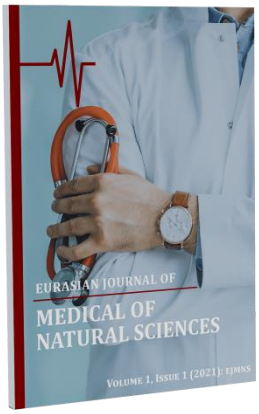
EURASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES
Innovative Academy Research Support Center
UIF = 8.3 | SJIF = 5.995 www.in-academy.uz



MODERN CONTACT CORRECTION

Kholmirzaev Abboskhon Lutfillo ugli
5th year student of the Department of Treatment
Kholmatova Yakutkhan Ne'mattillaevna
Scientific advisor
https://www.doi.org/10.5281/zenodo.10656307

ARTICLE INFO

Received: 06th January 2024
Accepted: 13th February 2024
Online: 14th February 2024

KEY WORDS

LASIK, soft contact lenses, myopia, method, orthokeratology contact lenses.

ABSTRACT

The article presents a comparative analysis of the results of a study of functional indicators of correction of myopia (astigmatism) in 20 patients (20 eyes) after excimer laser vision correction (LASIK) with the prescription of soft contact lenses (SCL) and orthokeratological lenses (OKL). It was revealed that after LASIK, the use of OKL, as well as SCL, allows one to obtain high functional results of vision correction.

INTRODUCTION

Over the past decades, contact vision correction has been a dynamically developing area of non-invasive methods of optical correction of refractive errors [1]. This is evidenced by the steady increase in the number of contact lens (CL) users. Today, SCL is undoubtedly the most popular and widespread. The use of SCL helps to improve visual performance, improves the acuity of deep vision, as well as the condition of the accommodative apparatus of the eye [2, 4, 5, 10].

Currently, there is also an active development of orthokeratology. It is known that using orthokeratology lenses (OCLs) it is possible to achieve temporary flattening of the cornea in doses with the formation of an optical zone of the required refraction [2]. The high functional results obtained with OCL [2], as well as the night mode of their use, favorably influence the widespread use of this technique among CL users of different ages.

It should be noted that as a result of keratorefractive interventions, the cornea has a modified profile, which, in the presence of ametropia, does not always allow one to obtain high functional values when correcting vision using standard CL options, as well as achieve their comfortable use [3].

MATERIALS AND METHODS

Contact vision correction is a method of correcting vision defects by wearing contact lenses on the eyes.

Lenses can be soft or hard. The latter are divided into gas-permeable and gas-tight. These days, rigid gas-tight lenses have fallen out of favor. Most often, hard lenses are used to treat keratoconus (a pathology of the cornea in which it protrudes).

But with the help of soft lenses, such common eye diseases as myopia, farsightedness and astigmatism are corrected. An ophthalmologist selects lenses after conducting a complete examination of the visual organ. In addition, during the appointment he teaches the beginner how to put on, remove and care for lenses.

The main advantages of contact correction:

Invisibility of lenses on the eyes, or vice versa, improvement of the natural shade of the eyes with their help;

The lenses do not interfere with vision and do not impair spatial perception in any way;

The ability to correct vision if the difference between the eyes is up to 4 diopters;

In case of a fall or accident, the eyes are not injured.

Disadvantages of contact vision correction:

The need for careful care, if the rules are violated, eye inflammation may develop (the exception is daily replacement lenses);

Inability to use when the patient is sick with eye diseases, as well as some colds;

For women, it is necessary to select special cosmetics (for sensitive eyes).

Indications for using eye lenses:

- Myopia up to 20 D;
- Farsightedness up to +20 D;
- Astigmatism up to +/- 6 D;
- Anisometropia (if the difference between the 2 eyes exceeds 2.0 D).

There are different types of contact lenses. They are divided according to oxygen permeability, moisture content, wearing mode and replacement mode. The highest quality contact lenses are those with the highest oxygen permeability coefficient and the shortest period of use (for example, one-day silicone hydrogel lenses).

Contact correction products are made from various polymer materials - hydroxymethyl methacrylate, polymethyl methacrylate, silicone copolymers, etc.

We observed 20 patients (20 eyes) who had previously undergone LASIK surgery. At the time of examination, all patients complained of insufficient distance vision that arose more than 1 year ago. The average age of the subjects was (26.8 ± 0.27) years (from 20 to 30 years). The patients were divided into 2 comparable groups of 10 people (10 eyes) each. In group 1, uncorrected visual acuity (UCVA) ranged from 0.2 to 0.5 (average 0.24 ± 0.01), sphere equivalent (S/E) from -1.0 to -2.25 diopters [average (-1.58 ± 0.1) diopters], with astigmatism up to -0.5 diopters, best-corrected visual acuity (BCVA) - from 0.9 to 1.0 (average 0.98 ± 0.01). Patients from group 1 were prescribed silicone hydrogel SCL ("1-Day Acuvue TruEye" from Johnson & Johnson) for daily wear.

In group 2, uncorrected visual acuity (UCVA) ranged from 0.1 to 0.4 (average 0.23 ± 0.01), sphero-equivalent (SE) from -1.25 to -2.25 diopters (on average 1.63 ± 0.1 diopters), with astigmatism up to -0.75 diopters, best-corrected visual acuity (BCVA) - from 0.9 to 1.0 (average 0.99 ± 0. 01). For vision correction, patients of group 2 were prescribed OCL (Emerald from Euclid Systems Corporation (USA)), used during sleep (6-10 hours). Repeated studies of the state of visual functions (BCVA, BCVA), refractive parameters (SE), as well as biomicroscopy were performed at 9-10 a.m. 1, 3 and 6 months after the prescription of CL.

The results obtained were processed by statistical analysis using the Statistica 8.0 program.

RESULTS AND DISCUSSION

When examining both groups of patients before selecting contact lenses during keratotopography, characteristic changes in the profile of the cornea were noted, corresponding to the condition after LASIK surgery. For patients from group 1, SCL was selected based on refraction parameters, corneal diameter and its flattened shape. Accordingly, for adequate proportionality of the contact lens profile and the sagittal size of the cornea, the SCL of the daily replacement plan "1-Day Acuvue TruEye" from Jhonson & Jhonson with R = 9.0 mm was selected.

In group 2, the selection of OCL was carried out according to the generally accepted method based on refraction data, keratotopograms, as well as a fluorescein test performed when staining a contact lens. Taking into account the time factor for the formation of the maximum functional result, the first BCVA data were assessed 1 month after the prescription of OCL [3]. It should also be noted that keratometric data recorded after LASIK were taken into account, and not before excimer laser correction. During the selection of CLs, the correct (central) position of the lens with sufficient mobility was achieved in all patients (for SCL - from 0.1 to 0.5 mm, for OCL - from 1.0 to 1.5 mm). Additionally, during the period of adaptation to CL, moisturizing drops with a keratoprotective effect were prescribed. During the entire observation period, no complications were identified. Functional and refractive results of OCL and SCL correction are presented in the table.

Table 1

Dynamics of functional and refractive indices in patients using SCL and OCL after LASIK, (M ± m)

Indicators	Observation period after CL selection					
	before selection		1 month		3-6 months	
	1st group	2nd group	1st group	2nd group	1st group	2nd group
NCVA	0,24 ± 0,01	0,23 ± 0,01*	0,26 ± 0,01	0,94 ± 0,01**	0,30 ± 0,01	0,97 ± 0,01
BCVA	0,90 ± 0,01	0,92 ± 0,01	0,92 ± 0,01	0,94 ± 0,01	0,93 ± 0,01	0,94 ± 0,02
SE, diopters	-1,58 ± 0,10*	-1,63 ± 0,10*	-0,46 ± 0,10**	-0,51 ± 0,10**	-0,41 ± 0,10	-0,43 ± 0,10

*The difference between the mean values, which are marked * and **, is statistically significant ($t > 2.0$; $p < 0.05$).*

During the selection process and during 1 month of observation, when CL was prescribed, a significant ($p < 0.05$) increase in BCVA and a decrease in SE in group 2 was obtained. At the same time, no significant differences in BCVA were obtained between the use of OCL and SCL ($p > 0.05$), which indicates an equal positive effect of both CL options on BCVA parameters.

However, it is possible due to the design features of OCL, which best corresponds to the changed profile of the cornea after LASIK, as well as the mechanism of action that helps to increase sphericity and reduce total aberrations [9] in the optical zone of the cornea, in the 2nd group in all patients achieved BCVA exceeding the initial BCVA parameters. In addition, despite the absence of significant differences in SE between groups and in the presence of an astigmatic component, patients using OCL reported more stable quality and higher visual acuity during the day than patients using SCL. Thus, patients from group 1 in 40% of cases (4 eyes) versus 20% (2 eyes) from group 2 complained of periodic blurred vision and lens sensation, which were eliminated by using moisturizing drops. Accordingly, the appointment of OCL in situations where it is impossible to achieve acceptable conditions for clear and comfortable vision is preferable to SCL in the presence of myopia, including with an astigmatic component, after LASIK operations.

CONCLUSION

Prescribing OCL may be an option along with using SCL in the presence of myopia (astigmatism) after LASIK. The use of OCL makes it possible to achieve high and stable functional results of vision correction, and can also increase the comfort and tolerability of CL with altered corneal topography parameters.

References:

1. Bodrova S.G. Morphofunctional changes in the cornea after long-term wearing of soft contact lenses affecting the results of keratorefractive operations: abstract. dis... cand. honey. Sci. — Saransk, 2019.
2. Azatbaevna, S. S. (2023). THE ATTEMPTS OF CURRENT KARAKALPAK POETRY TO ACHIEVE THE LEVEL OF WORLD POETRY.
3. Azatbaevna, S. S. (2023). THE ATTEMPTS OF CURRENT KARAKALPAK POETRY TO ACHIEVE THE LEVEL OF WORLD POETRY.
4. Raqiboyevna, G. M. (2023). Hereditary Pigmentary Degeneration. *American Journal of Pediatric Medicine and Health Sciences (2993-2149)*, *1*(10), 146-149.
5. AMINOVA, Z. P. (2021). THE NECESSITY OF MULTIMEDIA IN TEACHING RUSSIAN LANGUAGE. *THEORETICAL & APPLIED SCIENCE Учредители: Теоретическая и прикладная наука*, (9), 731-733.
6. Aminova, Z. P., & Abdinazarov, K. S. (2021). THE EFFECTIVENESS OF GT (GOOGLE-TRANSLATOR) IN TRANSLATING WRITTEN CONTEXTS IN AGRICULTURE. *Актуальные проблемы современной науки*, (3), 41-45.
7. Aminova, Z. P. (2020). TECHNOLOGY IN TRANSLATING PROFESSION BASED CONTEXTS. *Modern Science*, (11-2), 222-224.
8. Abdurahim o'g'li, Q. A., & Komilovna, G. L. (2023). IKKILAMCHI KATARAKTANI DAVOLASHDA YAG-LAZER KAPSULOTOMIYA USULI SAMARADORLIGI VA ASORATLARINI BAHOLASH. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *23*(3), 26-30.
9. Uralovna, B. Z. (2023). The Place of the Uzbek Language in the World Community. *Genius Repository*, *25*, 35-37.

10. Kaipbergenova, S. (2024). APPROACHES IN COMPUTER LINGUADIDACTICS IN TEACHING FOREIGN LANGUAGES USING NETWORK TECHNOLOGIES. *Models and methods in modern science*, *3*(1), 255-257.
11. Sarsenbaevna, B. G. (2022). Methods of Using Games in Teaching Grammar. *International Journal on Integrated Education*, *5*(6), 102-104.
12. Ашурова, О. Ю., & Кодирова, Г. Р. (2020). ПРИМЕНЕНИЕ ЭНТЕРАЛЬНОЙ ОКСИГЕНОТЕРАПИИ (КИСЛОРОДНОГО КОКТЕЙЛЯ) В КОМПЛЕКСНОМ ВОССТАНОВИТЕЛЬНОМ ЛЕЧЕНИИ ГИПОКСИИ И ХРОНИЧЕСКИХ БОЛЕЗНЕЙ ОРГАНОВ ДЫХАНИЯ. *Интернаука*, (46-1), 36-37.
13. Хакимов, М. Ш., Маткулиев, У. И., Ашуров, Ш. Э., & Кодирова, Г. Р. (2022). *Новый взгляд на оценку тяжести кровотечения из варикозно расширенных вен пищевода* (Doctoral dissertation, Узбекистан).
14. Kivaev A. A. Contact vision correction / A. A. Kivaev, E. I. Shapiro. - M.: LDM Service, 2020. - 5 p.
15. Bruce A. S. Clinical aspects of contact correction: a reference guide / A. S. Bruce, N. A. Brennan. - M.: CIBA Vision Corporation, 2015. - 89 p.
16. Belousov, V.V. Contact lenses of tomorrow / V.V. Belousov // Bulletin of Optometry. - 2017. - No. 7. - P. 22-26.