

The Surgical Management of Ptosis

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Introduction

THERE ARE two main types of ptosis, congenital and acquired. Congenital ptosis is due to hypoplasia of the levator palpebrae superioris muscle. The superior rectus muscle arises from the same mesodermal mass as the levator muscle and congenital ptosis associated with ipsilateral superior rectus palsy is not uncommon. The causes of acquired ptosis are multiple. The majority of cases with congenital ptosis and selected cases of acquired ptosis are amenable to corrective surgery.

This paper is a study of the surgical management of ptosis in the Eye Department, University Hospital. 22 consecutive cases were assessed and operated by the author between January 1973 and March 1976. Both main groups of ptosis, the congenital and acquired were operated upon. 19 cases (86.4%) were congenital and 3 cases (13.6%) acquired. Unilateral congenital ptosis accounted for 17 cases. 2 patients with unilateral ptosis had ipsilateral superior rectus palsy. One had Marcus Gunn jaw-winking syndrome with superior rectus palsy. (Figure 5). In this synkinesis syndrome, the ptosis was eliminated and over-corrected when the patient opened his mouth (Figure 6) or moved his jaw to the opposite side (Figure 7). There were two bilateral cases (Table I). In the acquired group of 3 cases, 2 were due to traumatic third nerve palsy and one was a chronic progressive external ophthalmoplegia (Table II). One patient with traumatic third nerve palsy had the injury at the age of four and the eye was amblyopic. The other patient had bilateral third nerve palsy after a head injury.

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Table I
Congenital Ptosis

Unilateral	
With normal superior rectus	14
With superior rectus palsy	2
Marcus Gunn jaw-winking	1
Bilateral	
With normal superior rectus	2
	<hr/> 19

Table II
Acquired Ptosis

Third nerve palsy (traumatic)	2
*C. P. E. O.	1
	<hr/> 3

*Chronic progressive external ophthalmoplegia

Assessment of Ptosis

The important aspect in the surgical management of ptosis is the reliable preoperative evaluation of the patient. The patients were assessed on the following criteria:-

- i) The type of ptosis, congenital or acquired, was determined.

- ii) Unilateral or bilateral ptosis was noted.
- iii) Measurement of ptosis was done in the primary position.
- iv) The position of the eyelid margin to the pupil indicated the degree of lid droop. Amblyopia of a ptotic eye, though the pupil is completely covered, is never due to ptosis per se but to an associated factor such as ametropia or squint.
- v) The presence of a lid fold indicated at least some degree of levator function.
- vi) Levator muscle function is measured by the amount of lid excursion from looking down and then looking up, the frontalis action being eliminated by pressure on the brow by the observer's thumb. Normal levator function is 15mm or more.
- vii) Frontalis muscle adds another 4mm to 6mm of lift and is important for brow suspension operation.
- viii) The function of the extraocular muscles were noted. Superior rectus palsy with congenital ptosis is not uncommon.
- ix) The orbicularis muscle is responsible for lid closure and paresis will result in or aggravate lagophthalmos.
- x) The synkinesis syndrome must be looked for. A Marcus Gunn jaw-winking syndrome can be easily missed.
- xi) Bell's phenomenon was noted. Its absence forewarns of exposure keratitis in lagophthalmos.
- xii) The presence of corneal sensation was recorded.
- xiii) Preoperative photographs were taken for record purposes. A study of the photographs may reveal information missed on earlier examinations.

Overall, the congenital group was easier to assess than the acquired.

Degree of Ptosis

The degree of ptosis was assessed as mild, moderate or severe, based on the amount of droop of the eyelid or the function of the levator muscle. A lid droop of 2mm or less was considered mild, 3mm moderate and 4mm or more severe. Ptosis with levator function of 8mm or more was considered mild, 5mm to 7mm moderate and 4mm or less severe. (Beard, 1969). (Table III).

Choice of Operation

The choice of operation was determined by the pre-operative evaluation, especially the type and degree of ptosis. For the congenital group of

Table III
Degree of Ptosis

Degree	Levator Function
Mild	8mm or more
Moderate	5mm to 7mm
Severe	4mm or less

patients with severe and moderate ptosis, the operation of choice was levator resection. The acquired cases had absent or minimal levator action and suspension operation was performed.

Type of Operation

For a levator resection I have preferred the conjunctival approach of Blascovics (Blascovics, 1923) as I find this procedure simpler. I have no difficulty in resecting up to 20 mm of levator muscle with the posterior approach. I have used the anterior or skin approach for reoperation of an under-correction. I find it useful to quantitate the amount of levator muscle resection. It is advisable to err on the radical side with levator resection in congenital ptosis as overcorrection is less common. For the suspension operation, I have preferred the Fox's brow suspension operation with autogenous fascia lata (Fox, 1966).

Analysis of Operated Patients

In 10 patients with severe congenital ptosis, levator resection of 18mm to 20mm was done with tarsectomy of 2mm. In 8 patients with moderate ptosis, levator resection of 16mm to 17mm was done with tarsectomy of 2mm. The patient with Marcus Gunn jaw-winking syndrome had levator excision of 20mm followed by brow suspension at the same operation.

The 3 acquired cases had severe ptosis. One patient with third nerve palsy had no levator function while the other had 1mm function. The chronic progressive external ophthalmoplegia had 1mm function. Fox's brow suspension operation was done for each of these cases (Table IV). The patient with chronic progressive external ophthalmoplegia had the other lid lifted few years ago in another hospital. The case with bilateral traumatic third nerve palsy had only one lid lifted to avoid diplopia.

Lid Folds

With the Blascovics operation, the ptosis can be corrected either with or without a lid fold. In the congenital group, superior lid folds were created in unilateral cases, only when a lid fold was present in the fellow upper lid. In the bilateral cases, lid

Table IV
Analysis of Operated Patients

Type	Degree	No.	Operation	Amount
Congenital	Severe	10	Levator resection plus Tarsectomy	18mm - 20mm 2mm
	Moderate	8	Levator resection plus Tarsectomy	16mm - 17mm 2mm
	Marcus Gunn Jaw-winking	1	Levator Excision plus Fox's brow suspension	20mm
Acquired	Severe	3	Fox's brow suspension	

folds were created in both upper lids. A lid fold was an invariable accompaniment with suspension operation. With bilateral ptosis it is preferable to do both lids at one operation. In ptosis with associated muscle palsy, the ptosis and squint were corrected at separate operations.

Results

In the congenital group of 19 patients, 13 had good results with symmetry of the palpebral apertures (Figures 1 to 4). 6 patients had undercorrection. (Table V). Only one patient with undercorrection was reoperated upon; the reoperation was done by the anterior approach. No reoperation was done for the rest of the undercorrected cases as the patients were satisfied with the cosmetic improvement. The patient with Marcus Gunn jaw-winking syndrome did well after the operation. The synkinesis was eliminated and the ptosis satisfactorily corrected. (Figures 5 to 10).

Complications

In the congenital group, 5 patients developed complications. All the complications were managed satisfactorily. 3 patients had lagophthalmos with exposure keratitis. A Berke's levator tenotomy (Berke, 1957) was done in one of the patients and this reduced the lagophthalmos to a manageable proportion. The other two cases were not severe and had good Bell's phenomenon. They were treated medically with artificial tears and advised to tape their lids at night. In all cases the exposure keratitis cleared in time due to development of resistance of the cornea to drying, without permanent

reduction in visual acuity. 2 patients had conjunctival prolapse. One needed surgical reposition but the prolapse in the second case cleared spontaneously. Partial loss of eyelashes occurred in the

Table V
Results

Congenital Ptosis	19
Good result	13
Undercorrected	6
Overcorrected	0

Table VI
Results

Acquired Ptosis	3
Satisfactory Result	3

patient who had levator tenotomy. This was left alone. There were no complications in the 3 cases of acquired ptosis (Table VII).

Discussion

Congenital ptosis is much easier to evaluate than the acquired. In congenital ptosis, an effort should be made to quantitate the amount of levator resection with the degree of ptosis. If there is doubt to the amount of resection, a larger resection is advised as overcorrection is less common in



Figure 1
Preoperative photograph of child with right moderate congenital ptosis.



Figure 3
Bilateral severe congenital ptosis.



Figure 2
After right Blascovics operation with good result.



Figure 4
After bilateral Blascovics operation.

Table VII
Complications

Congenital	
Lagophthalmos with exposure keratitis	3
Conjunctival Prolapse	2
Partial loss of eye lashes	1
Acquired	
Complications	Nil

congenital ptosis (Beard, 1966). Acquired ptosis is more difficult to assess. Each case must be considered on its own merits and the general rules that apply in the treatment of congenital ptosis do not apply in the acquired. For the same degree of ptosis, the amount of levator resection required is less than that for congenital ptosis. Consequently, it is easier to overcorrect acquired ptosis. The levator muscle may be resected by the anterior skin-approach, the Everbush operation or its modifications (Leahey, 1953; Johnson, 1954; Berke, 1959;

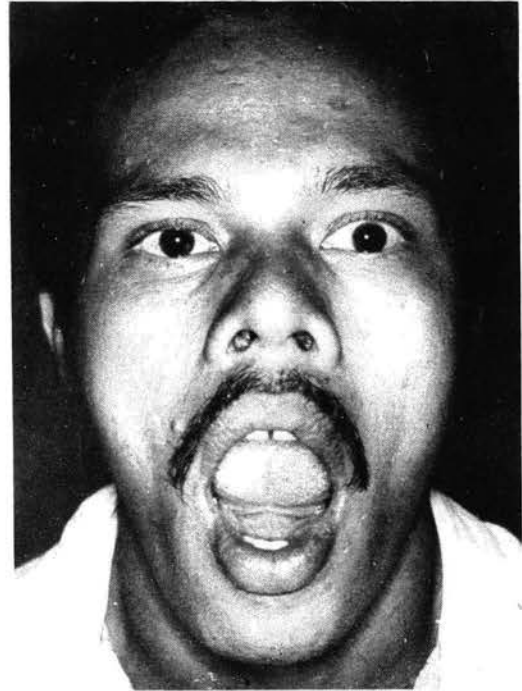


Figure 6
Pre-op. Synkinesis is obvious when left ptosis becomes over-corrected on opening mouth.



Figure 5
Pre-op. Patient with Marcus Gunn jaw-winking syndrome showing left moderate ptosis.

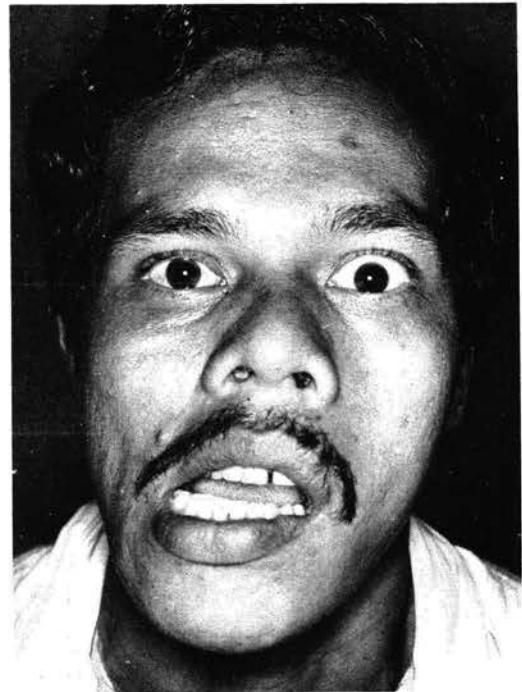


Figure 7
Pre-op. Left ptosis overcorrected on moving jaw to opposite side.

Mustarde, 1968) or by the posterior conjunctival-approach of Blascovics. Each approach has its advantages and disadvantages. With the anterior approach it is easier to get more muscle and a lid fold is invariably created. In Chinese patients with unilateral ptosis and absent lid fold on the contra-suspension operation is done as a second procedure. Beard (1969) advised bilateral suspension operation as a primary procedure for severe bilateral congenital ptosis if the patient is reluctant to undergo a second lateral lid, it is necessary to use the posterior approach to avoid creating an unwanted lid fold.

Levator resection is the operation of choice for moderate congenital and acquired ptosis and also for severe congenital ptosis. For minimal ptosis, when the levator function is 10mm or more, the Fasanella-Servat operation (Fasanella and Servat, 1961) or its modified form (Fox, 1975) can be performed. This operation is mainly a tarsectomy rather than a levator resection. For severe acquired ptosis, the suspension operation is indicated. For severe unilateral or bilateral congenital ptosis with levator function of 4mm or less, levator resection is still the operation of choice. If this fails, a



Figure 9
Post-op. Synkinesis eliminated when patient opens mouth; left upper lid remains in same position.



Figure 8
Post-op. After levator muscle excision with Fox's sling operation in left upper lid.



Figure 10
Post-op. Synkinesis eliminated when patient moves jaw to opposite side.

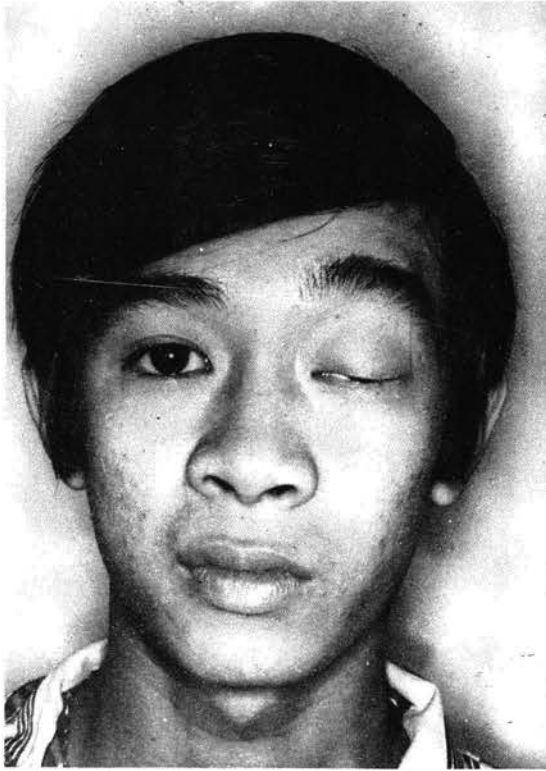


Figure 11

Left traumatic third nerve palsy with ptosis (acquired). Left eye has poor vision (amblyopia).

operation. Suspension operation from the frontalis muscle can be done with autogenous fascia lata (Beard, 1965) or with silicone strip (Tillett and Tillett, 1966). A suspension operation has the disadvantage that though the appearance is satisfactory in the straight ahead (primary) position and on looking up, there is marked lid lag on looking down and this would result in asymmetry for unilateral cases. For bilateral suspension operation, as lid lag occurs in both upper lids, symmetry is present and the result is acceptable. Beard (1965) had advised bilateral suspension for unilateral ptosis by excising the levator muscle in the normal lid to make it ptotic and then slinging both the upper lids. Callahan (1972) suggested placing a sling in the normal lid as well as the ptotic lid without excision of the levator muscle in the normal lid, to achieve the same result. In unilateral third cranial nerve palsy when the affected eye is amblyopic, ptosis correction can be performed. If a lid suspension is indicated because of absent or minimal levator function, a unilateral and not bilateral lid suspension is the operation of choice. This is because the palsy of the associated muscles would prevent symmetry

in all directions of gaze. Unilateral third nerve palsy is one of the few instances when only unilateral lid suspension need be performed (Beard, 1973).

Summary

An analysis is made on 22 consecutive and operated cases of ptosis. 19 cases were congenital and 3 acquired. The choice of operation was determined by the preoperative evaluation. Those with severe and moderate congenital ptosis had levator resection. The patient with Marcus Gunn jaw-winking syndrome had levator excision followed by brow suspension at the same operation. Suspension operation was done for the 3 cases of severe acquired ptosis. The majority of congenital cases achieved good results. The acquired cases had satisfactory results. Few complications occurred and they were managed satisfactorily.

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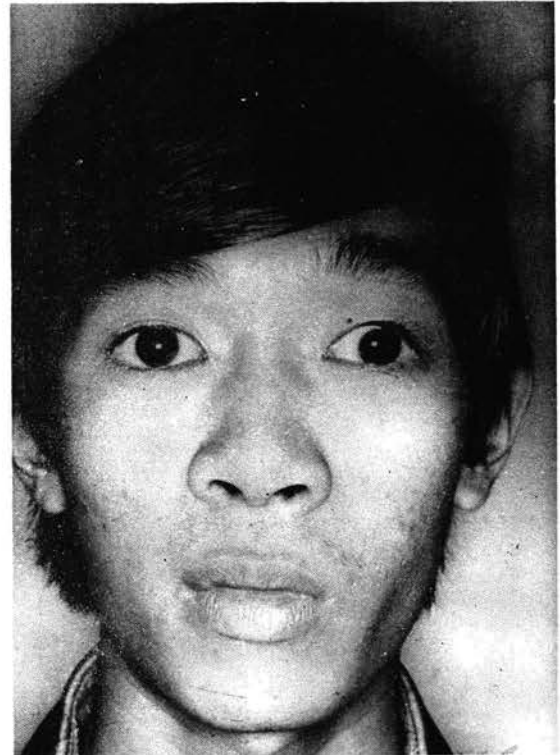


Figure 12

After Fox's suspension operation with autogenous fascia lata, in left upper lid.

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