Comparison between subjective fluorescein breakup time and automated tear breakup time measurements using the E300 corneal topographer

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Purpose

Comparison of invasive fluorescein tear film breakup time (FBUT) and the automated measurement of tear film stability known as Tear Film Surface Quality (TFSQ) breakup time using placido disc videokeratography measured with and without fluorescein sodium (NaFl).

Method

In 57 eyes of 57 subjects (males n=23, females n=34), FBUT using a single dose of NaFl was measured three times and automated TSFQ breakup time was measured twice under two different conditions: non-invasively (without NaFl), and using a single dose NaFl, using the E300 corneal topographer (Medmont International Pty Ltd., Victoria, Australia). Mean age (± SD) was 35.1±15.2 years ranging from 19 to 65 years. There was no history of ocular diseases, contact lens wear, or previously diagnosed dry eye. Subjects were grouped by age (<40 years [n=34] versus ≥40 years [n=23])and Ocular Surface Disease Index (OSDI) score (≤12 ‘*normal*’ [n=36] versus >12 [n=21])**.**

**Results**

There were no significant differences between the three consecutive measures of FBUT (p=0.62), two measures of TFSQ breakup time without NaFl (p=0.67) or with NaFl (p=0.96). There were strong significant correlations between TFSQ without and with NaFl (r=0.709, p<0.0005) and moderate significant correlations between the FBUT and TFSQ breakup time without NaFl (r=0.583, p<0.0005) and with NaFl (r=0.432, p=0.001). Average FBUT was significantly shorter (8.1 ± 6.9 sec) compared to TFSQ breakup time without NaFl (12.6 ± 12.9 sec) and with NaFl (13.6 ± 12.6 sec; p=0.002, partially eta squared=0.21), irrespective of age group (p=0.36) or gender (p=0.60) or OSDI score (p=0.67)**.**

**Conclusion**

Automated TFSQ break up time measured with the Medmont E300 topographer is repeatable when measured with and without the addition of NaFl dye; however, the TFSQ break up time is overall significantly increased compared to subjective FBUT. Both measures of tear breakup time are therefore not interchangeable.