Changes of Choroidal Thickness After Phacoemulsification

We read with interest the recent article by Pierru et al. published in Investigative Ophthalmology & Visual Science. The authors measured the subfoveal choroidal thickness (SFCT) of 115 eyes before and after phacoemulsification by using enhanced depth imaging-optical coherence tomography (EDI-OCT). In a prospective study, they stated that the SFCT significantly increased after surgery.

We congratulate and applaud their interesting and important work, but we believe that some concerns must be addressed:

1. Accurate measurements of SFCT by EDI-OCT require a well-defined choroid–scleral junction. Different posterior boundary definitions may result in significant differences in SFCT measurements. In that study, SFCT was measured from the outer surface of the retinal pigment epithelium to the inner sclera border. However, measuring to the inner margin of sclera could include the suprachoroidal layer, which could impact SFCT measurement as was reported in normal eyes. In normal adult eyes, suprachoroidal layer was present in over 40% of eyes. The authors should comment on whether they observed the suprachoroidal layer in their choroidal images;

2. Diurnal variation may have been an issue, especially when the difference was not large. In the study of Pierru et al., the measurement time of day is not mentioned. Previous studies have reported significant diurnal variation of SFCT. The choroid is thickest at night and thinnest at noon. The mean amplitude (difference between the thickest and thinnest choroidal thickness) due to diurnal variation exceeded 30 μm, which also exceeded the changes reported in the current study (Table 1). We believe that the results would be changed if all of the measurements had been performed at the same time of day;

3. In a longitudinal study of OCT scans, it is very important to perform the successive OCT scans between visits at the same locations. As the topographical variations have been reported in choroidal thicknesses throughout the macula, a minor change in the OCT scan position may result in differences in choroidal thickness measurements. However, the authors did not report the use of image registration and tracking, which may influence the result of comparison of SFCT; and

4. Furthermore, we have some concerns about the statistical analysis of their overtime comparisons of data. A paired Student’s t-test was used at each time point versus preoperative values, but statistical differences would require adjustment for multiple comparisons and the P value lowered accordingly. A factor effects ANOVA may be more suitable for the hypothesis than several pairwise t-tests.

In summary, many factors can affect SFCT assessment by EDI-OCT. The SFCT showed a small increase in the present study, which might be within the diurnal or measurement variation. Thus, the conclusions in this article should be interpreted with caution. We believe that our remarks will contribute to more accurate elaboration of the results presented by Pierru et al.

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References


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