

Combined excision and autologous blood injection for oversized cystic bleb

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Abstract

Trabeculectomy is the standard surgical treatment for control of intraocular pressure for various types of glaucoma. A complication of trabeculectomy is that the bleb may be very cystic and large, and may extend onto the corneal surface. This is especially common if adjunctive antimetabolic agents have been used. An oversized and overhanging cystic bleb may cause ocular symptoms and may be associated with short- and long-term complications. This report describes a surgical technique combining surgical excision and autologous blood injection for the management of an oversized and overhanging cystic bleb.

Key words: Blood, Cysts, Glaucoma, Trabeculectomy

Introduction

Oversized cystic bleb is one of the complications of trabeculectomy, especially when adjunctive antimetabolic agents have been used. The cystic blebs may expand and dissect onto the cornea. The large oversized bleb can cause foreign body sensation, ocular irritation, and incomplete lid closure, which can lead to corneal complications. Other complications include persistent hypotony, bleb rupture, and endophthalmitis. The corneal part of the cystic bleb may cause irregular astigmatism and tear film disturbance resulting in corneal dellen and epitheliopathy.

For patients unable to tolerate the discomfort or in whom serious vision-threatening complications are anticipated,

surgical intervention is necessary. Various treatment methods have been described for the management of oversized cystic bleb. These include cryotherapy,¹ laser treatment,² in-bleb autologous blood injection, compression sutures, and surgical excision.³⁻⁵

This report describes the treatment of a patient with an oversized cystic bleb overhanging onto the cornea using combined surgical excision and autologous blood injection.

Case report

A 73-year-old woman developed chronic angle-closure glaucoma in her left eye following a prolonged attack of acute primary angle-closure. She had undergone trabeculectomy 10 years previously and phacoemulsification with intraocular lens implantation 6 years previously. She was referred to the Department of Ophthalmology at the United Christian Hospital for management of the symptomatic overhanging cystic bleb. She complained of tearing, foreign body sensation, and photophobia despite the use of lubricants. At consultation, her left eye vision was 0.3 and the intraocular pressure (IOP) was 6 mm Hg without any antiglaucoma medication. There was a large cystic bleb that extended across one-third of the superior cornea (**Figure 1**). The size of the bleb measured 8 mm horizontally and 6 mm vertically. The remaining part of the cornea was normal. There was no bleb leakage. The anterior chamber was quiet. Gonioscopy showed peripheral anterior synechial closure of the visualized angle. The superior angle was obscured by the large bleb. The cup-disc ratio of the left eye was 0.9. There was no maculopathy.

The right eye vision was 0.3 due to the presence of cataract. A patent laser peripheral iridotomy was present and the

trabecular meshwork could be visualized for 360° when gonioscopy was performed.

Surgical technique

After topical anesthesia with 2% xylocaine jelly was applied, a lid speculum was used to retract the eyelids. The eye was rinsed with povidone-iodine solution. The procedure was performed under an operating microscope. The inferior corneal margin of the overhanging bleb was freed and lifted up with a blunt iris spatula (**Figures 2 and 3**). The dissection was performed up to the limbus, where there was stronger adhesion between the bleb tissue and the underlying sclera. The free corneal part of the bleb was excised in 1 piece using Wescott scissors (**Figures 4 and 5**). Balanced salt solution was injected through an anterior chamber paracentesis wound. No leakage was observed at the excision margin of the bleb (**Figure 6**). The eye was patched for 1 day after operation followed by application of 0.1% dexamethasone and 0.5% chloramphenicol 4 times a day.

On the first day following excision, the IOP was 5 mm Hg. An area of epithelial defect was observed in the superior

quadrant of the cornea. The anterior chamber was deep and clear. There was a slow ooze at the limbal margin of the bleb. The leakage persisted for 1 week despite patching and the IOP remained at 7 mm Hg. The corneal epithelial defect healed completely.

In view of the persistent ooze, autologous blood intrableb injection was performed. Venous blood was taken from the



Figure 3. The corneal part of the bleb was lifted up showing the corneal epithelium defect.



Figure 4. The corneal part of the bleb was excised at the limbus.

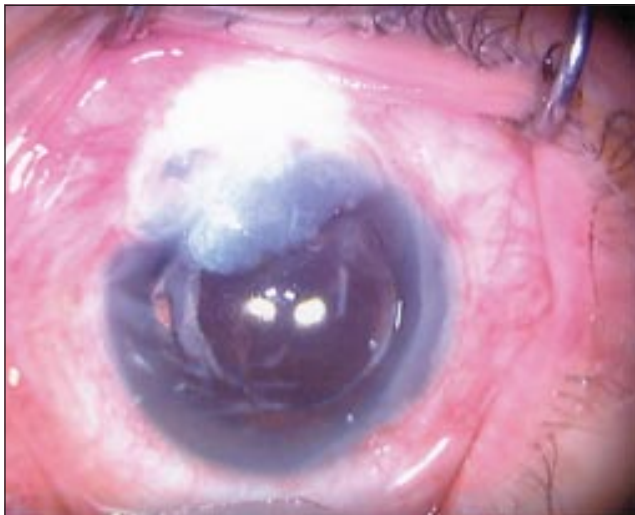


Figure 1. Appearance of the bleb.

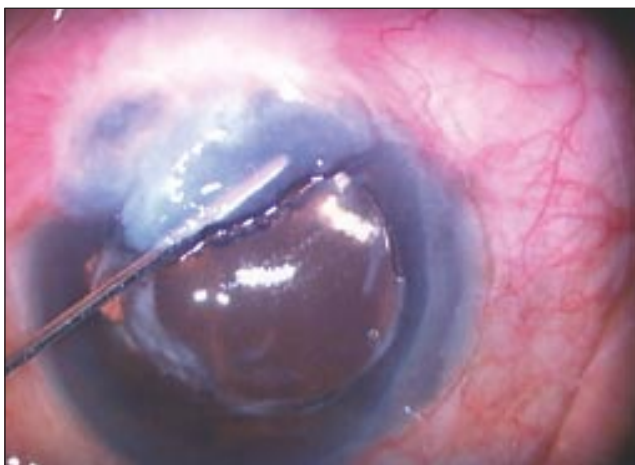


Figure 2. Dissection of the plane between the undersurface of the bleb and the corneal surface.

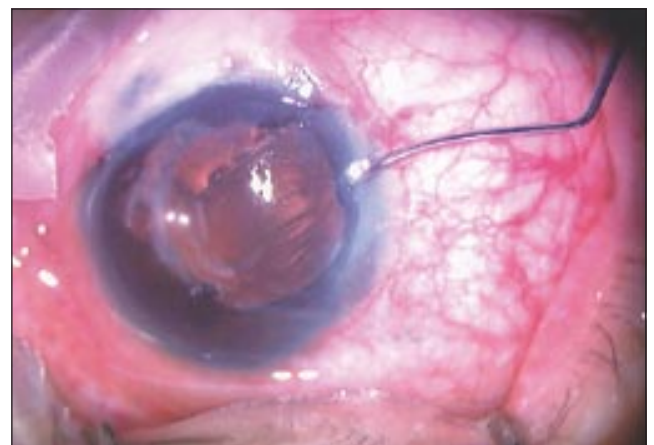


Figure 5. Balanced salt solution was injected through anterior chamber paracentesis wound to test for bleb leakage.

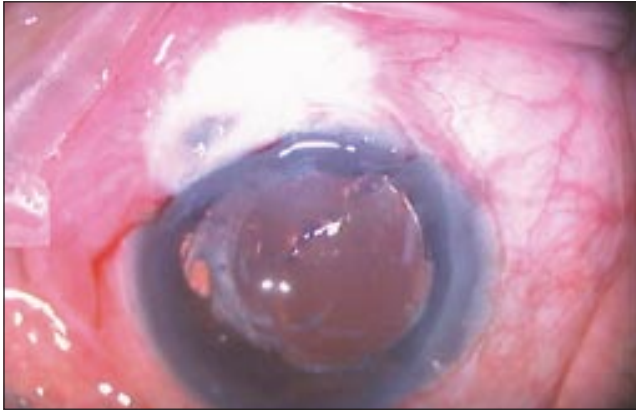


Figure 6. Appearance of the bleb after excision.

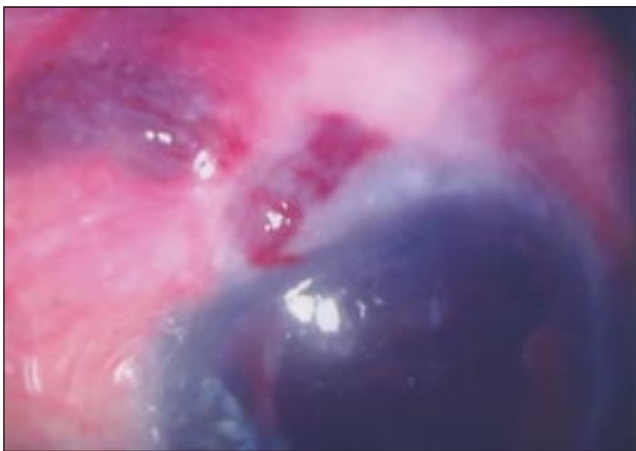


Figure 7. Autologous blood injected inside the bleb.

antecubital area with a 5-mL syringe using an aseptic technique. The eye was anesthetized and prepared as for the bleb excision described above. The procedure was performed under the operating microscope. A 25-gauge needle was used to tunnel through the conjunctiva and was passed inside the bleb. Approximately 0.2 mL of blood was injected into the bleb until resistance was felt (**Figure 7**). The eye was patched for 1 day and 0.1% dexamethasone and 0.5% chloramphenicol was given 4 times a day.

On the day after blood injection, the leakage stopped and the IOP increased to 12 mm Hg. The blood disappeared after 1 week. Although the leakage stopped and the eye was less hypotonic, the bleb remained cystic and large (**Figure 8**). Repeat blood injection was advised to thicken the bleb wall and to minimize the risk of long-term complications associated with the cystic bleb. However, the patient felt comfortable at this stage and did not consent for further surgical intervention. At the patient's last follow-up 3 months later, the vision was 0.2 and the IOP was 14 mm Hg without medication. There was no further bleb leakage and no recurrence of corneal extension of the bleb.

Discussion

Treatment modalities for large cystic bleb include cryotherapy, neodymium:YAG (Nd:YAG) laser reduction, and compression sutures.¹⁻⁴ However, cryoapplication is



Figure 8. Appearance of the bleb 3 months after excision and blood injection.

relatively destructive to both the bleb and the normal corneal tissue. Nd:YAG laser therapy is technically difficult and may require repeated applications. Compression sutures are effective for reducing the size of the cystic bleb without extension onto the cornea, although it is difficult to place sutures on the corneal part of the bleb. For this patient, the primary aim of surgical treatment was to alleviate the symptoms caused by the presence of the large overhanging bleb. This was achieved by surgical excision of the corneal part of the cystic bleb. The cleavage plane between the underlying surface and the corneal surface was easily created with a blunt spatula.

Although the bleb adhered firmly to the scleral tissue near the limbus, there was postoperative ooze at this area. Management of bleb leakage includes the use of an aqueous suppressant, pressure patch, bandage contact lens, conjunctival autograft, amniotic membrane transplantation, and blood injection.⁶⁻⁸ Intraleak blood injection was described by Wise in 1993.⁹ The red cells and the fibrin enhance tissue scarring as well as obstructing the aqueous flow. The complications associated with blood injection include infection, hyphema, and bleb rupture.^{3,10} The leak in this patient persisted despite patching for 1 week, so we injected autologous blood into the bleb, which successfully closed the leakage point. The IOP also increased from the preoperative single digit to double digits after 1 injection of blood. After the combined procedure, the patient's ocular symptoms were alleviated. Since there was no more bleb leakage or hypotony maculopathy during follow-up, there was no absolute indication for revision of the bleb that remained after the partial excision. It is important to inform the patient about the potential long-term complications of a cystic bleb. If indicated, the autologous blood injection can be repeated to thicken the bleb wall and decrease the bleb size.

In conclusion, combined surgical excision with autologous blood injection is one of the treatment options for overhanging cystic bleb. In this patient, the combined procedure was effective at alleviating the patient's symptoms by reducing the size of the exuberant bleb without compromising its filtering function. The blood injection sealed off the postoperative bleb leak and raised the IOP to a less hypotonic level.

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