

doi: 10.13241/j.cnki.pmb.2020.13.035

超声乳化联合不同术式对青光眼合并白内障患者视力、血流动力学及生活质量的影响 *

唐彦慧 彭子春 胡品章 唐琪 凌宇

(南宁市第一人民医院眼科 广西南宁 530022)

摘要 目的:探讨超声乳化联合不同术式对青光眼合并白内障患者视力、血流动力学及生活质量的影响。**方法:**回顾性分析 2015 年 1 月~2019 年 8 月期间我院收治的青光眼合并白内障患者 56 例(66 眼)的临床资料,根据手术方式的不同分为 A 组($n=27$,超声乳化联合小梁切除术)和 B 组($n=29$,超声乳化联合房角分离手术),比较两组患者视力、眼压、血流动力学及生活质量情况,统计两组并发症发生情况。**结果:**两组术后 1 个月、术后 3 个月、术后 6 个月视功能指数表(VF-14)评分呈升高趋势,且 B 组高于 A 组($P<0.05$)。两组患者术后 1 个月、3 个月、6 个月视力呈先升高后降低,且术后 1 个月、3 个月、6 个月均高于术前($P<0.05$),B 组术后 3 个月、术后 6 个月视力均高于 A 组($P<0.05$);两组患者术后 1 个月~术后 6 个月眼压均呈不断下降趋势,且 B 组低于 A 组($P<0.05$)。两组术后 6 个月舒张末期流速(EDV)、收缩期峰值流速(PSV)均升高,且 B 组高于 A 组($P<0.05$);阻力指数(RI)均降低,且 B 组低于 A 组($P<0.05$)。两组并发症发生率比较差异无统计学意义($P>0.05$)。**结论:**与超声乳化联合小梁切除术相比,超声乳化联合房角分离手术治疗青光眼合并白内障患者,在改善患者视力、眼压、血流动力学及生活质量方面效果较佳,且不增加并发症发生率。

关键词:超声乳化;房角分离手术;小梁切除术;青光眼合并白内障;视力;血流动力学;生活质量

中图分类号:R775;R776 **文献标识码:**A **文章编号:**1673-6273(2020)13-2564-04

The Effect of Phacoemulsification Combined with Different Operation Methods on Vision, Hemodynamics and Quality of Life of Glaucoma Patients with Cataract*

TANG Yan-hui, PENG Zi-chun, HU Pin-zhang, TANG Qi, LING Yu

(Department of Ophthalmology, Nanning First People's Hospital, Nanning, Guangxi, 530022, China)

ABSTRACT Objective: To investigate the effect of phacoemulsification combined with different surgical methods on vision, hemodynamics and quality of life in patients with glaucoma and cataract. **Methods:** The clinical data of 56 patients (66 eyes) with glaucoma and cataract who were admitted to our hospital from January 2015 to August 2019 were analyzed retrospectively. According to the different operation methods, they were divided into two groups: group A ($n=27$, phacoemulsification combined with trabeculectomy) and group B ($n=29$, phacoemulsification combined with angle separation). The visual acuity, intraocular pressure, hemodynamics and quality of life of the two groups were compared. The complications of the two groups were counted. **Results:** The visual function index (VF-14) of the two groups increased in 1 month after operation, 3 months after operation and 6 months after operation, and group B was higher than group A ($P<0.05$). The visual acuity of the two groups increased first and then decreased at 1, 3 and 6 months after operation, and it was higher at 1, 3 and 6 months after operation than that before operation ($P<0.05$). The visual acuity of group B was higher at 3 and 6 months after operation than that of group A ($P<0.05$). The intraocular pressure of the two groups decreased continuously from 1 month to 6 months after operation, and group B was lower than that of group A ($P<0.05$). The end diastolic velocity (EDV) and peak systolic velocity (PSV) in group B were higher than that in group A ($P<0.05$), and the resistance index (RI) was lower in group B than that in group A ($P<0.05$). There was no significant difference in the incidence of complications between the two groups ($P>0.05$). **Conclusion:** Compared with phacoemulsification combined with trabeculectomy, phacoemulsification combined with angle separation is better in improving vision, intraocular pressure, hemodynamics and quality of life of patients with glaucoma combined with cataract, and does not increase the incidence of complications.

Key words: Phacoemulsification; Angle separation surgery; Trabeculectomy; Glaucoma with cataract; Vision; Hemodynamics; Quality of life

Chinese Library Classification(CLC): R775; R776 **Document code:** A

Article ID: 1673-6273(2020)13-2564-04

* 基金项目:广西壮族自治区卫生科技研究计划项目(桂卫 Z2010360);南宁市科技攻关项目(20153332)

作者简介:唐彦慧(1971-),女,硕士,副主任医师,研究方向:白内障、青光眼及眼整形,E-mail: 181741460321@126.com

(收稿日期:2020-02-19 接受日期:2020-03-13)

前言

白内障、青光眼均为常见眼科疾病,其中白内障以晶状体浑浊为主要特征,而青光眼的发生则与瞳孔阻滞密切相关,均为致盲性眼病^[1-2]。白内障、青光眼可相互影响,且可同时发生,增加治疗难度^[3]。手术是治疗此类患者的有效手段。超声乳化联合小梁切除术是临床治疗青光眼合并白内障患者的常用术式,但超声乳化联合小梁切除术后容易发生一些严重并发症,继而影响患者预后^[4-6]。而超声乳化联合房角分离手术为新术式,疗效确切,但关于其疗效尚存在一定的争议^[7]。本研究通过探讨超声乳化联合不同术式对青光眼合并白内障患者视力、血流动力学及生活质量的影响,以期为临床治疗提供参考。

1 资料与方法

1.1 一般资料

回顾性分析 2015 年 1 月~2019 年 8 月期间我院收治的青光眼合并白内障患者 56 例(66 眼)的临床资料,纳入标准:(1)均符合青光眼诊断标准,且白内障核硬度(Emery-Little 分级)为 II~III 级^[8];(2)均具备手术指征;(3)临床资料完整,均完成随访。排除标准:(1)合并角膜病变、眼底出血等其他眼部病变者;(2)合并全身感染者;(3)合并心肝肾等重要脏器功能不全者;(4)既往有眼部外伤史或其他眼部手术史者;(5)血糖控制不良的糖尿病患者;(6)术中发生严重并发症者。根据手术方式的不同分为 A 组($n=27$,超声乳化联合小梁切除术,32 眼)和 B 组($n=29$,超声乳化联合房角分离手术,34 眼),其中 A 组男 9 例(11 眼),女 18 例(21 眼),年龄 40~86 岁,平均(68.49 ± 4.26)岁;病程 4h~90d,平均(42.65 ± 5.61)d;粘连性房角闭合 $180^\circ \sim 270^\circ$ 15 眼, $90^\circ \sim 180^\circ$ 17 眼。B 组男 7 例(8 眼),女 22 例(26 眼),年龄 42~81 岁,平均(67.51 ± 5.28)岁;病程 8h~87d,平均(41.24 ± 6.95)d;粘连性房角闭合 $180^\circ \sim 270^\circ$ 15 眼, $90^\circ \sim 180^\circ$ 19 眼。两组一般资料对比无差异($P>0.05$),均衡可比。

1.2 方法

两组患者术前均接受裂隙灯、视力、眼压、前房角镜等检查。在此基础上,B 组给予超声乳化联合房角分离手术治疗,具体如下:患者呈仰卧状,常规消毒铺巾、麻醉,在 3 点方向行透明角膜缘辅助切口,对颞上象限行透明角膜切口,大小 3 mm 左右,往前房注入黏弹剂,对前囊膜进行连续环形撕囊,分离晶

状体皮质和核水,对晶状体核进行劈核乳化,将皮质吸出。皮质彻底抽吸后将黏弹剂注入虹膜根部,在囊袋内置入折叠人工晶状体,最后吸出前房粘弹剂。I/A 头进入前房,慢慢靠近周围房角,使用灌注液冲刷房角,术前粘连严重者可对周边虹膜吸引牵拉,以分离房角。随后清理残余黏弹剂,术后采用妥布霉素地塞米松眼膏(国药准字 H20020496,齐鲁制药有限公司,规格:3 g:妥布霉素 9 mg;地塞米松 3 mg)涂患眼,无菌包扎;A 组给予超声乳化联合小梁切除术,具体如下:患者呈仰卧状,常规消毒铺巾、麻醉,于 11 点方向做透明角膜切口, 15° 穿刺刀做辅助切口。黏弹剂注入前房,连续环形撕囊,超声乳化操作同 B 组。人工晶状体植入后对残留黏弹剂清理,由侧切口调整前房深度,卡巴胆碱(山东博士伦福瑞达制药有限公司,国药准字 H10950174,规格:1 mL:0.1 mg)注入以缩瞳,切除 1.5~2.0 mm 长的小梁组织及虹膜周边切除。术后采用妥布霉素地塞米松眼膏涂患眼,无菌包扎。

1.3 观察指标

两组患者术后均采用门诊复查的形式随访 6 个月,记录两组患者术前、术后 1 个月、术后 3 个月、术后 6 个月的视力、眼压情况。于术前、术后 1 个月、术后 3 个月、术后 6 个月采用视功能指数量表(Visual function index scale, VF-14)^[9]评价患者生活质量。VF-14 包括看标识牌、读书看报、做精细活、娱乐活动、看电视、看大小字体、体育活动、看清楼梯等方面,分数越高,生活质量越高。记录两组术后并发症发生情况。于术前、术后 6 个月通过 HP Image Point 超声多普勒彩色血流图测定患者眼动脉血流动力学指标,包括舒张末期流速(End diastolic velocity, EDV)、收缩期峰值流速(Peak systolic velocity, PSV)及阻力指数(Resistance index, RI)。

1.4 统计学方法

使用 SPSS25.0 软件进行统计学分析,计量资料以($\bar{x} \pm s$)表示,实施 t 检验,计数资料以比或率表示,实施卡方检验, $P<0.05$ 为差异有统计学意义。

2 结果

2.1 两组生活质量比较

两组术前 VF-14 评分比较差异无统计学意义($P>0.05$);两组术后 1 个月、术后 3 个月、术后 6 个月 VF-14 评分呈升高趋势,且 B 组高于 A 组($P<0.05$);详见表 1。

表 1 两组生活质量比较($\bar{x} \pm s$, 分)

Table 1 Comparison of quality of life between the two groups($\bar{x} \pm s$, score)

Groups	Before operation	1 month after operation	3 months after operation	6 months after operation
Group A ($n=27$)	27.16 $\pm$ 3.39	35.54 $\pm$ 4.31a	47.53 $\pm$ 5.48ab	58.28 $\pm$ 4.20abc
Group B ($n=29$)	27.08 $\pm$ 2.84	43.83 $\pm$ 3.27a	56.62 $\pm$ 5.36ab	69.34 $\pm$ 6.05abc
t	0.096	8.144	6.273	7.890
P	0.924	0.000	0.000	0.000

Note: compared with before operation, ^a $P<0.05$; compared with 1 month after operation, ^b $P<0.05$; compared with 3 month after operation, ^c $P<0.05$.

2.2 两组视力、眼压比较

两组术前视力、眼压比较差异无统计学意义($P>0.05$);两组患者术后 1 个月、3 个月、6 个月视力呈先升高后降低,且术后 1 个月、3 个月、6 个月均高于术前 ($P<0.05$),B 组术后 3 个

月、术后 6 个月视力高于 A 组($P<0.05$);两组患者术后 1 个月、术后 3 个月、术后 6 个月眼压呈不断下降趋势,且 B 组低于 A 组($P<0.05$);详见表 2。

表 2 两组视力、眼压比较 ($\bar{x} \pm s$)

Table 2 Comparison of vision and intraocular pressure between the two groups ($\bar{x} \pm s$)

Groups	Vision(°)				Intraocular pressure(mmHg)			
	Before operation	1 month after operation	3 months after operation	6 months after operation	Before operation	1 month after operation	3 months after operation	6 months after operation
Group A (n=27)	0.38± 0.07	1.19± 0.18 ^a	0.87± 0.15 ^{ab}	0.83± 0.16 ^{ab}	44.97± 4.21	40.06± 4.37 ^a	34.68± 4.16 ^{ab}	29.43± 4.51 ^{abc}
Group B(n=29)	0.36± 0.06	1.22± 0.24 ^a	1.15± 0.21 ^{ab}	1.12± 0.18 ^{ab}	44.91± 3.96	34.92± 4.25 ^a	28.91± 4.79 ^{ab}	23.76± 5.47 ^{abc}
t	1.150	0.526	5.703	6.354	0.055	4.461	4.797	4.214
P	0.255	0.601	0.000	0.000	0.956	0.000	0.000	0.000

Note: compared with before operation, ^a $P<0.05$; compared with 1 month after operation, ^b $P<0.05$; compared with 3 month after operation, ^c $P<0.05$.

2.3 两组血流动力学指标比较

两组术前 EDV、RI、PSV 比较差异均无统计学意义 ($P>0.05$);

两组术后 6 个月 EDV、PSV 均升高, 且 B 组高于 A 组

($P<0.05$); RI 均降低, 且 B 组低于 A 组 ($P<0.05$); 详见表 3。

表 3 两组血流动力学指标比较($\bar{x} \pm s$)

Table 3 Comparison of hemodynamic indexes between the two groups($\bar{x} \pm s$)

Groups	EDV(cm/s)		PSV(cm/s)		RI	
	Before operation	6 months after operation	Before operation	6 months after operation	Before operation	6 months after operation
Group A (n=27)	3.31± 0.29	3.89± 0.22 ^a	8.17± 1.18	10.52± 1.32 ^a	0.72± 0.06	0.64± 0.05 ^a
Group B(n=29)	3.36± 0.35	4.41± 0.31 ^a	8.25± 1.26	13.08± 1.21 ^a	0.74± 0.08	0.58± 0.06 ^a
t	0.580	7.190	0.245	7.527	1.052	4.049
P	0.565	0.000	0.808	0.000	0.297	0.000

Note: compared with before operation, ^a $P<0.05$.

2.4 两组并发症比较

A 组出现前房出血 1 例、低眼压性黄斑水肿 1 例、低眼压 2 例, 并发症发生率为 14.81%(4/27); B 组出现低眼压性黄斑水肿 1 例、前房出血 1 例, 并发症发生率为 6.90%(2/29); 两组并发症发生率比较差异无统计学意义 ($\chi^2=0.916, P=0.338$)。

3 讨论

青光眼合并白内障的发病机制复杂, 青光眼好发于老年群体, 而老年群体存在小角膜、晶状体较厚、短眼轴等解剖特点, 且晶状体厚度随年龄增加而增加, 逐渐浑浊、增厚(易形成白内障), 晶状体所占空间大, 房水自后房流往前房的阻力增加甚至房水流通道关闭, 眼压升高, 引发青光眼合并白内障^[10-12]。现理论上针对青光眼合并白内障的治疗应采取分开式手术治疗, 先治疗青光眼, 再治疗白内障。但此类高频率的手术方式会极大的增加患者的经济与精神压力, 故采用超声乳化联合小梁切除术或者房角分离手术相比单一的治疗方法更为有效且可缓解患者各方面压力^[13-15]。超声乳化吸除指的是通过 1.0 mm 人工晶状体对 5.5 mm 左右人眼晶状体进行代替, 可有效促进患者视力恢复^[16,17]。小梁切除术是治疗青光眼的常用术式, 可有效控制眼压, 但该手术存在较多并发症, 甚至可发生角膜内皮失代偿、恶性青光眼等严重并发症^[18]。房角分离手术为一种重建性手术, 可通过分离青光眼患者周边粘连的房角, 进而重建周边房角的正常结构, 继而恢复小梁网滤过功能, 其已成为一种切实可行的治疗青光眼合并白内障患者的方法^[19,20]。

本次研究结果显示, B 组的眼压、视力改善情况均优于 A

组, 提示与超声乳化联合小梁切除术相比, 超声乳化联合房角分离手术可更好的改善青光眼合并白内障患者的视力、眼压。这可能是由于超声乳化手术可开放关闭的房角, 将小梁网暴露出来, 便于房水流出, 可从发病机制上阻断青光眼的发生^[21,22]; 加之房角分离手术在改善前房深度方面相比小梁切除术更有优势, 可有效改善患者视力、眼压^[23,24]。既往有研究认为^[25], 虽然眼压异常升高是青光眼合并白内障发生的主要原因, 但血流动力学变化在视力损伤的进程中亦发挥着重要作用。本研究结果显示超声乳化联合房角分离手术可更好的改善患者眼部血流动力学指标。分析其原因, 球动脉血液灌注与前房深度、眼压等因素有关, 而青光眼的发病则与晶状体、瞳孔阻滞等密切相关, 白内障可加快瞳孔阻滞速度, 增加房角闭合风险; 通过房角分离术可分开房角, 减轻房角粘连情况, 同时, 灌注液对小梁网的冲洗, 可保持小梁滤过功能, 有利于降低眼压及房水引流^[26-28]。另外, 本次研究结果还显示 B 组术后 6 个月的生活质量高于 A 组, 这可能是由于超声乳化联合房角分离手术可有效维持患者视力稳定, 阻止疾病进展, 促使患者尽快恢复以投入至正常的日常生活、工作中, 从而更易获得心理幸福感, 有效改善其生活质量^[29]。另两组并发症发生率比较差异无统计学意义, 而贺新等人研究结果则显示^[30], 超声乳化联合房角分离手术可有效减少并发症发生率。这与本次研究结果尚存在一定差异, 可能与本次纳入研究的病例过少, 且存在个体差异性, 未考察患者远期治疗效果有关, 后续报道将通过扩大样本量、延长随访时间以获取更为准确的数据。

综上所述, 与超声乳化联合小梁切除术相比, 超声乳化联

合房角分离手术治疗青光眼合并白内障患者,在改善视力、眼压、血流动力学及生活质量方面效果较佳,且不增加并发症发生率,具有一定的临床推广价值。

参考文献(References)

- [1] Daniel MC, Mohamed-Noriega J, Petchyim S, et al. Childhood Glaucoma: Long-Term Outcomes of Glaucoma Drainage Device Implantation Within the First 2 Years of Life [J]. *J Glaucoma*, 2019, 28(10): 878-883
- [2] Melo Araújo KC, Velanes Neto EC, Bassoli Scoralick AL, et al. Re: Samuelson et al. Prospective, randomized, controlled pivotal trial of an ab interno implanted trabecular micro-bypass in primary open-angle glaucoma and cataract: two-year results[J]. *Ophthalmology*, 2020, 127(2): e14-e15
- [3] Elwehidy AS, Bayoumi NHL, Badawi AE, et al. Combined phacoemulsification-viscosynechialysis-trabeculectomy vs phacotrabeculectomy in uncontrolled primary angle-closure glaucoma with cataract [J]. *J Cataract Refract Surg*, 2019, 45(12): 1738-1745
- [4] Wang Q, Jiang ZX, Liao RF. Outcomes of 1.8-3.0 mm incision phacoemulsification combined with trabeculectomy for primary angle-closure glaucoma with cataract [J]. *Int J Ophthalmol*, 2020, 13(2): 246-251
- [5] Pantalon A, Obadã O, Constantinescu D, et al. Inflammatory model in patients with primary open angle glaucoma and diabetes[J]. *Int J Ophthalmol*, 2019, 12(5): 795-801
- [6] Moghimi S, Latifi G, Zandvakil N, et al. Phacoemulsification? Versus Combined Phacoemulsification and Viscogonioplasty in Primary Angle-Closure Glaucoma: A Randomized Clinical Trial[J]. *J Glaucoma*, 2015, 24(8): 575-582
- [7] Skalicky SE, McAlinden C, Khatib T, et al. Activity Limitation in Glaucoma: Objective Assessment by the Cambridge Glaucoma Visual Function Test[J]. *Invest Ophthalmol Vis Sci*, 2016, 57(14): 6158-6166
- [8] 王科华, 夏晓波. DisCoVisc 黏弹剂与透明质酸钠在超声乳化白内障摘出术中的应用比较 [J]. *中华实验眼科杂志*, 2015, 33(4): 367-372
- [9] 刘梦珠, 孙璐, 刘琰, 等. 中文版库欣综合征患者生活质量问卷的信效度研究[J]. *护士进修杂志*, 2016, 31(6): 549-551
- [10] Tang Y, Tan J, Zhou X, et al. Modified phacoemulsification plus goniosynechialysis compared with conventional surgery for cataract and glaucoma[J]. *Exp Ther Med*, 2020, 19(1): 131-136
- [11] Hansapinyo L, Choy BNK, Lai JSM, et al. Phacoemulsification Versus Phacotrabeculectomy in Primary Angle-closure Glaucoma with Cataract: Long-Term Clinical Outcomes[J]. *J Glaucoma*, 2020, 29(1): 15-23
- [12] Xie Z, Liu H, Du M, et al. Efficacy of Ahmed Glaucoma Valve Implantation on Neovascular Glaucoma[J]. *Int J Med Sci*, 2019, 16(10): 1371-1376
- [13] Erichev VP, Kozlova IV, Kosova JV. Frequency and type of macular edema after cataract surgery in patients with glaucoma [J]. *Vestn Oftalmol*, 2019, 135(5. Vyp. 2): 241-247
- [14] Wang J, Chen J, Chen W, et al. Incidence of and Risk Factors for Suspected Glaucoma and Glaucoma After Congenital and Infantile Cataract Surgery: A Longitudinal Study in China [J]. *J Glaucoma*, 2020, 29(1): 46-52
- [15] Liu Y, Li W, Jiu X, et al. Systematic Review and Meta-Analysis of Comparing Phacoemulsification Combined with goniosynechialysis to other mainstream procedures in treating patients with angle-closure glaucoma[J]. *Medicine (Baltimore)*, 2019, 98(42): e17654
- [16] Marcos Parra MT, Salinas López JA, López Grau NS, et al. XEN implant device versus trabeculectomy, either alone or in combination with phacoemulsification, in open-angle glaucoma patients [J]. *Graefes Arch Clin Exp Ophthalmol*, 2019, 257(8): 1741-1750
- [17] Pakravan M, Afroozifar M, Yazdani S. Corneal Biomechanical Changes Following Trabeculectomy, Phaco-trabeculectomy, Ahmed Glaucoma Valve Implantation and Phacoemulsification [J]. *J Ophthalmic Vis Res*, 2014, 9(1): 7-13
- [18] Arimura S, Iwasaki K, Gozawa M, et al. Trabeculectomy followed by phacoemulsification versus trabeculectomy alone: The Collaborative Bleb-Related Infection Incidence and Treatment Study[J]. *PLoS One*, 2019, 14(10): e0223439
- [19] 高宁宁, 宋凡倩, 唐颖, 等. 超声乳化联合房角分离治疗急性闭角型青光眼的临床观察[J]. *现代生物医学进展*, 2019, 19(3): 473-476
- [20] 张思瑶, 厉君, 林利, 等. 小梁消融术联合白内障超声乳化手术和房角分离治疗原发性闭角型青光眼的初步探索[J]. *眼科*, 2019, 28(4): 285-288
- [21] Seo JH, Lee Y, Shin JH, et al. Comparison of conjunctival vascularity changes using optical coherence tomography angiography after? trabeculectomy and phacotrabeculectomy [J]. *Graefes Arch Clin Exp Ophthalmol*, 2019, 257(10): 2239-2255
- [22] Esfandiari H, Taubenslag K, Shah P, et al. Two-year data comparison of ab interno trabeculectomy and trabecular bypass stenting using exact matching[J]. *J Cataract Refract Surg*, 2019, 45(5): 608-614
- [23] 刘励, 林胤, 陈本安, 等. 原发性闭角型青光眼小梁切除术后行白内障超声乳化联合房角分离术的疗效分析 [J]. *东南国防医药*, 2017, 19(1): 51-53
- [24] 郭淑玲, 刘晓静, 李海冰, 等. 超声乳化联合房角分离治疗 PACG 合并白内障疗效分析[J]. *中国实用眼科杂志*, 2018, 36(4): 311-314
- [25] 张伽雨, 彭娜, 李磊, 等. 超乳联合房角分离或小梁切除对 PACG 合并白内障患者血流动力学的影响[J]. *国际眼科杂志*, 2019, 19(5): 749-752
- [26] 邓里, 曾军. 超声乳化白内障吸除人工晶状体植入术联合房角分离术治疗闭角型青光眼[J]. *国际眼科杂志*, 2017, 17(2): 335-337
- [27] 李军, 郭素平, 徐玲, 等. 白内障超声乳化联合机械性房角分离治疗闭角型青光眼[J]. *国际眼科杂志*, 2019, 19(7): 1212-1214
- [28] Galvis V, Tello A, Carreño NI, et al. Very long-term rate of posterior laser capsulotomy and corneal endothelial cell loss after phacoemulsification[J]. *J Cataract Refract Surg*, 2020, 46(2): 327
- [29] Young CEC, Seibold LK, Kahook MY. Cataract surgery and intraocular pressure in glaucoma [J]. *Curr Opin Ophthalmol*, 2020, 31(1): 15-22
- [30] 贺新, 刘宁. 不同手术治疗方式对青光眼合并白内障患者视力眼压散光度及并发症的影响[J]. *河北医学*, 2019, 25(3): 555-559