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Effect of Phaco Time on Retinal Thickness

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Abstract

The present prospective study aimed to compare macular thicknesses measured by optical coherence tomography (OCT) before and after uncomplicated phacoemulsification and to investigate the effect of phaco time (PT) on postoperative macular thickness. The study included 65 eyes of 65 patients between February 2015 and September 2015. OCT measurements were performed preoperatively and at the postoperative 1st day, 1st week, and 1st month. The mean macular thickness measured at the postoperative 1st day was significantly higher than those measured preoperatively and at the postoperative 1st week and 1st month ($p=0.027$, $p=0.037$, and $p=0.019$, respectively). The mean peripheral superior quadrant macular thickness measured at the postoperative 1st day was significantly higher than those measured at the postoperative 1st week and 1st month ($p=0.022$ and $p=0.048$, respectively). The mean inferior quadrant macular thickness measured at the postoperative 1st day was significantly higher than that measured at the postoperative 1st month ($p=0.032$). The mean peripheral inferior quadrant macular thickness was significantly higher at the postoperative 1st day than at the postoperative 1st week ($p=0.048$). The mean peripheral nasal quadrant macular thickness measured at the postoperative 1st day was significantly higher than those measured at postoperative 1st week and 1st month ($p=0.049$ and $p=0.048$, respectively). There was a significant moderate correlation between the macular thickness measured at the postoperative 1st day and PT (Pearson's correlation, $\rho=0.306$ and $p=0.013$). No significant linear correlation was found between macular thicknesses of other quadrants and PT. The present study revealed significant changes in the macular thickness in special regional pattern in the parafoveal region and that PT had an increasing effect on the macular thickness in the early period but had no significant effect on the macular thickness in the long term.

1. Introduction

Phacoemulsification (phaco) is today the most common technique used for cataract surgery. In phaco, various factors may affect ocular tissue structures. Ultrasonic energy and fluidics produce mechanical energy and this leads to inflammatory reaction, compression, and hypoxia in the tissue. Each step of this procedure may cause direct effect on the tissue or instant fluctuations of pressure. As fluidics has a pressure effect that radiates like a miniature shock wave, it can directly affect the anterior chamber tissue and may conduct this effect in every direction. Ultrasonic energy should also be taken into consideration as a risk factor that could affect the eyeball structures [1-5].

The retina, a sensory array, is in need of more oxygen as compared to the brain and accordingly is affected by the alterations in the levels of oxygen and in the condition of