

## Summary

**Purpose:** To study effect of AquaLase method used for final management of posterior capsule during cataract surgery on the posterior capsule opacification (PCO) creation and to verify safety of this method for the corneal endothelium.

**Methods:** The prospective clinical study involving 56 patients with bilateral cataract having lens removal at the Department of Ophthalmology, University Hospital Hradec Králové in the period from September 2007 to March 2009.

During the surgery lens was removed using torsional phacoemulsification and bimanual irrigation/aspiration. Cleaning of the posterior capsule of the right eye was performed using AquaLase method (Alcon Laboratories, Forth Worth, Texas, USA) based on pulsed warm, naturally balanced surgical solution. Intraocular lens AcrySof SA60AT was implanted bilaterally to all patients. All patients were examined preoperatively and 3, 6, 12 and 24 months after surgery. Each examination covered best corrected visual acuity (BCVA), endothelial cell count (ECC) and corneal pachymetry. Moreover postoperatively digital retroillumination photographs of the anterior segment focused on the posterior capsule were always obtained. The Evaluation of Posterior Capsule Opacification (EPCO 2000) software and the Open-Access Systematic Capsule Assessment (OSCA) system were used for PCO evaluation.

**Results:** Average BCVA was about 0,9 in all patients. Average value for PCO index was in 3, 6, 12 and 24 months postoperatively for right eye  $0.289\pm 0.223$ ,  $0.276\pm 0.176$ ,  $0.309\pm 0.185$  and  $0.418\pm 0.253$ , for left eye  $0.302\pm 0.191$ ,  $0.301\pm 0.168$ ,  $0.355\pm 0.206$  and  $0.468\pm 0.309$ . Average value for OSCA score (New analysis) was for right eye  $0.612\pm 0.279$ ,  $0.603\pm 0.339$ ,  $0.559\pm 0.265$  and  $0.642\pm 0.401$ , for left eye  $0.630\pm 0.398$ ,  $0.629\pm 0.366$ ,  $0.535\pm 0.331$  and  $0.574\pm 0.340$ . Nd:YAG capsulotomy was performed in one right eye one year after surgery and in one right eye two years after surgery. Preoperative and postoperative ECC changes were statistically significant on both eyes. Postoperative ECC changes and pachymetry compared both between right eye and left eye were not statistically significant.

**Conclusion:** One year after surgery, most cases of PCO were graded as minimal by both softwares of analysis. The results were not statistically significant. Pachymetry and ECC results show that the AquaLase is safe method for corneal endothelium.