Axial Length as a Factor Associated With Visual Outcome After Vitrectomy for Diabetic Macular Edema

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PURPOSE. To investigate whether axial length predicts visual acuity outcome after vitrectomy for diffuse macular edema secondary to diabetic retinopathy.

METHODS. Fifty-one eyes of 41 patients with diabetic macular edema (DME) who underwent vitrectomy were reviewed retrospectively. Clinical data, including axial length measured by partial coherence interferometry, postoperative best-corrected visual acuity (BCVA), and postoperative status of integrity of the photoreceptor layer observed by optical coherence tomography, were recorded. The relationship between axial length and postoperative BCVA or visibility of the junction between the inner and outer segment (IS/OS) line at 12 months after surgery were analyzed. Logistic regression analyses were performed to examine predictors related to postoperative BCVA.

RESULTS. Median BCVA improved significantly ($P < 0.0001$) after surgery (0.4 logMAR units; range, 0–1.5) compared to baseline (0.69 logMAR units; range, 0.22–1.22). Median axial length was significantly longer ($P = 0.017$) when postoperative BCVA was below 0.4 logMAR units (23.51 mm; range, 22.30–26.10) compared to over 0.4 logMAR units (23.02 mm; range, 22.10–24.65). A significant negative correlation was observed between postoperative logMAR and axial length ($n = 51$, $r_s = -0.35$, $P = 0.012$). Median axial length was significantly longer ($P = 0.039$) in eyes with visible IS/OS line (23.54 mm; range, 22.39–26.10) than in those without visible IS/OS line (23.02 mm; range, 22.13–24.65) at 12 months after surgery. Multivariate logistic regression analysis showed that short axial length (odds ratio: 0.3, $P = 0.009$) increased the risk of poor visual outcome after surgery.

CONCLUSIONS. Longer axial length predicts better postoperative BCVA after vitrectomy for diffuse macular edema secondary to diabetic retinopathy.

Keywords: axial length, diabetic macular edema, pars plana vitrectomy, optical coherence tomography, photoreceptor layer, hyperlipidemia

Diabetic macular edema is the most common cause of visual impairment in patients with diabetic retinopathy. Natural history data show that 24% of eyes with diabetic macular edema will lose at least three lines of vision over a period of 3 years. Although photocoagulation treatment for clinically significant macular edema reduces the rate of moderate visual loss, the visual outcome of photocoagulation for diffuse macular edema is worse than that for focal macular edema arising from diabetic microaneurysm. Various reports have shown favorable effects of pars plana vitrectomy (PPV) for treating diffuse macular edema with or without obvious abnormalities of the vitreoretinal interface. Several studies were conducted to evaluate preoperative factors that affect the visual acuity after PPV for diabetic macular edema. Lower baseline visual acuity and a history of previous macular grid photocoagulation have been reported to negatively influence postoperative visual outcomes after PPV for diffuse nontractional macular edema secondary to diabetic retinopathy.

Population-based studies showed an association between myopia and lower risk of diabetic retinopathy. Moreover, Man and colleagues proposed that eyes with longer axial length are less likely to have diabetic retinopathy and diabetic macular edema. The exact mechanisms concerning the protective effect of axial elongation remain unclear. It has been hypothesized that decreased blood flow with increasing axial length plays a major role in this association. Previous reports suggest that axial length may affect the postoperative visual outcome after PPV for diabetic macular edema.

The purpose of this study was to investigate the relationship between axial length and visual acuity outcome 12 months following PPV for nontractional diffuse macular edema secondary to diabetic retinopathy.

Patients and Methods

This retrospective study enrolled consecutive diabetic patients who underwent primary PPV for diabetic macular edema (DME) between April 2009 and June 2011 at Tokyo Medical University Hospital. The study was approved by the institutional review committee of Tokyo Medical University. Informed consent for surgery and examinations was obtained on a routine basis from all patients. Diabetic eyes that met the following criteria were included in the current study: diffuse macular edema without dense and extensive lipid deposits.
within the center of the macula, diffuse macular edema without vitreomacular traction syndrome (incomplete posterior or vitreous detachment with traction and detachment of the macula, foveal thickness greater than 300 μm on optical coherent tomography (OCT), and a minimum follow-up of 12 months after primary PPV. Exclusion criteria were a history of vitrectomietral surgery and grid macular photocoagulation; presence of macular degeneration, such as AMD; diabetic macular ischemia; presence of vitreous hemorrhage, fibrovascular proliferation with traction, or rhegmatogenous retinal detachment and macular dislocation; a history of intravitreal anti-VEGF antibody or corticosteroid injection, or focal macular photocoagulation within 4 months before surgery; cataract surgery or scatter photocoagulation within the center of the macula, diffuse macular edema without vitreomacular traction syndrome (incomplete posterior or vitreous detachment with traction and detachment of the macula, foveal thickness greater than 300 μm on optical coherent tomography (OCT), and a minimum follow-up of 12 months after primary PPV. Exclusion criteria were a history of vitrectomietral surgery and grid macular photocoagulation; presence of macular degeneration, such as AMD; diabetic macular ischemia; presence of vitreous hemorrhage, fibrovascular proliferation with traction, or rhegmatogenous retinal detachment and macular dislocation; a history of intravitreal anti-VEGF antibody or corticosteroid injection, or focal macular photocoagulation within 4 months before surgery; cataract surgery or scatter photocoagulation within 4 months before surgery; and posterior capsule rupture during cataract surgery.

All patients were evaluated preoperatively and postoperatively by stereoscopic biomicroscopy and OCT to determine the macular configuration and foveal thickness (FTH: center subfield thickness). A spectral-domain OCT (Cirrus HD-OCT; Carl Zeiss Meditec, Dublin, CA) was used to perform OCT examination in all patients. The integrity of the photoreceptor layer was evaluated by the visibility of the junction between the inner and outer segment (IS/OS) line in the central 1000-μm diameter area of the fovea. The appearance of the IS/OS line in both horizontal and vertical scans was scored as follows: IS/OS (+) for eyes with intact or partially visible IS/OS line, and IS/OS (−) for eyes with no visible IS/OS line. An epiretinal membrane (ERM) was defined as the observation of a highly reflective tissue membrane on the inner surface of the retina in the foveal region on OCT images. Fluorescein angiography was performed preoperatively to evaluate the severity of diabetic retinopathy and detect diabetic macular ischemia or degeneration. Diabetic macular ischemia was defined as the observation of enlarged, irregular foveal avascular zone with widened spaces between macular capillaries. Best-corrected visual acuity (BCVA) was measured using the Landolt C acuity chart in a masked fashion and converted to logarithm of minimal angle of resolution (logMAR) scale.

**Intervention**

All patients underwent standard PPV under local anesthesia. Vitreectomy was conducted using a 25- or 23-guage three-port system. Phacoemulsification and aspiration (PEA) were performed simultaneously in eyes with cataract, and an acrylic foldable intraocular lens (IOL) was placed in the capsular bag. PPV was performed with intravitreal injection of triamcinolone acetonide to visualize the vitreous gel and vitreoretinal adhesions. The posterior hyaloid was separated from the optic disc by suction from the vitreous cutter in eyes with no posterior vitreous detachment (PVD). Posterior hyaloid remaining on the surface of the macula and ERM were removed during surgery, if present. When an attempt was made to peel the internal limiting membrane (ILM), the ILM was stained with brilliant blue G. The vitreous body was removed as far as the vitreous base under scleral depression. Endolaser was applied to cases of severe nonproliferative as well as proliferative diabetic retinopathy, but no eyes underwent photocoagulation to the macula during surgery.

**Additional Treatment for Diabetic Macular Edema**

Within the follow-up period after surgery, no intravitreal anti-VEGF antibody or corticosteroid injection, and no grid laser photocoagulation were applied.

**Clinical Data Analysis**

Preoperative, intraoperative, and postoperative data were collected for each patient. Preoperative data at the time of surgery included age; sex; body height; duration and status of diabetes mellitus (hemoglobin [HbA1c]); other systemic diseases, such as hypertension and hyperglycemia; renal status (serum creatinine); and ophthalmic factors, including BCVA (logMAR), lens status, axial length, duration of macular edema, prior treatment for DME, FTH, visibility of IS/OS line, and severity of diabetic retinopathy. Intraoperative data included the number of PEA and IOL procedures, ILM peeling, presence or absence of ERM, and additional scatter photocoagulation. Postoperative data included BCVA and visibility of the IS/OS line at 12 months, and FTH at 6 and 12 months after surgery.

**Axial Length Measurement**

Axial length was measured using partial coherence interferometry (IOLMaster, software version 3.1; Carl Zeiss, Heidelberg, Germany) by experienced examiners before surgery. If a double peak was observed, the posterior peak was used for axial length measurement. Cases with signal-to-noise ratio (SNR) less than 2 were excluded from this study.
Table 3. Visual Acuity Outcomes and OCT Findings at 12 Months After Surgery

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n (%) of Eyes, or Median (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postoperative BCVA, logMAR</td>
<td>0.4 (0–1.5)</td>
</tr>
<tr>
<td>BCVA improvement by 3 lines or more</td>
<td>19 (37)</td>
</tr>
<tr>
<td>Postoperative FTH, μm</td>
<td>294 (192–862)</td>
</tr>
<tr>
<td>IS/OS, +/−</td>
<td>35/16 (69/31)</td>
</tr>
</tbody>
</table>

Statistical Analysis

Clinical data, including axial length, are expressed as median (range). To evaluate the association of postoperative BCVA with other clinical data described above, patients were divided into two groups by the median logMAR at 12 months after surgery. Wilcoxon rank sum test and χ² test (Fisher exact test if n < 5) were used to compare visual acuity outcome and other clinical data between two groups. Multivariate logistic regression analyses were performed to identify the independent preoperative factors related to postoperative BCVA. A P value less than 0.05 was considered statistically significant. All analyses were performed using JMP statistical analysis software, version 5.01J (SAS Institute, Cary, NC), and MedCalc statistical analysis software, version 11.6 (MedCalc Institute, Ostend, Belgium).

RESULTS

Baseline Characteristics

Patient demographics and baseline ocular findings are summarized in Table 1. A total of 51 eyes of 41 diabetic patients (24 men and 17 women) undergoing vitrectomy for DME were studied. Their median age was 62 years (range, 40–76), median body height was 161.5 cm (range, 141.5–179.9). The median duration of diabetes was 14.4 years (range, 8.1–26.2), and median hemoglobin A₁c (HbA₁c) level was 6.6% (range, 5.2–10.1). The median baseline BCVA was 0.69 logMAR units (range, 0.22–1.22), the median FTH was 557.0 μm (range, 359–1039). The IS/OS line was visible in the fovea of 25 eyes (49%; IS/OS [+]), whereas the line was completely invisible in 26 eyes (51%; IS/OS [−]). Complete PVD with a Weiss ring was observed in 19 eyes (37%). Prior treatments for DME had been performed in 24 eyes (48%), including focal laser photocoagulation in 14 eyes (28%), intravitreal anti-VEGF antibody injection in 8 eyes (16%), and peribulbar triamcinolone injection in 5 eyes (10%). The median duration of DME was 14 months (range, 3–36).

Table 4. BCVA at 12 Months After Surgery and Clinical Data

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Postoperative BCVA logMAR &lt; 0.4, n = 27</th>
<th>Postoperative BCVA logMAR &gt; 0.4, n = 24</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex, male</td>
<td>18 (67)</td>
<td>11 (46)</td>
<td>0.133</td>
</tr>
<tr>
<td>Age, y</td>
<td>63 (40–75)</td>
<td>60 (46–76)</td>
<td>0.955</td>
</tr>
<tr>
<td>Body height, cm</td>
<td>161.8 (141.5–179.9)</td>
<td>159.8 (141.5–172.0)</td>
<td>0.121</td>
</tr>
<tr>
<td>HbA₁c, %</td>
<td>6.6 (5.2–10.1)</td>
<td>6.8 (5.6–9.0)</td>
<td>0.962</td>
</tr>
<tr>
<td>Hypertension</td>
<td>17 (63)</td>
<td>15 (63)</td>
<td>0.863</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>11 (41)</td>
<td>16 (67)</td>
<td>0.040</td>
</tr>
<tr>
<td>Serum creatinine, mg/dL</td>
<td>0.75 (0.48–5.33)</td>
<td>0.75 (0.47–2.11)</td>
<td>0.535</td>
</tr>
<tr>
<td>Axial length, mm</td>
<td>23.51 (22.30–26.10)</td>
<td>23.02 (22.10–24.65)</td>
<td>0.017</td>
</tr>
<tr>
<td>FTH at baseline, μm</td>
<td>543 (359–1039)</td>
<td>615 (369–825)</td>
<td>0.115</td>
</tr>
<tr>
<td>IS/OS (+) at baseline</td>
<td>16 (59)</td>
<td>9 (38)</td>
<td>0.119</td>
</tr>
<tr>
<td>IS/OS (+) at 12 months after surgery</td>
<td>24 (89)</td>
<td>11 (46)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>25-gauge system</td>
<td>6 (46)</td>
<td>7 (54)</td>
<td>0.570</td>
</tr>
<tr>
<td>Posterior vitreous detachment</td>
<td>9 (33)</td>
<td>10 (42)</td>
<td>0.559</td>
</tr>
<tr>
<td>Prior focal macular photocoagulation</td>
<td>7 (26)</td>
<td>7 (29)</td>
<td>0.724</td>
</tr>
<tr>
<td>PDR</td>
<td>6 (22)</td>
<td>11 (33)</td>
<td>0.072</td>
</tr>
<tr>
<td>Severe non-PDR</td>
<td>13 (48)</td>
<td>11 (45)</td>
<td>0.869</td>
</tr>
<tr>
<td>Duration of DME, mo</td>
<td>14 (4–36)</td>
<td>14 (3–36)</td>
<td>0.709</td>
</tr>
<tr>
<td>Epiretinal membrane peeling</td>
<td>4 (15)</td>
<td>2 (8)</td>
<td>0.469</td>
</tr>
<tr>
<td>Internal limiting membrane peeling</td>
<td>22 (81)</td>
<td>22 (92)</td>
<td>0.283</td>
</tr>
<tr>
<td>Additional scatter photocoagulation</td>
<td>17 (63)</td>
<td>20 (83)</td>
<td>0.104</td>
</tr>
</tbody>
</table>

Data are expressed as number (%) of eyes, or median (range).
Postoperative Visual Acuity Outcome and Morphological Change of Macula

Visual acuity and OCT findings at 12 months after surgery are summarized in Table 3. The median BCVA at 12 months after surgery was 0.4 logMAR units (range, 0–1.5), which had improved significantly compared with baseline ($P < 0.0001$). The BCVA at 12 months after surgery improved by three lines or more in 19 eyes (37%), was unchanged in 28 eyes (59%), and decreased in 4 eyes (4%). The median FTHs at 6 and 12 months after surgery were 353 μm (170–741) and 294 μm (192–862), respectively, and were reduced significantly compared with baseline ($P < 0.0001$ and $P < 0.0001$). The median FTH reduction from baseline was 186 μm (–226 to 645) at 6 months, and 231 μm (–271 to 695) at 12 months. The IS/OS line was visible in the fovea of 35 eyes (69%; IS/OS [+] ) at 12 months after surgery, whereas the line was completely invisible in 16 eyes (31%; IS/OS [–]). The number of IS/OS (+) eyes at 12 months after surgery increased significantly compared with baseline ($P = 0.0182$).

Relation of Visual Acuity Outcome With Clinical Data

The relationship of BCVA at 12 months after surgery with various clinical data is summarized in Table 4. The cases were divided into two groups by the median BCVA at 12 months after surgery (logMAR 0.4 units). Eyes with postoperative BCVA logMAR less than 0.4 (BCVA < 0.4 group) and eyes with logMAR greater than 0.4 (BCVA > 0.4 group) were compared with respect to axial length and other clinical data. Axial length was significantly longer ($P = 0.017$) in the BCVA < 0.4 group (median, 23.51 mm; range, 22.30–26.10) than in the BCVA > 0.4 group (median, 23.02; range, 22.10–24.65) (Fig. 1). A weak but significant negative correlation was observed between BCVA (logMAR) at 12 months after surgery and axial length ($n = 51$, $r = -0.35$, $P = 0.012$). The prevalence of hyperlipidemia differed significantly between the two groups (41% vs. 67%, $P = 0.040$). The number of IS/OS (+) eyes at 12 months after surgery differed significantly between the two groups (89% vs. 46%, $P < 0.001$).

Logistic regression analyses were performed to identify preoperative risk factors in eyes with poor postoperative visual acuity (logMAR > 0.4) (Table 5). The result of univariate logistic regression analysis showed that preoperative logMAR (odds ratio: 65.2, $P < 0.001$), axial length (odds ratio: 0.4, $P = 0.006$), and hyperlipidemia (odds ratio: 4.0, $P = 0.039$) were significant factors for visual acuity outcome after PPV for DME. Next, multivariate analysis using stepwise method was performed using axial length and other preoperative clinical factors potentially related to postoperative BCVA after PPV (preoperative logMAR, hyperlipidemia, FTH, IS/OS [–] on OCT, and proliferative diabetic retinopathy [PDR]) as independent variables. The result of multivariate logistic regression analysis showed that short axial length (odds ratio: 0.3, $P = 0.009$), preoperative poor BCVA (odds ratio: 75.2, $P = 0.008$), and presence of hyperlipidemia (odds ratio: 10.7, $P = 0.007$) increased the risk of poor visual acuity outcome after PPV for DME secondary to diabetic retinopathy.

Relation of OCT Findings After Surgery With Clinical Data

The relationship of visibility of the IS/OS line at 12 months after surgery with various clinical data was evaluated. The IS/OS (–) group ($n = 16$) and the IS/OS (+) group ($n = 35$) were compared with respect to axial length and other clinical data. The median axial length in IS/OS (–) group (23.02 mm [range, 22.13–24.65]) was significantly shorter ($P = 0.039$) than that in the IS/OS (+) group (23.54 mm [range, 22.39–26.10]). The preoperative median BCVA (logMAR units) in the IS/OS (–) group (1.0 [range, 0.39–1.22]) was significantly higher ($P = 0.001$) than that in the IS/OS (+) group (0.55 [range, 0.22–1.10]). The preoperative median FTH in the IS/OS (–) group
patients with good baseline vision, our study also found a significant correlation between axial length and visual outcome in eyes with axial length below 23.5 mm. The median decrease in FTH at 6 months after surgery was 238.9 μm (range, 179 to 645) in eyes with axial length below 23.5 mm (n = 22), and it was 147 μm (range, 226 to 576) in eyes with axial length over 23.5 mm (n = 29), with a significant difference between the two groups (P = 0.018; Fig. 2). At 12 months after surgery, however, no significant difference in FTH reduction was observed between the two groups.

**DISCUSSION**

Many previous studies have analyzed the factors associated with visual outcomes after vitrectomy for DME. However, to the best of our knowledge, the present study is the first that analyzed the relationship between axial length and visual outcome and demonstrated a correlation between the two. This article reports that longer axial length predicts better postoperative BCVA after vitrectomy for nontractional macular edema secondary to diabetic retinopathy. Consistent with many reports showing better postoperative visual acuity in patients with good baseline vision, our study also identified baseline visual acuity as an independent factor predicting postoperative visual outcome. ERM peeling and eyes with signs of vitreomacular traction are other factors reported to be associated with good postoperative visual acuity, whereas prior focal or grid macular laser is a factor significantly related to unfavorable postoperative visual outcome. However, in our present study, ERM peeling and prior focal or grid macular laser was not significantly associated with postoperative visual acuity. A probable reason for the discrepancies in these reports is that the macular abnormalities of patients included in these studies differed to some extent. Among these reports, some included cases complicated by vitreomacular traction syndrome, whereas others excluded these cases and one study included cases with concomitant ERM whereas another excluded them. In the present study, 12% of our DME cases had ERM but patients with VMT were excluded. These baseline characteristics should be taken into consideration when interpreting the results.

**Myopic foveoschisis** is a macular complication of high myopia, and in these patients, vitrectomy and ILM peeling also improve visual acuity. Thus, myopic foveoschisis may be an important confounding factor for the present study. The OCT characteristics of myopic foveoschisis are a marked increase in thickness of the retina in the posterior pole area, outer retinoschisis with intraretinal columns, and inner retinoschisis. Furthermore, almost all cases have posterior staphyloma and the axial length is very long with a mean of 29 mm. None of our patients had these characteristics. Therefore, myopic foveoschisis can be excluded as a factor that contributes to the favorable visual outcome after surgery observed in our patients.

We used partial coherence interferometry (IOLMaster) to measure axial length of all the eyes in the present study. Two reports confirm the accuracy of using partial coherence interferometry to measure axial length in eyes with macular edema, suggesting that IOLMaster is superior to A-scan ultrasonography in measuring axial length in eyes with macular edema and reducing postoperative refractive errors. A
double peak was observed in 4 eyes (8%) in the present study, and we used the posterior peak to calculate axial length. Kojima and colleagues\textsuperscript{10} reported that when the posterior peak of the double peak was used in IOL calculation, 92% of eyes after IOL implantation were corrected within \pm 1.0 diopter of the postoperative refractive error. Therefore, the axial length is not likely to be affected by macular edema, and the present results have high reliability.

Our results showed that median axial length in eyes with a visible IS/OS line after surgery was significantly longer than that in eyes without a visible IS/OS line. And multivariate logistic regression analysis showed that short axial length increased the risk of poor integrity of the IS/OS line after PPV for DME. Moreover, a significant decrease in FTH at 6 months was found in eyes with an axial length more than 23.5 mm compared with eyes with axial length less than 23.5 mm. These results suggest that compared with eyes with shorter axial length, eyes with longer axial length show early improvement of macular edema after surgery and consequently milder photoreceptor dysfunction, which may explain the better visual outcome after vitrectomy for DME. Myopia has been suggested to have a protective effect against diabetic retinopathy.\textsuperscript{6–8,19,20} Population-based, cross-sectional studies in persons with diabetes showed that myopic refraction and longer axial length were associated with a lower risk of diabetic retinopathy.\textsuperscript{6–8,19,20} Therefore, among eyes with diabetic retinopathy, those with longer axial length are less susceptible to develop DME, and even if DME occurs, vitrectomy results in early improvement of macular edema with a high probability of recovering visual acuity. However, the present study provides no physiological evidence for the mechanism by which axial length affects the visual outcome after vitrectomy for DME.

A past study in our department demonstrated that short axial length is significantly associated with more advanced proliferative diabetic retinopathy and a higher incidence of early vitreous hemorrhage after PPV, and also revealed a significant negative correlation between aqueous humor VEGF concentrations and axial length in eyes with proliferative diabetic retinopathy.\textsuperscript{21} Diabetic eyes with shorter axial length tend to have higher intraocular fluid VEGF concentration. Therefore, assuming that VEGF continues to be overexpressed after surgery, some VEGF-induced effects may render eyes with short axial length more susceptible to prolonged macular edema, resulting in dysfunction of outer retinal layers and poor visual outcome after PPV for DME. On the other hand, diabetic eyes with long axial length have low basal VEGF production, and the intraocular VEGF concentration is further reduced after vitrectomy,\textsuperscript{22} which may account for the early disappearance of macular edema.

In diabetic subjects, retinal blood flow increases with increasing severity of diabetic retinopathy, subsequently increasing retinal capillary pressure. This increased pressure may cause macular edema.\textsuperscript{23–25} Several reports have demonstrated that ocular blood flow decreases as axial length increases.\textsuperscript{26–28} and some reports speculated that the protective effect of increased axial dimension on diabetic retinopathy and DME could partially be due to reduced blood flow with axial elongation.\textsuperscript{6–8} Thus, it has been hypothesized that the decrease in blood flow with increasing axial length plays a major role in this protective effect. Quigely and Cohen\textsuperscript{29} postulated that elongation of the globe causes stretching and thinning of vessels, which reduces blood flow and consequently lowers the pressure exerted on vessel walls, thus providing a protective effect on diabetic retinopathy. Furthermore, Krepler and colleagues\textsuperscript{30} suggested that vitrectomy induces significant reduction in ocular blood flow in patients with diabetic retinopathy. From these past reports and current results, it is possible that in DME cases, reduction in ocular blood flow after vitrectomy occurs earlier in eyes with longer axial length than in those with shorter axial length, and this phenomenon may promote early resorption of macular edema, minimizing dysfunction of photoreceptors, resulting in favorable postoperative visual outcome. Therefore, future studies should measure ocular blood flow after vitrectomy for DME, analyze its relationship with axial length and postoperative visual acuity.
visual acuity. In addition, because eyes with short axial length are at risk of delayed resorption of macular edema, it may be necessary to consider active postoperative treatments such as intravitreal triamcinolone injection and intravitreal injection of anti-VEGF agents in these eyes.

In conclusion, longer axial length predicts better postoperative VA after PPV for non tractional DME secondary to diabetic retinopathy. Earlier reduction of foveal thickness and preservation of the integrity of the IS/OS line are found in eyes with longer axial length, which may result in favorable visual outcome. Further research is needed to elucidate the mechanism by which axial length affects visual outcome after PPV for DME. In addition, ophthalmologists should take the axial length into account when assessing the visual prognosis of PPV for DME.

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References


