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# STRUCTURAL CHANGES IN RETINA AFTER CATARACT SURGERY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS USING OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY

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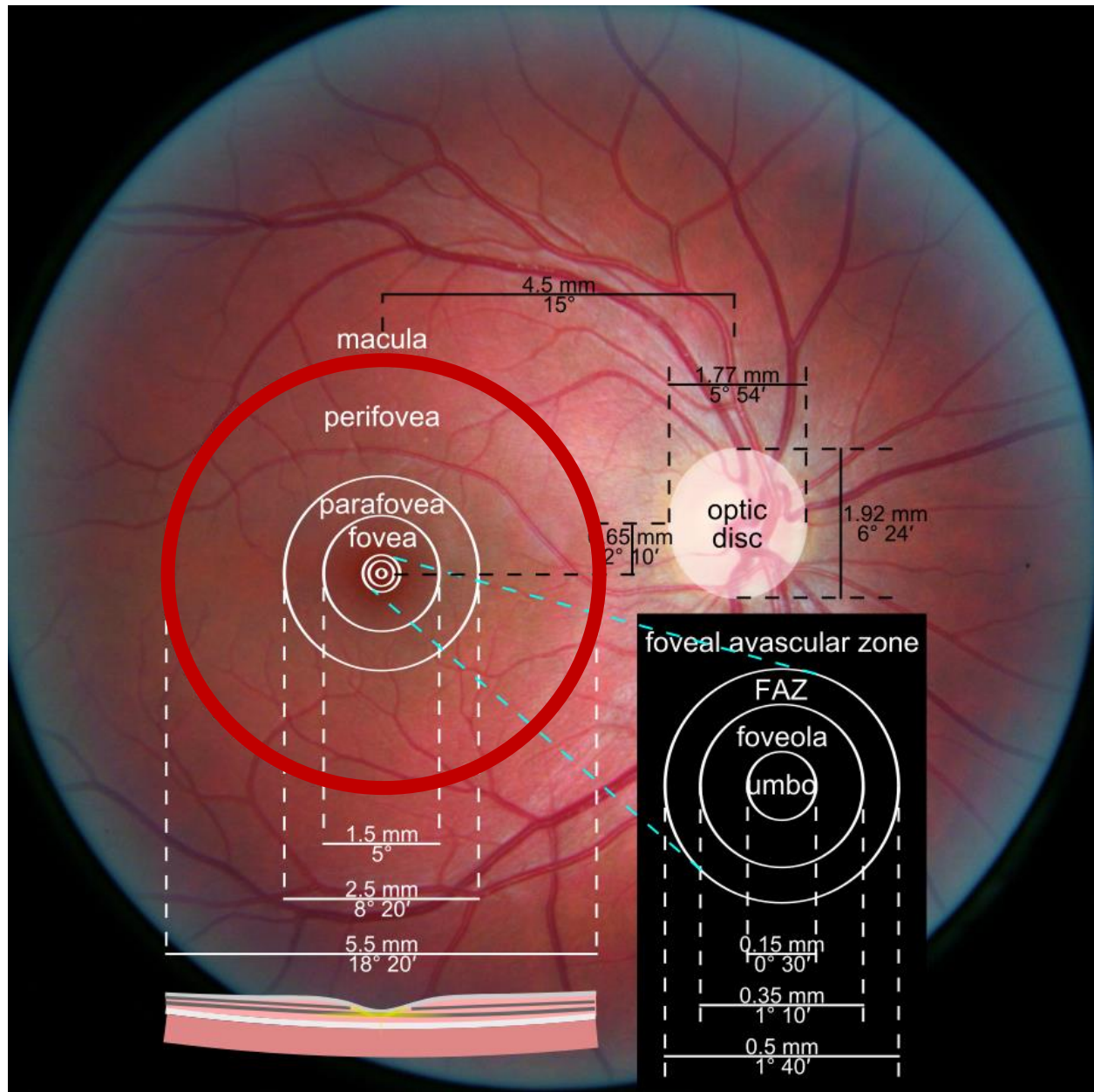
**Background.** Optical coherence tomography angiography (OCTA) is a relatively new non-invasive diagnostic device mostly used in ophthalmology to diagnose vascular abnormalities.

**Aim** - evaluate changes in retinal structures

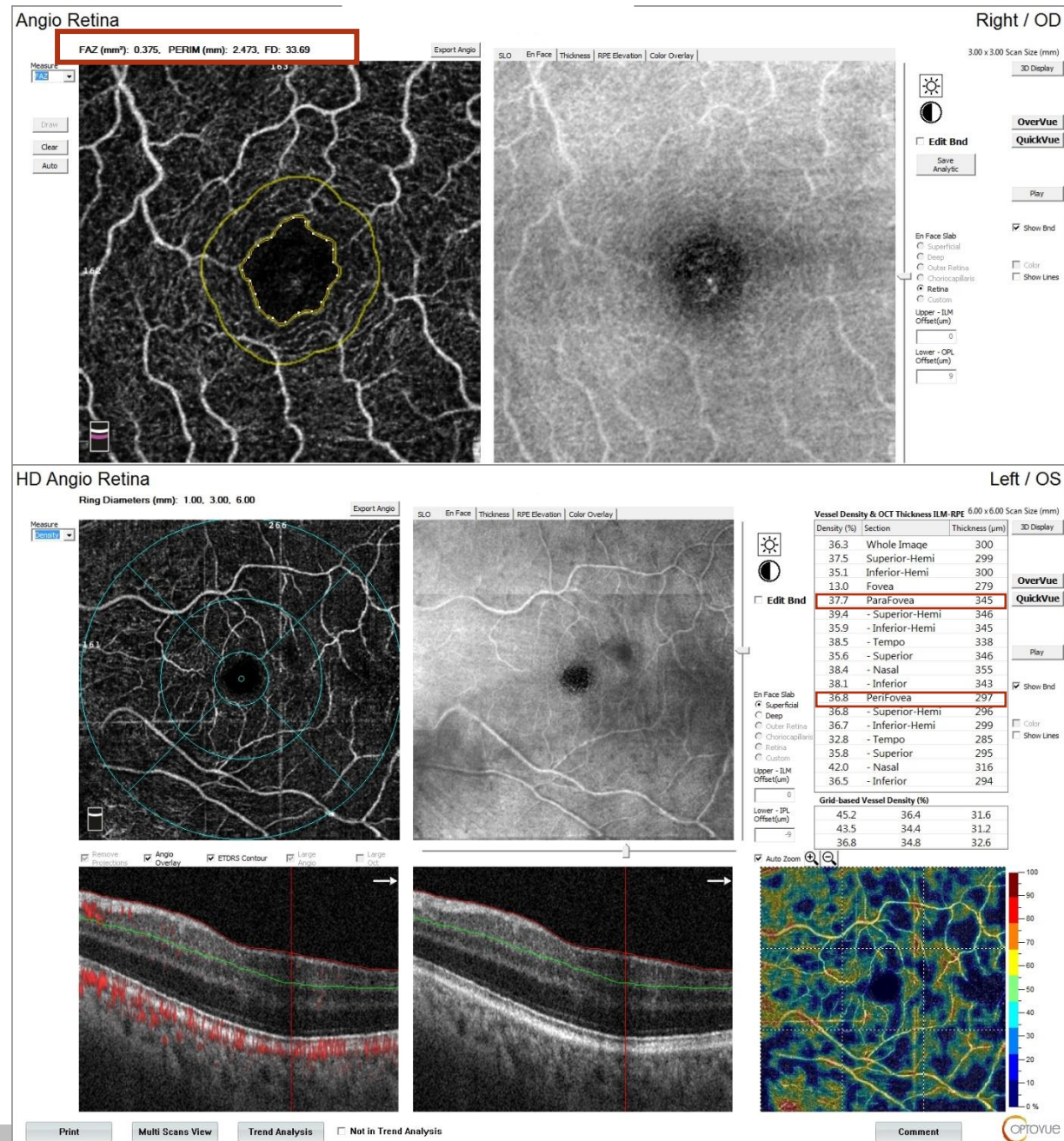
- central retinal thickness
- foveolar avascular zone (FAZ) enlargement
- vascular density (VD) reduction

after phacoemulsification cataract surgery among patients with type 2 diabetes mellitus (T2DM).

**Methods.** A longitudinal prospective study in Pauls Stradiņš Clinical University Hospital from October 2020 to December 2020. All 12 eyes from 12 participants underwent OCTA and individual  $3 \times 3 \text{mm}^2$  and  $6 \times 6 \text{mm}^2$  OCTA images of the superficial and deep layer which were obtained at baseline and one month after cataract surgery. Automated measurements of FAZ, VD parafoveal and perifoveal density (%) were analysed. A Wilcoxon signed-rank test was used to compare measures in two time-points. Statistical significance of  $p < 0.05$  was considered for this study.

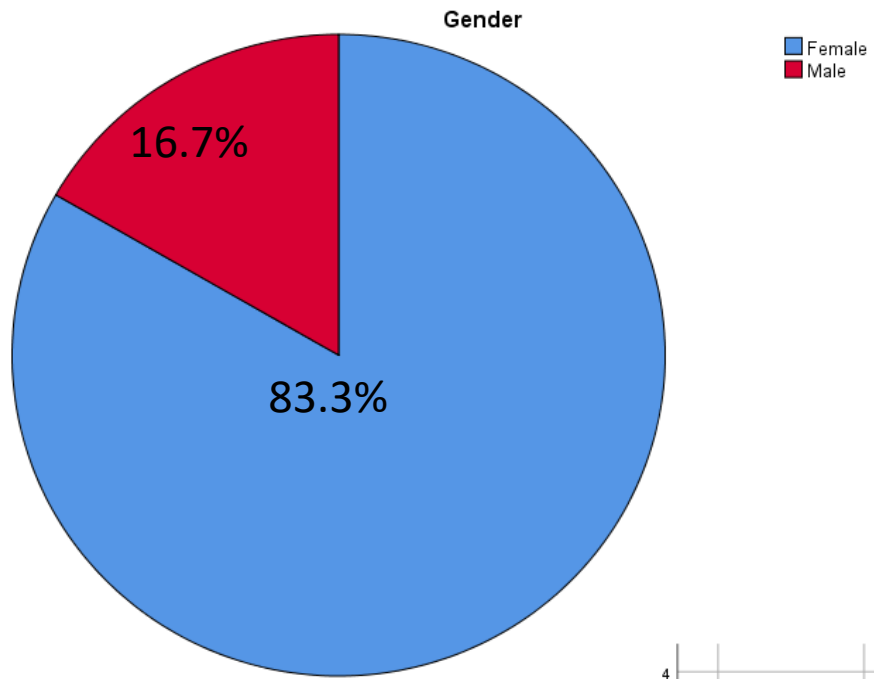


Picture 1: <https://upload.wikimedia.org/wikipedia/commons/6/6c/Macula.svg>

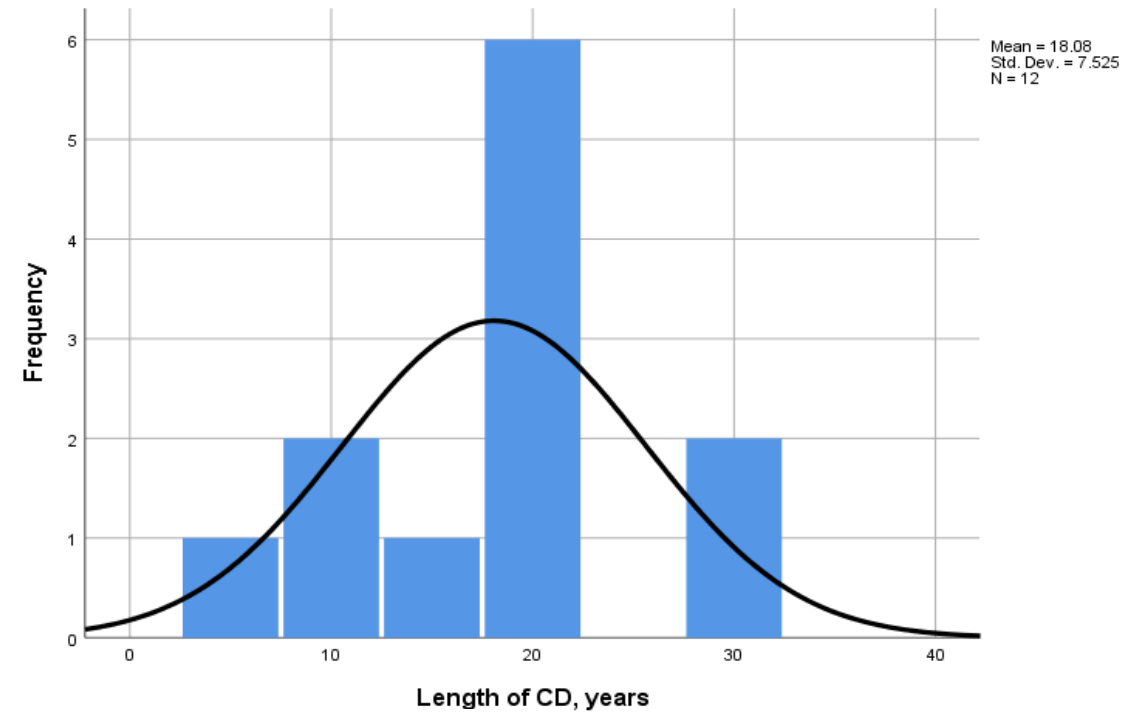
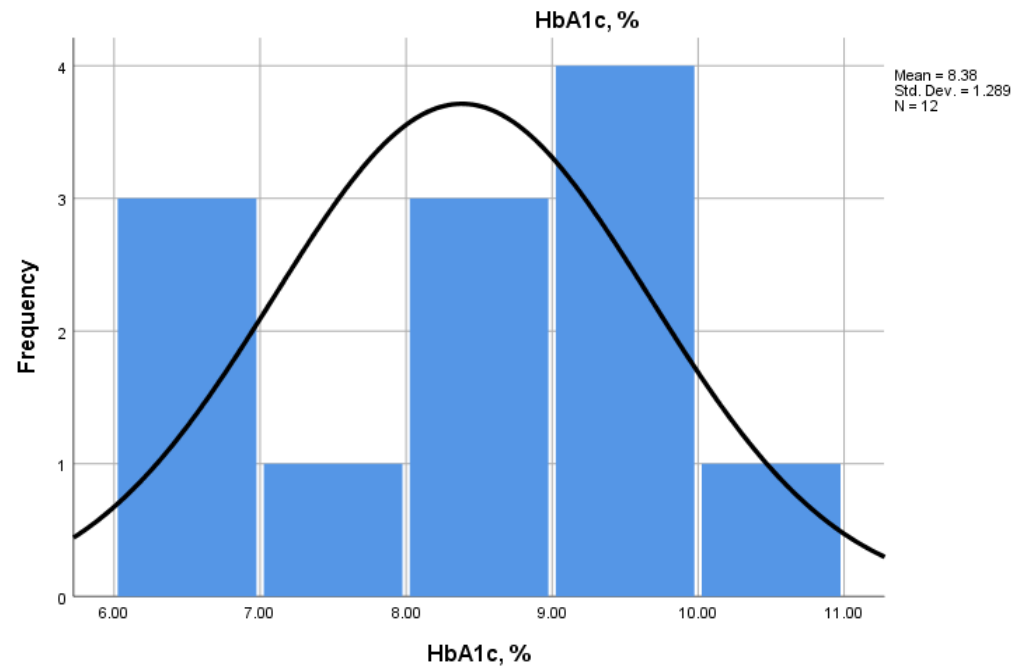


Picture 2: OCTA printout with FAZ, peri and parafoveal density measurements

# Results

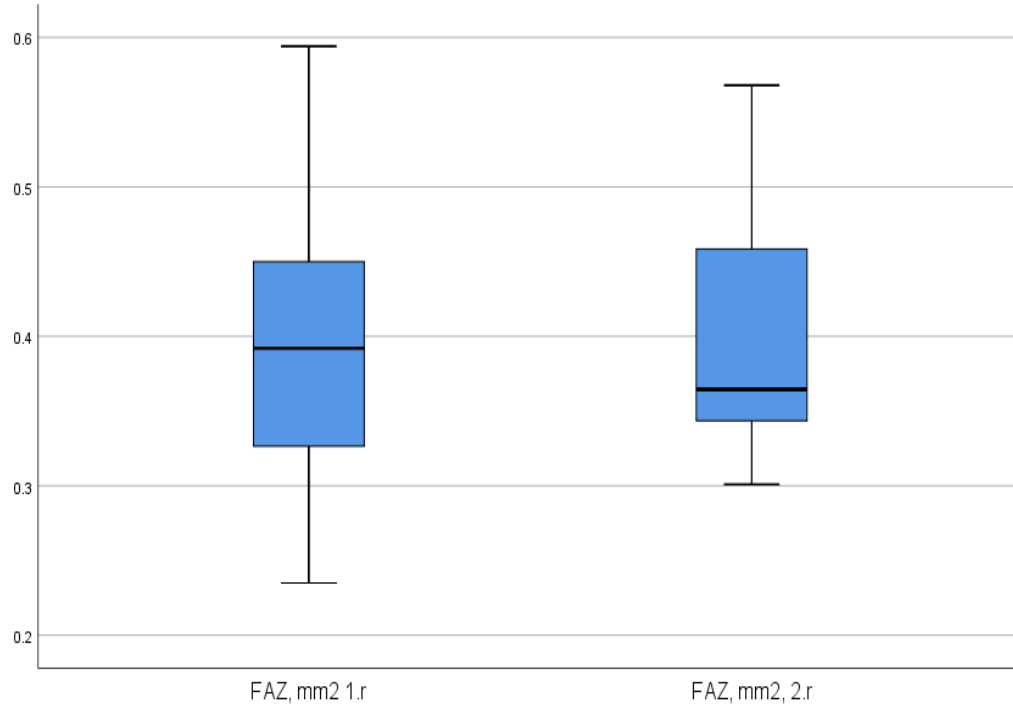


Graph 2: patients divided in groups dependin on their HbA1c value.

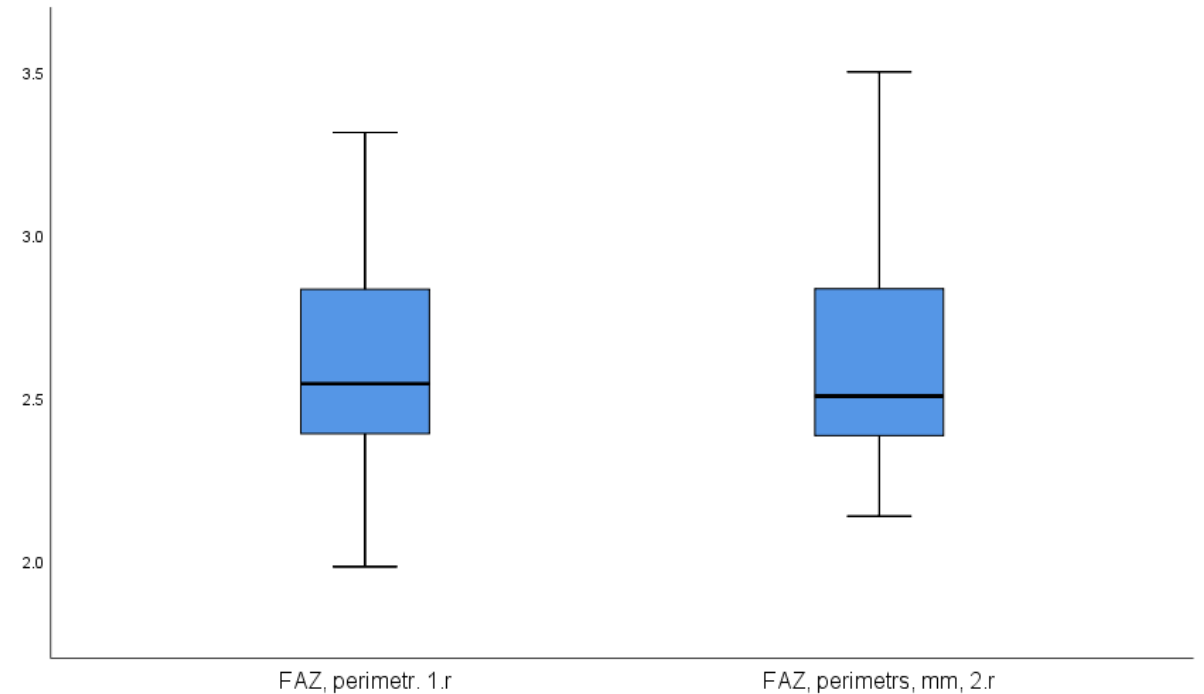


Graph 3: patients divided in groups dependin on the duration of DM

# Results – foveolar avascular zone

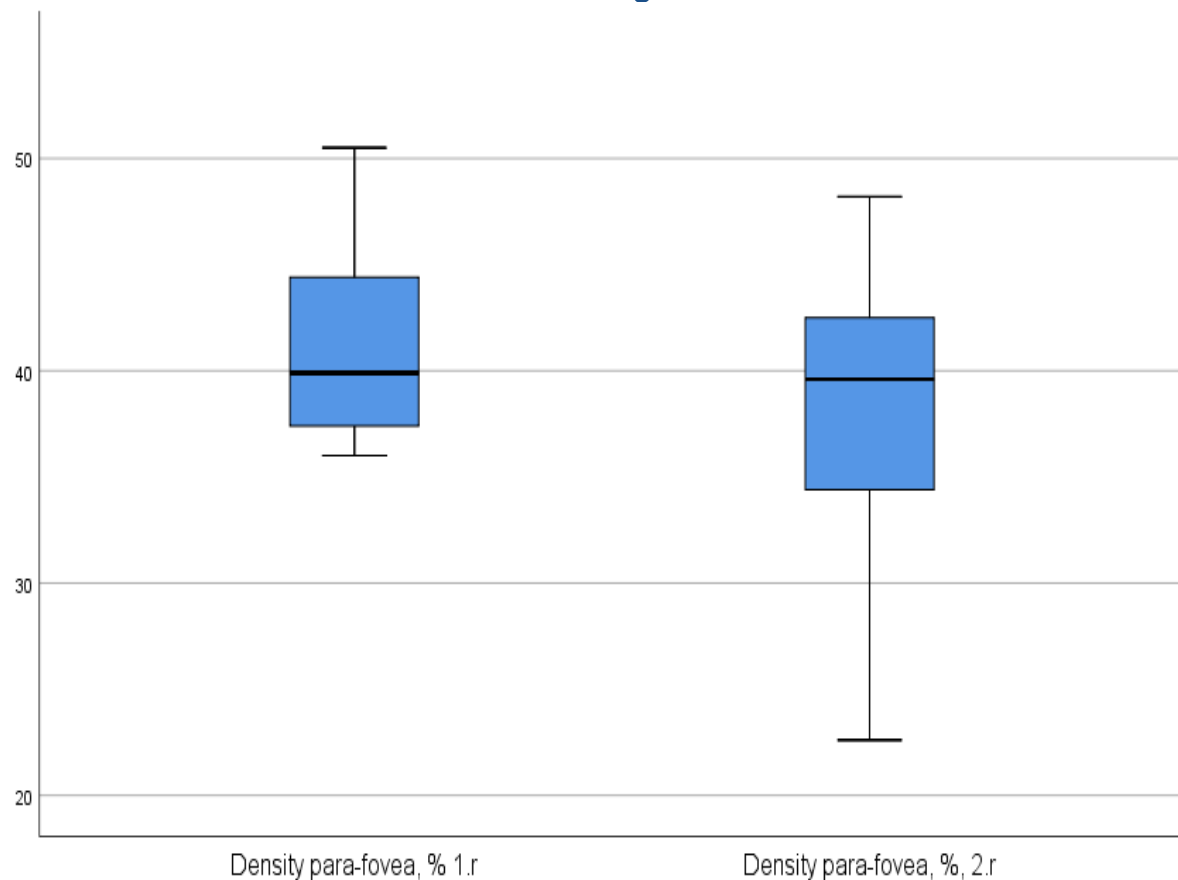


Graph 4: Comparison in two time points – FAZ **area** before and one month after cataract surgery;  $p=0.43$ .

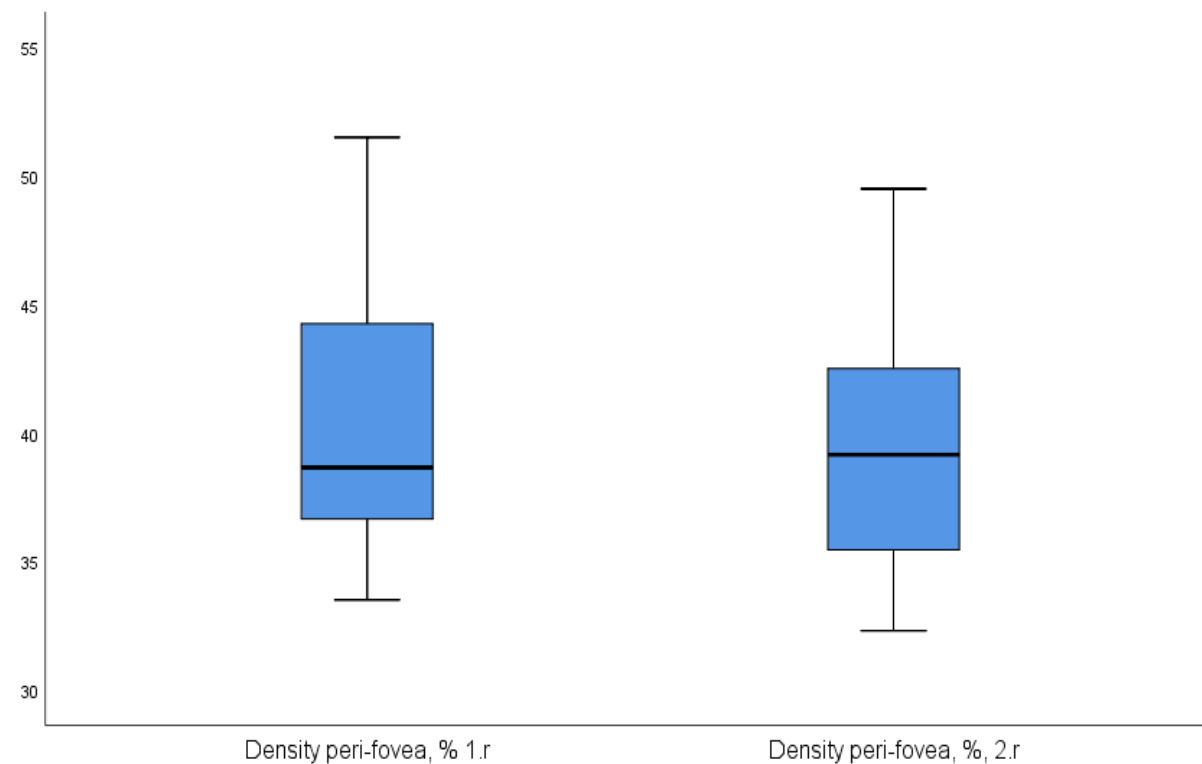


Graph 5: Comparison in two time point - FAZ **perimeter** before and one month after cataract surgery;  $p = 0.31$ .

# Results - density



Graph 6: Comparison in two time points - **parafoveal density** before and one month after surgery; **p = 0.071**.



Graph 7: Comparison in two time points - **perifoveal density** before and one month after surgery; **p = 0.39**.

# Conclusions / Summary

- ✓ Mean metabolic compensation was unsatisfied
- ✓ Most of the patients didn't know when was the last time they checked glycated hemoglobin
- ✓ Could be more significant difference in parafoveal density continuing this study
- ✓ Further analysis with larger samples and longer duration is warranted to confirm these results
- ✓ OCTA could be used as evaluation device to predict post cataract surgery complications in patients with type 2 diabetes mellitus and
- ✓ Evaluate first changes in retina that are not visible in fundoscopy during routine ophthalmologic examinations

**Thank you for your attention!**

**Any questions?**

