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超声乳化吸出联合人工晶体植入术对糖尿病合并白内障患者的疗效

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[摘　要]　**目的：**探讨超声乳化吸出联合人工晶体植入术治疗糖尿病合并白内障的效果，为临床诊疗提供依据。**方法：**选取2017年11月至2019年11月收治的糖尿病合并白内障患者70例为实验对象。采用简单随机数表法分两组，各35例。接受小切口白内障摘除及人工晶体植入术治疗的为对照组，采用超声乳化吸出联合人工晶体植入术治疗的为观察组。比较术后3个月视力恢复情况，记录患者术后各时间点角膜散光变化，比较手术前后中央角膜内皮细胞密度(central corneal endothelial cell density，CCD)、平均内皮细胞面积(average endothelial cell area，AVE)变化及夜间读物、精细操作、阅读书写、看电视得分，并统计并发症发生情况。**结果：**观察组术后1个月、术后3个月的视力明显优于对照组，差异有统计学意义(P<0.05)；术后1个月、3个月两组角膜散光度均呈下降趋势，且观察组低于对照组，差异有统计学意义(P<0.05)。术后3个月，患者的CCD降低，观察组低于对照组，而AVE升高，观察组高于对照组，差异有统计学意义(P<0.05)。术后3个月，观察组夜间读物、精细操作、阅读书写、看电视得分明显高于对照组，差异有统计学意义(P<0.05)。观察组总并发症发生率低于对照组，差异有统计学意义(P<0.05)。**结论：**超声乳化吸出联合人工晶体植入术治疗对糖尿病合并白内障可促进患者视力恢复，降低角膜散光度，减轻角膜内皮细胞损伤，提升患者视觉质量，安全性高，值得临床推广使用。

[关键词]　白内障；糖尿病；超声乳化；人工晶体；角膜内皮；并发症

Effect of phacoemulsification combined with intraocular lens implantation on diabetes mellitus patients with cataract

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Abstract　**Objective:** To explore the effect of phacoemulsification combined with intraocular lens implantation in the treatment of diabetes mellitus patients with cataract, and to lay the groundwork for clinical diagnosis and treatment. **Methods:** Seventy patients with cataract combined with diabetes admitted from November 2017 to November 2019 were included as the research subjects. A simple random number table method was used to divide these subjects into two groups, each with 35 cases. The control group received small incision cataract

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extraction and intraocular lens implantation, and the observation group received phacoemulsification combined with intraocular lens implantation. The visual recovery 3 months after the operation was compared. The changes in corneal astigmatism at various time points after the operation were compared. The changes in central corneal endothelial cell density (CCD), average endothelial cell area (AVE), night reading, fine manipulation, reading and writing were compared before and after surgery. TV watching score is recorded, and complications are counted. **Results:** The visual acuity of the observation group at 1 month and 3 months after surgery was significantly higher than that of the control group. The difference was statistically significant (P<0.05). The corneal astigmatism of the two groups both showed a downward trend at 1 month and 3 months after surgery, the observation group being lower than the control group. The difference was statistically significant (P<0.05); after 3 months, the patient's CCD decreased, the observation group being lower than the control group, while AVE increased, the observation group being higher than the control group. The difference was statistically significant (P<0.05); 3 months after surgery, the scores of night reading, fine manipulation, reading and writing, and watching TV in the observation group were significantly higher than those in the control group. The difference was statistically significant (P<0.05). The total complication rate of the observation group was lower than that of the control group. The difference was statistically significant (P<0.05). **Conclusion:** Phacoemulsification combined with intraocular lens implantation can promote the recovery of vision, reduce the corneal astigmatism and the damage of corneal endothelial cells, improve the visual quality of patients, and has high safety, which is worthy of clinical application.

Keywords cataract; diabetes; phacoemulsification; intraocular lens; corneal endothelium; complications

糖尿病是临床治疗中常见的慢性疾病，随着人们生活、饮食习惯的改变，糖尿病的患病率也随之增加，若治疗不及时或治疗不当，可累及多器官，严重影响患者生活质量[1-2]。因糖尿病患者自身抵抗力、修复功能均较薄弱，易出现一些并发症，白内障是最常见的并发症之一，且患病率也日益增加[3-5]。手术摘除是治疗白内障的有效手段，但不同的手术治疗方法的临床效果也存在一定差异，哪种手术治疗方式效果更佳尚无明确定论[6-7]。小切口白内障摘除及人工晶体植入术操作难度较大，同时也会影响患者术后视觉质量[8]。超声乳化吸出联合人工晶体植入术可纠正患者的屈光不正，促进患者术后视力恢复，改善术后视觉质量[9]。鉴于此，本研究旨在探讨超声乳化吸出联合人工晶体植入术治疗糖尿病合并白内障的临床效果。

1 对象与方法

1.1 对象

选取2017年11月至2019年11月收治的70例糖尿病合并白内障患者，采用简单随机数表法将其分为观察组(n=35)和对照组(n=35)。观察组男19例，女16例，年龄50~75(62.18±4.02)岁；病程5~10(7.29±0.75)个月。对照组男20例，女15例，年龄50~75(62.09±4.13)岁；病程5~10(7.30±0.74)个月。纳入标准：1)符合《中华眼科学》[10]中白内障诊断标准；2)符合2型糖尿病诊断标准[11]；3)符合人工晶体植入术手术指征；4)无其他眼部疾病或角膜接触镜佩戴史。排除标准：1)因其他原因所导致的白内障；2)因认知功能障碍而无法正常沟通交流者；3)合并严重肝、肾、心功能障碍者；4)合并其他恶性肿瘤或心脑血管疾病者；5)既往有接受其他眼科手术治疗者；6)合并其他感染性疾病或凝血功能异常者；7)存在因高血压及相关药物所引起的视网膜病变者。两组患者资料差异无统计学意义(P>0.05)。本研究获滁州市第一人民医院医学伦理委员会审核同意。

1.2 方法

患者入院后接受降糖治疗，待血糖、空腹血糖降到正常范围内后行人工晶体植入术治疗。

对照组：采用小切口白内障摘除及人工晶体植入术治疗。术前30 min采用复发托吡卡胺滴眼液(生产厂家：参天制药有限公司；规格：10 mL；进口药品注册证号：H20170325)散瞳，采用聚维酮碘溶液冲洗结膜，待散瞳及结膜囊冲洗完成后，行小切口白内障摘除术治疗，术前给予丙美卡因[生产厂家：s.a. Alcon-Couvreur n.v.(比利时爱尔康)；规格：15 mL，75 mg；进口药品注册证号：H20160133]麻醉眼部，选取上方角

巩膜缘后1.5~2 mm做反眉弓巩膜隧道切口，长度4.0~6.0 mm，以1/2全巩膜厚度向前潜行至透明角膜缘内1.8~2.0 mm，9点位做1.5 mm侧切口，注入透明质酸钠(生产厂家：山东博士伦福瑞达制药有限公司；规格：1 mL；国械注准：20173220847)，切穿上方隧道切口，用撕囊镊连续环形撕囊，水分离、水分层，双手转动晶状体核并移动至前房。采用手法将晶状体核劈成2~4块，分次取出，注吸周边皮质并注入透明质酸钠，随后行人工晶状体植入，术后给予患者妥布霉素地塞米松眼液[生产厂家：s.a. Alcon-Couvreur n.v.(比利时爱尔康)；规格：5 mL；进口药品注册证号：H20150119]滴眼，3次/d。

观察组：采用超声乳化吸出联合人工晶体植入术治疗。消毒、散瞳、麻醉操作同对照组。上方10点位角膜缘内作透明角膜切口，宽约3.2 mm，深1/2~2/3角膜厚度，并向前潜行1.8~2.0 mm，2点位做1.5 mm侧切口，注入透明质酸钠，切穿透明角膜切口进入前房，用撕囊镊连续环形撕囊，水分离、水分层，超声乳化吸出晶状体核，用注吸系统(I/A)的注吸头清除晶状体残余皮质及部分核周组织，接着注入透明质酸钠，人工晶体植入方法以及术后用药同上。

1.3 观察指标

比较术后3个月患者视力恢复情况，记录患者术后各时间点角膜散光变化，比较手术前后中央角膜内皮细胞密度(central corneal endothelial cell density，CCD)、平均内皮细胞面积(average endothelial cell area，AVE)变化及夜间读物、精细操作、阅读书写、看电视得分，并统计并发症。

采用《日常视觉活动量表》[12]调查术后3个月视觉质量，包括夜间读物、阅读书写、精细操作、看电视4个条目，分值与视觉质量呈正比。

1.4 统计学处理

选择SPSS 20.0软件进行数据分析。计量资料以均数±标准差($\bar{x}\pm s$)表示，用t检验；重复测量用方差分析，计数资料用χ^2检验。P<0.05为差异有统计学意义。

2 结果

2.1 两组术后 3 个月视力恢复比较

两组术前、术后1周视力比较，差异无统计学意义(P>0.05)；观察组术后1个月、术后3个月的视力明显高于对照组，差异有统计学意义(P<0.05，表1)。

2.2 两组不同时间点角膜散光变化分析

术前、术后1周两组患者角膜散光度比较，差异无统计学意义(P>0.05)；术后1个月、3个月两组角膜散光度均呈下降趋势，且观察组低于对照组，差异有统计学意义(P<0.05，表2)。

2.3 两组手术前后 CCD、AVE 变化比较

与术前比较，术后3个月CCD降低，观察组低于对照组，而AVE升高，观察组高于对照组，差异有统计学意义(P<0.05，表3)。

2.4 两组术后 3 个月夜间读物、精细操作、阅读书写、看电视得分比较

术后3个月，观察组患者的夜间读物、精细操作、阅读书写、看电视得分明显高于对照组，差异有统计学意义(P<0.05，表4)。

2.5 两组并发症比较

观察组总并发症发生率低于对照组，差异有统计学意义(P<0.05，表5)。

表1 两组术后3个月视力恢复比较(n=35，$\bar{x}\pm s$)

Table 1 Comparison of visual acuity recovery between the two groups at 3 months after operation (n=35, $\bar{x}\pm s$)

组别	视力			
	术前	术后1周	术后1个月	术后3个月
观察组	0.17 ± 0.05	0.37 ± 0.10	0.56 ± 0.11	0.75 ± 0.12
对照组	0.18 ± 0.04	0.35 ± 0.09	0.42 ± 0.09	0.62 ± 0.11
t	0.923	0.879	5.827	4.724
P	0.358	0.382	<0.001	<0.001

表2 两组不同时间点角膜散光度变化分析(n=35，$\bar{x} \pm s$)

Table 2 Analysis of changes in corneal astigmatism at different time points in the two groups (n=35, $\bar{x} \pm s$)

组别	角膜散光度变化/μm				F	P
	术前	术后1周	术后1个月	术后3个月		
观察组	1.08 ± 0.20	1.01 ± 0.18	0.74 ± 0.21	0.62 ± 0.12	33.12 0	<0.001
对照组	1.02 ± 0.15	1.04 ± 0.13	0.86 ± 0.19	0.73 ± 0.11	16.161	<0.001
t	1.419	0.799	2.506	3.997		
P	0.160	0.427	0.015	0.002		

表3 两组患者手术前后CCD、AVE变化比较(n=35，$\bar{x} \pm s$)

Table 3 Comparison of changes in CCD and AVE between the two groups of patients before and after surgery (n=35, $\bar{x} \pm s$)

组别	CCD/(个·mm^{-2})		AVE/μm^2	
	术前	术后3个月	术前	术后3个月
观察组	2450.23 ± 210.23	2002.12 ± 213.20	415.02 ± 18.20	488.24 ± 12.20
对照组	2452.23 ± 221.52	2190.25 ± 209.89	416.20 ± 19.30	442.20 ± 11.98
t	0.038	3.720	0.263	15.929
P	0.969	<0.001	0.793	<0.001

表4 两组患者术后3个月夜间读物、精细操作、阅读书写、看电视得分比较(n=35，$\bar{x} \pm s$)

Table 4 Comparison of scores of night reading, fine manipulation, reading and writing, and watching TV between the two groups 3 months after surgery (n=35, $\bar{x} \pm s$)

组别	视觉质量得分			
	夜间读物	精细操作	阅读书写	看电视
观察组	2.85 ± 0.23	2.37 ± 0.31	3.12 ± 0.42	2.88 ± 0.47
对照组	2.30 ± 0.31	2.01 ± 0.30	2.37 ± 0.39	2.28 ± 0.52
t	8.429	4.937	7.741	5.064
P	<0.001	<0.001	<0.001	<0.001

表5 两组患者并发症比较(n=35)

Table 5 Comparison of complications between the two groups of patients (n=35)

组别	角膜水肿/[例(%)]	眼压升高/[例(%)]	前房反应/[例(%)]	后囊浑浊/[例(%)]	合计/[例(%)]
观察组	1 (2.86)	1 (2.86)	0 (0.00)	0 (0.00)	2 (5.71)
对照组	3 (8.57)	2 (5.71)	1 (2.86)	2 (5.71)	8 (22.86)
χ^2	1.061	0.348	1.014	2.058	4.200
P	0.303	0.555	0.313	0.151	0.040

3 讨论

糖尿病属代谢性疾病，患者主要表现为高血糖，治疗不当可累及多个器官，最典型的是糖尿病合并白内障[13]。糖尿病合并白内障是临床治疗中常见眼科疾病，因机体处于高血糖状态，会激活醛糖还原酶，导致细胞外水分被吸收，最终对晶状体纤维细胞产生影响，出现肿胀、变形等现

象[14-16]。随着糖尿病患者的不断增加，糖尿病合并白内障的患者也随着增加，严重影响患者的正常生活，因此提高临床治疗糖尿病合并白内障效果成为研究热点。

手术摘除是治疗白内障的主要手段，但是手术所行切口较大，术后所需恢复时间长，且易出现多种并发症，降低手术治疗效果，临床运用受限[17-18]。随着医疗水平的不断进步，超声乳化吸出联合人工晶体植入术被广泛用于治疗糖尿病合并白内障，疗效可观。研究[19-21]表明：植入人工晶体可取代眼内晶状体，并形成接近于人体正常的晶状体系统，发挥改善视力及屈光功能的效果。张思毅等[22]研究表明：超声乳化吸出联合人工晶体植入术治疗糖尿病合并白内障，无需等待白内障成熟，可缩短等待时间，减轻患者痛苦，有助于患者早诊断、早治疗，促进患者术后视力恢复。本研究对收治患者分别给予两种手术治疗方式干预，并对比患者术后视力恢复情况。发现超声乳化吸出联合人工晶体植入术治疗后患者的视力恢复情况明显优于小切口白内障摘除及人工晶体植入术治疗患者，且术后1、2个月患者的角膜散光度均低于小切口白内障摘除及人工晶体植入术，提示超声乳化吸出可有效促进患者术后视力的恢复，改善患者的角膜散光度。

研究[23-24]表明：糖尿病本身就会对角膜产生众多不利影响，如降低角膜层细胞密度，但目前对其损伤角膜内皮细胞的相关机制尚不清楚。有学者[25-26]指出：在糖尿病发病过程中，房水中葡萄糖含量持续升高，不利于角膜内皮细胞三磷酸循环，导致乳酸浓度升高，角膜内皮细胞的抵抗能力降低，修复能力减弱。本研究结果显示：手术治疗后患者的CCD降低，AVE升高，但超声乳化吸出联合人工晶状体植入术治疗的效果好于小切口白内障摘除及人工晶体植入术治疗，提示超声乳化吸出联合人工晶体植入术对患者的CCD、AVE改善效果更为明显。糖尿病合并白内障患者的视力多下降，导致患者的日常生活能力降低。研究[27-28]采用日常视觉活动量表对接受手术治疗的100例患者术后视觉质量进行调查。发现超声乳化吸出治疗患者的夜间读物、看电视、精细操作、阅读书写等得分均高于小切口白内障摘除治疗患者，表明超声乳化吸出联合人工晶体植入术可促进患者术后视觉质量恢复，从而提高患者日常生活能力。

从安全性看，超声乳化吸出联合人工晶体植入术可降低患者并发症发生率，是一种安全有效的手术治疗方法。但本研究所选取的样本量较小，临床可扩大样本量进行深入研究。

综上所述，超声乳化吸出联合人工晶体植入术治疗对糖尿病合并白内障可促进其视力恢复，降低角膜散光度，减轻角膜内皮细胞损伤，提升患者视觉质量，安全性高，值得临床推广使用。

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