SUMMARY

PURPOSE: To assess the extent of posterior capsule opacification (PCO) after AquaLase (AqL) and NeoSoniX (NSX) phacoemulsification methods using two types of software for PCO quantification. To compare PCO after AqL and NSX and to find out whether AqL is better in PCO prevention. To evaluate the correlation between results of the two PCO- quatificaton methods.

METHODS: 50 patients were analyzed one and two years after surgery. All surgeries were done at the Department of Ophthalmology, University Hospital in Hradec Králové. AqL was used in the right eye and NSX in the left eye of each patient. One and two years after surgery, digital retroillumination photographs of anterior segments were obtained. The Evaluation of Posterior Capsule Opacification (EPCO) 2000 software and the Open-Access Systematic Capsule Assessment (OSCA) system were used for PCO assessment. Best-corrected Snellen visual acuity (BCVA) was evaluated before and after surgery. Statistical analysis was performed using parametric tests.

RESULTS: Most cases of PCO were graded as minimal by both systems of analysis. One year after surgery, there was no significant difference in PCO measured by EPCO 2000, however, PCO after AqL as assessed by EPCO 2000 was slightly worse. The OSCA system gave significantly higher PCO scores in the NSX group. Two years postoperatively, PCO measured by both systems of analysis, EPCO 2000 and OSCA, was nonsignificantly better after AqL. When compared the results 1 and 2 years after surgery, EPCO 2000 results were significantly worse two years after surgery in the AqL and in the NSX group. PCO measured by OSCA were nonsignifiantly worse after AqL 2 years postoperatively. On the contrary, the OSCA system gave nonsignificantly better results after NSX phacoemulsification method two years after cataract surgery. No correlation between EPCO 2000 and OSCA outcomes was proved. Nd:YAG capsulotomy rate (AqL vs. NSX) was 0:1 one year after surgery and 1:3 two years postoperatively.

CONCLUSIONS: Posterior capsule opacification is the most frequent complication of the crystalline lens extracapsular extraction. Our results suggest, that the

occurence and progress of PCO is low after using AqL and NSX phacoemulsification method.

AquaLase is the relatively new crystalline lens removal technology, which is promising in PCO prevention. According to our findings, AqL may potentionally reduce the risk of the PCO occurrence and progress. However, this method is not able to eradicate the PCO completely.