

Prediction of Refractive Stabilization after Cataract Surgery...Is it Possible?

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The goals of modern cataract surgery include restoration of vision as completely and rapidly as possible while minimizing complications. At the same time, postoperative refractive errors should be negligible [1]. Although the refractive outcome is not the unique measure to determine the success, low refractive errors with rapid stabilization improve patient satisfaction and quality of life [2]. However, a pronounced, transient postoperative corneal swelling lasting approximately two weeks is sometimes noted after phacoemulsification surgery [3]. Evaluation of postoperative corneal swelling is easily done with ultrasonic or optical pachymetry and is important because swelling can cause refractive changes that limit fast visual rehabilitation. There are few studies evaluating stabilization of refraction after cataract surgery with minimal changes after two weeks [4,5]. Most of those studies were retrospective and evaluated the spherical equivalent, but it is more accurate to distinguish between spherical and cylindrical refraction. In a prospective study, we found that refraction (spherical and cylindrical component) was stabilized one week after surgery [6]. Nevertheless, we caution about the general applicability of our findings. Other than the presence of cataracts, we included only healthy eyes, the surgery was performed by the same experienced surgeon who used the same technique throughout, and there were no surgical complications. Therefore, our results can be extrapolated only to populations with similar characteristics.

To meet the high expectations of patients following cataract surgery, further studies and advances are needed in all areas, including methods of predicting the moment of refractive stabilization (RS). This information could be useful to surgeon to improve the information given to patients before surgery. Besides, it would reduce the visits until the final prescription.

However, no comprehensive data on the relationship between some factors (pre and post surgical) and refractive stabilization have been reported. A few months ago, we studied 163 eyes (mean age of 66.14 years) undergoing cataract surgery. Preoperative predictors included age, lens opacity, optical biometry, and automated refraction, among

others. Also intraoperative predictors (surgical technique, ultrasound time, aspiration time and flow rate) were included.

The predictive equation for RS was $\ln\left(\frac{h(t)}{h_0(t)}\right) = 0.11$ power

LIO+0.28 axial length where $h(t)$ is the probability of RS at time t and $h_0(t)$ is the baseline probability when all the explanatory variables are zero. Discrimination and calibration of the final model were good, but today it is still not possible to predict when the refraction stabilizes. It is necessary to evaluate this predictive equation by means a multicenter and prospective study.

In summary, prediction of refractive stabilization will be possible but there is still a lot of work to do.

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