# Longitudinal Assessment of Ellipsoid Zone Recovery using *En Face* OCT after Retinal Detachment Surgery

Natalia Figueiredo, SriniVas Sadda, David Sarraf, Frederic Gunnemann, Tina Felfeli, Carolina LM Francisconi, Verena R Juncal, Nishaant (Shaan) Bhambra, Saffire H Krance, Samara B Marafon, Alan Berger, Louis R Giavedoni, David T Wong, Filiberto Altomare, Peter J Kertes, Radha P Kohly, Roxane J Hillier, Rajeev H Muni

**Natalia Figueiredo, MD**

Research Fellow

St. Michael's Hospital

Department of Ophthalmology & Visual Sciences

University of Toronto

UNIVERSITY OF TORONTO

St. Michael's

Inspired Care.
Inspiring Science.

# Financial Disclosures

- No relevant financial disclosures

# Summary

**Purpose**

Patients with rhegmatogenous retinal detachment (RRD) often experience poor functional outcomes.

This study was undertaken to provide quantitative assessment on *en face* OCT findings in patients with macula-off RRD.

**Methods**

This is a *post hoc* analysis of the PIVOT RCT.

SD-OCT *en face* images of the EZ slab at 3, 6, 12, and 24 months post surgery were analyzed.

Hyporeflective areas were manually measured by two graders using ImageJ.

**Results**

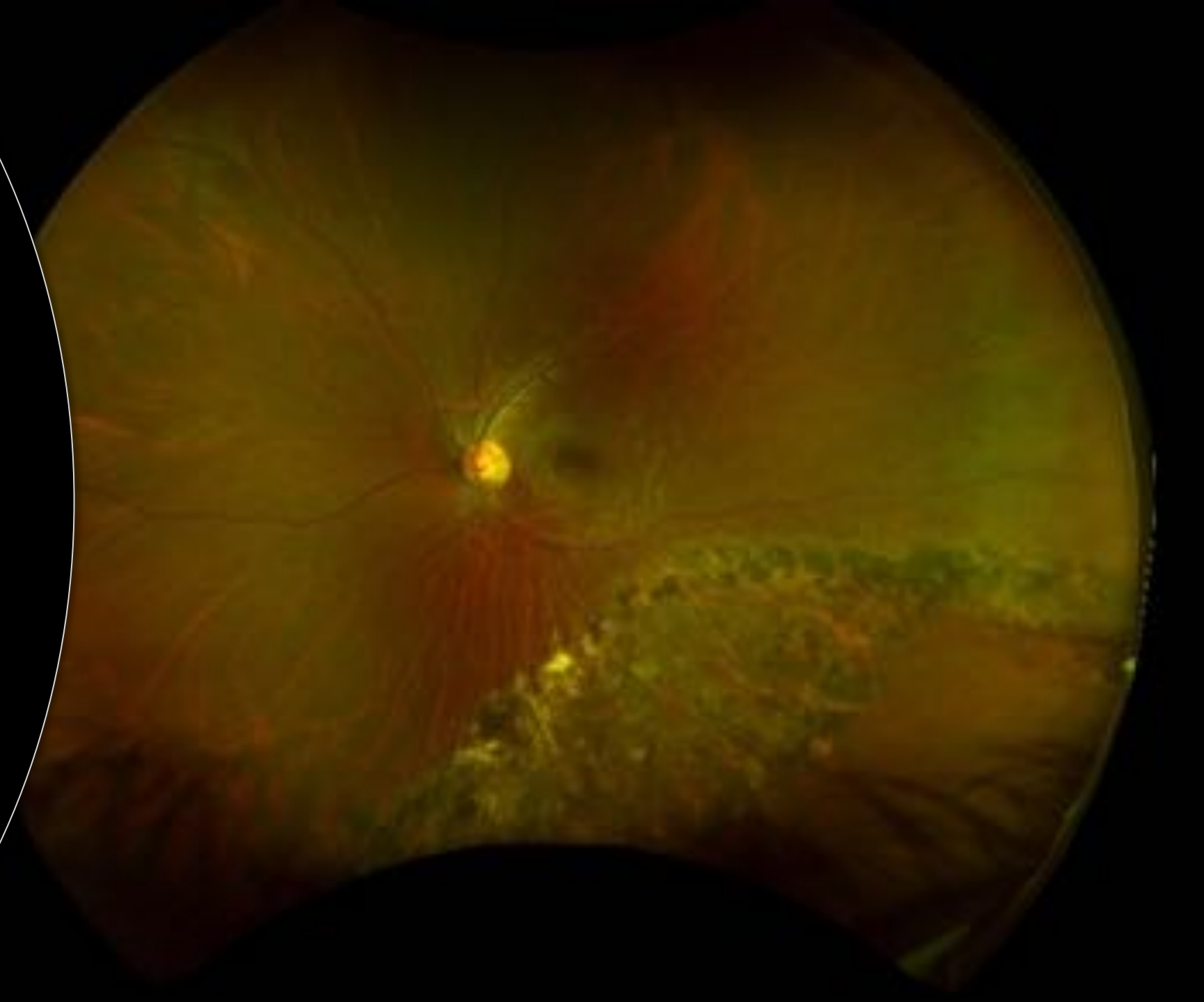
- A statistically significant reduction was observed in the mean area of hyporeflectivity over time, $F$ (3,87) = 14.85, $p < .0005$.
- There was moderate negative correlation between change in hyporeflective area and change in ETDRS letters from 3 to 24 months, $r(31) = -0.46$, $p = .007$.

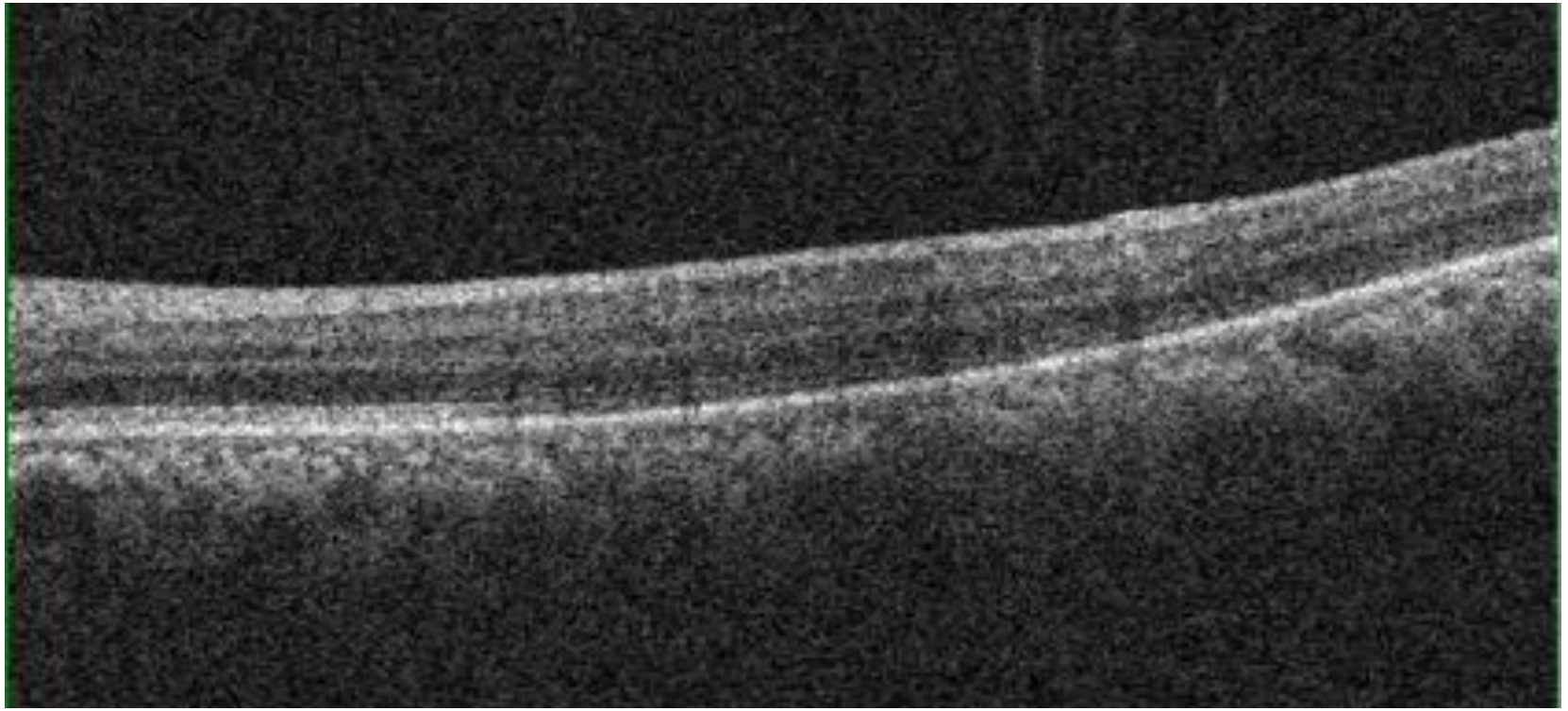
**Conclusions**

- EZ recovery can be quantitatively documented after RRD surgery using enface OCT.
- A steady reduction in the area of abnormal central EZ was observed over time and correlated with ETDRS improvement in patients with macula-off RRD.

Anatomic Reattachment

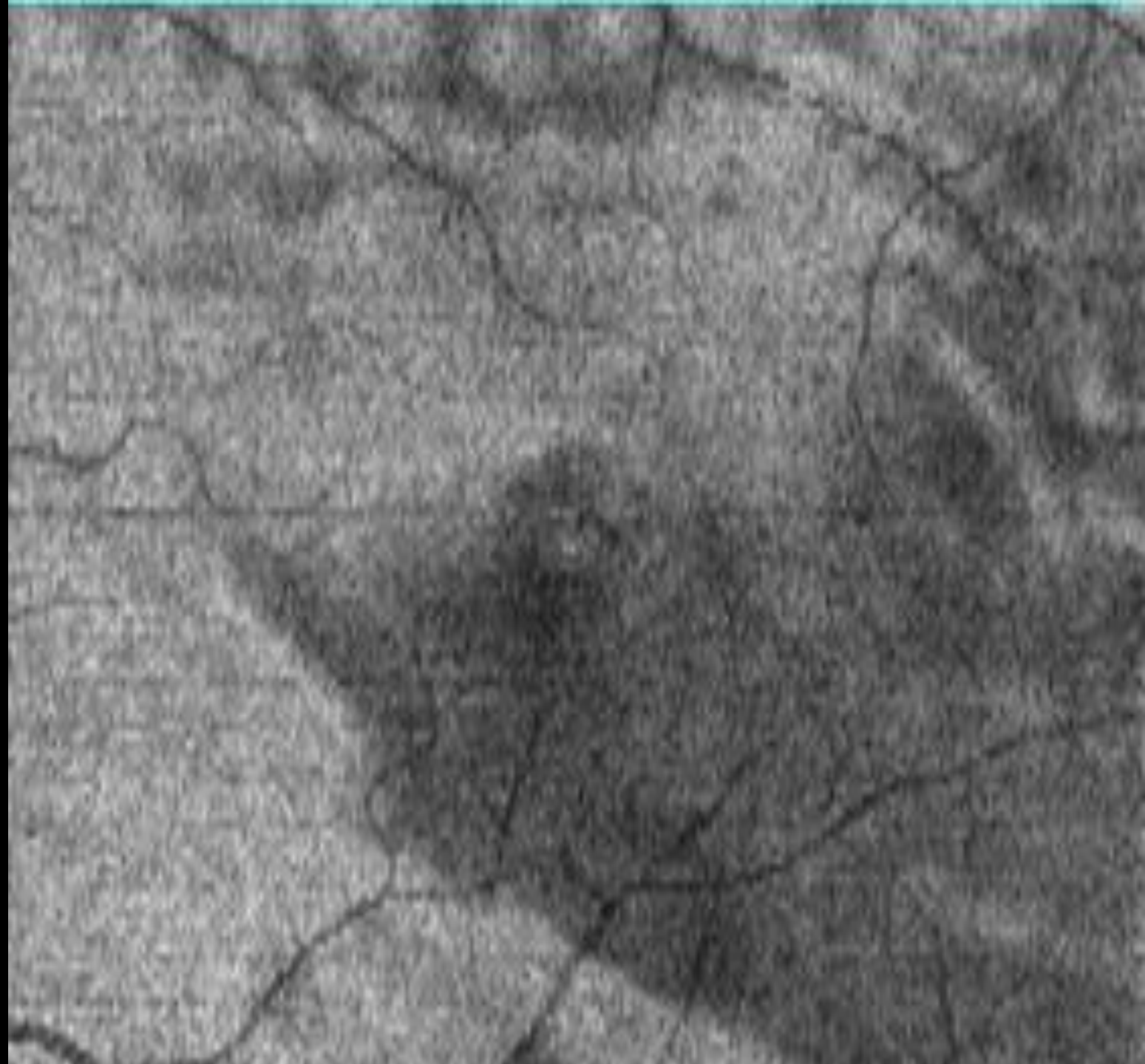
Poor functional outcome





# EZ abnormalities

# Hyporeflective regions on *en face* OCT



**Objectives:**

- To quantitatively assess EZ recovery using *en face* OCT after RRD surgery.
- To determine the correlation between EZ recovery and improvement in visual acuity.

- This is a *post hoc* analysis of patients enrolled in the **PIVOT** RCT with **macula-off RRD**.

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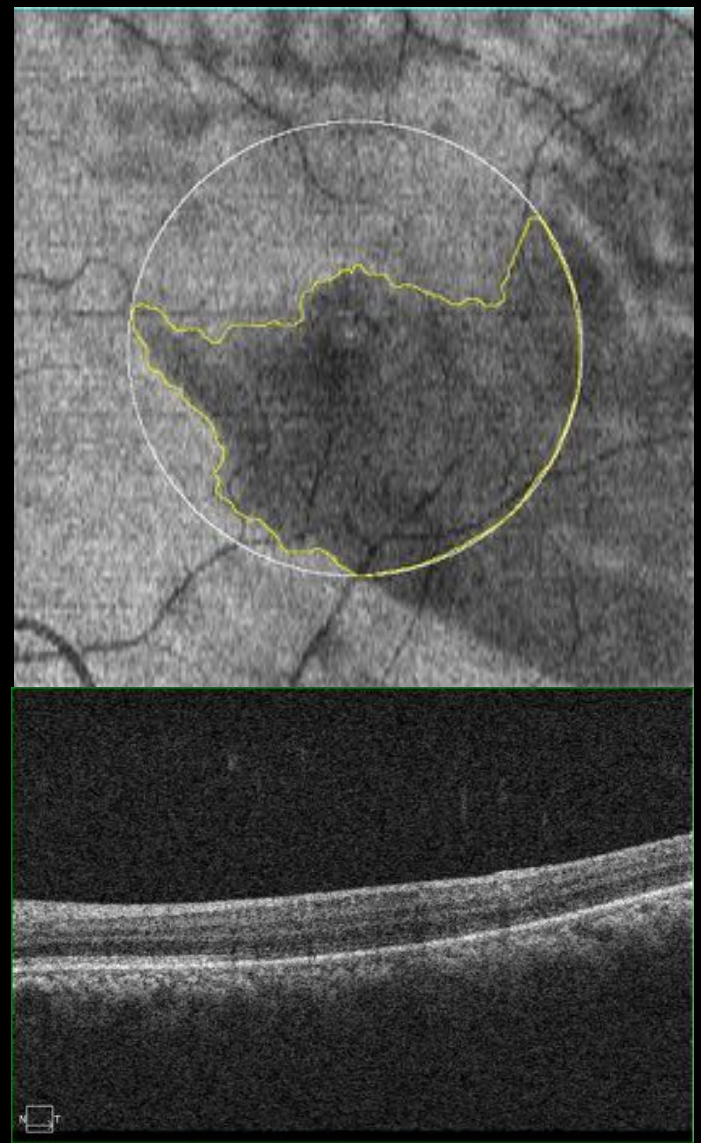
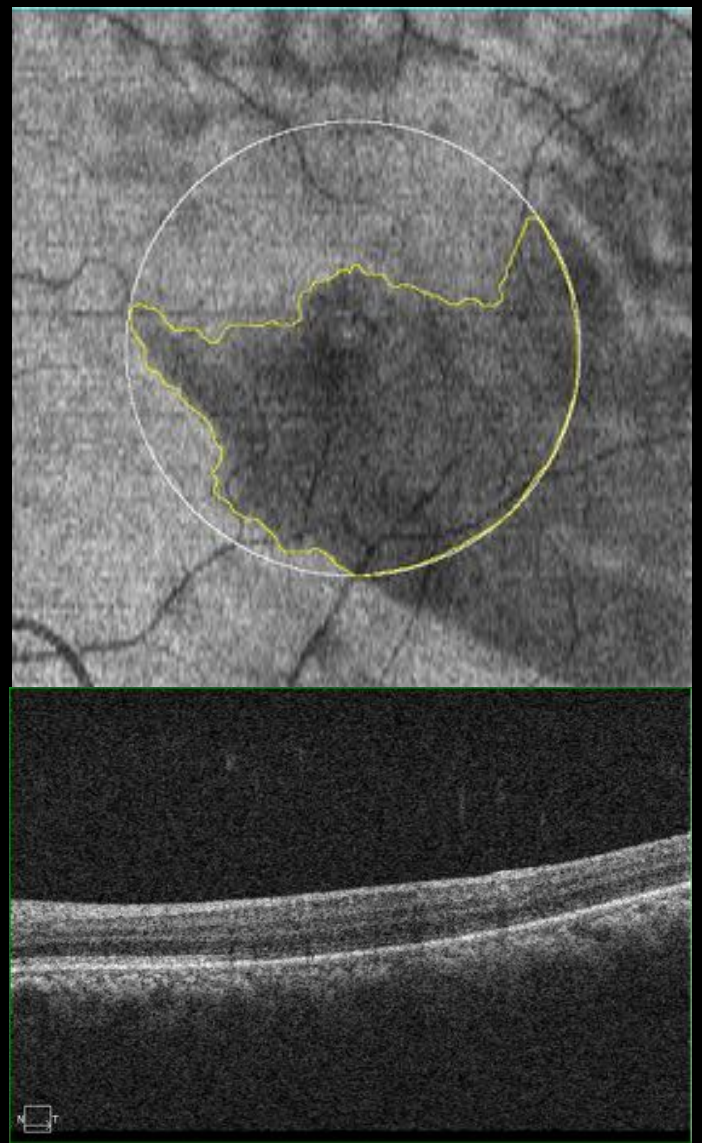
- En face images of the EZ slab at 3, 6, 12, and 24 months post-operatively.
- Hyporeflective areas were co-localized with EZ abnormalities on the B-Scan and manually measured by two masked graders using ImageJ.

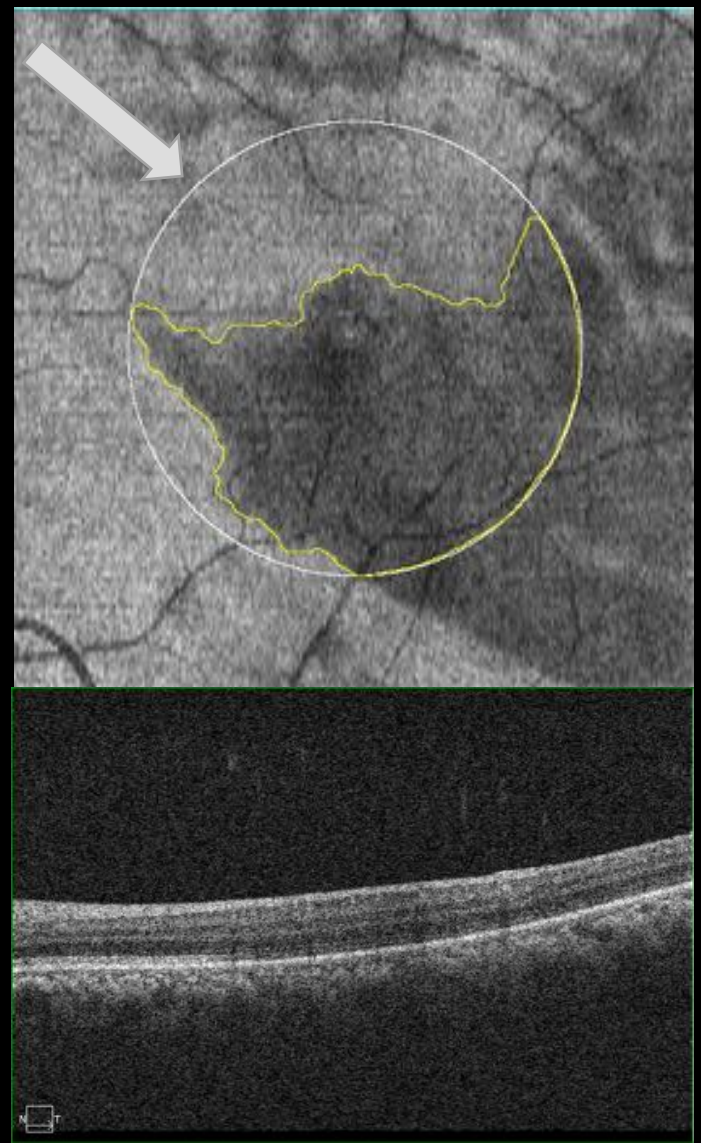


**Intraclass Correlation Coefficient**

| | Intraclass Correlation[b] | 95% Confidence Interval | | F Test with True Value 0 | | | |
|---|---|---|---|---|---|---|---|
| | | Lower Bound | Upper Bound | Value | df1 | df2 | Sig |
| Single Measures | .813[a] | 0.674 | 0.896 | 9.979 | 39 | 39 | 0.000 |
| Average Measures | .897[c] | 0.805 | 0.945 | 9.979 | 39 | 39 | 0.000 |



- The region of interest was defined as a circle with 4mm diameter in the center of the enface image.



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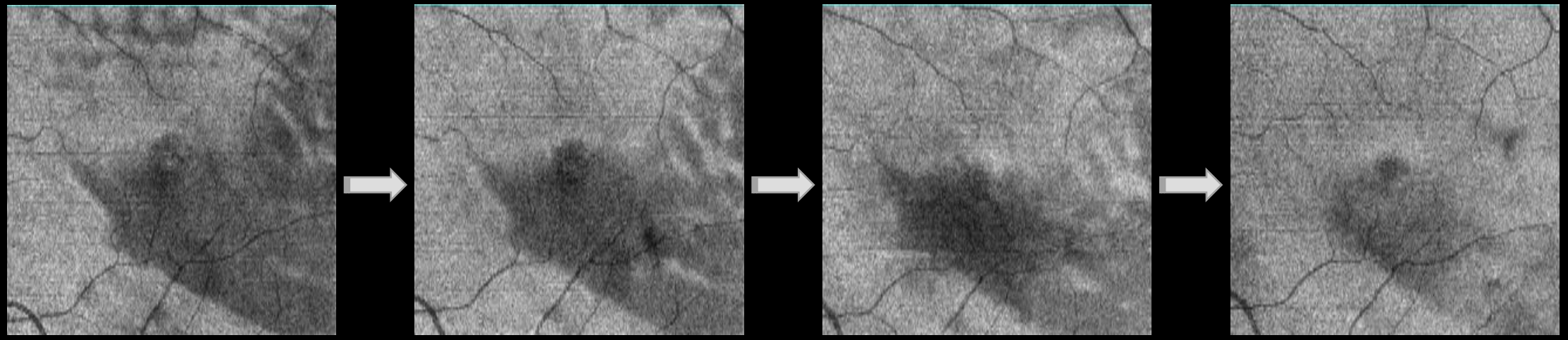
- A statistically significant reduction was observed in the mean area of the hyporeflectivity over time
  - $F$ (3,87) = 14.85, $p$ < .0005

**6.08 ± 2.31** mm$^2$ **5.43 ± 2.99** mm$^2$ **4.06 ± 2.69** mm$^2$ **3.26 ± 2.76** mm$^2$



- The mean abnormal area significantly decreased from 3 to 12 months (2.01 (95% CI, 0.64-3.38) mm2, p = .002), and from 3 to 24 months (2.81 (95% CI, 1.34-4.28) mm2, p < .0001).

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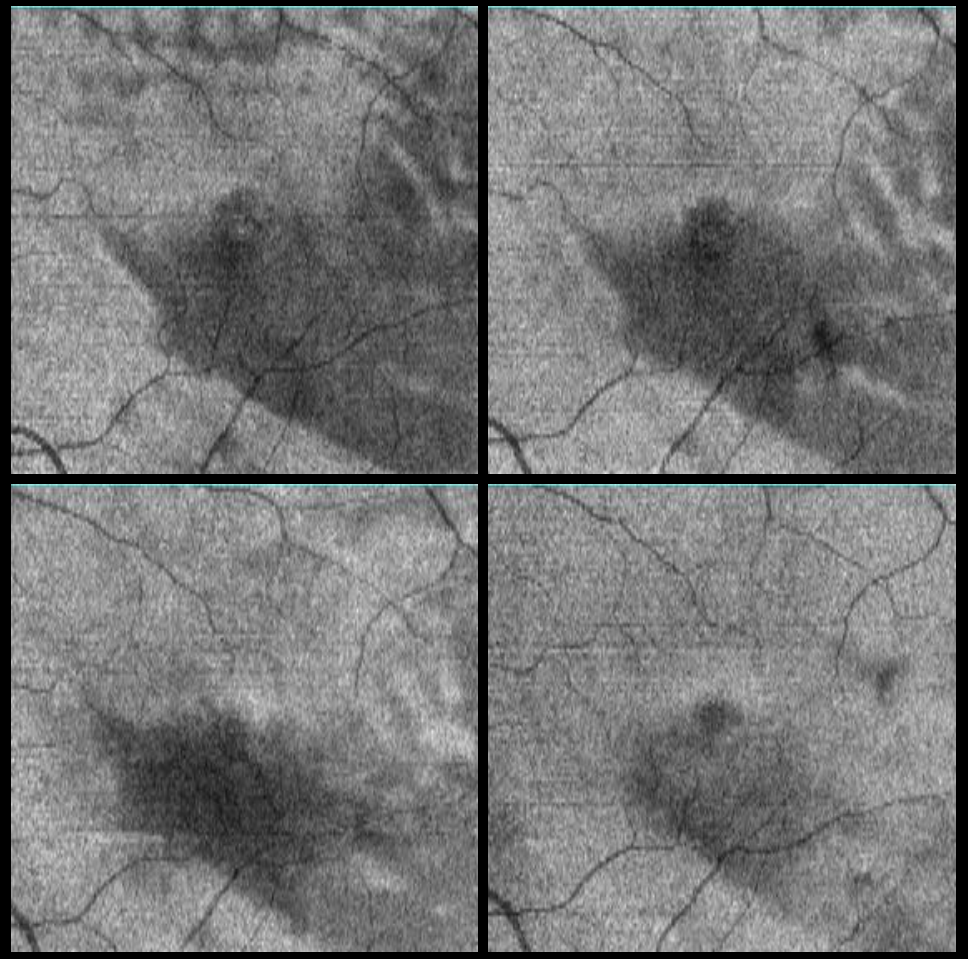
- Additionally, there was moderate negative correlation between change in hyporeflective area and change in ETDRS letters from 3 to 24 months, r(31) = -0.46, p = .007.

… going back to the patient



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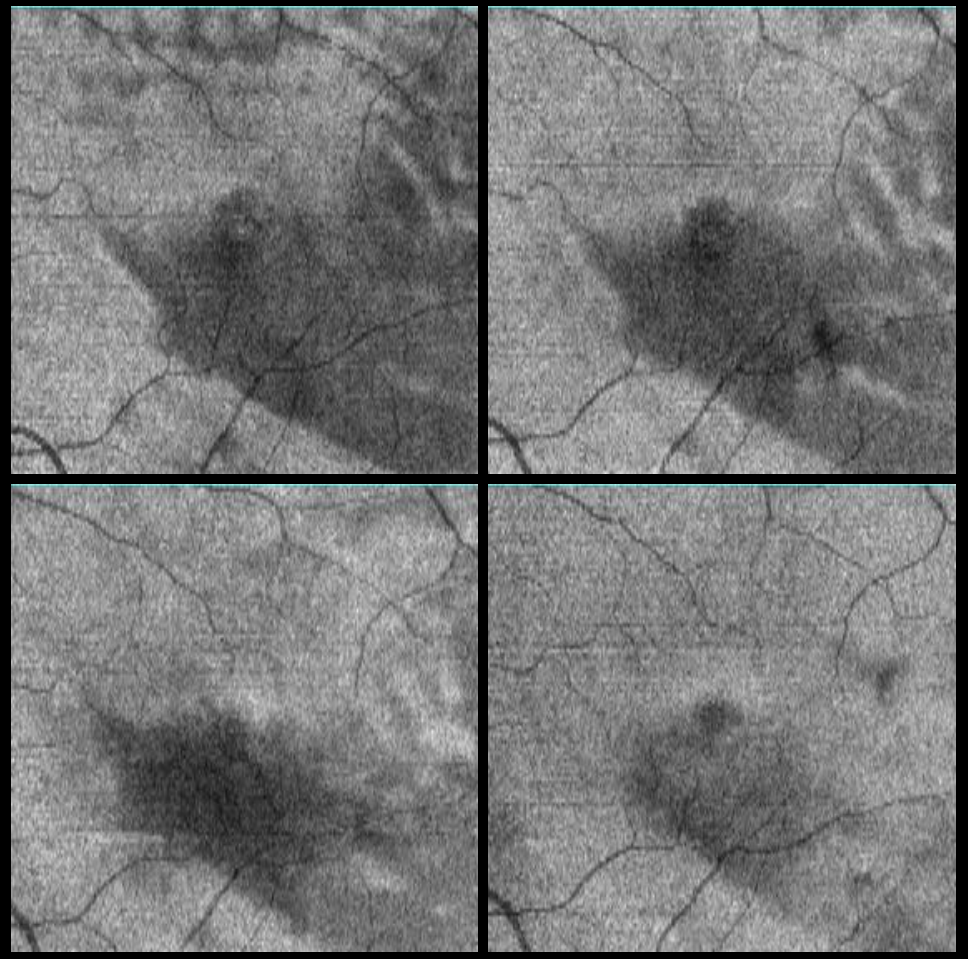

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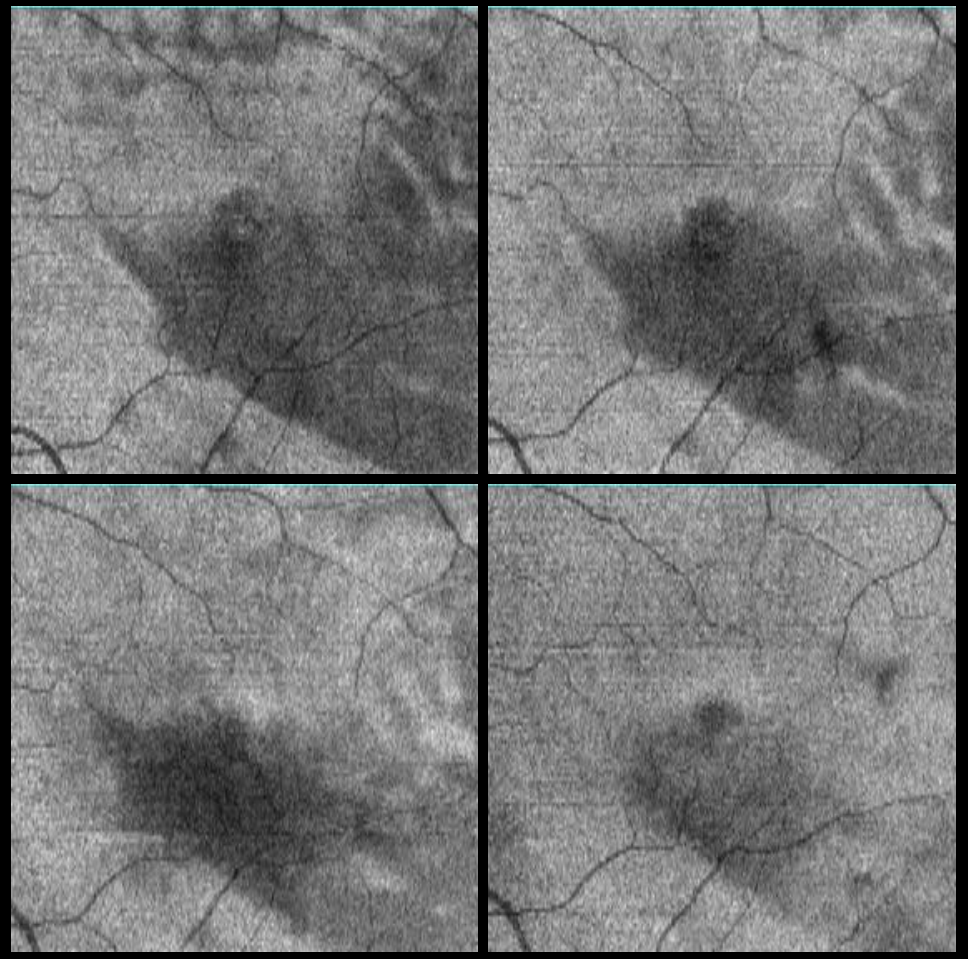

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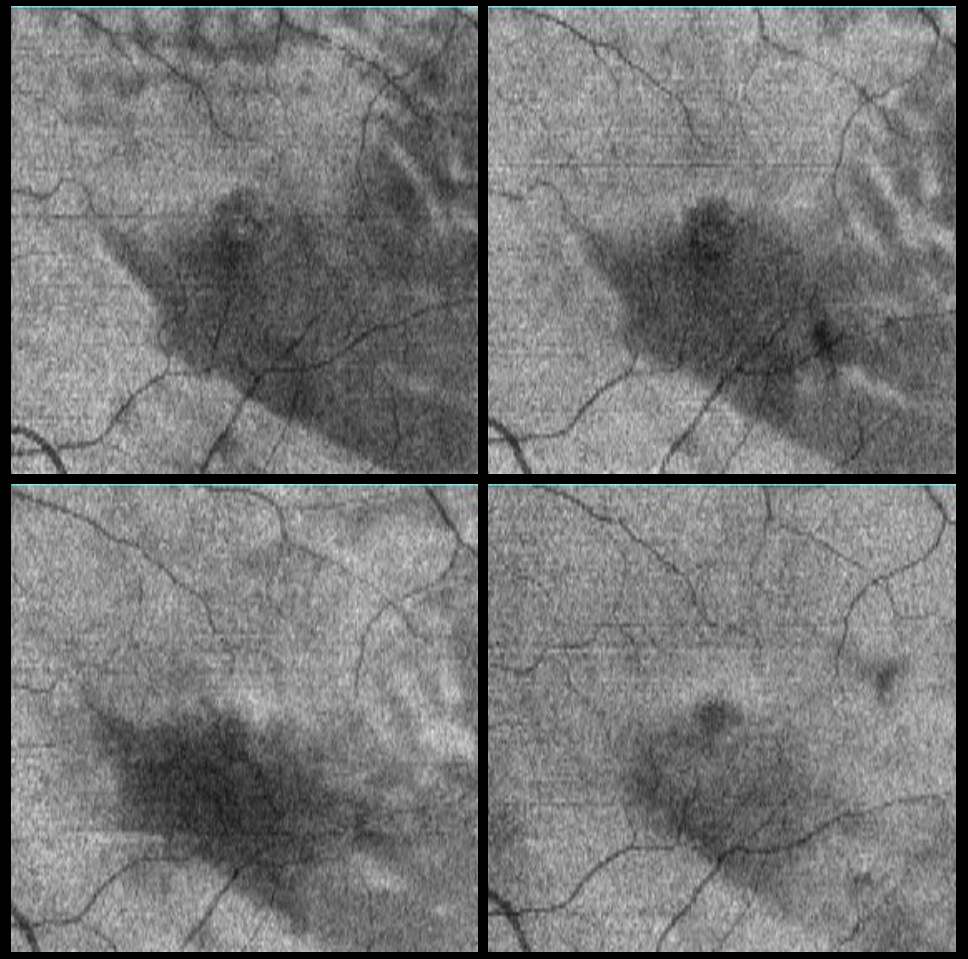
- A steady reduction in the area of abnormal central EZ was observed over time and correlated with ETDRS improvement in patients with macula-off RRD.
- Hyporeflective areas on *en face* OCT may serve as a useful biomarker for EZ integrity, functional outcomes and long-term visual prognosis following RRD repair.



# Thank you!

Natalia Figueiredo

 taialucena@gmail.com