



Anna Stage Vergmann

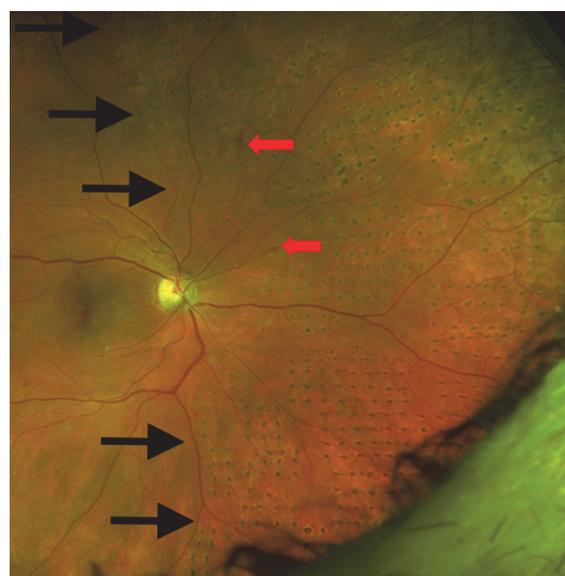
# Effect and side effects of individualized laser treatment for proliferative diabetic retinopathy

On September 4, 2020, Stage Vergmann defended her thesis: "The Individually-Marked Panretinal laser photocoagulation for proliferative diabetic retinopathy Study: IMPETUS 2018 – TREAT" at Faculty of Health Sciences, University of Southern Denmark. Main supervisor: Jakob Grauslund, Department of Ophthalmology, Odense University Hospital, Denmark.

Panretinal laser treatment is the 'gold standard' treatment of proliferative diabetic retinopathy (PDR). PDR includes the formation of new retinal vessels that are fragile and at high risk of causing hemorrhage within the eye and, in the worst-case scenario, blindness. The effect of treatment with laser was first established in 1976 where it was shown to decrease the risk of severe visual loss in patients with PDR by 57%. However, panretinal laser treatment is normally applied as a 'one-size-fits-all' where almost the entire retinal periphery is treated, thus, causing side effects such as loss of visual field and reduced night vision. Therefore, we investigated if a more individualized approach to laser treatment could reduce the treatment burden while being as efficient and without causing the same degree of side effects when compared to the standard treatment of PDR. By using a navigated

laser called Navilas, we conducted a randomized study at The Research Unit of Ophthalmology, Odense University Hospital, Denmark, where half of the patients received standard laser treatment while the other half received individualized laser treatment. We then compared the effect of treatment, side effects (visual field and night vision), and retinal quality of life (Danish validated version of Visual Function Questionnaire-25) in the two treatment groups six months after the initial treatment had started.

We found that individualized laser treatment was as effective as standard laser treatment with comparable side effects and retinal quality of life. We observed no declines in any of the investigated side effects. We also found that individualized treatment was especially efficient in patients with less extensive disease. These results provide interesting new information that suggests that a less extensive laser treatment may be a viable treatment option for patients with early stages of PDR. Furthermore, navigated laser was found not to cause any decline in either visual fields, night vision, or retinal quality of life regardless of the approach. Collectively, our study



**Example of individualized treatment**  
This is an example of a case that received individualized laser treatment located to only one retinal half (marked by black arrows) where new retinal vessels (marked by the red arrows) were evident. This case only received treatment at the initiation of the study and the disease regressed hereafter. Normally, the entirety of the retina would be covered with laser spots.

indicates that the individualized laser approach holds much promise as a treatment option in early PDR.

## Conclusions of the PhD study

1. Individualized laser treatment of proliferative diabetic retinopathy may be a viable treatment option for patients with less extensive disease.
2. Navigated laser provides no decline in either visual field or night vision regardless of the extensiveness of the treatment, thus suggesting this could be the choice of laser for the future.

Photo of Anna Stage Vergmann: Jørgen Wogtman