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RESPONSE TO LETTER

# Assessment of Preoperative Risk Factors for Post-LASIK Ectasia Development [Response to Letter]

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## Dear editor

First, we thank Dr. Navarro-Naranjo and his colleagues for their collaboration and interest in our ectasia study.[1] In their letter, they mentioned some inaccuracies reported in our study related to the calculation of the NICE. We must respectfully disagree as we present Table 1, which includes the clinical data from the parameters considered in the NICE index. These data support the published NICE results in which 62.5% of the eyes (15 out of 24) presented with a

**Table 1** NICE Clinical Parameters and Calculation

| Clinical Data | | | | | NICE Index Calculation | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Patient** | **K2 (D):** | **EP** | **Pachy** | **IS** | **K2** | **EP** | **Pachy** | **IS** | **Total** |
| 1 | 44.1 | 11 | 539 | 0.37 | 1 | 1 | 1 | 1 | **4** |
| 2 | 45 | 17 | 508 | −0.18 | 2 | 2 | 2 | 1 | **7** |
| 3 | 46.6 | 11 | 501 | 0.61 | 2 | 1 | 2 | 1 | **6** |
| 4 | 46.7 | 13 | 507 | 0.61 | 2 | 1 | 2 | 1 | **6** |
| 5 | 46.4 | 17 | 491 | 0.16 | 2 | 2 | 3 | 1 | **8** |
| 6 | 47.3 | 18 | 490 | 0.16 | 3 | 3 | 3 | 1 | **10** |
| 7 | 45.4 | 9 | 492 | 0.75 | 2 | 1 | 3 | 1 | **7** |
| 8 | 43.6 | 8 | 527 | 0.75 | 1 | 1 | 1 | 1 | **4** |
| 9 | 44.6 | 7 | 516 | 0.87 | 1 | 1 | 2 | 1 | **5** |
| 10 | 44.2 | 10 | 527 | 0.87 | 1 | 1 | 1 | 1 | **4** |
| 11 | 41.8 | 3 | 567 | −0.86 | 1 | 1 | 1 | 1 | **4** |
| 12 | 43.9 | 9 | 591 | 0.3 | 1 | 1 | 1 | 1 | **4** |

(*Continued*)



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**Table 1** (Continued).

| Clinical Data | | | | | NICE Index Calculation | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Patient** | **K2 (D):** | **EP** | **Pachy** | **IS** | **K2** | **EP** | **Pachy** | **IS** | **Total** |
| 13 | 43.8 | 10 | 585 | 0.12 | 1 | 1 | 1 | 1 | **4** |
| 14 | 43.6 | 21 | 580 | 0.12 | 1 | 3 | 1 | 1 | **6** |
| 15 | 42.2 | 13 | 533 | 0.93 | 1 | 1 | 1 | 1 | **4** |
| 16 | 42.6 | 13 | 523 | 0.93 | 1 | 1 | 1 | 1 | **4** |
| 17 | 45 | 5 | 527 | 0.53 | 2 | 1 | 1 | 1 | **5** |
| 18 | 44.5 | 10 | 515 | 0.53 | 1 | 1 | 2 | 1 | **5** |
| 19 | 44.1 | 8 | 530 | 1.19 | 1 | 1 | 1 | 2 | **5** |
| 20 | 44.9 | 12 | 539 | 1.19 | 1 | 1 | 1 | 2 | **5** |
| 21 | 44.9 | 10 | 538 | 0.76 | 1 | 1 | 1 | 1 | **4** |
| 22 | 45.2 | 10 | 542 | 0.76 | 2 | 1 | 1 | 1 | **5** |
| 23 | 44.7 | 9 | 479 | 1.27 | 1 | 1 | 3 | 2 | **7** |
| 24 | 45 | 10 | 494 | 1.27 | 2 | 1 | 3 | 2 | **8** |

**Note**: Red shaded values= Index value 5 or more.

score higher than 5.[1] Based on their criteria, these scores would contraindicate for LASIK.[2] Interestingly, the remaining nine eyes had a score of 4. While reducing the cut-off would make the sensitivity of 100%, this would also impact the specificity of the criteria.

We agree that a subjective classification may change the criteria of some cases. Nevertheless, while any refractive surgeon should master the interpretation of color-coded curvature maps, the limitations of such subjective classification are relevant. In a previous study that evaluated the subjective classification from 11 experient examiners on 25 cases, high inter-observer variability was observed in the subjective classifications using the same scale. Moreover, the study also found significant intra-observer variability, with eight of the eleven examiners presenting statistically different categories from the maps presented with the Klyce/Smolek 1.5D absolute scale and the 0.5D Holladay (classic Eye Sys red-to-blue) normative scale.[3] Differences in calculating the NICE index are expected, considering the subjective classifications.

We agree with Navarro-Naranjo et al in their letter that multimodal diagnostics, beyond front surface topography and 3-D tomography, is essential to augment the safety and efficiency of refractive surgery.[4] Corneal biomechanical assessment, integrated with tomography with artificial intelligence, aims to characterize the corneal predisposition or susceptibility to biomechanical decompensation.[4,5] This concept goes beyond, but not over, the detection of mild or subclinical (fruste) cases of keratoconus. The BrAIN (Brazilian Artificial Intelligence Networking in Medicine) ectasia software combines with AI the intrinsic predisposition and the extrinsic impact of the corneal procedure to objectively characterize ectasia risk (https://brain.med.br/).

## Disclosure

The authors report no conflicts of interest in this communication.

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