Frontalis Suspension Surgery for Ptosis.

A COMPREHENSIVE SURGICAL OVERVIEW

Indications and Patient Selection

- Severe ptosis with poor levator function (<4 mm)
- Congenital ptosis with poor levator development
- Neurogenic or myogenic ptosis (e.g., third nerve palsy, muscular dystrophy)
- Patients unsuitable for levator resection
- Children under 3 years: consider synthetic slings due to fascia lata limitations

Preoperative Evaluation

- Detailed history and physical examination
- Assessment of levator function and eyelid excursion
- Bell's phenomenon evaluation
- Corneal sensitivity and tear film assessment
- Photographic documentation

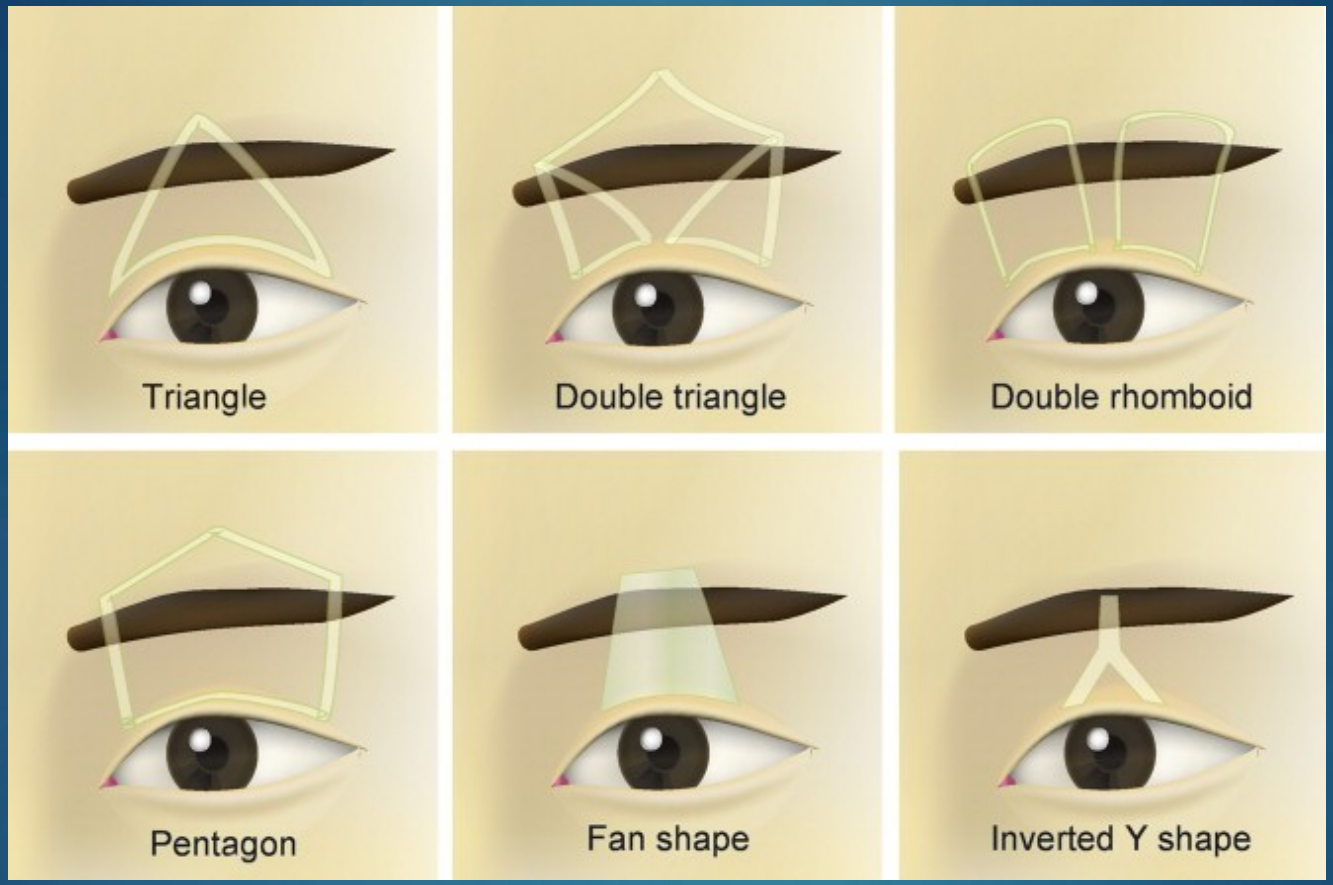
Surgical Techniques Overview

Anterior approach

- Crawford Technique (Pentagon configuration)
- Fox Technique (Triangle configuration)
- Modified Approaches: Single/Double Rhomboid, Single Triangle
- Selection based on surgeon preference and patient anatomy

Posterior approach

- Trans conjunctival frontalis suspension


Triangle
Double triangle
Double rhomboid
Pentagon
Fan shape
Inverted Y shape

Common Configurations

Configuration	Description	Typical Use/Advantages
Fox Pentagon	Single pentagon; five incisions (three eyelid, two brow)	Simple, commonly used, good for mild cases
Modified Fox (Triangle)	Single triangle; three incisions (two eyelid, one brow)	Simpler, less scarring, suitable for children
Crawford (Double Pentagon)	Two pentagons; allows separate adjustment of medial and lateral eyelid	Improved contour, especially for long eyelids
Rhomboid (Friedenwald-Guyton/Iliff)	Single or double rhomboid loops	Prevents postoperative bending in young children
Trapezoid	Five incisions; allows for more diffuse elevation	Used for diffuse brow elevation
Mehta's Modification	Double triangle with split central lid incision for silicone rod	Reduces central notching, better contour

Crawford Technique (Pentagon)

- Two brow incisions and three eyelid stab incisions
- Sling passed in pentagon shape using Wright needle
- Ends tied and buried in brow incisions
- Provides good eyelid contour and symmetry

Fox Technique (Triangle)

- Single triangle configuration
- Simpler and faster than Crawford
- May result in less natural eyelid contour
- Used in unilateral or mild ptosis cases

Modified Approaches

- **Single Rhomboid:** one brow incision, four eyelid incisions
- **Double Rhomboid:** two rhomboid loops for better contour
- **Single Triangle:** simplified version of Fox Used to optimize symmetry and reduce sling migration

Sling Materials

- **Autogenous fascia lata:** gold standard, durable
- Cadaveric fascia lata: alternative when autogenous not feasible
- **Synthetic materials:**
  - Silicone rods,
  - Prolene,
  - Polyester and
  - Gortex
- Material choice affects longevity, infection risk, and adjustability

Sling Materials Comparison

- **Autogenous fascia lata:** + Durable, - Requires harvest
- Cadaveric fascia: + No donor site, - Risk of disease transmission
- **Silicone rods:** + Adjustable, - Higher extrusion risk
- **Prolene/Polyester:** + Readily available, - Less natural movement

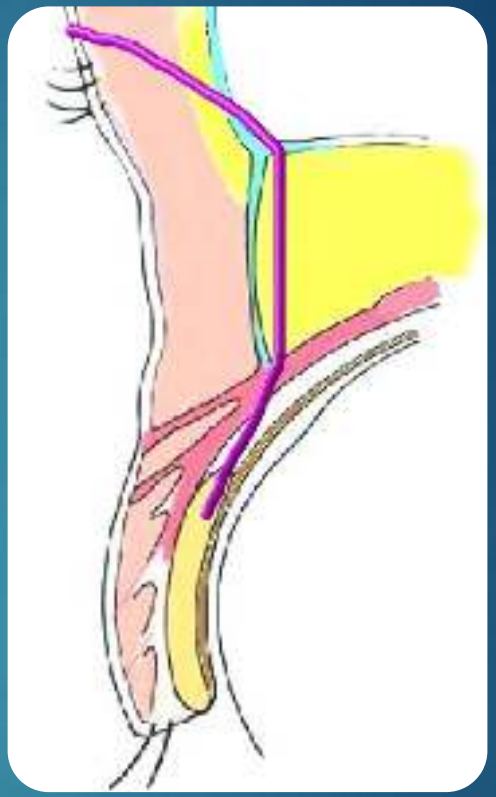
Surgical approaches

- Closed anterior approach
- Opened Anterior approach
- Closed posterior approach (TCFS)

Trans-Conjunctival Frontalis suspension

- The technique involves creating a *triangular* suspension ,
- Located *behind the septum* with its base passing through the *upper border of the tarsus,*
- Anchored behind the *periosteum* of the upper orbital rim, with the apex fixed above the brow.

- Starts by passing the suture horizontally through the upper edge of the body of the tarsus (near to the normal anatomical insertion of the levator)
- Posterior to the septum.
- Anchored behind the periosteum of the upper orbital rim will create a superior-posterior vector force that elevates the lid in a posterior and superior direction , maintaining good contact with the globe and described as the (septal pulley effect).



Trans-Conjunctival Frontalis suspension

Closed anterior approach Technique

Open anterior approch technique

Intraoperative Pearls

- Ensure symmetric sling tension bilaterally
- Avoid overcorrection to prevent lagophthalmos
- Secure knots deeply to prevent extrusion
- Check eyelid height in primary gaze before closure

Long-term Outcomes and Recurrence

- **Autogenous fascia lata:** lowest recurrence, best durability
- **Synthetic slings:** higher risk of extrusion and recurrence
- Success depends on technique, material, and patient factors
- Regular follow-up essential for early detection of issues

Key Take Home message

- Frontalis suspension is effective for severe ptosis with poor levator function
- Technique and material selection are critical for outcomes
- Adopt the technique best for you and prefect it
- Autogenous fascia Lata offers best long-term results (not in TCFS)
- Postoperative care is essential to prevent complications