the next step [1].

Pseudoptosis: In this condition, patients develop a drooping eyelid but in the absence of any levator muscle pathology. One of the causes is an excessive amount of eyelid skin that appears to cover the eye.

There are many ways to correct ptosis by surgery. In this paper a new sutures technics in ptosis surgery was described as details.

2. Materials and methods

Procedure for intervention: A modified Fasanella-Servat [3, 4]. The modified procedure is a new sutures technics in ptosis surgery was described as details below:

1. Two ml of 2% lidocaine was injected into the skin of the upper lid.
2. An incision of 5 mm above the eyelid margin, parallel to the lid cilia, was made. The inferior skin orbicularis flap was freed from the tarsus. The superior skin orbicularis flap was freed from the orbital septum to the level of Whitnall's ligament. (Figure 1a, 1b). When stripping the orbital septum, care must be taken to avoid exposing orbital fat. (Fig. 1)
3. Three 5 O Vicryl mattress sutures were placed from the superior eyebrow, across the levator muscle, to the upper edge of the tarso plate with a 4 mm width, returning through the levator muscle and out of the skin of the eyebrow. The first suture was placed at the central upper lid. The second suture was placed at the lateral lid and the third at the nasal lid. (Fig. 2). These sutures should be removed: 2 lateral sutures (cut off 1 week after surgery) and 1 central suture (cut off 2 weeks after surgery). (Fig 2)
4. The levator aponeurosis was bifolded (by doubling over) inversely by the first suture, followed by a second and third suture. The lid crease was recreated by three vertical sutures tied with a round-gauze (1.5 cm in diameter) at the superior eyebrow (Fig. 1d). It is possible, in the first week postoperatively, to loosen the lid crease by removing the gauze for over- correction, or tighten the lid crease by replacing the original gauze with a bigger gauze (e.g. >2 mm in diameter) in the case of under-correction. (Fig. 2)
5. The skin edges were closed with silk 6-0, with side-to-side running or interrupted sutures. If excessive, lid skin

may be incised.(Fig. 2)

Diagnosis, principal measurements

Principal measurements: measure mm of lid slit, lagophthalmos at before and after surgery: three month, six month, and one year follow-up.

Diagnosis: According to Beard [1], eyelid drooping of ≤2 mm from its desired level is arbitrarily defined as mild, 3 mm as moderate, and ≥4 mm as severe. The upper eyelid level in its normal position results in a lid slit of 9 mm. In mild ptosis, the lid slit will be 7 mm, and in moderate and severe ptosis, it will be 6 mm and 5 mm respectively. Levator function of ≥8 mm is considered to be good; 5-7 mm is fair; ≤4 mm is poor [1].

Excluded: An ice test for the diagnosis ptosis caused by of myasthenia gravis.is excluded our surgical indication [2] (Fig 3)

3. Results & Discussion

We performed a modified Fasanella -Servat procedure [3, 4], since unmodified, the procedure should not be performed on patients over the age of 11. The Fasanella-Servat procedure is performed in patients with minimal ptosis (1 to 3 mm) and achieves good levator function (9 to 13 mm). There are, however, some drawbacks to the procedure, including overcorrection, under correction, malposition of the lid crease, malposition of cilia, peaking of the lid margin, excessive lid lag, inadequate lid closure, and conjunctiva prolapse [5, 6].

According to Burnstine and Putterman their upper blepharoplasty procedure (removal of all excess skin and orbicularis between the eyebrow and eyelid margin) performed in six patients (twelve eyelids) showed an improvement in upper eyelid ptosis (as measured by margin reflex distances), without any worsening of lagophthalmos or corneal keratopathy [7]. The modified procedure with levator excision and frontalis suspension achieves satisfactory correction of ptosis without corneal exposure [5, 6].

There are several classifications of ptosis:

- with normal superior rectus;
- With superior rectus weakness;
- blepharophimosis;
- neurogenic, congenital third palsy;
- Horner and Marcus-Gunn's syndrome [8].

The group 1 ptosis is the most common form. The ptosis is commonly unilateral rather than bilateral. Treatment consists of assessing the ptosis and performing the most appropriate surgery, taking care not to under correct the condition. Moderate correction should be the aim for older children with a long history of ptosis.

About 55 to 60% of all ptosis cases are congenital. True congenital ptosis can be associated with other muscular abnormalities. In some cases, ptosis will have been present since birth; in others, it will have arisen from birth injuries. The actual mechanism causing ptosis is obscure, but it may be due to third nerve damage [9]. Electron microscopy studies have suggested that it may be due to muscular dystrophy [9, 10].

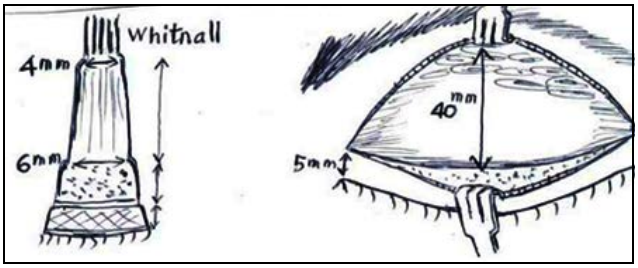
An advantage of our new sutures technics is easily done and can be applied on elder age, older patient who was suffered from ptosis both eyes. The second is managed over-under correction ptosis one week post operation by adjustable sutures [11].

A disadvantage of our modified procedure is that the bifolded levator muscle causes thickening of the upper lid for at least 6 months following surgery. The thickening lid will be thinner 1 year later [11].

4. Conclusions

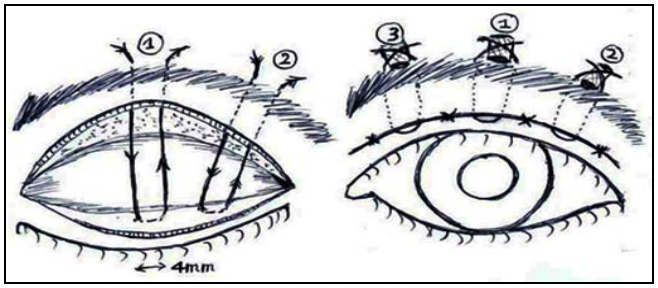
The upper blepharoplasty procedure described in this paper, in which the levator muscle is doubled over and three correctable interrupted sutures are placed, may be a good alternative for ptosis treatment. This new less invasive procedure and with adjustable sutures may be the easy choice for indicated ptosis correction with some advantages and disadvantages mentioned above.

5. Tables and Figures



(a) (b)

Fig 1: (a) Left the lavatory system **(b)** Right placing the 1st, 2nd and 3rd sutures with the bifolded invert



(a) **(b)**

Fig 2: (a) left Disinsertion of the levator aponeurosis, (b) Right Tied three mattress sutures with three round gauzes. Whit adjustable sutures. Closed eyelid skin with interrupted stures

Fig 3: Preo & post ice test on with Myasthenia Gravis for exclusion

6. References

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