

Silicone Frontal Suspension Surgery in a 3-month-old Infant with Unilateral Congenital Ptosis: Case Report*Unilateral Konjenital Pitozu Olan 3 Aylık Bebekte Silikon Frontal Askı Ameliyatı: Vaka Sunumu***Berkay Kızıltaş¹** ¹Department of Ophthalmology, City Research and Education Hospital, Adana, Türkiye**Abstract**

This case report discusses the outcomes of a silicone frontalis sling surgery performed on a 3-month-old female infant diagnosed with congenital ptosis of the left eye. Congenital ptosis, characterized by drooping of the upper eyelid present at birth, can lead to amblyopia, strabismus, and other visual impairments if not treated promptly. In cases where levator function is inadequate, frontalis suspension surgery is considered the gold standard treatment for congenital ptosis. This case presents a patient who underwent early intervention with a silicone frontalis sling technique.

Keywords: Congenital Ptosis, Silicone Frontalis Sling, Eyelid Drooping, Surgical Outcomes

ÖZ

Bu vaka sunumunda, sol göz konjenital pitozu tanısı almış 3 aylık bir kız bebekte uygulanan silikon frontal askı ameliyatının sonuçları tartışılmaktadır. Konjenital pitoz, doğumsal bir göz kapağı düşüklüğü olup erken tedavi edilmediğinde ambliyopi, strabismus ve diğer görsel sorunlar gelişebilir. Konjenital pitoz tedavisinde frontal askı cerrahisi, levator fonksiyonunun yetersiz olduğu olgularda altın standart tedavi yöntemidir. Bu vaka, erken dönemde silikon frontal askı yöntemiyle tedavi edilen bir hastayı içermektedir.

Anahtar kelimeler: Konjenital Pitoz, Silikon Frontal Askı, Göz Kapağı Düşüklüğü, Ameliyat

Highlights

- Early silicone frontalis sling surgery at 3 months successfully prevented stimulus-deprivation amblyopia in severe congenital ptosis.
- FOX pentagon technique achieved excellent functional outcomes (MRD1: 3mm) with minimal complications in an infant patient.
- Silicone material offers practical advantages over autogenous fascia lata in early pediatric ptosis surgery.

Introduction

Congenital ptosis presents at birth or within the first year of life. It may affect one or both eyes and can vary in severity. The condition is associated with dysgenesis of the levator muscle or defects in neuronal migration, leading to a loss of muscle elasticity. If not treated early, congenital ptosis can result in amblyopia, strabismus, and other visual impairments (1). In cases where there is a risk of amblyopia, early surgical intervention should be considered. If no such risk is present, surgery may be postponed until around 3–4 years of age to allow for a more accurate assessment of levator muscle function. Frontalis sling surgery is considered the gold standard treatment for cases with poor levator function (2). This case represents a situation where early surgical intervention and subsequent follow-up were successfully managed.

Case Presentation

Informed consent was obtained from the patient's parent/legal guardian for publication of this case report.

A 3-month-old female infant was referred to our clinic due to drooping of the left upper eyelid. The patient's birth history revealed that she was born at 39 weeks of gestation via normal vaginal delivery, weighing 3300 grams. There were no systemic, congenital, or genetic diseases reported, and no family history of ptosis was identified. Preoperative examination showed unrestricted bilateral ocular motility in all directions, normal anterior chamber structures, and a clear cornea. Fundus examination was unremarkable. Pupillary light reflexes were positive for both direct and consensual responses. Levator muscle function in the left eye was measured by asking the patient to look down and then up while manually immobilizing the frontalis muscle, measuring the excursion of the upper eyelid margin, which was found to be 2-3 mm (normal >15 mm).

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Received: 28 April 2025 **Accepted:** 27 September 2025

Cite as: Kızıltas.B et al. Silicone Frontal Suspension Surgery in a 3-month-old Infant with Unilateral Congenital Ptosis: Case Report. JCMBS 2025; 5(3): 167-170
doi.org/ 10.5281/zenodo.17688768

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The margin reflex distance (MRD1) was measured as the distance between the upper eyelid margin and the corneal light reflex in primary gaze position, which was 1 mm (normal 4-5 mm). Bell's phenomenon was found to be positive. Schirmer testing could not be reliably performed (**Figure 1**).



Figure 1. Initial presentation showing ptosis of the patient

Visual assessment in this 3-month-old infant was performed using age-appropriate methods including fixation behavior assessment, pupillary light reflexes, and observation of visual tracking responses. While formal visual acuity testing is not feasible at this age, the presence of complete ptosis with pupil occlusion posed a significant risk for stimulus-deprivation amblyopia, necessitating immediate surgical intervention.

Given the risk of amblyopia in the left eye, early surgical intervention was deemed necessary. Silicone frontalis sling surgery was planned for the patient. Detailed informed consent was obtained from the patient's legal guardian.

The surgical procedure was performed under general anesthesia using a silicone sling material according to the FOX pentagon technique. The FOX pentagon technique involves creating a pentagonal configuration with the silicone sling material (3)(**Figure 2**).

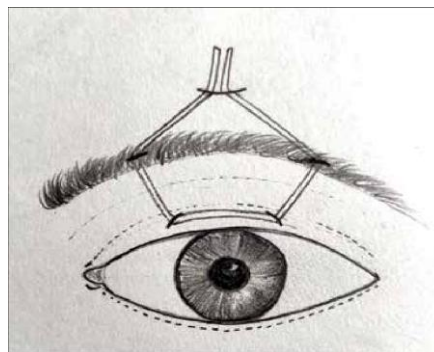


Figure 2. Illustrative figure demonstrating the FOX pentagon technique

The sling passes through two eyelid incisions (positioned 1mm medial to the medial limbus and 1mm lateral to the lateral limbus) and three forehead incisions (positioned above the medial, central, and lateral aspects of the eyebrow). The silicone material forms a pentagon shape, with the base along the eyelid margin and the apex at the central forehead incision (4). Two small incisions were made just 1–2 mm above the lash line, positioned 1 mm medial to the medial limbus and 1 mm lateral to the lateral limbus. Three brow incisions were also made on the forehead. The silicone sling material was passed through the eyelid incisions with the aid of a Wright needle, forming a pentagonal configuration. The eyelid was adjusted to align with the superior limbus. Incision sites were closed with 6-0 Vicryl sutures, and the eye was tightly patched postoperatively.

The surgical procedure was completed without complications. On the first postoperative day (**Figure 3**) and at the 10-day follow-up (**Figure 4**), the eyelid was observed to be in a normal position, with an MRD1 of 3 mm. A 1

mm degree of lagophthalmos was noted on the first postoperative day. Written informed consent was obtained from the parents for the case report and publication of the photographs.



Figure 3. Postoperative appearance of the patient on day 1.



Figure 4. Postoperative appearance of the patient on day 10.

Discussion

In patients with congenital ptosis, early surgical intervention is crucial when there is a risk of amblyopia. Frontalis sling surgery is the most commonly used surgical technique for patients with poor levator muscle function and moderate to severe ptosis. In this procedure, the tarsus is suspended from the frontalis muscle using materials that can be autogenous, allogenic, or synthetic. Elevation of the eyebrows results in the lifting of the upper eyelids (5). Although autogenous fascia lata is considered the gold standard material for frontalis suspension in congenital ptosis treatment, harvesting fascia lata from infants can be challenging. Additionally, the need for an extra surgical site, which may not be accepted by parents, and the possibility of permanent thigh scarring are significant disadvantages. Synthetic materials are more readily available and can shorten surgical time; however, they carry higher risks of complications such as infection, rejection, and granuloma formation (6). Recent studies by Ghiam et al. (2023) and Thacker et al. (2025) have shown similar success rates with silicone slings compared to other synthetic materials, with lower infection rates and easier revision surgery when needed (7,8). Comparative analysis of different surgical approaches demonstrates that frontalis sling surgery in infants under 6 months shows excellent functional outcomes with minimal complications when performed by experienced surgeons. The silicone material offers advantages including biocompatibility, ease of handling, and the ability to adjust tension postoperatively if needed.

The observed 1 mm lagophthalmos is considered mild and typically well-tolerated in pediatric patients. However, long-term monitoring for dry eye symptoms is essential. Postoperative care should include artificial tear supplementation and regular assessment of corneal integrity. In our case, no signs of corneal desiccation were observed during the follow-up period, and Bell's phenomenon was preserved, providing additional protection. In this case, early application of a silicone frontalis sling surgery resulted in successful outcomes without any complications.

Study Limitations

This case report has several limitations. The short follow-up period (10 days) prevents assessment of long-term outcomes and potential complications. As a single case, findings cannot be generalized to all pediatric ptosis patients. Additionally, comprehensive visual acuity and Schirmer testing could not be performed due to the patient's young age (3 months). Long-term follow-up is necessary to evaluate surgical durability and late complications.

Conclusion

Congenital ptosis, if left untreated during infancy, can negatively impact visual development. This case highlights that silicone frontalis sling surgery is an effective and safe treatment option even at a young age in patients with congenital ptosis, and that early intervention can lead to successful outcomes.

Acknowledgements: None.

Ethical Approval: Written informed consent was obtained from the patient's legal guardian for this case report.

Author Contributions: Concept: BK. Literature Review: BK. Design: BK. Data acquisition: BK. Analysis and interpretation: BK. Writing manuscript: BK. Critical revision of manuscript: BK.

Conflict of Interest: The author(s) do not have any potential conflict of interest regarding the research, authorship and/or publication of this article.

Data Availability: The data used to support the findings of this study are available from the corresponding author upon request

Financial Disclosure: No financial support was received for this study.

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