



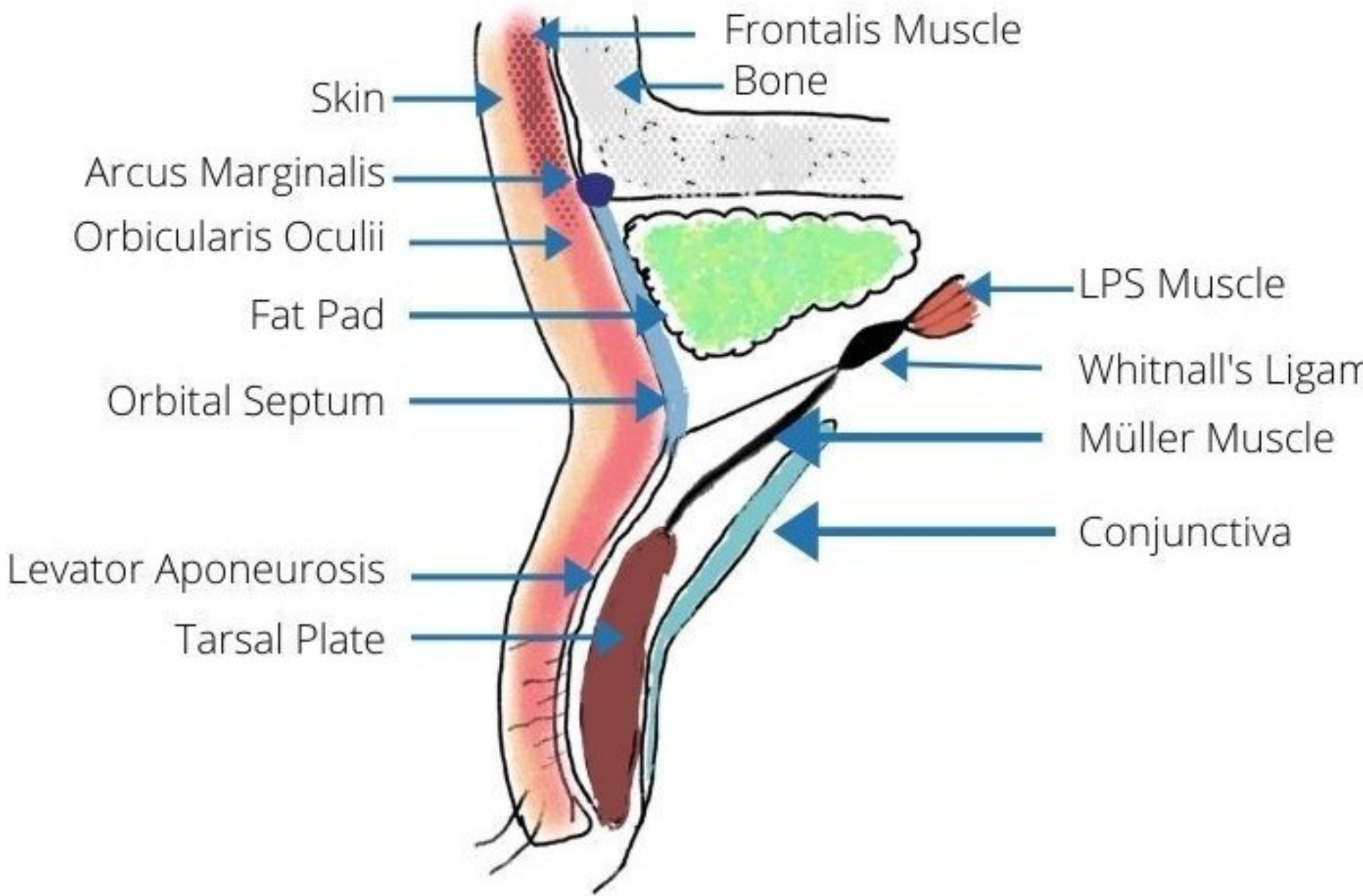
Posterior Approach in Ptosis Surgery

A Minimally Invasive Technique for Eyelid Elevation

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- ▶ two posterior approach techniques—
 - ▶ Müller's Muscle-Conjunctival Resection (MMCR)
 - ▶ Posterior Approach White Line Advancement





Müller's Muscle- Conjunctival Resection (MMCR)

Indications

- ▶ MMCR is primarily indicated in :
 - ▶ Mild to moderate ptosis (typically ≤ 3 mm)
 - ▶ Good levator function (≥ 10 mm)
 - ▶ Positive response to the phenylephrine test
 - ▶ Minimal dermatochalasis,
 - ▶ No significant conjunctival or corneal disease.
- ▶ A positive phenylephrine test, defined as an increase in margin reflex distance 1 (MRD1) of ≥ 0.5 mm after topical phenylephrine instillation

Contraindications

- ▶ Poor levator function (<8–10 mm),
- ▶ Significant conjunctival scarring (e.g., from cicatricial diseases),
- ▶ Severe dry eye,
- ▶ Prior extensive conjunctival surgery,
- ▶ Cases where more than 3 mm of tarsus would need to be resected

Preoperative Evaluation

- ▶ **History and Examination:** Document onset, duration, variability, and associated symptoms (e.g., diplopia, fatigue). Assess for systemic diseases (e.g., myasthenia gravis), prior ocular surgery, trauma, and contact lens use⁸.
- ▶ **Ocular Surface Evaluation:** Rule out dry eye, keratitis, or conjunctival scarring. Address ocular surface disease preoperatively to minimize postoperative complications.
- ▶ **Levator Function:** Measure upper eyelid excursion from downgaze to upgaze with frontalis immobilized. Good function is ≥ 10 mm; fair is 6–10 mm; poor is ≤ 5 mm².
- ▶ **MRD1:** Normal is ~ 4 mm; ptosis is defined as MRD1 < 2.5 mm.
- ▶ **Phenylephrine Test:** Instill 2.5% or 10% phenylephrine in the superior fornix; reassess MRD1 after 5–10 minutes. The degree of elevation guides the amount of tissue to resect³⁵⁶.
- ▶ **Assessment for Hering's Law:** Elevation of one eyelid may unmask contralateral ptosis; bilateral surgery may be indicated in such cases.
- ▶ **Photography:** Preoperative and postoperative

Two techniques for MMCR

- ▶ Closed technique .
- ▶ Open technique.

► **Preparation and Marking:**

- Place a 4-0 silk traction suture through the upper lid margin at the midline.
- Evert the eyelid over a Desmarres retractor
- Mark the superior tarsal border, desired resection distance superiorly on the conjunctiva (typically 8–10 mm, and Mark mid way¹¹².

► **Anesthesia:**

- Infiltrate 2% lidocaine with epinephrine into the conjunctiva and skin.
- **Topical Anesthesia:**
Proparacaine or tetracaine drops are instilled prior to phenylephrine testing and as adjuncts during surgery.
- **General Anesthesia:**
Indicated for pediatric patients or those unable to tolerate local anesthesia.



Closed MMCR

Suture Placement:

- ▶ Pass a 6-0 silk suture in a running fashion through the conjunctiva and Müller's muscle at the **Middle** marks. This suture provides traction

Clamping:

- ▶ Place a Putterman clamp (or curved hemostats) at the superior tarsal border, ensuring only conjunctiva and Müller's muscle are included (tarsus should be spared)¹¹¹².

Suturing:

- ▶ Pass a 6-0 Vycrl in a running mattress fashion 1.5–2 mm below the clamp, from lateral to medial and back, through conjunctiva and Müller's muscle.

Resection:

- ▶ Using a #11 or #15 blade, excise the tissue within the clamp by cutting between the clamp and the suture ("**metal-on-metal**" **technique**), taking care not to cut the suture.

Closure:

- ▶ The running suture is tied, and the knot is externalized through the skin (to avoid corneal irritation) or buried within the conjunctiva. The traction suture is removed.



Opened MMCR

► Conjunctival Opened:

- The superior border of the everted tarsus is opened with electrocautery
- Dissection of the conjunctiva from Müller muscle is performed superiorly for 15 mm.

► Müller muscle :

- Dissected and cut from its superior tarsal insertion, dissected from the levator aponeurosis superiorly for 13 to 15 mm,

► Resection:

- Transected near its origin from the inferior surface of the levator muscle, and 8mm removed.
- Avoid damage to the lacrimal gland ducts by not disturbing the lateral extensions of the Müller muscle.¹⁷

► Closure:

- The conjunctivae were then repositioned and either sutured with a continuous 6-0 vicryl suture with knots buried or allowed to heal spontaneously.



Complications and Management

- ▶ **Common Complications:**
- ▶ **Undercorrection:** May require revision with additional resection or conversion to external levator advancement.
- ▶ **Overcorrection:** Rare; may be managed with early suture removal, digital massage, or, in severe cases, surgical revision.
- ▶ **Contour Abnormalities:** Peaking or notching due to asymmetric resection or suture placement; may require revision.
- ▶ **Exposure Keratopathy:** Usually transient; managed with lubricants, ointment, or temporary tarsorrhaphy in severe cases.
- ▶ **Corneal Abrasion:** From internal suture knots; prevent by externalizing knots or using bandage contact lens¹⁴¹³.
- ▶ **Suture Granuloma:** Rare; may require excision.
- ▶ **Infection or Hematoma:** Uncommon; managed with antibiotics or drainage as indicated.
- ▶ **Dry Eye Exacerbation:** Due to excision of accessory lacrimal glands; minimize conjunctival resection in at-risk patients.



Posterior Approach White Line Advancement

What Is the White Line?

- ▶ • Anatomical landmark: anterior surface of levator aponeurosis
- ▶ • Appears white through conjunctiva
- ▶ • Target for advancement in posterior ptosis repair
- ▶ • Key to restoring eyelid height and function

Indications &

- ▶ Aponeurotic ptosis
- ▶ Levator function moderate to good levator function (≥ 8 mm),
- ▶ Regardless of phenylephrine test response,
- ▶ High or absent skin crease,
- ▶ Minimal dermatochalasis,
- ▶ Desire for no external scar

Contraindications

- ▶ Poor levator function (< 8 mm)
- ▶ Neurogenic or myogenic ptosis
- ▶ Severe dermatochalasis
- ▶ significant conjunctival scarring, or inability to evert the eyelid adequately.

Step-by-Step Surgical Technique

▶ **Marking and Traction:**

- ▶ Mark the desired skin crease.
- ▶ Place a 4-0 silk traction suture in the grey line of the upper eyelid.

▶ **Eyelid Eversion:**

- ▶ Evert the eyelid over a Desmarres retractor.

▶ **Conjunctival Incision:**

- ▶ Apply gentle diathermy and make a conjunctival incision just above the superior tarsal border.

Dissection:

- ▶ Dissect Müller's muscle and conjunctiva as a composite flap to expose the white line (posterior surface of the distal levator aponeurosis).

Suture Placement:

- ▶ Place a central double-armed 5-0 vicryl suture through the white line in a forehead manner.
- ▶ Pass the suture through the conjunctival surface of the tarsal plate 1 mm below the superior border, then through to the skin at the marked crease.

Assessment and Adjustment:

- ▶ Tie the suture in a bow and assess lid height and contour.
- ▶ Place a second suture 2–3 mm lateral if needed for contour adjustment.

Closure:

- ▶ Leave absorbable sutures to dissolve; no excision or resuturing of Müller's muscle or conjunctiva is performed



Complications and Management

► **Common Complications:**

- **Undercorrection:** Occurs in 9–13% of cases; may require revision surgery.
- **Overcorrection:** Rare; not reported in large series.
- **Contour Abnormalities:** Medial notching or lateral flare may occur but are uncommon.
- **Suture-Related Issues:** Exposed or protruding sutures may cause conjunctival or scleral ulceration if non-absorbable monofilament is used; braided absorbable sutures are preferred²⁰.
- **Corneal Abrasion:** Rare, especially if conjunctiva is left intact and absorbable sutures are used.
- **Infection or Hematoma:** Uncommon; managed as per standard protocols.

► **Special Considerations:**

- Avoid monofilament non-absorbable sutures to prevent suture exposure and ocular surface complications²⁰.
- In cases of significant dermatochalasis, combine with blepharoplasty for optimal results.

Summary Table: Key Differences

Feature	MMCR	Posterior Approach White Line Advancement
Indications	Mild–moderate ptosis, phenylephrine-positive, good levator function	Mild–severe aponeurotic ptosis, moderate–good levator function, phenylephrine response not required
Phenylephrine Dependence	Required (traditionally)	Not required
Tissue Resection	Müller’s muscle and conjunctiva	None (tissue-sparing)
Levator Advancement	Indirect via Müller’s stump	Direct via white line (distal levator aponeurosis)
Anterior Dissection	No	No
Success Rate	85–98%	81–88%
Complications	Rare; undercorrection, contour issues	Undercorrection (9–13%), rare overcorrection
Combined Blepharoplasty	Possible	Frequently combined (up to 59%)
Technical Complexity	Moderate	Technically straightforward
Learning Curve	Moderate	Easy to teach and learn
Visible Scar	None	None
Recovery Time	1–2 weeks	1 week (often shorter)
Applicability in Severe Ptosis	Limited (unless combined with tarsectomy)	Effective in moderate–severe ptosis
Suture Type	Absorbable or non-absorbable; externalized or buried	Absorbable, buried
Risk of Dry Eye	Slightly higher (conjunctival resection)	Minimal (conjunctiva spared)

Surgical Pearls and

- ▶ **MMCR is best suited for:** Mild to moderate ptosis, good levator function, positive phenylephrine test, minimal dermatochalasis, and no significant conjunctival disease.
- ▶ **White line advancement is preferred for:** Moderate to severe aponeurotic ptosis, moderate to good levator function, phenylephrine-negative or -positive patients, and those desiring tissue preservation or rapid recovery.
- ▶ **Avoid anterior dissection** in both techniques to preserve anatomical landmarks and minimize morbidity.
- ▶ **Identify the true white line** (distal levator aponeurosis) to prevent undercorrection in white line advancement.
- ▶ **Combine with blepharoplasty** when dermatochalasis is present for optimal functional and cosmetic outcomes.
- ▶ **Use absorbable, braided sutures** in white line advancement to minimize risk of suture exposure and ocular surface complications.

Decision Algorithm

- ▶ **Assess levator function:** If <8 mm, consider external levator advancement or frontalis sling.
- ▶ **Assess ptosis severity:** Mild (≤ 2 mm), moderate (2–3 mm), severe (>3 mm).
- ▶ **Perform phenylephrine test:** If positive and mild–moderate ptosis, MMCR is preferred. If negative or moderate–severe ptosis, white line advancement is preferred.
- ▶ **Evaluate ocular surface and conjunctiva:** Avoid MMCR if significant scarring or dry eye is present; white line advancement may be safer.
- ▶ **Consider patient preference, comorbidities, and need for combined procedures.**



Thank you