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LETTER

Reliability of Intraocular Pressure Measurement by Goldmann Applanation Tonometry After Refractive Surgery: A Review of Different Correction Formulas [Letter]

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Dear editor

We have read with interest the article from de Bernardo et al titled Reliability of Intraocular Pressure Measurement by Goldmann Applanation Tonometry After Refractive Surgery: A Review of Different Correction Formulas.[1]

The authors provided a review of various correction formulas applied to Goldmann applanation tonometer (GAT) readings after the surgery, and other different methods to overcome underestimation of applanation tonometry after these procedures. In the discussion section of the paper, a description of several devices that attempted to find a reliable IOP post laser refractive surgery was described. They reference that there are four devices that have proven to be as reliable as GAT after surgery: dynamic contour tonometer (DCT), Corvis ST, Ocular Response Analyzer (ORA), and CATS.

Although the objective of the article was the described formulas, we would like to point out that a mention is missing among these tonometers. We have developed a new applanation tonometer that does not underestimate IOP after surgery: the Convex Tonometer (CT).[2] We studied n=102 myopic laser refractive surgery patients (29 PRK, 73 LASIK) and CT had a strong correlation in the LASIK subgroup with GAT before surgery. Such outcome correlated as well with our finite element analysis, in which we found a lower resistance from the center of the cornea that encompassed a wider amount of contact between the operated cornea and GAT. However, if an external convex force with a determined radii was applied towards the operated cornea, a similar contact pressure profile could be registered.

We are ahead of new publications, and we acknowledge this tonometer is still not in the market, but since our article was published in April 2020 with such conclusions, we believe the authors could have at least referred our work in his paper.

In addition, there is another issue with the conclusions of this article: we disagree with the Bernardo et al that CATS prism has proven to be as reliable as GAT after laser procedures. In the article referred related to CATS tonometer, McCafferty et al[3] measured with GAT and CATS n=243 healthy eyes with a wide range of corneal pachymetry. They found a significant correlation between CCT and

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CH, improving IOP measurements related to corneal biomechanical changes due to CCT and CH variations. No post laser refractive surgery patients were included in this study. Indeed, McCafferty et al concluded that other studies will be carried out in laser refractive surgery patients and other subtype of patients. We coincide with the authors that this new tonometer has proven to be more reliable in standard corneas, but there are no publications about laser refractive surgery patients with the CATS device.

Disclosure

M. Iglesias, M.D, F.E.B.O, has exclusive personal rights to intellectual property of the convex tonometer secured by a European patent filed number 3520682 (awarded patent). Ricardo P Casaroli-Marano M.D, Ph.D, declares no conflicts of interest in this communication.

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