

### Introduction

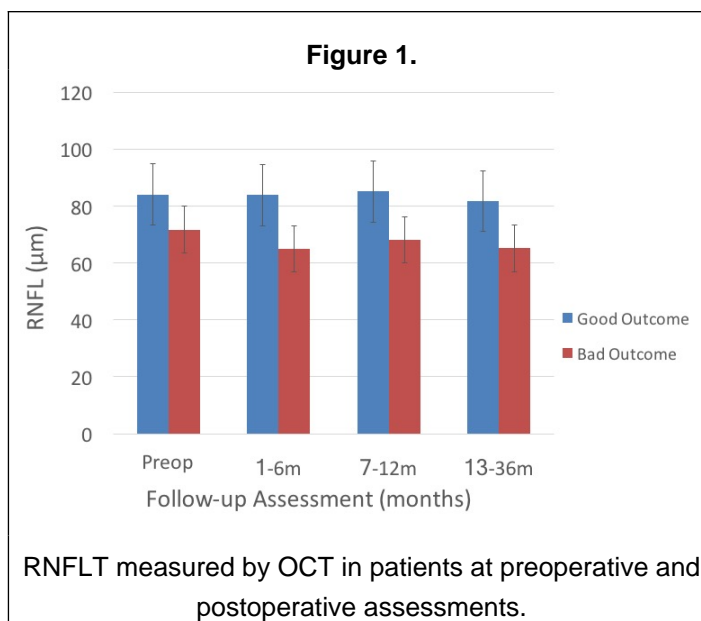
- Optical coherence tomography (OCT) has become a standard component in the neuro-ophthalmological assessment of patients with pituitary tumors.
- Previous studies have noted preoperative OCT measurements as predictive of postoperative visual recovery in patients with chiasm compression (1, 2).
- However, the course of long-term outcome remains heterogeneous with a subset of patients experiencing progressive dysfunction even after complete decompression of the optic apparatus.

### Objective

The purpose of this study was to characterize the long-term structural changes of the anterior visual pathway in patients who underwent pituitary tumor resection.

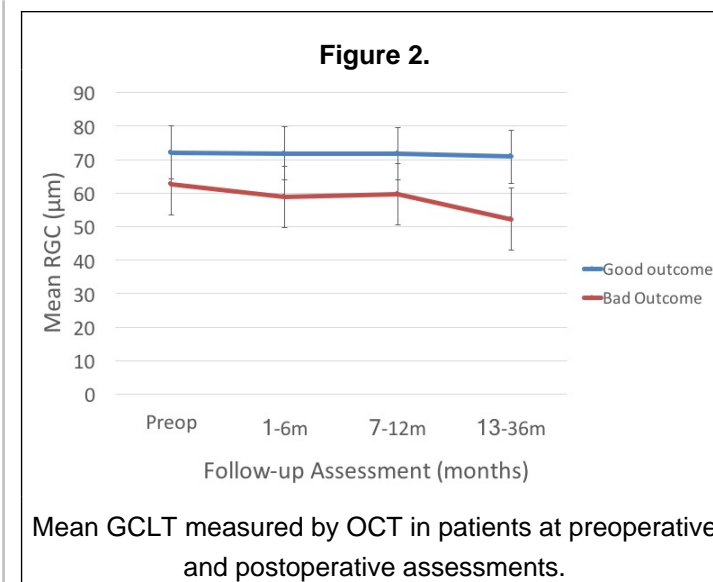
### Methods

- Design: Retrospective cohort study
- 22 patients (10F: 12M) with diagnosis of symptomatic pituitary macroadenomas underwent a neuro-ophthalmic evaluation and spectral-domain optical coherence tomography (OCT) testing pre-operatively, and up to 3 years after surgery.
- Retinal nerve fiber layer thickness (RNFLT) and ganglion cell layer thickness (GCLT) were compared between patients with normalized visual function versus persistent visual field deficits after surgery (mean deviation < -5.0 decibels).



### Results

- 9 of 44 eyes in the patient cohort had visual field deficit greater than mean deviation of < -5.0 decibels even after complete decompression of the optic apparatus.
- Preoperative RNFLT and GCLT between the two patient groups were significantly different with patients with persistent deficit having thinner RNFL and GCLT (84.1µm vs 71.8µm;  $p < 0.01$ , 72.1µm vs 62.6µm;  $p < 0.01$ ).
- There was progressive thinning of the RNFL in patients with persistent deficit at long-term follow-up (1-3 years postop) with trend towards significance (71.8µm vs 65.2µm;  $p = 0.06$ ). Furthermore, these patients had significant decrease in GCLT at long-term follow-up (62.6µm vs 52.2µm;  $p = 0.04$ ).
- Contrastingly, patients with normalized visual field function exhibited stable RNFLT and GCLT (84.1µm vs 81.7µm;  $p = 0.18$ , 72.1µm vs 70.9µm;  $p = 0.29$  respectively).



### Conclusions

- There are long-term structural changes seen in the anterior visual pathway in patients with ongoing visual dysfunction even after complete decompression of the optic apparatus.
- This argues for the notion of threshold effect in compressive neuropathy even after decompression where irreversible and progressive injury occur preventing functional recovery.

### References

1. Danesh-Meyer et al. In vivo retinal nerve fiber layer thickness measured by optical coherence tomography predicts visual recovery after surgery for parasellar tumors. *Investigative ophthalmology & visual science*. 2008; 49; 1879-1885.
2. Moon et al. The time course of visual field recovery and changes of retinal ganglion cells after optic chiasm decompression. *Investigative ophthalmology & visual science*. 2011; 52: 7966-7973.