Observation of the effect of extracapsular cataract extraction and intraocular lens implantation through small scleral tunnel incision

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Abstract

Objective: to evaluate the clinical efficacy of intraocular lens (IOL) implantation through scleral tunnel cataract extraction. Methods: a total of 257 cataract patients (270 eyes) were performed with small incision extracapsular cataract extraction and intraocular lens implantation. The visual acuity improvement and recovery after operation and the complications during and after operation were observed. Results: at 1d, 3d, 1 month, 2 months and 3 months after surgery, the number of eyes with naked eye vision 0.5 was 72.9%, 77.4%, 85.6%, 89.6% and 92.9%, respectively. Conclusion: the postoperative visual acuity can be improved, the pupil shape can be well maintained and the corneal astigmatism can be well controlled.

Keywords

scleral tunnel small incision; Cataract; Clinical curative effect

1. Introduction

There are many causes affecting the incidence of cataract, such as human physiological aging, immune genetics, nutritional disorders, human metabolism and the external environment can lead to metabolic disorders of the lens, so that the lens protein denaturation and clouding, that is, cataract. Cataract can be divided into congenital cataract and acquired cataract. At present, domestic treatment methods for cataract mainly include drug treatment and surgical treatment [1]. Drug therapy has no good effect on cataract patients. Surgical treatment is divided into phacoemulsification and incision capsular excision. Phacoemulsification uses ultrasound to crush the nucleus of the lens to a chylous state, and then at the same time, the cortex is sucked out, and the posterior capsule of the lens is retained, which can be implanted into the chamber intraocular lens at the same time [2]. Because the phacoemulsification equipment is more expensive and the treatment cost is high, it is difficult to promote to the masses in the primary hospitals. Small incision extracapsular cataract extraction and intraocular lens implantation make up for the shortcomings of these methods, thus benefiting the majority of grassroots people.

2. Clinical data and methods

2.1 Patients enrollment

In this study, all the patients had grade 3-4 hard nuclear cataract. Among them, there were 257 patients (270 eyes), 114 women (120 eyes) and 143 men (150 eyes). The patients ranged in age from 50 to 89 years, with an average age of 65 years. The lens was implanted with an optical diameter of 5.5mm. The degree of the intraocular lens was calculated by SRKII formula.
Surgical methods [2]: using conventional ball after anesthesia and compression method to lower intraocular pressure, fixed line rectus suture, 11 o clock to the vault of the eye conjunctival flap for the basement, 1.5 2 mm after corneal limbus above place to do a horizontal shape 6-7 mm long lamellar sclera incision, do to 1 mm inside the cornea, sclera tunnel piercing into the anterior chamber, and injecting viscoelastic agent, the circular capsulorhexis was about 5 mm in diameter. The water nucleus was separated and transferred to the anterior chamber, and the internal incision was enlarged so that the internal orifice was larger than the external orifice. Viscoelastic agent was injected into the anterior chamber and the capsule and implanted into the posterior chamber intraocular lens. And make the front room watertight state. The incision does not require suture (1-2 stitches if necessary). Patients were treated as usual after surgery.

2.2. After testing

Before and after surgery, 3 days, 1 week, 1 month, 2 months, and 3 months, the patient was examined by a dedicated tester for visual acuity measurement and mean corneal assay.

2.3. Statistic analysis

Significance was defined as p<0.05 as calculated by T-test.

3. Results

3.1. Vision

At 1d, 3d, 1 month, 2 months and 3 months after surgery, there were 197 eyes (72.9%), 209 eyes (77.4%), 231 eyes (85.6%), 242 eyes (89.6%) and 251 eyes (92.9%) with naked eye vision 0.5 in 257 patients (table 1).

Table 1 postoperative mean corrected visual acuity of naked eyes

<table>
<thead>
<tr>
<th>Date after surgery</th>
<th>eyes</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1d</td>
<td>197</td>
<td>72.9%</td>
</tr>
<tr>
<td>3d</td>
<td>209</td>
<td>77.4%</td>
</tr>
<tr>
<td>1 month</td>
<td>231</td>
<td>85.6%</td>
</tr>
<tr>
<td>2 month</td>
<td>242</td>
<td>89.6%</td>
</tr>
<tr>
<td>3 month</td>
<td>251</td>
<td>92.9%</td>
</tr>
</tbody>
</table>

3.2. Corneal astigmatism

According to table 2 below, there was no significant difference in the average corneal astigmatism between the patients before and after surgery (p>0.05). The difference in mean astigmatism between preoperative and postoperative was only 0.02d.

Table 2 corneal astigmatism before and after surgery

<table>
<thead>
<tr>
<th>time</th>
<th>Eyes</th>
<th>Mean astigmatism (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before surgery</td>
<td>270</td>
<td>0.82±0.81</td>
</tr>
<tr>
<td>3d after surgery</td>
<td>270</td>
<td>0.88±0.67</td>
</tr>
<tr>
<td>1 month after surgery</td>
<td>248</td>
<td>0.86±0.52</td>
</tr>
<tr>
<td>2 month after surgery</td>
<td>247</td>
<td>0.85±0.85</td>
</tr>
</tbody>
</table>
### 3.3. Complications

Complications are divided into intraoperative complications and postoperative complications. Intraoperative complications were mainly iatrogenic tear, posterior capsular rupture, corneal edema and fundus hemorrhage, etc. No cataract incision leakage was found in this study. Postoperative complications were corneal edema, uveal reaction, transient ocular hypertension and anterior chamber hematocele. Postoperative corneal edema disappeared within 5-7 days after the application of eyedrops and ointment, and there is no complications in the 6-12 months follow-up period.

### 4. Conclusion

In this study, the effect of scleral tunnel small incision extracapsular cataract extraction and intraocular lens implantation on patients was observed and compared before and after surgery. Small incision surgery can be better applied to patients with primary cataract. It has the advantages of good curative effect, wide practicability, easy operation by surgeons, low cost and few postoperative complications. Extracapsular cataract extraction with small incision has certain advantages over drug therapy with little curative effect and expensive phacoemulsification [3].

### References

