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SURGICAL CORRECTION OF INVOLUTIONAL PTOSIS: A CASE REPORT WITH ANTHROPOMETRIC ANALYSIS

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ABSTRACT

Background:

Involutional ptosis is one of the most common age-related eyelid disorders characterized by progressive drooping of the upper eyelid due to attenuation or dehiscence of the levator aponeurosis. Besides aesthetic concerns, involutional ptosis may lead to visual field impairment, eye fatigue, and compensatory frontalis muscle overactivity.

Objective:

To evaluate the effectiveness of surgical correction of involutional ptosis using objective anthropometric assessment.

Methods:

A clinical case of a patient with bilateral involutional ptosis was analyzed. Preoperative and postoperative evaluation included standardized photographic anthropometry in frontal and lateral projections. Key parameters included marginal reflex distance-1 (MRD-1), palpebral fissure height, upper eyelid symmetry, brow position, and eyelid contour. Surgical correction was performed using levator aponeurosis advancement through an anterior approach.

Results:

Postoperative evaluation demonstrated significant improvement in eyelid position and symmetry. MRD-1 increased from approximately 0–1 mm preoperatively to 3–4 mm postoperatively. Palpebral fissure height normalized bilaterally with restoration of upper eyelid contour and reduction of compensatory brow elevation. Functional and aesthetic outcomes were satisfactory without postoperative complications.

Conclusion:

Levator aponeurosis advancement is an effective and reliable technique for the correction of involutional ptosis. Objective anthropometric analysis allows accurate assessment of surgical outcomes and demonstrates significant improvement in eyelid position, symmetry, and facial aesthetics.

INTRODUCTION.

Involutional ptosis, also referred to as aponeurotic ptosis, is the most common form of acquired blepharoptosis in adults. The condition develops primarily due to age-related stretching, thinning, or dehiscence of the levator aponeurosis from its attachment to the tarsal plate. As a result, the upper eyelid descends, causing narrowing of the palpebral fissure and impairment of both aesthetic appearance and visual function [1,2].

Clinically, patients with involutional ptosis often present with upper eyelid drooping, visual fatigue, compensatory eyebrow elevation, and forehead wrinkles caused by chronic frontalis muscle activation. In severe cases, superior visual field obstruction may significantly affect quality of life [3].

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Accurate preoperative evaluation is essential for successful surgical planning. Anthropometric assessment includes measurement of marginal reflex distance-1 (MRD-1), levator function, palpebral fissure height, brow position, and eyelid crease symmetry. Standardized photographic documentation provides objective evaluation of both preoperative deformity and postoperative outcomes [4].

Several surgical techniques have been described for correction of involutional ptosis, including levator advancement, levator resection, Müller muscle-conjunctival resection, and frontalis suspension. Among these, levator aponeurosis advancement remains the gold standard in patients with good levator function because it restores normal anatomical relationships while preserving physiological eyelid movement [5,6].

Despite the high success rate of ptosis surgery, precise restoration of eyelid symmetry and contour remains technically demanding. Therefore, objective anthropometric analysis is increasingly emphasized in modern oculoplastic surgery for evaluation of surgical outcomes and long-term stability [7].

The purpose of this study was to present a clinical case of involutional ptosis corrected with levator aponeurosis advancement and to evaluate surgical outcomes using objective anthropometric assessment.

CASE PRESENTATION.

A patient presented with complaints of progressive drooping of the upper eyelids, tired appearance, visual discomfort, and narrowing of the superior visual field. The symptoms had gradually progressed over several years.

Clinical examination revealed bilateral upper eyelid ptosis, more pronounced on the right side. Compensatory elevation of the eyebrows and increased forehead wrinkles were noted due to chronic frontalis muscle activation. Upper eyelid crease height was elevated, suggesting levator aponeurosis attenuation.

Preoperative anthropometric analysis demonstrated decreased MRD-1 values of approximately 0–1 mm bilaterally, reduced palpebral fissure height, and asymmetry of the upper eyelids. Levator muscle function remained preserved (>10 mm), confirming the diagnosis of involutional ptosis suitable for levator advancement surgery.

Standardized photographic evaluation was performed in frontal and lateral projections (Figures 1–2).

Figure 1

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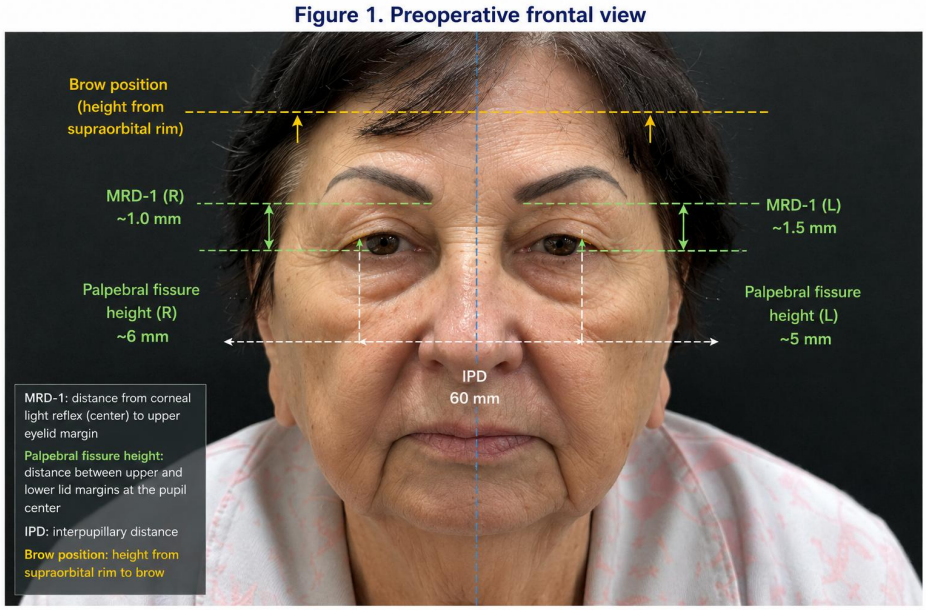

Figure 1. Preoperative frontal anthropometric assessment

The frontal view demonstrates bilateral involutional ptosis, more pronounced on the left side. Decreased palpebral fissure height and reduction of MRD-1 are observed bilaterally. Mild compensatory brow elevation is present due to chronic frontalis muscle activation. Upper eyelid dermatochalasis and periorbital soft tissue ptosis contribute to a tired and aged facial appearance.

Anthropometric findings:

MRD-1: Right — ~1.0 mm; Left — ~1.5 mm
Palpebral fissure height: Right — ~6 mm; Left — ~5 mm
Brow position: mildly elevated bilaterally
Upper eyelid crease: elevated and asymmetric

Figure 2

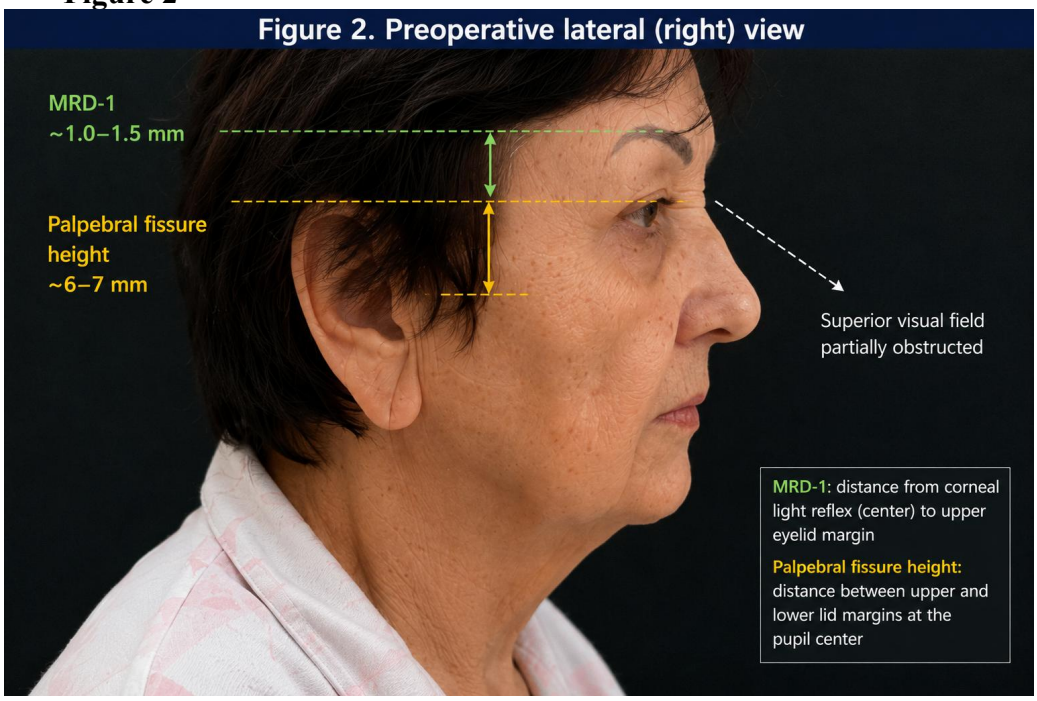

Figure 2. Preoperative lateral anthropometric assessment

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The lateral view demonstrates upper eyelid descent with partial coverage of the superior corneal limbus and narrowing of the palpebral fissure. Findings are consistent with involutional ptosis caused by levator aponeurosis attenuation.

Anthropometric findings:

MRD-1: ~1.0–1.5 mm

Palpebral fissure height: ~6–7 mm

Superior visual field: partially obstructed

SURGICAL TECHNIQUE

Surgical correction was performed under local anesthesia using an anterior levator aponeurosis advancement technique.

A skin incision was made along the natural upper eyelid crease. Following careful dissection through the orbicularis oculi muscle, the orbital septum was opened to expose the levator aponeurosis. Intraoperative examination confirmed attenuation and partial dehiscence of the levator aponeurosis.

The levator aponeurosis was advanced and reattached to the superior border of the tarsal plate using interrupted sutures. Intraoperative eyelid height and symmetry were carefully evaluated to achieve optimal eyelid contour and physiological position.

Conservative excision of redundant upper eyelid skin was performed to improve aesthetic appearance. The wound was closed with fine nonabsorbable sutures.

RESULTS

Postoperative anthropometric analysis demonstrated significant bilateral elevation of the upper eyelids with restoration of symmetrical palpebral fissures. MRD-1 increased from approximately 1–1.5 mm preoperatively to 3–4 mm postoperatively.

Upper eyelid contour became smoother and more defined, while compensatory brow elevation decreased. Mild postoperative edema and ecchymosis were present and consistent with normal postoperative healing.

Figure 3.

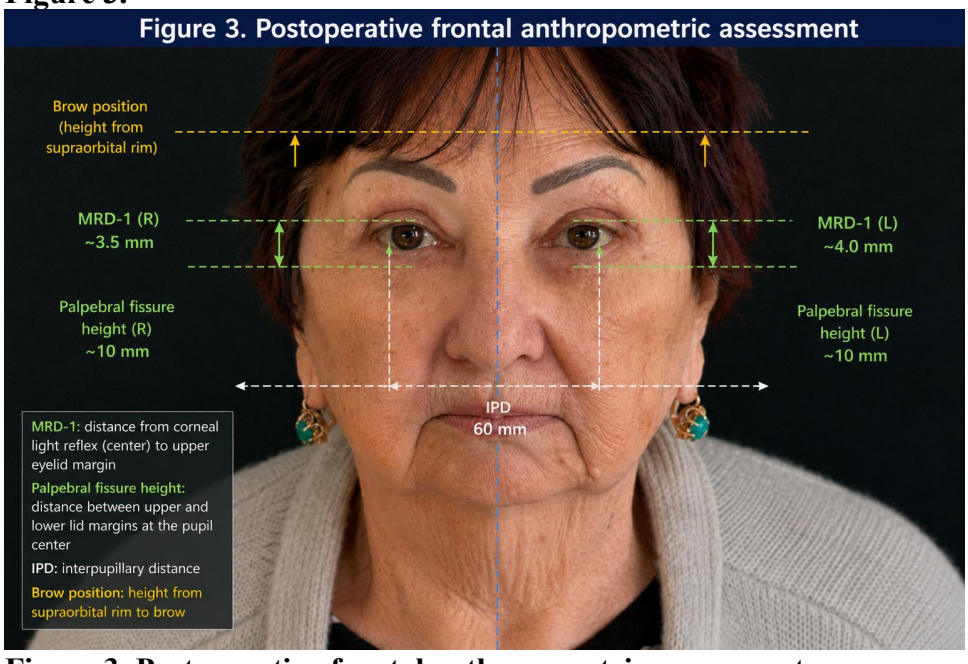

Figure 3. Postoperative frontal anthropometric assessment

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Postoperative frontal view demonstrates elevation of the upper eyelids with increased MRD-1 and normalization of palpebral fissure height. Symmetry of the upper eyelids is restored, and brow position appears more relaxed.

Anthropometric findings:

MRD-1: Right — ~3.5 mm; Left — ~4.0 mm
Palpebral fissure height: ~10 mm bilaterally
Brow position: physiological and symmetric
Eyelid contour: smooth and elevated

Figure 4.

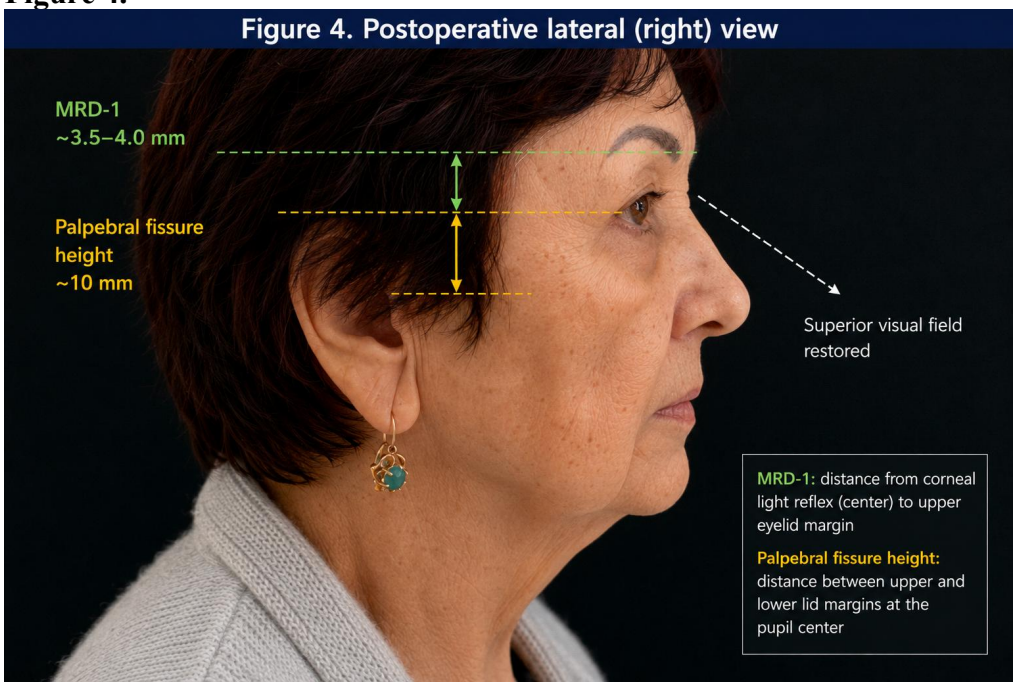

Figure 4. Postoperative lateral anthropometric assessment

The postoperative lateral view demonstrates adequate upper eyelid elevation with restoration of the superior visual field and normalization of upper eyelid position relative to the corneal limbus.

Anthropometric findings:

MRD-1: ~3.5–4.0 mm
Palpebral fissure height: ~10 mm
Superior visual field: restored

Table 1.

Comparative anthropometric assessment before and after surgery

Parameter	Preoperative	Postoperative	Assessment
MRD-1	~1–1.5 mm	~3–4 mm	Normalized
Palpebral fissure height	Reduced (5–7 mm)	Increased (10 mm)	Improved
Upper eyelid symmetry	Mild asymmetry	Symmetric	Restored
Eyelid contour	Flattened, ptotic	Smooth and elevated	Corrected
Brow position	Compensatory	Relaxed	Improved

	elevation	physiological position	
Dermatochalasis	Pronounced	Reduced	Improved
Superior visual field	Partially obstructed	Restored	Improved
Facial appearance	Tired, aged appearance	Rejuvenated and balanced	Improved
MRD-1	~1–1.5 mm	~3–4 mm	Normalized
Palpebral fissure height	Reduced (5–7 mm)	Increased (10 mm)	Improved

DISCUSSION.

Involutional ptosis occurs due to stretching and dehiscence of the levator aponeurosis. Levator advancement remains the preferred surgical method in patients with preserved levator muscle function because it restores normal anatomical support and physiological eyelid movement [5].

In the present case, significant improvement in eyelid height, symmetry, and facial aesthetics was achieved following levator aponeurosis advancement. Objective anthropometric analysis confirmed normalization of MRD-1 and palpebral fissure height.

Reduction of compensatory brow elevation additionally contributed to a more youthful and balanced facial appearance. No complications such as overcorrection, lagophthalmos, or eyelid asymmetry were observed.

These findings support the effectiveness and reliability of levator aponeurosis advancement for correction of involutional ptosis.

CONCLUSION.

Levator aponeurosis advancement is an effective and reliable surgical technique for correction of involutional ptosis. Objective anthropometric analysis confirms significant postoperative improvement in eyelid position, symmetry, and superior visual field function.

The combination of functional restoration and facial rejuvenation contributes to high patient satisfaction and favorable aesthetic outcomes.

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