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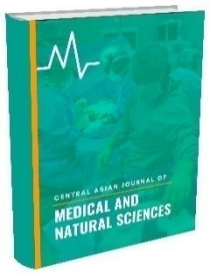

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PHAKIC INTRAOCULAR LENSES (PHIOL) IN THE TREATMENT OF PATIENTS WITH HIGH DEGREE MYOPIA

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Abstract: 40 operations of implantation of posterior chamber phakic IOL of RSC-3 model were performed in 20 patients (40 eyes) aged from 18 to 28 years. High visual acuity of 0.7-0.8 with correction was achieved on the 3-4 day after the operation. Refraction decreased to emmetropic. There were no complaints from the patients in the distant period. The method of phakic IOL implantation is characterised by accuracy and stability of refractive effect.

Key words: implantation methods, myopia correction, transparent lens

Introduction: Correction of high myopia in order to preserve full visual acuity is relevant both socially and scientifically. One of the directions in refractive surgery, especially intensively developed and studied during the last decade, is the implantation of a negative corrective lens (IOL) inside the eye while preserving its own transparent crystalline lens [1,4]. Due to continuous improvement of materials, technology of phakic IOL manufacturing, improvement of the method of calculation and size of the artificial lens, methods of their implantation, appearance of new instruments and medical preparations that allow this technology to be safe for correction of high degrees of myopia, this method is a correct and often the only safe alternative to other methods. It is possible to accurately predict the refractive effect and achieve high functional results while preserving accommodation.

In recent years, there has been increased interest in the correction of high-grade myopia by implantation of a negative IOL into a phakic myopic eye through a small, self-sealing

incision while preserving the native clear lens [2,3,5].

Purpose of the study: To investigate the efficacy of phakic IOL implantation for the correction of high degree myopia, as well as the effect of this operation on the anatomo-optical parameters of the eyes.

Material and methods of the study: We examined 20 patients aged 18 to 28 years with high degree myopia, who were on outpatient and inpatient treatment in the department of eye diseases of the multidisciplinary clinic of Samarkand State Medical University and the ophthalmological centre of Professor A.A. Yusupov.

The patients' complaints consisted in difficult tolerance and sometimes in absolute intolerance of glasses or contact lenses, in rapid eye fatigue, in discomfort of the visual analyser, in dizziness, in a feeling of heaviness in the eye area, in redness of the eyes after minor work at a close distance. Wearing thick glasses prevented the patients from doing their work: they pressed the bridge of the nose, limited the fields of vision. In addition, even with short-term use of corrective devices, their visual acuity did not meet their domestic and professional needs. Thanks to surgery, they would like to get rid of unaesthetic spectacle lenses and thus improve their appearance. The majority of patients opted for surgery for professional reasons, due to pronounced asthenopic phenomena arising from visual strain. Wearing contact lenses led to "dry eye" syndrome, eye redness, conjunctivitis, keratitis. Laser correction was contraindicated due to thin cornea.

All patients underwent a complete ophthalmological examination according to the traditional method. To assess the state of functions of the visual organ and refractive apparatus, the following methods of examination were performed: visiometry according to the standard table of Golovin and Sivtsev, skiascopy after mydriasis, refractometry and ophthalmometry on the "Huvitus" apparatus, biomicroscopy, ophthalmoscopy, ophthalmoscopy, ultrasound eye examination, ultrasound biomicroscopy (UBM) and optical coherence tomography (OCT) of the anterior and posterior eye, pachymetry and corneal topography, accommodation volume on a proximeter.

Before surgery, special attention was paid to the visual acuity without and with full spectacle correction, as well as with contact correction. Patients with visual acuity with correction not less than 0.2 were selected for the operation. When examining the anterior segment of the eye by biomicroscopy, the cornea was transparent, the relief and iris pattern were without peculiarities, concordant and direct pupil reactions to light were preserved. According to ultrabiomicroscopic examination, the depth of the anterior chamber varied from 3.2 to 3.6 mm (average 3.35 mm). At ophthalmoscopy, peripheral chorioretinal dystrophy of the retina was noted in 8 patients, which was preliminarily subjected to prophylactic peripheral laser photocoagulation before the operation. Keratotopography showed the thickness of the cornea, which was less than normal in the central zone (average 4.81 μm). Refraction ranged from -10.0 to -14.0 dpt (mean -12.5 dpt). Of the total number of patients, 14 were diagnosed with anisometropia, of which 5 had a difference of more than 3 dptr. The method of FIOL calculation was selected according to a specially proposed table and nomogram developed in the ISTC "Eye Microsurgery", on the ultrasound diagnostic device "OcusanRXP" of "Alcon" company in the A-scanning mode:

- for myopia from 7 to 11 dptr, 1 dptr was added and 1 dptr was subtracted from this value,
- for myopia from 11 to 15 dptr, IOLs of the same power were used,
- at myopia from 16 to 20 dptr the IOL power was reduced by 1 dptr.

Intraocular pressure in all patients was within the normal range. All patients underwent laser

iridectomy one week before the operation under local parabulbar anaesthesia.

Traditional implantation of soft posterior chamber phakic intraocular lenses of RSC-3 model manufactured by "NEP Eye Microsurgery" LLC was performed in both eyes. The optical power of the implanted IOLs varied from - 8.0 dptr to - 14.0 dptr, which averaged - 9.75 dptr.

Surgical technique: the surgical field was treated with betadine solution 3 times. The operation was performed under local anaesthesia. Epibulbar eye was injected 3 times with 1% alcaine solution, retrobulbarly was injected with 2% lidocaine solution 4 ml. The ocular slit was widened with a blepharostat. At 12 o'clock through a tunnel self-sealing incision up to 4 - 5 mm wide, a paracentesis was made with a keratome at 3 o'clock with a length of 2.4 mm, through which viscoelastic was injected into the anterior chamber. The crystalline lens was withdrawn through the incision into the posterior chamber and a flexible IOL (OcyflexAcryso) was implanted into the chamber using an injector. The viscoelastic was removed using the push-push technique with a Simcoe cannula. Depending on the nature of the corneal astigmatism, either the paracentesis was extended to 2.8 mm or an additional 2.8 mm tunnel knife incision was made in the strong meridian. The anterior chamber and ophthalmotonus were restored with physiological solution, and hydration of the incision edges was performed. Suturing was not required.

Results and discussion of the study: No serious complications were observed at the time of surgery. The follow-up periods of surgery ranged from 1 year to 6 years. The operative and postoperative periods were smooth. In the early postoperative period all patients received Maxitrol 2 drops 6 times a day for 20 days, except for 2 patients who had transient ophthalmohypertension as a result of pupillary block. The attack was controlled by medication miosis by injecting 0,5 % solution of timolol - 2 drops 2 times during 3 days and orally by tablet 0,25 g of diacarb - 2 times a day. After that the patients underwent additional laser iridectomy.

The visual acuity of the patients on the 3-4 day after the operation exceeded the value of visual acuity before the operation, i.e. increased to 0.5 - 0.6 without correction and 0.7 - 0.8 with correction.

One month later the uncorrected visual acuity averaged 0.65 ± 0.11, which exceeded the result of preoperative visual acuity correction by an average of 35%. Loss of corrected visual acuity was not detected in any case. Refraction in 18 patients decreased to emmetropic, in 2 patients - to mild myopic, in the range of spherical component from - 0.25 to - 0.75 dptr and cylindrical component to - 0.5 dptr in only one case.

There were no complaints from the patients in the long term.

One of the special aspects of observation of these patients was to study the effectiveness of the operation on the subjective feelings of the patients, as all the patients were people of working age, working in different branches of the national economy. After the operation, the patients' performance at a close distance significantly improved, the feeling of eye fatigue decreased, the subjective boundaries of peripheral vision expanded. The patients became confident, purposeful, the fear of low vision disappeared forever, they got rid of wearing thick glasses and painful contact lenses. They considered themselves full-fledged members of society, the range of their professional activities increased.

Conclusions:1. Correction of high degree myopia by implantation of FIOL model RSC-3 manufactured by "NEP Eye Microsurgery" LLC is a very effective method.

2. The refraction of the eyes became within the physiological emmetropia, visual acuity significantly improved, the volume and reserve of accommodation were restored - strengthened, anatomo-physiological parameters of the eyes were stabilised.

4. The corrective lens placed inside the eye is significantly superior to extraocular correction means in terms of image quality.

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