

CONTACT LENS FITTING IN THE TREATMENT OF LOW VISION IN PATHOLOGICAL MYOPIA WITH AGE RELATED MACULAR DEGENERATION

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INTRODUCTION

"A person with low vision is one who has impairment of visual functioning even after standard refractive correction with spectacles or contact lenses and/or medical, pharmacological or surgical treatment. It may difficult the person to perform everyday tasks." (1)

In the ICD-10, the WHO includes the recommendations of the International Council of Ophthalmology for the terms of low vision and blindness (2):

- Low vision is the condition when a person has a visual acuity of less than 6/18 but equal or better than 6/120, or a visual field of less than 20 degree from the point of fixation, when the better eye and with the best refractive correction
- Blindness is the condition when a person has a visual acuity of less than 6/120, or a visual field of less than 10 degree from the point of fixation, when the better eye and with the best refractive correction (3)

Visually impaired population is growing in European countries and the US, which increases the service demand and the request for low vision aids (4)(5).

Given the rise in life expectancy during the last few decades, the prevalence of visual pathologies which lead to low vision has increased, being Age-Related Macular Degeneration (AMD) and pathologic myopia between the main pathologies (6)(7).

Low vision services fight for these people to be able to perform everyday tasks and hobbies which they abandoned because of their visual loss. These tasks are necessaindependent and happy (8).

Low vision therapists must know all training guidelines and preparation for each case and all optical and non-optical aids to improve the patient's quality of life, including contact lenses.

CLINICAL CASE

• Anamnesis:

54-year-old woman with pathologic myopia only in RE. LE has no correction and is healthy. She wore CL but stopped to suppress the scotoma (an area of lost or depressed vision within the visual field, surrounded by an area of less depressed or of normal vision) she had in RE due to dry ADM. However, after the eye was suppressed, the patient started having problems when driving, walking and judging distances and also having increased sensitivity to glare as the condition reached a more advanced stage.

• Purposes:

- Eliminate binocular disturbances when the RE is corrected
- Eliminate the glare and improve transitions between light and dark areas
- Enhance RE as far as possible in fear of what might happen to the good eye.

• Refraction:

	Refraction	Far BCVA	Near BCVA
RE	-17,00 -1,50x90	0,15 with difficulties	2,5M With +4,00 Add
LE	0,00 -0,75x165	0,94	0,8M With +2,50 AdD

Measurements were taken with ETDRS test for far and with the MNRead for near.

RE reaches 2,5M with a reading speed of 35 words-per-minute (WPM). LE has average reading speed.

K readings

RE: 7,96 42,50 (36) // 7,7 43,50 (126)
LE: 7,92 42,50 (163) // 7,75 43,50 (73)

IOP

RE: 17 mmHg
LE: 16 mmHg

Slit lamp

RE: sclerosis of the lens, diminished tear meniscus and mild papillary conjunctivitis

LE: sclerosis of the lens, diminished tear meniscus

EOM: normal movement of the eyes in all directions

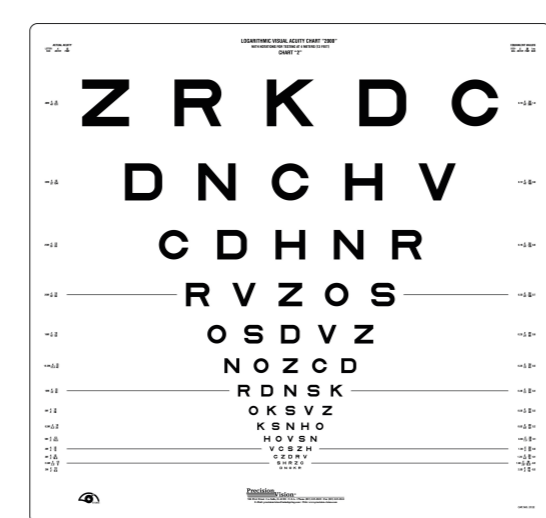
Pupils: PERL

Ishihara's test: altered for RE

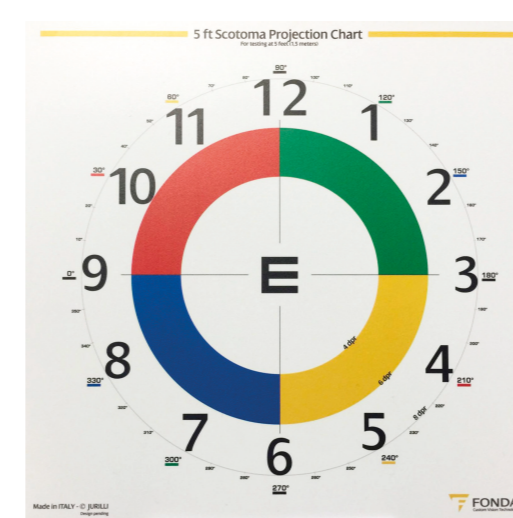
Eye fundus: myopic staphyloma and dry AMD

Amsler's test: altered RE with scotoma. Normal LE.

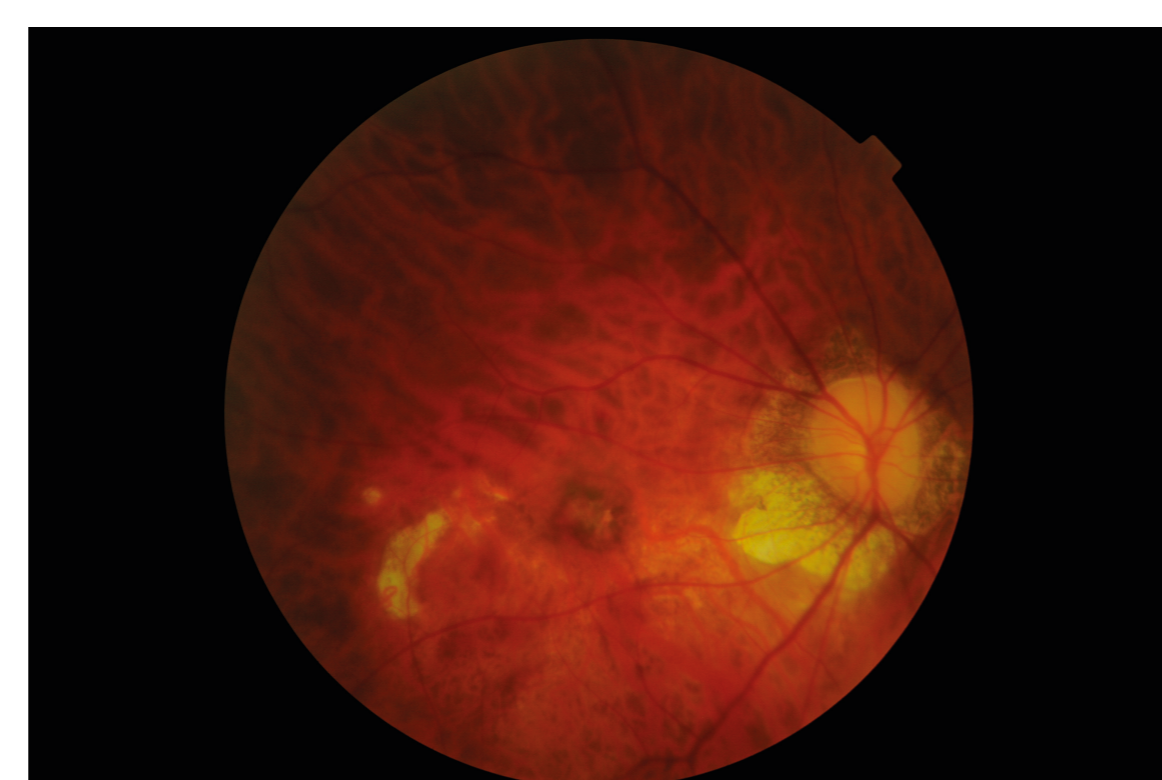
Contrast sensitivity (Pelli-Robson's test): diminished for RE.



ETDRS test for far distance



5ft Scotoma projection chart



Eye fundus: myopic staphyloma and dry AMD

A full visual rehabilitation program includes not only the prescription of visual aids but the refinement of the residual vision by training them, in the cases it may be appropriate, to develop an eccentric vision; mapping, scanning, tracking and feedback skills; daily life skills and orientation and mobility techniques. Besides, it is important to have a multidisciplinary support through other professionals (psychologist, occupational therapists...) (9).



The use of contact lenses (CL) among low vision patients tends to be limited by their visual impairment since CL handling and care become complicated. Moreover, for the same reason, the patients may ignore certain complications related to the CL wear. Nevertheless, CL need to be kept in mind for the great advantages they offer to improve their visual capacity (10).

Peripheral visual field grows and peripheral image becomes sharpened with CL wear, which should be considered interesting in myopic refraction. In severe myopic patients, CL enlarge the image lightly (11-13).

One of the best advantages of CL is that they produce less aniseiconia, allowing us to correct higher anisometropias and enlarging the patient's visual field (12). Besides, CL wear improve visual acuity in comparison with mounted spectacle lexcnses (11-13).

• Visual rehabilitation program

The objective is to develop and exercise eccentric vision in the eye affected by ADM so the patient is able to move and control the scotoma in order to improve monocular, and especially binocular, visual acuity.

This could lead to the disappearance of the initial disturbances achieving the purposes set in the anamnesis.

In order to do that, a series of exercises and therapy sessions were organized both at the office and at home with special low vision aids to establish the preferred retinal locus (PRL).

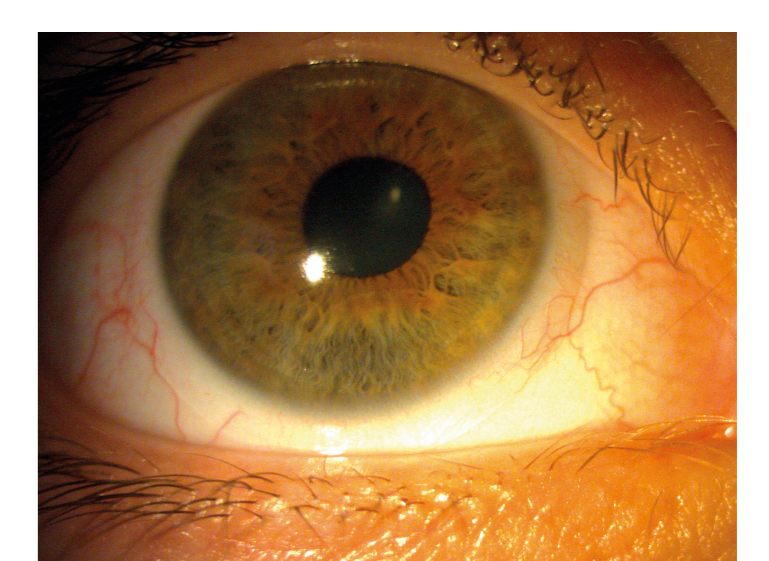
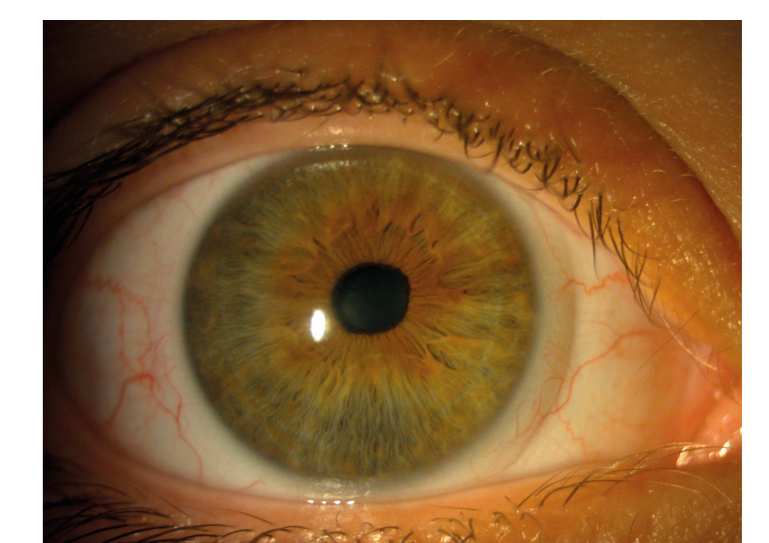
*The whole process was based in achieving the best visual acuity so that the RE worked with all its capabilities and had the maximum visual field. Therefore, before all this process, it was decided to fit a contact lens.

• CL fitting

Saphir RX	Diameter	base curve	Refraction	Visual Acuity	Contrast sensibility
Initial CL:	14,50	8,30	-14,00 -1,00x 175	0,18 logMAR	1 more letter
Final CL:	14,50	8,30	-13,00 -1,00x 175	0,18 logMAR more comfortable	1 more letter

Saphir RX	Geometries	Range of parameters	Steps
Diameters (mm)	⊙ ⊙ ⊙ ⊙	13.00 a 16.00	0.50
Base Curves (mm)	⊙ ⊙ ⊙ ⊙	6.80 a 9.80	0.30
Spheres (D)	⊙ ⊙ ⊙ ⊙	+30.00 a -30.00	0.25
Cylinders (D)	⊙ ⊙	-0.75 a -8.00	0.25
Axes (°)	⊙ ⊙	All	1°
Additions (D)	⊙ ⊙	+0.50 a +4.00	0.50
Multifocal - Design	⊙ ⊙	CD - CN	

Saphir range of parameters



Contact lens on eye

• Results after rehabilitation

- Far VA: 0,34 logMAR

- Near VA: with a 4X microscope, 0,8M was obtained with a reading speed of 70 WPM

- Contrast sensitivity: two more letters (without achieving the triple) with 450nm filter, although the patient feels much more comfortable.

- Subjective feeling: the patient knows exactly how to handle the scotoma caused by ADM and deviate the gaze when it interferes with binocular vision. Despite the fact that the LE is fine and she relies on it, she is happy for having done the rehabilitation because she is more comfortable binocularly and because her RE is ready to give its best if anything happens to the other eye.

Conclusions

Personalized toric hydrophilic contact lens with a 75% WC was the right choice in this case with pathologic myopia, huge anisometropia, ADM and low vision.

Thanks also to the visual training, the patient improved profoundly her visual function and, as a consequence, her quality of life.

In comparison with ophthalmic lenses, the contact lens has provided her with a better VA, larger visual field, improved contrast sensitivity and bigger retinal image due to the proximity of the CL to the ocular surface. In addition, contact lenses were the best option in terms of comfort and appearance since the weight and thickness of ophthalmic lenses are not present.

Moreover, since the anisometropia was so strong, contact lenses were the only choice for a full binocular prescription.