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History of OQAS/HD analyzer and quality of the tear film measured with an objective optical method

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Purpose: Following the introduction of the history of OQAS we will look into how the quality of the tear film severely affect quality of vision. The purpose of this work was to develop a novel optical non-invasive approach to characterize tear film quality. It is based on analysis of the ocular scattering dynamics measured objectively with a double-pass instrument.

Methods: The procedure consists in dynamic recording of double-pass (DP) images during unforced tear film break-up. Series of images (every half second) are recorded in the eyes of a group of both healthy and dry-eye patients with a DP-based instrument (OQAS, Visiometrics, Spain). An unstable tear film would produce an elevation of the ocular scattering and in consequence a degraded retinal image. The relative dynamic changes of scatter would be related with modifications in the tear film quality. The dynamics of ocular scattering was evaluated with an Objective Scatter Index (OSI) calculated for each individual DP image. This parameter quantifies the level of scatter and its variations with time will indicate the impact of tear film deterioration.

Results: In healthy eyes with good quality tear film, the analysis of the series of DP images showed that normal tear film break-up process involves minor fluctuations in the OSI value (0.5±0.2), whereas an abnormally accelerated tear film break-up tends to increase this value (0.9±0.3). Patients with diagnosed dry eyes showed both an increased average OSI value and higher fluctuations (3±2). The quality of the tear film can be determined and graded by the average value and standard deviation of the scatter parameter.

Conclusions: A new robust and objective optical method to quantify the quality and stability of the tear film has been developed. It is based on measuring the induced changes in the scattering that affect the retinal image. This technique may be useful to detect and follow-up tear-film related patient's complaints.

Biography

In the early 80's, Jan Bonel started out in his native Sweden as Sales Representative at Pharmacia, AB. These were the early days of IOL´s and Healon™. This is truly where he got involved with ophthalmology, both professionally and emotionally. With his experience as teacher and already trained economist, at Pharmacia he received an extraordinary background. This period improved his technical and clinical skills. He also established close relationships with those days upcoming star ophthalmologist, who are now the most prominent opinion leaders in the world. As Distributor for Chiron Vision, he belonged to the select group which brought LASIK, with Hansatome and Technolas, to the world in 1992. He and Güell, were the first in the world to promote LASIK as a standard procedure. LASIK courses were organized. 200+ Doctors came from all over the world to get trained in Barcelona. He also served on the European Board of Chiron Vision. Timely, he understood that the next big things had to be better diagnostic instruments in the optical and ophthalmic market. After 10 years of dedicated hard work with the finest experts, in the optic space, the HDAnalyzer™was launched The HD Analyzer™ is a true game changer, allowing to understanding the objective part of vision.

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