

SUMMARY

Primary open-angle glaucoma (POAG) is the most common type of glaucoma in Europe. Due to the increasing number of patients worldwide, the development of effective and safe treatments for this disease is becoming increasingly important. In recent years, surgery as a first-line treatment has been shown to provide better control of intraocular pressure (IOP), a major risk factor for glaucoma progression, than initial conservative treatment.

This doctoral thesis is based on two key publications that form the basis of the study. The first is a review that analysed the available scientific literature and confirmed the need for a comparative study of these treatments. This review showed that despite the available studies on the different surgical techniques used to treat glaucoma, a comprehensive comparison of ab externo canaloplasty and iStent implantation in the treatment of POAG was lacking. This gap in knowledge motivated a 12-month follow-up of patients after both types of surgery, the results of which were the subject of a second publication.

The aim of this study was to evaluate and compare the efficacy and safety of two modern minimally invasive surgical procedures for the treatment of mild to moderate POAG, ab externo canaloplasty and implantation of a first-generation iStent microimplant during cataract phacoemulsification.

The study was a single-centre, prospective clinical trial conducted at the Department of Ophthalmology, University Clinical Hospital in Bialystok. It involved 138 people with mild to moderate POAG who were divided into two groups according to the surgical procedure performed.

The results of the 12-month follow-up showed that both surgical procedures were equally effective in lowering IOP, reducing the number of antiglaucoma drops used after surgery, stabilising the progression of visual field changes and improving visual acuity. Mean corneal endothelial cell density one year after surgery was similar between groups. Both methods had a low incidence of postoperative complications, although method-specific complications such as hyphema and transient IOP elevation were more common in the ab externo canaloplasty group. The comparable high rate of complete and qualified surgical success in both groups suggests that both methods are effective in the long-term treatment of POAG, with a low risk of surgical failure.

In conclusion, both surgical methods of glaucoma treatment, ab externo canaloplasty and iStent implantation in a combined procedure with phacoemulsification, show comparable efficacy and safety in the treatment of mild to moderate POAG. The results obtained may help to develop new standards and therapeutic strategies for the treatment of glaucoma patients in the future, and both procedures have a good chance of becoming the first choice in the treatment of POAG.