Corneal Flap Analysis of new Short Pulse Femto-LASIK with Optical Coherence Tomography

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Financial Interest

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Purpose

To assess the precision (thickness) of laser-assisted in situ keratomileusis (LASIK) corneal flaps created with a novel short pulse femtosecond laser (VICTUS; Bausch + Lomb, Rochester, NY).

Methods

- Consecutive case series of 51 patients (102 eyes) scheduled to undergo bilateral LASIK
- The femtosecond laser was programmed to create a 120 µm corneal flap
- All eyes were examined at 1-month postoperatively
- Flap thickness was assessed with using the anterior segment optical coherence tomography (OCT) using the manual flap tool at 5 locations on a horizontal B scan
- Age, central corneal thickness (CCT) and spherical equivalent refraction were recorded preoperatively

VICTUS FS Laser Platform

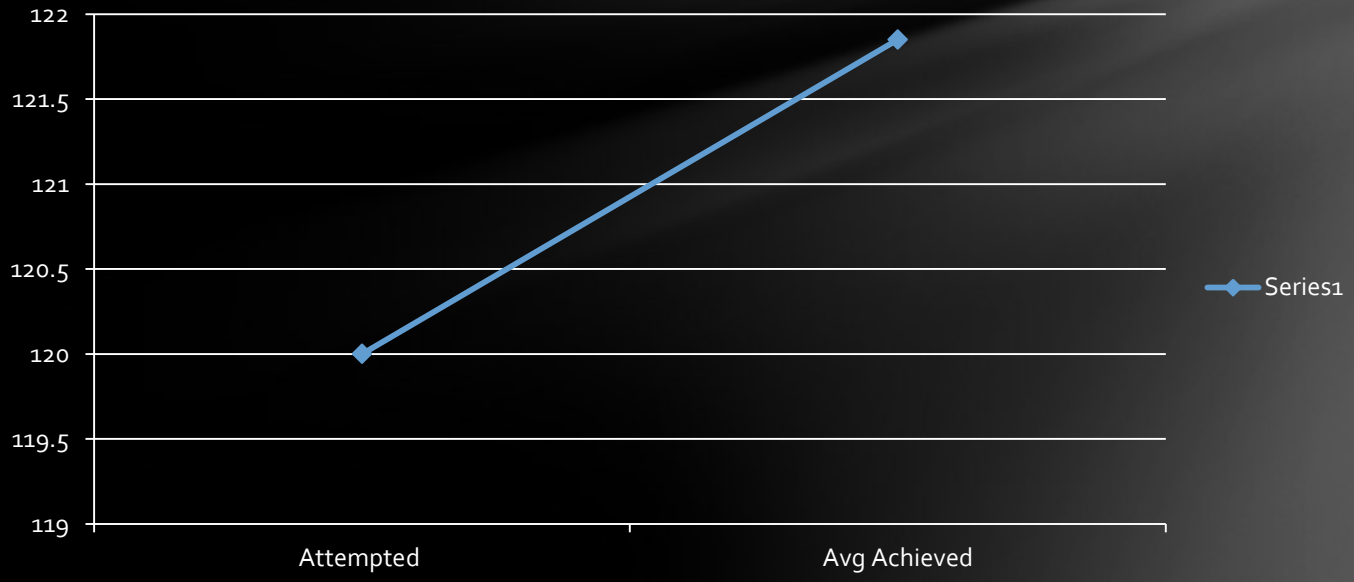
- FS laser maximizes accuracy of incisions
- Pulse rates up to 160 kHz
  - Minimizes procedure time
  - Enhances surgeon control
- Monitoring of curved patient interface using pressure sensors
- Adjustable Vacuum in 20mbar increments
- Procedure-dependent pressure control

Results

N=51 patients

Intended flap thickness was 120 µm

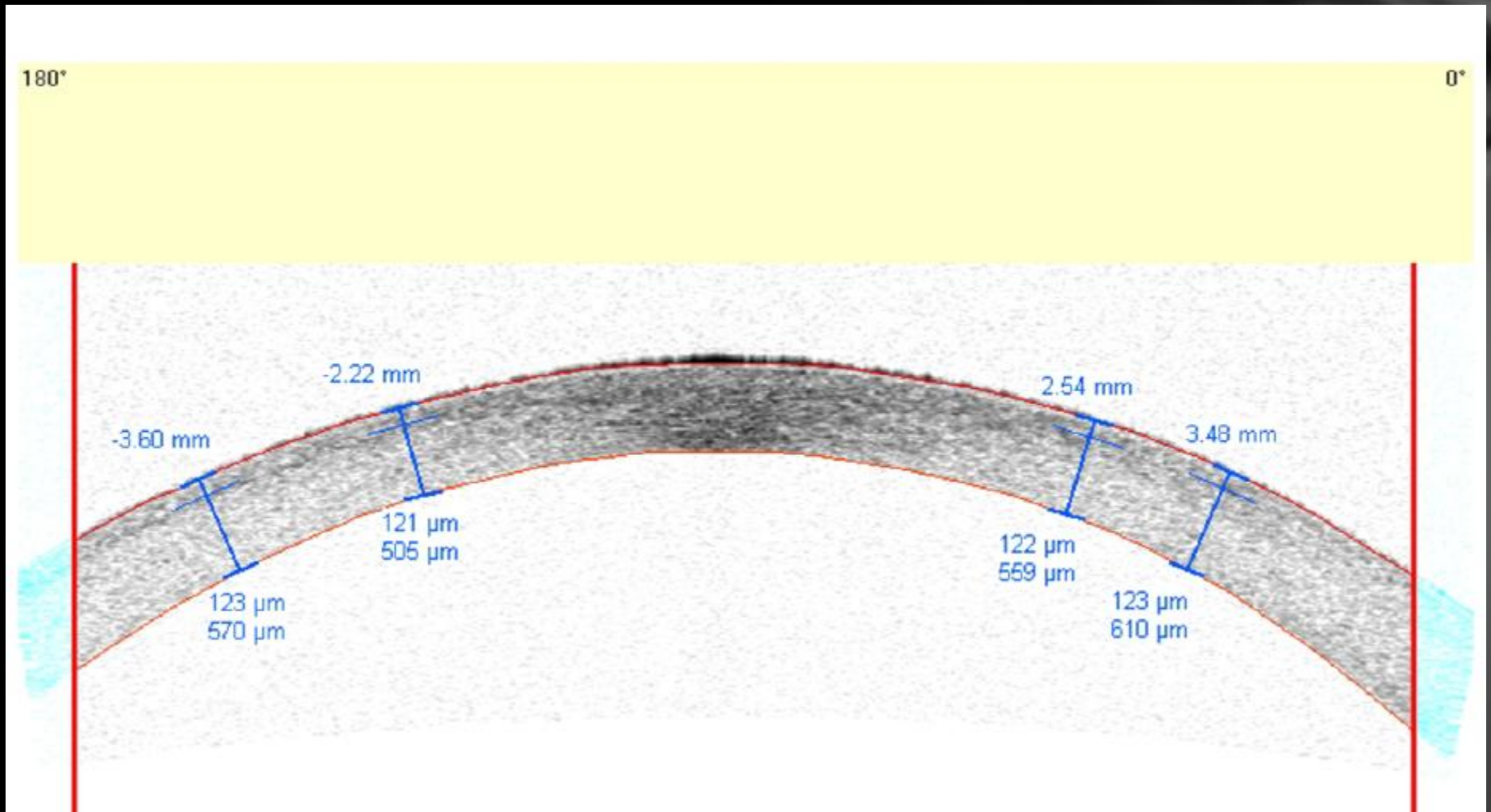
A mean flap thickness of 121.85 µm µm was achieved



Results

- There was no relationship between corneal flap thickness and age, pre op CCT or spherical equivalent refraction through stepwise regression analysis
- The difference in corneal flap thickness between right and left eye (0.35 ± 4.5) was not statistically significant
- No patient suffered any flap complications (e.g. abrasions, button holes, free caps or slipped flaps) or experienced worsening of pre-operative best corrected visual acuity

Anterior segment ultrasound measurement of VICTUS LASIK flaps using Visante OCT



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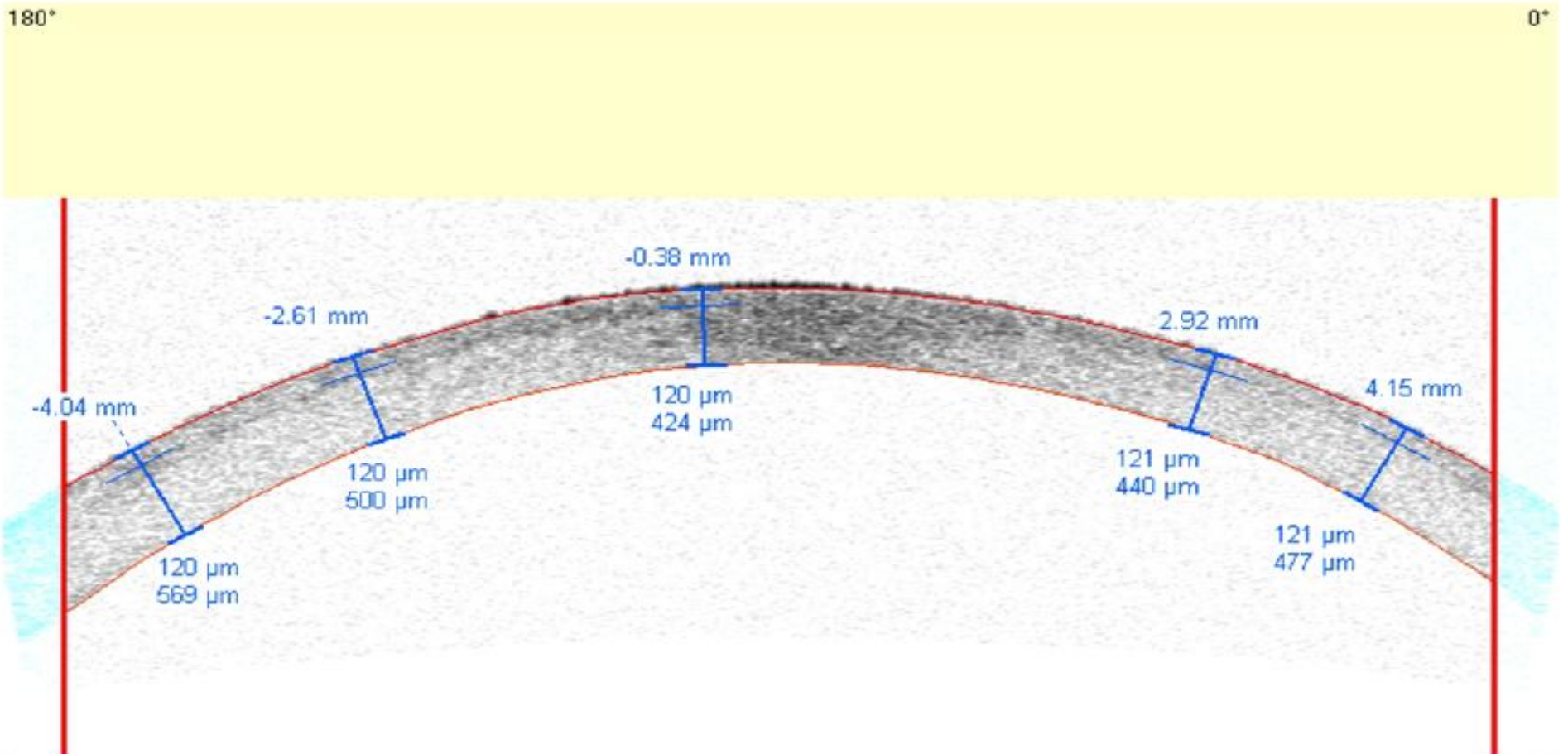

Conclusion

Corneal flaps created with this new femtosecond laser are:

- Accurate and reproducible within 10 µm of the intended thickness

The laser is safe, with no patients experiencing any flap related complications OR reduction in corrected visual acuity