

TEAR BREAK-UP TIME FOR TEAR FILM EVALUATION: THE RELEVANCE OF THE MOISTENING SOLUTION



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Purpose

Fluorescein Break-up Time (TBUT) is one of the most commonly employed tests for tear film evaluation in clinical practice. It was the aim of this study to assess the compliance of Spanish eye care practitioners with the recommended normalized procedure to administer TBUT and to determine the influence of deviations from these recommendations on the sensitivity of TBUT to discriminate between normal and dry eye.

Methods

An online survey was used to ask 100 Spanish practitioners about the type of solution they employed to moisten fluorescein strips and whether they controlled the volume of instilled fluorescein. The second part of the study enrolled 58 participants (age from 19 to 32 years) without dry eye symptoms (OSDI<15). A controlled volume of fluorescein was instilled with fluorescein strips (Fluorets strips, Chauvin Pharmaceuticals, Ltd) moistened with 6 different commonly employed solutions, whereupon a cut-off point of 5 seconds was selected to differentiate between normal and dry eyes, as determined by the results of the TBUT.

Results

Of 47 practitioners who answered the survey, 64% admitted using different solutions to moisten the fluorescein strips during TBUT assessment. Moreover, 77% of respondents reported not properly controlling the volume of instilled fluorescein. Statistically significant differences in TBUT were found between the employed solutions as a whole ($\chi^2=198.384$, $p<0.001$), as well as between all solutions when explored pair-wise (all $p<0.001$), except for the two saline solutions. When using the OSDI values for comparison purposes, a false diagnosis of dry eye was reached in up to 8 participants (range 0 to 8) with the different solutions.

Conclusions

The present findings support the relevance of selecting the appropriate solution when conducting TBUT for the evaluation of the tear film. Deviations from the recommended procedure may result in misdiagnosis of dry eye.

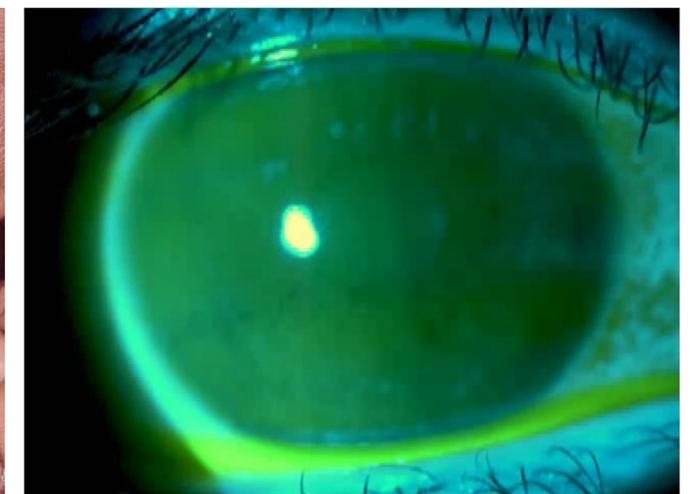
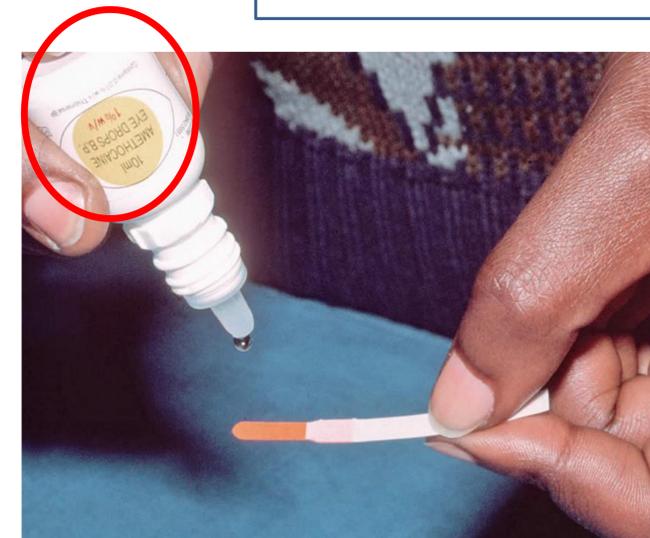
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Which of the following solutions do you use (or have used) to moisten fluorescein strips when conducting TBUT? (More than one answer is possible)

- Saline solution
 Multi-purpose solution
 Wetting solution
 Artificial tears
 Other

Do you use any means to control the volume of fluorescein you instill on the ocular surface during TBUT?

- Yes
 No



SOLUTION	Median (seconds)	Maximum (seconds)	Minimum (seconds)	TBUT consistency (seconds)	False dry eye positives (FP)	Specificity TN/(TN+FP)
S1	6.00	10.50	4.53	1.71	6	90.6%
S2	6.09	10.80	4.60	1.82	6	90.6%
S3	6.83	12.57	5.73	1.26	0	100%
S4	6.24	11.15	4.96	1.31	2	96.7%
S5	5.73	8.64	4.37	1.68	8	87.9%
S6	5.59	8.70	4.21	1.77	8	87.9%