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ICL 植入术矫正高度近视的短期临床观察 *

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摘要 目的:观察后房型有晶体眼人工晶体(implantable contact lens, ICL)植入术矫正高度近视术后早期的有效性和安全性。**方法:**选择于我院行 ICL 植入术的高度近视患者 18 例(36 眼),于术前及术后 1 周、1 个月、3 个月随访记录其裸眼视力(uncorrected visual acuity, UCVA),最佳矫正视力(best corrected visual acuity, BCVA),等效球镜(spherical equivalent, SE),前房深度(anterior chamber depth, ACD),眼内压(intraocular pressure, IOP),角膜内皮细胞密度(endothelial cell density, ECD)的变化。**结果:**所有患者术后 3 个月裸眼视力和有效球镜度均较术前显著提高($P<0.05$),前房深度较术前变浅($P<0.05$),眼内压与术前对比无明显差异($P>0.05$),角膜内皮细胞密度较术前显著减少($P<0.05$)。**结论:**ICL 植入手术矫正高度近视的短期临床疗效和安全性均较好。

关键词:后房型有晶体眼后房型人工晶体;高度近视;视力矫正

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Clinical Research of Implantation of Phakic Anterior Chamber Intraocular Lens for High Myopia in Short-term*

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ABSTRACT Objective: To evaluate the effectiveness and security of anterior chamber intraocular lens implantation for high myopia in short-term. **Methods:** Thirty-six eyes of eighteen high myopia patients received ICL implantation were selected. The uncorrected visual acuity(UCVA), best corrected visual acuity(BCVA), spherical equivalent(SE), anterior chamber depth (ACD), intraocular pressure(IOP) and endothelial cell density (ECD) were detected preoperation and at 1 week, 1 month and 3 months postoperation. **Results:** After operation, the UCVA and SE were significantly improved ($P<0.05$), the mean ACD and ECD were significantly decreased ($P<0.05$). IOP showed no variation postoperation ($P>0.05$). **Conclusions:** ICL implantation appeared to be an effective and safe method for high myopic.

Key words: Implantation of posterior chamber intraocular lens; High myopic; Vision correction

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前言

高度近视在中国中青年人中发病率高,已经成为一个社会公共健康问题^[1]。可植入性后房型人工晶状体(implantable contact lens, ICL)是一种用于矫正高度近视的可放置于后房的新型人工晶状体,适用于高度近视和超高度近视,调节范围为 -10.0 D~30.0 D。ICL V4c 是最新型的 ICL 晶体,在设计上中心留有一个 0.36 mm 的孔^[2,3],可以增大房水流通体积,排除了防止眼压升高进行虹膜周切术的需求。作为一种内眼手术,ICL 植入术存在一定风险和可能并发症,如感染、瞳孔阻滞、前房变浅等^[4]。后房型有晶体眼人工晶体植入术在发达国家已经得到了广泛应用^[5],但在我国,尤其在黑龙江省地区尚未得到广大高度近视患者的高度认可。因此,本研究对在我院行 ICL 植入术的高度近视患者短期术后有效性和安全性进行总结报道如下。

1 材料与方法

1.1 一般资料

选择 2017 年 1 月至 2018 年 4 月于我院我科行 ICL 手术的高度近视患者 18 例(36 眼),其中男 8 例(16 眼),女 10 例(20 眼),平均年龄(24.62 ± 4.07)岁,年龄 20~37 岁,术前等效球镜度 -10.0 D~-18.5 D,平均(-13.94 ± 2.19) D,散光 -0.25~-1.50 D,平均(-13.94 ± 2.19) D。纳入标准:患有高度近视散光患者,年龄 20~45 岁,等效球镜度数 -5.0D~-30.0D,手术前至少 1 年屈光度数稳定,一年内屈光改变 <0.5 D,眼压 10~21 mm Hg,角膜内皮细胞计数 ≥ 2000 个/ mm^2 。术前最佳矫正视力 ≥ 0.5 ,前房角开放,前房深度 >2.8 mm。排除标准:排除可能影响视力的其它疾病,如青光眼、葡萄膜炎、视网膜脱离、黄斑病变、圆锥角膜等、糖尿病、自身免疫性疾病、遗传性疾病、精神异常等。

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1.2 术前检查及准备

标准对数视力表测量散瞳前后裸眼视力(UCVA)、最佳矫正视力(BCVA),由同一位医师验光试镜,在瞳孔自然状态下的最佳矫正视力的最低屈光度数为手术预测度数。IOL Master(IOL Master 500, Carl Zeiss, Germany)测量中央角膜厚度,前房深度,眼轴,非接触式眼压计测量术前眼压三次,取平均值。非接触式角膜内皮镜(Noncon Robo-CAKonan SP-9000p Tokyo, Japan)测量角膜内皮细胞密度。三面镜散瞳检查眼底,排除视网膜裂孔。术前3天0.5%左氧氟沙星沙星眼液(可乐必妥)点眼,1日4次。

1.3 手术方法

所有手术由同一名经验丰富的医生进行。术前30分钟复方托吡卡胺滴眼(美多丽,参天制药,日本)散瞳,盐酸奥布卡因滴眼液(倍诺喜,参天制药,日本)表面麻醉3次,采用自闭式透明角膜切口,使用3.0 mm穿刺刀于角膜缘内1 mm穿入,隧道潜行1.5 mm后穿入前房。15°尖刀在2点位于角膜缘内做辅助切口,前房注入粘弹剂(Healon;Advanced Medical Optics,Santa Ana,CA,USA),推入ICLV4c(STAAR SURGICAL,Switzerland)人工晶状体入睫状沟内,调整人工晶状体至正确位置,置换粘弹剂,切口做角膜基质水化处理。妥布霉素/地塞米松眼膏(典必舒,爱尔康公司,比利时)涂眼,包扎术眼。

1.4 术后处理

氯替泼诺混悬滴眼液、普南扑灵滴眼液2周,每日4次;左氧氟沙星滴眼液1周,每日2次;人工泪液4周,一日4次。出院后1周,1个月,3个月进行复查随访。进行裸眼视力和最佳矫正视力检查,等效球镜、裂隙灯、眼压、角膜内皮细胞计数检查。

1.5 统计学方法

采用SPSS 19.0统计学软件进行数据分析。计量资料用均数±标准差表示,各时间点数据间比较采用重复测量方差分析,手术前后两个时间数据对比采用配对t检验分析,以 $P<0.05$ 为差异有统计学意义。

2 结果

将完成3个月随访的患者纳入本次研究,所有患者均未发生视网膜脱离,黄斑囊样水肿等并发症。

2.1 视力

所有患者的术后3个月裸眼视力(UCVA)0.5~1.0均较术前0.01~0.1明显提高,差异有统计学意义($P<0.05$),最佳矫正视力(BCVA)与术前比较未见明显差异($P>0.05$),见表1。

2.2 屈光状态

所有患者术后未发现晶状体偏位情况,术前等效球镜度值为 $(-13.94\pm 2.19)D$,术后3个月为 $(-0.34\pm 0.82)D$,较术前明显降低,差异有统计学意义($P<0.05$),见表1。

表1 术前和术后3个月裸眼视力、最佳矫正视力和等效球镜比较

Table 1 Comparison of the UCVA, BCVA and SE preoperation and at 3 months postoperation

	Preoperation	At 3 months postoperation	t	P
UCVA	0.04± 0.02	0.79± 0.18	-25.126	0.000
BCVA	0.83± 0.17	0.88± 0.13	-1.74	0.091
SE(D)	-13.94± 2.19	-0.34± 0.82	-32.736	0.000

Note: Data are presented as mean± SD. Differences were considered statistically significant at $P<0.05$.

表2 术前和术后3个月前房深度、眼压和角膜内皮细胞密度比较

Table 2 Comparison of the ACD, IOP and ECD of preoperation and at 3 months postoperation

	Preoperation	At 3 months postoperation	t	P
ACD(mm)	3.22± 0.12	2.24± 0.12	43.309	0.000
IOP(mmHg)	15.56± 2.48	15.47± 2.60	0.132	0.896
ECD(cell/mm ²)	2718.97± 255.85	2469.58± 243.02	9.782	0.000

Note: Data are presented as mean± SD. Differences were considered statistically significant at $P<0.05$.

2.3 前房深度

术前、术后各时间点前房深度比较差异有统计学意义($P<0.05$)。术前为 $(3.03\pm 0.17)mm$,术后1周减少为 $(2.31\pm 0.18)mm$,术后1个月和术后1周,术后3个月和术后1个月相邻时间点间前房深度比较无明显差异($P>0.05$),见图1。

2.4 眼压

术后1周眼压较术前明显升高($P<0.05$),术后3个月眼压较术前显著下降($P<0.05$),但术后3个月与术前眼压比较无明显差异($P>0.05$)。36眼中,有3名患者(3只眼)术后眼压 $>22mmHg$,分别为27 mmHg、35 mmHg和25 mmHg,给予降眼压药物治疗,布林佐胺滴眼液点眼,未经辅助切口放液治疗,术

后1周复查时,后2者眼压达到正常范围,第1名患者继续用药3天后复查,眼压降至19 mmHg。所有患者在术后3个月随访时眼压在正常范围内,见图2。

2.5 角膜内皮细胞密度

术后各时间点角膜内皮细胞密度较术前均下降($P<0.05$)。见图3。术后3个月角膜内皮细胞密度为 (2469.58 ± 243.03) 个/ mm^2 ,在安全范围内。

3 讨论

矫正高度近视屈光不正的方法包括角膜屈光手术、透明晶状体吸出联合人工晶体植入术和有晶体眼后房型人工晶体植

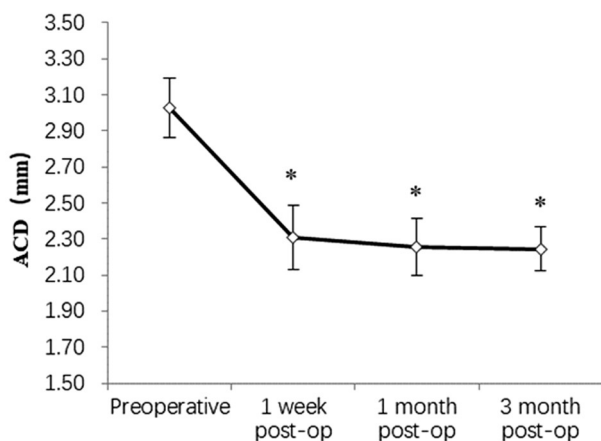


图1 术前和术后1周、1个月、3个月前房深度比较

Fig.1 Comparison of SE of preoperative and postoperative after 1 week, 1 month and 3 months

Note: * $P < 0.001$, compared with preoperative.

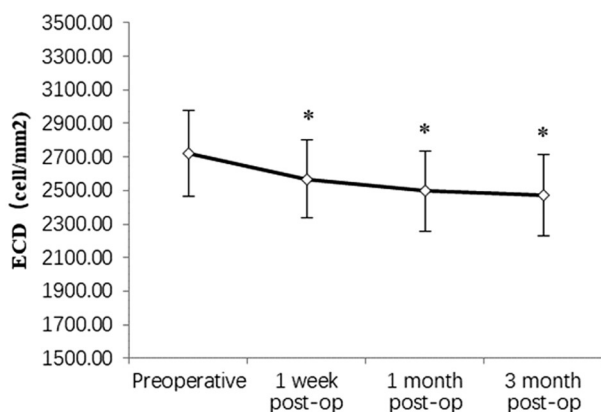


图3 术前和术后1周、1个月和3个月角膜内皮细胞密度比较

Fig.3 Comparison of ECD of preoperative and postoperative after 1 week, 1 month and 3 months

Note: * $P < 0.001$, compared with preoperative.

入术等^[6,7],角膜屈光手术是目前应用最为广泛的矫正屈光不正的手术方法之一。相对于传统同的角膜屈光手术,ICL植入术具有很多优点,打破了传统角膜屈光手术的局限性,解决了高度近视患者角膜过薄不能进行屈光手术的问题^[8],矫正屈光范围更广,并且手术为可逆性,人工晶状体可以更换和取出^[9,10]。有研究认为ICL植入术可以矫正角膜屈光手术带来的屈光偏差^[11]。Sanchez-Galeana等报导LASIK和PRK手术可以用来治疗ICL植入术后的剩余度数^[12],Zaldivar等认为LASIK联合ICL植入术是预测-18~-38D高度近视预后的手术方法^[13]。透明晶状体吸出联合人工晶体植入术是过去治疗超高度近视的方法之一,但存在视力调节能力丧失、视网膜脱离、黄斑囊样水肿和远期预测性差等弊端,因此未能推广^[14,15]。

ICL既能打破角膜屈光手术的局限性,又能维持透明晶状体的调节功能,成为新兴的矫正高度近视和超高度近视的有效方法。本研究结果显示患者在术后裸眼视力得到明显提高,但最佳矫正视力无明显差异。Alfonso等研究证实患者的术后裸眼视力高于术前最佳矫正视力,可能与ICL植入后其光学中心更接近研究光学节点有关^[16]。

ICL植入术后最为显著的并发症之一为植入的人工晶状

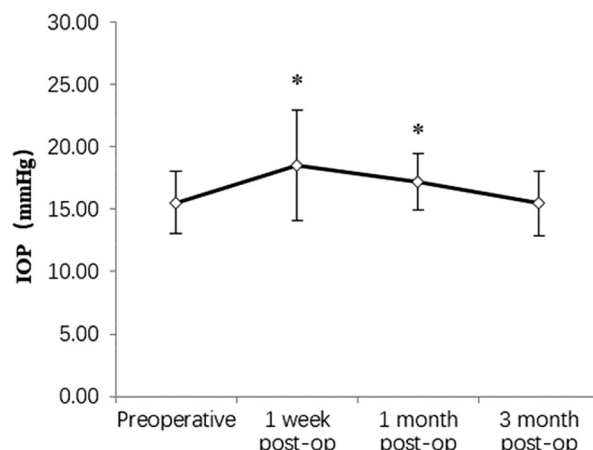


图2 术前和术后1周、1个月和3个月前房深度比较

Fig.2 Comparison of IOP of preoperative and postoperative after 1 week, 1 month and 3 months

Note: * $P < 0.001$, compared with preoperative.

体可能使房角变窄,前房体积减小,前房深度变浅^[17]。Chung等报导小梁虹膜夹角在术后1个月减少了42%,但在后续的33个月检测中并无进一步变窄^[18]。Fernandez-Vigo等发现小梁虹膜夹角在术后1个月内由34%降至42%,在3个月左右达到稳定^[19]。有研究认为ICL植入术可能导致中央角膜厚度减少,瞳孔直径和K值发生改变^[20-22]。本研究对前房深度、眼压和角膜内皮细胞密度等指标术后3个月和术前进行了统计学分析,发现术后眼压与术前变化无明显差异,前房深度及角膜内皮细胞均较术前明显降低,提示ICL植入术短期内对眼内压的安全性较好。术后3个月角膜内皮细胞密度较术前有减少,但各患者的角膜内皮细胞密度术后维持在2000个/mm²以上,在安全范围内。以往研究认为植入后房型人工晶状体后,人工晶状体位置异常是导致术后青光眼、白内障发生的最主要原因^[23-25],但在本研究中,短期内并无晶状体偏位、易位情况发生。

本研究结果表明ICL植入术术后视力和视觉质量得到明显提高,对眼压影响不显著,发生视网膜脱离和黄斑囊样水肿概率较低。在做好术前筛查的前提下,其具有较高的有效性和安全性。但本研究纳入患者数量较少,随访时间较短,ICL植入术用于矫正高度近视的长期临床疗效和安全性均有待于进一步研究证实。

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