



Insertion of a Baerveldt Drainage Implant with Encircling Silicone Strip Resection in a Patient with Refractory Glaucoma after Vitrectomy: A Case Report

Masashi Sakamoto*, Keisuke Yata, Izumi Yoshida, Asao Sakai and Takatoshi Maeno

Department of Ophthalmology, Toho University Sakura Medical Center, Japan

Abstract

Background: A glaucoma drainage implant is a useful device for the treatment of refractory glaucoma, but it is difficult to secure the space for insertion of the plate of the device. Herein we report a case of refractory glaucoma with a preexisting silicone strip that was treated using a Baerveldt Drainage Implant (BGI).

Case Presentation: A 43-year-old man developed rhegmatogenous retinal detachment. He had undergone vitrectomy twice because of retinal redetachment after the first vitrectomy. At the last vitrectomy, encircling (silicone strip #220) was performed. Immediately after the vitrectomy, the Intraocular Pressure (IOP) increased up to 30 mmHg to 50 mmHg for about 2 weeks; nevertheless, administration of hypotensive drugs and laser iridectomy. We inserted a BGI *via* the pars plana with silicone strip resection. The IOP reduced below 20 mmHg for 14 months after the implant surgery with the administration of hypotensive drops.

Conclusion: Insertion of a BGI *via* the pars plana with silicone band resection may be useful for refractory glaucoma after vitrectomy with a preexisting silicone strip.

Keywords: Retinal detachment; Encircling; Baerveldt drainage implant

Introduction

Postoperative glaucoma has been reported in 2% to 48% of patients after vitrectomy for rhegmatogenous Retinal Detachment (RD) [1-5]. The cause is considered to be pupillary block angle closure, inflammation, or a preexisting angle abnormality. Owing to conjunctival scarring and recession caused by a previous vitrectomy with an encircling band, filtration surgery is difficult to perform for maintaining a low Intraocular Pressure (IOP) to prevent postoperative glaucoma after surgery for RD.

A Glaucoma Drainage Device (GDD) is a valuable tool for the management of patients in whom filtering surgery has failed or as the first surgical option in patients at high risk of failure [6].

However, it is difficult to secure the space for insertion of the plate of the device because in some cases after vitrectomy for RD, a preexisting scleral band may be present. To the best of our knowledge, there is no report on the resection of a silicone strip for the insertion of a BGI. Herein we report a case of refractory glaucoma with a preexisting silicone strip in which a Baerveldt Drainage Implant (BGI) was inserted.

Case Presentation

A 43-year-old man developed rhegmatogenous retinal detachment. Range of RD was total off. Vitrectomy combined with pars plana lensectomy using gas tamponade with silicone band (#240) was performed. However, 7 days after the first vitrectomy, retinal redetachment from the nasal inferior section was recognized. The second vitrectomy was performed with the change of silicone band (#240) to a silicone strip (#220). Immediately after the second vitrectomy, the IOP increased up to 30 mmHg to 50 mmHg for about 3 weeks because peripheral anterior synechia was observed in almost every part of the angle; nevertheless, administration of hypotensive drugs and laser iridectomy. We performed BGI *via* the pars plana with silicone strip resection.

Results

The IOP reduced below 20 mmHg for 14 months immediately after the implant surgery with

OPEN ACCESS

*Correspondence:

Masashi Sakamoto, Department of Ophthalmology, Toho University Sakura Medical Center, 564-1 Shimoshizu, Sakura-shi, Chiba Prefecture 2858741, Japan, Tel: 81434628811; Fax: 81434628820; E-mail: masashi.sakamoto@med.toho-u.ac.jp

Received Date: 13 Jan 2019

Accepted Date: 05 Feb 2019

Published Date: 07 Feb 2019

Citation:

Sakamoto M, Yata K, Yoshida I, Sakai A, Maeno T. Insertion of a Baerveldt Drainage Implant with Encircling Silicone Strip Resection in a Patient with Refractory Glaucoma after Vitrectomy: A Case Report. *Ann Clin Case Rep.* 2019; 4: 1595.

ISSN: 2474-1655

Copyright © 2019 Masashi

Sakamoto. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

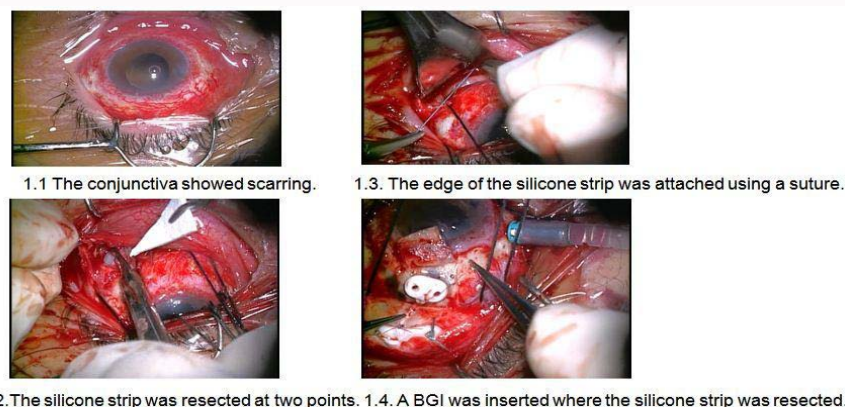


Figure 1: Surgical procedure.

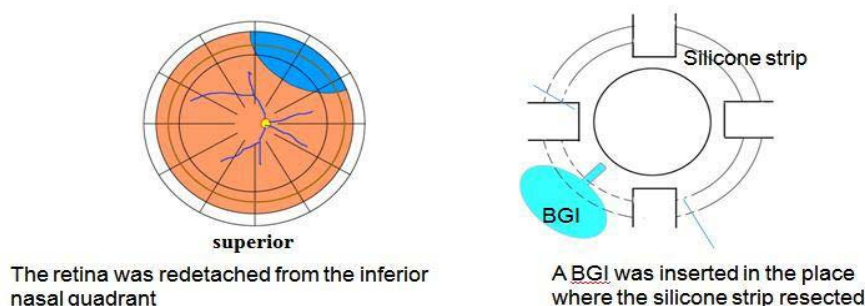


Figure 2: Surgical procedure.

hypotensive drops; the retina has remained attached during the follow-up period.

Surgical Procedure

The conjunctiva showed scarring before the operation (Figure 1.1). Sub-Tenon's anesthesia (2% lidocaine) was administered, and a conjunctival incision was made along the corneal limbus to expose the superior and lateral rectus muscles. The silicone strip was resected at the superior nasal quadrant and the inferior temporal quadrant; the resected silicone band was removed from the superior temporal quadrant (Figure 1.2). Then, the edge of the silicone band was attached to the sclera with 5-0 polyester suture because the effect of retinal indentation to the portion of redetachment of the retina was needed to be rest (Figure 1.3 and Figure 2). A 6 mm × 6 mm fornix-based lamellar scleral flap was created, and a 25-gauge infusion line was placed in the inferotemporal quadrant.

The Baerveldt implant tube was knotted using an 8-0 polyglactin suture thread because aqueous flow through the device must be restricted until plate encapsulation and insertion beneath the lateral and superior rectus muscles in the superotemporal quadrant is completed (Figure 1.4). The plate was then anchored to the sclera using a 5-0 polyester suture through each of the two fixation holes on the anterior flange of the plate. Next, a sclerotomy was made 3.5 mm to the limbus under the scleral flap using a 20-gauge V-lance. The tube was inserted through the sclerotomy and the Hoffmann elbow was fixed in place with an 8-0 nylon thread. The Hoffmann elbow was then covered by the scleral flap, which was closed using a 10-0 nylon thread. A Sherwood slit was made using a microblade to avoid early postoperative elevation of IOP. Finally, the infusion cannula

was removed, and the conjunctival incision was closed using an 8-0 polyglactin continuous suture.

Discussion

GDDs inserted *via* the pars plana route are used to control IOP in eyes with refractory glaucoma, particularly when conjunctival scarring owing to prior intraocular surgery is present.

The tube of a GDD is usually inserted into the Anterior Chamber (AC), but complications, including a shallow anterior chamber and corneal endothelial decompensation, have been reported following insertion of a GDD tube into the anterior chamber [7-10]. The pars plana GDD is designed to avoid these complications [11], but requires thorough resection of the vitreous by vitrectomy to avoid occlusion of the tube by the vitreous. Therefore, if the patient has already undergone a vitrectomy for RD, pars plana GDD is considered a good device for refractory glaucoma after vitrectomy.

Smith et al. [12] reported the use of a long-valved (plateless) Krupin-Denver tube inserted into the encapsulated band in cases with a preexisting silicone band. However, distal tube occlusion was recognized in 30% of these cases. Sidoti et al. [13] reported that the success rate of BGI is 85% in eyes with a preexisting scleral band without resection of the silicone band. This study reported that obstruction of the distal tube opening by episcleral fibrous tissue was a frequent complication.

Sufficient posterior dissection between the sclera and tenon capsule in the quadrant of implantation is necessary to allow adequate seating of the implant and resection of the silicone band is required to secure a space for insertion of the plate. The GGD used

in this case was a pars plana BGI that has a plate measuring 350 mm [2]. In this case, a silicone strip #220 (width 6 mm) was previously used, because of which it was difficult to secure a space for insertion of the plate of the BGI. Further, the BGI was inserted with resection of the preexisting silicone band, rather than removing the entire band, because soon after the vitrectomy, the effect of indentation of scleral band to the retinal detachment position wanted to be rest. The rest of silicone strip was sutured to the eye ball at the edge of the silicone band.

Therefore, we inserted the BGI on the opposite side where the retina showed reattachment.

If the silicone band is wide and is not resected, the silicone tube from the plate may be occluded by the compression of silicone band. However, the silicone tube was not placed under the band owing to the possibility that the band-scleral compression would perforate the sclera at the tube site. Sidoti et al. [14] reported a case of Baerveldt implantation complicated by scleral perforation at the site of severe ectasia underlying a previously placed scleral buckle.

Regarding the space for insertion of the plate, the superonasal quadrant should be avoided for larger GDDs because the implant or an overlying bleb may interfere with the function of the superior oblique muscle, resulting in acquired Brown's syndrome [15,16].

Our findings in the current case suggest that insertion of a BGI via the pars plana with resection of the silicone band may be useful for refractory glaucoma in eyes after vitrectomy with a preexisting silicone strip.

Statements

Acknowledgement

We would like to thank Editage Author Services for manuscript editing.

Statement of ethics

The report was approved by the ethics committee at Toho University Sakura Medical Center (approval number S16047). All study conduct adhered to the tenets of the Declaration of Helsinki.

Author contributions

Masashi Sakamoto, Keisuke Yata, Izumi Yoshida and Asao Sakai participated in data management, analysis, and interpretation; Masashi Sakamoto, Izumi Yoshida, Asao Sakai and Takatoshi Maeno prepared, reviewed, and approved the manuscript.

References

1. Lucke KH, Foerster MH, Laqua H. Long-term results of vitrectomy and silicone oil in 500 cases of complicated retinal detachments. *Am J Ophthalmol.* 1987;104(6):624-33.
2. Burk LL, Shields MB, Proia AD, McCuen BW 2nd. Intraocular pressure following intravitreal silicone oil injection. *Ophthalmic Surg.* 1988;19(8):565-9.
3. Vitrectomy with silicone oil or perfluoropropane gas in eyes with severe proliferative vitreoretinopathy: Results of a randomized clinical trial. Silicone study report 2. *Arch Ophthalmol.* 1992;110(6):780-92.
4. Nguyen QH, Lloyd MA, Heuer DK, Baerveldt G, Minckler DS, Lean JS, et al. Incidence and management of glaucoma after intravitreal silicone oil injection for complicated retinal detachments. *Ophthalmology.* 1992;99(10):1520-6.
5. Barr CC, Lai MY, Lean JS, Linton KL, Trese M, Abrams G, et al. Postoperative intraocular pressure abnormalities in the silicone study. Silicone study report 4. *Ophthalmology.* 1993;100(11):1629-35.
6. Five-year follow-up of the fluorouracil filtering surgery study. The fluorouracil filtering surgery study group. *Am J Ophthalmol.* 1996;121(4):349-66.
7. Hill RA, Heuer DK, Baerveldt G, Minckler DS, Martone JF. Molteno implantation for glaucoma in young patients. *Ophthalmology.* 1991;98(7):1042-6.
8. Gedde SJ, Herndon LW, Brandt JD, Budenz DL, Feuer WJ, Schiffman JC. Postoperative complications in the Tube vs. Trabeculectomy (TVT) study during five years of follow-up. *Am J Ophthalmol.* 2012;153(5):804-14.
9. Gedde SJ, Schiffman JC, Feuer WJ, Herndon LW, Brandt JD, Budenz DL, et al. Treatment outcomes in the Tube Versus Trabeculectomy (TVT) study after five years of follow-up. *Am J Ophthalmol.* 2012;153(5):789-803.
10. Lloyd MA, Sedlak T, Heuer DK, Minckler DS, Baerveldt G, Lee MB, et al. Clinical experience with the single-plate molteno implant in complicated glaucomas. Update of a pilot study. *Ophthalmology.* 1992;99(5):679-87.
11. Luttrull JK, Avery RL. Pars plana implant and vitrectomy for treatment of neovascular glaucoma. *Retina.* 1995;15(5):379-87.
12. Smith MF, Doyle JW, Fanous MM. Modified aqueous drainage implants in the treatment of complicated glaucomas in eyes with pre-existing episcleral bands. *Ophthalmology.* 1998;105(12):2237-42.
13. Sidoti PA, Minckler DS, Baerveldt G, Lee PP, Heuer DK. Aqueous tube shunt to a preexisting episcleral encircling element in the treatment of complicated glaucomas. *Ophthalmology.* 1994;101(6):1036-43.
14. Sidoti PA, Minckler DS, Baerveldt G, Lee PP, Heuer DK. Epithelial in growth and glaucoma drainage implants. *Ophthalmology.* 1994;101(5):872-5.
15. Ball SF, Ellis GS Jr, Herrington RG, Liang K. Brown's superior oblique tendon syndrome after baerveldt glaucoma implant. *Arch Ophthalmol.* 1992;110(10):1368.
16. Prata JA Jr, Minckler DS, Green RL. Pseudo-Brown's syndrome as a complication of glaucoma drainage implant surgery. *Ophthalmic Surg.* 1993;24(9):608-11.