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同轴微切口超声乳化白内障手术对角膜内皮细胞的影响*

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摘要 目的:分析同轴微切口超声乳化白内障手术对角膜内皮细胞的影响。**方法:**回顾性分析 2015 年 5 月至 2016 年 4 月在本院进行治疗的 86 例白内障患者,以经微切口治疗的 43 例患者视为观察组,经常规切口治疗的 43 例患者视为对照组。比较两组患者治疗前、治疗后 3 天、7 天、1 个月、3 个月的中央角膜厚度、变异系数、六角形细胞比例、角膜内皮细胞密度。**结果:**治疗前,两组患者中央角膜厚度、变异系数、六角形细胞比例、角膜内皮细胞密度比较差异均无统计学意义($P>0.05$),治疗后 3 天、7 天、1 个月、3 个月,两组患者中央角膜厚度、变异系数、六角形细胞比例、角膜内皮细胞密度较治疗前显著增加($P<0.05$),但两组患者之间中央角膜厚度、变异系数、六角形细胞比例、角膜内皮细胞密度比较差异均无统计学意义($P>0.05$)。**结论:**与常规切口治疗白内障相比,微切口治疗白内障对角膜内皮细胞的影响相当,但其能进一步缩小患者手术切口,更有利于患者术后的恢复。

关键词:常规切口;微切口;白内障;角膜内皮细胞

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Effect of Coaxial Micro-incision Phacoemulsification Cataract Surgery on the Corneal Endothelial Cells*

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ABSTRACT Objective: To analyze the effect of coaxial micro-incision phacoemulsification cataract surgery on the corneal endothelial cells. **Methods:** 86 cases of cataract patients treated in our hospital from May 2015 to April 2016 were selected, 43 patients who were given microsurgical treatment was regarded as the observation group, while 43 patients treated by conventional incision were regarded as the control group. The central corneal thickness, coefficient of variation, hexagonal cell ratio and corneal endothelial cell density were compared between the two groups before treatment and at 3 d, 7 d, 1 month and 3 months after treatment. **Results:** Before treatment, there was no significant difference in the central corneal thickness, coefficient of variation, hexagonal cell ratio and corneal endothelial cell density between the two groups ($P>0.05$). At 3 d, 7 d, 1 month, 3 months after treatment, the central corneal thickness, coefficient of variation, hexagonal cell ratio and corneal endothelial cell density were significantly increased in both groups ($P<0.05$), but no significant difference was found between two groups ($P>0.05$). **Conclusion:** Compared with conventional incision treatment of cataract, micro-incision cataract had equal effect on the corneal endothelial cells, it could further reduce the surgical incision and is more beneficial to the recovery of patients after cataract surgery.

Key words: Conventional incision; Micro incision; Cataract; Corneal endothelial cells

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前言

目前,临床治疗白内障较的要手术方式为超声乳化白内障吸出术,此方案具有减少角膜散光、提高患者视力等优势^[1]。但相关研究表明超声乳化白内障吸出术中使用常规切口方式会

损害角膜内皮细胞功能,导致角膜内皮失常,可能会导致大泡性角膜病变,进而出现角膜盲^[2,3]。近年来,超声乳化白内障吸出术中采取小切口的方式已逐渐应用在临床中,此方案的作用优势已获得临床证明,然而目前关于小切口治疗白内障对患者角膜内皮细胞修复及损伤的影响报道甚少^[4]。因此,本研究主要探

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讨了同轴微切口超声乳化白内障手术对角膜内皮细胞的影响,现将结果报道如下。

1 资料与方法

1.1 临床资料

回顾性分析 2015 年 5 月至 2016 年 4 月在本院进行治疗的 86 例白内障患者,其中经微切口治疗的 43 例患者视为观察组,43 眼;经常规切口治疗的 43 例患者视为对照组,43 眼。纳入标准:① 患者自愿加入本次试验;② 依从性较好,能配合医护人员完成本次试验;③ 无精神疾病史,意识清晰,无交流沟通障碍。排除标准:① 糖尿病、青光眼合并、Fuchs 角膜内皮营养不良等会对角膜内皮细胞带来影响的疾病者;② 临床资料缺失者;③ 当前正在配合其他项目研究者。观察组中,男 28 例,女 15 例;年龄为 57~72 岁,平均(67.94± 2.32)岁;核硬度 I 级 7 例,II 级 13 例,III 级 17 例,IV 级 6 例。对照组中,男 25 例,女 18 例;年龄为 56~71 岁,平均(67.86± 2.36)岁;核硬度 I 级 8 例,II 级 14 例,III 级 16 例,IV 级 5 例。两组患者的性别、年龄、核硬度资料方面比较差异均无统计学意义($P>0.05$),具有可比性。

1.2 治疗方法

对患者进行表面麻醉后,使用开睑器进行开睑操作,在左眼鼻上方或右眼颞上方 10:00~11:00 位置处作出一条透明角膜隧道切口,其中观察组行 1.8 mm 的微切口,对照组行 3.0 mm 的常规切口,在 2 点钟位置处做出一条侧切口,将黏弹剂注入至前房中,在进行水分离晶状体核及连续环形撕囊后,使用美国 Alcon 公司所提供的 Universal II 超声乳化仪完成超声乳化操作,将晶状体核清除后,使用自动注吸头将残留晶状体皮质

吸出后,随之植入人工晶状体,清除黏弹剂,手术即完成。在完成手术后在球侧处注射 2 万单位的妥布霉素,2.5 mg 的地塞米松,并使用典必舒滴眼液,整个手术过程均是由同一名眼科医生完成。

1.3 观察指标

在术前、术后 3 天、7 天、1 个月、3 个月使用非接触式角膜内皮检测仪对患者手术切口区和中央区角膜内皮进行检测。操作步骤如下:叮嘱患者将受检眼投向角膜内皮检测仪镜头内的光源处,取出中央内皮照相,然后在仪器左下角位置处做出红色标识,叮嘱患者注视此红色标识,使镜头能对准手术切口,即 11:00 位置处。需对患者的每只眼连续拍摄 3 张照片,然后选出最清晰的 1 张照片放置在微机图像分析系统中,对中央角膜厚度、变异系数、六角形细胞比例、角膜内皮细胞密度予以观察。

1.4 统计学处理

本次实验数据处理选择 SPSS11.5 软件包进行,计量资料用($\bar{x} \pm s$)来表示,采用 t 检验,计数资料用[n(%)]来表示,采取 χ^2 检验,以 $P<0.05$ 表明差异具有统计学意义。

2 结果

2.1 两组患者不同时间点中央角膜厚度比较

治疗前,两组患者中央角膜厚度比较差异无统计学意义($P>0.05$),治疗后 3 天、7 天、1 个月、3 个月,两组患者中央角膜厚度较治疗前显著增加($P<0.05$),但两组患者在治疗后 3 天、7 天、1 个月、3 个月的中央角膜厚度比较差异无统计学意义($P>0.05$),见表 1。

表 1 两组患者治疗前后不同时间点中央角膜厚度的比较($\bar{x} \pm s, \mu\text{m}$)

Table 1 Comparison of the central corneal thickness between two groups at different time points before and after treatment($\bar{x} \pm s, \mu\text{m}$)

Groups	Before treatment	After 3days treatment	After 7 days treatment	After 1months treatment	After 3months treatment
Observation group	553.21± 24.32	612.32± 64.12*	601.43± 61.33*	585.43± 53.09*	578.54± 54.03*
Control group	553.19± 25.02	613.71± 64.19*	603.02± 61.29*	585.49± 53.11*	579.02± 55.02*

Note: Compared with before treatment, * $P<0.05$.

2.2 两组患者不同时间点角膜内皮细胞变异系数比较

治疗前,两组患者角膜内皮细胞变异系数比较差异无统计学意义($P>0.05$),治疗后 3 天、7 天、1 个月、3 个月,两组患者角

膜内皮细胞变异系数较治疗前显著增加($P<0.05$),但两组患者在治疗后 3 天、7 天、1 个月、3 个月的角膜内皮细胞变异系数比较差异无统计学意义($P>0.05$),见表 2。

表 2 两组患者不同时间点角膜内皮细胞变异系数比较($\bar{x} \pm s$)

Table 2 Comparison of the variation coefficient of corneal endothelial cells between two groups at different time points before and after treatment($\bar{x} \pm s$)

Groups	Before treatment	After 3days treatment	After 7 days treatment	After 1months treatment	After 3months treatment
Observation group	20.43± 2.67	28.54± 2.97*	30.98± 3.45*	32.04± 3.87*	31.43± 4.03*
Control group	20.49± 2.71	28.61± 2.91*	30.92± 3.41*	32.09± 3.91*	31.76± 4.06*

Note: Compared with before treatment, * $P<0.05$.

2.3 两组患者不同时间点六角形细胞比例比较

治疗前,两组患者六角形细胞比例比较差异无统计学意义($P>0.05$),治疗后 3 天、7 天、1 个月、3 个月,两组患者六角形细胞比例较治疗前显著降低($P<0.05$),但两组患者在治疗后 3 天、7 天、1 个月、3 个月的六角形细胞比例比较差异无统计学意义

($P>0.05$),见表 3。

2.4 两组患者不同时间点角膜内皮细胞密度比较

治疗前,两组患者角膜内皮细胞密度比较差异无统计学意义($P>0.05$),治疗后 3 天、7 天、1 个月、3 个月,两组患者角膜内皮细胞密度较治疗前显著降低($P<0.05$),但两组患者在治疗后

3天、7天、1个月、3个月的角膜内皮细胞密度比较差异无统计学意义($P>0.05$),见表4。

表3 两组患者不同时间点六角形细胞比例比较($\bar{x} \pm s, \%$)

Table 3 Comparison of the hexagonal cells between two groups at different time points before and after treatment ($\bar{x} \pm s, \%$)

Groups	Before treatment	After 3days treatment	After 7 days treatment	After 1months treatment	After 3months treatment
Observation group	53.51 $\pm$ 5.87	40.54 $\pm$ 4.36*	38.43 $\pm$ 3.41*	37.52 $\pm$ 3.32*	35.54 $\pm$ 3.01*
Control group	53.59 $\pm$ 5.91	40.59 $\pm$ 4.37*	38.45 $\pm$ 3.38*	37.57 $\pm$ 3.28*	35.43 $\pm$ 3.05*

Note: Compared with before treatment, * $P<0.05$.

表4 两组患者不同时间点角膜内皮细胞密度比较($\bar{x} \pm s, \text{cell} \cdot \mu\text{m}^{-2}$)

Table 4 Comparison of the corneal endothelial cell density between two groups at different time points before and after treatment ($\bar{x} \pm s, \text{cell} \cdot \mu\text{m}^{-2}$)

Groups	Before treatment	After 3days treatment	After 7 days treatment	After 1months treatment	After 3months treatment
Observation group	2598.43 $\pm$ 253.45	2143.87 $\pm$ 215.43*	2125.43 $\pm$ 211.45*	2075.68 $\pm$ 205.43*	2001.57 $\pm$ 196.54*
Control group	2597.51 $\pm$ 253.41	2144.09 $\pm$ 214.98*	2126.05 $\pm$ 213.51*	2074.97 $\pm$ 204.98*	2003.02 $\pm$ 197.01*

Note: Compared with before treatment, * $P<0.05$.

3 讨论

白内障是因为眼部晶状体蛋白质变性而发生的混浊现象,此病的发病因素存在多样性,中毒、辐射、外伤、代谢紊乱、局部免疫、遗传等因素均可诱发白内障^[5]。白内障的发病人群大部分在40岁以上,且年龄越大,发病率越高。伴随着患者病情的进一步发展,白内障患者视力会逐渐衰退直至消失,给患者生活质量带来严重影响。在临床治疗中,采取积极的方式予以治疗显得颇为关键^[6,7]。当前,在治疗白内障中主要有药物治疗和手术治疗两种方式,其中药物治疗以珠红明目滴眼液、维生素E、维生素C、谷胱甘肽等药物为主,但药物治疗常常缺乏确切的临床疗效,需借助手术治疗^[8-10]。

手术治疗在治疗白内障疾病中较为常见且有效的方式,当前治疗白内障应用得较为广泛的手术方式为白内障超声乳化吸出术。在临床中,将切口不足2mm的白内障超声乳化术视为微切口白内障手术,和常规切口(3.0~3.2mm)相比,微切口白内障超声乳化手术除了灌注套管的管径、抽吸针头、超声乳化针头相应缩小外,操作方式、手术器械和常规切口治疗白内障的方式相同,在手术中术者没有必要改变当前手术习惯^[11,12]。相关研究显示和常规切口治疗白内障患者相比,微切口治疗白内障所需的手术恢复时间较短,较低的术源性散光率,及较低的切口渗漏发生率,有着更低的内皮细胞受损程度^[13,14]。

在白内障超声乳化吸出术中,角膜内皮细胞受损是难以避免的一种并发症,发病原因可能和术中器械对患者角膜细胞造成的影响、晶状体碎片、超声振荡等因素有关^[15,16]。相关研究表明在白内障超声乳化吸出术后,患者晶状体核硬度和角膜内皮细胞损伤程度存在着密切关联性,其中患者有着越高的晶状体核硬度,会有着更高的应用超声强度,患者也会有越大的可能性合并角膜内皮细胞损伤,也会增加患者的受损程度^[17-20]。角膜内皮细胞受损后,患者会在一定时间内得到逐渐恢复,此恢复过程常常需要周围健康细胞的延伸和增殖予以完成^[21,22]。患者角膜上、中、下区域内皮细胞在白内障吸出术后会有一定差异性存在,其中上、中部角膜受损程度最大,然而3个月左右基本上可恢复,其中下部角膜在1~2个月内会基本上恢复^[23,24]。正是

这种恢复时间存在差异性,在评价白内障超声乳化吸出术的临床效果及手术技巧中常常将角膜内皮细胞受损程度以及恢复时间差视为重要指标^[25]。本研究通过对白内障患者分别予以常规切口与微切口治疗,和治疗前相比,在治疗后不同时间点的角膜内皮细胞密度均得到显著性降低,但两种治疗方式在术后不同时间点所产生的角膜内皮细胞密度比较无明显差异性,提示微切口在治疗白内障患者中,不但能缩小手术切口,而且不会给角膜内皮细胞带来更大损失,有着较高的安全性^[26,27]。角膜内皮细胞变异系数可反映内皮细胞面积变异,在衡量角膜内皮细胞受损中常常被视为较为敏感的指标之一^[28-30]。本次研究中,白内障患者分布接受常规切口和微切口治疗后,患者的角膜内皮细胞变异系数明显比手术前高,两种手术方式治疗者在术后的角膜内皮细胞变异系数比较无明显差异性,提示常规切口与微切口治疗白内障给患者角膜内皮细胞带来的损伤程度相同。中央角膜厚度直接反映了内皮细胞的受损程度。本研究中,常规切口和微切口治疗白内障患者所造成的中央角膜厚度比较无明显差异性,提示常规切口和微切口对白内障患者术后中央角膜厚度的影响相当。

总之,与常规切口治疗白内障相比,微切口治疗白内障对角膜内皮细胞的影响相当,但其能进一步缩小患者手术切口,更有利于患者术后的恢复。

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