

Ultra Wide Field Fluorescein Angiography Guided Targeted Retinal Photocoagulation (TRP)

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Introduction

- Ultra wide field fluorescein angiography (Optos Panoramic 200; Optos PLC, Dunfermline, Scotland, United Kingdom) performs fluorescein angiography up to 200 degrees.
- Accurate delineation of retinal capillary non-perfusion in the far-periphery was possible.
- Targeted retinal photocoagulation (TRP) to the ischemic areas may cause regression of the neovascularization while minimizing some of the risks and complications associated with conventional panretinal photocoagulation (PRP).
- We report two cases in which ultra wide field fluorescein angiography was used to direct or target retinal photocoagulation (TRP) to areas of retinal ischemia in an attempt to cause regression of proliferative disease.

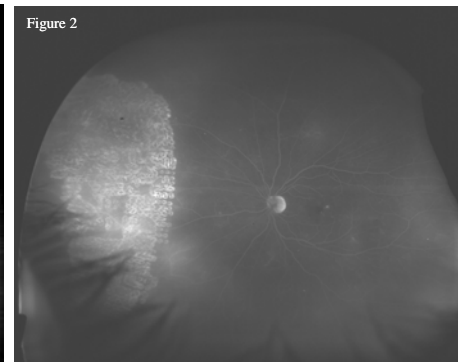
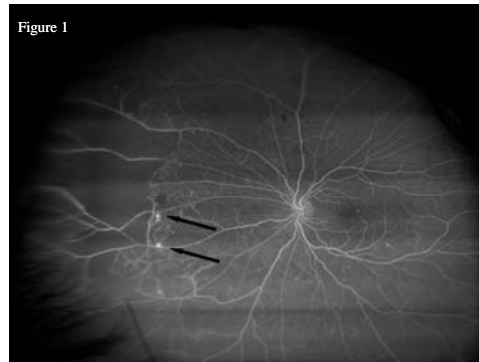
Complications of PRP

- The DRS showed that 10% of patients suffered a decline in visual acuity after PRP
- 5% developed a constriction of their visual fields
- macular edema
- hemorrhage
- choroidal detachments
- acute angle closure glaucoma
- decrease in color vision and contrast sensitivity
- nyctalopia

The application of many laser burns and the ablation of significant areas of retina are, in part, responsible for complications associated with PRP

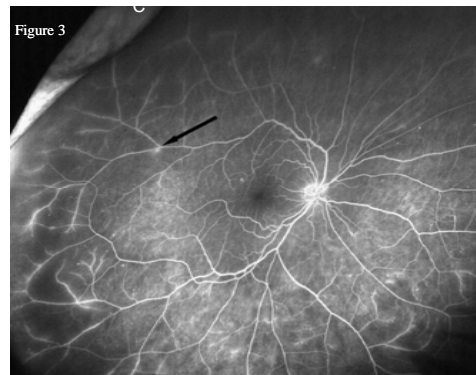
Case 1

- 50-year-old male with type II diabetes mellitus
- Ultra wide field fluorescein angiography of the left eye demonstrated new focal areas of neovascularization in the nasal periphery associated with a well demarcated area of capillary non-perfusion [Figure 1].
- Targeted retinal photocoagulation (TRP) was applied to the area of ischemia in her right eye in an attempt to cause regression of the neovascular tufts while avoiding ablation of healthy retina. A total 1000 applications of 532 nm laser were applied.
- Regression of all areas of neovascularization was observed one month after therapy [Figure 2].
- Visual acuity remained 20/20 on the 9 month follow-up and there was no evidence of macular edema at anytime after TRP.



Case 2

- 42-year-old female with type I diabetes mellitus
- Ultra wide field fluorescein angiography of her right eye demonstrated a focal area of retinal neovascularization [black arrow] and temporal, nasal and inferior peripheral capillary non-perfusion anterior to the equator [Figure 3].
- Targeted retinal photocoagulation (TRP) was applied to her right eye in an attempt to arrest early neovascularization [Figure 4].
- Following therapy, she developed no evidence of neovascularization or macular edema in her right eye and her visual acuity was maintained at 20/20 at her 2.5 year follow-up visit.



Conclusions

- Ultra wide field fluorescein angiography allowed very precise identification of areas of capillary non-perfusion and their boundaries.
- The application of targeted retinal photocoagulation (TRP) successfully led to the regression of the retinal neovascularization in our patients.
- Complications of conventional PRP such as visual field loss and macular edema may have been avoided.
- When TRP is used in conjunction with ultra wide field fluorescein angiography, preservation of functional retina may be possible while minimizing the amount of laser treatment that is applied to the retina.

References

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