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3D-Stereoscopic Vídeo Projection of Cataract Surgeries

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Purpose: To compare spatial identification of intraocular structures during cataract surgery between standard surgical video projection and 3D-sterescopic video projection.

Methods: Standard video projections and 3D-stereoscopic video projections of 11 scenes of cataract surgery were randomly distributed into a group of 22 scenes. The scenes were projected to a viewer audience of 63 ophthalmologists of different levels of experience. A questionnaire using the visual analog scale (VAS) was used for identification of intraocular structures. Results were compared between each group and with a gold-standard score prepared by the authors. After this, 10 scenes of standard and 3D surgery were projected for simple identification to the viewers. VAS scores were compared using paired t-test.

Results: Two scenes of 3D surgery showed similar scores to the gold standard. One scene presented a lower score than standard video projection. All other scenes presented high variance and scores, which were significantly different between each group and between the gold-standard. 3D-stereoscopic surgery was positively identified in 89% of the cases and negatively identified in 45% of the cases.

Conclusions: Standard video projections and stereoscopic video projections present high degrees of variance for interpretation. However, 3D-stereoscopic projections presented high levels of identification and slightly higher levels of agreement in the spatial identification of surgical intraocular structures. Further development in quality of capture and projection is needed for widespread adoption of this projection technology.