

PRESBYOPIA SURGERY ON THE CORNEA THROUGH MODIFICATION OF SPHERICAL ABERRATION

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PRESBYOND WHAT IS IT?

CRS MASTER

CRS-MASTER HAS AN **H-S ABERROMETER**(WASCA ANALYZER), **IRIS RECORDING** AND AN ANTERIOR SURFACE **CORNEAL TOPOGRAPHER** (ATLAS 9000).



PRESBYOND WHAT IS IT?

PRESBYOND

Laser Blended Vision Treatment Planning

11/1/19 **OD**



OS

Refraction @ 12.50 mm

Sph[D] Cyl[D] Axis[°] z(4,0)[μm] Malacara Analysis Pupil: 6mm
Wavefront
Manifest 0.00 0.00 0 0.00 Load WF...

Target Refraction

Sph[D] Cyl[D] Axis[°]
Default 0.00 0.00 0
Applied 0.00 0.00 0 ☐ Use manual target

Intended Correction

Sph[D] Cyl[D] Axis[°] Optical Zone [mm]
-0.01 0.00 0 6.00
Procedure: LASIK

LBV

Age 42
Funct. Age 42

Dominant Eye

☒ OD ☐ OS
+1.5D Test Tolerance
☒ Yes ☐ No

Refraction @ 12.50 mm

Sph[D] Cyl[D] Axis[°] z(4,0)[μm] Malacara Analysis Pupil: 6mm
Wavefront 4.58 0.82 166 -0.50
Manifest 0.00 0.00 0 0.00 Load WF...

Target Refraction

Sph[D] Cyl[D] Axis[°]
Default -1.50 0.00 0
Applied -1.50 0.00 0 ☐ Use manual target

Intended Correction

Sph[D] Cyl[D] Axis[°] Optical Zone [mm]
1.32 0.00 0 7.00
Procedure: LASIK

Safety Panel

Flap Creation Quiron
Pachymetry [μm]
Flap Thickness 110 [μm] include 1 SD
Ablation Depth [μm]
Post-op RST [μm]

K-Readings

[mm] [D] Source
K mean 7.86 42.94 Default
User... Topo... Default

Safety Panel

Flap Creation
Pachymetry [μm]
Flap Thickness 110 [μm] include 1 SD
Ablation Depth [μm]
Post-op RST [μm]

K-Readings

[mm] [D] Source
K mean 7.86 42.94 Default
User... Topo... Default

Treatment Assistant

- ⚠ Pachymetry value must be between 250 and 999 μm.
- ⚠ Predicted residual stromal thickness falls below RST limit.
- ⚠ Ablation depth must be higher than 6μm.
- ⚠ Please press Calculate button or F2
- ⚠ Functional age is outside recommended range.

Ablation Pattern



Ablation Pattern



Treatment Assistant

- ⚠ Pachymetry value must be between 250 and 999 μm.
- ⚠ Predicted residual stromal thickness falls below RST limit.
- ⚠ Ablation depth must be higher than 6μm.
- ⚠ Please press Calculate button or F2
- ⚠ Functional age is outside recommended range.
- ⚠ Manifest Spherical Equivalent is not consistent with Wavefront Refraction.

DATA CAN BE EXPORTED TO MEL-80

Calculate Close Summary Pages

ABERROMETRY
REFRACTION
TOPOGRAPHY
IRIS RECORDING

PRESBYOND

OUR STUDY

THREE GROUPS UNDER STUDY (n=20 patients)

- LONG SIGHTED: $+ 1.99 \pm 1.11$ (5.00/0.50)
- MYOPIC <3 DP: -1.85 ± 0.46 (-2.26/-1.00)
- MYOPIC >3 DP: -3.48 ± 1.37 (-7.00/-1.75)

REASSESSED THREE MONTHS AFTER SURGERY

BINOCULAR VISUAL ACUITY - CONTRAST SENSITIVITY - FAR VISION

BINOCULAR VISUAL ACUITY - CONTRAST SENSITIVITY – NEAR VISION

POST SURGICAL REFRACTION (DOMINANT AND NON DOMINANT EYE)

POST SURGICAL TOTAL AND CORNEAL VARIATION OF Q AND $Z_{4,0}$

PATIENT SATISFACTION QUESTIONNAIRE BASED ON NEI-VFQ-25

AGE AND GENDER DISTRIBUTION

AGE GENDER

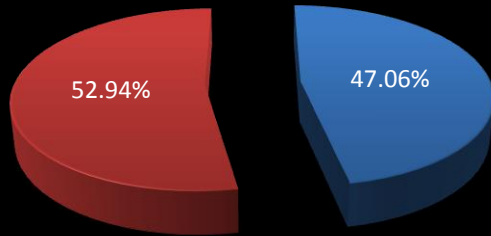
- | | | |
|------------------|--------------------------|-------------------|
| • LONG SIGHTED : | 51.71 ± 3.26 (56/43) | 70.59% M/29.41% H |
| • MYOPIC <3 DP: | 46.60 ± 3.13 (52/44) | 60.00% M/40.00%H |
| • MYOPIC >3 DP: | 48.50 ± 5.21 (59/43) | 62.50% M/37.50%H |

PRESBYOND

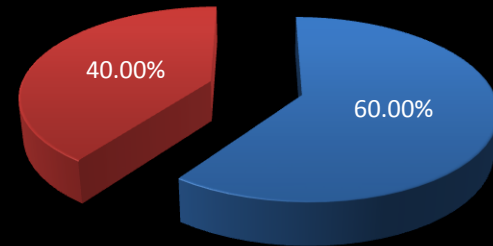
OUR STUDY

RESULTS

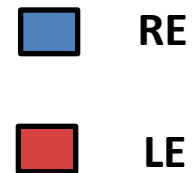
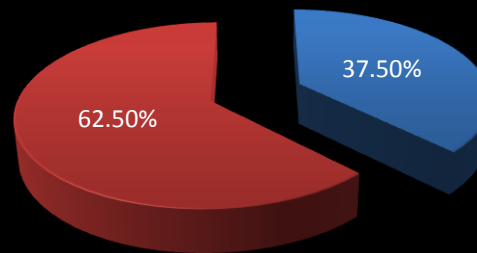
LONG-SIGHTED



MYOPIC < 3 DP



MYOPIC > 3 DP

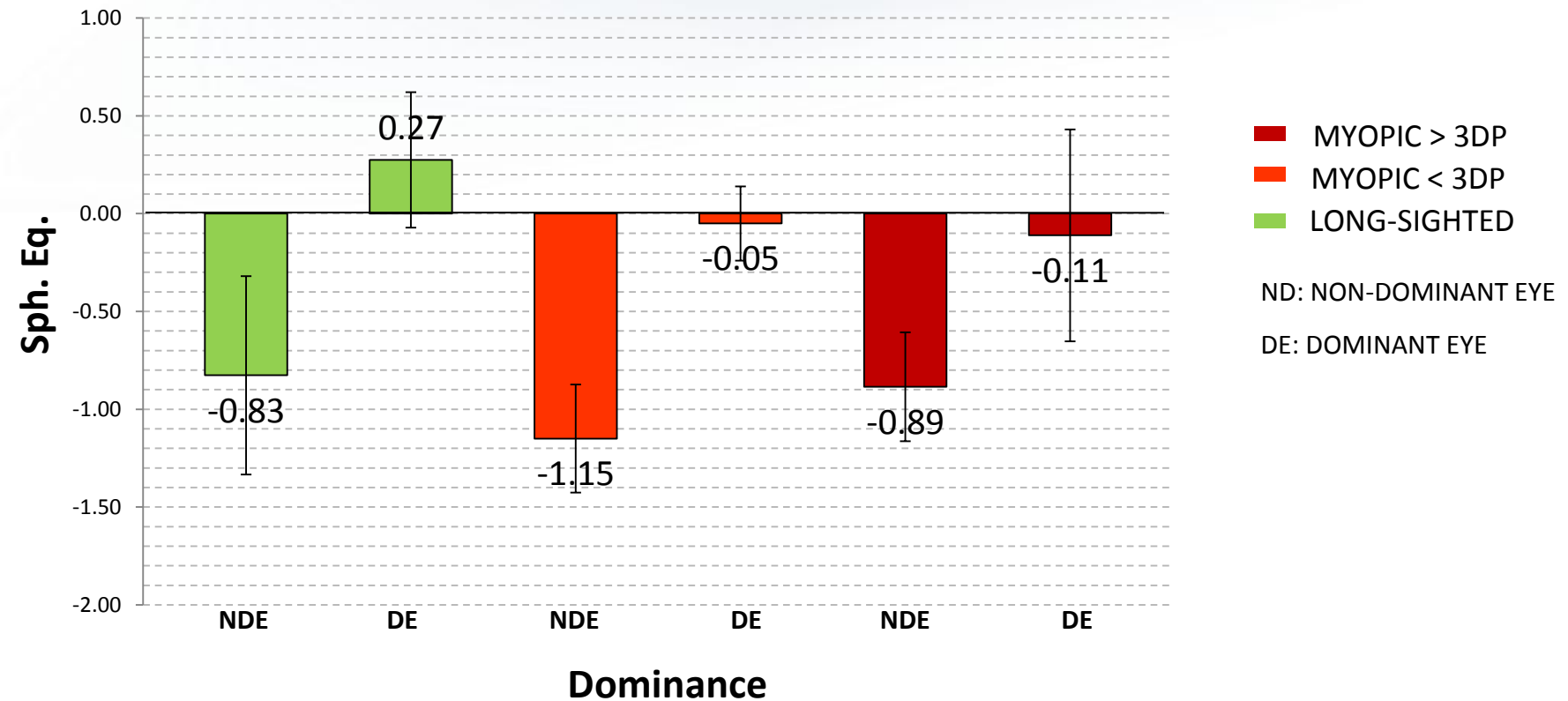


PREVALENCE OF EYE DOMINANCE DEPENDING ON REFRACTIVE CONDITION

PRESBYOND

OUR STUDY

RESULTS

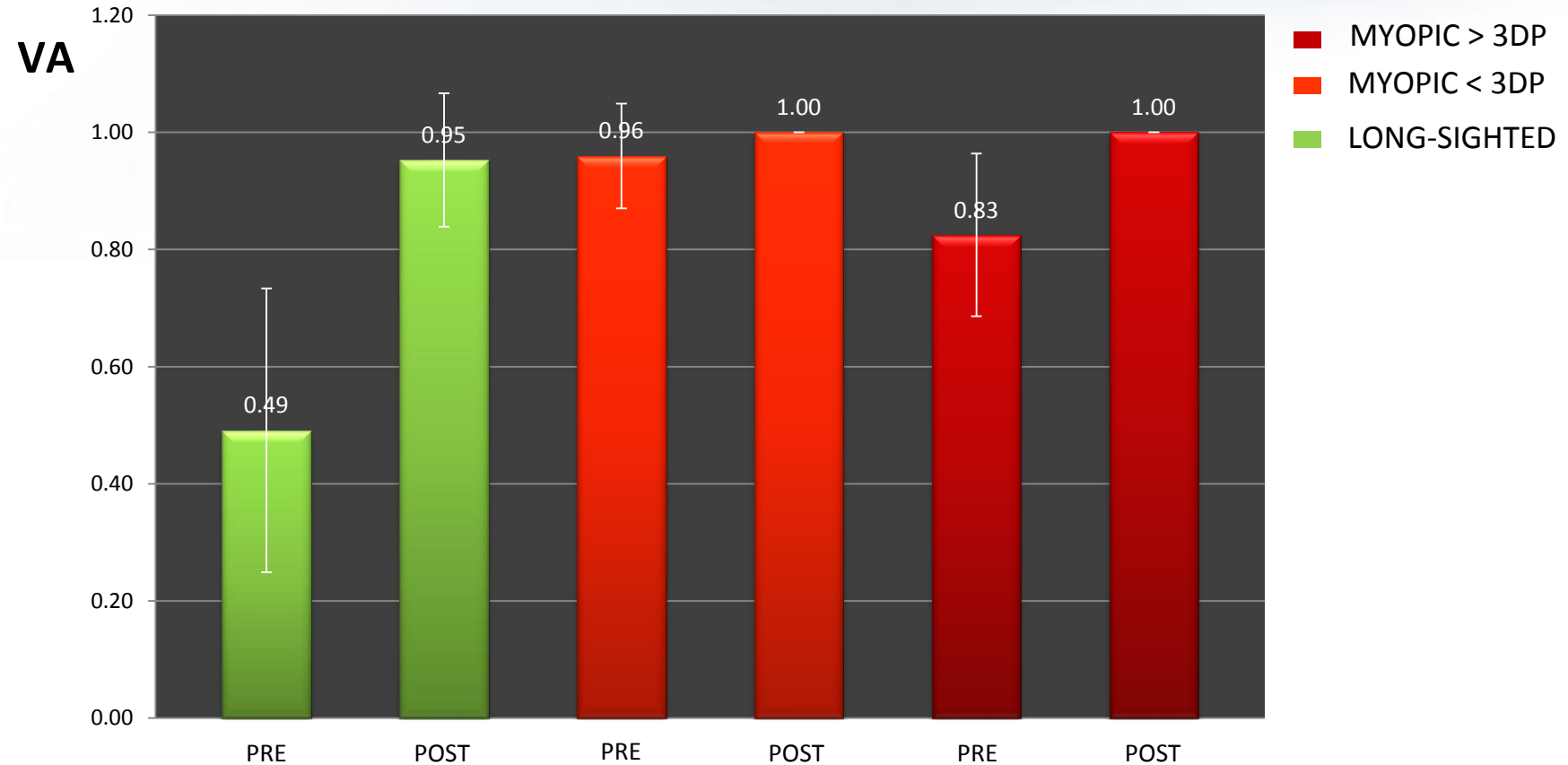


POST SURGICAL SPHERICAL EQUIVALENTS IN DOMINANT AND NON-DOMINANT EYE
FOR THE THREE GROUPS

PRESBYOND

OUR STUDY

RESULTS



DIFFERENCES IN TERMS OF PRE AND POST SURGICAL BINOCULAR NEAR VISUAL ACUITIES WITHOUT CORRECTION BETWEEN THE THREE GROUPS

PRESBYOND

OUR STUDY

RESULTS



LONG-SIGHTED VA : 1.00 ± 0.01 (1.0/0.95)

MYOPIC < 3DP VA: 1.00 ± 0.00 (1.0/1.0)

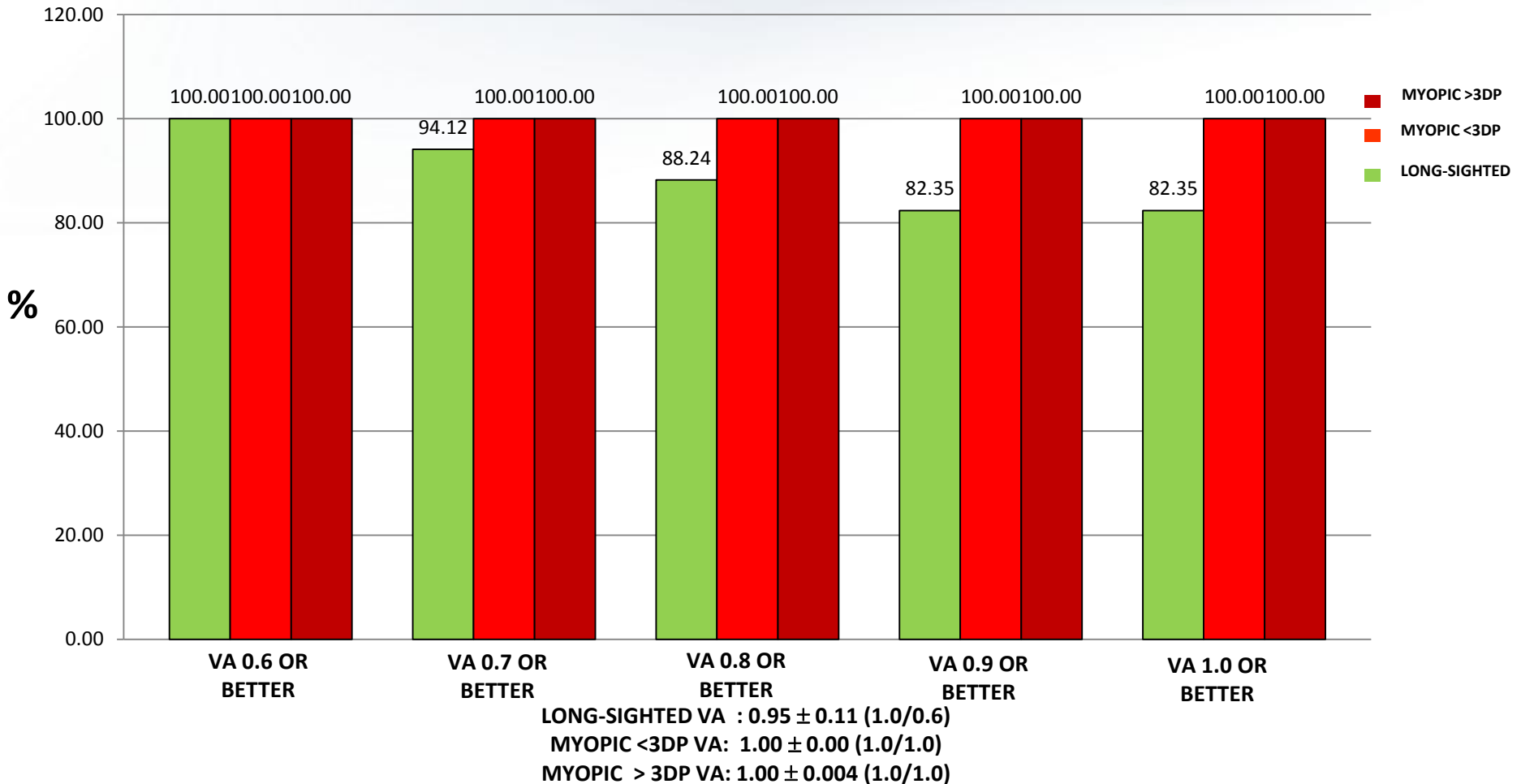
MYOPIC > 3DP VA: 0.99 ± 0.04 (1.0/0.90)

VISUAL ACUITY CUMULATIVE PERCENTAGE WITHOUT **BINOCULAR** POST SURGICAL FAR CORRECTION

PRESBYOND

OUR STUDY

RESULTS



VISUAL ACUITY CUMULATIVE PERCENTAGE WITHOUT BINOCULAR POST SURGICAL NEAR CORRECTION

PRESBYOND

OUR STUDY

RESULTS

OF THE 10 ITEMS IN OUR PATIENT SATISFACTION QUESTIONNAIRE, WE SELECTED JUST 4 IN ORDER TO SIMPLIFY THE ANALYSIS:

- 1: WATCHING TV
- 2: READING TASKS
- 3: COMPUTER
- 4: GENERAL SATISFACTION

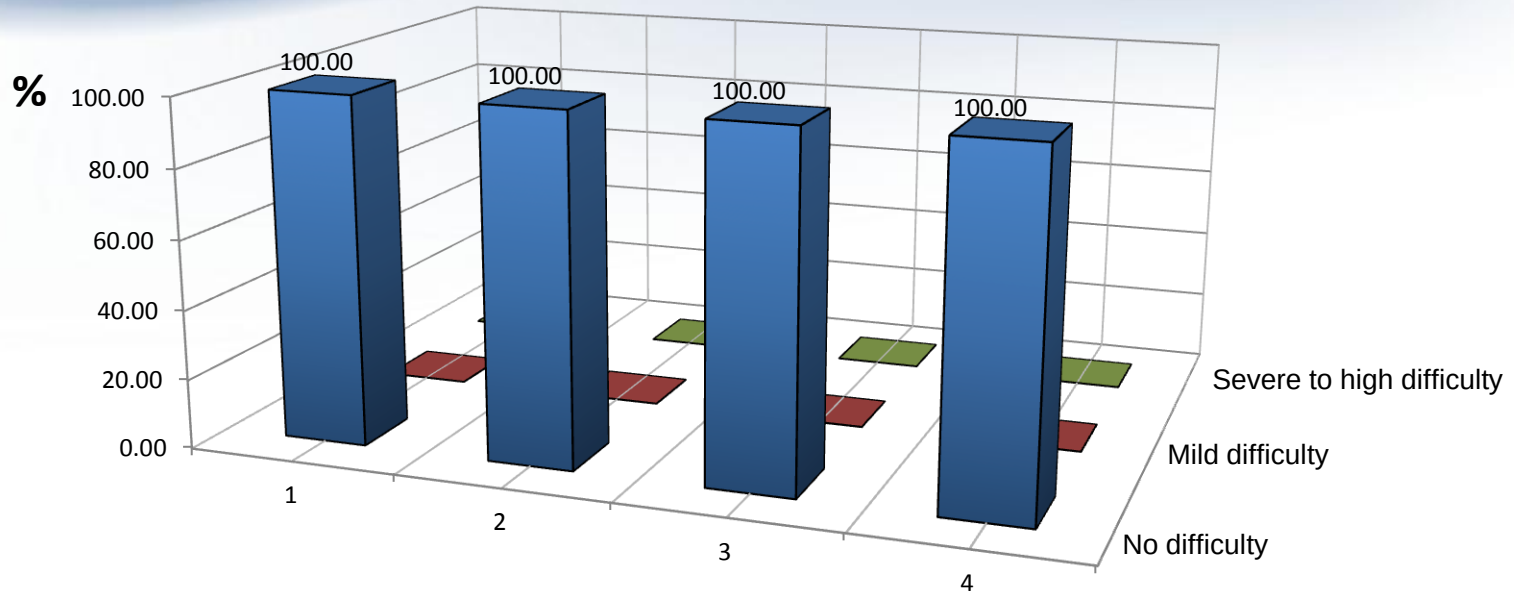
ALSO, OF THE SUBJECTIVE ASSESSMENT SCALE WE ONLY SHOW 3 POSSIBILITIES, THE MOST OUTSTANDING ONES:

- 1: NO DIFFICULTY
- 2: MILD DIFFICULTY
- 3: SEVERE TO HIGH DIFFICULTY

THE NEXT SLIDE GRAPHICALLY SHOWS THE PERCENTAGES OBTAINED THROUGH THE QUESTIONNAIRES AS PER GROUP.

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PATIENT SATISFACTION QUESTIONNAIRE



	1	2	3	4
sin dificultad	100.00	100.00	100.00	100.00
No difficulty	0.00	0.00	0.00	0.00
Mild difficulty	0.00	0.00	0.00	0.00

Severe to high difficulty

1: WATCHING TV
2: READING TASKS
3: COMPUTER
4: GENERAL SATISFACTION

QUESTIONNAIRE STATISTICS % (N=60)

PRESBYOND

OUR STUDY

CONCLUSIONS

- THE POST SURGICAL **BINOCULAR VISUAL ACUITY** AVERAGE OF OUR PATIENTS AFTER THREE MONTHS OF THE PROCEDURE, INDEPENDENTLY OF THEIR PRE SURGICAL REFRACTIVE CONDITION IS **0.99 ± 0.02 FOR FAR VISION** AND **0.98 ± 0.07 FOR NEAR VISION** ($P < 0.001$).
- IN LONG-SIGHTED PATIENTS, **SPHERICAL ABERRATION** VARIES **$0.189 \mu\text{m}$**
- ACCORDING TO OUR QUESTIONNAIRE (NEI-VFQ-25), **100%** OF OUR PATIENTS ARE SATISFIED OF THEIR CONDITION AFTER SURGERY.
- INDEPENDENTLY OF THEIR PRE SURGICAL REFRACTIVE CONDITION, VISUAL RESULTS ARE SATISFACTORY AT ANY AGE.