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Ophthal Focus

Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you 'Ophthal Focus' which contains latest and interesting news in the field of Ophthalmology.

This issue contains

- **Comparison of visual, refractive, and patient-reported outcomes between an Enhanced Monofocal IOL and a Traditional Monofocal IOL**
- **Comparison of the outcome of eyes with a macula-on giant retinal tear detachment treated with pars-plana-vitrectomy**
- **Relationship between dyslipidemia and dry eye disease (DED), and its influence on tear film and meibomian glands**
- **Urrets-Zavalia Syndrome (UZS)- An uncommon case report**

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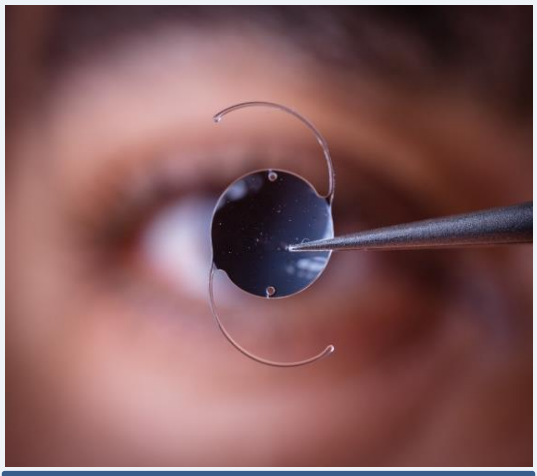
Comparison of visual, refractive, and patient-reported outcomes between an Enhanced Monofocal IOL and a Traditional Monofocal IOL

INTRODUCTION



MONOFOCAL IOL

Patients who received the improved monofocal IOL had comparable levels of patient-reported photic phenomena to those who received the traditional monofocal IOL, but they also had superior intermediate and near vision.

For patients having intraocular lens surgeries, achieving greater depth of focus is crucial because many daily activities necessitate adequate intermediate vision (for instance computer work, tablets, cooking, many hobbies, etc.). Many patients undergoing cataract or refractive lens exchange surgery now prioritize intermediate vision more because of the rising usage of smartphones and tablets.[1] A few monofocal intraocular lens (IOL) designs have surfaced in recent years with optical characteristics intended to slightly extend the depth of focus while preserving the same level of clarity for distant vision and incidence of visual phenomena as traditional monofocal IOLs. The Tecnis Eyhance ICB00 IOL is one of these. The Tecnis ZCB00 monofocal aspheric IOL and this IOL have many of the same features. The ICB00 model features a higher-order aspheric anterior surface in its refractive optical design when compared to the ZCB00 model. The goal of this optic profile was to enhance intermediate vision; these lens models were also known as enhanced monofocal IOLs or monofocal plus. The ICB00 model and its parent IOL model (ZCB00) have been compared in several investigations up to this point. Very few studies report on the tolerance to monovision, and the refractive findings of the trials also differ.[2] Therefore, the current investigation compared the visual, refractive, and patient-reported outcomes between the ICB00 and ZCB00 models in order to validate the results of earlier studies in a large cohort of patients. Furthermore, the monovision approach tolerability in patients with bilateral Tecnis Eyhance ICB00 IOL implants was evaluated.

METHODS

This retrospective study examined patients who had undergone lens replacement surgery with or without cataract, comparing the outcomes of two types of implanted IOLs: Tecnis Eyhance ICB00, an enhanced monofocal lens, and Tecnis ZCB00, a conventional monofocal lens. The study

included 383 patients in each group and retrieved patient data from Optical Express, Glasgow, UK, meeting specific criteria from November 2019 to July 2023. These criteria included bilateral implantation of Tecnis Eyhance ICB00, low corneal astigmatism, good corrected distance visual acuity (CDVA), attendance at a one-month postoperative visit, and completion of a vision and eye health questionnaire. The study compared monocular and binocular visual acuities at various distances, refractive predictability, and patient-reported outcomes. Additionally, a subgroup analysis within the Eyhance IOL group compared patients achieving bilateral emmetropia to those with mini-monovision. Results were assessed at the one-month postoperative mark.

RESULTS

In the study, the majority of patients underwent standard phacoemulsification, with a small percentage opting for femtosecond laser-assisted phacoemulsification. There were no significant differences in the mean power of the implanted IOLs, suggesting comparable preoperative biometric measurements between the two groups. One-month postoperative outcomes, showed no statistically significant differences between the groups in terms of visual acuity percentages. Monocular and binocular uncorrected intermediate visual acuities (UIVA) were approximately one Snellen line better in Group 1 compared to Group 2, with statistically significant differences. Monocular and binocular uncorrected near visual acuities (UNVA) were also significantly better in Group 1 compared to Group 2 (Fig 1A and 1B). Both groups had similar CDVA outcomes, although there was a slightly higher gain in CDVA observed in Group 2. The distribution of postoperative manifest spherical equivalent (MSE) showed comparable percentages within ±0.50 D of emmetropia between the two groups. Group 2 had a higher percentage of eyes with myopia of -1.0 D or less in the dominant eye. Postoperative refractive astigmatism and residual refractive cylinder showed no significant differences between the groups. Patients who achieved bilateral emmetropia or monovision had consistent outcomes with no notable differences in postoperative visual phenomena, indicating good tolerance to slight myopia in patients with the Eyhance IOL.

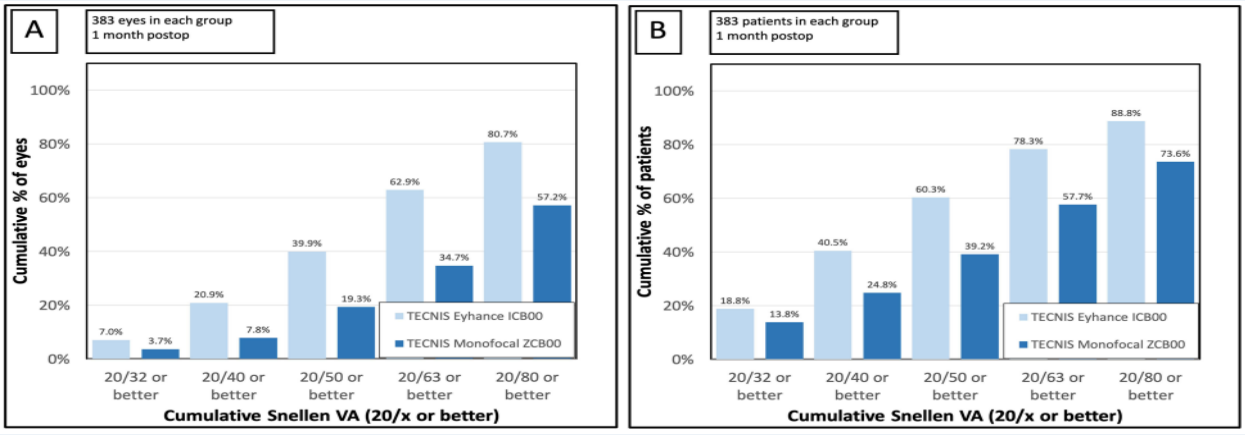


Figure 1. Cumulative postoperative uncorrected near visual acuity (40 cm) in binocular (A) and monocular (B) views. Results for monocular visual acuity depend on the patient's dominant eye.

DISCUSSION

A sub-analysis of the current study found that, when compared to patients with Tecnis Eyhance who attained bilateral emmetropia, mini-monovision with Tecnis Eyhance IOL produced somewhat lower binocular UDVA but about one Snellen line better average UIVA and UNVA. But bilateral emmetropes and those with mini-monovision had similar visual phenomena and pleasure levels. The mini-monovision target with Tecnis Enhance IOL was covered in two studies.[3,4] Comparing bilateral emmetropes to mini-monovision patients from the research IOL, one of them has a comparable design.[4] The authors discovered very minor and non-significant variations in bilateral UDVA and UIVA (0.03 logMAR difference) across the 25 patients in each group; however, the mini-monovision technique improved UNVA by nearly two Snellen lines.[4] This was different from the results of the current study, probably because the patients in the previous study, even in the bilateral emmetropia group, had a more myopic spherical equivalent (mean MSE: bilateral emmetropia group: −0.18 ± 0.21 D vs mini-monovision group: dominant eye −0.19 ± 0.18 D, non-dominant eye: −0.95 ± 0.19 D), whereas in this study, the MSE was closer to plano in the eyes that were targeted for emmetropia. Nonetheless, their patient-reported results support the study's conclusion that patients with bilateral emmetropes and those with mini-monovision did not vary in terms of visual phenomena or overall patient satisfaction.

CONCLUSION

Through a comprehensive analysis involving a substantial sample size, this study reaffirmed earlier research indicating that Tecnis Eyhance provides improved intermediate vision compared to its predecessor, while retaining comparable distance vision and a similar occurrence of visual phenomena. Additionally, adopting a mini-monovision strategy could potentially enhance intermediate and near visual acuity in Eyhance IOL recipients without adversely affecting visual phenomena or patient satisfaction.

REFERENCE

1. Hiley C. UK mobile phones statistics. Uswitch statistics from 1st February 2023; 2023. Available from: https://www.uswitch.com/mobiles/studies/ mobile-statistics. Accessed October 18, 2023.
2. Dell SJ, Hannan SJ, Venter JA, Teenan D, Hannan NC, Raju D, Berry CW, Kiss HJ, Schallhorn JM. Comparative Analysis of Clinical and Patient-Reported Outcomes of a New Enhanced Monofocal IOL and a Conventional Monofocal IOL. Clin Ophthalmol. 2024 May 1;18:1157-1169.
3. Beltraminelli T, Rizzato A, Toniolo K, Galli A, Menghini M. Comparison of visual performances of enhanced monofocal versus standard monofocal IOLs in a mini-monovision approach. BMC Ophthalmol. 2023 Apr 21;23(1):170.
4. Park ES, Ahn H, Han SU, Jun I, Seo KY, Kim EK, Kim TI. Visual outcomes, spectacle independence, and patient satisfaction of pseudophakic mini-monovision using a new monofocal intraocular lens. Sci Rep. 2022 Dec 15;12(1):21716.

Comparison of the outcome of eyes with a macula-on giant retinal tear detachment treated with pars-plana-vitrectomy

INTRODUCTION

Redetachment rates were greater in eyes receiving petrol tamponade as opposed to SO tamponade. In contrast to SO tamponade, the final postoperative BCVA in eyes with gas was noticeably improved.

A giant retinal tear (GRT) is characterized by a full-thickness retinal break extending circumferentially for ≥3 clock hours (≥90°) with a posteriorly detached vitreous. GRTs are uncommon, and their exact frequency is not thoroughly documented in the literature.[1] Several risk factors, including trauma, high myopia, extensive lattice degeneration, or hereditary vitreoretinopathies, contribute to the occurrence of GRTs. Managing GRT-associated rhegmatogenous retinal detachment (RRD) poses a challenge for vitreoretinal (VR) surgeons. The standard approach involves pars-plana vitrectomy (PPV) with endotamponade due to the extent of the tear, the risk of its posterior edge slipping, and the higher incidence of proliferative vitreoretinopathy (PVR). Silicone oil (SO) tamponade was often preferred for its effectiveness; however, it has drawbacks such as the need for a second PPV for removal, unexplained visual loss (UVL), the risk of secondary glaucoma, and complications like SO emulsification and SO-associated keratopathy. Consequently, some VR surgeons opt for gas tamponade, even in complex GRT cases. Currently, there was no consensus on whether SO or gas tamponade should be preferred for GRT detachments.[2] Thus, the study aimed to assess cases of GRT-associated RRDs that underwent VR surgery over the past fifteen years, analyzing their functional and anatomical outcomes based on the type of endotamponade used. To ensure comparability, only cases with macula-on status were included.

METHODS

A retrospective assessment was conducted on all consecutive cases of macula-on GRT detachments that underwent VR surgery between 2007 and 2022. Medical records and surgical logbooks were reviewed, revealing a total of 51 eyes from 45 patients who underwent VR surgery during this period for macula-on GRT-associated RRD. The majority of patients were male (77%) with a mean age of 55 years (SD 9.0; range 31–73). All eyes underwent PPV with endotamponade, with 32 eyes (63%) receiving silicone oil (SO) and 19 eyes (37%) receiving gas tamponade. The outcomes between the SO group and gas group were compared in terms of pre-, intra-, and postoperative data, including the number of VR procedures required for reattachment, redetachment rate, and functional outcome. Specifically, eyes treated with primary SO tamponade were contrasted with those receiving primary gas tamponade.

RESULTS

In the gas group, eyes underwent significantly shorter cut-suture times (p<0.001). The mean preoperative logarithm of the minimum angle of resolution (logMAR) best-corrected visual acuity (BCVA) was 0.63. Nine patients had compromised visual acuity due to vitreous hemorrhage (VH) upon presentation, with a mean initial logMAR BCVA of 0.31 in eyes without VH. There was no statistically significant difference in preoperative BCVA values between the two groups (p=0.282). At the endpoint, the mean postoperative BCVA for all cases was 0.49, assessed on average 2.5 months after the last VR procedure. Eyes in the gas tamponade group (mean BCVA 0.32) had significantly better BCVA at the endpoint compared to eyes in the silicone oil (SO) tamponade group (mean BCVA 0.60) (p=0.008). Before and after PPV, all BCVA values of eyes with macula-on large GRT detachments were listed in Table 1. A primary surgical success, defined as a reattached retina, was achieved in 41 (80%) eyes. Redetachment occurred in 4 (13%) cases in the SO group and 6 (32%) eyes in the gas group, with 6 of 10 involving the macula. Reasons for failure included secondary proliferative vitreoretinopathy (PVR) development (n=5), elevated GRT edge (n=2), or retinal slippage (n=1). Eyes in the gas group experienced significantly fewer postoperative complications compared to SO group eyes (p=0.007), with UVL occurring in 50% of eyes with primary SO tamponade and none in the gas group. The shortest duration of SO tamponade in an eye experiencing UVL was 73 days. Incidence of other postoperative complications (macular edema, epiretinal membranes, IOP elevation) did not differ significantly between the SO and gas groups (p=0.682). There was no difference in central foveal thickness (CFT) between the SO and gas groups at the final visit (p=0.928), which occurred on average 14 months after the last VR procedure. In 23 cases (45%), the fellow eye also developed RRD, with 8 eyes (16%) related to GRT. The mean interval between the first and second eye involvement was 27 months.

Table 1. Before and after PPV, functional development of macula-on giant retinal tear detachments

BCVA and IOP	silicone oil group (n=32)	gas group (n=19)	p-value
preoperative logMAR BCVA	0.70 (SD 0.75)	0.48 (SD 0.58)	0.282
preoperative logMAR BCVA #	0.31 (SD 0.30)	0.31 (SD 0.24)	0.969
postoperative logMAR BCVA	0.60 (SD 0.42)	0.32 (SD 0.30)	0.008*
postoperative logMAR BCVA≤0.3	14 (44%)	13 (68%)	0.073
Difference BCVA (lines) #	-3 (SD 0.9)	+1 (SD 1.2)	0.017
IOP min (mmHg)	12 (SD 3.1)	11 (SD 3.0)	0.192
IOP max (mmHg)	22.7 (SD 9.6)	21.5 (8.8)	0.727

BCVA=best-corrected visual acuity, IOP=intraocular pressure, PPV=pars-plana-vitrectomy, # eyes with vitreous haemorrhage at initial presentation excluded, * significant using Bonferroni correction

DISCUSSION

This study suggested strong rationale for using SO tamponade in repairing GRT, citing its potential to prevent retinal slippage and reduce the risk of PVR and redetachment. However, it observed that postoperative BCVA was significantly superior in eyes treated with gas tamponade compared

to SO.[2] Consistent with findings from other studies, eyes receiving primary SO tamponade exhibited a lower redetachment rate compared to those treated with gas.[3] The predominant cause of recurrent RRD in this study was attributed to the onset of PVR, consistent with findings documented in other literature.[4] Eyes treated with gas tamponade exhibited significantly improved postoperative BCVA and experienced less frequent occurrences of uveitis compared to those undergoing SO tamponade.[5]

CONCLUSION

There were compelling arguments in favor of SO tamponade for repairing GRT, such as its ability to prevent retinal slippage and reduce the risk of PVR and redetachment. However, eyes treated with a gas tamponade benefit from superior functional outcomes and require fewer VR procedures. Based on the study findings and evidence from various authors, primary gas tamponade emerges as a viable option, particularly for patients with a macula-on condition. Alternatively, expedited removal of the SO tamponade could mitigate the risk of visual loss. Ultimately, the choice of endotamponade depends on the surgeon's discretion and the intraoperative circumstances, tailored to the specific clinical presentation in each case, as aptly stated by Schepens.

REFERENCE

1. Ang GS, Townend J, Lois N. Epidemiology of giant retinal tears in the United Kingdom: the British Giant Retinal Tear Epidemiology Eye Study (BGEES). Invest Ophthalmol Vis Sci. 2010 Sep;51(9):4781-7.
2. Barth T, Radeck V, Gamulescu MA, Helbig H, Märker D. Management of macula-on giant retinal tear detachments- outcome of pars-plana-vitrectomy with silicone oil versus gas tamponade. BMC Ophthalmol. 2024 Apr 22;24(1):184.
3. Al-Khairi AM, Al-Kahtani E, Kangave D, Abu El-Asrar AM. Prognostic factors associated with outcomes after giant retinal tear management using perfluorocarbon liquids. Eur J Ophthalmol. 2008 Mar-Apr;18(2):270-7.
4. Taleb EA, Nagpal MP, Mehrotra NS, Bhatt K, Goswami S, Noman A. Giant retinal tear retinal detachment etiologies, surgical outcome, and incidence of recurrent retinal detachment after silicone oil removal. Oman J Ophthalmol. 2020 Nov 2;13(3):117-122.
5. Moharram HM, Abdelhalim AS, Hamid MA, Abdelkader MF. Comparison Between Silicone Oil and Gas in Tamponading Giant Retinal Breaks. Clin Ophthalmol. 2020 Jan 15;14:127-132.

Relationship between dyslipidemia and dry eye disease (DED), and its influence on tear film and meibomian glands

INTRODUCTION

An influence on the tear film and meibomian glands, namely in DEQ-5 scores, LLG, and L-LAMG, was linked to disorders in TC, HDL, LDL, and TG levels, which were linked to DED.

Dyslipidemia, a significant systemic condition, stands as a primary risk factor for cardiovascular disease, a leading cause of morbidity and mortality globally. Its far-reaching influence on multiple organs has established connections, whether indirect or direct, to various eye ailments, including age-related macular degeneration, glaucoma, retinal vein occlusions, and hypertensive and diabetic retinopathy.[1] The tear film comprises a complex blend of lipids, proteins, and electrolytes, providing essential coverage to the eye's surface and upholding the integrity of the cornea and conjunctiva. The lipid layer of the tear film, positioned at its outermost surface, acts as a protective barrier against evaporation and environmental factors. Mainly consisting of meibomian gland secretions, the lipid layer contains various fatty acids and wax esters. Dyslipidemia has been associated with changes in these meibomian gland secretions, potentially diminishing the quality and quantity of the lipid layer tear film (LLTF). Consequently, this can lead to a spectrum of ocular surface disorders, including dry eye disease (DED), meibomian gland dysfunction (MGD), and blepharitis. Furthermore, alterations in the tear film may incite inflammation, damage to the cornea and conjunctiva, and even vision impairment. Despite ongoing studies, the precise pathophysiological mechanisms underpinning the relationship between dyslipidemia and the tear film remain incompletely understood.[2] Hence, this study examined the possible impact of dyslipidemia on tear film and meibomian gland dysfunction. The study also evaluated the association between dyslipidemia, identified by abnormal lipid levels in the bloodstream, and the integrity of the lipid layer within the tear film, a crucial determinant of ocular surface health.

METHODS

In this cross-sectional study, 40 participants with an average age of 35.2 ± 13.9 years and no prior history of dyslipidemia were enrolled. The inclusion criteria consisted of: (1) individuals aged ≥18 years who fasted for at least 8 hours; (2) diagnosis of DED based on the dry eye workshop (DEWS) II criteria, meeting one of the following conditions: (2.1) dry eye questionnaire-5 (DEQ-5) score ≥6, (2.2) noninvasive tear film breakup time (NIBUT) <10 seconds, or (2.3) ocular surface staining with more than five or nine corneal or conjunctival stains, respectively; and (3) diagnosis of MGD according to the international workshop on MGD, meeting two of the following conditions: (3.1) irregularity of the eyelid margin or mucocutaneous junction, (3.2) vascularity of the eyelid margin, (3.3) plugged or capped meibomian gland orifices, (3.4) meibomian gland atrophy, or (3.5) decreased meibum quality and quantity. Symptoms and signs of DED were assessed using the ocular surface analyzer (OSA). Evaluation of DED and serum lipid profile was conducted following an 8-hour fasting period. Participants were categorized based on serum lipid levels using the following cutoff values: total cholesterol (TC) (200 mg/dl), high-density lipoprotein (HDL) (40 mg/dl), low-density lipoprotein (LDL) (130 mg/dl), and triglycerides (TG) (150 mg/dl). The

relationship between serum lipid levels and DED was examined using various variables, including DEQ-5, first (F-NIBUT) and average (A-NIBUT) noninvasive breakup time, tear meniscus height (TMH), lipid layer grade (LLG), conjunctival bulbar redness (CBR), and loss area of upper (U-LAMG) and lower (L-LAMG) meibomian glands.

RESULTS

Lipid abnormalities were observed in specific proportions within the patient cohort: 15 (37.5%) individuals had total cholesterol (TC) levels exceeding 200 mg/dl; 9 (22.5%) exhibited high-density lipoprotein (HDL) levels below 40 mg/dl; 15 (37.5%) displayed low-density lipoprotein (LDL) levels surpassing 130 mg/dl; and 18 (45%) had triglyceride (TG) levels above 150 mg/dl. Notably, the distribution of these characteristics deviated from normal, and no significant differences were observed between groups concerning age and sex distribution. With regard to DED symptoms, a marginal yet significant trend was noted in DEQ-5 scores, indicating that patients with elevated TC (>200 mg/dl) and LDL levels (>130 mg/dl) reported more severe DED symptoms ($p < 0.05$) (Figure 1(c)). In terms of DED signs, patients with elevated TC and LDL levels exhibited significantly higher tear meniscus height (TMH) ($p < 0.05$) (Figure 1(a)), while lower HDL levels (<40 mg/dl) were associated with significantly higher lipid layer grade (LLG) ($p < 0.05$) (Figures 1(d)). Additionally, individuals with elevated TC, LDL, and TG levels (>150 mg/dl), as well as lower HDL levels, reported significantly higher loss area of lower (L-LAMG) meibomian glands compared to those with lower

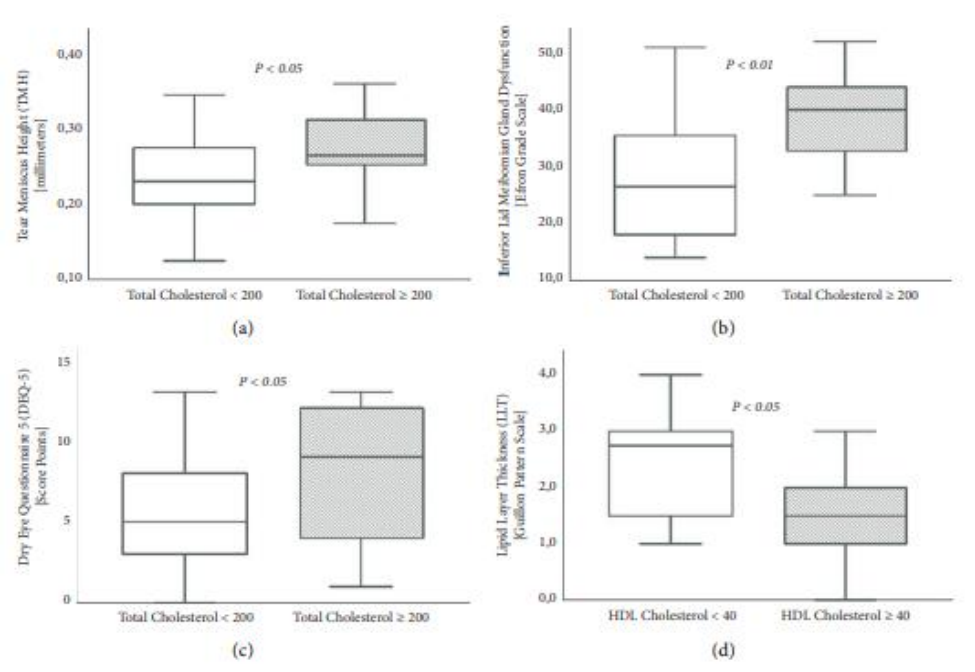


Figure 1: Box and whisker diagrams illustrating the correlation between dyslipidemia and indications and symptoms of DED Patients with low (<200 mg/dl) and high (>200 mg/dl) TC levels were categorised as (a) TMH, (b) L-LAMG, (c) DEQ-5 scores, and (d) LLG. HDL levels with low (left) (<40 mg/dl) and high (right) (>40 mg/dl) levels were categorised as (left) and right) respectively. For every group, the median, quartiles, and outliers were shown in each graph. DEQ-5 stands for dry eye questionnaire; HDL stands for high-density lipoprotein; L-LAMG for lower loss area meibomian glands; TC stands for total cholesterol; LLG for lipid layer grade; and TMH for tear meniscus height.

serum lipid values ($p < 0.05$). Noteworthy correlations were observed, including significant positive associations between TC and TMH ($r = 0.35$, $p < 0.05$) and TC and L-LAMG ($r = 0.41$, $p < 0.05$), along with a significant negative correlation between HDL and LLG ($r = -0.32$, $p < 0.05$).

DISCUSSION

This study revealed that individuals with elevated levels of TC, LDL, and TG exhibited heightened symptoms of DED and experienced greater atrophy of the lower meibomian glands compared to those with lower serum lipid levels. These findings align with outcomes from previous case-control studies. For instance, Dao AH et al. documented a higher prevalence of dyslipidemia among patients with moderate to severe MGD in comparison to the healthy population.[3]

CONCLUSION

This study suggested that dyslipidemia may exert an influence on the tear film and meibomian glands. Elevated levels of TC and LDL were linked to higher DEQ-5 scores and tear meniscus height (TMH), while lower levels of HDL were associated with increased lipid layer grade (LLG). Furthermore, patients with elevated TC, LDL, and TG, as well as lower HDL levels, reported greater loss area of lower meibomian glands (LLAMG).

REFERENCE

1) Wang S, Xu L, Jonas JB, You QS, Wang YX, Yang H. Dyslipidemia and eye diseases in the adult Chinese population: the Beijing eye study. PLoS One. 2012;7(3):e26871.
2) Serrano-Morales JM, Álvarez-Santaliestra N, Sánchez-González MC, Ballesteros-Sánchez A, Sánchez-González JM. Impact of Dyslipidemia on Tear Film and Meibomian Gland Dysfunction: A Cross-Sectional Study of the Interplay between Serum Lipid Profile and Ocular Surface Health. J Ophthalmol. 2024 Apr 30;2024:7345270.
3) Dao AH, Spindle JD, Harp BA, Jacob A, Chuang AZ, Yee RW. Association of dyslipidemia in moderate to severe meibomian gland dysfunction. Am J Ophthalmol. 2010 Sep;150(3):371-375.e1.

Urrets-Zavalia Syndrome (UZS)- An uncommon case report

INTRODUCTION

Urrets-Zavalia syndrome (UZS) is an uncommon complication after surgery characterized by a fixed and dilated surgical pupil that is unresponsive to miotic drop.[1] Although it has been reported that the pupillary findings begin five months after surgery, they can be seen in the initial postoperative days.[2] Two typical findings in UZS are elevated IOP

Proactive steps might involve screening for plateau iris prior to surgery and using iris hooks during surgery rather than pharmaceutical dilation.

due to iris shrinkage from a limited blood supply and angle occlusion. In this case, a scleral-sutured intraocular lens was implanted after a dislocated intraocular lens was removed, and a unique case of UZS was recorded.

CASE PRESENTATION

A 59-year-old man visited the clinic with recent-onset blurry vision in his right eye, which had previously undergone cataract surgery. This visual disturbance occurred spontaneously, without any preceding trauma to his eye or face. His uncorrected visual acuity was "counting fingers" in the right eye and 20/20 in the left eye, with normal intraocular pressure (IOP) in both eyes. Examination revealed a dislocated one-piece intraocular lens in the inferior vitreous of the right eye, with an attached retina and no retinal tears. The left eye examination was normal, showing a clear crystalline lens without phacodonesis and a healthy fundus. A decision was made to remove the dislocated intraocular lens. Due to the absence of lens capsule remnants, placing the lens in the sulcus was not an option, so a scleral-sutured intraocular lens was chosen instead. On the day of surgery, the eye was dilated using 1% cyclopentolate, 1% tropicamide, and 2.5% phenylephrine. A complete 25-gauge pars plana vitrectomy was performed, utilizing Balanced Salt Solution with a 1000x dilution of epinephrine 1:1000 to maintain pupil dilation. Carbachol was administered into the anterior chamber to induce pupillary constriction, but the pupil remained dilated. On the first postoperative day, the best-corrected visual acuity (BCVA) in the right eye was counting fingers, IOP was 8, and the pupil was dilated to 7.5 mm. The patient did not experience any severe postoperative eye pain, indicating no transient IOP spikes. He was prescribed moxifloxacin and 1% prednisolone acetate drops, four times daily. At the postoperative one-week visit, BCVA improved to 20/60, IOP was 10, and the right pupil remained dilated. Moxifloxacin was discontinued at the end of the second postoperative week, and prednisolone was tapered off by the end of the first postoperative month. The IOP remained within normal limits, the pupil continued to be dilated to 7.5 mm, and the patient reported no severe pain throughout this period. By the second postoperative month, the BCVA improved to 20/25, but the right pupil remained dilated to 7.5 mm, and the IOP was elevated to 40. The patient did not report any pain, suggesting a gradual IOP increase. He was prescribed brinzolamide (10 mg/ml), Combigan (0.2% brimonidine and 0.5% timolol), and 1% pilocarpine. By the third postoperative

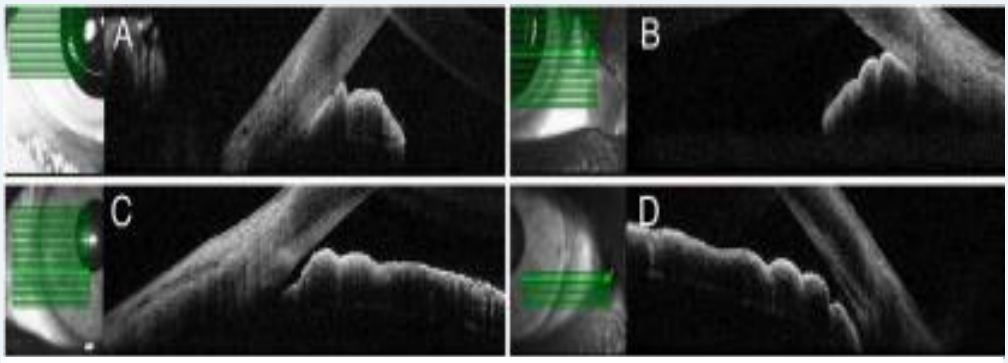


Fig. 1. OCT of the anterior section. Anterior and posterior closed angles and a permanently dilated pupil were shown in the right eye, A and B. C, D: Plateau iris arrangement in the left eye, demonstrating nasal and temporal aspects.

month, the IOP had decreased to 30, but the pupil remained dilated to 7.5 mm. Gonioscopy revealed a closed angle in the right eye without anterior synechiae. The anterior segment exam showed a well-centered intraocular lens with no signs of infection or inflammation. Anterior segment OCT confirmed a closed angle in the right eye (Fig. 1A and B). Additionally, the left eye's iris exhibited a plateau configuration (Fig. 1C and D).

DISCUSSION

The first instance of UZS was reported which included the explantation of a displaced IOL and the implantation of a scleral-sutured IOL. After his generally simple operation, the patient's dilated pupil was seen, which did not respond to carbachol therapy and remained fixed and dilated after the procedure. Immediately following surgery, the patient lost the capacity to constrict the pupil, but at least in the first month following the procedure, his intraoperative pressure was normal. However, an extremely lengthy time of dilatation was necessary for the procedure to replace his displaced intraocular lens with a scleral sutured intraocular lens. Moreover, epinephrine has the side effect of constricting tiny vessels.[3] It was possible that this, together with intraoperative iris ischemia, caused the iris's subsequent inability to contract.

CONCLUSION

The patient exhibited compromised pupil constriction characteristic of UZS immediately post-surgery, suggesting that extended iris dilation might have led to ischemia in the constrictor pupillae muscles. Additionally, the presence of a plateau iris configuration in the other eye indicates that certain iris anatomical features may predispose patients to iris ischemia and UZS when the iris was dilated. Surgeons should consider screening for plateau iris configuration in patients scheduled for prolonged intraocular procedures and use mechanical dilation methods, such as iris hooks, instead of pharmacological dilation in such cases.

REFERENCE

1. Sylla MM, Gelnick S, Leskov I. Urrets-Zavalia syndrome following placement of scleral-sutured intraocular lens. Am J Ophthalmol Case Rep. 2024 Feb 9;34:102010.
2. Jastaneiah S, Al-Towerki AE, Al-Assiri A. Fixed dilated pupil after penetrating keratoplasty for macular corneal dystrophy and keratoconus. Am J Ophthalmol. 2005 Sep;140(3):484-9.
3. de Araújo RB, Azevedo BMS, Andrade TS, Abalem MF, Monteiro MLR, Carricondo PC. Subconjunctival 0.1% epinephrine versus placebo in maintenance of mydriasis during vitrectomy: a randomized controlled trial. Int J Retina Vitreous. 2018 Oct 17;4:38.