

Diagnosis and Management of Bleb Dysesthesia Associated with Reduced Visual Acuity: Case Report

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Abstract

Purpose: Demonstrate the need of exhaustive studies to fully diagnose a bleb dysesthesia through a case report, and assess the need for surgical treatment and appropriate management.

Case Report: A 44 years old female diagnosed with juvenile open-angle glaucoma presented bleb dysesthesia on late post trabeculectomy. At the consultation, visual loss of the same eye was further detected. Complementary studies were conducted to rule out differential diagnoses.

Results: Topography revealed an irregular astigmatism that explained the reduced visual acuity. The need for bleb surgical revision was evaluated. Patient's discomfort, significant visual loss, bleb morphology and risk factors for bleb-related infections made surgical treatment preferable. Conjunctival flap advancement with relaxing incisions, excision of avascular tissue and amniotic membrane transplant were carried out.

Conclusion: Bleb dysesthesia can be associated to numerous other complications; if visual loss is presented, astigmatism shift as a differential diagnosis should be always ruled out. Management of a dysesthetic bleb is very challenging. To assess the need for surgery, patient's symptoms, long-term risk factors for bleb-related infections and target IOP required should be considered.

Keywords: *Dysesthesia; Filtering Bleb; Surgical Bleb Revision; Astigmatism; Complication*

Introduction

Bleb dysesthesia is an uncommon complication of glaucoma filtration surgery. It refers to well-functioning filtering blebs with adequate target intraocular pressure (IOP) that causes ocular discomfort due to the effect of interrupted tear film distribution over the bleb and cornea [1]. This condition is defined by the patient's symptoms, however, it can be associated to other complications that require a deeper analysis, such as thinning of the tissues, bleb migration over the cornea, corneal dellen, corneal invasion by the filtering bleb [2,3]. In order to prevent more severe consequences such as visual loss or infections, an appropriate full diagnosis is needed at the moment of patient's concern.

In the following article, a case of bleb dysesthesia 1 year post trabeculectomy is presented. At the time of the consultation, the patient only complained about ocular discomfort, but after complete examination reduced visual acuity was discovered, demanding an exhaustive study that revealed a significant astigmatic corneal shift.

Purpose of the Study

The purpose of our work is to demonstrate the need of complementary studies to fully diagnose a bleb dysesthesia and assess the need for surgery in this type of cases.

Case Presentation

A 44 years old female presented ocular discomfort in left eye (OS) 1 year after incurring trabeculectomy. She complained about a popping sensation which was caused by tiny bubbles formed along the interface of the lid and bleb that popped when she blinked.

The patient was diagnosed with juvenile open-angle glaucoma (JOAG) at age of 15 years old. She was initially treated with topical medication, she interrupted treatment for some years, and afterwards she needed filtering surgery in both eyes (UO). After surgery, her IOP was controlled without topical medications.

Ocular examination

Her best-corrected visual acuity (BCVA) in her right eye (OD) was hand motion (HM) (-0.25 -1.25 x 175) and 0.1 (+3.00 -3.25 x 105) in her OS. It was remarkable that before surgery, BCVA of OS was 0.9 with a very different refraction measure (-0.75 -0.25 x 100).

On slit-lamp exam, OD presented a diffuse bleb and IOP was 11 mmHg (Figure 1). On the OS, a cystic, avascular, thin-walled, translucent filtering bleb overhanging the cornea superiorly was seen. The bleb was Seidel negative (Figure 2); IOP was 9 mmHg.

Fundi examination revealed big papillae with clear edges, and a cup-to-disc ratio of 0.9 OD and 0.7 OS. Macula and periphery in UO presented no alterations (Figure 3).

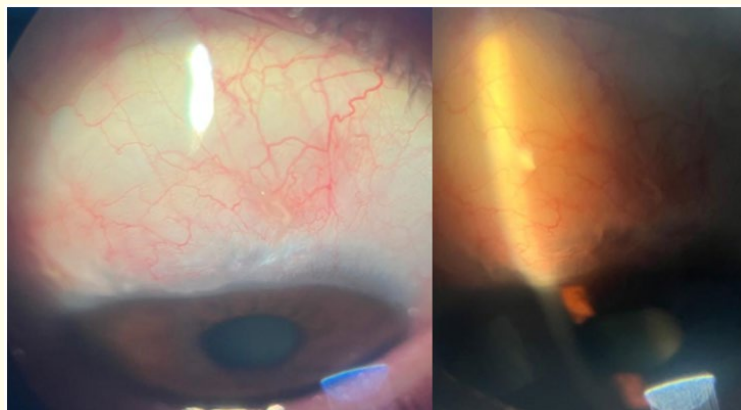


Figure 1: Slit lamp image of OD. A diffuse filtering bleb can be seen.

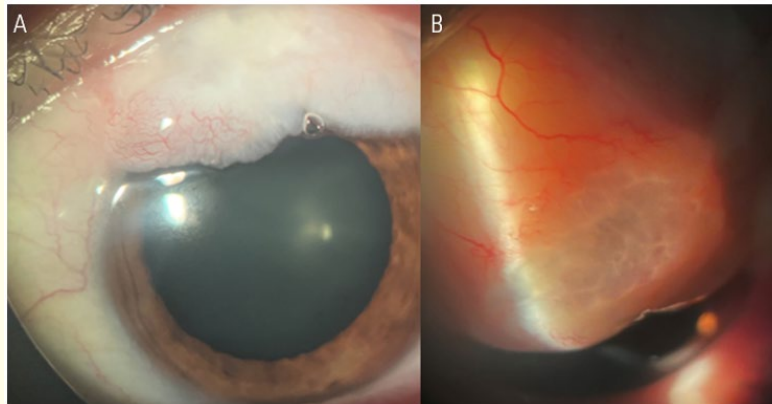


Figure 2: Slit lamp image of OS. A: Large cystic bleb with migration over the cornea and areas of avascular tissue are portrayed. A little bubble next to the bleb can be seen, which is the responsible for patient's ocular discomfort. B: Optic section of the same bleb shows translucent thin walled-bleb.

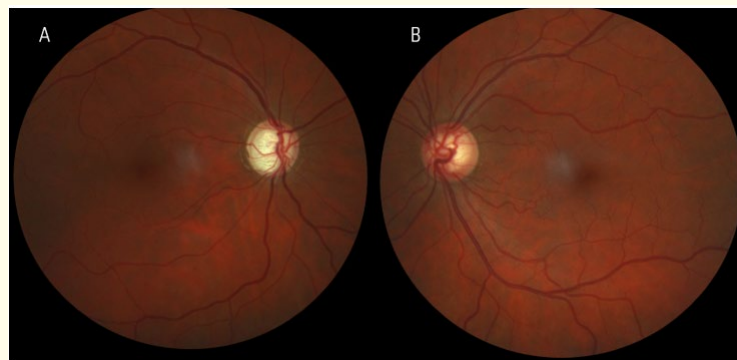


Figure 3: A: Fundi examination OD: papillae with cup-disc-ratio of 0.9 and thinning of temporal inferior rim. B: OS: papillae with cup-disc-ratio of 0.7.

Complementary studies and differential diagnoses

Despite the main patient's concern was ocular discomfort, because of the significant vision loss in OS, which the patient had not realized before the consult, it was mandatory to carry out a more exhaustive study and asses possible differential causes.

Differential diagnoses for vision loss considered:

- Glaucoma progress optical coherence tomography (OCT) of the optic nerves (Figure 4), computerized visual field (CVF) (Figure 5), IOP curve and pachymetry, were conducted to demonstrate structural or functional deterioration of the optic nerve and the presence of IOP spikes or fluctuations.
- Refractive shift error → topography (Figure 6) was performed in order to rule out a possible irregular astigmatism caused by the filtering bleb overlapping the cornea.
- Hypotony maculopathy → macular OCT was performed

- Cataract → it may appear as a complication of trabeculectomy but dilated slit-lamp examination ruled out this diagnosis.

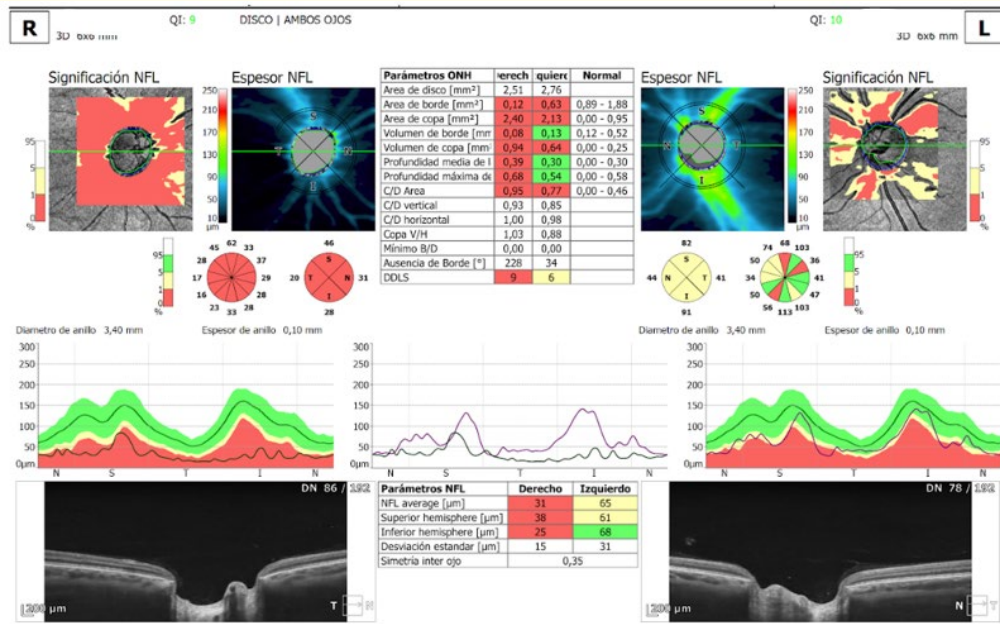


Figure 4: OCT of optic nerves showing large disc area in UO (megalopapillae) with significant deterioration of NFL, more severe in OD.

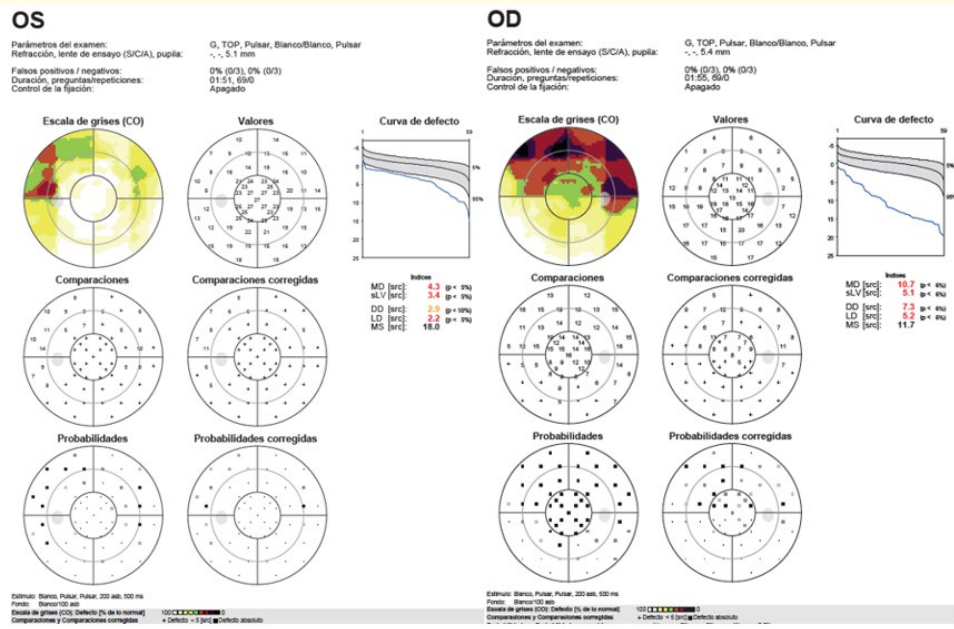


Figure 5: CVF: OS portraying a paracentral scotoma; OD showing a superior arcuate defect.

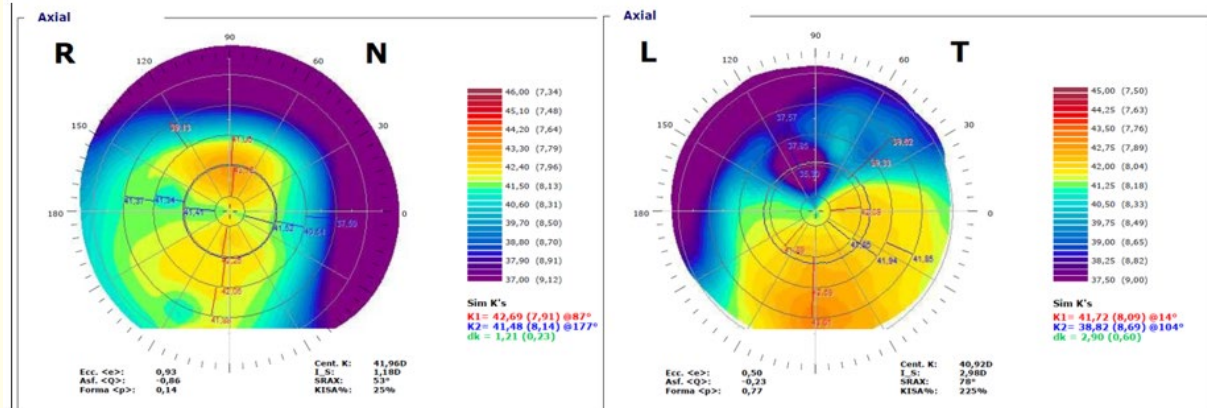


Figure 6: Topography: OS presented an irregular astigmatism with a flatter sector superiorly.

Results and Discussion

Pachymetry were 475 μm and 495 μm in the OD and OS respectively; IOP curve showed no pathological fluctuations or spikes. In spite of not having previous OCT and CVF to compare and define glaucoma progression (since the studies were done with different devices), results of OS did not show a central defect that could explain the pronounced visual loss found.

Moreover, topography of OS portrayed a dk of 2.90 associated with an irregular astigmatism. A flatter area superiorly, that coincided with the location where filtering bleb was overlapping the cornea, was seen.

Bleb dysesthesia has a reported incidence of 12.5% [4], it is an uncommon complication of glaucoma filtration surgery in which a well-functioning bleb with adequate IOP control causes ocular discomfort. Initial therapeutic option is aggressive surface lubrication, but when this does not work more invasive alternatives must be considered [1].

The decision to intervene a well-functioning filtering bleb is a real challenge. Cardakli, *et al.* reported an overall success rate for bleb surgical revision of 60% in cases of dysesthesia and a 5-year Kaplan-Meier survival of 63% [5]. Less invasive options are the use of topical trichloroacetic acid and injection of autologous blood to reduce bleb height by stimulating scarring. However, this might also cause filtration failure [1].

Considering patient's discomfort and the reduced visual acuity, surgical treatment was decided despite the great IOP control achieved. A thin avascular walled-bleb can also be a cause for possible infections or seidel in the future, therefore conjunctivoplasty was decided.

Although etiology of bleb dysesthesia has not be fully elucidated, two different types of histological blebs responsible for this complication have been identified. There are avascular blebs consisting of a hypocellular tissue that reach larger sizes causing tear film to be interrupted. This kind of bleb is probably related to the use of antimetabolites [6]. On the other hand, there is a second type of blebs that are formed by a hypertrophic connective tissue caused by an extensive scarring reaction. The scarring contributes to bleb height, and facilitates the formation of a subconjunctival reservoir for aqueous humour [7]. The choose of surgical technique to repair a dysesthetic bleb should be accordingly to the type of bleb presented.

Our patient had a well-filtering avascular thin bleb that partially overlapped the cornea. Peritomy around limbal bleb edges was carried out and tissue adhered to the cornea was separated. Subconjunctival dissection was performed peripherally and posteriorly

to mobilize the conjunctiva. The entire avascular area of the bleb was excised, making sure to preserve as much normal conjunctiva as possible. Two relaxing lateral incisions were made in order to advance viable conjunctiva. Cellulose sponges soaked with mitomycin C (MMC) (0.1 mg/mL) were placed over the site of the previous scleral flap for 2 minutes. Conjunctival flap was sutured laterally to create a diffuse bleb reducing bleb height and ensuring that it did not overlap the cornea [8,9]. Bleb and superior area of the cornea were covered by amniotic membrane in order to promote epithelialization and suppress excessive inflammation or scarring that may limit filtration and alter corneal curvature [10].

Despite Dyrda, *et al.* argued that worse surgical results were observed in partial or entire bleb excision with advancement of conjunctiva, avascular tissue represented a risk factor for future infections [1]. Kim, *et al.* identified risk factors for late-onset bleb-related infections after trabeculectomy; our patient presented numerous of those factors: age less than 50 years ($p < .05$), avascular, high and thin bleb ($p < .01$) and juvenile glaucoma ($p < .001$) [4]. Furthermore, in the same study, surgical bleb revision demonstrated a protective effect against bleb-related infections ($P < .01$) when risk factors were presented [4]. Surgical partial excision of glaucoma filtering bleb is a reliable, simple, and precise method [11], and that is why it was preferable for our patient.

The patient began a postoperative regimen of antibiotics eye drops and prednisolone four times a day. During immediate postoperative follow-up, a moderate conjunctival congestion was seen, without corneal alterations. 3 months after conjunctivoplasty, patient's ocular discomfort was completely resolved, BCVA was 0.8 (+1.25-1.00 x 170), she presented a diffuse filtering bleb and IOP was 11 mmHg (Figure 7 and 8). A new topography was carried out that portrayed the refractive shift (Figure 9).

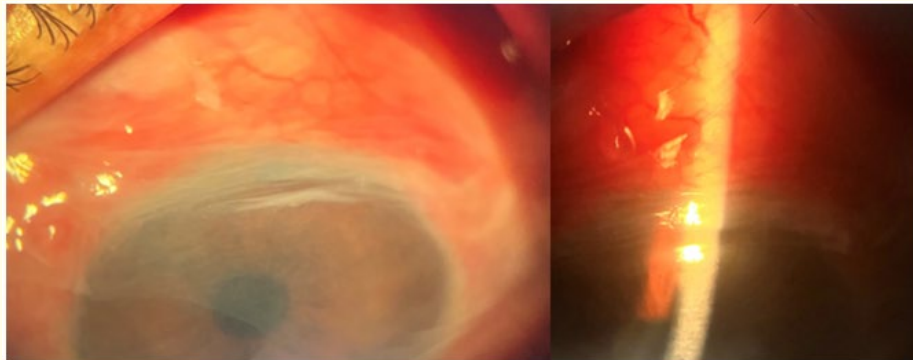


Figure 7: 24-hour postoperative follow-up. Bleb and cornea still covered by amniotic membrane.

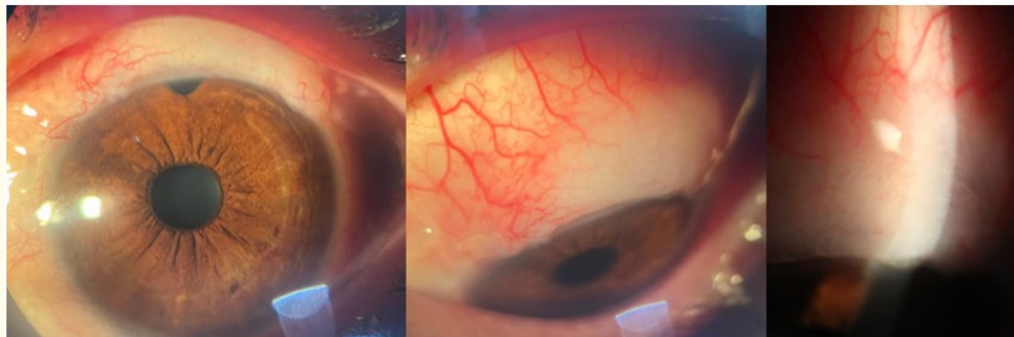


Figure 8: 3 months postoperative follow-up. Diffuse filtering bleb and clear cornea can be seen.

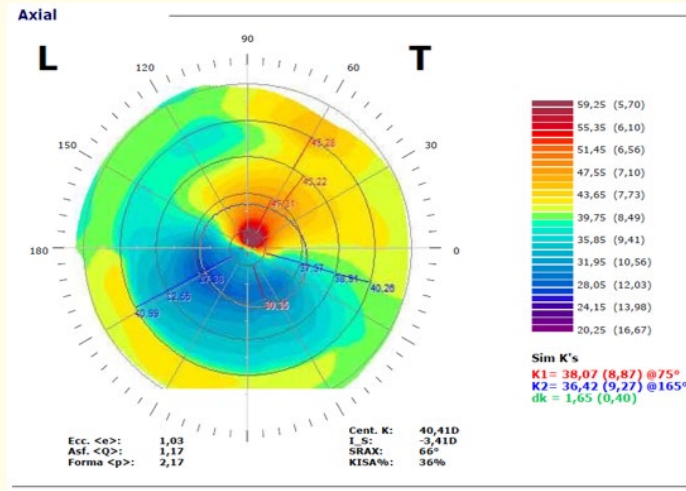


Figure 9: 3 months postoperative follow-up topography.

Conclusion

To conclude, dysesthesia is an uncommon complication after filtering glaucoma surgery; it can be associated with numerous different disorders which required further study. At the presentation of visual loss, always remember the mechanical effect of overhanging blebs and think about astigmatism shift as a differential diagnosis.

Management of dysesthetic blebs is very challenging. To assess the need for surgery, evaluate patient’s symptoms, long-term risk factors for bleb-related infections and target IOP required. If surgical bleb revision is decided, aggressive surgical techniques removing bleb tissue may be less effective in terms of subsequent IOP control [1], but it is mandatory to remove thin avascular tissue to avoid future infections. Amniotic membrane can be used in these cases to promote epithelization and reduce inflammation [10].

Conflict of Interest

The authors declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

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