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VIDEO REPORT

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Sub-epithelial gas breakthrough during femtosecond laser flap creation for LASIK

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Introduction: The femtosecond laser produces photodisruption at the molecular level to generate plasma, displacing the surrounding tissue resulting in the formation of cavitation bubbles. We report a case of myopic LASIK in which a vertical gas break through the surface occurred during IntraLase femtosecond flap creation.

Case report: A 30 year-old patient underwent bilateral Wavefront guided (WaveScan, Visx, USA) LASIK. The IntraLase (FS 60) was used to create a 100 µm flap. In the right eye, during flap creation in a raster mode, subepithelial gas breakthrough was noted in two focal areas. The surgeon was able to lift the flap without creating a buttonhole. The excimer ablation procedure was performed and the flap was repositioned. On the first postoperative day uncorrected visual acuity was 20/20 in both eyes.

Discussion: The incidence of flap-related complications associated with the use of motorized microkeratomes for creating corneal flap during LASIK is around 5%.^{1 2} For the femtosecond laser there have been previous reports of cavitation bubbles migrating to the anterior chamber resulting in poor tracking during subsequent excimer laser ablation.^{3 4} Vertical subepithelial gas breakthrough during femtosecond laser flap creation is rare and a PubMed search revealed no previous report of this complication. Vertical gas breakthrough occurs between the dissection plane and the subepithelial space resulting in escape of gas bubbles in to the subepithelial space. The cause is unknown but a thin flap or a focal break in the Bowman’s membrane may contribute to this complication.

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