

Management of Congenital Ptosis

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SUMMARY

Out of a total of 12 patients with congenital ptosis, 7 were treated by trans-conjunctival (Iliff's) isolation and resection of Levator palpebrae superioris muscle and 5 underwent a combined approach of transconjunctival isolation and trans-cutaneous resection of Levator palpebrae superioris muscle. In the former, 5 patients had good post-operative lid level (considered to be within 2 mm of normal), 1 was over corrected, 1 undercorrected and 2 had poor lid skin crease and fold. In the latter, there were no under or over-corrections, 3 had good (within 1 mm of normal) and 2 had fair (within 2 mm of normal) post-operative lid levels and all 5 had good lid crease and fold formation.

Key Words: Ptosis, Transconjunctival Isolation, Transcutaneous resection.

INTRODUCTION

P tosis or drooping of upper eye lid, can be due to defective innervation, dystrophy of muscle itself, dehiscence of aponeurosis or increased weight of upper lid¹.

Surgical approach and exposure of Levator palpebrae superioris muscle can be by a trans-conjunctival or posterior¹⁻³ and transcutaneous or anterior approach⁴⁻⁶. A combined approach, whereby the muscle is dissected trans-conjunctivally and resected transcutaneously has been described which enables the surgeon to benefit from the advantages of both modalities^{13,14}.

MATERIAL AND METHODS

Twelve patients of congenital ptosis were operated on. Ages ranged from 3-31 years. Ptosis was measured by the margin reflex distance (MRD) i.e. the distance between the corneal reflection in primary position to the center of the upper eye lid margin, the normal being 4mm. Levator function was assessed by noting the total excursion of the center of upper lid margin in extreme downgaze to extreme up-gaze by means of a ruler held in front while pressing on the brow to eliminate any Frontalis action.

Visual acuity was checked to rule out amblyopia. Slit-lamp biomicroscopy, applanation tonometry and funduscopy were done. External ocular movements, Bell's phenomenon, jaw-winking phenomenon and pupillary reaction were specifically checked.

All patients were operated on under general anaesthesia. The upper eye lid was everted after insertion of a central suture at the anterior lid surface, just above the ciliary margin. The amount of Levator resection was determined by the formula proposed by Urist and Putterman. Margin Limbal distance (MLD) i.e. the distance between the 6 O'clock corneal limbus and center of upper lid in extreme upgaze is measured. The difference in MLD between the two sides three determines the amount of Levator to be resected. 1 cc of 1 : 10,000 locaine with Adrenaline was injected at the lateral upper border of tarsal plate. (Fig. 1) This causes hydro-dissection of the Levator from Orbicularis. (Fig. 3) The Levator muscle, Muller's muscle and conjunctive are then grasped in a ptosis clamp (Fig. 4). The muscle is then freed from the upper tarsal border (Fig. 5). Levator is dissected out, the lateral and medial horns identified and cut. The lid is everted back and full thickness incision along the upper tarsal border is given over a lid guard (Fig. 6). The Levator is then brought out through the lid incision (Fig. 7).

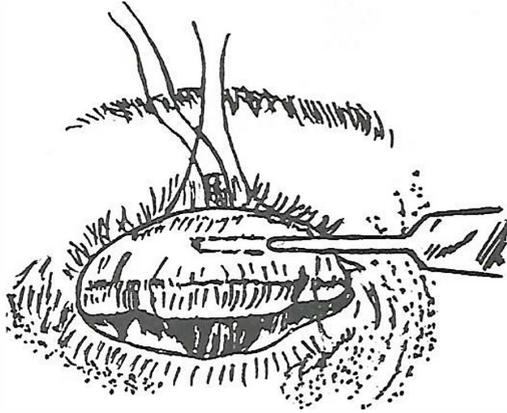


Fig. 1: Injection at lateral superior tarsal border to create hydraulic separation of Levator aponeurosis from Orbicularis muscle.

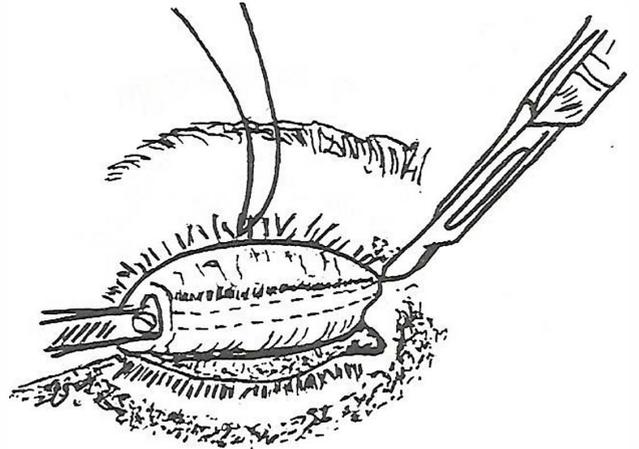


Fig. 3: Insertion of scissors in the plane of hydro-dissection.

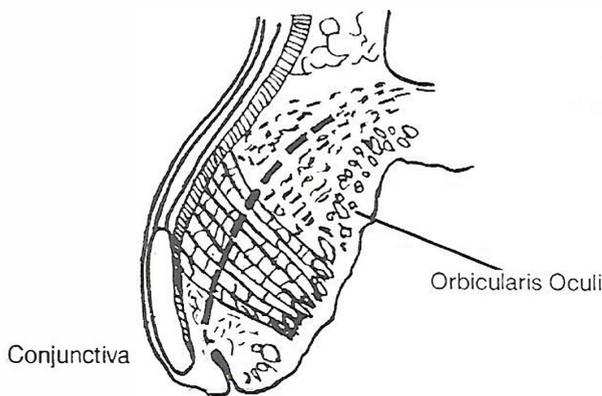


Fig. 2: Cross section of upper lid showing plane of hydro-dissection.

The skin Orbicularis lamina is dissected down and anterior tarsal surface is exposed. A central marking suture is placed by a double armed 5-0 polyglactin suture in tarsal plate and brought out through the Levator, at the site measured. The upper lid level is determined after tying the suture; any readjustment can be made at this point (Fig. 8). Two more sutures securely anchor the Levator to the tarsal plate. Skin is closed by interrupted sutures taking a bite into tarsal plate to create the future skin crease (Fig. 9).

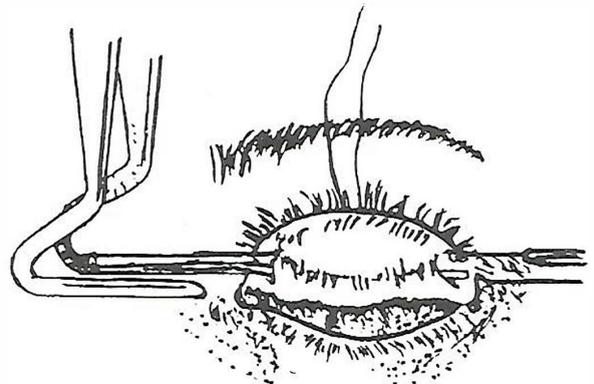


Fig. 4: Introduction of ptosis clamp.

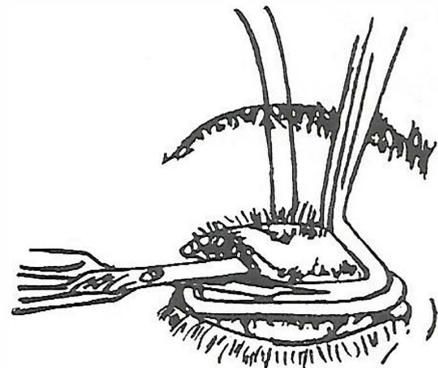


Fig. 5: Cutting the Levator muscle from tarsus.



Fig. 6: Transcutaneous incision through Orbicularis muscle.

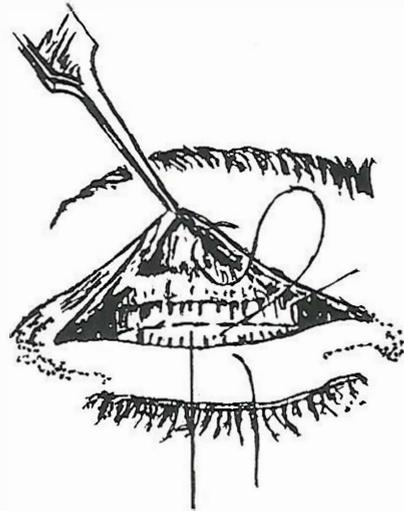


Fig. 9: Placement of eye lid fold sutures through tarsus, Levator and skin.

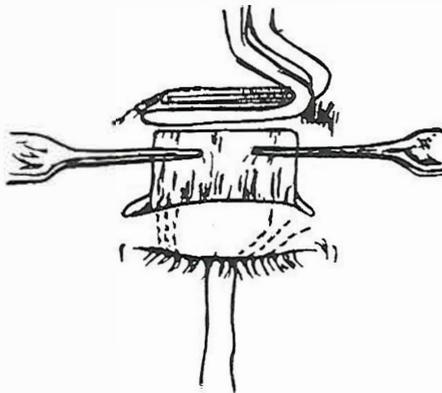


Fig. 7: Transfer and re-clamping of Levator apoenurosis.



Fig. 8: Checking the placement of marking suture.

A lower lid Frost suture is applied (Fig. 10) to avoid the problem of exposure. Antibiotic with steroid ointment is instilled and dressing is applied.



Fig. 10: Central upper lid suture placement to exert a pulling effect.
(Source Putterman A, Urist MJ: Transconjunctival isolation and transcutaneous resection of the Levator palpebrae superioris muscle. Am J Ophthalmol 1974; 77: 90).

RESULTS

A total of 12 patients with congenital ptosis were dealt with (Table 1). 1 patient had mild, 4 had moderate and 7 had severe ptosis (Table 2). Levator function was assessed to be fair in 5 patients and poor in 7 patients (Table 3). 7 patients were treated via the trans-conjunctival approach as advocated by

Iloff. Though 5 patients had good lid levels, poor lid skin crease fold was seen in 2 patients; 1 patient was over corrected and another had a residual ptosis (Table 5). The results of combined approach were much better with a good lid crease and fold and there were no over or under corrections (Table 5).

The amount of Levator palpebrae superioris muscle resection correlated with the amount of Levator function. During the combined method, preoperative adjustment of Levator muscle resection is an added advantage.

Table 1: Patient data.

S. No.	Age years	Amount of Ptosis (mm)	Levator Function (mm)	Levator Resection (mm)	Procedure	Date
1.	15	4	poor	18	Iloff's	24-01-88
2.	07	5	poor	15	Blaskovic	13-04-88
3.	21	6	poor	20	Iloff's	27-04-90
4.	19	4	fair	15	Iloff's	21-11-88
5.	07	2	poor	18	Iloff's	11-01-89
6.	18	3	poor	18	Iloff's	31-05-89
7.	05	3	poor	15	Iloff's	16-06-89
8.	17	4	poor	21	*TCI/TCR	09-08-89
9.	03	4	fair	18	TCI/TCR	30-08-89
10.	31	3	fair	12	TCI/TCR	20-12-89
11.	07	3	fair	15	TCI/TCR	04-06-90
12.	11	6	fair	18	TCI/TCR	06-08-90

* Trans-conjunctival isolation and transcutaneous resection.

Table 2:

Amount of Ptosis	No. of Cases
Mild (3mm)	1
Moderate (3mm)	4
Sever (4mm) or over	7
Total	12

Table 3: Levator palpebrae superioris function no of cases.

Good (7-8mm)	--
Fair (5-7mm)	5
Poor (4 mm)	7
Total	12

Table 4: Levator palpebrae superioris resection no of cases.

Minimal (14-17mm)	5
Moderate (18-22mm)	5
Maximal (23 mm)	2
Total	12

Table 5: Post-operative LID level.

	TCI/TCR*	Iloff's
Good	2	5
Fair (within 1-2 mm of normal)	3	--
Over-correction	--	1
Residual ptosis		--
Total	5	7

*Transconjunctival isolation and transcutaneous resection.

DISCUSSION

The controversy regarding internal¹⁻³ or external⁴⁻⁶ approach for ptosis surgery is quite old. The surgical treatment of ptosis has been a point of discussion between the protagonists of transcutaneous VS tranconjunctival isolation and resection of Levator palpable superioris muscle (LPS). Levator palpable superioris is the main elevator muscle of the upper lid. The muscle ends in a broad aponeurosis and inserts by splitting into two laminae. The anterior laminae inserts into the pretarsal skin, traversing the orbicularis fibers and the posterior lamina inserts into the anterior surface of the tarsal plate⁷⁻¹⁰. The transconjunctival route gives a speedy and safe dissection of LPS from orbicularis but subsequent suture placement after resection through the skin leaves the aponeurosis in proximity but not anatomically attached to its new insertion, hence depending upon the development of adhesions for its new attachment. Besides, the upper edge of the tarsal plate is rough and can lead to discomfort and the lid crease is not very well created in most cases¹².

The transcutaneous isolation and resection needs more experience at isolation of the muscle but like surgical exposure anywhere else, gives the advantages of antero-posterior approach, LPS attachments are better identified and after resection the aponeurosis is actually sutured to its new insertion. The skin crease is also created by suturing

the skin to the upper edge of the tarsal plate¹².

Putterman and Urist reported the combined technique of transconjunctival isolation (TCI) and transcutaneous resection (TCR) of LPS muscle¹⁴. They came to regard it as the procedure of choice after performing over 200 internal transconjunctival LPS muscle resections, 100 external transcutaneous procedures and over 75 combined operations.

The criteria for success have also become more stringent.

In 1969, Smith et al reviewed the surgical result for 148 patients and reported that a good result, considered to be correction within 2-5 mm for patients with 4 mm of ptosis, was achieved in 73% of cases. They also showed that success rates varied from 48 to 83% after reviewing published results¹⁵.

In 1979, Anderson and Dixon reported a success rate of 83% in acquired ptosis with 1 mm or less of residual ptosis as the criteria of success and a minimum 1 year of follow up. This study included 23 patients with congenital ptosis, 18 patients with acquired ptosis, and 19 patients with neurogenic ptosis¹⁶.

In 1983, Older reported 95% success rate in 116 acquired ptosis and 58 congenital ptosis cases using 1 mm or less residual ptosis as the criterion for success, average followup being 6-7 months. They identified post-operative lid droop 2 to 4 months after surgery and attributed it to disinsertion of the aponeurosis as the absorbable sutures of 6-0 double armed polyglactin weaken. Therefore they recommended use of non-absorbable sutures¹⁸.

Anderson believes that besides the absorbable suture, the late failures can also be due to inadvertent aponeurosis tuck or suture replacement in rarefied aponeurosis.

Hylkema and Koorned have also showed that the amount of Levator resection cannot be predicted from preoperative assessment of the Levator function and degree of ptosis.¹⁹ They recommend adjustable suture surgery via the anterior approach. Although patients were selected exclusively on the basis of the amount of ptosis (exceeding 2 mm) and Levator function (exceeding 3 mm), 86% of patients were reported to have good cosmetic result after a single procedure. In case of congenital ptosis 90% achieved cosmetically satisfactory post-operative lid levels.

Berlin and Vestal reported that the major factor in determining results is the amount of ptosis preoperatively whereas Levator function and type of

anesthesia have no effect. This is contrary to accepted criteria by a majority of ptosis surgeons and we found that pre-operative Levator muscle function has a definite relationship to the amount of muscle resected.

In conclusion, by internal transconjunctival route using hydraulic dissection, the LPS aponeurosis is separated with ease, speed, assurance and safety. External transcutaneous route gives the ability to adjust the eye lid level and arch and to create a matching eye lid fold.

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