

Access this article online	
	Website: www.klinikaozna.pl
	DOI: https://doi.org/10.5114/ko.2023.133119

Migration and extrusion of eyelid implant in patients with facial palsy – two case reports

Larysa Krajewska-Węglewicz

Clinical Department of Ophthalmology, National Medical Institute of the Ministry of the Interior and Administration, Warsaw, Poland
Warsaw Eye Hospital, Warsaw, Poland

ABSTRACT

Peripheral facial nerve palsy is one of the cranial neuropathies and may present with lagophthalmos. The damage may be permanent or transient. Depending on the severity of symptoms and prognosis, treatment is proposed. In many cases, lid load is the procedure of choice due to its effectiveness, minimal invasiveness, and reversibility. Despite the undeniable advantages, the eyelid implant procedure is associated with the risk of a number of complications. One of the most common is the displacement and extrusion of the eyelid implant.

Cases report: The paper presents a description of two cases: an 88-year-old patient with extrusion of a gold implant and

a 61-year-old patient with eyelid implant migration. In both cases, the implant was removed and re-implantation was abandoned. The paper discusses possible causes of eyelid implant displacement as well as methods of treatment and prevention of this complication.

Conclusions: Implantation of the eyelid implant is an effective method of treating paralytic lagophthalmos. Displacement of the eyelid implant is a common complication, which in many cases can be prevented by the selection of the appropriate implant and surgical technique.

KEY WORDS: facial palsy, eyelid implant, extrusion, migration.

INTRODUCTION

Peripheral facial palsy is a cranial nerve neuropathy that significantly reduces the quality of life of affected patients. An ophthalmologist might be the first healthcare provider that a patient with acute facial palsy consults. There are multiple causes of facial palsy. One of the most common is Bell's palsy (idiopathic), which accounts for 70% of cases [1]. Other causes include infection, trauma, neoplastic process, autoimmune diseases, and iatrogenic factors [2]. Prognosis has been found to be associated with the cause of facial palsy. In patients with traumatic or iatrogenic palsy, the prognosis is typically less favorable, while in cases of Bell's palsy, complete and spontaneous recovery of nerve function commonly occurs within 3 to 4 months [1]. The therapeutic approach is determined by the expected likelihood of spontaneous improvement. Furthermore, the patient's age, overall health status, and capacity to adhere to therapeutic recommendations and attend follow-up appointments are considered. In addition to conservative treatment, surgical options are available, including ophthalmological interventions aimed at providing temporary eye protection or permanent cor-

rection of eyelid position as well as procedures performed by specialists in other disciplines, such as cross-facial nerve grafting or muscle transposition. Procedures that can be reversed when the orbicularis oculi muscle regains function include temporary tarsorrhaphy and eyelid implant placement. In patients with persistent and irreversible palsy, permanent lateral and medial tarsorrhaphy and eyelid implant surgery are performed. At present, tarsorrhaphy is experiencing a decline in popularity due to the limited satisfaction with the aesthetic outcomes among both patients and surgeons.

In many cases, the treatment of choice involves the placement of eyelid implant. It is a fast, reversible, and effective treatment modality for paralytic lagophthalmos. Nevertheless, it carries a risk of complications. One of the most common is implant migration, occurring in 0-15% of primary gold weight implantation procedures [3-6].

The aim of this study is to present two cases of patients with eyelid implant migration and to discuss potential complications associated with eyelid implant surgery, with a specific focus on implant migration.

CORRESPONDING AUTHOR

Larysa Krajewska-Węglewicz, Clinical Department of Ophthalmology, National Medical Institute of the Ministry of the Interior and Administration, 137 Wołoska St., 02-507 Warszawa, Poland, e-mail: larysa.krajewska@ckmmswia.gov.pl

CASE REPORTS

Case 1

An 88-year-old patient underwent gold weight implant surgery in the upper eyelid of the right eye at another medical center three years previously due to facial palsy following the excision of squamous cell carcinoma involving the scalp together with a fragment of the skull bone in the right parietal region. He reported to the Warsaw Eye Hospital because of implant extrusion that had occurred a week prior. On examination, the patient presented with no pain, fever, or signs of inflammation in the eyelids. Physical assessment revealed a gold weight implant piercing through the skin and visible up to half of its longitudinal dimension. Skin thinning was observed around the implant. The patient exhibited lagophthalmos of the right eye, with preserved Bell's phenomenon (Figure 1). Evaluation of ocular motility and visual acuity proved difficult because the patient was uncooperative. Intraocular pressure was 12 mmHg in the right eye and 13 mmHg in the left eye. Anterior segment evaluation revealed no significant abnormalities. The patient's right eye was quiet, and the cornea appeared smooth, glossy, and transparent. The anterior chamber was clear, while the lens revealed early-stage opacities. Neither the patient's history nor the available medical records provided any information regarding the weight of the implant, the method of production, or the surgical technique.



Figure 1. An 88-year-old patient presenting with regurgitation and eyelid implant extrusion



Figure 2. Same patient as in Figure 1 – intraoperative view

The implant removal procedure was performed under local anesthesia, from a percutaneous approach in the palpebral sulcus. Intraoperatively, it was noted that the weight was unilaterally secured to the tarsus with non-absorbable sutures (Figure 2). The implant was not covered by fibrous tissue. The implant bed was rinsed with gentamicin solution and the tissues were closed in layers. An oral antibiotic was prescribed.

The patient did not attend any further follow-up appointments because immediately after the procedure he had a scheduled hospital stay for the treatment of metastatic cancer.

Case 2

A 61-year-old patient reported to the Ophthalmology Outpatient Clinic at the National Medical Institute of the Ministry of the Interior and Administration in Warsaw because of migration of the right eyelid implant, which had been felt under the skin for several months. The implant was placed at another medical center, in 2018, to treat lagophthalmos caused by surgery to remove a tumor in the right cerebellopontine angle. Later in 2018, the patient underwent anastomosis of the right hypoglossal nerve with the peripheral part of the right facial nerve. The procedure brought a very good functional effect. On examination, the patient's eyelids were positioned at an equal height, with full eyelid closure. Ocular motility was preserved in all directions. The pupils were round and symmetrical, with normal direct and consensual light reflex. The implant was palpable under the skin, moving freely without causing any pain (Figure 3). The skin on the upper eyelid was unchanged. The patient had full best corrected visual acuity in both eyes measured by the Snellen chart. Intraocular pressure was 18 mmHg bilaterally. Anterior segment evaluation found no abnormalities. The patient underwent a surgical procedure to remove the implant through anterior incision in the palpebral sulcus. Intraoperatively, the implant was found to be encapsulated, and non-absorbable sutures were identified on the surface of the weight (Figure 4). The implant was entirely disconnected from the tarsal surface. Following the procedure, the orbicularis oculi muscle was fixed with single Vicryl 6/0 sutures, and the skin was closed with a continuous intradermal Prolene 5/0 suture. After the procedure, the patient had full eyelid closure and symmetrical positioning of the upper eyelids. Consequently, it was decided not to perform reimplantation.

DISCUSSION

Eyelid implant surgery is the procedure of choice in many cases of paralytic lagophthalmos. The procedures have been performed since 1958. At present, eyelid implants are an element of routine management of paralytic lagophthalmos due to their high efficacy and a strong safety profile [7]. They typically have no adverse effect on the patient's visual acuity or visual field, while potentially reducing the need to use lubricating eye drops and other measures to relieve dry eyes. They may be reversible if the palsy resolves. In the early stages of facial palsy, they can be affixed to the upper eyelid, en-



Figure 3. Visible protrusion of the skin above the scutellum due to implant displacement. The skin above the implant is unchanged

hancing closure through a completely non-invasive method. They can be implanted inside the eyelid at any point during the course of the condition to enhance the overall esthetic appearance. Advantages of eyelid implants include:

- improved blinking [8],
- improved eyelid closure,
- corneal protection [9],
- lower severity of dry eye.

An implant of properly selected weight is placed beneath the orbicularis oculi muscle and fixed to the tarsus with non-absorbable sutures. Supplementary procedures can be performed concurrently to correct the position of the eyelids, such as horizontal shortening of the lower eyelid, direct eyebrow lifting, or blepharoplasty. Currently, the available eyelid implant options include gold and platinum weights [10]. Both types are characterized by high biocompatibility and minimal potential to induce inflammation [11]. Platinum implants offer an advantage because of their reduced size and thinner profile, which is due to platinum's higher density compared to gold [12]. Their disadvantage lies in the high cost. Gold weights are more allergenic, with 7% of patients developing allergy reactions to gold weight eyelid implants [13]. They are primarily categorized as type IV hypersensitivity reactions [14]. The most frequently used implants are plate-shaped, with rounded edges. Chain implants are another option. They are better adapted to the curvature of the eyelid, resulting in reduced astigmatism and improved esthetic outcomes [13]. In cases of under- or over-correction, it is possible to add or remove one chain link without the need to explant the entire weight [15]. Eyelid implant surgery, despite its many advantages, can be associated with complications. Depending on the author, the complication rate varies from 0 to 61% [16, 17]. The paper presents two cases of implant migration, which is among the more common complications associated with this procedure. Other complications associated with eyelid implant surgery include residual lagophthalmos, ptosis, entropion, infection, granulomatous response, suboptimal esthetic outcomes (e.g. implant visibility through the eyelid), and nocturnal lagophthalmos. Implants can also induce astigmatism [18]. Implantation procedures performed with implants of insufficient weight or incorrect weight positioning can lead to postoperative lagophthalmos. In both reported cases, neither the patient's history nor the available medical records provided information regarding the weight

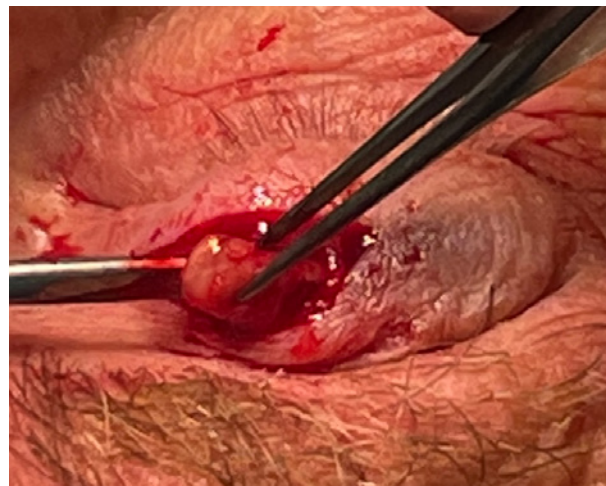


Figure 4. Implant covered with a fibrous capsule – intraoperative view

of the plates, the method of their production, or the surgical technique.

Several implant placement techniques are available, including pretarsal implantation above the edge of the eyelid (low pretarsal), septal, pretarsal implantation beneath the upper edge of the tarsus (high pretarsal), and orbital implantation. Higher-level implantation requires heavier implants, and this factor should be considered in preoperative planning. Implants placed higher generally yield more favorable aesthetic outcomes compared to implantation above the eyelash line. However, they are associated with a greater incidence of nocturnal lagophthalmos. The implants weigh down the eyelid by gravity when the patient is in a horizontal position. If the implant is positioned higher, there is an increased risk of lagophthalmos. The risk can be mitigated by propping the head higher on the pillow [19].

Patients reported on in the present study experienced delayed migration of the gold weight implant. In patients with persistent facial palsy, the periorbital tissues can undergo atrophy due to denervation. This may result in implant migration or extrusion. Usually, the implant penetrates through the skin, but case reports in the literature have documented implant extrusion through the tarsus, which carries the risk of corneal damage [20]. To minimize the risk of implant extrusion, technical modifications can be implemented, including [21, 22] covering of the implant with a graft of fascia lata (deep fascia of the thigh) [23], fixation of the weight to the upper edge of the tarsus, and implant placement in the reproseptal pocket. These approaches tend to induce less astigmatism and reduce the visibility of the implant, as it is concealed by more layers of tissue. In technical terms, these procedures are more challenging compared to pretarsal implantation [24]. Factors contributing to minimizing the risk of extrusion include selection of implants of appropriate weight, precise execution of the surgical procedure, central positioning, use of non-absorbable sutures, and double-layer tissue closure. Some authors report that, over time, the implant becomes enveloped by a layer of connective tissue

(pseudocapsule), which stabilizes the weight [25]. In the first patient described in this study, no fibrosis was observed around the implant, whereas in the second patient, the implant migrated despite the presence of a pseudocapsule identified during the surgery. Clearly, more research is needed to investigate the impact of inflammation and fibrotic processes on implant mobility.

To date, there have been no large randomized studies comparing the incidence of implant migration following implantation of different types of weights. A study involving 44 patients showed a higher rate of extrusion for chain weights compared to plate weights [26]. Bladen *et al.*, in a study of 107 eyelids during a five-year follow-up, reported extrusion of gold weight implants in 10% of cases. However, We Fong Siah *et al.*, in their 10-year follow-up study of 154 eyelids, observed gold weight implant migration in 31.8% and extrusion in 4.7% of cases, and platinum weight implant migration in 3.6% of cases [13]. Extrusion rates reported in the literature range from 0 to 43% [27]. However, the duration of follow-up is important. At present, the majority of authors favor the use of platinum weight implants because of the lower incidence of complications and improved esthetic outcomes.

In both cases reported here, a decision was made to remove the implant without subsequent reimplantation. In the former case, a repeated procedure will be considered once the patient's general condition stabilizes, whereas in the latter case, following successful anastomosis of the hypoglossal and facial nerves, the patient achieved full eyelid closure. The reimplantation rate is estimated at 13-20% [28-30]. In cases

where reimplantation is considered to address weight extrusion or migration, it may be advisable to explore the option of platinum implant placement together with the application of modified surgical techniques. High-level implantation and coverage with additional tissue layers is the preferred solution. If skin atrophy is observed, the anterior surface of the implant can be covered with the fascia lata. Tarsal thinning may be an indication to reinforce the posterior surface of the implant with a cartilage graft. There are also isolated reports of the use of pericardium barrier material [31] or bioengineered products [32].

In summary, the main focus in the ophthalmological care of patients with facial nerve palsy is to protect the cornea. To achieve this goal, alongside conservative treatment options, various surgical modalities are available. Eyelid implant is a good method to improve eye closure and should be considered in every case of lagophthalmos associated with the risk of corneal complications. Eyelid implant surgery is characterized by a high level of patient satisfaction, primarily because of its minimally invasive approach, reversibility, substantial improvement in eyelid closure, and a favorable aesthetic outcome. Complications arising from eyelid implantation are generally mild and reversible, making the procedure an effective treatment for paralytic lagophthalmos. Appropriate choice of implant and suitable surgical technique can reduce the risk of complications associated with eyelid implant surgery.

DISCLOSURE

The author declares no conflict of interest.

References

1. Marson AG, Salinas R. Bell's palsy. *West J Med* 2000; 173: 266-268.
2. Bleicher JN, Hamiel S, Gengler JS, Antimarino J. A Survey of Facial Paralysis: Etiology and Incidence. *Ear Nose Throat J* 1996; 75: 355-358.
3. Chapman P, Lamberty BG. Results of upper lid loading in the treatment of lagophthalmos caused by facial palsy. *Br J Plast Surg* 1988; 41: 369-372.
4. Foda HM. Surgical management of lagophthalmos in patients with facial palsy. *Am J Otolaryngol* 1999; 20: 391-395.
5. Pickford MA, Scamp T, Harrison DH. Morbidity after gold weight insertion into the upper eyelid in facial palsy. *Br J Plast Surg* 1992; 45: 460-464.
6. Misra A, Grover R, Withey S, *et al.* Reducing postoperative morbidity after the insertion of gold weights to treat lagophthalmos. *Ann Plast Surg* 2000; 45: 623-628.
7. Hontanilla B, Marre D. Eyelid reanimation with gold weight implant and tendon sling suspension: evaluation of excursion and velocity using the FACIAL CLIMA system. *J Plast Reconstr Aesthet Surg* 2013; 66: 518-524.
8. Wambier SPF, Garcia DM, Cruz AAV, Messias A. Spontaneous Blinking Kinetics on Paralytic Lagophthalmos After Lid Load with Gold Weight or Autogenous Temporalis Fascia Sling. *Curr Eye Res* 2016; 41: 433-440.
9. Nowak-Gospodarowicz I, Różycki R, Rękas M. Gold weights in the treatment of exposure keratopathy – 7-year experience. *Klinika Oczna* 2017; 119: 29-33.
10. Bianchi B, Ferri A, Leporati M, *et al.* Upper eyelid platinum chain placement for treating paralytic lagophthalmos. *J Craniomaxillofac Surg* 2014; 42: 2045-2048.
11. Bladen JC, Norris JH, Malhotra R. Cosmetic comparison of gold weight and platinum chain insertion in primary upper eyelid loading for lagophthalmos. *Ophthalmic Plast Reconstr Surg* 2012; 28: 171-175.
12. Silver AL, Lindsay RW, Cheney ML, Hadlock TA. Thin-profile platinum eyelid weighting: a superior option in the paralyzed eye. *Plast Reconstr Surg* 2009; 123: 1697-1703.
13. Siah WF, Nagendran S, Tan P, *et al.* Late outcomes of gold weights and platinum chains for upper eyelid loading. *Br J Ophthalmol* 2018; 102: 164-168.
14. Doyle E, Mavrikakis I, Lee EJ, *et al.* Type IV hypersensitivity reactions to upper lid gold weight implants-is patch testing necessary? *Orbit* 2005; 24: 205-210.
15. Braun T, Batran H, Zengel P, *et al.* Surgical rehabilitation of paralytic lagophthalmus by platinum chain lid loading: focusing on patient benefit and health-related quality of life. *Otol Neurotol* 2012; 33: 1630-1634.

16. Jacob JT, Pendleton K, Broussard E, et al. Porous alloplastic material encasement of gold weights for the treatment of paralytic lagophthalmos. *Ophthalmic Plast Reconstr Surg* 1999; 15: 401-406.
17. Townsend DJ. Eyelid reanimation for the treatment of paralytic lagophthalmos: historical perspectives and current applications of the gold weight implant. *Ophthalmic Plast Reconstr Surg* 1992; 8: 196-201.
18. Mavrikakis I, Beckingsale P, Lee E, et al. Changes in corneal topography with upper eyelid gold weight implants. *Ophthalmic Plast Reconstr Surg* 2006; 22: 331-334.
19. Levine RE, Pulec JL. Eyelid reanimation with the palpebral spring after facial nerve graft surgery: an interdisciplinary approach. *Ear Nose Throat J* 1993; 72: 686-691.
20. Seider N, Beiran I, Gdal-On M, Miller B. Posterior lamellar gold-weight extrusion. *Ophthalmic Plast Reconstr Surg* 2003; 19: 407-408.
21. Gendy A, Therattil PJ, Feintisch AM, Lee ES. Postseptal Weight Placement for Paralytic Lagophthalmos. *Eplasty* 2016; 16: ic26.
22. Wagh VK, Lim WS, Cascone NC, Morley AMS. Post-septal upper eyelid loading for treatment of exposure keratopathy secondary to non-cicatricial lagophthalmos. *Orbit* 2016; 35: 239-244.
23. Egemen O, Ozkaya O, Uscetin I, Akan M. Covering the gold weight with fascia lata graft in paralytic lagophthalmos patients. *Br J Oral Maxillofac Surg* 2012; 50: 369-372.
24. Mokhtarzadeh A, Lee EW, Barahimi BI, et al. Placement of an eyelid weight as an upper lid spacer for lagophthalmos. *Clin Exp Ophthalmol* 2015; 43: 766-768.
25. Keen M. Gold eyelid weights in patients with facial palsy. *Plast Reconstr Surg* 1992; 90: 1121-1122.
26. Pausch NC, Kuhnt CP, Halama D. Upper-eyelid weight implants for patients with lagophthalmos-comparison of rigid and flexible implants. *J Craniomaxillofac Surg* 2018; 46: 1843-1849.
27. Kelley SA, Sharpe DT. Gold eyelid weights in patients with facial palsy: a patient review. *Plast Reconstr Surg* 1992; 89: 436-440.
28. Sönmez A, Öztürk N, Durmuş N, et al. Patients' perspectives on the ocular symptoms of facial paralysis after gold weight implantation. *J Plast Reconstr Aesthet Surg* 2008; 61: 1065-1068.
29. Razfar A, Afifi AM, Manders EK, et al. Ocular outcomes after gold weight placement and facial nerve resection. *Otolaryngol Head Neck Surg* 2009; 140: 82-85.
30. Aggarwal E, Naik MN, Honavar SG. Effectiveness of the gold weight trial procedure in predicting the ideal weight for lid loading in facial palsy: a prospective study. *Am J Ophthalmol* 2007; 143: 1009-1012.
31. Foster JA, Perry JD, Cahill KV, et al. Processed human pericardium barrier for gold weight implantation. *Ophthalmic Plast Reconstr Surg* 2004; 20: 107-109.
32. Monroy A, Kojima K, Ghanem MA, et al. Tissue engineered cartilage "bioshell" protective layer for subcutaneous implants. *Int J Pediatr Otorhinolaryngol* 2007; 71: 547-552.