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透明角膜切口白内障术后角膜曲率的临床观察*

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摘要 目的:观察年龄相关性白内障行透明角膜切口超声乳化吸除及人工晶体植入术后角膜曲率的变化及相对稳定的时间。**方法:**收集 2016 年 6 月-8 月在哈尔滨医科大学附属第一医院伍连德纪念医院进行的 3.0 mm 透明角膜切口白内障超声乳化吸除及人工晶体植入术的患者 200 例 216 眼,其中男 88 例、女 128 例,平均年龄 71.2 岁,进行相应的术前检查,并检查术前、术后第一天、一周、一个月、和三个月时的角膜曲率、视力、眼压并行相应的统计学分析。**结果:**术后不同时间点视力 >0.5 的恢复情况:第一天为 147 眼(68.05%)、一周为 175 眼(81.02%)、一个月为 193 眼(89.35%)、三个月为 197 眼(91.20%);术前角膜曲率为 43.94 ± 1.35 、术后第一天、术后一周的角膜曲率分别为 44.98 ± 1.06 、 44.45 ± 1.18 ,与术前相比有显著性差异($p < 0.05$),术后一个月、三个月的角膜曲率分别为 44.13 ± 1.27 、 44.02 ± 1.24 ,与术前相比无显著性差异($p > 0.05$);术源性散光于术后一天达到最大,随后逐渐减小,术后一个月、三个月与术后一天比较有显著性差异($p < 0.05$),术后三个月与一个月比较无显著性差异($p > 0.05$),术源性散光术后逐渐下降,并于一个月时趋于稳定。**结论:**3.0 mm 透明角膜切口白内障超声乳化吸除及人工晶体植入术患者在术后一个月的角膜曲率基本稳定,恢复至术前状态,屈光状态趋于稳定,术源性角膜散光较小,术后视力恢复至较好状态。

关键词:白内障;角膜曲率;屈光;散光

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Clinical Observation of Corneal Curvature after Cataract Surgery with Transparent Corneal Incision*

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ABSTRACT Objective: To observe the changes and the relatively stable time of corneal curvature after phacoemulsification (PHACO) and IOL implantation on age-related cataract patients with transparent corneal incision. **Methods:** A total of 200 patients (216 eyes) with 3.0 mm transparent corneal incision cataract phacoemulsification and IOL implantation were collected in the hospital of the First Affiliated Hospital of Harbin Medical University (Wu Liande Memorial Hospital) from June 2016 to August 2016. Among them, 88 males, 128 females, mean age 71.2 years old. Performed relative examination before the operation, and check the corneal curvature, vision, intraocular pressure of preoperative, first day after operation, first week after operation, first month after operation, and three months after operation, and perform the corresponding statistical analysis. **Results:** After surgery, the recover of vision which better than 0.5 at different time: the first day was 147 eyes (68.05%), one week was 175 eyes (81.02%), one month was 193 eyes (89.35%) and the three month was 197 eyes (91.20%). The preoperative corneal curvature was 43.94 ± 1.35 , postoperative the first day and the first week corneal curvature respectively of 44.98 ± 1.06 , 44.45 ± 1.18 , compared with the preoperative have significant difference ($p < 0.05$), one month and three months after the corneal curvature were 44.13 ± 1.27 , 44.02 ± 1.24 , compared with the preoperative was no statistically significant difference ($p > 0.05$); Intraoperative astigmatism reached its maximum on the first day after surgery, then gradually decreased, there was a significant difference between one month, three months and one day after surgery ($p < 0.05$). There was no significant difference between three months and one month after surgery ($p > 0.05$). Intraoperative astigmatism decreased gradually and stabilized in a month. **Conclusion:** Patients with 3.0 mm transparent corneal incision cataract phacoemulsification and IOL implantation was stable in one month after operation, and recovery to preoperative status. Refractive status tends to be stable and the less invasive corneal astigmatism, Postoperative visual acuity returned to a better condition.

Key words: Cataract; Corneal curvature; Dioptric; Astigmatism

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前言

白内障是临床上常见的眼病,表现为晶状体混浊,光线进入眼球受阻,从而影响视力及视觉质量^[1]。目前仍无有效的药物治疗手段,主要治疗手段是手术^[2]。常用的术式为超声乳化吸出联合人工晶状体植入术^[3,4]。随着时代的发展,患者对术后视觉质量的要求也随之提高,使白内障手术从以往的复明手术转变为屈光性手术。技术水平的提高,机械设备的更新换代,晶状体制作工艺的精湛,现在应用最普遍最广泛的术式为透明角膜切口白内障超声乳化吸除联合人工晶状体植入,其优点是切口小、能自闭,造成的术源性散光小,术后视力佳,本研究选择我科 2016 年 6 月-8 月接受 3.0 mm 透明角膜切口白内障超声乳化吸除联合人工晶状体植入术的患者共 200 例 216 眼,探索其术后角膜曲率、散光的变化情况及随时间延长后的变化及最佳配镜时间,现总结如下。

1 材料与方法

1.1 研究对象

收集 2016 年 6 月-8 月在哈尔滨医科大学附属第一医院伍连德纪念医院眼科进行的 3.0 mm 透明角膜切口白内障超声乳化吸除及人工晶体植入术的患者 200 例 216 只眼,其中男 88 例、女 128 例,平均年龄 71.2 岁,术前视力:光感 2 眼、手动 25 眼、指数 47 眼、0.02~<0.05 者 39 眼、0.05~<0.1 者 52 眼、0.1~<0.2 者 23 眼、0.2~<0.5 者 20 眼、0.5~1.0 者 8 眼,术前均由经验丰富的医师进行白内障的确诊^[5],对患者进行裂隙灯检查(检查角膜、前房、晶状体)、验光、B 超、OCT、角膜内皮等,术前眼压均在 10~21 mmHg(1 mmHg=0.133 kPa)、眼轴长度为 23-25 mm、晶状体核硬度为 I-III 级,以排除眼外伤、角膜手术史、角膜病、青光眼、眼底病(黄斑裂孔、黄斑水肿、黄斑变性、视网膜脱离等)、圆锥角膜及其它眼科疾病。

1.2 主要仪器

采用 TOPCON KR-8900 角膜曲率电脑验光仪、日本 Topcon 公司的裂隙灯生物显微镜、非接触式眼压测量仪、logMAR

视力表。

1.3 手术方法

1.3.1 术前准备 术前常规检查、抗生素眼药水点术眼、冲洗泪道和结膜囊、术前 30 min 进行散瞳。

1.3.2 手术过程 术前 10 min 进行表面麻醉,滴表面麻醉药 2-3 次,仰卧在手术台上,碘伏消毒术眼,铺无菌孔巾,开睑器开术眼,3.0 mm 穿刺钻石刀于 10 点位垂直角膜缘穿刺约 0.5 mm,在角膜基质层内向视轴方向移动 1.75 mm 后,穿刺进入前房,前房内注入透明质酸钠,连续环形撕前囊膜,充分水分离、水分离,15 度尖刀作 2 点位辅助切口,超声乳化吸除混浊的晶体核及大部分皮质,用注吸系统(I/A)清除晶状体残余皮质,前房及囊袋内注入黏弹剂,推入后房型折叠人工晶体入囊袋内并调整为水平位,卡米可林缩瞳,I/A 注吸透明质酸钠及缩瞳剂,维持前房,闭合切口,地塞米松加利多卡因结膜下注射,涂碘必殊眼膏后盖眼垫,术毕。手术由同一主刀医生完成。

1.4 数据采集

分别对接受白内障手术的患者进行术前、术后第一天、术后一周、术后一个月、术后三个月的视力、眼压、角膜曲率(水平曲率、垂直曲率、平均值)、角膜散光。角膜曲率测量应用 TOPCON KR-8900 角膜曲率电脑验光仪,角膜曲率测量的每个数值均行三次测量取平均值,术前、术后视力由同一护士检查,术前、术后其余检查均由同一医师操作。

1.5 统计学处理

对接受白内障手术的患者术眼视力进行统计,并用百分比体现,角膜曲率、散光计量资料以均数($\bar{x} \pm s$)标准差表示,组间比较采用 t 检验,以 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 术后视力

术后一天、一周由于部分患者切口处角膜水肿、眼压高于正常值,使角膜散光出现变化,导致视力受到影响,随着水肿的减轻直至消失,视力也得到恢复,术后三个月视力大于 0.5 的患者达到 91.20%,术后一个月视力基本也趋于稳定。

表 1 不同时间点的术后视力分布情况

Table 1 Postoperative vision distribution at different time points

Postoperation	<0.1		0.1~<0.5		0.5~0.9		≥ 1.0	
	N	Percent(%)	N	Percent(%)	N	Percent(%)	N	Percent(%)
First day	16	7.41	53	24.54	119	55.09	28	12.96
First week	4	1.86	37	17.13	129	59.72	46	21.30
First month	1	0.46	22	10.18	129	59.72	64	29.63
Three months	1	0.46	18	8.33	132	61.11	65	30.09

2.2 术后眼压

术后第一天眼压高于正常值有 27 眼,经处理后观察一段时间均恢复正常,术后无切口漏水发生,角膜水肿病例术后 24 h 以后逐渐减轻,切口周围组织水肿 3 d 后逐渐消退,全部病例于半月内水肿消失,切口附近角膜变平整。

2.3 术后角膜曲率变化

术前患者平均角膜曲率为 43.94 ± 1.35 ,术后第一天患者平均角膜曲率为 44.98 ± 1.06 ,术后第一周患者平均角膜曲率为 44.45 ± 1.18 ,术后第一个月患者平均角膜曲率为 44.13 ± 1.27 ,术后三个月患者平均角膜曲率为 44.02 ± 1.24 ,术后角膜曲率较术前有所增大,随着时间的推移,术后的恢复,曲率又逐渐减小,术后第一天、第一周角膜曲率明显大于手术前,手术前后

差异有显著性($P<0.05$),手术后一个月、三个月角膜曲率基本恢复至术前水平手术前后差异无显著性($P>0.05$)。

2.4 术后角膜散光变化

术前角膜散光为(1.11 ± 0.78)D,术后第一天角膜散光为(1.47 ± 1.15)D,术后一周角膜散光为(1.41 ± 0.96)D,术后一个月角膜散光为(1.22 ± 0.62)D,术后三个月角膜散光为(1.14 ± 0.83)D。3.0 mm 透明角膜切口的白内障超声乳化吸除及人工晶体植入术,术后三个月角膜散光较术后一个月无显著差异($P>0.05$)说明术后一个月角膜散光已基本趋于稳定。

3 讨论

白内障是全球第一位致盲眼病在所有致盲者中占 46%,以老年人最为多见,老年人群白内障患病率高达 70%,且逐年增高^[6],因白内障而致盲这一问题也将会更加严重,给眼科工作者带来了巨大挑战。白内障唯一有效的治疗方法就是手术,而术式的发展从针拨术、囊内摘除术、囊外摘除术、小切口白内障摘除术、巩膜隧道切口白内障超声乳化吸出术联合人工晶状体植入术、角巩膜缘切口白内障超声乳化吸出术联合人工晶状体植入术,过度到现在的透明角膜切口白内障超声乳化吸出术联合人工晶状体植入术、微切口白内障超声乳化吸出联合人工晶状体植入术^[7]、飞秒激光辅助白内障手术。

透明角膜切口白内障超声乳化吸出联合人工晶状体植入术最大优势为切口小、无需缝线、损伤小、时间短、能自闭,并发症少,造成的术源性散光小,恢复快,术后视力佳,从而得到最为广泛的应用。透明角膜切口超声乳化白内障手术与巩膜隧道切口超声乳化白内障手术相比,具有对角膜散光、角膜厚度影响小和术后恢复快等优点^[8],与角膜缘切口超声乳化白内障手术相比,具有出血少,手术视野清晰的特点。3.2 mm 和 5.5 mm 透明角膜不缝合自闭式切口白内障手术术后散光情况的对比研究发现,3.2 mm 透明角膜切口术后视力恢复快,术源性散光小,手术效果更好^[9,10],提示较小的切口术后对角膜散光影响较小。飞秒激光辅助的白内障手术优点为撕囊简便及精准,劈核所需能量小,造成损伤小,角膜自闭性好,切口稳定,但是学习曲线长、初学者易出现前后囊膜破裂,晶状体脱入玻璃体等并发症,禁忌症也相对较多,费用高,对医疗机构及术者要求高,不利于广泛的推广^[11-16]。

因此透明角膜切口白内障超声乳化术得到广泛的应用,是目前白内障手术的主要术式,有研究报道,术后早期裸眼视力存在波动这与早期前房深度的变化、角膜水肿及角膜散光有一定关系^[17]。术后角膜曲率改变的程度主要取决于手术切口的位置及长度^[18-23],手术切口产生的术源性散光是影响白内障术后视力的重要因素^[24-26]。术源性散光是由于白内障手术造成角膜形态改变而引起的,它在术后一段时间内是个变量,并且随着切口愈合而趋于稳定^[27]。手术切口越大越容易损伤角膜生理结构,角膜复原过程越慢,产生的记忆丧失也越多,故而大切口更易产生术源性散光^[28],Gavallini 等^[29]研究发现,角膜散光的程度与手术切口长度成正比,且切口位置距离角膜中心越近,术后散光越强;角膜切口越小,术源性角膜切口散光越弱^[30],切口每减少 0.5 mm,散光程度降低约 0.25 D。大量临床研究认为,手术切口缩小能够有效减少术源性散光,增加前房的密闭性与稳

定性,降低眼内感染的发生率^[31]。本研究病例中采用较小的透明角膜切口(3.0 mm),切口位置起始于角膜缘,并且避免角膜内潜行较长(<2 mm),从而使整个切口尽量远离角膜中心,降低术源性散光。本研究显示,术后一月内角膜曲率和角膜散光逐渐趋于回复术前水平,术后一个月角膜曲率的变化以及角膜散光较术前无显著差异($p>0.05$),且术后三个月与术后一个月相比无明显变化,说明术后一个月角膜散光已基本趋于稳定。

本研究有很多不足之处,有一定的局限性,样本量小,本研究角膜曲率、散光的结果采用 TOPCON KR-8900 角膜曲率电脑验光仪测得,有文献报道角膜地形图测定的数值更为精准,但由于经济条件等客观因素并未使用,但本研究结果与相似文献献基本一致。

综上所述,本术式切口小,损伤小,无缝线,愈合快,术后并发症少,屈光状态稳定,角膜曲率改变小,角膜散光改变小,术后视力恢复好,完全能够满足现代白内障手术术后效果的高要求,日后条件允许情况下应缩小角膜切口,并在术前散光轴位的引导下设定个性化治疗方案,从而提高视觉质量,更加满足患者要求。

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