Case report

EJO European Journal of Ophthalmology

European Journal of Ophthalmology
2023, Vol. 33(5) NP79–NP82

DOI: 10.1177/11206721221136433
journals.sagepub.com/home/ejo
Sage

Spontaneous intraocular lens extrusion through Gundersen conjunctival graft after multiple failed keratoplasties: A report of two cases

Giuseppe Giannaccare[1], Sana Nadeem[2], Sabrina Vaccaro[1] and Vincenzo Scorcia[1]

Abstract

Purpose: To report the occurrence and the outcomes of 2 cases of spontaneous extrusion of 3-piece intraocular lens (IOL) through a Gundersen conjunctival flap performed for tectonic purposes after multiple failed penetrating keratoplasties (PKs).

Methods: A 70-year-old woman (Patient #1) with severe dry eye disease who had undergone cataract surgery with posterior chamber 3-piece IOL implantation, multiple PKs and Gundersen conjunctival flap in her left eye presented with partial extrusion of the optic and the inferior haptic of the IOL through the conjunctival flap. Inferior symblepharon and keratinization of the entire ocular surface were also present. A 64-year-old diabetic man (Patient #2) with history of cataract surgery with a posterior chamber IOL implantation, multiple PKs for keratoconus and Gunderson conjunctival flap in his right eye presented with partial extrusion of IOL optic through the conjunctival flap.

Results: Patient #1 refused a further surgery and IOL was removed at the slit lamp. Currently, 3 months after IOL extrusion, corneal perforation self-sealed, visual acuity of light perception is maintained, and the patient does not complain any symptoms of ocular discomfort or pain. In Patient #2, tectonic PK combined with IOL removal and anterior vitrectomy was performed. Currently, 1 month postoperatively corneal graft is clear, intraocular pressure is normal, and patient's vision is counting fingers.

Conclusions: In both cases, IOL extrusion occurred spontaneously through a Gunderson conjunctival flap. Including the underlying Tenon's capsule in the conjunctival graft could increase its tectonic support, potentially avoiding this complication.

Keywords

corneal transplantation, penetrating keratoplasty, IOLs, ocular surface surgery, surgery with high-risk ocular conditions

Date received: 30 April 2022; accepted: 17 September 2022

Introduction

Extrusion of posterior chamber intraocular lenses (IOL) has been reported as a result of ocular trauma, usually from the surgical wound(s) of a previous ocular surgery.[1] Other reported causes are endophthalmitis and scleromalacia owing to both autoimmune diseases and herpes zoster infection.[2,3] Trans-corneal exposure and extrusion of posterior chamber IOLs is a rare phenomenon, and to date has been described only in 2 cases.[4,5] In the first one (2008), trans-corneal IOL extrusion occurred in a patient with a history of extracapsular cataract extraction with a posterior chamber IOL who developed 12 years later a

[1]Department of Ophthalmology, University of "Magna Graecia", Catanzaro, Italy
[2]Department of Ophthalmology, Foundation University Medical College & Fauji Foundation Hospital, Islamabad, Pakistan

Corresponding author:
Giuseppe Giannaccare, Department of Ophthalmology, University of Magna Graecia, Viale Europa, Germaneto, Catanzaro, CZ 88100, Italy.
Email: giuseppe.giannaccare@unicz.it

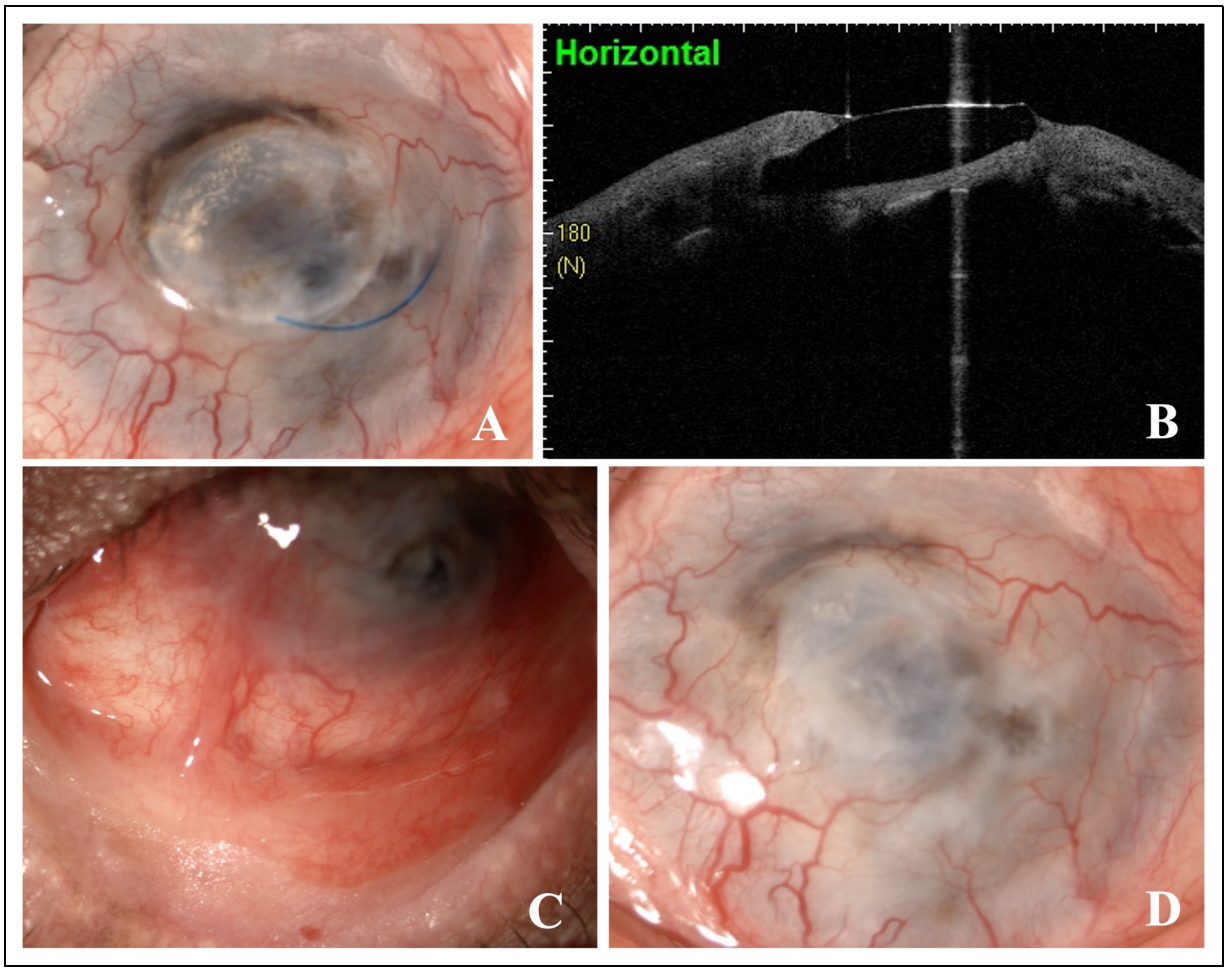

Figure 1. Clinical picture of Patient #1. Part A: Slit lamp picture showing the extrusion through the conjunctival graft of the optic and the inferior haptic of a posterior chamber 3-piece intraocular lens (IOL) 1 year after the last surgery. Part B: Anterior segment-optical coherence tomography (AS-OCT) scan confirming IOL extrusion in the presence of iridocorneal synechiae. Part C: Cicatrizing conjunctival disease with inferior symblepharon and keratinization of the ocular surface epithelia. Part D: Three months after IOL removal, corneal perforation self-sealed with the formation of an opaque tissue.

corneal ulcer and subsequent corneal melting with IOL extrusion via this route.[4] In the second case (2021), IOL extrusion occurred via the donor cornea 8 years after a penetrating keratoplasty (PK) performed for bullous keratopathy and complicated later with glaucoma and graft failure.[5] We report herein 2 unique cases of spontaneous 3-piece IOL extrusion through a Gundersen conjunctival flap, performed for tectonic purposes after multiple failed PKs, in the absence of history of ocular trauma. Patients' clinical course along with detailed corneal imaging are presented and discussed.

Case description

Case #1

A 70-year-old woman with severe dry eye disease (DED) owing to primary Sjogren syndrome presented to us with foreign body sensation in her left eye (LE). The patient had undergone elsewhere multiple (n = 6) PKs in the LE, the first one being performed for the surgical management of a corneal opacity. During the second PK, surgery was combined with phacoemulsification and posterior chamber IOL implantation. All PK grafts failed after a variable amount of time from surgery (range 4–12 months) due to uncontrolled DED and ocular surface inflammation that predisposed to the onset of immune rejections. Given the intense pain referred by the patient who refused a further corneal transplantation, a conjunctival flap according to Gundersen technique was performed to cover the failed graft.[6] Upon presentation, 1 year after the last surgery, patient' visual acuity was light perception in LE. Slit lamp biomicroscopy showed a partial extrusion of the optic and the inferior haptic of a posterior chamber 3-piece IOL through the conjunctival flap (Figure 1 part A).

This finding was further confirmed by anterior segment-optical coherence tomography (AS-OCT) scan (Casia, Tomey, Nagoya, Japan) (Figure 1 part B). Cicatrizing conjunctival disease with inferior symblepharon and keratinization of the entire ocular surface was present (Figure 1 part C). Schirmer test type I was equal to 0 mm/5 min. The patient refused a further surgery and thus IOL was removed at the slit lamp and a bandage contact lens was applied. Currently, 3 months after IOL extrusion, corneal perforation self-sealed with the formation of an opaque tissue (Figure 1 part D). Visual acuity of light perception continues to be maintained and the patient does not complain any symptoms of ocular discomfort or pain.

Case #2

A 64-year-old diabetic man, with history of multiple PKs (n = 3) failed due to corneal ulcer of unknown origin followed by serial immunological rejections in his right eye (RE) for advanced stage keratoconus and cataract surgery with a posterior chamber IOL implant performed elsewhere, presented to us with intense eye redness and pain in the RE. Slit lamp examination showed the presence of an infectious keratitis with a large epithelial defect covering the entire graft and a loose running suture (Figure 2 parts A-B). Corneal scraping was performed at slit lamp and topical empirical therapy with fortified antibiotic (vancomycin drops 5%) and antifungal (amphotericin B drops 0.15%) was started hourly. One week later, despite the culture resulted negative clinical picture continued to worsen with progressive melting of the graft, and therefore a tectonic Gunderson conjunctival flap was performed. Postoperative course was regular, conjunctival graft appeared vital and infectious signs regressed progressively (Figure 2 part C). Two months later, the patient presented to us reporting foreign body sensation in the operated eye. Slit lamp examination showed partial extrusion of single-piece IOL optic through the conjunctival flap (Figure 2 part D) that was confirmed by AS-OCT scan (Figure 2 part E). Tectonic PK combined with IOL removal and anterior vitrectomy was performed. Currently, 1 month postoperatively the eye is quiet with a clear corneal graft (Figure 2 part F) and normal intraocular pressure, and patient's vision is counting fingers.

Discussion

The Gunderson conjunctival flap was introduced in 1958 to cover the cornea with a thin total conjunctival flap in order to stabilize the ocular surface and decrease inflammation thanks to the intake of blood supply from conjunctival vessels. This flap has been used for decades in a variety of ocular surface diseases, such as corneal melting and perforation, severe DED, neurotrophic keratopathy and recalcitrant

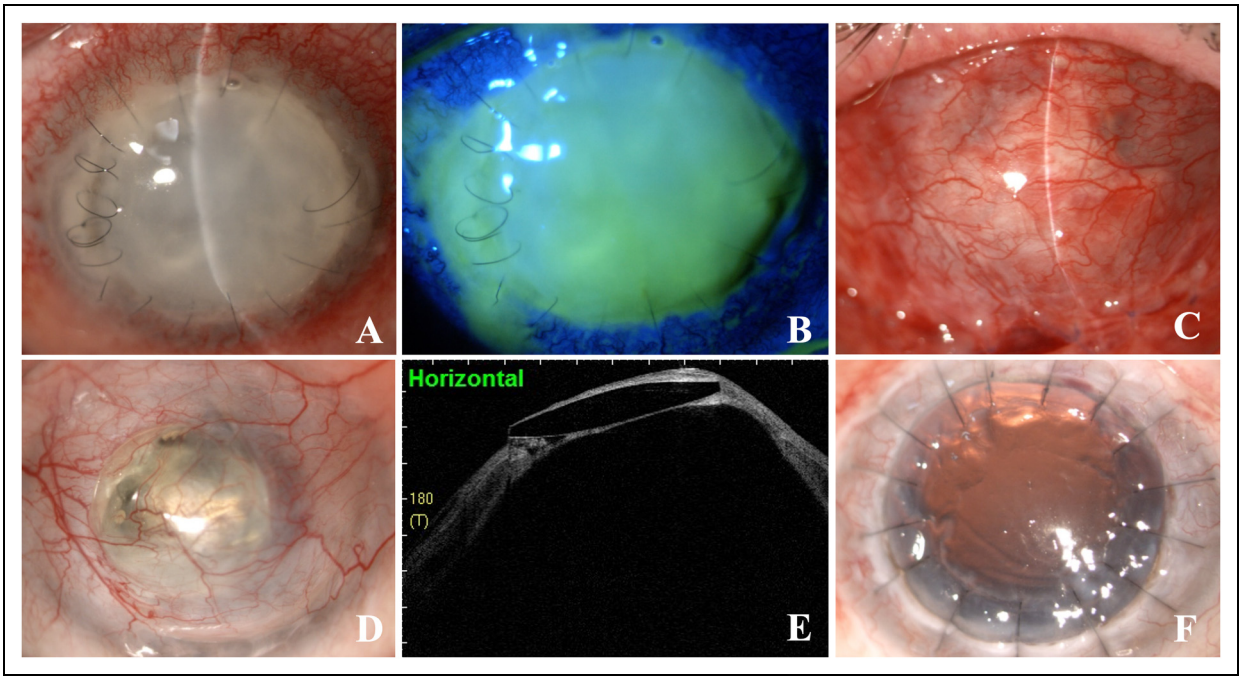

Figure 2. Clinical picture of Patient #2. Parts A-B: Slit lamp picture showing the presence of infectious keratitis with a large epithelial defect covering the entire penetrating keratoplasty graft and a loose running suture. Part C: One week after surgery, Gunderson conjunctival flap was vital and infectious signs regressed progressively. Part D: Two months after surgery, partial extrusion of IOL optic through the conjunctival flap. Part E: AS-OCT scan confirming the extrusion of the IOL optic in the presence of iridocorneal synechiae. Part F: One month postoperatively, tectonic PK graft is clear.

corneal ulcers, among others.[6–8] The flap covers the cornea and protects it from further stromal lysis and erosion caused by tear enzymes, forming a resilient, vascular surface that provides nutrients, growth factors, anti-collagenases, and infection resistance. Although its usage has been in part replaced by tectonic PK or amniotic membrane transplantation, the Gunderson flap still has indication for globe salvage in case of multiple graft failures, unresponsive infectious keratitis, corneal ulcer with or without perforation; in eyes with visual potential, it can represent a bridge therapy to optical PK for visual rehabilitation.[7] Both our cases are unique since IOL extrusion occurred spontaneously through a Gunderson conjunctival graft performed to cover a failed PK. This series raises various open questions that deserve mentioning. Firstly, whether conjunctiva alone is sufficient for providing support to a compromised or breached ocular surface, or the inclusion in the graft of the underlying Tenon's capsule may help to provide a stronger support, improving the thickness and robustness of the graft itself, thus preventing progressive melting and perforation, with possible risk of IOL extrusion in pseudophakic eyes. A total composite Tenon's capsule-conjunctival flap has been recently proposed as an alternative to the Gunderson flap.[9,10] The inclusion of Tenon's capsule within the flap provides both unique advantages and disadvantages to the use of conjunctival tissue alone. For instance, the inclusion of the Tenon's capsule can increase the viability and integrity of the conjunctival flap. However, anatomy of the Tenon's capsule can pose some potential disadvantages: as the Tenon's capsule is contiguous with the rectus muscle sheaths, their insertion marks the posterior extent of dissection of the Tenon's corneal surface coverage. This limitation can potentially lead to smaller flaps and greater tension on the flap, which has been suggested as a main contributor to flap complications such as flap retraction, ptosis, and short fornix. Secondly, at the time of IOL extrusion, iridocorneal synechiae were present in both cases, as confirmed by the OCT scans. However, it is difficult to determine if this condition could be a predisposing cause for IOL extrusion, or a consequence of corneal/conjunctival graft perforation. Thirdly, IOL type and size along with implantation techniques could influence the risk of dislocation and extrusion. Despite no data concerning this issue are available, it is reasonable to hypothesize that intrasclearal fixated IOL or in-the-bag single-piece IOL as large as possible could increase lens stability. However, it should be pointed out that in both cases posterior chamber IOL implantation was performed uneventfully in combination with PK and no risk of IOL dislocation existed at that time.

Conclusions

In conclusion, we report for the first time two unique cases of spontaneous IOL extrusion through a Gundersen conjunctival flap performed for covering a failed PK graft. It is possible to hypothesize that including the underlying Tenon's capsule in the conjunctival graft could have increased its tectonic support. This approach could be preferred in eyes with null/very poor visual potential where the further reduction of graft transparency caused by the additional use of Tenon's capsule does not represent an issue.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iDs

Giuseppe Giannaccare https://orcid.org/0000-0003-2617-0289

Sana Nadeem https://orcid.org/0000-0003-3994-8774

References

1. Blomquist PH. Expulsion of an intraocular lens through a clear corneal wound. *J Cataract Refract Surg* 2003; 29: 592–594.
2. Ahmed TY, Carrim ZI, Diaper CJM, et al. Spontaneous intraocular lens extrusion in a patient with scleromalacia secondary to herpes zoster ophthalmicus. *J Cataract Refract Surg* 2007; 33: 925–926.
3. Lewis JM and Elliot D. Extrusion of an anterior chamber intraocular lens complicated by Haemophilus endophthalmitis. *Am J Ophthalmol* 1998; 125: 261–263.
4. Shukla M, Saleem A, Vakil AA, et al. Transcorneal extrusion of a posterior chamber intraocular lens: an unusual presentation of intraocular lens dislocation. *Indian J Ophthalmol* 2008; 56: 82–83.
5. Errera C, Gomart G, Lindner V, et al. Intra-ocular lens extrusion in a patient with corneal graft melting. *Am J Ophthalmol Case Rep* 2021; 24: 101204.
6. Zemba M, Stamate AC, Tataru CP, et al. Conjunctival flap surgery in the management of ocular surface disease (Review). *Exp Ther Med* 2020; 20: 3412–3416.
7. Oostra TD and Mauger TF. Conjunctival flaps: a case series and review of the literature. *Eye Contact Lens* 2020; 46: 70–73.
8. Versura P, Giannaccare G, Pellegrini M, et al. Neurotrophic keratitis: current challenges and future prospects. *Eye Brain* 2018; 10: 37–45.
9. Galindo-Ferreiro A, Akaishi PS, Al-Aliwi M, et al. Five years' experience with tenon-conjunctival flaps in phthisical eyes. *Semin Ophthalmol* 2017; 32: 642–646.
10. Lee JS, Shin MK, Park JH, et al. Autologous advanced tenon grafting combined with conjunctival flap in scleromalacia after pterygium excision. *J Ophthalmol* 2015; 2015: 547276.