doi: 10.13241/j.cnki.pmb.2019.03.017

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 *

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摘要 目的:观察和比较白内障超声乳化吸除人工晶状体植入术联合前房角分离术或小梁切除术治疗原发性急性闭角型青光眼合并白内障的临床疗效。**方法:**选择哈尔滨医科大学附属第一医院眼科医院 2017 年 1 月～2017 年 11 月收治的原发性急性闭角型青光眼合并白内障患者 62 例,根据手术方式不同将其随机分为 A、B 两组,A 组(31 例,行 Phaco+IOL 联合前房角分离术);B 组(31 例,行 Phaco+IOL 联合小梁切除术)。分别观察两组患者术前术后最佳矫正视力(BCVA)、眼压(IOP)、前房深度(ACD)、角膜内皮细胞密度(ECD)的变化。**结果:**两组患者术后 3 天、3 个月 BCVA 及 IOP 和术前比较均明显提高(*P<0.05*),IOP 控制至正常范围。且术后 1 周,A 组视力恢复及眼压控制均优于 B 组(*P<0.05*)。两组患者术后 3 月,ACD 及 ECD 均较术前明显变化,ACD 加深,ECD 减少(*P<0.05*),且 A 组 ACD 明显高于 B 组(*P<0.05*)。**结论:**Phaco+IOL 联合前房角分离术治疗急性闭角型青光眼合并白内障患者能有效降低眼压,在早期即可获得较好的临床效果。

关键词:原发性闭角型青光眼;白内障;房角分离;小梁切除

中图分类号:R776.1 **文献标识码:**A **文章编号:**1673-6273(2019)03-473-04

A Clinical Study on Phacoemulsification Combined with Goniosynechialysis in the Treatment of Primary Acute Angle Closure Glaucoma*

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ABSTRACT Objective: To observe and compare the clinical efficacy of phacoemulsification and intraocular lens implantation combined with goniosynechialysis or trabeculectomy in the treatment of acute primary angle-closured glaucoma with cataract. **Methods:** 62 cases of patients diagnosed with acute angle-closure glaucoma combined with cataract in the Eye Hospital of the First Affiliated Hospital of Harbin Medical University from January 2017 to November 2017 were selected and randomly divided into group A and B according to different operation methods, group A(31 cases, Phaco+IOL combined goniosynechialysis); group B(31 cases, Phaco + IOL combined trabeculectomy). The best corrected visual acuity (BCVA), intraocular pressure (IOP), anterior chamber depth (ACD), the changes of corneal endothelial cell density (ECD) after operation were compared between two groups of patients. **Results:** The BCVA and IOP of both groups of patients at 3 days and 3 months after operation were significantly improved (*P<0.05*), the IOP returned to the normal range. Furthermore, at 1 week after operation, the visual acuity of group A was better than that of group B (*P<0.05*). At three months after operation, the ACD and ECD of both groups changed significantly compared with those preoperation(*P<0.05*), and the ACD of group A was significantly deeper than that of group B(*P<0.05*). **Conclusions:** Phaco+IOL combined goniosynechialysis can effectively reduce intraocular pressure, obtain good clinical effect at the early satge in the treatment of acute primary angle-closured glaucoma with cataract.

Key words: Angle-closure glaucoma; Cataract; Goniosynechialysis; Trabecular resection

Chinese Library Classification(CLC): R776.1 Document code: A

Article ID: 1673-6273(2019)03-473-04

前言

原发性急性闭角型青光眼在临床上较为常见,随着我国人口老龄化的加剧,多数急性闭角型青光眼患者合并不同程度的白内障[1]。由于晶体厚度的增加,晶状体虹膜隔前移等导致前房变浅,同时晶状体与虹膜接触面加大,引起瞳孔阻滞,后房压力增大,前房变浅,最终房角关闭,导致青光眼急性大发作,对患者的生活质量造成严重影响[2,3]。目前,临床上治疗急性闭角型青光眼合并白内障的主要方法为手术,包括 Phaco+IOL(白内障超声乳化吸除人工晶体植入术),Phaco+IOL 联合前房角分离术和 Phaco+IOL 联合小梁切除术。本研究通过分析比较 Phaco+IOL 联合前房角分离术和 Phaco+IOL 联合小梁切除术治疗

* 基金项目:黑龙江省自然科学基金面上项目(H2017028)

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(收稿日期:2018-04-20 接受日期:2018-05-15)

后最佳矫正视力(BCVA)、眼压(IOP)、前房深度(ACD)、角膜内皮细胞密度(ECD),旨在评价不同术式的疗效,现报道如下。

1 材料与方法

1.1 一般资料

选取我院 2017 年 1 月～2017 年 10 月收治住院手术治疗的原发性急性闭角型青光眼合并白内障患者 62 例(62 眼)作为研究对象,男 17 例(17 眼),女 45 例(45 眼),入院后用药物治疗或者前房穿刺将眼压将至 25 mmHg 以下, 眼压控制后将患者根据手术方式的不同分为行 Phaco+IOL 联合前房角分离术(A 组) 和 Phaco+IOL 联合小梁切除术 (B 组)。A 组患者男 7 例(22.6 %),女 24 例(77.4 %),平均年龄 68.7± 9.8 岁;B 组患者男 10 例(32.3 %),女 21 例(67.7 %),平均年龄 66.8± 11.1 岁。两组患者在年龄、性别、术前视力水平、眼压、前房深度及角膜内皮细胞比较无统计学意义。入选标准[4]:① 诊断为原发性急性闭角型青光眼;② 眼压控制后观察均有明显的晶状体混浊;③ 术前视力均 <0.5。排除标准:① 慢性开角型青光眼及继发性青光眼;② 晶状体脱位;③ 角膜内皮数< 1000 个 /mm^2;④ 存在其他眼部疾患或具有全身手术禁忌症患者。本研究中涉及的所有患者均对本研究内容知情同意。

1.2 方法

1.2.1 术前准备 所有患者入院后均立即行硝酸毛果芸香碱滴眼液缩瞳,酒石酸溴莫尼定、盐酸左布诺洛尔滴眼液降眼压治疗,药物治疗不理想者可行前房穿刺降低眼压,眼压控制相对稳定后,左氧氟沙星眼液滴眼,完善青光眼、白内障术前常规检查, 择期行 Phaco+IOL 联合前房角分离术或 Phaco+IOL 联合小梁切除术。

1.2.2 手术方式 A 组患者行 Phaco+IOL 联合前房角分离术:术前给予复方托吡卡胺滴眼液散瞳, 术前 30 min 静脉滴注 20 %甘露醇注射液 250 mL, 盐酸奥布卡因滴眼液局部麻醉。 常规消毒、铺巾,开睑器开术眼,冲洗结膜囊, 作上方透明角膜切口及侧方辅助切口,注入黏弹剂,撕囊镊连续环形撕囊。将平衡液注入皮质内,水分离及水分层后进行超声碎核,清除残余皮质,后囊抛光,前房及囊袋内注入黏弹剂,植入折叠人工晶状体于囊袋内,调整晶体位置。卡米可林缩瞳,黏弹剂分离全周房角,边注入边用粘弹剂钝针头压迫虹膜根部,使前房角变宽,顺时针完成 360° 的房角分离,清除黏弹剂,水密切口。B 组患者行 Phaco+IOL 联合小梁切除术:术前准备及麻醉方法同 A 组,以角膜缘为基地做巩膜瓣, 地塞米松棉片放置瓣下 3 分钟,生理盐水冲洗。12 点位穿刺入前房,晶状体超声乳化摘除加人工晶状体植入术式同 A 组, 卡米可林缩瞳后, 在巩膜瓣下切除 1.5 mm× 2.5 mm 小梁组织和周边虹膜, 切除后用 10-0 尼龙线对巩膜瓣和结膜瓣进行间断缝合。结膜囊内涂妥布霉素地塞米松眼膏,包封术眼。

1.2.3 术后处理 术后患者均滴用左氧氟沙星滴眼液 2 次 / 天,用一周,氯替泼诺混悬滴眼液,普拉洛芬滴眼液 4 次 /d,每周减少 1 次,连续用药 4 周,不添加防腐剂的人工泪液每天 4 次点眼,维持用量 4 周,每日睡前妥布霉素地塞米松眼膏涂眼,连续用药 1 周。不使用全身抗生素和激素。

1.3 观察指标

对两组患者的最佳矫正视力、眼压、前房深度、角膜内皮细胞密度进行术前、术后 3 天 ~3 月随访观察,日本 Topcon 公司的裂隙灯生物显微镜,ToPcon 非接触式眼压计测量仪, IOL master 测量前房深度,TOPcon SP-3000P 角膜内皮细胞计数仪测量角膜内皮细胞密度,logMAR 视力表。

1.4 统计学方法

使用 SPSS 22.0 统计学软件, 计量资料用均数± 标准差表示,两组间数据比较采用独立样本 t 检验,手术前后数据比较采用配对 t 检验,*P<0.05* 为差异有统计学意义。

2 结果

2.1 两组术后视力、眼压的比较

两组患者术后 3 天、3 个月最佳矫正视力及眼压和术前比较均明显提高,眼压控制至正常范围,差异有统计学意义(*P< 0.05*)。且术后 1 周,A 组视力恢复及眼压控制均优于 B 组,差异有统计学意义(*P<0.05*);术后 3 月,两组的视力、眼压比较差异无统计学意义(*P<0.05*),见表 1~2。

2.2 两组前房深度、角膜内皮的比较

两组患者术后 3 月,前房深度及角膜内皮细胞密度均有明显变化,前房深度加深,角膜内皮细胞密度减少,与术前相比差异有统计学意义 (*P<0.05*),A 组前房深度明显高于 B 组 (*P< 0.05*),两组角膜内皮细胞密度比较无统计学意义(*P>0.05*),见表 3~4。

3 讨论

原发性闭角型青光眼是原先就存在的虹膜构型而发生的前房角被周边虹膜组织机械性阻塞,导致房水流出受阻,造成眼压升高的一类青光眼,多见于 50 岁以上老年人,且女性多于男性[5]。有研究表明亚洲女性周边房角狭窄的解剖因素、晶体厚度、晶体于前房的相对位置,眼轴长度是已被公认的发生急性闭角型青光眼的危险因素。随着年龄增长,晶状体厚度每年约增加 21 μm,中央前房深度减少约 8 μm,导致前房变浅的原因

表 1 两组患者手术前后 BCVA 比较

Table 1 Comparison of theCompared BCVA of between two groups patients before and after operation

Groups	Preoperation	At three days after surgery	At three months after surgery
Group A(31 cases)	0.13± 0.13	0.45± 0.19	0.52± 0.16
Group B(31 cases)	0.15± 0.15	0.23± 0.13	0.47± 0.15
p	0.615	<0.05	0.150

注:A 组与 B 组术后三天相比,**P<0.05*。

Note: Group A compared with group B at three days postoperation, **P<0.05*.

表 2 两组患者手术前后 IOP 比较

Table 2 Compared Comparison of the IOP of between two groups of patients before and postoperation after operation

Group	Preoperation	At one week after surgery	At three months after surgery
Group A(31 cases)	46.2± 9.6	13.7± 3.5	13.1± 1.9
Group B(31 cases)	47.1± 9.6	16.0± 2.7	14.1± 2.8
p	0.674	<0.05	0.096

注:A 组与 B 组术后一周相比,*$P<0.05$.

Note: Group A compared with group B first week postoperation , *$P<0.05$.

表 3 两组患者手术前后 ACD 比较

Table 3 Comparison of theed ACD of between two groups of patients before and postoperation after operation

Groups	Preoperation	At three days after surgery	*p*
Group A(31 cases)	1.83± 0.34	3.48± 0.16	<0.05
Group B(31 cases)	1.73± 0.32	2.79± 0.31	<0.05
p	1.287	11.212	

注:A 组与 B 组术后三月相比,*$P<0.05$;分别与本组术后三月相比,$^{\triangle}P<0.05$。

Note: Group A compared with group B three months postoperation, *$P<0.05$; Preoperation compared with three months postoperation respectively, $^{\triangle}P<0.05$.

表 4 两组患者手术前后 ECD 比较

Table 4 Comparedison of the ECD of between two groups of patients before and postoperationafter operation

Groups	Preoperation	At three months after surgery	*p*
Group A(31 cases)	2373.6± 526.9	1740.2± 465.8	<0.05
Group B(31 cases)	2295.3± 373.9	1559.7± 380.2	<0.05
p	0.675	1.671	

注:分别与本组术后三月相比,*$P<0.05$。

Note: Preoperation compared with two months postoperation respectively, *$P<0.05$.

中,晶状体前移因素占 65 %,厚度增加占 35 %[6]。因此,解除瞳孔阻滞,重新建立前后房沟通,使虹膜隔后移,前房角重新开放,从而有效控制和降低眼压,保护视功能。

本研究选取的对象术前最佳矫正视力均小于 0.5,晶状体透明度的下降和急性闭角型青光眼导致的角膜水肿,前房变化都可影响视觉质量的降低。术后两组最佳矫正视力与术前比较有明显提高。术后 3 天,白内障超乳吸除联合房角分离组最佳矫正视力优于对照组,可能由于术中植入的人工晶状体会随前房深度的变化发生前后位移,进而引起眼屈光状态的改变,在模拟眼中,1 mm 的前房深度变化可导致 1.34 D 的屈光改变[7]。已有大量文献表明两组的手术方式均可有效增加前房深度,相比之下 A 组术中透明角膜切口所受机械损伤较轻时间较短,术后恢复更快,术后 3 天前房深度明显加深,在随后的随访中会趋于稳定[8]。B 组由于术后结膜滤过泡的形成,早期滤过较强,以致前房不稳定。术后角膜水肿导致角膜厚度增加,引起角膜前后表面曲率的变化,导致其矫正球镜的度数绝对值也越大。术后角膜散光度数与切口位置、类型、长度、关闭切口有无缝线以及缝线的松紧程度相关[9],相比于 A 组,B 组因为巩膜瓣和结膜瓣的间断缝合,增加了术后短期内角膜的散光度数。

白内障超声乳化吸除及人工晶状体植入使用厚度只有 1 mm 左右的人工晶体替代原有 5 mm 厚的晶状体后,解除晶体因素,明显改变了术后前房深度,使虹膜后移,解决瞳孔阻滞问题[10]。Chen 等的研究提出白内障超乳吸除联合房角分离可在无需使用局部眼药水的情况下将眼压至正常范围且,且成功率高达 93.8 %[11]。本研究中,A 组患者通过粘弹剂钝性分离虹膜根部与房角的粘连,进一步使前房角变宽开放,阻止前房角粘连,使房水经小梁网滤过,眼压得到有效控[12,13]。B 组联合小梁切除术作为传统的滤过性手术建立房水流出通道外,利用了白内障手术对周边房角的松解,术中的高灌注压作用,实现降低眼压的作用[14]。B 组手术操作复杂且用时较长,术后角膜水肿发生率高,需要相对长的一段时间稳定其对眼压的控制。在房角粘连范围 >270 ° 的青光眼患者,或加用药物控制眼压药物仍不能控制者,白内障吸除联合抗青光眼滤过性手术是有效的手术方式[15]。

角膜内皮细胞是与虹膜前内皮相移行的单层细胞,有稳定的六角形结构,紧贴于角膜后弹力层,通过屏障功能和 Na-K-ATP 酶的主动液泵功能维持角膜厚度及透明度。已有研究证实角膜内皮细胞不能再生,但可经迁移和扩大周围的弹力层细胞来弥补内皮细胞的损失。急性闭角型青光眼大发作时高眼压、窄房角及使用抗眼压药物的毒副作用,都会对术前角膜内皮细胞的变化产生一定程度的影响[16,17]。但引起角膜内皮变化最明显的因素还是手术过程中的损害,例如超乳过程中产生的热能,机械进出前房以及手术中核碎屑、气泡等引起的机械损伤,灌注液的酸碱度、渗透压等引起的化学损伤[18-21]。术后 2 个月,内角膜内皮细胞的密度较之前会显著减少,2 月后趋于稳定,与本实验中术前术后角膜内皮细胞比较差异具有统计学

意义的结果一致[22,23]。

总之，白内障超乳吸除联合房角分离或小梁切除术均可在术后加深前房深度，降低眼内压，改善视力[24,25]。此外，Phaco+IOL联合前房角分离术在术后早期即可获得稳定的疗效，临床医生需根据患者不同的病情选择合适的手术方式，以期达到最佳治疗效果。

参 考 文 献(References)

[1] Yu Z, Pu XL, Yan XN, et al. Ocular surface changes after combined surgery of glaucoma and cataract[J]. Guoji Yanke Zazhi, 2018, 18(3): 550-553

[2] Zhang H, Tang G, Liu J. Effects of Phacoemulsification Combined With Goniosynechialysis on Primary Angle-closure Glaucoma [J]. Glaucoma, 2016, 25 (5): e499-503

[3] Deng L, Zeng J. Efficacy observation of phacoemulsification with intraocular lens implantation and goniosynechialysis in the treatment ofangle-closure glaucoma[J]. Guoji Yanke Zazhi, 2017, 17(2): 335-337

[4] Luo Zhao-hua. Influence of phacoemulsification combined with goniosynechiailsis on intraocular pressure and visual function in patients with primary angle-closure glaucoma[J]. Journal of Practical Preventing Blind, 2017, 12(3): 99-101

[5] Lifang Liu, Xinyu Liu, Chukai Huang, et al. Associated factors of acute primary angle closure glaucoma in a sub-group of Chinese people: comparison between attack eyes and normal controls [J]. Scientific Repoorts, 2017, 7(1): 14885

[6] Wang Liang-hai, Chen Hui, Wang Hong-tao, et al. Effect of micro-incision phacoemulsification combined with goniosynechialysis in management on acute angle closure glaucoma [J]. Contemporary Medicine, 2017, 23(18): 14-18

[7] Yongji Liu, Zhaoqi Wang. Effects of measurement errors on refractive outcomes for pseudophakic eye based on eye model [J]. Optik, 2010, 121: 1347-1354

[8] Zong-Mei Zhang, Qing Niu, Yan Nie, et al. Reduction of intraocular pressure and improvement of vision after cataract surgeries in angle closure glaucoma with concomitant cataract patients[J]. Int J Clin Exp Med, 2015, 8(9): 16557-16563

[9] Borasio E, Mehta JS, Maurino V. Surgically induced astigmatism after phacoemulsification in eyes with mild to moderate corneal astigmatism: temporal versus on-axis clear corneal incisions [J]. Cataract Refract Surg, 2006, 32(4): 565-572

[10] Liu XJ, Guo SL, Li QX, et al. Clinical observation of phacoemulsification and IOL combined with goniosynechialysis for age-related cataract merging with PACG [J]. Guoji Yanke Zazhi, 2017, 17(10): 1883-1885

[11] Chen J, Zou YP. Endoscope-assisted goniosynechialysis combined with phacoemulsification and intraocular lens implantation to manage primary angle-closure glaucoma [J]. Int J Ophthalmol, 2013, 6: 174-177

[12] Xia XB, Yang J, Song WT, et al. The clinical effect of phacoemulsification combined with trabeculectomy for primary angleclosure glaucoma with cataract[J]. Guoji Yanke Zazhi, 2013, 13(7): 1469-1473

[13] Lan Cheng-hong, Qiu Liang-hui, Phacoemulsification cataract intraocular lens implantation combined goniosynechialysis the efficacy of the treatment of acute angle-closure glaucoma[J]. Chinese Journal of Modern Drug Application, 2017, 11(13): 70-72

[14] Xu Gui-hua, Chen Zi-lin, Wang Xiao-yi. Two different operation method to treat different state angle closure the clinical effect of closed angle-closure glaucoma combine cataract [J]. Chinese Journal of Modern Drug Application, 2017, 11(14): 57-58

[15] LIU Kui-xiang, Zhang Guo-wen, Liu Xin-ming, et al. Clinical observation of the simple phacoemulsification extraction of cataract and IOL implantation and isolation of anterior chamber angle in therapy of primary angle closure glaucoma [J]. Journal of Clinical Ophthalmology, 2011, 19(04): 326-327

[16] Fischbarg J. On the mechanism of fluid transport across corneal endothelium and epithelia in general [J]. J Exp Zool A Comp Exp Biol, 2003, 300(1): 30-40

[17] Varadaraj, Ramulu PY, Srinivasan K, et al. Evaluation of Angle Closure as a Risk Factor for Reduced Corneal Endothelial Cell Density[J]. J Glaucoma, 2018, 27(1): e31-e32

[18] Zheng X, Ma WL, Ye CH. Influence of mitomycin C on corneal endothelial cell in phacoemulsification combined trabeculectomy[J]. Guoji Yanke Zazhi, 2018, 18(1): 96-99

[19] Fanqian Song, Zhuo Chen, Liyao Sun, et al. Corneal integrity and thickness of central fovea after phacoemulsification surgery in diabetic and nondiabetic cataract patients [J]. Clinical research, 2016, [Epub ahead of print]

[20] Liu Xi, Chen Wei, Yue Peng, et al. Relative Factors of Phacoemlsification on Corneal Endothelial Cells Damage[J]. Progress in Modern Biomedicine, 2013, 13(03): 523-526

[21] Xu Xue-jiao, Cheng Hong-bo, Han Bing. The Influence of Glaucoma Surgery of Corneal Endothelial Cells[J]. Guoji Yanke Zazhi, 2016,16 (07): 1283-1286

[22] Wang T, Yan H. Study on effect of phacoemulsification combined with goniosynechialysis on corneal endothelial cells for the treatment of angle closure glaucoma [J]. Guoji Yanke Zazhi, 2016, 16 (11): 2142-2144

[23] Zhao Ye, Liu Zhi-feng. Intraocular Pressure and Corneal Endothelium Effects of Phacoemulsification in the Treatment of the Glaucoma Patients [J]. Journal of Hainan Medical University, 2016, 22(12): 1229-1231+1235

[24] Dooley I, Charalampidou S, Malik A, et al. Changes in intraocular pressure and anterior segment morphometry after uneventful phacoemulsification cataract surgery [J]. Eye (Lond), 2010, 24(4): 519-26

[25] Su WW, Chen PY, Hsiao CH, et al. Primary phacoemulsification and intraocular lens implantation for acute primary angle-closure [J]. PLo S One, 2011, 6(5): e20056