The Combined Approach in the Treatment of a Patient with Glaucoma and Endothelial-Epithelial Corneal Dystrophy: A Clinical Case Description

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ABSTRACT

BACKGROUND: *Penetrating keratoplasty provides a possibility of restoring vision in patients with various corneal diseases, however, just like any surgical intervention, the operation is associated with certain risks and has a number of contraindications. One of the unfavorable prognostic factors in cases of penetrating keratoplasty is uncompensated glaucoma. Penetrating keratoplasty can result in the reactive postoperative hypertension, however, this is not a standard situation. In patients with a history of glaucoma, this complication occurs much more often than in patients without previously diagnosed glaucoma. The increase of intraocular pressure during the postoperative period in patients suffering from glaucoma, can lead to the progression of the disease and to the development of the transplant disease.* ***CLINICAL CASE DESCRIPTION:*** *This article presents a clinical case of a patient with juvenile glaucoma, which underwent several glaucoma surgeries and later he received an Ex-PRESS implanted glaucoma drainage. The drainage implant was in contact with the posterior surface of the cornea, as a result of which, initially local and further total endothelial-epithelial corneal dystrophy has developed with the formation of stromal cloudiness and progressing of pain syndrome. The drainage was removed and subsequently a decision was drawn up on arranging a penetrating corneal keratoplasty, for the critical flicker fusion rate was 30 Hz, which allowed for expecting a sufficiently high vision acuity during the postoperative period. However, despite the maximal hypotensive regimen, the intraocular pressure remained high, due to which, for the purpose of decreasing it before corneal transplantation, a transscleral diode laser cyclophotocoagulation was used.* ***CONCLUSION:*** *The presented clinical case demonstrates the efficiency of transscleral diode laser cyclophotocoagulation in a patient with uncompensated glaucoma in terms of the quality of preparation to penetrating keratoplasty.*

Keywords: *clinical case; transscleral diode laser cyclophotocoagulation; refractory glaucoma; juvenile glaucoma; intraocular pressure; penetrating keratoplasty.*

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BACKGROUND

Penetrating keratoplasty is a surgical procedure, during which the whole thickness of the patient cornea is replaced with the donor material. The surgery provides a possibility of restoring vision in patients with corneal cloudiness caused by various reasons, however, just as any other surgical intervention, it is associated with certain risks and has a number of contraindications [1].

The normal level of intraocular pressure is one of the key factors affecting the transparent survival of the transplant and adequate visual rehabilitation in patients undergoing the penetrating keratoplasty, for the background of high intraocular pressure has a high risk of transplant cloudiness [1].

The elevation of intraocular pressure after the surgery can be the result of mechanical factors, such as the blockade of the angle in the anterior chamber, as well as the inflammatory and immune reactions (the activation of the inflammatory mediators can contribute to the formation of fibrous tissue and scarring in the area of the anterior chamber angle) [2].

The manifestation of reactive postoperative hypertension is a frequent complication of penetrating keratoplasty with an incidence, according to various data, ranging from 17 to 35% of the cases. Patients

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Комбинированный подход в лечении пациента с глаукомой и эндотелиально-эпителиальной дистрофией роговицы: клинический случай

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АННОТАЦИЯ

Обоснование. *Сквозная кератопластика даёт возможность восстановить зрение у пациентов с различными заболеваниями роговицы, однако, как и любое хирургическое вмешательство, операция связана с определёнными рисками и имеет ряд противопоказаний. Одним из неблагоприятных прогностических факторов при сквозной кератопластике является некомпенсированная глаукома. Сквозная кератопластика может приводить к реактивной послеоперационной гипертензии, однако это не является стандартной ситуацией. У пациентов с глаукомой в анамнезе данное осложнение встречается гораздо чаще, чем у пациентов без диагностированной ранее глаукомы. Повышение внутриглазного давления в послеоперационном периоде у пациентов, страдающих глаукомой, может приводить к прогрессированию заболевания и развитию болезни трансплантата.* ***Описание клинического случая.*** *В данной работе представлен клинический случай пациента с ювенильной глаукомой, которому были проведены несколько антиглаукомных операций и впоследствии имплантирован антиглаукомный Ex-PRESS дренаж. Дренаж контактировал с задней поверхностью роговицы, в результате чего развилась вначале локальная, а затем тотальная эндотелиально-эпителиальная дистрофия роговицы с формированием стромальных помутнений и появлением болевого синдрома. Дренаж был удалён, и впоследствии было принято решение о проведении сквозной кератопластики роговицы, поскольку критическая частота слияния мельканий составляла 30 Гц, что позволяло ожидать достаточно высокой остроты зрения в послеоперационном периоде. Однако, несмотря на максимальный гипотензивный режим, внутриглазное давление оставалось высоким, в связи с чем для его снижения перед трансплантацией роговицы была выполнена транссклеральная диод-лазерная циклофотокоагуляция.* ***Заключение.*** *Представленный клинический случай демонстрирует эффективность транссклеральной диод-лазерной циклофотокоагуляции у пациента с некомпенсированной глаукомой в качестве подготовки к проведению сквозной кератопластики.*

Ключевые слова: *клинический случай; транссклеральная диод-лазерная циклофотокоагуляция; рефрактерная глаукома; ювенильная глаукома; внутриглазное давление; сквозная кератопластика.*

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with a history of glaucoma are subject to the highest risk of increasing and stable decompensation of intraocular pressure after penetrating corneal transplantation, the control of which is especially difficult in patients at the maximum hypotensive mode, as well as among the individuals that underwent various types of surgical glaucoma interventions [3–6]. This is why the presence of past history of uncompensated glaucoma in a patient represents an unfavorable prognostic factor before the conduction of penetrating keratoplasty.

The clinical case presented demonstrates the possibility of using the transscleral diode-laser cyclophotocoagulation before the conduction of penetrating keratoplasty in patients with uncompensated or sub-compensated glaucoma at the maximum hypotensive regime. Laser cyclophotocoagulation affects the structures of the ciliary body, responsible for the production of aqueous humour. They undergo the processes of destruction, due to which, the quantity of produced humour decreases and the intraocular pressure decreases. The patient had multiple surgeries

for refractory glaucoma, due to this, the cicatrization process was initiated practically along the whole limbus, which is why it could be supposed that the success of any fistulizing surgery could be doubtful. This is why the method of surgical intervention chosen was specifically the laser cyclophotocoagulation.

CLINICAL CASE DESCRIPTION

Patient data

Patient aged 37 years, presenting on 28.04.2023 to the Department of Emergency Ophthalmology Aid of the Moscow City Ophthalmology Center under the State Budgetary Healthcare Institution "Moscow Botkin Multidisciplinary Scientific-Clinical Center" of the Healthcare Department of the City of Moscow (DEOA MCOC MBMSCC) with the complaints of pain in the left eye and low vision acuity in the left eye.

Case history. The complaints were acutely progressing from 26.04.2023. The patient was not self-medicating, presenting directly to the DEOA MCOC MBMSCC. According to oral information provided by the patient, from 2009 he was diagnosed with glaucoma in the left eye (oculus sinister, OS), for which he was constantly using Dorzolamide 2% drops twice daily, Timolol 0.5% twice daily, Proxodolol 1% + Clonidine 0.25% twice daily and Latanoprost 0.005% once daily. Past medical history of multiple (2010, 2012 and 2016) glaucoma surgeries in the ophthalmology clinical hospital. In 2016 — implantation of the Ex-PRESS drainage, followed by its removal in 2020.

On admission. The ophthalmology status of the right eye (oculus dexter, OD) shows no abnormalities: vision acuity based on visometry results of (Visus, Vis) 0.7 sph -1.0D=1.0 (where the sph means sphere and D — diopters); the intraocular pressure is 16 mm.Hg. The ophthalmology status of the left eye on admission: Vis OS=1/∞, proectio lucis certa (correct light projection, i.e. separate foci of retina have preserved the capability of reacting to light). The intraocular pressure on palpation is "++". The eyelids show no signs of abnormalities with their closure being complete, the eyelash growth pattern is correct. On palpation, the eyeball is painful. The conjunctiva and the sclera show the following: congestive injection, above the upper limbus, there is a cystically modified filtering bleb. The cornea: the surface is rough, diffuse swelling of the epithelium and stroma, cloudiness in the stroma, pronounced folds were found in the Descemet membrane. The underlying layers are covered in haze. The anterior chamber is of medium depth, the aqueous humour of the anterior chamber is transparent. The iris has intact color with smoothened pattern, at the 12 o'clock position, a basal coloboma was found. The pupil: the shape is correct, the photoreaction is weakened. The eye lens was visualized as transparent. The fundus reflex is weakened. The vitreous body, as well as the fundal structures are not available for ophthalmoscopy due to the corneal status.

Transscleral diode laser cyclophotocoagulation

Diagnosis. The patient is hospitalized to the Ophthalmology Department No. 60 of the DEOA MCOC MBMSCC according to the urgent indications with the diagnosis of: «OS: decompensated glaucoma, endothelial-epithelial corneal dystrophy. OD: mild myopia».

Medication treatment. The maximal hypotensive regimen was prescribed to the patient (with additional Brimonidin 0.15% 3 times daily; Acetazolamide 1 pill once daily for 3 days).

Surgical treatment. 29.04.2023 — the ophthalmology status of the OS shows no changes, due to which a decision was drawn up on the necessity of surgical treatment. The procedure of transscleral diode laser cyclophotocoagulation was carried out in the left eye using the infrared laser with a wavelength of 810 nm, with the power of 800 mW and with an exposure of 20 seconds; the quantity of formed coagulates is 16.

Ophthalmology status. On 30.04.2023, the patient subjectively notes positive changes. The ophthalmology status of the left eye: Vis OS=0.01 eccentric, not correctable (i.e. the vision acuity cannot be corrected with glasses).

The intraocular pressure upon palpation is "+". The eyelids show no signs of abnormalities, the eyelash growth pattern is correct. The conjunctiva is pale-pink, mild superficial injection is found along with the filtering bleb above the left limbus and with cystous changes. The surface of the cornea is rough, insignificant swelling of the epithelium, stromal cloudiness and folded Descemet membrane. The underlying structures are hazed. The anterior chamber is of medium depth, the aqueous humour of the anterior chamber is transparent. The iris pattern is smoothened, basal coloboma was found at the 12 o'clock position. The pupil has a correct shape, the photoreaction is weakened. The eye lens was visualized as transparent. The fundus reflex is weakened. The vitreous body and the structures of the fundus are not accessible for ophthalmoscopy due to the status of the cornea (Fig. 1).

Recommendations on discharge. On 03.05.2023, the patient was discharged with the recommendations

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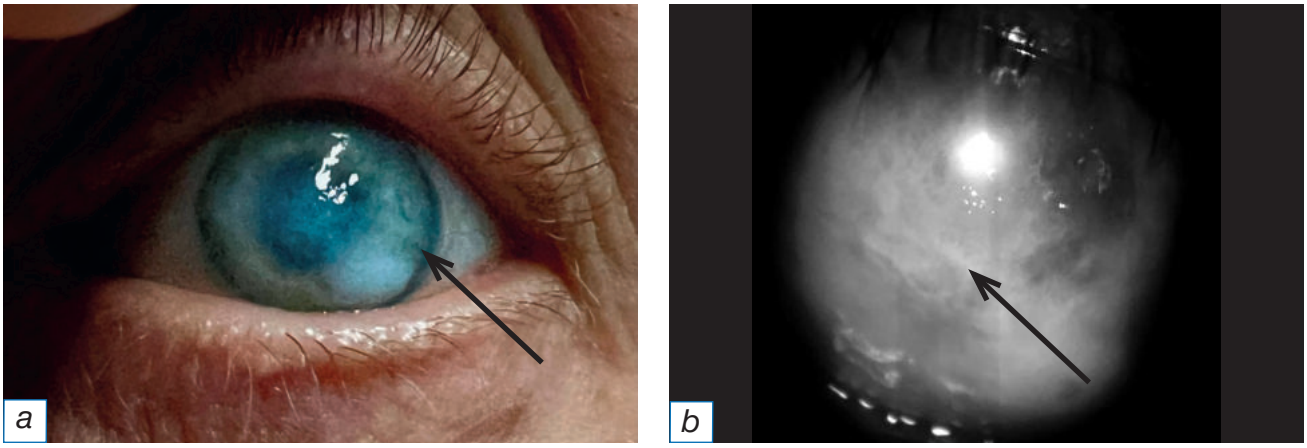

Fig. 1. Status of the eye after laser cyclophotocoagulation (before the conduction of the penetrating keratoplasty): *a* — appearance ×3; *b* — appearance ×16. The arrow indicates the swelling of the cornea with cloudiness in the stroma).

of following the hypotensive mode: Dorzolamide 2% twice daily, Timolol 0.5% once daily, Brimonidin 0.15% 3 times daily, Proxodolol 1% + Clonidine 0.25% twice daily, Latanoprost 0.005% once daily. Additional prescriptions included the anti-inflammatory, the antibacterial and the epithelization therapy: Bromfenac 0.09% eye drops once daily, Ciprofloxacin 0.3% + Dexamethasone 0.1% eye drops 3 times daily, Dexpanthenol 5% gel 3 times daily, intramuscular administrations of Ketorolak 30 mg once daily.

21.07.2023 — ophthalmology status (OS): VisOS=0.01, not correctable. Intraocular pressure — 15 mm.Hg. Critical flicker fusion rate — 30 Hz. The general eye status is stable. The conjunctiva is pale-pink, no signs of discharge were found. The status of the anterior and posterior segments of the eyeball corresponds to the ophthalmology status of 30.04.2023.

Penetrating keratoplasty

Diagnosis. OS: endothelial-epithelial corneal dystrophy, repeatedly operated juvenile grade IIIA glaucoma. OD: mild myopia.

Surgical treatment. On 01.11.2023, the patient was again hospitalized to the Ophthalmology Department No. 60 of the DEOA MCOC MBMSCC.

Surgery was conducted in the left eye: penetrating keratoplasty (diameter of the transplant — 8.5 mm, fixation with interrupted sutures).

Medication treatment. At the In-Patient Department, anti-inflammatory, antibacterial and epithelization therapy was prescribed: Bromfenac 0.09% drops once daily, Ciprofloxacin 0.3%+ Dexamethasone 0.1% drops 3 times daily, Phenylephrine 5.0% drops + Tropicamide 0.8% 3 times daily, Dexpanthenol 5% gel 3 times daily, intramuscular Ketorolak at a dosage of 30 mg once daily, intravenous Dexamethasone at a dosage of 8 mg once daily, oral Omeprazol — 20 mg once daily.

Ophthalmology status. Upon the examination on 02.11.2023, the patient has no complaints, subjectively reporting the improvement of the status. Ophthalmology status of the left eye: Vis OS=0.05, not correctable. Intraocular pressure 17 mm.Hg. The eyelids are unremarkable, capable of complete shutting, the eyelash growth pattern is correct. On palpation, the eyeball is painless. The conjunctiva and the sclera are pale-pink, above the upper limbus, there is a cystically changed filtering bleb. The cornea status is the following: the surface is smooth, glossy, the penetrating transplant is transparent, adapted, the interrupted sutures are clean and competent, single folds were found in the Descemet membrane. The anterior chamber is of medium depth, the aqueous humour of the anterior chamber is transparent. The iris has no changes in its color, the pattern is smoothened, at the 12 o'clock position, a basal coloboma was detected. The pupil: the shape is correct, active photoreaction is present. The eye lens is transparent. The fundus reflex is pink. The vitreous body contains floating cloudiness. The ocular fundus: the optic nerve disc is pale with a gray shade, the margins are clear, excavation 0.9, the vascular bundle is dislocated towards the nose, the macular area and the peripheral area show no signs of gross changes (Fig. 2).

Recommendations on discharge. On 03.11.2023, the patient was discharged for further dynamic follow-up by the ophthalmologist at the place of residence. The hypotensive regimen was corrected, the prescriptions included Dorzolamide 2% + Timolol 0.5% twice daily, Proxodolol 1% + Clonidine 0.25% twice daily. Additional prescriptions: Bromfenac 0.09% eye drops

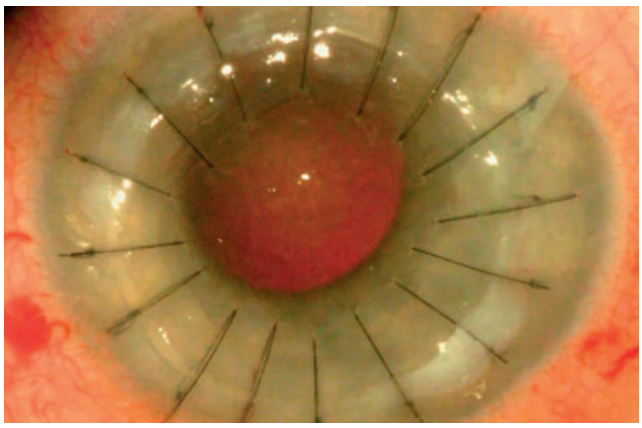

Fig. 2. Status of the eye after penetrating keratoplasty: postoperative day 1.

once daily, Phenylephrine 5.0% + Tropicamide 0.8% eye drops 3 times daily, Dexpanthenol 5% gel 3 times daily, Ciprofloxacin 0.3% + Dexamethasone 0.1% eye drops 3 times daily.

Outcome and results of further follow-up

On 22.01.2024, the patient had no complaints, the general status was satisfactory. Ophthalmology status of the left eye: Vis OS=0.16 with a 1.5 mm diaphragm, not correctable. Intraocular pressure — 17 mm.Hg. The eyelids show no signs of abnormalities, the eyelash growth pattern is correct. The conjunctiva is pale-pink, the filtering bleb was detected under the upper limbus, cystous changes were also found. The surface of the cornea is smooth and glossy, the penetrating transplant is transparent, adapted, and the interrupted sutures are clean and competent. The anterior chamber is of medium depth, the aqueous humour of the anterior chamber is transparent. The iris pattern is smoothened, the basal coloboma was found at the 12 o'clock position. The pupil has a correct shape, active photoreaction is present. The eye lens is transparent. The fundus reflex is pink. The vitreous body contains floating cloudiness. The ocular fundus: the optic nerve disc is pale with a gray shade, with clear margins, showing an excavation of 0.9, the vascular bundle is dislocated towards the nose, the macular area and the periphery show no signs of gross changes (Fig. 3).

At the moment of compiling the clinical case (May of 2024), Vis OS=0.2 with a diaphragm of 1.5 mm, not correctable. The intraocular pressure is 16 mm.Hg. The eye status is stable, no signs of discharge were found. The transplant is transparent, adapted, the sutures are clean and competent. The status of the anterior and posterior segments of the eye corresponds to the ophthalmology status of 22.01.2024.

Prognosis

As a result of conducted treatment (transscleral diode laser cyclophotocoagulation with further penetrating corneal transplantation) and dynamic follow-up within one year, the patient was diagnosed with an improvement of the vision acuity with correct light projection of up to 0.2 with a critical flicker fusion frequency of 30 Hz, which allows for supposing the favorable prognosis in terms of further improvement of the visual functions.

DISCUSSION

Uninterrupted transscleral diode laser cyclophotocoagulation is an effective method of stabilizing the ophthalmotonus in cases of insufficiency of surgical treatment in patients with refractory glaucoma [3, 4]. This type of surgical intervention, despite the high risk of developing complications (hemorrhagic, hypotension, cataracts, subatrophies of the eyeball), shows higher hypotensive effect comparing to the micro-impulse transscleral diode laser cyclophotocoagulation, which is why it is the method of choice in cases of repeatedly operated refractory glaucoma [7].

For the transparent survival of the keratotransplant, the normalization of the intraocular pressure is necessary [8]. An additional factor of corneal transplant survival is the absence of burn-induced reaction. Due to the fact that the applications of uninterrupted transscleral diode laser cyclophotocoagulation were

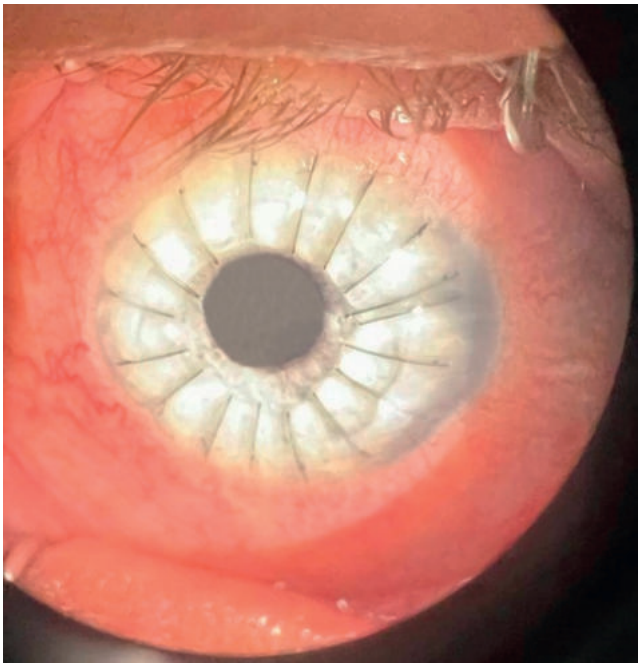

Fig. 3. Status of the eye after penetrating keratoplasty: follow-up month 3.

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applied distantly from the limbus zone, it can be judged that there was no significant damage of the cell growth zone, affecting further survival of the keratotransplant [9]. Within this context, there was no massive immune response observed, which provides adequate survival of the keratotransplant [10].

Taking into consideration all of the above, it can be supposed that transscleral diode laser cyclophotocoagulation can be carried out for decreasing the intraocular pressure in cases of repeatedly operated refractory glaucoma before the conduction of penetrating keratoplasty without the increased risk of developing the transplant disease [1].

As of today, the published clinical cases of such kind are few, however, the ones available demonstrate that transscleral diode laser cyclophotocoagulation allows for preserving the achieved vision acuity, the degree of keratotransplant transparency and for minimizing the required intake of hypotensive medications (duration of follow-up — up to 2 years) [3, 5].

CONCLUSION

This clinical case demonstrates the efficiency of using transscleral diode laser cyclophotocoagulation in a patient with uncompensated glaucoma as a preparation phase for conducting the penetrating keratoplasty. However, a single case is not enough to make convincing conclusion on high efficiency of this procedure in this category of patients, which, indeed, requires the conduction of additional research.

ADDITIONAL INFORMATION

Author contributions. *L.A. Popova:* study design development, review of publications on the topic of the article, manuscript writing; *A.I. Ibraimov:* patient treatment, approval of the concept and design of the study, manuscript writing; *I.B. Alekseev:* patient treatment, approval of the concept and design of the study, editing; *G.Sh. Arzhimatova*: manuscript editing. Thereby, all authors provided approval of the version to be published and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Consent for publication. The authors received written informed voluntary consent from the patient to publish personal data, including photographs (with the face covered), in a scientific journal, including its electronic version (signed on 2024 November 14). The volume of published data was agreed upon with the patient.

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REFERENCES

1. Кански Джек Дж. Кератопластика. В кн.: Кански Джек Дж. *Клиническая офтальмология: систематизированный подход* / под ред. В.П. Еричева. Пер. с англ. М.А. Аракелян и др. 2-е изд. Wroclaw: Elsevier Urban & Partner, 2009. С. 313–317. [Kanski JJ. Keratoplasty. In book: Kanski JJ. *Clinical ophthalmology: systematized approach.* Ed. by V.P. Yerichev. Transl. from English M.A. Arakelyan et al. 2nd ed. Wroclaw: Elsevier Urban & Partner; 2009. P. 313–317. (In Russ.)]
2. Dumitrescu OM, Istrate S, Macovei ML, Gheorghe AG. Intraocular pressure measurement after penetrating keratoplasty. *Diagnostics (Basel).* 2022;12(2):234. doi: 10.3390/diagnostics12020234
3. Маложен С.А. *Совершенствование системы реконструктивных операций у больных с осложненными бельмами и рефрактерной глаукомой:* Автореф. дис. … докт. мед. наук. Москва, 2009. 38 с. [Malozhen SA. *Perfection of the system of reconstructive surgeries in patients with complicated laminae and refractory glaucoma* [dissertation abstract]. Moscow; 2009. 38 p. (In Russ.)]. Режим доступа: https://search.rsl.ru/ru/record/01003458786
4. Chien AM, Schmidt CM, Cohen EJ, et al. Glaucoma in the immediate postoperative period after penetrating keratoplasty. *Am J Ophthalmol.* 1993;115(6):711–714. doi: 10.1016/s0002-9394(14)73636-0
5. Sihota R, Sharma N, Panda A, et al. Post-penetrating keratoplasty glaucoma: Risk factors, management and visual outcome. *Aust N Z J Ophthalmol.* 1998;26(4):305–309. doi: 10.1111/j.1442-9071.1998.tb01334.x
6. Kornmann HL, Gedde SJ. Glaucoma management after corneal transplantation surgeries. *Curr Opin Ophthalmol.* 2016;27(2):132–139. doi: 10.1097/ICU.0000000000000237
7. Ассоциация врачей-офтальмологов и др. *Глаукома первичная открытоугольная.* Клинические рекомендации. Москва, 2022. 98 с. [Association of Ophthalmic Physicians, et al. *Glaucoma primary open-angle glaucoma.* Clinical guidelines. Moscow; 2022. 98 p. (In Russ.)]. Режим доступа: http://avo-portal.ru/documents/fkr/Klinicheskie_rekomendacii_POUG_2022.pdf
8. Труфанов С.В., Маложен С.А., Сипливый В.И., Пивин Е.А. Оценка влияния сопутствующей глаукомы на результаты эндотелиальной кератопластики при буллезной кератопатии // *Национальный журнал Глаукома*. 2015. Т. 14, № 1. С. 62–67.

[Trufanov SV, Malozhen SA, Siplivy VI, Pivin EA. Evaluation of the influence of concomitant glaucoma for endothelial keratoplasty outcomes in bullous keratopathy treatment. *National journal of glaucoma*. 2015;14(1):62–67. (In Russ.)]. EDN: TPNJHB

9. Ассоциация врачей-офтальмологов. *Ожоги глаз.* Клинические рекомендации. Москва, 2023. 44 с. [Association of Ophthalmic Physicians. *Eye burns.* Clinical recommendations. Moscow; 2023. 44 p. (In Russ.)]. Режим доступа: http://avo-portal.ru/documents/fkr/KP%20Ожоги%20посл.%20вар._09.11.22.pdf
10. Пучковская Н.А., Шульгина Н.С., Непомящая В.М. *Патогенез и лечение ожогов глаз и их последствий.* Москва: Медицина, 1973. 192 с. [Puchkovskaya NA, Shulgina NS, Nepomnyashchaya VM. *Pathogenesis and treatment of eye burns and their consequences.* Moscow: Meditsina; 1973. 192 p. (In Russ.)]

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