

<b>DEWS</b>	<b>DRY EYE: DIAGNOSTIC TEST TEMPLATE</b>	
<b>RAPPORTEUR</b>	Norihiko Yokoi	<i>10 Oct 2004</i>
<b>TEST</b>	<b>Evaluation of conjunctivochalasis</b>	
<b>TO DIAGNOSE</b>	Dry eye	REFERENCES
<b>VERSION of TEST</b>	[V1 ]	
<b>DESCRIPTION</b>	Evaluation of <b>Lid Parallel Conjunctival Folds (LIPCOF)</b> as a potential diagnostic marker for dry eye	Höh et al. 1995; Schirra et al 1998.
<b>CONDUCT of TEST</b>	<p>The patient is seated at the slit-lamp, and sodium fluorescein is instilled into the conjunctival sac to enhance visualization of the conjunctival folds. The lower temporal LIPCOF has the most diagnostic value compared to the other quadrants (Schirra et al. 1998).</p> <p>Grading schemata:</p> <ol style="list-style-type: none"> <li>Scored using a grading system (originally in German - Höh et al. 1995; modified in English- Meller et al. 1998); the LIPCOF scale:  0: no persistent fold;  1: single, small fold;  2: more than two folds and not higher than the tear meniscus;  3: multiple folds and higher than the tear meniscus).</li> <li>Scored using a grading system (Schirra et al. 1998, modified from Höh et al. 1995); the LIPCOF stage:  stage 0: no lid-parallel conjunctival fold  stage 1: small lid-parallel conjunctival fold  stage 2: medium-sized lid-parallel conjunctival fold  stage 3: large lid-parallel conjunctival fold</li> </ol> <p>Or,</p> <ol style="list-style-type: none"> <li>3. folds can be counted on the lower temporal bulbar conjunctiva (Miller 2003) or,</li> </ol> <p>This system is based on the number of folds and the height of the redundant conjunctiva with respect to that of the tear meniscus.</p> <p>A newly proposed and more complete grading system for future investigation of conjunctivochalasis including location, folds versus tear meniscus height, punctal occlusion, changes in downgaze, and changes by digital pressure is available (Meller and Tseng.), but no clinical trial has been reported with this system</p>	Höh et al. 1995; Meller et al. 1998; Miller et al. 2003 ; Schirra et al 1998.
<b>Web Video</b>	Not available	
<b>Materials:</b>	<ul style="list-style-type: none"> <li>Slit-lamp biomicroscope</li> <li>Sodium fluorescein (standard fluorescein strip or the DRY EYE TEST (DET, Akorn, Inc., Buffalo Grove, Illinois)</li> <li>Barrier filter (Kodak-Wratten 12 or 15)</li> </ul>	Miller et al. 2003

	<ul style="list-style-type: none"> <li>• Slit-lamp camera</li> </ul>	
<b>Standardization</b>	Time of day [ ] Temperature [ ] Humidity [ ] Air speed [ ] Illumination [ ] Other:[ ]	
<b>Diagnostic value</b>	This version : [ 1 ] positive predictive value (actually have a dry eye condition): 93.09% , n=26; negative predictive value (definitely free of dry eye): 75.95%, n=267 Other version: [ 2 ] counting of lower temporal LIPCOF: moderate dry eye group (n=14): 2.07±2.16; normal control (n=8): 2.25±0.70, p=0.676	Höh et al. 1995 Schirra et al. 1998  Miller et al. 2003
<b>Repeatability</b>	Intra-observer agreement. [ ] Inter-observer agreement. [ ]	
<b>Sensitivity</b>	( <b>true positives:</b> ) [positive predictive value: 93.09% , n=267]	Höh et al. 1995;
<b>Specificity</b>	( <b>100-false positives:</b> ) [negative predictive value: 75.95%, n=267]	
<b>Other Stats</b>	14 moderate dry eye patients vs 8 normal subjects: tear osmolarity (p=0.005), corneal staining (p=0.019), and conjunctival bulbar injection (p=0.016) were significantly higher in moderate dry eye group.	Miller et al. 2003
<b>Test problems</b>	The location of the redundant conjunctiva on the lower lid varies, and the size of the conjunctival fold can be changed by gazing direction or digital compression to the eyeball	
<b>Test solutions</b>	More complete grading system or standardization of conduct of evaluation is necessary	
<b>FORWARD LOOK</b>	Whether conjunctivochalasis is the result or cause of dry eye should be made clear	
<b>Glossary</b>	LIPCOF = <b>Lid Parallel Conjunctival Folds</b>	

**References:**

Höh H, Schirra F, Kienecker C, Ruprecht KW. Lid-parallel conjunctival folds (LIPCOF): a definite diagnostic sign of dry eye. *Ophthalmologie* 92: 802-808, 1995.

Meller D, Tseng SCG. Conjunctivochalasis: Literature review and possible pathophysiology. *Surv Ophthalmol* 43:225-232 (1998).

Miller WL, Narayanan S, Jackson J, Bergmanson J. The association of bulbar conjunctival folds with other clinical findings in normal and moderate dry eye subjects. *Optometry* 74: 576-582, 2003

Schirra F, Höh H, Kienecker C, Ruprecht KW. Using LIPCOF (lid-parallel conjunctival fold) for assessing the degree of dry eye, it is essential to observe the exact position of that specific fold. *Adv Exp Med Biol* 438: 853-858, 1998