

## **Summary**

**Purpose:** To evaluate posterior capsule opacification (PCO) in patients 7 years after cataract operation with the implantation of three types of intraocular lenses (IOL): rigid polymethylmetacrylate IOL (PMMA) with a round optical edge, foldable hydrophobic acrylate IOL with a sharp edged optic and foldable IOL whose optical part is made from silicone with round edges. For the quantification, two computerized methods were used and the correlation of the two systems was evaluated. Data from both methods were used to compare PCO incidence for the followed IOL and ascertain if some type of IOL showed better qualifications in the prevention of posterior capsule opacification.

**Patients and methods:** We evaluated 73 patients that had undergone cataract operation using the classic ultrasound phacoemulsification method in the time period of 1998-2000 at the Ophthalmology Department of the Hradec Kralove Faculty Hospital. Seven years after the operation, a standard ophthalmologic examination was performed including best corrected visual acuity (BCVA) and a digital photograph of the anterior segment of the eye in mydriasis, focusing on the posterior capsule. On the photograph, posterior capsule opacification were evaluated using the Evaluation of Posterior Capsule Opacification 2000 software (EPCO 2000) and the Open – access Systematic Capsule Assessment system (OSCA). For the statistical evaluation nonparametric tests were used. This was because the data were not normally distributed.

**Results:** Seven years after cataract operation the followed IOL showed, from a longterm point of view, low levels of PCO. Almost identical values of PCO occurrence were measured using the EPCO 2000 method in all types of IOL. Differences were statistically insignificant. Using the objective method OSCA, silicon IOL had the highest occurrence of PCO and hydrophobic acrylate IOL the lowest. Statistically insignificant differences using the OSCA system were noted between the PMMA IOL and the acrylate IOL. The highest rate of Nd:YAG capsulotomies were performed with the PMMA IOL, then with silicon IOL and the lowest with acrylate IOL. Seven years after cataract operation BCVA was very good in all groups of IOL, the highest being with the acrylic IOL. Differences were statistically insignificant. In the followed IOL there was a statistically significant correlation between the data obtained from the EPCO 2000 system and the OSCA system.

**Conclusion:** The development of new operation techniques, materials and IOL designs leads to a continual decrease of PCO incidence. For the objective evaluation though, it is necessary to choose not only a convenient examination method, but also long term results are necessary. The new OSCA system is an objective method that is easily accessible, but if it will be used in the routine ophthalmologic examination is yet to be seen in future publications.