Motivation & training techniques of patients after SML implantation

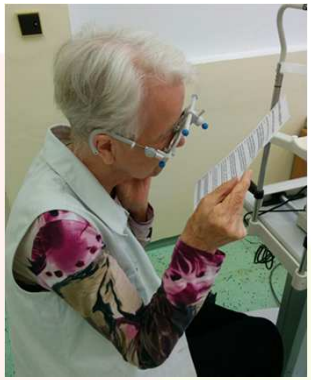
Jana Nekolová, MD., Ph.D.
Department of Ophthalmology
University Hospital
Hradec Králové
Czech Republic

Introduction

- Reading is one of the most frequently performed psycho-physiological operations and requires cooperation of oculomotor system (miosis-convergence-accommodation- eye tracking)-perceptive system (optical media of the eye, retina) and interpreting processes in the brain
- Low vision patients using visual aids are required to use head or hand movement more often than using natural eye movements to scan the text, which may result in vestibular-ocular conflict and discomfort
- Images provided by magnifying devices are different from images patients were used to see with healthy eyes
- Different reading technique with visual aids

=> Many visually impaired older adults have difficulty in getting used to a new device

=> **Need motivation and training**



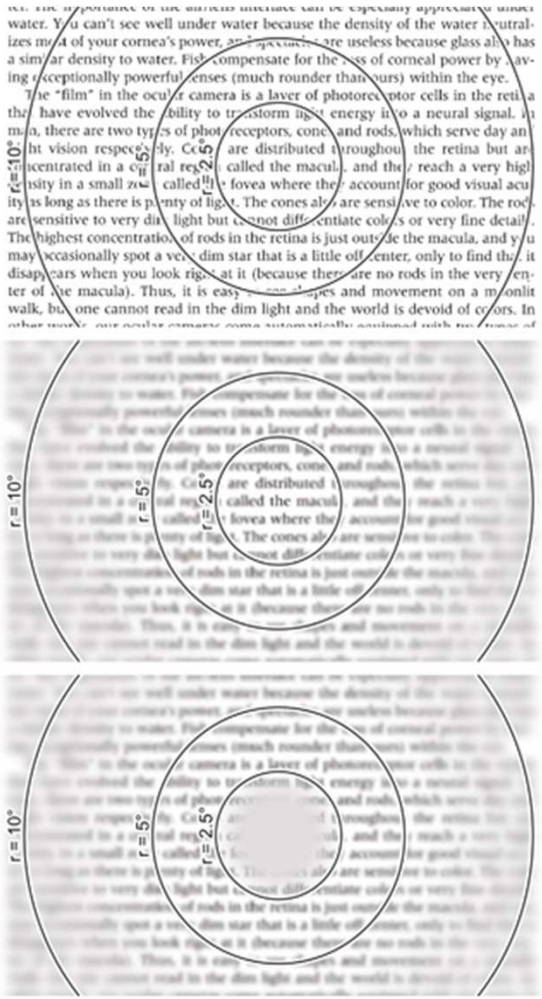
Methods

- Experience with 8 patients implanted with Scharioth Macula Lens
- 3 pilot study + 5 multicentric study
- Settings: Dpt.of Ophthalmology, University Hospital, Hradec Králové, Czech Republic
- The SML was monocularly implanted in the better-seeing eye
- No severe complications during and after surgery
- Postoperative care and treatment as usual after cataract surgery
- At baseline and 1 day, 1 week, 1, 3, 6 and 12 months after surgery: uncorrected and best corrected visual acuity at distance (ETDRS charts), visual acuity at near tested using Jaeger Reading Cards and Radner charts, and complete clinical examination, after pupil dilatation
- Possible complications were recorded and patients were asked about quality of vision after SML implantation

Note: Jaeger reading card is a chart on which paragraphs of text are printed, with the text sizes increasing from 0.37mm to 2.5mm, *the smallest print that the patients can read determines their visual acuity*

Preoperative care

- **prevention of dissatisfaction after SML implantation**
  - patient should share any specific visual needs with a doctor
  - test near vision with +6.0 diopters from distance of 15 centimetres preoperatively- it is experienced to be equal to uncorrected VA postoperatively
  - patient must feel improvement of near vision with +6.0 dioptres
  - it helps to ensure the results achieved by SML are consistent with patient's expectations
  - a doctor should help patient to understand the principles of SML action - by magnification, it uses the rest of the damaged fovea to enable reading, it will not heal the retinal problem
  - patient's maculopathy must be inactive!
  - patient must meet the indication criteria for SML implantation

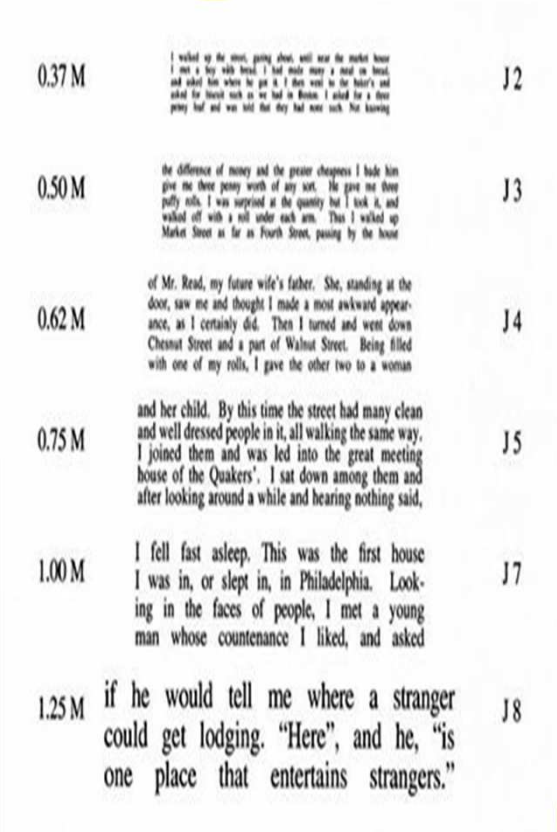


Created by David J. Marmor, MFA and Michael F. Marmor, MD © 2010 *Archives of Ophthalmology*

Postoperative care

- motivation and visual rehabilitation

- All patients were advised to perform reading exercises every day
- We provided them with instructions and training texts to facilitate the postoperative adaptation
- READ WITHOUT GLASSES or other EXTERNAL MAGNIFIERS AT LEAST TWICE A DAY FOR 10 MINUTES A SESSION
- sharp vision is achieved at a very near distance: 10-15 centimetres
- read from the big to the smallest type you are comfortable with (high contrast reading materials are recommended at the beginning)
- keep practicing until you can read comfortably (may be approx. 1 month but will probably improve over the first 12 months)
- don’t forget at good light conditions
- have a rest when being tired
- use artificial tears when you feel an eye discomfort



Patient 1, HK- pilot

Man, 1939, AMD dry form

Surgery 13rd January 2015- right eye

Preoperatively:

UCVA 0.3, BCVA 0.3 (LE 0.2)

At near J.13 nat, J.5 with +6,0

Postoperatively:

1 day- BCVA 0.2, J.6 nat

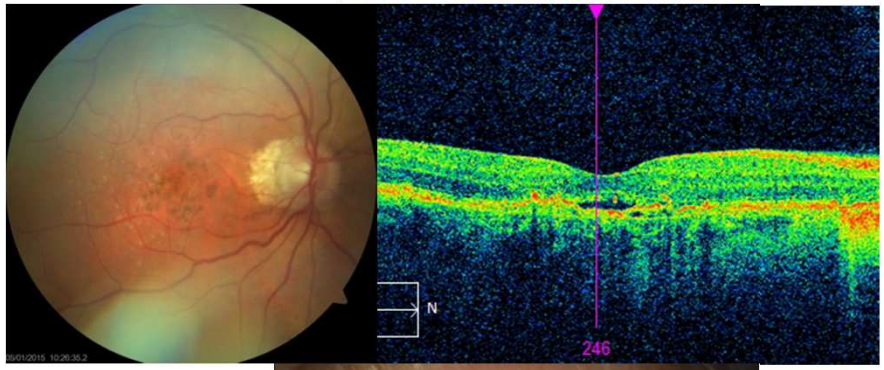
1 week- BCVA 0.4, J.1 nat

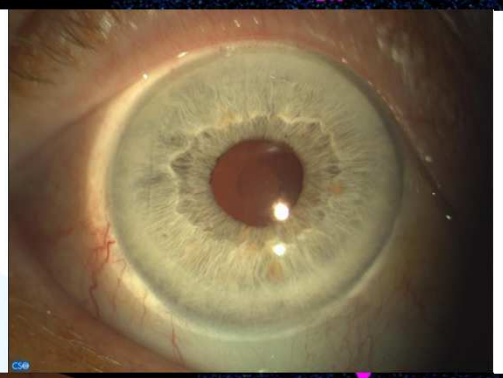
1 month- BCVA 0.3, J.2 nat, right eye disturbed

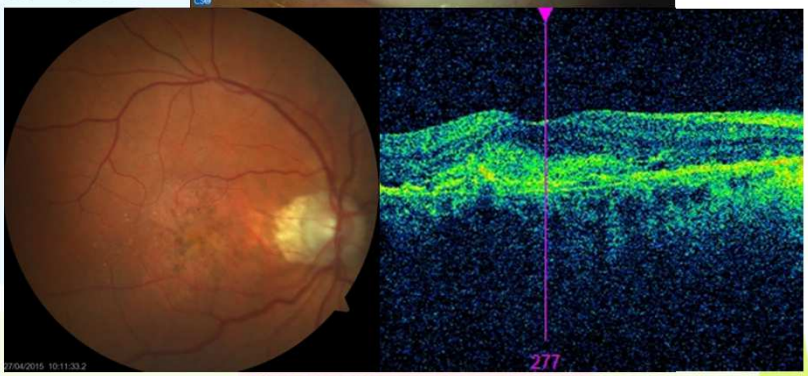
2-3 months- BCVA 0.2, J.7 nat

Switched into AMD wet form- Lucentis

BCVA 0.1 – stabilized, reading difficult



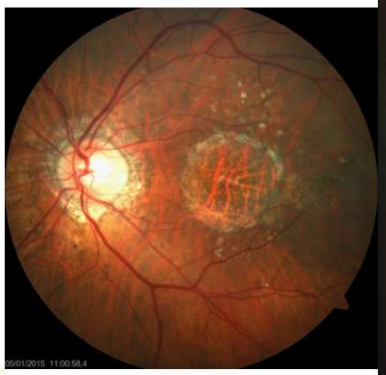


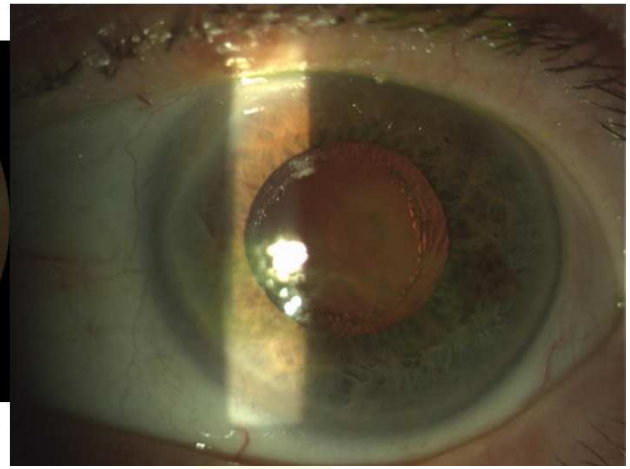


Patient 2, HK- pilot

Man, 1942, AMD dry form

Surgery: 23rd January 2015- left eye





Preoperatively:

UCVA 0.3, BCVA 0.3 (RE 0.1)

At near J.16, J.5 with +6.0

Postoperatively:

1 day- BCVA 0.06, J.12 nat

1 week- BCVA 0.3 with Pilocarpin, J.6

1-2 months- BCVA 0.3, J.5 nat, right eye disturbed

3 months- BCVA 0.15, J.6 nat, needed time to find the right position of text, fluent reading after few minutes, reading every day

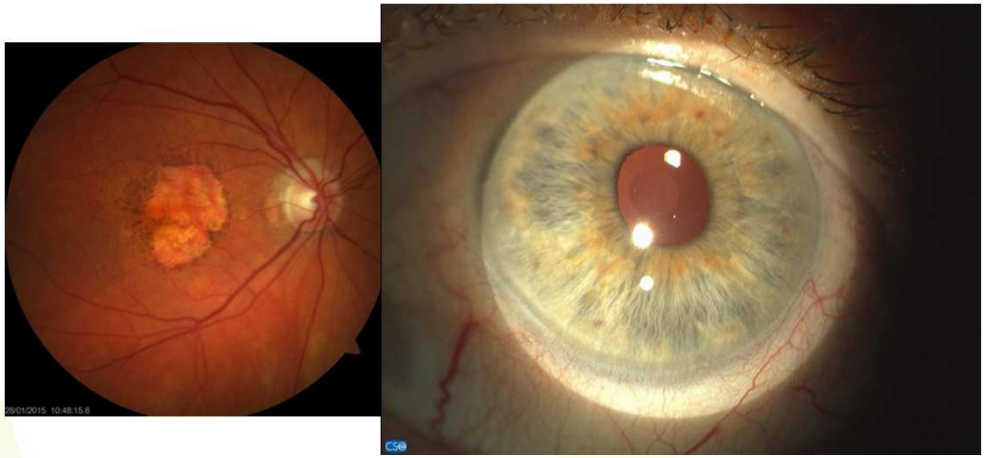
6 months- BCVA 0.2, J.2 fluently- everyday reading exercise

12 months- BCVA 0.15, J.3 - still everyday reading, satisfied, able to read newspaper text, long reading fatigued

Patient 3, HK- pilot

Woman, 1930, AMD dry form

Surgery: 10th February 2015- right eye



Preoperatively:

UCVA 0.1, BCVA 0.3 (LE 0.3)

At near J.8 nat, J.1 with +6.0

Postoperatively:

1 day- BCVA 0.4, J.13 stenopeic

1 week- BCVA 0.3, J.1 nat

1 month- BCVA 0.2, J.1 nat, very happy

2 months- BCVA 0.3, J.2 nat, satisfied

3 months- BCVA 0.3, J.4 nat

6 months- BCVA 0.2, J.4 nat, needed good light condition, she had leg ache, she did not exercise reading everyday- no motivation

12 months- BCVA 0.15, J.5, she had a car accident, no reading exercise, short reading distance uncomfortable

Patient 4, HK- multicentric

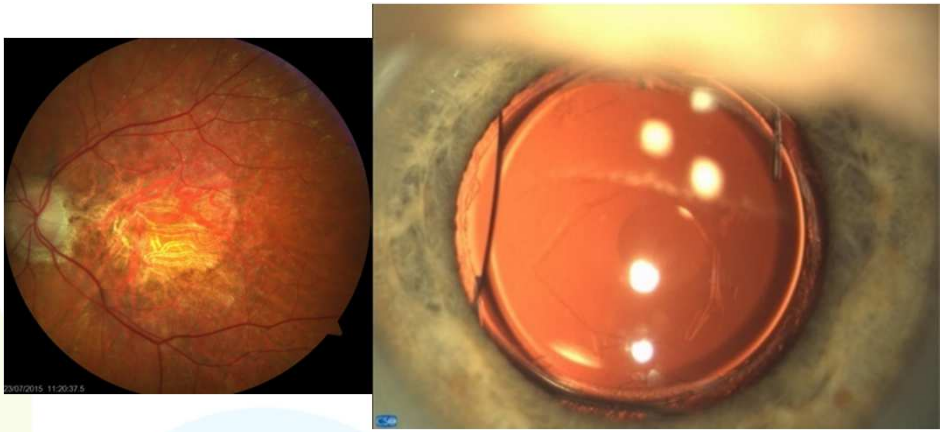
Woman, 1936, AMD dry form

Surgery: 28th July 2015- left eye

Preoperatively:

UCVA 0.2, BCVA 0.25 (RE 0.2)

At near J.13 nat, J.2 with +6.0



Postoperatively:

1 day- BCVA 0.16, J.8 stenopeic

1 week- BCVA 0.25, J.8 nat

1 month- BCVA 0.25, J.2 nat, right eye disturbed- covered while reading

3 months- BCVA 0.25, J.3 nat, everyday reading, good light, able to read normal size text, short reading distance uncomfortable

6 months- BCVA 0.25, J.3 nat, reading often

12 months- BCVA 0.2, J.1 nat, able to read everything what she needed

Patient 5, HK- multicentric

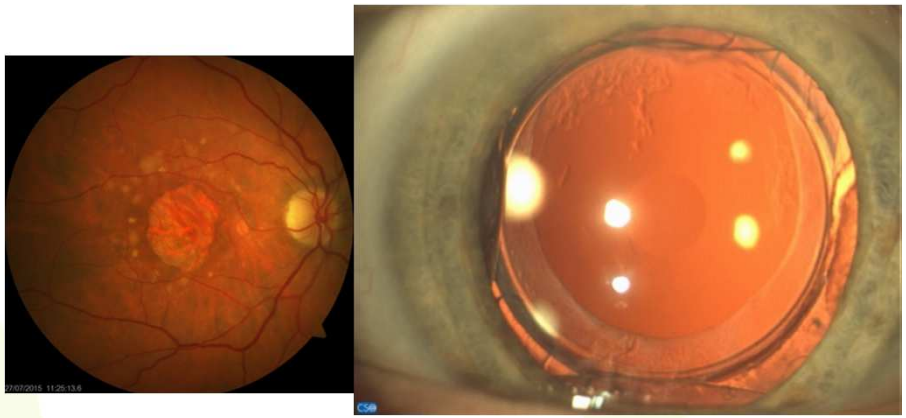
Woman, 1937, AMD dry form

Surgery: 11th August 2015- right eye

Preoperatively:

UCVA 0.125, BCVA 0.25 (LE 0.2)

At near J.13 nat, J.5 with +6.0



Postoperatively:

1 day- BCVA 0.2 stenop., J.1 nat

1 week- BCVA 0.3, J.2 nat

1 month- BCVA 0.3 , J.1 nat, satisfied, left eye did not disturb

3 months- BCVA 0.3, J.6 nat, reading fatiguing but possible

6 months- BCVA 0.25, J.8 nat, reading more difficult, recommended to exercise reading everyday

12 months- BCVA 0.25, J.5 nat, satisfied, able to read a book, got tired after 3 lines, then a short rest and able to read again

Patient 6, HK- multicentric

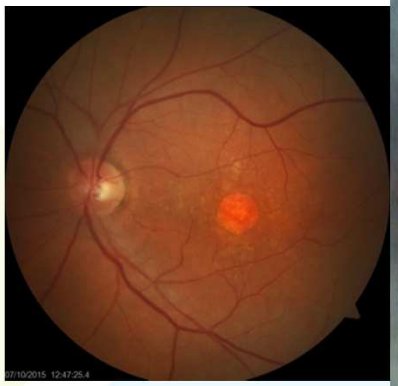
Woman, 1938, AMD dry form

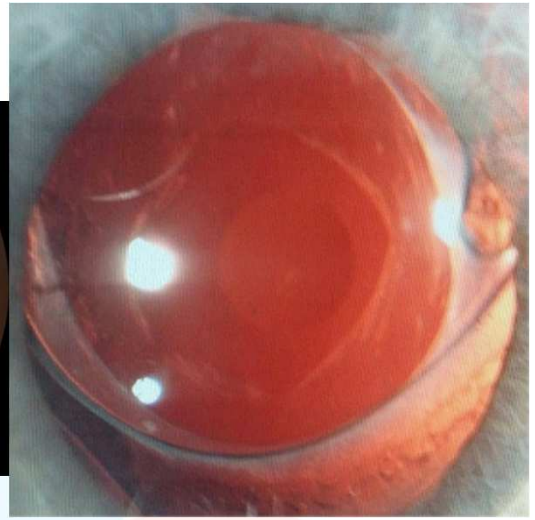
Surgery: 13th October 2015- left eye

Preoperatively:

UCVA 0.25, BCVA 0.25 (RE 0.2)

At near J.14 nat, J.4 with +6.0





Postoperatively:

1 day- BCVA 0.25, J.1 nat

1 week- BCVA 0.2, J.1 nat

1 month- BCVA 0.2, J.1 nat

3 months- BCVA 0.25, J.1 nat

6 months- BCVA 0.3, J.1 nat

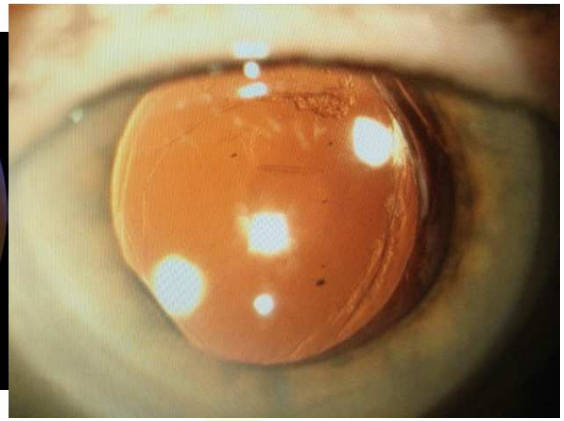
(12 months follow-up visit- 12 October 2016)

Satisfied, able to read a book, after 3 pages fatigued, needed good light, reading every day

Patient 7, HK- multicentric

Man, 1930, AMD dry form

Surgery: 20th October 2015- left eye



Preoperatively:

UCVA 0.16, BCVA 0.2 (RE 0.2)

At near J.13 nat, J.1 with +6.0

Postoperatively:

1 day- BCVA 0.16, J.13 nat

1 week- BCVA 0.4, J.1 nat, needed good light, right eye disturbed-cover

1 month- BCVA 0.3, J.1 nat, satisfied, reading exercises

3 months- BCVA 0.3, J.3 nat *

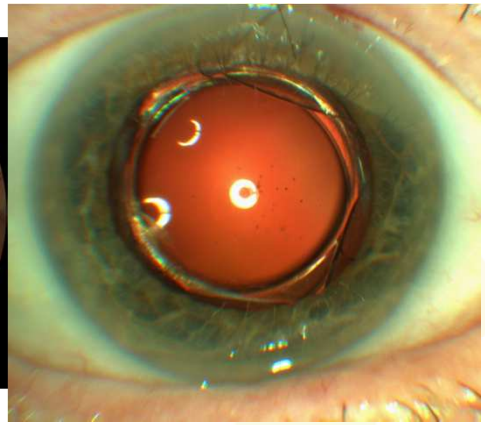
6 months- BCVA 0.25, J.3 nat *

(12 months follow-up visit- 20th October 2016)

* problems with reading speed and fluency, however reading is possible

Patient 8, HK- multicentric

Woman, 1935, AMD wet form inactive
Surgery: 1st February 2016- right eye



Preoperatively:

UCVA 0.3, BCVA 0.3 (LE 0.1)

At near J.13 nat, J.4 with +6.0

Postoperatively:

1 day- BCVA 0.1, J.8sl nat

1 week- BCVA 0.2, J.6 nat, cannot read, blured, left eye disturbed

1 month- BCVA 0.25, J.7 nat, she could read, but had knee ache and after bronchitis, she lost ability to read normal sized text- no reading exercise

3 months- BCVA 0.25, J.8 nat, able to read only headings, started to exercise reading

6 months- BCVA 0.25, J.5 nat, reading better, but fatiguing, good light

(12 months follow-up visit- February 2017)

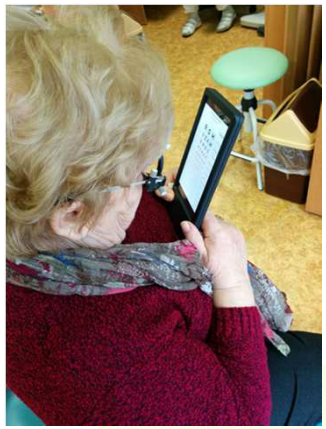
Summary

- Postoperative recovery was rapid and no complaints of diplopia or glare were recorded
- Patients reported problems with reading speed and distance
- Daily exercises improved their reading ability
- The eye without SML disturbed near vision of 5 patients; this eye had to be covered during reading for a temporary adaptation period of 2-4 weeks postoperatively
- spectacles with 1 glass removed and the other covered with semitransparent plaster

- After SML implantation, distance vision or visual field was not affected- paracentral vision

Summary - take a home message

- Patient must understand the principles of reduced reading distance



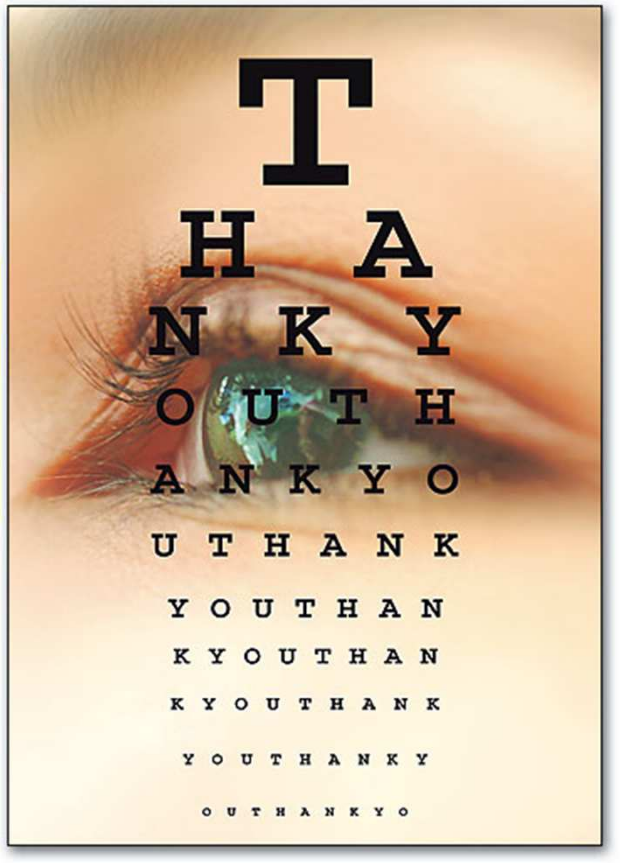
- Patient must know that his/her disease- AMD- is chronic and progressive and SML will not heal the problem of retina
- Patient realistic expectations should be established before surgery
- Patient should be motivated and should
  - exercise reading every day -training charts
  - read at distance of 10-15 centimetres, read in good light conditions
- Doctor/optician should repeat recommendations and improve patient's reading technique
- ***After SML implantation, care begins, not finishes***

Conclusion

- Macular degenerations and dystrophies often result in significant visual impairment that limits a patient's daily activities requiring good central vision, such as self-care, reading, recognizing facial features, driving, watching television, and other social activities. Thus, impaired vision is an important cause of depression and anxiety

- Scharioth macula lens is a new hope for low-vision patients, it is a suitable method to increase near visual acuity in patients with maculopathy

- According to our experience, careful preoperative examination, good indication and realistic patient's expectation and cooperation are crucial for optimal outcome

- The prospects of reading rehabilitation after SML implantation is promising; patient motivation and daily reading exercises are of utmost importance for achieving the best results and satisfied patient

Thank you for your attention