

Our Patient Has Droopy Eye Lids: What to do? (Ptosis)

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Blepharoptosis, more commonly referred to as ptosis, is defined as an abnormally low position of the upper lid.¹ As a fairly common entity encountered in clinical practice, a detailed and comprehensive evaluation assumes vital importance for effective surgical correction. An equal, if not additional, significance may be attached to distinguishing it from conditions masquerading as ptosis, to circumvent needless referrals and surgical intervention. The following abstract aims at providing one with a general overview of the condition, along with some approaches that may be followed during evaluation of a case.

Pseudoptosis¹

Before delving into the depth of the subject, it is essential to remember the conditions which cause a false impression of ptosis.

Conditions such as microphthalmos, enophthalmos, phthisis bulbi etc. which present with orbital volume deficit, may lend an appearance suggestive of ptosis owing to the lack of support to the lids by the globe.

It is also helpful to note whether it is

the contralateral lid which is retracted, by bearing in mind that in normal circumstances, the upper lid covers the superior 2 mm of the cornea.

Dermatochalasis needs to be ruled out, particularly in elderly patients, as sagging skin on the upper lids may be mistaken for ptosis. Similarly, brow ptosis may cause a false impression of ptosis, in cases of seventh nerve palsy. The possibility of ptosis in these cases may be easily eliminated by manually elevating the brow.

Due to the tendency of the upper lid to move along with the globe, ipsilateral hypotropia may appear like ptosis. On forcing the hypotropic eye into fixation by covering the normal eye, one may diagnose this condition.

Once the diagnosis of ptosis may be conclusively established, the necessities to be borne in mind while evaluating a case, are as follows.

History¹

History-taking assumes significance in distinguishing congenital from acquired ptosis. The duration of symptoms, along with the presence or absence of family history, may be inquired about.

Another important means of distinguishing the two conditions, is by comparing the size of the palpebral fissure on downgaze. In congenital cases, it is found to be greater on the ptotic side, while

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the opposite is true for acquired cases. Differentiating congenital from acquired ptosis, assumes significance owing to the fact that congenital cases require a greater amount of surgical correction for the same degree of ptosis. The surgical manoeuvres also vary depending upon the type.

Measurements^{1,2}

The following measurements are vital for planning the surgical intervention in any case of ptosis.

- Central palpebral fissure width
- Margin reflex distance
- Levator muscle function

a. Central Palpebral Fissure Width

In normal subjects, it is found to be 7-10 mm in males and 8-12 mm in females. However, as the lower lid margin acts as the baseline for this measurement, it may be inaccurate in cases that cause its displacement, such as entropion, ectropion (Fig. 1).



Fig. 1: Central Palpebral Fissure Width in assessment of Ptosis

Reference: Putterman A. (1980). Basic Oculoplastic Surgery. In: Peyman, Sanders, Goldberg. Principles and practice of ophthalmology (pp. 2247-2273). Philadelphia: Saunders.

b. Margin-Reflex Distance (M.R.D.)

In order to perform this test, the examiner sits directly in front of the patient, with his eyes at the same level as that of the patient's. The source of light is

held between the examiner's eyes, and flashed at the patient's eye, which is to be examined.

M.R.D. 1 is the distance of the corneal light reflex from the centre of the upper lid margin, which is taken as a positive value (Fig. 2).

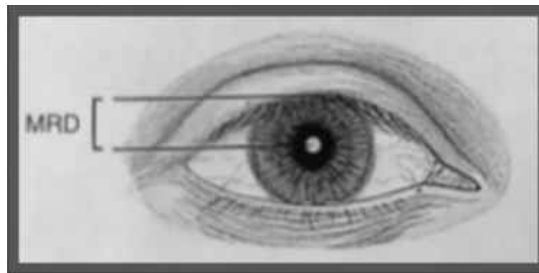


Fig. 2: Margin Reflex Distance in assessment of Ptosis

Reference: Putterman A. (1980). Basic Oculoplastic Surgery. In: Peyman, Sanders, Goldberg. Principles and practice of ophthalmology (pp. 2247-2273). Philadelphia: Saunders.

In cases of severe ptosis, when the upper lid obscures the corneal light reflex, it is taken as the number of millimetres the upper lid is lifted to reveal the corneal light reflex. This is taken as a negative value.

In unilateral cases,

Degree of ptosis = M.R.D. 1 of normal eye - M.R.D. 1 of affected eye

In bilateral cases,

Degree of ptosis = M.R.D. 1 of average eye (4.5 mm) - M.R.D. 1 of affected eye

M.R.D. 2 is the distance of the corneal light reflex from the lower lid margin.

M.R.D. 1 + M.R.D. 2 = palpebral fissure width

c. Levator Muscle Function

It may be measured as the number of millimetres of excursion of the upper lid from extreme downgaze to extreme upgaze by fixing the frontalis muscle with direct

pressure on the eyebrow (Fig. 3).

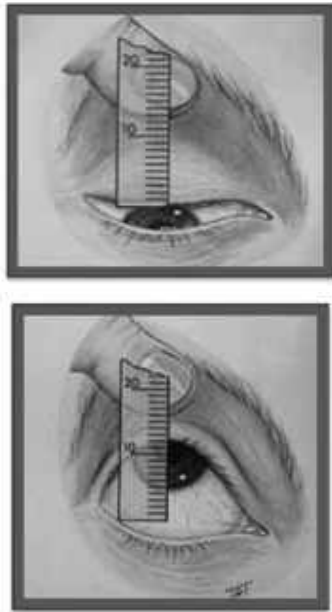


Fig. 3: Upper Lid Excursion Distance in assessment of Ptosis

Reference: Putterman A. (1980). Basic Oculoplastic Surgery. In: Peyman, Sanders, Goldberg. Principles and practice of ophthalmology (pp. 2247-2273). Philadelphia: Saunders.

Normal - 15 to 18 mm

Good - 12 to 14 mm

Fair - 5 to 11 mm

Poor - 4 mm or less

It may also be measured as Margin Limbal Distance (M.L.D.) i.e. the distance in millimetres from the 6 O' clock limbus to the central upper eyelid margin in extreme upgaze, with fixation of frontalis muscle. This measurement is an important requirement in case a resection of the levator palpebrae superioris muscle is planned as a part of the surgical intervention.

In unilateral cases,

Amount of levator resection (in mm) = (M.L.D. of normal eye - M.L.D. of affected eye) x 3

In bilateral cases,

Amount of levator resection (in mm) = (M.L.D. of average eye [9 mm] - M.L.D. of affected eye) x 3

Ptosis In Special Cases - Evaluation And Management^{1,2}

i. Ptosis and Strabismus

In cases with severe hypotropia, the strabismus is corrected first. It may relieve the ptosis, or the residual ptosis may be corrected at a later stage.

In case of mild hypotropia, only ptosis is corrected as long as the deviation is cosmetically acceptable.

In case of horizontal strabismus with ptosis, both surgeries may be performed in the same surgical session, as neither is likely to affect the outcome of the other.

An important consideration to be borne in mind is that M.L.D. is no longer valid in vertical strabismus as 6 O'clock limbal level in upgaze will become abnormal in such cases. Therefore, in these cases, we record M.R.D.3. It is the distance of the corneal light reflex from the central upper eyelid margin in extreme upgaze.

In unilateral cases,

Amount of levator resection (in m.m.) = (Normal M.R.D.3 - Abnormal M.R.D.3) x 3

In bilateral cases,

Amount of levator resection (in m.m.) = (Average M.R.D.3 [7 mm] - Abnormal M.R.D.3) x 3

ii. Ptosis & Jaw-Winking

It refers to the retraction of the ptotic upper lid in conjunction with

- chewing
- sucking
- opening the mouth
- contralateral jaw movement etc.

It is due to the misdirection of the mandibular branch of the fifth cranial nerve to the levator muscle. In these cases, levator muscle resection is avoided during surgical correction, as it will lead to exacerbation of the condition.

iii. Myasthenia Gravis

In every case of unilateral or bilateral ptosis, myasthenia gravis needs to be considered as a possible cause. It can be eliminated by means of a variety of tests, such as the Tensilon test, which is performed by administering 1 ml (10 mg) of edrophonium. Relief of ptosis within 3 minutes is diagnostic of myasthenia gravis.

iv. Disinsertion of Levator Aponeurosis

It is characterised by

- thin upper lid
- relatively high upper lid crease
- iris markings seen through the translucent upper lid when it is pulled over the cornea

It is surgically corrected by reattaching the disinserted aponeurosis.

Role of Muller's Muscle^{1,2}

The action of Muller's muscle, a sympathetically innervated muscle inserted into the upper border of the tarsal plate, is tested by instillation of 10% phenylephrine eyedrops. Within 10 to 15 minutes, the ptosis is relieved due to sympathetic stimulation of the muscle. In

these cases, resection and advancement of the Muller's muscle gives good post-operative results.

Surgical Options^{1,2}

The choice of surgery depends largely on the cause of ptosis, severity and associated conditions. The commonest surgical interventions performed are listed below, along with their indications.

1. Resection of Levator
 - when the levator function is 4 mm or greater
2. Resection of Muller's muscle
 - when there is minimal ptosis (1.5 - 2.5 mm), resolving with 10% phenylephrine
3. Frontalis sling
 - congenital, with less than 4 mm levator function
 - external ophthalmoplegia
 - neurogenic
 - myasthenia gravis
 - blepharophimosis
 - essential blepharospasm
4. Levator aponeurotic muscle reattachment in cases of disinsertion

Thus, a calculated and thorough examination of a case of ptosis, assists greatly in effective management, not merely as to the choice of surgery, but also the degree of correction and so as to gauge the likely post-operative outcome.

References

1. Bowling B. (2016). Eyelids. In: Bowling B. Kanski's Clinical Ophthalmology: A systematic approach (pp. 38-45). Edinburgh: Elsevier Limited.
2. Putterman A. (1980). Basic Oculoplastic Surgery. In: Peyman, Sanders, Goldberg. Principles and practice of ophthalmology (pp. 2247-2273). Philadelphia: Saunders.