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ASSESSMENT OF THE CORNEAL SURFACE AFTER KERATOREFRACTIVE SURGERY FOR MYOPIA IN PATIENTS PREVIOUSLY USING ORTHOKERATOLOGICAL LENSES

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Abstract. Relevance. The results of keratorefractive surgery using Lasik and Femtolasik methods were evaluated in patients with mild myopia and complex myopic astigmatism. **Material and methods.** Operations on 20 eyes on the Alcon Wavelight laser unit were performed. Patients were divided into two groups, the first group — patients who had previously used orthokeratological night lenses, the second group, who used spectacle correction and soft contact lenses. **Results.** The stability of the result, the state of the surface of the corneal interface were evaluated.

Key words: myopia, astigmatism, orthokeratology, Lasik, Femtolasik

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ОЦЕНКА ПОВЕРХНОСТИ РОГОВИЦЫ ПОСЛЕ КЕРАТОРЕФРАКЦИОННЫХ ОПЕРАЦИЙ ПРИ БЛИЗОРУКОСТИ У ПАЦИЕНТОВ, РАНЕЕ ИСПОЛЬЗОВАВШИХ ОРТОКЕРАТОЛОГИЧЕСКИЕ ЛИНЗЫ

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Аннотация. Актуальность. Была проведена оценка результатов кераторефракционной хирургии методами Ласик и Фемтоласик у пациентов с анзометропией, в частности, с близорукостью слабой степени и сложным миопическим астигматизмом, и эмметропией на парном. **Материал и методы.** На лазерной установке Alcon Wavelight проведены операции на 20 глазах. Пациенты разделены на две группы, первая группа — пациенты, которым была проведена эксимерлазерная операция технологией Ласик, вторая группа, которым была проведена эксимерлазерная операция технологией фемтоласик. **Результаты.** Оценивалось стабильность результата, состояние поверхности роговичного интерфейса.

Ключевые слова: миопия, астигматизм, ортокератология, Ласик, Фемтоласик

Для цитирования:

Хаджимухамедов Б. Б., Бахритдинова Ф. А., Назирова С. Х., Миррахимова С. Ш., Кадырова М. А. оценка поверхности роговицы после кераторефракционных операций при близорукости у пациентов, ранее использовавших ортокератологические линзы. — Передовая Офтальмология. — 2023; 1(1):220-223.

ILGARI ORTOKERATOLOGIK LINZALARDAN FOYDALANGAN MIYOPIYASI BO'LGAN BEMORLARDA KERATORREFRAKTİV JARROXLIKDAN KEYINGI SHOX PARDA YUZASINI BAHOLASH.

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Annotatsiya. Dolzarbligi. Ko'zida anizometropiya bo'lgan bemorlarda, xususan, engil miyopiya va murakkab miyopik astigmatizm va ikkinchi ko'zida emmetropiya bo'lgan bemorlarda Lasik va Femtolasik usullaridan foydalangan holda keratorefaktiv jarrohlik natijalari baholandi. **Material va usullar.** Alcon Wavelight lazer qurilmasida 20 ta ko'z ustida operatsiyalar bajarildi. Bemorlar ikki guruhga bo'lingan bo'lib, birinchi guruh — Lasik texnologiyasi bilan eksimer lazer operatsiyasi o'tkazilgan bemorlar, ikkinchi guruhga femtolasik texnologiyasi bilan eksimer lazer operatsiyasi o'tkazilgan bemorlar. **Natija.** Natijaning barqarorligi, shox parda interfeysi yuzasining holati baholandi.

Kalit so'zlar: miyopiya, astigmatizm, ortokeratologiya, Lasik, Femtolasik

Iqtibos uchun:

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Relevance. Myopia and astigmatism are the most common eye diseases of the 21st century worldwide. In particular, there is a significant increase in refractive errors in the countries of Central Asia [10]. According to scientists, in the next 30 years the number of people suffering from myopia on the planet can reach up to 5 billion [6]. It should be remembered that myopia, especially high myopia, can potentially lead to the development of serious retinal complications in the form of myopic chorioretinal dystrophy, peripheral chorioretinal dystrophy and retinal detachment [7]. These complications lead to a pronounced and in some cases irreversible impairment of visual function. Given the above, one of the urgent tasks for ophthalmology is the development of an effective method for controlling and stabilizing myopia, as well as preventing complications associated with it [11].

Currently, orthokeratological lenses (OK lenses) have established themselves as the only effective method for controlling myopia in patients of childhood and adolescence [4]. Every year this direction continues to develop rapidly. The use of OK lenses allows patients to avoid wearing glasses and soft contact lenses (SCLs), while maintaining an active lifestyle during the daytime [5,8]. An important factor is that wearing OK lenses allows you to stop the axial growth of the eyeball, which in the long term provides the necessary stability of indicators necessary for the potential implementation of keratorefractive surgery in order to get rid of myopia and astigmatism [1,2,3].

As a rule, excimer laser vision correction using LASIK or femto-LASIK technology is recommended after myopia has stabilized. However, there is an opinion that the preliminary use of OK lenses affects the clinical and morphological and functional results of keratorefractive operations [9], which is the subject of a deeper study.

The purpose of our study. To conduct a comparative analysis of the clinical and functional results of keratorefractive excimer laser surgery in patients with anisometropia, in particular, with myopia and astigmatism in one eye, who previously used orthokeratological lenses.

Materials and methods. In the innovative DMC clinic, 20 patients (20 eyes) with anisometropia, in particular with mild myopia and astigmatism, who had previously worn orthokeratological lenses for up to 2 years and had emmetropia in the fellow eye, were examined and operated on.

The main criteria for inclusion of patients in the study were:

— the presence of anisometropia, emmetropia on the fellow eye

— stabilized myopia after wearing orthokeratology lenses (no progression within 1 year)

— the thickness of the cornea in the center before the operation is not less than 490 microns;

— absence of pathological changes in the cornea, chronic inflammatory eye diseases;

The patients were divided into 2 groups: group 1 — patients who underwent excimer laser vision correction using LASIK technology, group 2 — patients who underwent femto-LASIK surgery. All patients wore Moonlens orthokeratology lenses from SkyOptix TMLLC in the night mode before surgery for up to 2 years. The age of the patients varied from 18 to 20 years. The study involved 11 female patients and 9 male patients. Before the operation, patients did

Table 1
Preoperative parameters of the organ of vision.

	1st group	2nd group
Sph.eq	-2,85±0,8 dptr	-2,67±0,5 dptr
Cyl.comp	-1,56±0,4 dptr	-1,39±0,6 dptr
Axial	24,99±0,09 mm	25,01±0,08 mm
K1	43,4±0,7 dptr	43,0± 0,8 dptr
K2	46,2± 0,8 dptr	45,8± 0,7 dptr
Pachymetry	537.4±8.1 mkm	528.0±7.2 mkm

not wear orthokeratological lenses for 2 months. All patients underwent standard and special methods for diagnosing the organ of vision, including visometry, keratotopography (WaveLight Oculyzer II), A-scan (Tomey «OA-2000»), optical coherence tomography of the cornea (Optopol revo), B-scan, Schirmer test and Norn's test. In the 1st group, the flap was formed using an Evolution 3E microkeratome with a 90 μm head (MORIA SA, France), and in the 2nd group, using a femtosecond laser using a Wavelight FS 200 unit (Alconlab., USA) with a programmed flap thickness of 100 μm.

Results and discussion. The intraoperative and postoperative period passed without complications, in all patients the correct fixation of the flap was observed. The examination was carried out the next day after the operation, after 7 days, after 1 and 6 months. The severity of dry eye syndrome (DES) in both groups was assessed using the OSDI scale, Schirmer's test and Norn's test.

Table 2
Corneal interface parameters.

Parametres	1st group (n=10)			2nd group (n=10)		
	Before operation	After 1 month	After 6 month	Before operation	After 1 month	After 6 month
Schirmer's test	14,8±0,08	12,9±0,08	13,9±0,09	14,9±0,10	14,0±0,8	14,2±0,07
Norn's test	19,1±0,04	16,3±0,07	17,1±0,05	18,8±0,06	18,9±0,04	19,0±0,05
OSDI scale	20,5±1,51	33,1±1,23	30,2±1,55	21,5±1,12	31,5±1,22	29,1±1,25

The data in Table 2 show that all patients had signs of DES before surgery. It should be noted that after the operation, at 1 and 6 months of observation, differences can be observed in the parameters of the Schirmer test and the Norn test; in patients of the 2nd group, DES symptoms were observed less frequently, given the less traumatic effect of the femtosecond laser on the corneal surface during the formation of the corneal flap. The axial size of the eyeball was measured in patients before the excimer laser vision correction, as well as after 6 months.

It can be seen from this table that the differences in the axial values in the control group changed insignificantly after the operation, however, the differences were more pronounced in comparison with the main group, which used OK lenses before the operation. The results obtained indicate the stabilization of myopia when wearing OK lenses.

Conclusion. Excimer laser surgery for patients who previously wore orthokeratological lenses is a rational continuation of the correction of myopia and astigmatism. These methods of surgical treatment are highly effective, safe and predictable. The previous wearing of orthokeratological lenses contributes to the stability of the postoperative result. Femto-LASIK surgery is preferred over LASIK surgery due to the lower risk of developing dry eye syndrome in patients who previously wore orthokeratological lenses.

Table 3
Analysis of the axial size of the eye before and after ELS.

	The main group of patients who used OK lenses before ELS, n=20	Control group patients who did not use OK lenses before ELS, n=20
Before operation	25,04±0,02 mm	24,99±0,03 mm
After 6 month of ELS	25,05±0,02 mm	25,09±0,03 mm

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