Automatic analysis of tear film quality

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Product
Tear film surface quality analysis software
Medmont E300

Supplier
Medmont

MEDMONT International has launched an upgraded software platform which includes some unique features. One of them is particularly interesting to anyone involved in dry eye management and the wettability of specific contact lenses.

Practitioners with a Medmont E300 can turn their corneal topography device into a tear film assessment tool. Placido reflection technology offers a non-invasive method of analysing the wettability of the corneal surface. [1,2,3,4,5]

The company included this new imaging option, called the 'tear film surface quality' (TFSQ) analysis, in Version 6 of its Medmont Studio software.

A benefit that many practitioners will appreciate is they have access to this analysis no matter how old their Medmont topographer is. By updating to Version 6 software, the standard Medmont E300 can also add dry eye assessment to its imaging capabilities.

Figure 1 shows the placido reflection over a patient with good tear film quality. Note the parallel ring reflection and sharpness of each mire. However, in Figure 2, a lack of continuity of the rings is observable. There are areas that distort, disappear altogether and lack a crisp differentiation of each area.

The image capture process is identical to that of a standard Medmont topography acquisition, but practitioners have the ability to take not only a single image but also a video sequence. Taking a series of photos immediately after the blink provides for an assessment of the changes in tear film quality over time. The practitioner can determine both the number of images per second as well as the duration in time (seconds).

The new TFSQ software automatically analyses each image for its relative smoothness. Ideal tear film quality appears blue in the analysis window while areas of tear film break-up appear yellow, orange or red—depending on the severity of the break-up. Figure 3 illustrates good tear film quality immediately after the blink but note the change over time as the tear film begins to break up at 5 and 10 seconds after the blink (Figures 4 and 5, respectively).

The TFSQ has applications in following dry eye treatment over time and over specific contact lenses to assess their wettability. The TFSQ algorithm provides practitioners with a quantitative value of the tear film quality in specific regions of the cornea as well as providing a global value of the surface as a whole.

Practitioners with the Medmont DV2000 digital imaging software, the M700 Automated Perimeter and the E300 corneal topographer will benefit from one software platform that can acquire, store and analyse slitlamp images, fundus photography, a wide range of visual field tests, corneal topography and now dry eye assessment.

Australians can be very proud of this local Melbourne-based company that continues to innovate and lead the market domestically and globally.

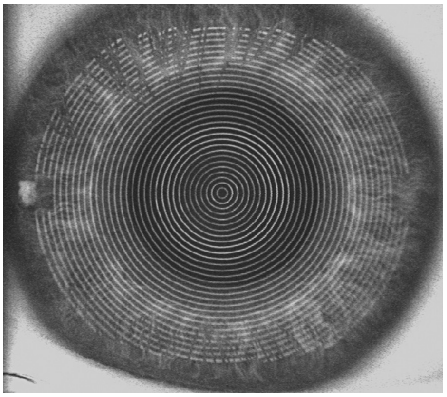


Figure 1. Patient with good tear film quality

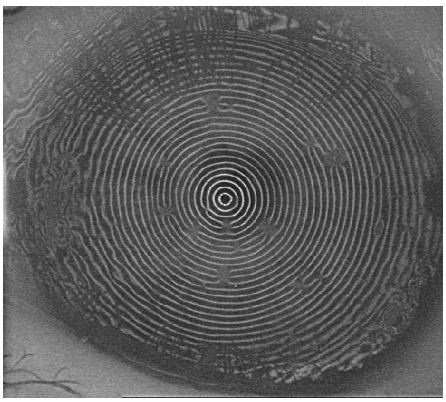
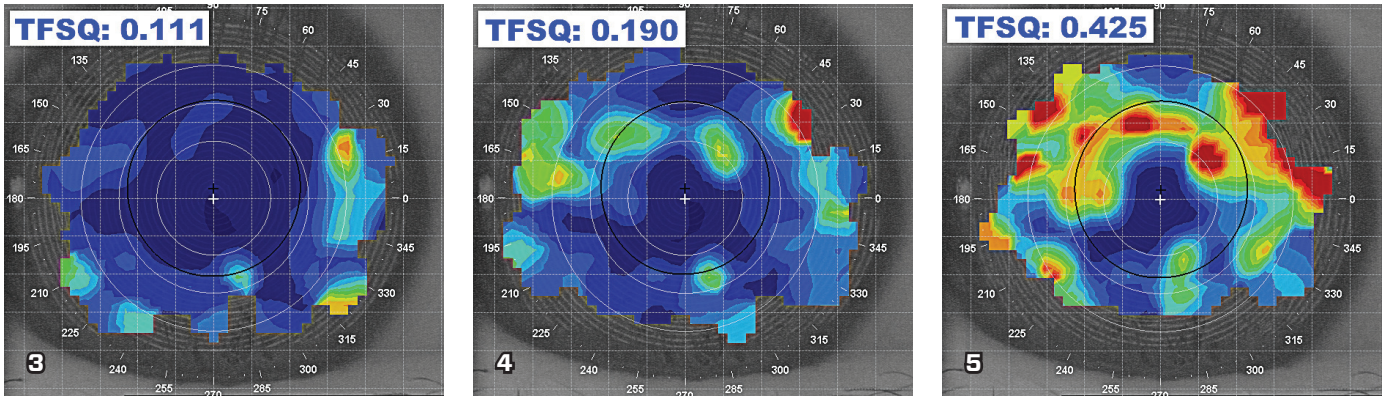


Figure 2. Patient with compromised tear film quality



Figures 3, 4 and 5. Tear film surface quality analysis reveals the change in tear film quality after the blink

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2. Goto T, Zheng X, Klyce SD, Kataoka H, Uno T, Karon M, Tatematsu Yet al. Methodologies to diagnose and monitor dry eye disease: report of the Diagnostic Methodology Subcommittee of the International Dry Eye WorkShop. *Ocul Surf* 2007; 5: 2: 108-152.
3. Goto T, Zheng, X, Okamoto S, Ohashi Y. Tear film stability analysis system: introducing a new application for videokeratography. *Cornea* 2004; 23: 8: S65-S70.
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5. Iskander DR, Collins MJ, Davis B. Evaluating tear film stability in the human eye with high-speed videokeratoscopy. *Biomedical Engineering* 2005; 52: 11.