



LETTERS TO THE EDITOR

Central corneal thickness measurement with Cirrus HD-OCT and Topcon SP-3000P



Medición del espesor corneal central con Cirrus HD-OCT y Topcon SP - 3000P

Dear Editor,

We read with great interest the article by Calvo-Sanz et al. comparing specular microscopy (SM) with OCT and ultrasound pachymetry (USP).¹

We would like to congratulate with the authors for their excellent paper, because even if corneal thickness (CT) is not the only parameter involved in the reliability of intraocular pressure measurement,² a precise CT measurement is very important both in establishing the corneal health³ and in evaluating the intraocular pressure.⁴

Their paper confirms our belief that SM measurements are in absolute thinner compared to other devices.^{5,6}

In fact in a previous paper De Bernardo et al. found that CT obtained with this device was thinner than the measurements obtained with Pentacam, and they proposed a regression formula to make the measurements comparable.⁷

We agree with the authors that USP measurements depend on the exact axial placement of the probe making the reproducibility of measurements dependent on examiner expertise.⁸

Concerning the difference between USP and SM, the authors performed the USP after the instillation of topical anesthesia utilizing a combination of 0.1% tetracaine and 0.4% oxybuprocaine.

Theoretically this could have given some differences, because it is true that in a previous published paper it has been demonstrated no influence on CT and volume measurements with the instillation of oxybuprocaine eye drops,⁹ but tetracaine eye drops have been described to cause corneal thickening.¹⁰

So in conclusion we would like to suggest that for future works concerning the comparison of different devices the use of oxybuprocaine, better if preservative free, instead of tetracaine should be advisable.

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None.

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Reply to: Central corneal thickness measurement with Cirrus HD-OCT and Topcon SP-3000P



Respuesta a: Medición del espesor corneal central con Cirrus HD-OCT y Topcon SP - 3000P

I would like to thank Dr. De Bernardo and colleagues for their words on our work on the analysis of central corneal thickness (CCT). We are honored to receive a comment of someone with such extensive research experience in this field. It is true that the effects of drugs used as anesthetics may affect CCT measurements. As De Bernardo cites in her letter, Osuagwu et al.¹ described corneal thickening after Tetracaine 1% drop instillation, however, we must apply a certain clinical approach to statistical data. I quote the author: "In general, the central cornea was thicker by 3 μm and 4 μm in eyes measured with USP, 10 min after instillation of one drop of 1% tetracaine in session 1 and session 2, respectively." These difference were statistically significant in the analysis performed by the authors, but the difference between the measurements obtained by the authors with Ultrasonic pachymetry or Topcon SP-3000P were 26–29 μm (values similar to those obtained in our study); Therefore, the existence of a 3 or 4 μm difference between the measurement with or without tetracaine in the USP, although statistically significant, is not clinically significant. We must also remember that these differences are lower than standard deviation and repeatability between SP3000P measures, which according to the authors was $\pm 12 \mu\text{m}$.¹ The authors describe that differences in CCT measurements pre and post anesthesia were only found with USP device; other authors found no significant differences in CCT measure-

ments pre- and post-instillation of tetracaine 0.1% measured with Orbscan.² This could be an indication that the measurement system may be sensitive to tear stability, while non-contact optical systems do not detect this difference in CCT. Finally, other authors³ described a temporal increase of CCT after instillation of 0.4% oxybuprocaine hydrochloride, but that difference close to 8 μm disappeared after 80s. In conclusion, it can actually be a transient increase in CCT which is only detected by contact instruments, but that increase, even statistically significant, do not appear to be clinically significant.

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