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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 μ m and 4 μ m 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 μ m (values similar to those obtained in our study); Therefore, the existence of a 3 or 4 μ m 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 $\pm 12 \mu$ 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 μ m 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.

References

1. Osuagwu UL, Ogbuehi KC. Evaluation of the comparative effect of tetracaine on central corneal thickness measured by a contact and noncontact pachymeter. *J Ocul Pharmacol Ther.* 2013;29:68–74.
2. Diaz-Rey JA, Giraldez MJ, Garcia-Resua C, Yebra-Pimentel E. [Effect of double anaesthetic Colicursi (tetracaine 0.1% and oxybuprocaine 0.4%) on central and paracentral corneal thickness]. *Arch Soc Esp Oftalmol.* 2009;84:23–30.
3. Nam SM, Lee HK, Kim EK, Seo KY. Comparison of corneal thickness after the instillation of topical anesthetics: proparacaine versus oxybuprocaine. *Cornea.* 2006;25:51–54.

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