Ophthal Focus

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This issue contains

- **Evaluation of Visual Acuity of Central Retinal Artery Occlusion Patients with or Without Paracentral Acute Middle Maculopathy**
- **Comparison of the effectiveness of intravitreal injection of triamcinolone acetonide/moxifloxacin with the standard eye drop regimen in patients undergoing pars plana vitrectomy**
- **Investigation of the systemic and ocular factors that affect the response to intensive aflibercept treatment in diabetic macular edema**
- **Case report on recanalization of Xen45 gel stent implant occlusion in refractory glaucoma using 10−0 nylon suture**

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Medical Team, Micro Labs Limited

Evaluation of Visual Acuity of Central Retinal Artery Occlusion Patients with or Without Paracentral Acute Middle Maculopathy

INTRODUCTION

An ophthalmologic condition called central retinal artery occlusion (CRAO) which can cause irreversible, catastrophic vision loss. The cause of CRAO is an abrupt blockage of the central retinal artery, which results in retinal ischemia damage and eventual cell death.[1] The typical presentation of CRAO is a sudden, painless loss of peripheral vision and visual acuity in one eye.[2] The patient may or may not have fundus abnormalities that are easily visible, and the presenting visual acuity may vary greatly. Paracentral acute middle maculopathy (PAMM) may be the initial symptom to appear prior to a more comprehensive CRAO. The development of optical coherence tomography angiography (OCT-A) has made it feasible to visualise the retinal capillary system in vivo and to perform depth-resolved imaging. OCT-A is useful for PAMM detection. It was reported that spectral domain optical coherence tomography (SD-OCT) revealed PAMM in about 22.38% (32/143) of the Chinese patients with CRAO.[3] There is currently no information on the relationship between PAMM and visual acuity in CRAO patients. So, the CRAO in patients with and without PAMM was analysed in this study using OCT-A.

Central retinal artery occlusion

Patients with PAMM who had CRAO showed a significant improvement in their visual acuity and a decrease in macular oedema. Different degrees of CRAO-related damage can be distinguished using OCT-A.

METHODS

This retrospective study included 34 patients with central retinal artery occlusion (CRAO) and paracentral acute middle maculopathy (PAMM), along with 30 CRAO patients without PAMM. All participants underwent a comprehensive ocular examination, encompassing tests for best-corrected visual acuity (BCVA), slit-lamp microscopy, indirect ophthalmoscopy, intraocular pressure assessment, fundus photography, and optical coherence tomography angiography (OCT-

A). OCT-A was employed to measure macular retinal thickness and the density of both shallow and deep vessels. The BCVA results were transformed into logarithm of the minimum angle of resolution (LogMAR) for subsequent statistical analysis.

RESULTS

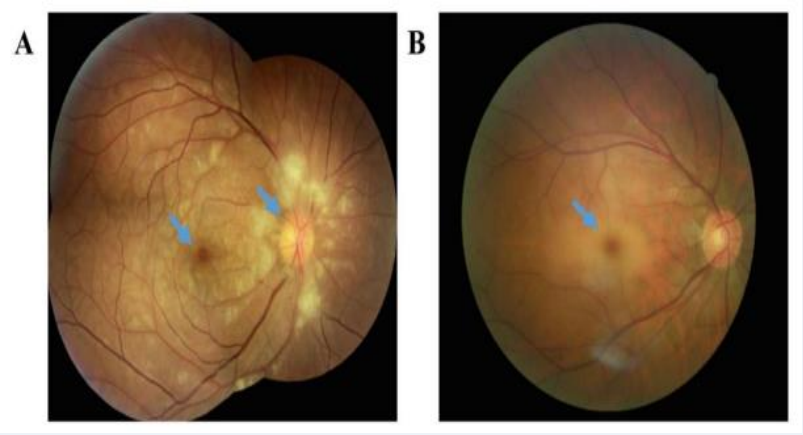

Figure 1. Fundus Image A) PAMM patients B) non-PAMM patient

On fundus examination, the optic disc boundary in central retinal artery occlusion (CRAO) patients with paracentral acute middle maculopathy (PAMM) exhibited varying clarity, with a slightly lighter color and features such as diffuse posterior pole retinal edema, retinal cotton spots, and occasional bleeding observed (Figure 1A). Conversely, the non-PAMM group typically displayed a clear optic disc boundary, with light coloration observed in some cases. These patients often present with prominent posterior pole retinal pale edema, accompanied by retinal cotton spots, bleeding, or cherry-red macular spots (Figure 1B). Both PAMM and non-PAMM groups show delayed retinal arteriovenous filling, with staining or leakage observed in the late stage. In the non-PAMM group, the majority (73.33%) exhibited high fluorescence of the optic disc with no perfusion of the peripheral retina or macula. Six patients (20%) show limited filling of the optic disc and peripapillary retinal vessels in the late stage, with most retinal vessels remaining unfilled. A small fraction (6.67%) experiences delayed arteriovenous filling, with no apparent hypoperfusion of retinal vessels in the later stage. In the PAMM group, there was a notable decrease in the density of superficial and deep macular vessels, with some small terminal arteries and capillaries showing no blood flow signals. The corresponding en face map revealed hyperreflective lesions at the occlusion of terminal arterioles. The entire en face image displayed PAMM-like scattered, dotted, lamellar, and fern-like hyperreflective changes, with more pronounced alterations observed in deep vessels than superficial vessels. In the non-PAMM group, there was a significant decrease in the density of superficial and deep macular vessels, with many branching arteries and veins lacking blood flow signals, exhibiting broken branch-like changes. The corresponding en face image demonstrated diffuse hyperreflectivity, with the main vessels of broken branches submerged in the diffuse high-fluorescence images. Various degrees of hyperreflectivity in the inner retinal layers and retinal thickening were observed on the B-scan images of both the PAMM and non-PAMM groups. CRAO patients with PAMM tend to have significantly better visual acuity in LogMAR BCVA (median, IQR: 1.48 (0.49–1.85) vs. 1.85

(1.70–1.96), P<0.01). A significant correlation was observed between LogMAR BCVA and macular retinal thickness (r = 0.42; P<0.01).

DISCUSSION

Macular retinal thickness and LogMAR BCVA were found to be significantly correlated in the current study. Yang S et al. showed that in patients with CRAO, central macular thickness (CMT) was correlated with best-corrected visual acuity.[4] Compared to CRAO patients without PAMM, those with PAMM have less severe visual function impairment.[3] Liang S et al. revealed that, during follow-up, the PAMM group's logMAR BCVA values were significantly better than those of the non-PAMM group.[5]

CONCLUSION

CRAO patients with PAMM exhibited milder visual function impairment compared to those without PAMM, and distinct manifestations are observed in OCT-A and fundus fluorescein angiography (FFA) within the PAMM group. Furthermore, a significant correlation was identified between LogMAR BCVA and macular retinal thickness.

REFERENCE

1) Lee KE, Tschoe C, Coffman SA, Kittel C, Brown PA, Vu Q, Fargen KM, Hayes BH, Wolfe SQ. Management of Acute Central Retinal Artery Occlusion, a "Retinal Stroke": An Institutional Series and Literature Review. J Stroke Cerebrovasc Dis. 2021 Feb;30(2):105531.
2) Mac Grory B, Schrag M, Biousse V, Furie KL, Gerhard-Herman M, Lavin PJ, Sobrin L, Tjoumakaris SI, Weyand CM, Yaghi S; American Heart Association Stroke Council; Council on Arteriosclerosis, Thrombosis and Vascular Biology; Council on Hypertension; and Council on Peripheral Vascular Disease. Management of Central Retinal Artery Occlusion: A Scientific Statement From the American Heart Association. Stroke. 2021 Jun;52(6):e282-e294.
3) Gong H, Wu B, Xie S. Visual acuity assessment of central retinal artery occlusion patients with or without paracentral acute middle maculopathy via OCT-A. BMC Ophthalmol. 2023 Oct 13;23(1):412.
4) Yang S, Liu X, Li H, Xu J, Wang F. Optical coherence tomography angiography characteristics of acute retinal arterial occlusion. BMC Ophthalmol. 2019 Jul 10;19(1):147.
5) Liang S, Chen Q, Hu C, Chen M. Association of Paracentral Acute Middle Maculopathy with Visual Prognosis in Retinal Artery Occlusion: A Retrospective Cohort Study. J Ophthalmol. 2022 May 21;2022:9404973.

Comparison of the effectiveness of intravitreal injection of triamcinolone acetonide/moxifloxacin with the standard eye drop regimen in patients undergoing pars plana vitrectomy

INTRODUCTION

Compared to standard postoperative topical therapy, Tri-Moxi is equally effective following vitrectomy.

Vitreoretinal surgery stands as one of the widely performed and successful procedures globally, boasting an anatomical success rate exceeding 90%. Technological and procedural advancements, including the use of smaller gauge ports and the implementation of self-sealing, sutureless incisions, have contributed to enhanced safety and consistently positive outcomes in the majority of cases. Following vitrectomy, the primary focus was addressing postoperative inflammation and preventing microbial proliferation, typically managed through the application of anti-inflammatory and antibiotic agents.[1] Historically, the primary approach for managing inflammation and preventing infection during the postoperative period has been the traditional use of topical eye drop therapy. While various aspects of vitreoretinal surgery have seen advancements, the standard practice of employing eye drop regimens has endured. A notable recent development was the introduction of intravitreal triamcinolone acetonide/moxifloxacin (Tri-Moxi), offering a 'dropless' alternative for cataract surgery.[2] According to Bardoloi et al., the majority of patients who underwent a transzonular injection of Tri-Moxi exhibited enhanced visual acuity and maintained intraocular pressure within the normal range during the 3-month follow-up period.[3] This study aimed to compare the postoperative outcomes of intraoperative intravitreal injection of Tri-Moxi with those of the standard topical eye drop regimen after vitrectomy surgery.

METHODS

In this retrospective longitudinal cohort study, 162 consecutive eyes were divided into two groups (Group 1: 81 eyes, Group 2: 81 eyes). Electronic medical records of all vitrectomy patients were reviewed. Eligible subjects were at least 18 years old, with no preoperative intraocular pressure elevation or glaucoma, requiring vitrectomy for vitreoretinal pathology. Group 1 received a pars plana intravitreal injection of triamcinolone acetonide-moxifloxacin (Tri-Moxi), while Group 2 received the standard steroid-antibiotic eye drop taper (Tobradex). Data collection included baseline and postoperative assessments at 1 day, 6 weeks, and 3 months by undergoing comprehensive ophthalmologic examinations, visual acuity testing, tonometry, and optical coherence tomography of the macula.

RESULTS

The mean intraocular pressure (IOP) in Group 1 preoperatively was 15.8 ± 2.7 mmHg and 15.11 ± 3.5 mmHg at 3 months postoperatively. In comparison, Group 2 exhibited preoperative IOP of 16.59 ± 5.1 mmHg and 15.89 ± 3.4 mmHg at 3 months postoperatively. These differences were not statistically significant either preoperatively (p=0.98) or at 3 months postoperatively (p=0.91).

Regarding visual acuity (logMAR) in Group 1, preoperative visual acuity was 0.92 (0.66) compared to 0.92 (0.75) in Group 2 (p=1). At 3 months, the visual acuity was 0.61 (0.3) in Group 1 and 0.57 (0.3) in Group 2, with no statistically significant difference (p=0.46) (Figure 1). Group 1 demonstrated superior outcomes in terms of central foveal thickness on optical coherence tomography (OCT). The mean average central foveal thickness (CFT, µm) in Group 2 preoperatively was 423 (95) and 348 (63) at 3 months postoperatively. In contrast, Group 1 exhibited preoperative CFT of 526 (109) and 306 (108) at 3 months postoperatively, with a statistically significant difference in thickness between the groups at 3 months (p=0.042) (Figure 1). Postoperative anterior chamber cell reaction severity was decreased by 35.0% and 35.7% at 1 day and 3 months after pars plana vitrectomy (PPV) in Group 1 compared with Group 2 (p=0.42). The intraocular inflammation severity did not show a statistically significant difference between the two groups on postoperative day 90 (p=0.57).

Figure 1. Fundus photograph on the first post-operative day following surgery displaying Tri-Moxi deposition in the inferior vitreous cavity

DISCUSSION

The current study showed that following a vitrectomy, Tri-Moxi was effective and comparable to standard topical therapy. According to Nassiri S et al., Triamcinolone acetonide-moxifloxacin injection is a useful technique for reducing intraocular inflammation following cataract surgery. It is a potentially effective replacement for traditional eye drop therapy, particularly in patients who do not take their eye drops as prescribed.[4] Atchison EA et al. revealed an appropriate substitute for making patients use a steroid drop taper after vitreoretinal surgery could be a single subconjunctival injection of triamcinolone acetonide at the end of the procedure.[5]

CONCLUSION

The intravitreal injection of triamcinolone acetonide-moxifloxacin during vitreoretinal surgery was non-inferior compared to standard topical eye drop therapy in managing postoperative inflammation, mitigating secondary ocular hypertension, enhancing central macular thickness, and preventing postoperative infection. Consequently, Tri-Moxi injections can be regarded as an advantageous alternative to standard topical therapy, introducing advancements in postoperative care and contributing to improved outcomes and patient satisfaction.

REFERENCE

1) Chalam KV, Ahmed H. Efficacy and Safety of 'Dropless Vitrectomy Surgery' and Comparison of Outcomes to Standard of Care Topical Therapy. Front. Ophthalmol. 2023; 3:1215968.
2) Assil KK, Greenwood MD, Gibson A, Vantipalli S, Metzinger JL, Goldstein MH. Dropless cataract surgery: modernizing perioperative medical therapy to improve outcomes and patient satisfaction. Curr Opin Ophthalmol. 2021 Jan;32 Suppl 1:S1-S12.
3) Bardoloi N, Sarkar S, Pilania A, Das H. Efficacy and safety of dropless cataract surgery. Indian J Ophthalmol. 2020 Jun;68(6):1081-1085.
4) Nassiri S, Hwang FS, Kim J, LeClair B, Yoon E, Pham M, Rauser ME. Comparative analysis of intravitreal triamcinolone acetonide-moxifloxacin versus standard perioperative eyedrops in cataract surgery. J Cataract Refract Surg. 2019 Jun;45(6):760-765.
5) Atchison EA, Gilca M, Civantos JM, Pollack JS. Elimination of steroid drops after vitreoretinal surgery. Journal of VitreoRetinal Diseases. 2019 Sep;3(5):324-7.

Investigation of the systemic and ocular factors that affect the response to intensive aflibercept treatment in diabetic macular edema

INTRODUCTION

Significant improvements in anatomical and visual aspects were observed in patients with DME after five months of loading doses of intravitreal aflibercept injection.

Diabetic macular edema (DME) is defined by the abnormal buildup of fluid in the subretinal or intraretinal spaces of the macula, resulting in significant impairment of central vision. The pathogenesis of DME involves various factors such as hypoxia and oxidative stress, increased expression of Vascular endothelial growth factor (VEGF) changes in the blood-retinal barrier (BRB), retinal vessel leukostasis, pericyte loss, and heightened vascular permeability.[1] VEGF plays a pivotal role in the pathophysiology of DME, making intravitreal anti-VEGF injections the primary treatment approach for center-involved DME. Aflibercept stands out as the sole antiangiogenic medication capable of blocking all isoforms of VEGF and placental growth factor (a member of the VEGF family) with the highest affinity and the longest half-life. Despite existing studies on systemic and ocular factors affecting the response to intensive aflibercept monotherapy in DME, there is currently no dedicated studies on this aspect, unlike studies conducted for other anti-VEGFs such as bevacizumab and ranibizumab.[2] Hence, the objective of this study was to assess the treatment outcomes associated with intensive aflibercept therapy in individuals with DME. Additionally, the study aimed to explore the modifiable systemic and ocular factors influencing the response to treatment within a real-world context.

METHODS

In this retrospective cohort study, 30 eyes of 23 patients diagnosed with DME underwent an intensive regimen of intravitreal aflibercept injections, consisting of five monthly loading doses

followed by pro re nata (PRN) treatment. Eligibility for the treatment was limited to those with a baseline central retinal thickness (CRT) ≥300 μm and HbA1c <8.0%. Prior to initiation, patients' medical history, and baseline blood test results, including glycated hemoglobin (HbA1c), complete blood count (CBC), renal function tests, liver function tests (LFT), serum electrolytes, and albumin, were reviewed. A comprehensive ophthalmologic assessment, encompassing ophthalmologic history, best-corrected visual acuity (BCVA), slit-lamp biomicroscopy, ultra-wide-field fluorescence angiography, spectral domain optical coherence tomography (SD-OCT), and funduscopic examinations with dilated pupils, was conducted. The treatment protocol involved five consecutive monthly intravitreal aflibercept injections (2 mg/0.05 mL each at baseline, months 1, 2, 3, and 4) during the loading phase. Subsequently, patients were monitored monthly and received as-needed (PRN) treatment. Treatment response, evaluated through central retinal thickness (CRT) and best-corrected visual acuity (BCVA) at each monthly visit, categorized patients as good (<300 μm) or suboptimal (≥300 μm) responders based on CRT after the loading phase. The study also investigated baseline systemic and ocular factors associated with treatment response.

RESULTS

Upon completing the loading injection phase at month 5, a significant improvement was observed in the mean central retinal thickness (CRT) and best-corrected visual acuity (BCVA) (486.87 ± 95.46 to 334.90 ± 69.47 μm and 0.51 ± 0.30 to 0.35 ± 0.25 LogMAR, all $p<0.05$). At month 5, based on CRT measurements, 11 eyes (36.66%) were classified as good responders, while 19 eyes (63.33%) were categorized as suboptimal responders. During the pro re nata (PRN) regimen in the maintenance phase, the mean CRT showed an increase alongside BCVA deterioration, although it did not surpass baseline values (Figure 1). Sixteen eyes (53.33%) maintained improved CRT without requiring additional treatment, while 14 eyes (46.66%) needed PRN treatment over the 12-month follow-up (at month 5 (1 eye, 3.33%), month 6 (5 eyes, 16.67%), month 7 (7 eyes, 23.33%), and month 10 (1 eye, 3.33%), respectively). Among these, 7 eyes (23.33%) received aflibercept monotherapy, and 7 eyes (23.33%) switched to alternative therapies (2 eyes (6.66%) to Ozurdex and bevacizumab, 1 eye (3.33%) to Ozurdex and subtenon triamcinolone injection, 3 eyes (10%) to Ozurdex only, and 1 eye (3.33%) to bevacizumab only). Throughout the entire cohort period, intensive aflibercept treatment did not result in any serious ocular or nonocular complications necessitating treatment discontinuation, such as intraocular inflammation or cardiovascular events. Suboptimal responders exhibited significantly longer duration of diabetes mellitus (DM) (17.42 ± 8.25 vs. 9.00 ± 7.04 years, $p=0.008$), lower estimated glomerular filtration rate (eGFR) (53.80 ± 34.16 vs. 85.00 ± 25.88 mL/min/1.73 m2, $p=0.018$), higher serum creatinine (2.23 ± 1.98 vs. 1.03 ± 0.92 mg/dL, $p=0.049$) and potassium (4.89 ± 0.60 vs. 4.20 ± 0.51 mmol/L, $p=0.004$) levels, and a higher prevalence of epiretinal membrane (ERM) (68.42% vs. 18.18%, $p=0.008$) compared to good responders. Logistic regression analysis revealed that eyes with DM duration ≥ 15 years (odds ratio (OR), 9.33; $p=0.011$), eGFR <80 mL/min/1.73 m2 (OR, 7.35;

p=0.046), serum creatinine ≥0.95 mg/dL (OR, 7.33; p=0.026), potassium ≥4.7 mmol/L (OR, 5.87; p=0.041), and ERM (OR, 9.75; p=0.014) were more likely to exhibit a suboptimal treatment response. Longitudinal analysis of CRT and BCVA changes over 12 months, based on these cutoff values, indicated that eyes with longer DM duration, lower eGFR, higher serum creatinine and potassium levels, and ERM exhibited less CRT reduction in response to aflibercept treatment. The trend of BCVA changes mirrored that of CRT throughout the follow-up period, although not entirely consistently, with greater fluctuations in BCVA changes.

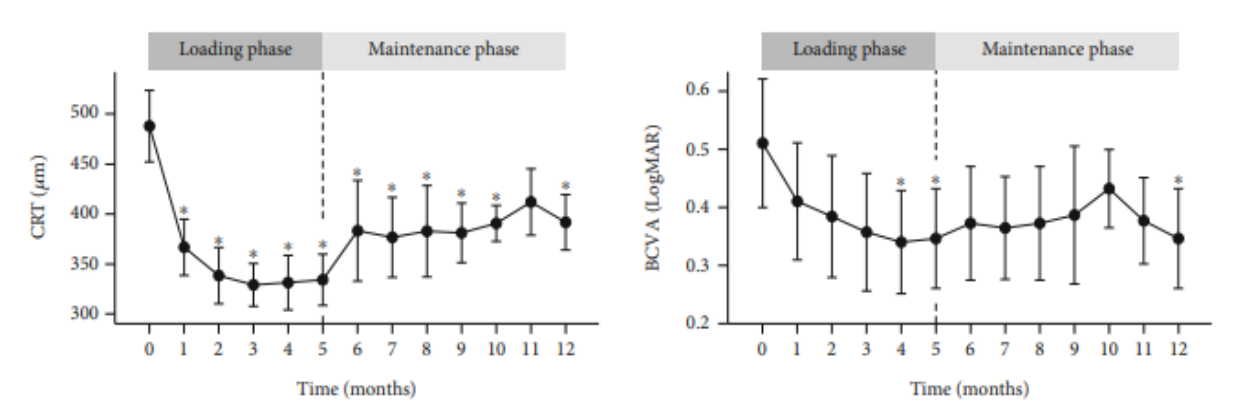

Figure 1. Mean variations in central retinal thickness and best-corrected visual acuity in the entire cohort

DISCUSSION

The study revealed that intensive aflibercept treatment yields substantial improvements in both anatomical and functional aspects for patients with DME. Notably, individuals with an extended duration of diabetes mellitus, lower estimated glomerular filtration rate (eGFR), elevated serum creatinine and potassium levels, and the presence of epiretinal membrane (ERM) were correlated with a suboptimal response to treatment.[2] In line with this research findings, individuals exhibiting lower estimated glomerular filtration rate (eGFR) levels showed a tendency for less favorable improvement in diabetic macular edema (DME) following ranibizumab treatment.[3] Consistent with this study findings, the duration of diabetes mellitus (DM) has been identified as an adverse predictor of the response to anti-VEGF treatment in diabetic macular edema (DME).[4]

CONCLUSION

Patients with DME experienced notable improvements in anatomy and vision after receiving five loading doses of intravitreal aflibercept injection each month. Patients who had renal impairment, ERM, or long-term diabetes were more likely to have a less-than-ideal response to treatment. These ocular and systemic risk factors can be used to predict how each DME patient will react to a rigorous course of aflibercept treatment.

REFERENCE

1) Chung YR, Kim YH, Ha SJ, Byeon HE, Cho CH, Kim JH, Lee K. Role of Inflammation in Classification of Diabetic Macular Edema by Optical Coherence Tomography. J Diabetes Res. 2019 Dec 20;2019:8164250.
2) Han YE, Jo J, Kim YJ, Lee J. Factors Affecting Intensive Aflibercept Treatment Response in Diabetic Macular Edema: A Real-World Study. J Diabetes Res. 2023 Jul 18;2023:1485059.
3) Lai IP, Huang WL, Yang CM, Yang CH, Ho TC, Hsieh YT. Renal Biomarkers for Treatment Effect of Ranibizumab for Diabetic Macular Edema. J Diabetes Res. 2020 Aug 18;2020:7239570.
4) Gurung RL, FitzGerald LM, Liu E, McComish BJ, Kaidonis G, Ridge B, Hewitt AW, Vote BJ, Verma N, Craig JE, Burdon KP. Predictive factors for treatment outcomes with intravitreal anti-vascular endothelial growth factor injections in diabetic macular edema in clinical practice. Int J Retina Vitreous. 2023 Apr 4;9(1):23.

Case report on recanalization of Xen45 gel stent implant occlusion in refractory glaucoma using 10−0 nylon suture

INTRODUCTION

Recanalizing the Xen45 Gel Stent with a 10−0 nylon suture is a relatively well tolerable and effective surgical procedure that doesn't require removing the Xen45 Gel Stent in the event that postoperative occlusion develops following implantation.

Glaucoma stands as a prominent cause of irreversible blindness globally. Recent projections suggest that the disease's prevalence could reach approximately 111 million cases by 2040. Despite trabeculectomy surgery being the established gold standard for treating glaucoma, it is accompanied by various risks.[1] The FDA has approved the XEN45 Gel Stent, a device designed to alleviate excess fluid in the eye. It utilizes a subconjunctival drainage pathway, bypassing trabecular and scleral resistance. Notably, it is the sole device replicating the non-physiologic drainage pathway of trabeculectomy and aqueous shunt surgeries, eliminating the requirement for conjunctival dissection.[2] This case study involved the application of the XEN45 Gel Stent for refractory glaucoma treatment. Additionally, a novel surgical protocol was proposed for successfully recanalizing an occluded XEN45 Gel Stent using a 10-0 nylon suture, without the necessity of removing the stent.

CASE PRESENTATION

A 16-year-old female patient visited the clinic with poorly managed intraocular pressure (IOP) in her right eye. Despite a prior diagnosis of bilateral juvenile open-angle glaucoma (JOAG) and gonioscopy-assisted transluminal trabeculotomy (GATT) in both eyes four years before, her right eye's IOP increased one-year post-surgery. Subsequent interventions, including goniosynechialysis (GSL) and trabeculectomy, were done on the right eye. No familial history of glaucoma was known. Examination revealed hand-motion best-corrected visual acuity (BCVA) in the right eye and 0.02 in the left eye. The right eye exhibited an IOP of 33 mmHg on four antiglaucoma drugs, while the left eye showed 13 mmHg on one drug. Slit-lamp examination disclosed a flattened superior bleb, a visible peripheral iridectomy, a moderately deep anterior chamber, and a clear lens in both eyes. Fundus examination identified bilateral glaucomatous optic disc with a 1.0 cup-to-disc ratio. Gonioscopy revealed an open Schlemm's canal and some peripheral anterior synechiae at eight clock points. The right eye underwent implantation of the Xen45 Gel Stent. Six days post-surgery, the IOP spiked to 40 mmHg, and a small whitish droplet occluded the anterior chamber tip of the Xen45 Gel Stent. Ultrasound biomicroscopy (UBM) revealed hyper-reflective material in the internal ostium of the Xen45 Gel Stent (Figure 1). Nd: YAG laser shockwave therapy was administered, restoring visibility to the internal ostium and reducing IOP from 42 to 25 mmHg. However, within six hours post-laser therapy, the IOP surged to 40 mmHg again, despite several unsuccessful attempts to address the blockage with increasing Nd: YAG laser energy. The patient ultimately underwent a revision procedure, recanalizing the Xen45 Gel Stent ab externo through an L-shaped conjunctival incision. In the 11-month follow-up, IOP was successfully controlled without the need for medication.

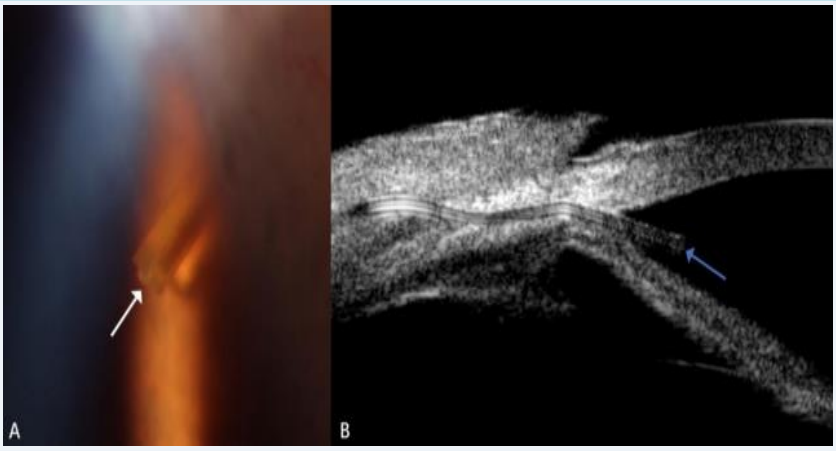

Figure 1. (A) A tiny white plug (white arrow) occluded the anterior chamber tip of the Xen45 Gel Stent, as revealed by the anterior segment examination. (B) The UBM displayed the hyper-reflective materials at the stent's internal ostium (blue arrow).

DISCUSSION

This study demonstrated that postoperative occlusion cases following Xen45 Gel Stent implantation, initiating Nd: YAG laser shockwave therapy was recommended as a minimally invasive first step. If this proves unsuccessful, the use of 10−0 nylon suture in surgery to recanalize the Xen45 Gel Stent should be considered as a relatively well tolerable and effective alternative, potentially avoiding the necessity of stent removal. Gillmann K et al. revealed that XEN Gel Stent implantation led to notable reductions in intraocular pressure (IOP) and medication usage, even

with relatively elevated rates of needling and subsequent reoperations.[3] Tatti et al. documented a case wherein 25 G vitreous scissors were employed to trim the ab interno portion of a Xen45 Gel Stent that had become occluded due to the strong adhesion of a fibrin clot following an unsuccessful Nd: YAG laser treatment.[4]

CONCLUSION

It was illustrated to use minimally invasive technique such as Nd: YAG laser shockwave to recanalize the Xen45 gel stent if postoperative occlusion develops after the implantation. This approach was relatively well tolerable and effective and may avoid the need to remove the Xen45 Gel Stent. The success rate of implanting Xen45 Gel Stents can be raised with the help of these techniques.

REFERENCE

1) Zhang Y, Xiang H, Zhang Y, Tang L. Recanalization of Xen45 gel stent implant occlusion using 10 - 0 nylon suture in refractory glaucoma: a case report. BMC Ophthalmol. 2023 Oct 19;23(1):418.
2) Hong K, Lind J, Sheybani A. Safety and efficacy outcomes of the Xen45 Gel Stent use for refractory glaucoma: a surgery series from surgeon trainees at a tertiary teaching hospital. Eye Vis (Lond). 2020 Feb 1;7:5.
3) Gillmann K, Bravetti GE, Rao HL, Mermoud A, Mansouri K. Combined and stand-alone XEN 45 gel stent implantation: 3-year outcomes and success predictors. Acta Ophthalmol. 2021 Jun;99(4):e531-e539.
4) Tatti F, Gentile P, Mangoni L, Demarinis G, Napoli P, Fossarello M. Xen45 gel stent ab interno trimming for ostium occlusion: case report. BMC Ophthalmol. 2021 Dec 27;21(1):446.