



УДК 617.77-002

**GAVHAR KAPSULASI BO'LMAGAN HOLATLARDA INTRAOKULYAR
LINZALARNI ORQA KAMERAGA FIKSATSIYALASHDA KO'ZNING KLINIK-
FUNKSIONAL KO'RSATKICHLARINI BAHOLASH.**

Nozimov A.E., Obidjonov U.A., Davronov O.D., Askarov Q.Sh.

Nozimov Ahmadjon Erkinovich

PhD, Toshkent davlat tibbiyot universiteti,
Oftalmologiya kafedrasida assistenti.

Manzil: Toshkent shahar, Farobiy ko'chasi 3A,

Tel: +998977747539, dr.nae@mail.ru,

<https://orcid.org/0000-0002-8315-3429>

Obidjonov Umid Akromjonovich

Toshkent davlat tibbiyot universiteti,
Oftalmologiya kafedrasida assistenti.

Manzil: Toshkent shahar, Farobiy ko'chasi 3A,

Tel: +998903542282, obidjonov.umidjon@gmail.com,

<https://orcid.org/0009-0003-9385-221X>

Davronov Otajon Diyor o'gli

Toshkent davlat tibbiyot universiteti,
Oftalmologiya kafedrasida magistri.

Manzil: Qashqadaryo viloyati, Koson tumani,

Mesit mahallasi, Dilkash ko'chasi 28A-uy

Tel: +998997453237. odavronov210@gmail.com,

<https://orcid.org/0009-0000-4994-0122>

Askarov Qadrbek Sheraliyevich

Toshkent davlat tibbiyot universiteti,
Oftalmologiya kafedrasida magistranti,

manzil: Toshkent sh., Farobi ko'chasi, 3A,

tel.: +998914401123, qadraskarov@gmail.com,

<https://orcid.org/0009-0002-2874-7475>

Annotatsiya. Dolzarbligi. Katarakta operatsiyalari vaqtida ba'zida gavhar kapsulasi saqlanmaydi, bu esa intraokulyar linzani odatdagi usulda joylashtirishga imkon bermaydi. Bunday holatlarda linzani ko'zning orqa kameraga fiksatsiyalash kerak bo'ladi. **Tadqiqot maqsadi:** Gavhar kapsulasi bo'lmagan holatlarda intraokulyar linzalarni ko'zning orqa kameraga fiksatsiyalashdan so'ng, bemorlarning ko'rish funksiyasi, anatomik holati va klinik-funksional ko'rsatkichlarini kompleks baholash. **Material va usullar:** Gavhar kapsulasi bo'lmagan katarakta bilan og'rikan 50 nafar bemor (50 ko'z) tekshirildi. Bemorlar ikki guruhga ajratildi: 1-guruh (asosiy guruh) – intraokulyar linza orqa kameraga fiksatsiya qilingan bemorlar; 2-guruh (nazorat guruhi) – intraokulyar linza oldingi kameraga fiksatsiya qilingan bemorlar. Barcha bemorlarga umumiy oftalmologik tekshiruvlar (vizometriya, biomikroskopiya, tonometriya, oftalmoskopiya va boshqalar) hamda maxsus tekshiruv usullari (avto refraktometriya, paximetriya, endotelial mikroskopiya, exobiometriya, A-skan, B-skan, ultratovushli biomikroskopiya (UBM), optik kogerent tomografiya (OKT)) o'tkazildi. **Natijalar:** Intraokulyar linza orqa kameraga fiksatsiya qilingan bemorlar o'rtacha ko'rish o'tkirligi yuqoriroq bo'lib, $0,6 \pm 0,1$ ni tashkil qildi, Intraokulyar linza oldingi kameraga fiksatsiya qilingan bemorlarda esa bu ko'rsatkich biroz pastroq — $0,5 \pm 0,1$ bo'ldi. Asosiy asoratlar quyidagilarni o'z ichiga oldi:



kistoid makulyar shish (8%), IOLning dezentratsiyasi (6%), yallig'lanish reaksiyalari (12%). Operatsiyadan keyin 1 oy ichida 90% bemorlarda ko'z ichki bosimi normallashti.

Xulosa: Gavhar kapsulasi bo'lmagan holatlarda intraokulyar linzalarni orqa kameraga fiksatsiya qilish kataraktali bemorlarni reabilitatsiya qilishda samarali usul hisoblanadi. Fiksatsiya usulining optimal tanlovi asoratlar xavfini minimal darajaga tushirishga va qoniqli funksional natijalarga erishishga yordam beradi.

Kalit so'zlar: intraokulyar linza, fakoemulsifikatsiya, katarakta, katarakta jarroxligi, IOLni orqa kameraga fiksatsiyalash.

Iqtibos uchun:

Nozimov A.E., Obidjonov U.A., Davronov O.D., Askarov Q.Sh. Gavhar kapsulasi bo'lmagan holatlarda intraokulyar linzalarni orqa kameraga fiksatsiyalashda ko'zning klinik-funksional ko'rsatkichlarini baholash. Ilg'or Oftalmologiya. 2025;10

**ОЦЕНКА КЛИНИКО-ФУНКЦИОНАЛЬНЫХ ПОКАЗАТЕЛЕЙ ГЛАЗА ПРИ
ФИКСАЦИИ ИНТРАОКУЛЯРНЫХ ЛИНЗ В ЗАДНЕЙ КАМЕРЕ В УСЛОВИЯХ
ОТСУТСТВИЯ КАПСУЛЫ ХРУСТАЛИКА**

Нозимов А.Э., Обиджонов У.А., Давронов О.Д., Аскарлов К.Ш.

Нозимов Ахмаджон Эркинович

кандидат медицинских наук,

ассистент кафедры офтальмологии

Ташкентского государственного медицинского университета.

Адрес: г. Ташкент, ул. Фараби, 3А,

тел.: +998977747539, dr.nae@mail.ru,

<https://orcid.org/0000-0002-8315-3429>

Обиджонов Умид Акрамджонович

ассистент кафедры офтальмологии

Ташкентского государственного медицинского университета.

Адрес: г. Ташкент, ул. Фараби, 3А,

тел.: +998903542282, obidjonov.umidjon@gmail.com,

<https://orcid.org/0009-0003-9385-221X>

Давронов Отажон Диёр угли

магистрант кафедры офтальмологии

Ташкентского государственного медицинского университета.

Адрес: Кашкадарьинская область, Косонский район,

махалля Месит, ул. Дилкаш, дом 28А,

тел.: +998997453237, odavronov210@gmail.com,

<https://orcid.org/0009-0000-4994-0122>

Аскарлов Кадрбек Шералиевич

магистрант кафедры офтальмологии,

Ташкентский государственный медицинский университет,

Адрес: г. Ташкент ул. Фараби 3А,

тел.: +998914401123. qadraskarov@gmail.com,

<https://orcid.org/0009-0002-2874-7475>



Аннотация. Актуальность. В ходе операций по удалению катаракты иногда не удается сохранить капсулу хрусталика, что делает невозможной имплантацию интраокулярной линзы (ИОЛ) стандартным способом. В таких случаях необходимо фиксировать линзу в задней камере глаза. **Цель исследования:** Комплексная оценка зрительных функций, анатомического состояния и клинико-функциональных показателей глаза после фиксации ИОЛ в задней камере у пациентов с отсутствующей капсулой хрусталика. **Материалы и методы:** Обследованы 50 пациентов (50 глаз) с афакией после удаления катаракты без сохранения капсулы хрусталика. Пациенты были разделены на две группы: 1-я группа (основная) — пациенты с фиксацией ИОЛ в задней камере; 2-я группа (контрольная) — пациенты с фиксацией ИОЛ в передней камере.

Всем пациентам проведено общее офтальмологическое обследование (визометрия, биомикроскопия, тонометрия, офтальмоскопия и др.), а также специальные методы исследования: авторефрактометрия, пахиметрия, эндотелиальная микроскопия, эхобиометрия, А-скан, В-скан, ультразвуковая биомикроскопия (UBM), оптическая когерентная томография (ОКТ). **Результаты:** Средняя острота зрения у пациентов с фиксацией ИОЛ в задней камере составила $0,6 \pm 0,1$, в то время как у пациентов с фиксацией ИОЛ в передней камере — $0,5 \pm 0,1$. Основные осложнения включали: кистозный макулярный отек (8%), децентрация ИОЛ (6%), воспалительные реакции (12%). У 90% пациентов внутриглазное давление нормализовалось в течение одного месяца после операции. **Вывод:** Фиксация ИОЛ в задней камере глаза при отсутствии капсулы хрусталика является эффективным методом реабилитации пациентов с катарактой. Оптимальный выбор метода фиксации помогает свести к минимуму риск осложнений и достичь удовлетворительных функциональных результатов.

Ключевые слова: интраокулярная линза, факоемульсификация, катаракта, хирургия катаракты, фиксация ИОЛ в задней камере.

Для цитирования:

Нозимов А.Э., Обиджонов У.А., Давронов О.Д., Аскарров К.Ш. Оценка клинико-функциональных показателей глаза при фиксации интраокулярных линз в задней камере в условиях отсутствия капсулы хрусталика. *Передовая офтальмология*. 2025.10

**EVALUATION OF CLINICAL AND FUNCTIONAL INDICATORS OF THE EYE IN
CASES OF INTRAOCULAR LENS FIXATION IN THE POSTERIOR CHAMBER
WITHOUT THE PRESENCE OF THE LENS CAPSULE**

Nozimov A.E., Obidjonov U.A., Davronov O.D., Askarov Q.Sh.

Nozimov Ahmadjon Erkinovich

PhD, Assistant of the Department of Ophthalmology,
Tashkent State Medical University.

Address: Tashkent city, Farobi street 3A,

Tel: +998977747539, dr.nae@mail.ru,

<https://orcid.org/0000-0002-8315-3429>

Obidjonov Umid Akromjonovich



Assistant of the Department of Ophthalmology,
Tashkent State Medical University.

Address: Tashkent city, Farobi street 3A,

Tel: +998903542282, obidjonov.umidjon@gmail.com,
<https://orcid.org/0009-0003-9385-221X>

Davronov Otajon Diyor ugli

Master's student, Department of Ophthalmology,
Tashkent State Medical University.

Address: Kashkadarya region, Koson district,
Mesit neighborhood, Dilkash street 28A,

Tel: +998997453237, odavronov210@gmail.com,
<https://orcid.org/0009-0000-4994-0122>

Askarov Kadrбек Sheralievich

Master's student of the Department of Ophthalmology,
Tashkent State Medical University,

Address: Tashkent city, Farabi street, 3A,

tel.: +998914401123, qadraskarov@gmail.com,
<https://orcid.org/0009-0002-2874-7475>

Abstract. Relevance. During cataract surgeries, the lens capsule is sometimes not preserved, which makes the standard placement of an intraocular lens (IOL) impossible. In such cases, fixation of the lens in the posterior chamber of the eye is necessary.

Aim of the study: To perform a comprehensive assessment of visual function, anatomical condition, and clinical-functional indicators of the eye after fixation of IOL in the posterior chamber in cases without the lens capsule. **Materials and Methods:** Fifty patients (50 eyes) with cataracts lacking the lens capsule were examined. The patients were divided into two groups: Group 1 (main group) — patients with IOL fixed in the posterior chamber; Group 2 (control group) — patients with IOL fixed in the anterior chamber. All patients underwent a comprehensive ophthalmological examination including visual acuity testing, biomicroscopy, tonometry, ophthalmoscopy, and special diagnostic methods such as autorefractometry, pachymetry, endothelial microscopy, echobiometry, A-scan, B-scan, ultrasound biomicroscopy (UBM), and optical coherence tomography (OCT). **Results:** The average visual acuity in patients with IOL fixation in the posterior chamber was higher, at 0.6 ± 0.1 , while in patients with IOL fixation in the anterior chamber, it was slightly lower, at 0.5 ± 0.1 . The main complications included cystoid macular edema (8%), IOL decentration (6%), and inflammatory reactions (12%). Intraocular pressure normalized within one month post-operation in 90% of patients. **Conclusion:** Fixation of IOL in the posterior chamber in the absence of the lens capsule is an effective method for rehabilitating patients with cataracts. Optimal choice of fixation method helps to minimize the risk of complications and achieve satisfactory functional outcomes.

Keywords: intraocular lens, phacoemulsification, cataract, cataract surgery, IOL fixation in the posterior chamber.

Citation:

Nozimov A.E., Obidjonov U.A., Davronov O.D., Askarov Q.Sh. Evaluation of Clinical and



Functional Indicators of the Eye in Cases of Intraocular Lens Fixation in the Posterior Chamber without the Presence of the Lens Capsule. *Advanced Ophthalmology*. 2025.10

Relevance. Cataract is a disease of the visual organ characterized by partial or complete clouding of the lens. The risk of developing cataracts increases with age. Approximately 40–50% of people aged 50–60 are diagnosed with cataracts, while this figure reaches 65–70% among individuals aged 70–80, and cataracts are observed in nearly all people over the age of 80 [1]. Currently, the most widely used and physiologically optimal method is the implantation of the intraocular lens (IOL) into the posterior chamber. With this fixation method, an almost natural iris–lens diaphragm is restored, and the IOL does not come into direct contact with the iris endothelium or the tissues of the anterior chamber angle. This reduces the risk of iris decompensation, chronic inflammation, glaucoma, peripheral anterior synechiae, and other iris-related complications [2].

At the same time, reconstruction techniques can be divided into two main groups: fixation of the IOL to the iris or fixation under a scleral flap through a scleral tunnel. Numerous studies dedicated to iris fixation describe suturing the haptic elements of the lens from the central to the peripheral parts of the iris [3]. However, the literature highlights certain disadvantages of iris-fixated IOLs, such as iris atrophy, pigment dispersion, an increased risk of uveitis and cystoid macular edema. This technique may also cause continuous trauma to the iris tissue, provoke a chronic inflammatory reaction, and increase the risk of bleeding [4]. Nevertheless, several proposals have been made to reduce the risk of iris injury, including the development of new suturing techniques or the use of a scleral tunnel approach. With the second method, the physiological position of the IOL in the posterior chamber, greater anterior chamber depth, lower risk of iris endothelial disorders, and reduced likelihood of postoperative intraocular pressure elevation can be noted [5].

Objective:

To comprehensively evaluate the effectiveness of posterior chamber–fixated intraocular lenses.

Materials and Methods:

From 2021 to 2024, 50 patients (50 eyes) with cataracts and absence of the posterior capsule of the lens were selected at the Republican Specialized Scientific-Practical Medical Center of Eye Microsurgery. They were divided into two groups: the main group and the control group.

- **Group 1 (Main group):** patients with a posterior chamber intraocular lens (IOL) implantation
- **Group 2 (Control group):** patients with an anterior chamber intraocular lens (IOL) implantation

Table 1.

Distribution of selected patients by sex:

Sex	Main group	Control group	Total
-----	------------	---------------	-------



	(n=25)		(n=25)		(n=50)	
	Number	%	Number	%	Number	%
Male	10	40	11	44	21	42
Female	15	60	14	56	29	58
Total:	25	50	25	50	50	100

Table 2.

Distribution of selected patients by age:

Group	45-55	56-65	66-75	75-80	Total
Main group	4 (16%)	8 (32%)	7 (28%)	6 (24%)	25
Control group	5 (20%)	7 (28%)	8 (32%)	5 (20%)	25

All patients underwent general ophthalmologic examinations (visometry, biomicroscopy, tonometry, ophthalmoscopy, etc.) as well as special diagnostic tests (autorefractometry, pachymetry, endothelial microscopy, exobiometry, A-scan, B-scan, ultrasound biomicroscopy, optical coherence tomography (OCT)).

Results and Discussion

Follow-up examinations were performed 3 months after surgery. Visual acuity:

The average visual acuity in the main group was higher, amounting to 0.6 ± 0.1 , whereas in the control group it was slightly lower — 0.5 ± 0.1 . Intraocular pressure (IOP): Patients in the control group showed slightly higher IOP values, averaging 22 ± 3 mmHg, while in the main group this indicator remained within the normal range — 18 ± 2 mmHg. Cystoid macular edema: In patients with posterior chamber-fixed intraocular lenses, the incidence was 8%, whereas in the control group it was somewhat higher — 12%. IOL decentration: The frequency of IOL decentration in the main group was 6%, while in the control group it reached 10%. Inflammatory reactions: Inflammation was observed in 10% of patients in the main group, compared with 14% in the control group. In addition, the main complications were associated with a reduction in iris endothelial cells and intraocular inflammatory processes.

In patients with anterior chamber-fixed IOLs, the loss of iris endothelial cells averaged 12%, whereas in the group with posterior chamber-fixed IOLs this value was 8%.

This confirms the likelihood of mechanical impact on the iris endothelium due to the closer proximity of the IOL implanted in the anterior chamber.

Table 3.

Comparison of complications after anterior and posterior chamber intraocular lens implantation in the main and control groups

Parameter	Control group (n=25)	Main group (n=25)	<i>P-value</i>
Visual acuity	$0,5 \pm 0,1$	$0,6 \pm 0,1$	$<0,001$
Intraocular pressure(IOP)	22 ± 3 mmHg	18 ± 2 mmHg	$<0,01$
Cystoid macular edema	12%	8%	$<0,001$



IOL desentration	10%	6%	<0,001
Inflammatory reactions	14%	10%	<0,001
Reduction of iris endothelial cells	10%	2%	<0,05
Secondary glaucoma	12%	2%	<0,05

Conclusion.

Implantation of the intraocular lens into the posterior chamber demonstrated favorable clinical and functional outcomes. Although certain complications were observed in patients with anterior chamber IOL implantation, the overall results were assessed as satisfactory. The obtained findings will help in selecting the optimal method of intraocular lens implantation in the future.

REFERENCES

1. Aznabaev B.M., Mukhamadeev T.R., Dibayev T.I., et al. Clinical results of ultrasound phacoemulsification based on three-dimensional oscillations. *Modern Technologies in Ophthalmology*. 2015;4:11–13.
2. Pershin K.B., Pashinova N.F., Cherkashina A.V., Tsygankov A.Yu. Surgical treatment of lens ectopia and congenital cataract in children with Marfan syndrome: evaluation of IOL fixation methods. *Cataract and Refractive Surgery*. 2015;15(4):14–19.
3. Shchuko A.G., Mishchenko O.P., Senchenko N.Ya., Yurieva T.N. Risk factors and complications arising in late spontaneous dislocation of the “posterior chamber IOL–capsular bag” complex into the vitreous cavity. *Ophthalmosurgery*. 2017;1:21–26.
4. Abbey A.M., Shah A.R., Hussian R., Williams G.A. Sutureless scleral fixation of intraocular lenses: outcomes of two approaches. The 2014 Yasuo Tano Memorial Lecture. *Graefe's Archive for Clinical and Experimental Ophthalmology*. 2015;253(1):1–5.
5. Khan M.A., Gupta O.P., Smith R.G., et al. Scleral fixation of intraocular lenses using Gore-Tex suture: clinical outcomes and safety profile. *British Journal of Ophthalmology*. 2016;100(5):638–643.

Acknowledgments: This study was conducted at the “Republican Specialized Eye Microsurgery Center” and the Ophthalmology Department of the “Multidisciplinary Clinic of the Tashkent Medical Academy.”

We express our gratitude to the administration of these institutions for their practical support in carrying out this research.

Patient Consent: Not required.

The authors declare that there are no actual or potential conflicts of interest related to the content of this article.

Author Contributions:

Nozimov A.E. — research concept and design; significant revision of the manuscript to enhance its scientific value; approval of the final version of the manuscript; agreement to take



responsibility for all aspects of the work, including proper investigation and resolution of issues related to accuracy or integrity.

Obidjonov U.A. — data acquisition, analysis, and interpretation; manuscript writing; agreement to take responsibility for all aspects of the work, including proper investigation and resolution of issues related to accuracy or integrity.

All authors approved the final version of the manuscript prior to publication and agreed to take responsibility for all aspects of the work, ensuring proper investigation and resolution of any issues concerning accuracy or integrity.