BULLETIN OF STOMATOLOGY AND MAXILLOFACIAL SURGERY
Volume 21, N 6

DOI: 10.58240/1829006X-2025.21.6-315

CASE REPORT

GOLD WEIGHT IMPLANTATION FOR PARALYTIC LAGOPHTHALMOS: A CASE REPORT

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Received: *Jun 26 2025;* ***Accepted:****Jul 27;2025;* ***Published:*** *Jul.30,2025*

Abstract

Paralytic lagophthalmos is the inability to close the eyelids due to facial nerve dysfunction, resulting in ocular surface exposure and risk of corneal injury. In chronic cases with no prospect of nerve recovery, surgical eyelid reanimation is necessary to restore corneal protection and visual comfort. We report a 51-year-old woman with a 2-year history of right-sided facial nerve paresis following severe orbital cellulitis, sinusitis, and odontogenic infection. She developed chronic paralytic lagophthalmos with exposure keratopathy, despite maximal medical therapy. Examination revealed a 4 mm lagophthalmos, punctate corneal staining, scleral show, and reduced visual acuity. The patient underwent a combined surgical approach: upper eyelid gold weight implantation and lower eyelid tarsal suspension to the medial orbital rim. A 1 g 24-karat gold weight (dimensions: 20 × 5 × 1 mm), with one hole on each side, was implanted into the pretarsal space of the upper eyelid and anchored to the tarsus. The lower lid was elevated via canthopexy to reduce corneal exposure. One month postoperatively, the patient achieved full eyelid closure, with complete resolution of corneal staining and improved visual acuity from 20/40 to 20/25. No complications such as implant extrusion, infection, or persistent ptosis occurred after 1 year of follow up. The cosmetic result was satisfactory and the patient reported significant relief of symptoms and improved quality of life. Gold weight implantation, combined with lower eyelid support, offers an effective, safe, and cosmetically acceptable solution for rehabilitating chronic paralytic lagophthalmos. Timely surgical intervention can prevent permanent corneal damage and restore ocular surface integrity.

Keywords: Paralytic lagophthalmos, gold weight implantation, facial nerve palsy

INTRODUCTION

Lagophthalmos refers to the inability to fully close the eyelids, most often due to dysfunction or paralysis of the orbicularis oculi muscle which is innervated by the facial nerve (cranial nerve VII). Paralytic lagophthalmos commonly arises from facial nerve palsy, which can occur secondary to various etiologies – classically Bell's palsy or iatrogenic injury, but also trauma, neoplasms, and severe infections. Inadequate eyelid closure leads to exposure of the ocular surface and insufficient tear film distribution, putting the cornea at risk of desiccation and injury. Without treatment, chronic exposure can result in keratoconjunctivitis sicca, persistent epithelial defects, stromal ulceration, infection, or even corneal perforation and blindness. These complications are compounded if corneal sensation is diminished (as in trigeminal nerve impairment) or tear production is reduced. Thus, prompt protective measures are critical in cases of lagophthalmos to preserve vision. In this report, we present a case of a patient with chronic paralytic lagophthalmos of the right eye resulting from facial nerve paresis after a severe infection. The patient was treated with an upper eyelid gold weight implant combined with lower eyelid support. We describe the clinical presentation, surgical procedure, and outcome at one month post-operatively, and we discuss this management approach in the context of the current literature.[1,2]

CASE REPORT

A 51-year-old Asian woman was referred to our oculoplastic service with a chief complaint of incomplete closure of her right eyelids for the past two years. She reported that since an illness two years prior, her right eye could not blink or close fully, leading to constant dryness, irritation, and a gritty sensation. She had been managing these symptoms with frequent artificial tears and ointments, but continued to experience discomfort and difficulty, especially while sleeping due to the eyelid remaining partially open. The patient's history was significant for a severe right orbital cellulitis with concurrent sinusitis and a dental (odontogenic) infection two years ago, which had required hospitalization. At that time, she underwent multiple surgical interventions including sequestrectomy of infected bone, extraction of an involved tooth, and functional endoscopic sinus surgery (FESS) to drain the sinus infection. Although the acute infection resolved, it was complicated by residual facial nerve paresis on the right side, resulting in paralytic lagophthalmos of the right eye. The facial palsy had shown no signs of improvement over the subsequent months. The patient also had a 20-year history of type 2 diabetes mellitus, which had been moderately controlled on medications; this was considered a contributing factor both to the severity of her infections and potentially to her facial nerve injury or delayed recovery.

On examination, the patient was alert and oriented, with a mild asymmetry of facial movement. There was a right lower motor neuron facial nerve paresis (House-Brackmann grade IV, per clinical judgment) manifesting as an impaired blink on the right side, slight brow ptosis, and an effacement of the right nasolabial fold. The right eye had evident lagophthalmos: when asked to close her eyes gently, the right upper and lower lids remained separated, leaving a gap. The palpebral fissure could not be completely closed even with forceful effort. The maximal lagophthalmos (lid gap) measured approximately 4 mm (vertical distance between the upper and lower lids) in primary gaze.

There was also an obvious scleral show inferiorly – the white sclera was visible between the lower limbus of the cornea and the right lower eyelid margin, indicating retraction or laxity of the lower lid (figure 1). The Bell's phenomenon (upward rotation of the globe upon attempted eye closure) was intact and strong on the right side, which provided some degree of corneal protection when she attempted to blink.

Slit-lamp ocular examination of the right eye revealed a reduced tear breakup time and areas of punctate keratopathy on the cornea consistent with exposure-related dryness.

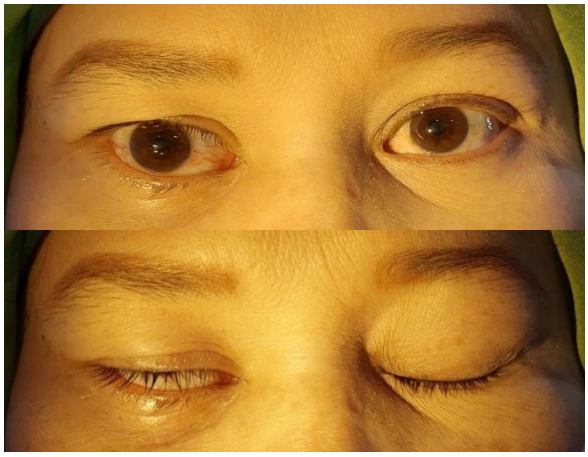

Figure 1. The maximal lagophthalmos (lid gap) measured approximately 4 mm (vertical distance between the upper and lower lids) in primary gaze.

Fluorescein dye testing showed multiple punctate epithelial erosions on the central cornea, staining positively, but there were no large persistent epithelial defects or ulcers (figure 2). A subtle nebulous corneal opacity (nebula) was present in the central cornea, likely a scar from prior exposure keratitis or infection, which was affecting visual acuity. Best-corrected visual acuity in the right eye was 20/40. In contrast, the left eye appeared normal with a full blink reflex and complete lid closure; left cornea was clear with no staining, and visual acuity was 20/25. Fundoscopic examination in both eyes was unremarkable. Overall, the right eye findings were consistent with paralytic lagophthalmos causing exposure keratopathy.

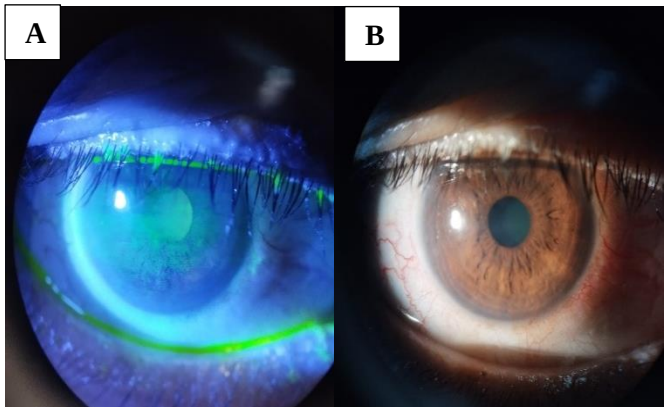

Figure 2. Slit-lamp ocular examination of the right eye. (A) Fluorescein dye testing showed multiple punctate epithelial erosions on the central cornea, staining positively, but there were no large persistent epithelial defects or ulcers. (B) A subtle nebulous corneal opacity (nebula) was present in the central cornea, likely a scar from prior exposure keratitis or infection.

Given the two-year duration of facial nerve palsy and ongoing corneal risk, a surgical plan was made to rehabilitate the right eyelid function. After discussing options, we planned for an upper eyelid gold weight implantation to aid closure, combined with a lower eyelid tightening procedure to address the scleral show and support the cornea. The goals were to achieve full eyelid closure, especially during sleep, and to alleviate the exposure symptoms, thereby preventing further corneal damage.

Surgery was performed under general anesthesia. The procedure was carried out in two stages during the same session: first addressing the lower lid, then the upper lid. For the lower eyelid support, we employed a canthopexy-like technique anchoring the tarsus to the medial orbital rim periosteum. The right lower lid was infiltrated with lidocaine/adrenaline, and a vertical skin marking was made on the lower eyelid about 4 mm from the lid margin, roughly at the junction of the medial and middle third of the lid (approximately 2 mm inferolateral to the punctum). Through a small 1 cm incision at this mark, a blunt dissection was carried down to expose the tarsal plate. Another small vertical incision was made at a point about 1.5 cm lateral to the medial canthus (on the lower lid crease line), and dissection was carried out to the periosteum of the anterior lacrimal crest (along the medial orbital rim, near the frontal process of the maxilla). Using a 5–0 nylon suture on a free (cut) needle, the inferior tarsal plate was then hitched and secured to the periosteum of the medial orbital rim (nasal aspect) through this incision. The suture was tied under slight tension, effectively elevating the lower lid – this brought the lower lid margin upward to a position just beneath the lower limbus of the cornea. This fixation helped correct the scleral show by tightening and vertically elevating the lower eyelid, thereby reducing the area of cornea exposed. The small incisions were irrigated and closed with fine absorbable sutures.

Figure 3. A marking was made on the upper lid skin corresponding to the desired placement: about 9 mm above the lash line in the upper lid crease, centered at the mid-pupillary line.

Next, attention was turned to the upper eyelid gold weight implantation. In this patient, a custom-made 1 g, 24-karat gold weight measuring 20 × 5 × 1 mm, with one hole on each side, was prepared. A marking was made on the upper lid skin corresponding to the desired placement: about 9 mm above the lash line in the upper lid crease, centered at the mid-pupillary line. After local anesthetic infiltration (2% lidocaine with epinephrine) along the lid crease, a horizontal incision ~10 mm in length was made in the lid crease. Dissection was carried through the orbicularis oculi muscle fibers to expose the tarsal plate beneath (figure 4).

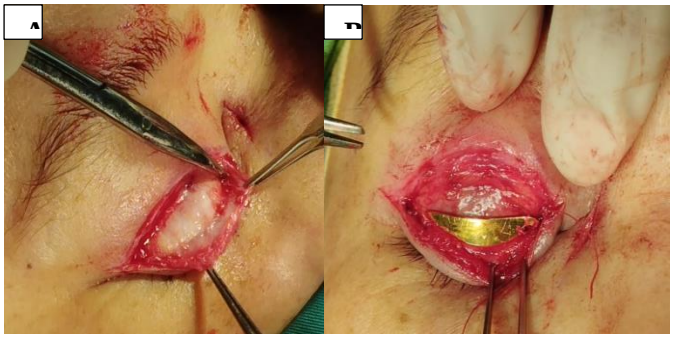

Figure 4. (A) Dissection was carried through the orbicularis oculi muscle fibers to expose the tarsal plate beneath. (B) The implant was secured firmly to the tarsus by placing two 6–0 vicryl sutures through the pre-drilled holes of the weight, anchoring them to the tarsal tissue.

A submuscular pocket was created over the tarsus of the right upper eyelid, sized to accommodate the dimensions of the gold weight (care was taken to stay at least 3–4 mm above the lash line to avoid any visibility or risk of eyelash follicle disruption). The custom-selected gold weight (polished rectangular plate, in this case approximately 1 g in in mass) was inserted into the pocket and positioned on the anterior surface of the tarsal plate, slightly nasal to the center of the lid to facilitate symmetric closure. The implant was secured firmly to the tarsus by placing two 6–0 vicryl sutures through the pre-drilled holes of the weight, anchoring them to the tarsal tissue (partial-thickness bites of tarsus to avoid conjunctival penetration). The overlying orbicularis muscle then closed in layers above the implant, and the skin incision was re-approximated with a running 6–0 vicryl suture, creating a nicely reformed lid crease (figure 5). The gold weight was not visible externally, and on table testing, the eyelid showed improved passive closure. As a precautionary measure, a temporary Frost suture (a bolster stitch tarsorrhaphy) was placed at the lateral eyelid margin using a 4–0 silk suture, to keep the eye partially closed and protect the cornea in the immediate postoperative period while tissues healed.

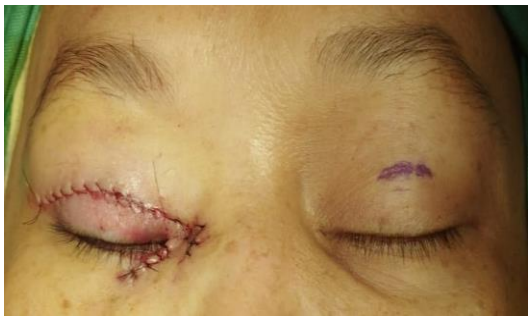

Figure 5. The overlying orbicularis muscle then closed in layers above the implant, and the skin incision was re-approximated with a running 6–0 vicryl suture, creating a nicely reformed lid crease.

The patient tolerated the procedure well. Postoperatively, the eye was patched and the head of bed kept elevated. The Frost suture was removed after 3 days. She was started on a prophylactic topical antibiotic ointment and instructed to continue using artificial tears as needed during the first week. There were no complications such as bleeding, infection, or implant exposure during the recovery period. By one week after surgery, the incisions had healed well and mild lid edema had resolved. At the one-month follow-up, the patient demonstrated significant improvement in her eyelid function and ocular surface. The right upper eyelid gold weight was in place and not appreciably noticeable cosmetically (no significant lid bulge or discoloration). In primary gaze, there was mild induced ptosis of the right upper lid, with the margin resting just at the upper limbus – an expected outcome of the added weight – but it was symmetric with the contralateral lid on downgaze and did not obstruct her visual axis. Most importantly, on gentle closure and blinking, the patient's right eye was now able to achieve full closure, with the upper and lower lids meeting completely. There was no residual lagophthalmos or gap observed. Her right lower lid maintained an elevated position from the medial canthal anchoring, with no scleral show evident (figure 6).

Figure 6. The right upper eyelid gold weight was in place and not appreciably noticeable cosmetically (no significant lid bulge or discoloration). The patient's right eye was now able to achieve full closure There was no residual lagophthalmos or gap observed

On examination of the cornea, the fluorescein staining had fully resolved – the previously noted punctate epithelial erosions were healed, and the cornea was smooth and wetting properly (figure 7).

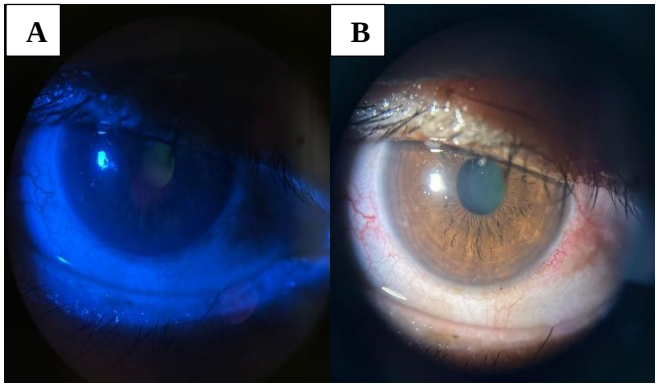

Figure 7. On examination of the cornea, (A) the fluorescein staining had fully resolved – the previously noted punctate epithelial erosions were healed, and (B) the cornea was smooth and wetting properly.

The central corneal nebular opacity remained, but with improved tear film and protection, the patient's best-corrected visual acuity in the right eye had improved to 20/25.

She reported that her right eye felt comfortable and moist, with no further burning or foreign-body sensation. She no longer needed to apply ointment at night and was using lubricating drops only occasionally (more for habit than necessity). The patient was very pleased with the outcome, noting that she could sleep through the night without her eye cracking open and that she felt more confident during the day as her blinking appeared nearly normal. Overall, the intervention successfully restored protective eyelid function and relieved her symptoms. The plan was to continue periodic follow-up to monitor the implant position and ocular surface, and to reinforce diabetic control to aid long-term tissue health.

DISCUSSION

This case illustrates the successful rehabilitation of chronic paralytic lagophthalmos using an upper eyelid gold weight implant in conjunction with a lower eyelid support procedure. The patient's facial nerve palsy was secondary to a severe orbital and sinus infection. Her long-standing diabetes mellitus likely predisposed her to such an aggressive infection and may have impeded nerve recovery. After two years without nerve function improvement, her paralysis was deemed permanent –

aligning with typical timelines, as facial nerve palsy that has not recovered within 12–18 months carries a poor prognosis for spontaneous return of full function. In such cases of irreversible lagophthalmos, surgical intervention is indicated to prevent ongoing corneal damage and vision loss. Conservative measures alone were insufficient for our patient, and continuing them indefinitely was not practical given her persistent epithelial defects and discomfort. Tarsorrhaphy was considered as a temporary measure early on, but given her relatively young age and the desire to preserve cosmesis and binocular visual field, a lid-loading procedure was preferred for permanent management. This decision is supported by the literature – simple tarsorrhaphy, while effective for corneal protection, is disfiguring and can significantly interfere with lateral vision, so it is often reserved for patients who cannot undergo more sophisticated procedures or as a short-term solution. Upper eyelid weighting, on the other hand, offers dynamic protection that more closely mimics natural blinking without sacrificing the entire palpebral aperture.

An important aspect of our surgical approach was the combination of upper lid and lower lid procedures to fully rehabilitate eyelid closure. In paralytic lagophthalmos, although the primary issue is the non-functional upper lid, the lower lid can also become lax or retract due to prolonged facial nerve weakness (leading to paralytic ectropion). Our patient had significant scleral show and likely some degree of lower lid laxity, which would have left a portion of the cornea exposed even if the upper lid was brought down with a weight. We addressed this by anchoring the lower lid to the medial orbital periosteum, effectively a canthopexy that raised the lower lid margin. This maneuver, akin to a medial canthoplasty or a static lower lid shortening, reduced the vertical palpebral fissure and worked synergistically with the gold weight. The literature supports such combined interventions: Chepeha et al. reported that many patients with facial palsy benefit from adjunctive lower eyelid procedures (like lateral tarsal strip or canthoplasty) in addition to gold weight placement to achieve complete corneal coverage. Similarly, other authors note that older patients or those with significant lower lid laxity often require a tightened lower lid (via blepharoplasty or canthal suspension) at the time of gold weight insertion to optimize outcomes. In our case, performing the lower lid tarsal fixation ensured that once the gold weight closed the upper lid, the lower lid was high enough to meet it, resulting in full closure. This comprehensive approach likely contributed to the excellent result of zero residual lagophthalmos in this patient.[3–6]

The gold weight implant itself functioned as intended, providing the necessary gravitational force to overcome the unopposed levator palpebrae muscle and close the upper lid. Proper weight selection is critical for success. In practice, most adults with facial palsy require a gold implant in the range of about 1.0 to 1.6 g to achieve full closure. Our patient's implant was ~1 g, which was sufficient to close a 4 mm lagophthalmos gap. Notably, her Bell's phenomenon was strong, which means her globe rotated upward on attempted closure; this can reduce the risk of corneal abrasion in incomplete blinking, but a gold weight ensures the lids themselves actually meet and protect the eye in primary position.

After surgery, our patient attained complete lid closure and her cornea healed, demonstrating the effectiveness of the intervention. This outcome parallels the improvements documented in other series. With the gold weight in place, lagophthalmos can be reduced dramatically – often to 0–1 mm of any remaining gap – significantly lowering exposure time and allowing the corneal epithelium to recover. In our patient, fluorescein staining went from diffusely positive pre-op to entirely negative at one month, indicating resolution of exposure keratopathy. Her visual acuity improved from 20/40 to 20/25. This aligns with reports that improved corneal integrity and reduced need for lubricants after lid loading can lead to better visual acuity and patient comfort. Różycka et al. recently found that after gold eyelid implants, patients' reliance on artificial tears dropped from an average of 7 times a day to about 2 times a day, reflecting a much-improved ocular surface condition. They also noted an average 85% improvement in vision-related quality of life scores in patients treated with gold weights. Our patient's experience was consonant with these findings – she reported dramatically less dryness and no longer needed nighttime ointment.[7]

Another point highlighted by this case is the safety and lack of complications with careful technique. By one year, our patient showed no signs of implant migration, extrusion, or inflammation. We attribute this to meticulous surgical method: creating a snug pretarsal pocket and suturing the gold weight to the tarsal plate. Suture fixation is known to greatly stabilize the implant and minimize postoperative complications. Gold itself is an inert metal, so true allergic reactions are exceedingly rare; a few cases of foreign-body granuloma or inflammation around gold weights have been reported, but these can often be managed with topical or injected corticosteroids without removing the implant. Our patient exhibited no inflammatory response to the implant. We also did not encounter issues of persistent edema or infection; her diabetes was controlled perioperatively to aid healing, and standard antibiotic prophylaxis was given.

In summary, the management of paralytic lagophthalmos should be individualized, but upper lid loading with a gold weight is a proven, straightforward method that addresses the functional defect while maintaining cosmesis. Our patient's case reinforces several key principles from the literature:

(1) timely surgical intervention is crucial once it is clear the palsy will not spontaneously recover, to prevent irreversible corneal damage;
(2) multidisciplinary care may be needed – in this case, input from ophthalmology, otolaryngology, and oral surgery was required to manage the initial infection and the subsequent eyelid rehabilitation;
(3) proper surgical technique and customization (weight selection, placement, and adjunctive procedures) are paramount to achieving a successful outcome; and
(4) patient quality of life improves significantly when the basic function of eye closure is restored.

CONCLUSION

Chronic paralytic lagophthalmos is a potentially sight-threatening condition that warrants prompt and definitive management. This case demonstrates that gold weight implantation in the upper eyelid – combined with appropriate adjunctive measures such as lower lid support – can effectively restore eyelid closure and protect the ocular surface in a patient with long-standing facial nerve palsy. The gold weight implant provided a simple, gravity-assisted solution to achieve full blinking closure, resulting in healing of corneal lesions and improvement of visual acuity and symptoms. Consistent with the literature, our patient experienced excellent functional and subjective outcomes with no significant complications. Gold eyelid loading remains a gold-standard treatment for paralytic lagophthalmos due to its high success rate, safety, and minimal invasiveness. By tailoring the weight and surgical technique to the individual and addressing both upper and lower eyelid positions, surgeons can maximize corneal protection and patient satisfaction. Early intervention with such static eyelid reanimation not only prevents corneal ulceration and vision loss, but also significantly improves patients' quality of life by restoring comfort and the appearance of a natural blink.

DECLARATIONS

Conflict of interest

The authors declare no conflict of interest.

Funding

This research received no external funding.

Informed Consent Statement

The patient provided an informed consent statement.

Ethical Statement

This case report was conducted in accordance with institutional ethical standards. Written informed consent was obtained from the patient for the publication of this case and accompanying clinical data.

REFERENCES

1. 1.Pereira MVC, Glória ALF. Lagophthalmos. *Semin Ophthalmol.* 2010;25(3):72-78. doi:10.3109/08820538.2010.488578
2. 2.George E, Richie MB, Glastonbury CM. Facial Nerve Palsy: Clinical Practice and Cognitive Errors. *Am J Med*. 2020;133(9):1039-1044. doi:10.1016/j.amjmed.2020.04.023
3. 3.Chepeha DB, Yoo J, Birt C, Gilbert RW, Chen J. Prospective evaluation of eyelid function with gold weight implant and lower eyelid shortening for facial paralysis. *Arch Otolaryngol Head Neck Surg*. 2001;127(3):299-303. doi:10.1001/archotol.127.3.299
4. 4.Tuna SH, Gumus HO, Hersek N. Custom-made Gold Implant for Management of Lagophthalmos: A Case Report. *Eur J Dent.* 2008;2(4):294-298.
5. 5.Lavy JA, East CA, Bamber A, Andrews PJ. Gold weight implants in the management of lagophthalmos in facial palsy. *Clin Otolaryngol Allied Sci*. 2004;29(3):279-283. doi:10.1111/j.1365-2273.2004.00817.x
6. 6.Manodh P, Devadoss P, Kumar N. Gold weight implantation as a treatment measure for correction of paralytic lagophthalmos. *Indian J Dent Res*. 2011;22(1):181. doi:10.4103/0970-9290.80002
7. 7.Różycka K, Bakalarski K, Różycka M, et al. Evaluation of the efficacy of upper eyelid gold implant surgery in the treatment of lagophthalmos. *OphthaTherapy Therapies in Ophthalmology*. Published online October 25, 2024. doi:10.24292/01.OT.250824