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Google Glass in oculoplastic surgery: Measurement of the margin reflex distance

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Google Glass is a commercially available wearable technology consisting of a camera, optical display, microphone, touchpad, accelerometer, gyroscope, and bone-conduction speaker. Although relatively new to the market, its application in healthcare has been expanding. Amongst its potential use in oculoplastic surgery is documentation of eyelid position. The margin reflex distance-1 (MRD-1) is the distance between the corneal light reflex and upper eyelid margin in primary gaze. We have previously demonstrated the use of digital photography with a handheld camera to be excellent at documenting this measurement. In the present study, we explore whether Google Glass can also be used for digital photography analysis of eyelid position. This proof of concept study compared clinically measured MRD-1 and Google Glass photographs. A total of 62 eyes of healthy subjects were enrolled. The mean clinical MRD-1 was 4.13 (range 2.5-6.0) and the digital MRD-1 was 4.12 (range 2.5-6.2). Paired t-test showed no statistically significant difference in the measurements (p=0.77). Bland-Altman plot showed excellent agreement. Overall, Google Glass was able a reliable method of photographic measurement. However, the resolution of the camera limits the quality of the photographs. In addition, no light source is provided by the camera, so a handheld light must be used. Finally, the camera's optical axis is not in the center of the photographer's face (but rather the right ear piece), so photographs must be taken at an angle. Google Glass remains a promising technology, although further advancements are needed to apply for routine oculoplastic use.

Biography

Michael K Yoon is a full time Faculty Clinician and Scientist at Massachusetts Eye and Ear Infirmary/Schepens Eye Research Institute, teaching institutions of Harvard Medical School. His clinical expertise is in orbital diseases including tumors, thyroid eye disease and trauma. His research has focused on orbital anatomy and computer analysis of various structures. He has published over 55 peer-reviewed articles.

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