

## Background

Diabetic retinopathy is one of the leading causes of blindness among adults aged 50 years and older worldwide. Panretinal photocoagulation (PRP) therapy has been the standard treatment of Proliferative Diabetic Retinopathy (PDR) since 1980s as established by the Diabetic Retinopathy Study. Traditional PRP is associated with significant side effects including diminished peripheral visual field. The efficacy of the combination of anti-VEGF injections with less extensive or modified midperipheral PRP (Figure-1) has been under debate.

## Purpose

To evaluate the effects of combined modified midperipheral panretinal photocoagulation (mPRP) and intravitreal Anti-Vascular Endothelial Growth Factor (Anti-VEGF) injections for the management of newly diagnosed high risk proliferative diabetic retinopathy (HR-PDR).

## Study Design

Retrospective case series.

## Methods

38 consecutive eyes of 19 patients with newly diagnosed high-risk PDR were included in the study. All participants underwent modified panretinal photocoagulation under indirect ophthalmoscopy from anterior to midperipheral retina performed in 2 or more sessions followed by anti-VEGF injections as needed. Visual acuity, status of diabetic macula edema, number of anti-VEGF injections, the need for surgical intervention and DR status outcomes were tracked for 1 year after treatment.

## Results

The mean age of patients was ( $53.16 \pm 12.17$  years) and 68.4% of the participants were male. About 63.2% of the patients had high-risk PDR without diabetic macular edema (DME), 31.6% had high-risk PDR with DME, and 5.3% had high-risk PDR, DME, and focal tractional retinal detachment at the initial visit. The mean total number of Anti-VEGF Injections administered after mPRP was ( $5.95 \pm 6.91$  injections) and all patients were compliant with their follow up and treatment. The main indications for Anti-VEGF Injections after mPRP were recurrent PDR with DME (55.3%), recurrent PDR (21.1%), recurrent DME (7.1%), and neovascular glaucoma (5.3%). The mean visual acuity was  $0.37 \pm 0.27$  logMAR (Snellen=20/46) at baseline and remained stable  $0.30 \pm 0.22$  logMAR (Snellen=20/40) at final follow-up,  $p=0.523$ , 95% confidence interval: [-0.07, 0.15]. Resolution of PDR was achieved in 100% of eyes 1 year after initiating the treatment.

## Conclusions

Combined modified midperipheral panretinal photocoagulation and anti-VEGF as needed is an effective treatment approach in diabetic eyes with newly diagnosed high risk PDR. This treatment protocol minimizes a patient's visual field loss while preserves the visual acuity and yielded PDR regression in the majority of eyes with no patient in this study requiring surgical intervention at 1year follow-up.

## Figure

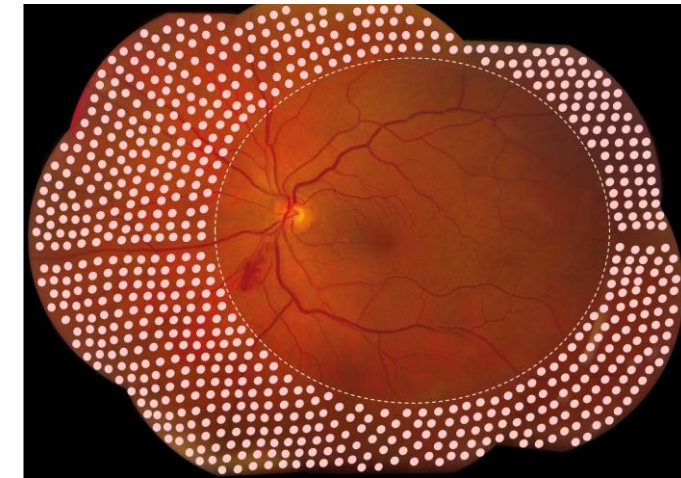


Figure-1: Modified midperipheral PRP using argon laser. The mPRP was targeted to achieve medium to light gray burns of approximately 500  $\mu$ m in size, one-half to 1 burn width apart, and approximately 2 to 3 disc diameters outside the arcades, that extend peripherally to the far periphery. The treatment end point was complete peripheral retinal scatter photocoagulation, achieved in approximately 800 to 1600 spots.

## References

1. Causes of blindness and vision impairment in 2020 and trends over 30 years, and prevalence of avoidable blindness in relation to VISION 2020: the Right to Sight: an analysis for the Global Burden of Disease Study. The Lancet Global health. 2021;9(2):e144-e160.
2. Photocoagulation treatment of proliferative diabetic retinopathy. Clinical application of Diabetic Retinopathy Study (DRS) findings, DRS Report Number 8. The Diabetic Retinopathy Study Research Group. *Ophthalmology*. 1981;88(7):583-600.