

# Complex Treatment of Proliferative Diabetic Retinopathy with Focal Photocoagulation of Diabetic Macular Edema in Oldest-Old Female: A Clinicopathologic Case Report

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## Abstract

Diabetic macular oedema (DME) is the most frequent cause of visual loss among diabetic patients. The accumulation of comorbidities makes the ageing diabetic more fragile, especially in oldest-old adults, and is linked to increased hospitalisation and death rates. This case report analyses the complex treatment of Proliferative Diabetic Retinopathy with focal Photocoagulation of DME in an oldest-old woman who initially arrived with numerous diabetic comorbidities. An 82-year-old woman visited ophthalmology OPD twelve years before to perform cataract surgery. During that time, the patient did not have diabetic retinopathy at the baseline. One year before, due to irregular medication, she developed DME and best-corrected visual acuity (BCVA) was 6/36 in the right eye and prescribed to be under insulin therapy. Optical coherence tomography confirmed the presence of macular oedema and showed areas of retinal capillary non-perfusion and retinal leakage from numerous microaneurysms in the macular area. Following that, unilateral focal photocoagulation was planned. Despite grid laser, the macular oedema persisted and after two sessions of laser therapy, the macular oedema was reduced and the patient was satisfied with her vision. There is a need for further research on focal photocoagulation of DME among oldest-old adults.

**Keywords:** Diabetic Macular Edema, Focal Photocoagulation, Laser Therapy, Oldest-Old Adult, Proliferative Diabetic Retinopathy, Vision Loss.

## Introduction

For individuals with diabetes, diabetic macular oedema (DME) continues to be the most frequent cause of visual loss [1]. Understanding how ageing affects pharmacological metabolism, adherence, and disease progression is essential to ensuring that the growing number of older patients with diabetic retinopathy (DR) and DME receive appropriate therapy [1]. Around the world, 700 million adults between the ages of 20 and 79 are predicted to have diabetes by the end of 2045 [2]. DR is characterised by the progressive

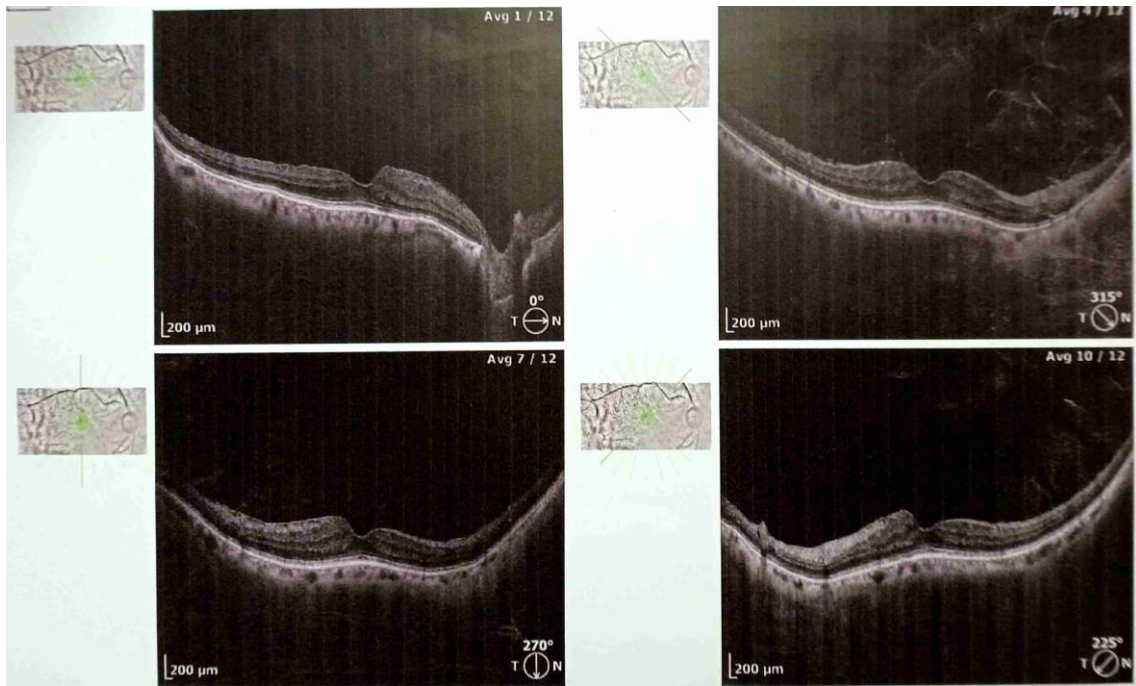
impairment of the blood vessels due to high glucose levels. The accumulation of comorbidities makes the ageing diabetic more fragile, especially in oldest-old adults, and is linked to increased hospitalisation and death rates [3]. Proliferative diabetic retinopathy (PDR) is the primary cause of vision impairment and blindness [4]. Optical coherence tomography (OCT) and fundus fluorescein angiography (FFA) are two methods used to monitor patients with non-proliferative or proliferative diabetic retinopathy. Dietary intake and self-care activities also play a vital role in DR [5]. In

various areas of medicine, laser therapy is frequently used and also to treat DME. The most successful treatment for proliferative diabetic retinopathy is still laser photocoagulation [6]. This case report's particular goal is to draw attention to the indications and supporting data for the use of focal laser photocoagulation in the treatment of DR and DME in an oldest-old woman who initially arrived with numerous diabetic comorbidities.

### Case Report

An 82-year-old woman visited ophthalmology OPD twelve years before to perform cataract surgery. She was diagnosed

with diabetes mellitus twenty years ago and to prevent the disease from further progression, oral hypoglycemic agents were prescribed. She also had hypertension in the past 8 years. During that time, the patient did not have diabetic retinopathy at the baseline. In 2023, due to irregular medication, she developed DME and her best-corrected visual acuity (BCVA) was 6/24 in the right eye that is to counting fingers (CF) at a 1.2m distance. Fundus examination by direct ophthalmoscope revealed that she had visual complaints such as dot, blot haemorrhages, floaters, blurred vision, and photophobia. A complete ocular exam and dilated retinal exam are the gold standard for detecting diabetic retinopathy.

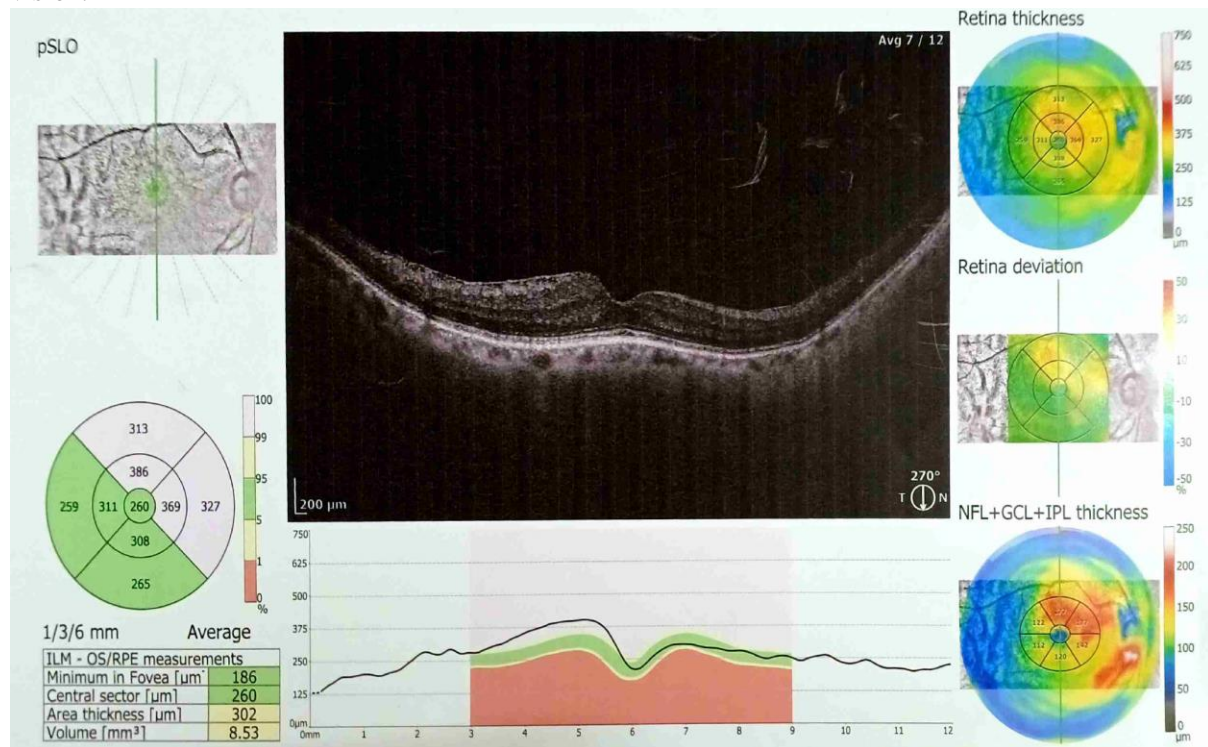


**Figure 1.** The Sequential (Horizontal, Vertical and Diagonal) Images of Optical Coherence Tomography (oct) of the Right Eye

Optical coherence tomography (OCT) confirmed the presence of macular oedema and showed areas of retinal capillary non-perfusion and retinal leakage from numerous microaneurysms in the macular area (Fig. 1). At that time, the patient was urgently hospitalized and prescribed be under insulin therapy due to uncontrolled diabetic level. After one month, the condition was explained to the patient and informed consent was obtained for unilateral

focal laser photocoagulation. An initial grid laser treatment followed by two sessions of focal photocoagulation was performed in the right eye. Despite the grid laser, the macular edema persisted, and after laser therapy, it was reduced. She refused to receive intraocular injections. The last examination in Aug 2024 revealed a BCVA of 6/12 in the right eye (Fig. 2). The macular oedema was reduced by laser

therapy and the patient was satisfied with her vision.



**Figure 2.** The Average Thickening in The Right Eye (Od) And Macular View of The Right Eye (Od)

## Discussion

An important cause of diabetic retinopathy is diabetes and hypertension. Proper medication to control glucose level and blood pressure helps the patient to reduce DR. PRP generally has a more long-term effect with a lower treatment burden and also has been shown to reduce VEGF levels significantly in eyes with active neovascularization [7]. A 19-year-old Hispanic male diabetic with a history of cataracts and toe amputations was analysed by Angela et al., after experiencing a rapid, painless loss of bilateral vision for one week. For his ongoing macular oedema, he underwent a single intravitreal injection of anti-vascular endothelial growth factor (VEGF) in both eyes. His visual acuity did not improve despite the reduction of his retinal oedema [8]. Florid diabetic retinopathy is defined by proliferative diabetic retinopathy in a young patient, with a tendency to affect both eyes, a rapid course that could quickly result in blindness. Poor metabolic regulation frequently makes the

problem worse [9]. According to research, a 52-year-old male driver in Iran was initially diagnosed with type 2 diabetes mellitus five years prior but did not have diabetic retinopathy. Within a year of receiving a diagnosis of proliferative retinopathy, he lost his left eye's vision. In this instance, proliferative retinopathy has advanced due in large part to occupational stress brought on by the nature of the profession [10].

This case study shows that laser therapy was effective in treating a patient who had PDR and DME. Additionally, several recent studies have shown that various forms of laser therapy are very efficient in treating PDR and DME in older females [11]. According to ophthalmological diagnosis, additional research and information are needed about combined laser therapy treatment approaches for DR in older adults [12]. As a result, screening for diabetic retinopathy should begin as soon as feasible for all patients, since PDR is an aggressive manifestation of the disease [13]. To catch the illness early on, these people need to be closely

watched [14]. The patient requires vigorous treatment with laser photocoagulation and potentially vitrectomy as soon as DME manifests.

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## Conflict of Interest

The authors declare that they have no conflict of interest that could have appeared to influence the work reported in this paper.

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