



**YASNIY
VZOR**
pediatric eye clinics



IPOSC

International Pediatric Ophthalmology
& Strabismus Council

EOS 2023



**My personal tips and tricks to improve the
surgical success**

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I have no financial interest to disclose

"Strabo glasses" was invented by my Teacher and Head of Pediatric Eye Clinics "Yasnyi Vzor"

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No angle of deviation

High visual acuity

Binocular vision

High stereo vision

STRABO care

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- Tychsen L. Can ophthalmologists repair the brain in infantile esotropia? Early surgery, stereopsis, monofixation syndrome, and the legacy of Marshall Parks.
- Birch EE. Marshall Parks lecture. Binocular sensory outcomes in accommodative esotropia. *Journal of American Association for Pediatric Ophthalmology and Strabismus*. 2003;7(6):369-373.
- Birch EE, Stager DR, Berry P, et al. Stereopsis and long-term stability of alignment in esotropia. *Journal of American Association for Pediatric Ophthalmology and Strabismus*. 2004;8:146–150.
- Birch EE. Stereopsis in infants and its developmental relation to visual acuity. New York, Oxford University Press. 1993:224.

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AIM

Development of a method for restoring sensory fusion by alternating programmable separation of vision with liquid crystal glasses and evaluating its effectiveness in comparison with traditional orthoptic treatment.



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Material

Main group
46 patients

Treatment by STRABO glasses

Control group
53 patients

Orthoptic treatment



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STRABO glasses



LCD glasses were used daily for 4 hours Check-up with a doctor to determine binocular functions was carried out monthly

Synoptophore



Courses for 10 days every 3 months (total 3-4 courses). Recovery of sensory fusion was studied on synoptophore



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Inclusion Criteria:

- age from 2 to 11 years
- state of orthotropy (when measured on the synoptophore, the residual angle of strabismus is not more than 10°)
- hypermetropic refraction up to 5 diopters in spherical equivalent and astigmatism no more than 2.0 diopters

Exclusion Criteria:

- amblyopia of medium and higher degrees
- the presence of a serious concomitant ophthalmic pathology
- vertical strabismus greater than 3 degrees and with cyclotropia, which were detected on the synoptophore and during the Maddox test



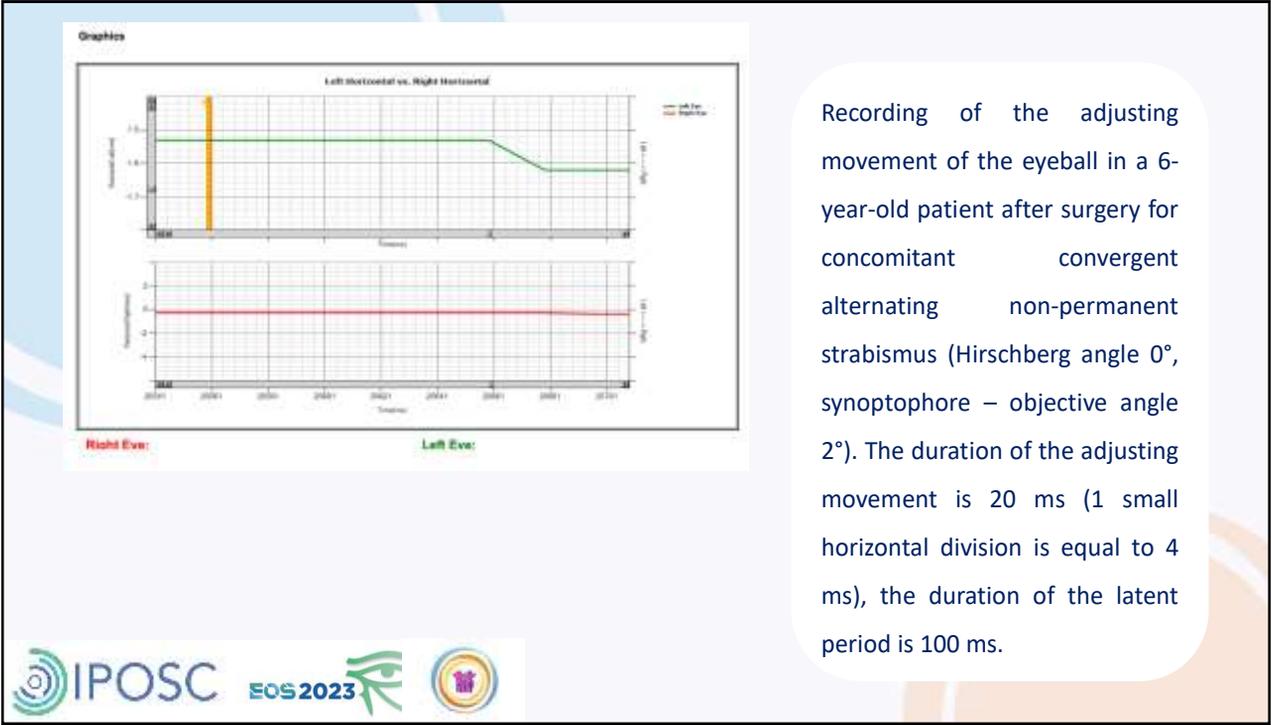
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Research methods

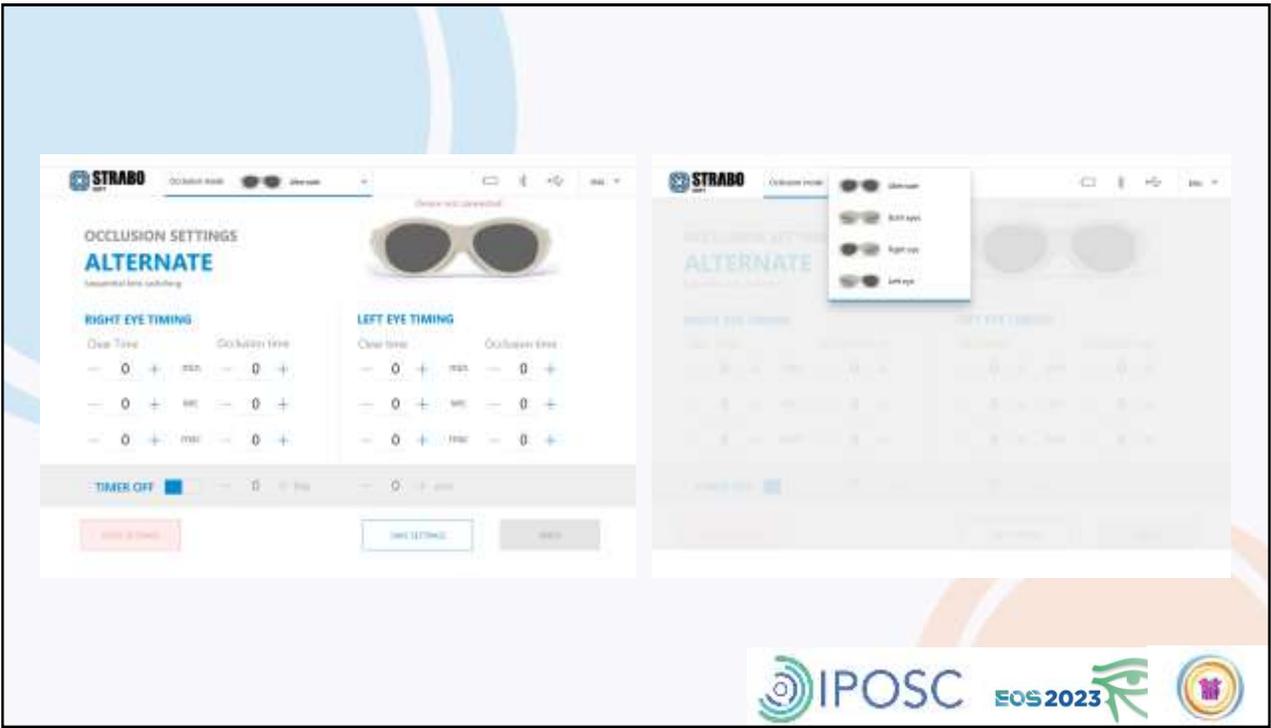
- ✓ study of the objective and subjective angle on the synoptophore
- ✓ determination of binocular vision according to the Worth test
- ✓ study of the movement of the eyeball during installation movements using the Gazelab video oculograph (BCC Innova, Spain)
- ✓ according to the indications, optical coherence tomography, the study of visually evoked potentials and electroretinography were performed.



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To determine the individual frequency of alternating liquid crystal glasses, we developed a patent (Aznauryan I.E., Shpak A.A., Balasanyan V.O., Agagulyan S.G. Method for determining the frequency of alternating liquid crystal glasses to restore sensory fusion, RF patent No. 2721888 dated December 25, 2019).



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Parameter	Main group (n=46)	Control group (n=53)
Age, years	5,6±2,5	5,7±1,9
Gender, M/F	23/23	30/23
Age when strabismus was detected, years	1,4±1,4	1,3±1,7
Visual acuity of the better seeing eye with correction	0,94±0,09	0,91±0,1
Visual acuity worse seeing eye with correction	0,79±0,07	0,77±0,07
Spherical equivalent of the better seeing eye, diopter	2,85±1,65	2,5±1,45
Spherical equivalent of the worse seeing eye, diopter	2,94±1,7	2,54±1,6
Anisometropia value, diopter	0,43±0,39	0,5±0,48
Strabismus angle	5,1±1,8	5,3±1,3

Note: The groups did not differ statistically ($p>0.05$)



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Results

Recovery of sensory fusion and binocular vision after treatment

Functions after treatment		Control group (n=53)	Main group (n=46)
Fusion	Binocular vision		
Restored	Restored	11 (21 %)	18 (39,1%)
Restored	No	2(4%)	23 (50 %)
No restoration	No	40 (75 %)	5 (10,9 %)

*Note: The difference between the groups is statistically significant ($p < 0.000$)



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RESTORATION OF BINOCULAR FUNCTIONS WITH STRABO GLASSES

Possibility to carry out medical procedures without time limit

No attachment to the clinic

The work of the visual system is restored in natural conditions

Individual setting of parameters for each patient



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Thank you.

