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## Biography

**Syed Tajrian**, is a medical student in the highly selective 7-year accelerated BS/MD program at the CUNY School of Medicine, a prestigious combined track designed for high-achieving students committed to careers in medicine from an early stage. He is graduating as one of the top 10 students in his class, distinguishing himself through academic excellence, leadership, and strong clinical and research performance.

## Evaluation of Pneumo-LASEK, a New Vacuum-Assisted Advanced Surface Ablation (ASA) Technique vs. Standard Alcohol-Assisted PRK (LASEK)

### Abstract:

**Background:** Pneumo-LASEK is a novel suction-assisted surface ablation method that eliminates alcohol use for epithelial removal. By transiently increasing intraocular pressure with an epi-keratome suction ring, it allows blunt mechanical dissection while minimizing epithelial trauma. This study compared Pneumo-LASEK with traditional alcohol-assisted PRK (LASEK) in terms of visual, refractive, and patient comfort outcomes.

**Methods:** In this prospective, randomized contralateral-eye study, 12 patients (24 eyes) underwent surface ablation, receiving alcohol-assisted PRK in one eye and Pneumo-LASEK in the other. All procedures were performed by a single surgeon using a wavefront-guided VISX Star S4 IR excimer laser. Outcomes included intraoperative and postoperative discomfort, epithelial healing, uncorrected distance visual acuity (UDVA), residual refractive error, corneal haze, and dry-eye parameters. Follow-ups were performed on postoperative days 4 and 8, and at 1- and 2-month intervals.

**Results:** Pneumo-LASEK significantly reduced intraoperative pain (mean 1.23 vs 3.47;  $p = 0.03$ ) and postoperative day-one tearing (1.88 vs 3.8;  $p = 0.013$ ). Epithelial healing was faster, with 73.68% of Pneumo-LASEK eyes fully re-epithelialized by day 4 compared to 63.16% of alcohol-assisted eyes ( $p = 0.0143$ ). By day 8, healing and vision were equivalent. At one month, over 94% of eyes in both groups achieved UDVA of 20/20 or better, with most within  $\pm 0.50$  D of the target. Tear breakup time, Schirmer's results, and corneal haze were similar across groups.

**Conclusion:** Pneumo-LASEK yields equivalent visual and refractive outcomes to alcohol-assisted PRK while providing improved comfort and faster early healing, presenting a safe, alcohol-free alternative for advanced surface ablation.