Resident's corner

Tear break-up time: Practical or passé?

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Traditional diagnostic testing for dry eye has long been led by the mainstay of tear break-up time (TBUT), a measurement of tear film stability.\(^1\) The technique – first introduced by Norn in 1969 – uses a slit lamp and cobalt blue filter to view the tear film after instillation of fluorescein.\(^2\) The first appearance of a dark spot or streak in the tear film denotes the tear break-up time, and is more likely to occur at the temporal periphery.\(^1,2\) Values vary broadly from 3 to 132 seconds;\(^2\) a TBUT of less than 10 seconds indicates tear film instability, while values of less than 5 seconds are closely associated with dry eye symptoms.\(^3,4\)

Despite its prevalent use, the technique has long been criticized for its lack of repeatability and standardization.\(^1,5\) The procedure carries a sensitivity and specificity of 75 percent and 60 percent respectively,\(^6\) but is complicated by a number of factors: individual patients’ values vary widely from visit to visit,\(^7\) and medications, surgical procedures (i.e. LASIK) and fluorescein itself have all been shown to independently destabilize the tear film.\(^1,8,9\) Due to these variations, there have been repeated efforts to normalize the technique, as well as a trend toward non-invasive measurements of tear film stability.\(^1\)

Conventional wisdom regarding tear break-up time states that tear disruption occurs when lipids absorb to the aqueous/mucin interface.\(^10\) A direct role has also been proposed for mucin thinning in the development of dark spots.\(^11\) A deficient TBUT, however, has been associated with both aqueous-deficient and evaporative dry eye, making a differential diagnosis of these conditions difficult based on this technique alone.\(^12\)

Despite the limitations, tear break-up time remains a practical and popular technique. As with any dry eye test, it evaluates only one aspect of a complex disease and should be analyzed in sum with other techniques to diagnose and manage the patient appropriately.

**References**


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