Electronic Supplementary Materials

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Materials and Methods

Patients

Patients with POAG who underwent canaloplasty at the Eye Hospital of Wenzhou Medical University between October 2015 and February 2021 were enrolled. Inclusion criteria were: (1) POAG, diagnosed based on gonioscopically open angles, abnormal visual field results, and corresponding glaucomatous optic disc changes (neuroretinal rim thinning or glaucomatous retinal nerve-fiber layer defects) on slit lamp examination or optical coherence tomography (OCT), (2) patients with POAG indicated for canaloplasty due to insufficient IOP control with the maximum tolerated medical therapy (defined as IOP >21 mmHg despite the use of ≥2 anti-glaucoma medications or insufficient IOP control with tolerated drops in use); (3) successfully completed canaloplasty with 360° catheterization; (4) regular follow-up records for a period ≥1 year. The exclusion criteria were: history of (1) ocular trauma; (2) severe respiratory, cardiovascular, or other systemic diseases; (3) persistent postoperative IOP elevation for ≥3 months, that was considered as failure of surgery; and (4) unreliable or incomplete data of the 1-year follow-up records.

Preoperative examinations

All patients underwent a comprehensive ophthalmological examination within 1 week before surgery, which included a review of the medical history, best-corrected visual acuity (BCVA, decimal), IOP measurement using Goldmann applanation tonometry (Haag-Streit, Koenitz, Switzerland), slit lamp biomicroscopy, gonioscopy, non-mydriatic fundus photography, ultrasound biomicroscopy (Aviso, Quantel Medical, Cournon d'Auvergne, France), axial length (AL) measurement using IOL Master (Carl-Zeiss Meditec) and retinal nerve-fiber layer thickness evaluation using OCT (Cirrus HD-OCT 5000, Carl-Zeiss Meditec AG, Jena, Germany). Humphrey 24-2 visual field test (Humphrey Field Analyzer 750i, Carl-Zeiss Meditec AG, California, USA) was used at baseline to stage POAG into mild, moderate, or severe according to the Hodapp–Anderson–Parrish criteria(Wang, Shen and Pasquale *et al.*, 2020). The following data were also

collected: preoperative IOP (including baseline IOP, maximum IOP within 1 month before surgery, and the highest recorded IOP value).

Surgical technique and postoperative evaluation

All participants underwent canaloplasty (without phacoemulsification), performed by Dr. YB Liang using a standardized technique(Koerber, 2012; Brusini, Caramello and Benedetti *et al.*, 2016). Postoperatively, all patients were treated with levofloxacin and dexamethasone eye drops four times daily for 2–4 weeks. The following data were collected at each postoperative visit (1 day, 1 week, 1 month, 3 months, 6 months, 1 year, and the last visit): IOP, BCVA, and number of anti-glaucoma medications. Early transient IOP elevation was defined as an IOP >21 mmHg that decreased to ≤21 mmHg within 1 week to 3 months postoperatively. The duration of postoperative IOP elevation was recorded. The lowest recorded IOP value during the first postoperative week ($IOP_{min\text{-}1w}$; usually measured on Days 0, 1, 2, and 7) was collected. Patients were divided into subgroups with normal IOP (NIOP) and high IOP (HIOP) based on the presence of early transient IOP elevation. Surgical success was defined as postoperative 5<IOP≤21 mmHg at each postoperative visit with (qualified success) or without (complete success) the use of anti-glaucoma medication and without additional surgical therapy.

Statistical analysis

All statistical analyses were performed using the SPSS software (version 22.0; IBM Corp., Armonk, NY, USA). Normally distributed continuous measures are summarized as mean ± standard deviation, and categorical factors are summarized as percentages. Non-normally distributed continuous data are expressed as median values. The continuous measures, differences in IOP and decimal visual acuity, at baseline and at each postoperative visit were compared using the paired *t*-test, and differences in the number of anti-glaucoma medications at baseline and at each postoperative visit were compared using the non-parametric Wilcoxon matched-pairs signed rank test. Student's *t*-test (continuous data) or χ^2 test (categorical data) was used to compare variable differences between the NIOP and HIOP groups. Pearson's and Kendall's correlation coefficients were used to determine

the associations between parameters. Linear logistic regression analysis was used to evaluate risk factors associated with HIOP in all cases. Statistically significance was set at $P \leq 0.05$.

References

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