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Accessory lacrimal gland secretion mimicking seidel positivity following complex cataract surgery: Case report

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ABSTRACT

Purpose: To describe the presentation of lacrimal gland secretions mimicking a positive Seidel test following combined complex cataract surgery and endocyclophotocoagulation (ECP).

Observation: The patient presented with a posterior subcapsular cataract (PSC) most likely secondary to chronic steroid use for a history of chemical burns from a firework injury in 2019. This injury resulted in symblepharon formation and limbal stem cell deficiency. He also developed glaucoma secondary to steroid response and angle structure damage. On postoperative day 1 (POD 1) after combined cataract surgery and ECP, the patient's paracentesis was Seidel positive and aqueous suppression was started. On postoperative week 1 (POW 1), the paracentesis was Seidel negative; however, it was noted at this visit that there were 3 pinpoint areas in the superotemporal conjunctiva that were Seidel positive. Digital pressure did not worsen the leak. Ultrasound biomicroscopy (UBM) was performed at POW 2.5 and showed lacrimal gland ducts in the superotemporal conjunctiva. Given this, it is likely that the "Seidel positive" finding was not due to aqueous humor leakage, but secretions from lacrimal gland tissue that may have been dragged more anteriorly due to conjunctiva scarring, thus producing a false positive Seidel sign.

Conclusion & importance: This case highlights a false positive Seidel sign in the context of an eye with a complex ocular history and recent surgery. Clinicians should recognize that a false positive Seidel sign is possible if normal lacrimal gland anatomy has been disturbed.

1. Introduction

The Seidel test was first introduced by Dr. Erich Seidel to test for postoperative leakage; however, it was later expanded for its use for other causes of anterior chamber leakages as well.¹ The procedure consists of adding fluorescein dye onto the surface of the eye under cobalt blue light. Aqueous leakage from a corneal defect will dilute the dye and appear as a stream.¹

The Seidel test has become widely adopted by ophthalmologists to identify aqueous leakage from the anterior chamber. It is imperative for ophthalmologists to find postoperative leakages because it indicates a defect in the cornea or sclera, allowing for atypical communication between the anterior chamber of the eye and the external environment.¹ A false positive Seidel test is rarely reported in literature due to the high specificity of the test.²

Here we report a case of accessory lacrimal gland secretions mimicking a positive Seidel test following complex cataract surgery with

lysis of symblepharon and endoscopic cyclophotocoagulation.

2. Case report

A 25-year-old male initially presented to an outside hospital 3.5 years prior for management of a chemical and thermal burn injury from a firework resulting in a symblepharon and limbal stem cell deficiency (as seen in [Fig. 1](#)). Subsequent to multiple medical and surgical interventions, including self-retained, cryopreserved amniotic membrane (Prokera), symblepharon lysis and simple limbal epithelial transplantation (SLET), fornix repair with amniotic membrane graft, Kenalog and 5-Fluorouracil (5-FU) injections into symblepharon, selective laser trabeculoplasty, and transscleral cyclophotocoagulation, the patient developed a PSC likely secondary to chronic steroid use. The patient was eventually referred to the cornea clinic at Northwestern Medicine (NWM) for management of the PSC. He was also referred to the glaucoma clinic at NWM for management of his end-stage glaucoma. The

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Fig. 1. Clinical appearance pre-cataract surgery and endocyclophotocoagulation in slit lamp examination demonstrating extensive conjunctival scarring and symblepharon of the right eye.

patient was actively being treated with topical ocular anti-hypertensives along with prednisolone acetate twice daily and neomycin/polymyxin/dexamethasone once daily. He did not have any pertinent past medical history, and review of systems and family history were unremarkable.

He underwent cataract surgery with lysis of symblepharon as well as endocyclophotocoagulation (ECP). During the surgery, a crescent blade was used to dissect the temporal pannus and the superonasal symblepharon from the cornea prior to starting the cataract surgery. The conjunctiva was not manipulated beyond its limbal or corneal attachments. The cataract surgery and 270 degrees of endocyclophotocoagulation were then performed without complication. A 10-0 nylon suture was then used to close the superotemporal paracentesis and the main wound which were both noted to be watertight at the end of the case.

On POD 1, the intraocular pressure (IOP) was 13 mm Hg and a slow positive Seidel sign at the conjunctival pannus overlying the superotemporal paracentesis was noted. Aqueous suppression was initiated in the form of timolol 0.5 % twice daily to decrease flow through a leaking wound and promote wound healing.^{3,4} Additionally, a lower frequency than typical for prednisolone 1 % was used to allow for additional inflammation that may help close the leaking wound. Although intracameral moxifloxacin was used during the case, gatifloxacin 0.5 % 4 times daily was also initiated as prophylaxis for infection in the presence of a Seidel positive wound.

On POD 4, the IOP was 7 and the site of the paracentesis was Seidel negative. However, three pinpoint areas in the superotemporal conjunctiva just posterior to the paracentesis were noted to be “Seidel positive” (as seen in Fig. 2A and B). At this point, there was concern that there may have been a “bleb” formed by a leaky paracentesis and the pannus that had been partially dissected off the cornea during the case. Dorzolamide 2 % twice daily was started for additional aqueous suppression.

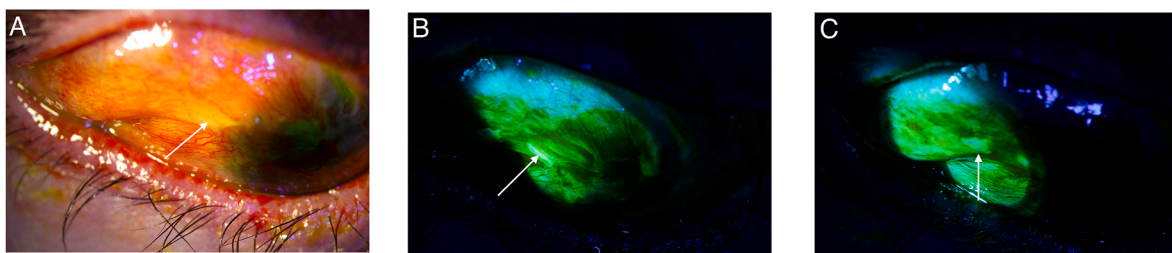


Fig. 2. Clinical appearance post-cataract surgery and endocyclophotocoagulation with A) area of leakage under bright light, leakage can be seen with white arrow B) same area following fluorescein dye administration, leakage can be seen with white arrow C) different angle with white arrow demonstrating fluorescein dye dilution.

At POW1, the IOP was 2 mm Hg and the areas of pinpoint “Seidel positivity” were noted, however, there was no worsening of leakage with application of pressure onto the eye. The eye pressure was suspected to be low due to a combination of aqueous suppression from topical medications and decreased ciliary body function, the latter of which was secondary to both ECP and postoperative inflammation. At this point, dorzolamide 2 % was stopped, and prednisolone 1 % was increased to 4 times daily to treat the inflammation.

On POW 2.5, the IOP was up to 22 mm Hg and a UBM showed lacrimal gland ducts in the superotemporal conjunctiva where the 3 pinpoint leakages were initially identified (as seen in Video 1). Throughout the postoperative period, the patient reported good drop adherence.

3. Discussion

We present a documented case of a false positive Seidel sign following surgery in an eye with a complex ocular surface history most notable for severe symblepharon formation. The Seidel test is a clinical method employed to evaluate the presence of aqueous humor leakage from the anterior chamber.¹ A positive result is visually identified by dilution of fluorescein under cobalt blue light (as seen in Fig. 2C).

In the immediate postoperative period, the exam revealed a positive Seidel sign at the paracentesis despite being sutured. The thought was that the patient’s irregular corneal tissue made it more difficult to achieve a watertight wound. This was thought to result in a macroleak, where aqueous fluid was exiting an open wound. Eventually, the leak at the paracentesis resolved, but there were 3 pinpoint areas of leakage over the superotemporal conjunctiva. The initial concern was that the pinpoint areas of “Seidel positivity” were microleaks of aqueous humor flowing from the anterior chamber, through the paracentesis and under the conjunctival pannus, and seeping out the conjunctiva more posteriorly. However, the absence of worsened leakage with application of pressure to the eye did not align with the findings of a positive Seidel sign.

The pinpoint leakages were likely not due to aqueous humor, but due to secretions from lacrimal gland tissue that was dragged anteriorly by the conjunctival scarring from the chemical injury. A UBM was performed and showed lacrimal gland tissue/ducts, suggesting this was a false positive Seidel sign, by demonstrating ducts that could be collapsed with compression in the area of the pinpoint leakage. While the UBM finding does not rule out the possibility that a true Seidel positive microleak of aqueous humor was present previously, the authors feel this was less likely. There have been documented cases of lacrimal gland prolapse, many of which have been associated with patients who have blepharoplasty.^{2,3} After conducting a literature review on 12/11/23 utilizing PubMed, Google Scholar, and Medline using the keywords “false positive Seidel,” “Seidel” & “lacrimal gland,” “aberrant Seidel,” “inaccurate Seidel,” and “lacrimal gland prolapse” yielded only two documented cases of false positive Seidel Test. Both cases were following incisional surgery, one an Ahmed implant⁵ and the other a trabeculectomy.⁶ Furthermore, in both cases, the false positive Seidel tests were

seen in the superotemporal conjunctiva. It is important to note that tear secretions can be directly visualized in anatomically normal lacrimal glands when fluorescein dye is directly applied to the ductal openings.⁷

This case highlights a false positive Seidel sign in the context of an eye with a complex ocular history most notable for symblepharon and recent surgery. Clinicians should recognize that a false positive Seidel sign is possible if normal lacrimal gland anatomy has been disturbed.

Patient consent

Informed consent to publish this case was obtained from the patient.

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CRedit authorship contribution statement

Joshua M. Garcia: Writing – original draft, Writing – review & editing. **Patrick B. Wu:** Data curation, Writing – original draft, Writing – review & editing. **Ramez I. Haddadin:** Data curation, Writing – review & editing. **J. Minjy Kang:** Investigation, Supervision, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.ajoc.2024.102048>.

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