

ADVANTAGES OF LASER TREATMENT OF DIABETIC RETINOPATHY: ANALYSIS OF CLINICAL DATA

Allayarov A.T.¹, Rizaev J.A.², Yusupov A.A.³

¹Basic doctoral student of the Department of Ophthalmology, Samarkand State Medical University

²Doctor of Medical Sciences, Professor, Rector, Samarkand State Medical University,

³ Doctor of Medical Sciences, Professor of the Department of Ophthalmology, Samarkand State Medical University

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Abstract. *Diabetic retinopathy remains one of the main causes of vision loss in people of working age. Laser treatment of diabetic retinopathy is widely used in clinical practice, but its benefits require further study. In this paper, the results of laser treatment of diabetic retinopathy in 60 patients who underwent examination and treatment in the Department of Ophthalmology of the 1st clinic of SamSMU over the past 3 years are analyzed. The results showed that laser treatment improves visual function, reduces the risk of complications, and can be an effective method of therapy for diabetic retinopathy.*

Keywords: *diabetic retinopathy, laser treatment, visual function, complications, clinical study.*

Introduction.

Diabetic retinopathy (DR) is one of the most serious complications of diabetes, which can lead to impaired visual function and even blindness. According to a report by the World Health Organization, diabetic retinopathy is one of the leading causes of blindness in the world among people of working age. According to the U.S. National Institute of Diabetes and Kidney Disease, approximately half of all people with type 1 and type 2 diabetes develop diabetic retinopathy. Therefore, effective treatment of this complication is essential to preserve vision and improve the quality of life of patients.

Laser treatment of diabetic retinopathy has been widely used in clinical practice for decades. It is based on coagulation laser pulses to reduce fluid leakage from retinal vessels and stop the growth of new blood vessels. This treatment method can be effective in preventing the progression of diabetic retinopathy and reducing the risk of its complications, such as hemorrhages and retinal detachment.

However, despite the widespread use of laser treatment, its benefits and effectiveness require further research. Modern technologies and techniques can offer new treatment approaches that may be more effective and safer for patients with diabetic retinopathy. In this context, analyzing the clinical data of patients who have received laser treatment for diabetic retinopathy can help in evaluating current practices and identifying possible improvements.

This study aims to assess the benefits of laser treatment for diabetic retinopathy based on the analysis of clinical data from patients. Analyzing the results will help determine the effectiveness of this method in improving visual function, reducing the risk of complications, and overall enhancing the quality of life for patients diagnosed with diabetic retinopathy. The obtained data can be utilized to optimize the treatment of this diabetes complication and improve therapy outcomes.

Material and methods.

For this study, data from 60 patients undergoing laser treatment for diabetic retinopathy at the Department of Ophthalmology of the 1st Clinic of Samara State Medical University over the past 3 years were selected. Of these, 40 patients had a diagnosis of early or moderate-stage diabetic retinopathy, while 20 patients had a severe stage of the disease, including proliferative diabetic retinopathy and/or macular edema. Patients were divided into two groups according to gender: a female group consisting of 25 patients and a male group consisting of 35 patients. Additionally, patients were divided into three age categories: young (18-40 years), middle-aged (41-65 years), and elderly (over 65 years). There was approximately an equal number of patients in each age category.

Patients underwent a comprehensive ophthalmological assessment, including measurement of visual acuity, determination of the severity of retinopathy, assessment of retinal structural integrity using fundoscopy and optical coherence tomography (OCT), as well as measurement of blood glucose levels. All patients received mandatory education on post-laser coagulation treatment and eye care.

Laser treatment for diabetic retinopathy was conducted using a laser device that met modern standards. Laser coagulation procedures included focal and pan-retinal photocoagulation depending on the individual characteristics of each patient and the severity of their condition. After laser coagulation, patients were periodically monitored for 6 months to assess the effectiveness of the treatment and detect any potential complications. This included regular ophthalmologist examinations, visual acuity measurements, fundoscopy, and optical coherence tomography.

For statistical analysis, methods including t-tests, analysis of variance (ANOVA), and correlation analysis were employed to identify relationships between disease parameters and treatment outcomes, as well as to compare the effectiveness of laser treatment among different patient groups based on gender and age.

Thus, the main methodological approach allowed for a comprehensive evaluation of the effectiveness of laser treatment for diabetic retinopathy, taking into account the gender and age of the patients.

Results.

After a comprehensive analysis of the data from a study involving 60 patients who underwent laser treatment for diabetic retinopathy over the past three years, important results were revealed confirming the effectiveness of this treatment method:

Improvement of visual function: According to the results of the study, 70% of patients showed an improvement in visual acuity after laser treatment. In addition, more than 60% of patients reported improved color perception and image contrast. This indicates a positive effect of laser treatment on the visual function of patients with diabetic retinopathy.

Reduction of retinal edema and infiltration: In 85% of patients, there was a decrease in retinal edema and infiltration after laser treatment. This indicates effective control of vascular changes characteristic of diabetic retinopathy.

Reducing the risk of complications: Laser treatment significantly reduced the risk of complications in patients. Hemorrhages were noted in only 15% of patients after laser treatment, compared with 30% before the start of therapy. Retinal detachment was observed in only 5% of patients after laser treatment, while before that it was observed in 20% of patients.

Long-term results: For 6 months after laser treatment of diabetic retinopathy, 80% of patients had no recurrence of the disease. They demonstrated a stable condition and no deterioration in visual function.

In general, the results of the study indicate the high effectiveness of laser treatment of diabetic retinopathy in improving visual function, controlling vascular changes and reducing the risk of complications. These results confirm the importance and widespread use of this technique in clinical practice to improve the quality of life of patients diagnosed with diabetic retinopathy.

Conclusions.

The results of this study confirm the effectiveness of laser treatment of diabetic retinopathy in improving visual function and preventing disease progression. There is a significant decrease in retinal edema and infiltration in most patients, which indicates stabilization of the retina. Moreover, reducing the risk of irreversible complications such as hemorrhages and retinal detachment confirms the importance of early and effective intervention.

These results highlight the importance of laser treatment in the treatment of diabetic retinopathy and support its use in clinical practice. Early medical treatment and laser therapy can significantly reduce the risk of complications and improve the prognosis of visual function in patients with diabetic retinopathy.

Further research should be aimed at optimizing the technique of laser treatment, as well as at studying the long-term effects of this method. This will make it possible to more accurately determine the indications for laser therapy, improve treatment results, and improve the quality of life of patients with diabetic retinopathy.

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