Utilizing a novel custom fragmentation approach to decrease the incidence of intraoperative complications when performing FLACS

Patrick Sweeney, MD

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Financial Disclosures

- Alcon
- Glaukos
- LENSAR

What if we could use FLACS to our advantage and significantly reduce intraoperative complications?

What about intraoperative complications and FLACS?

In a study by Riemey et al. 1,806 eyes of 1,131 patients who underwent FLACS the overall intraoperative complication rate was 0.28% (n=5), with three cases of anterior capsule tear (0.17%) and two cases of posterior capsule tear (0.11%)[1]

In another study by Medhi et al. 873 underwent FLACS and 1251 underwent CP; The intraoperative complication rate for the FLACS group was 1.60% and the CP group was 2.39% ($P < 0.00001$)[2]

1. Riemey J, Latz C, Mirshahi A. Intraoperative complications of cataract surgery using a low-energy femtosecond laser: Results from a real-world high-volume setting. PLoS One. 2022 Dec 15;17(12):e0279023. doi: 10.1371/journal.pone.0279023. 2. Medhi S, Senthil Prasad R, Pai A, Muthukrishnan GR, Mariammal A, Chitradevi R, Shekhar M. Clinical outcomes of femtosecond laser-assisted cataract surgery versus conventional phacoemulsification: A retrospective study in a tertiary eye care center in South India. Indian J Ophthalmol. 2022 Dec;70(12):4300-4305.

Single surgeon data from EHR Review

Group 1 2018-2020

3524 femto cases performed with LENSAR Gen 1 and Catalys lasers

14 vitrectomies during this time frame; vitrectomy rate = 0.40%

Group 2 2021-2023

3259 femto cases performed with LENSAR Gen 1

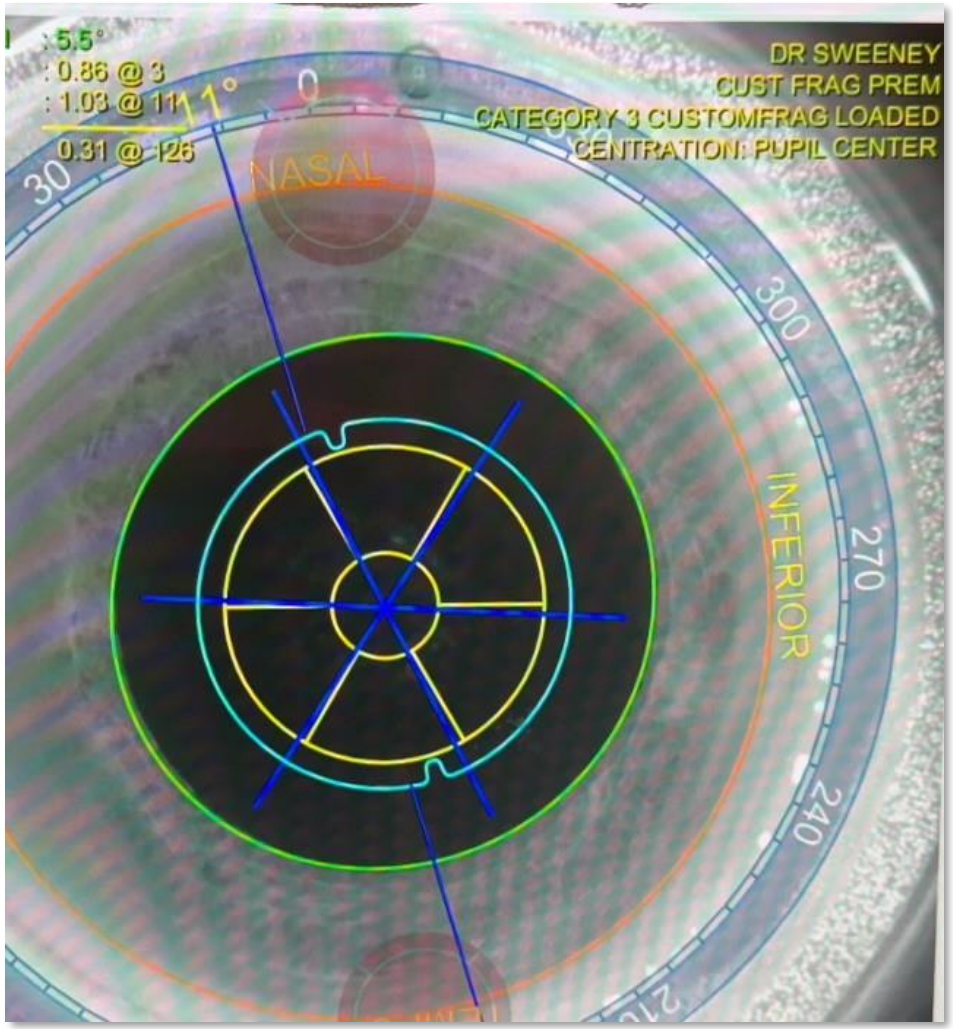
2 vitrectomies during this time frame; vitrectomy rate = 0.06%

Vitrectomy rate of femto cases between the 2 groups **(0.06% vs 0.40%, p= 0.004)**

Changes following Group 1

- LENSAR Gen 1 laser only laser used
- One laser ablation pattern was used for all femto settings rather than factory installed
- Commitment to Visco-dilation and Visco-lift technique, no deviations.
- Patients with phacodenesis were not operated on

Laser Ablation Pattern



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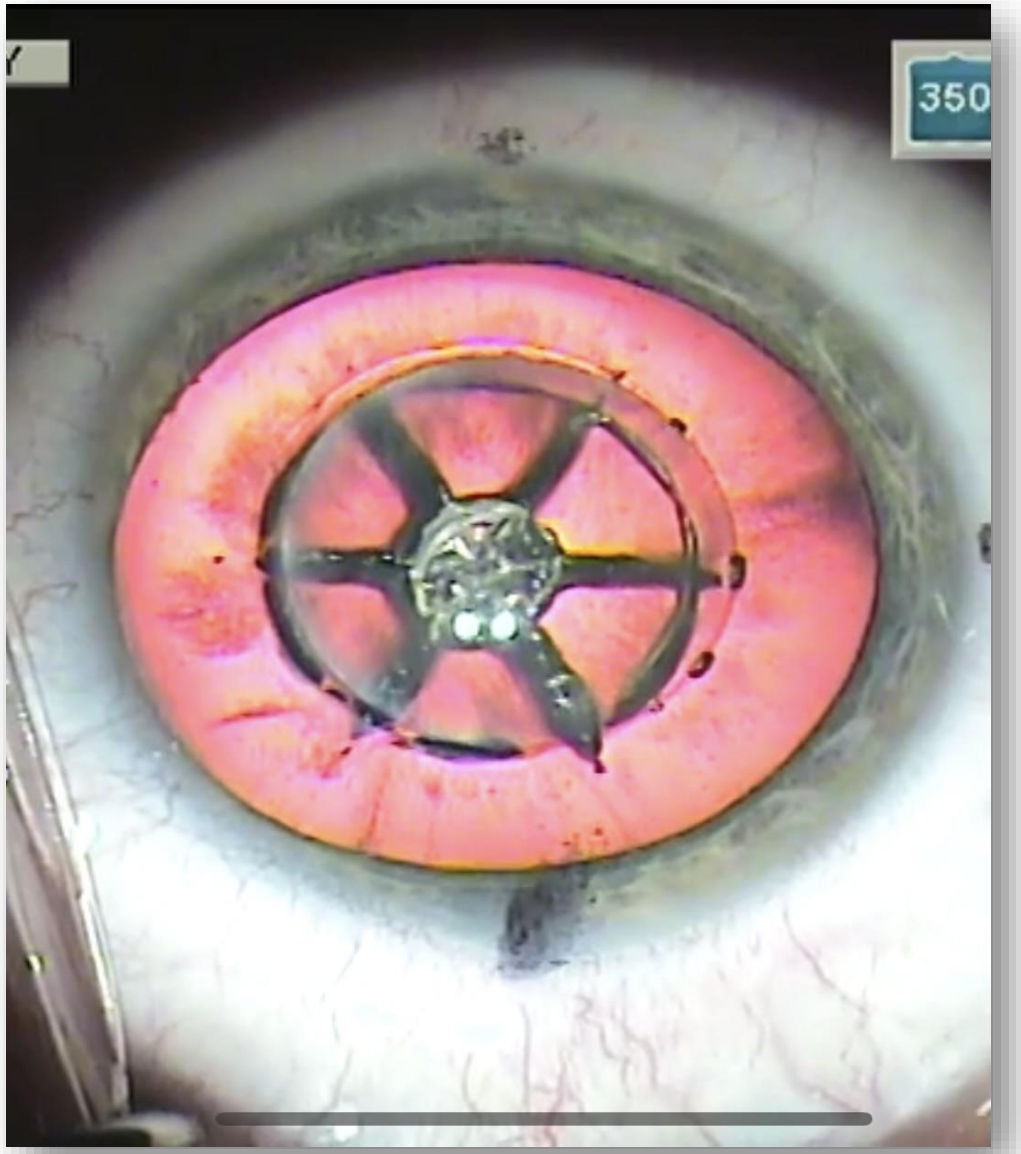
Laser Pattern

Factory loaded ablations based on Scheimpflug camera images changed to single ablation pattern

Viscoelastic separation made easy



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Same laser ablation with two techniques based on cataract density

Soft-Medium cataracts:

Visco-dissection: flat tipped 27 gauge hydrodissection cannula *placed on dispersive viscoelastic turned 90 degrees to slip into the laser ablated nucleus*

Hard Cataracts (resistant to cracking and reluctant to rotate with hydrodissection):

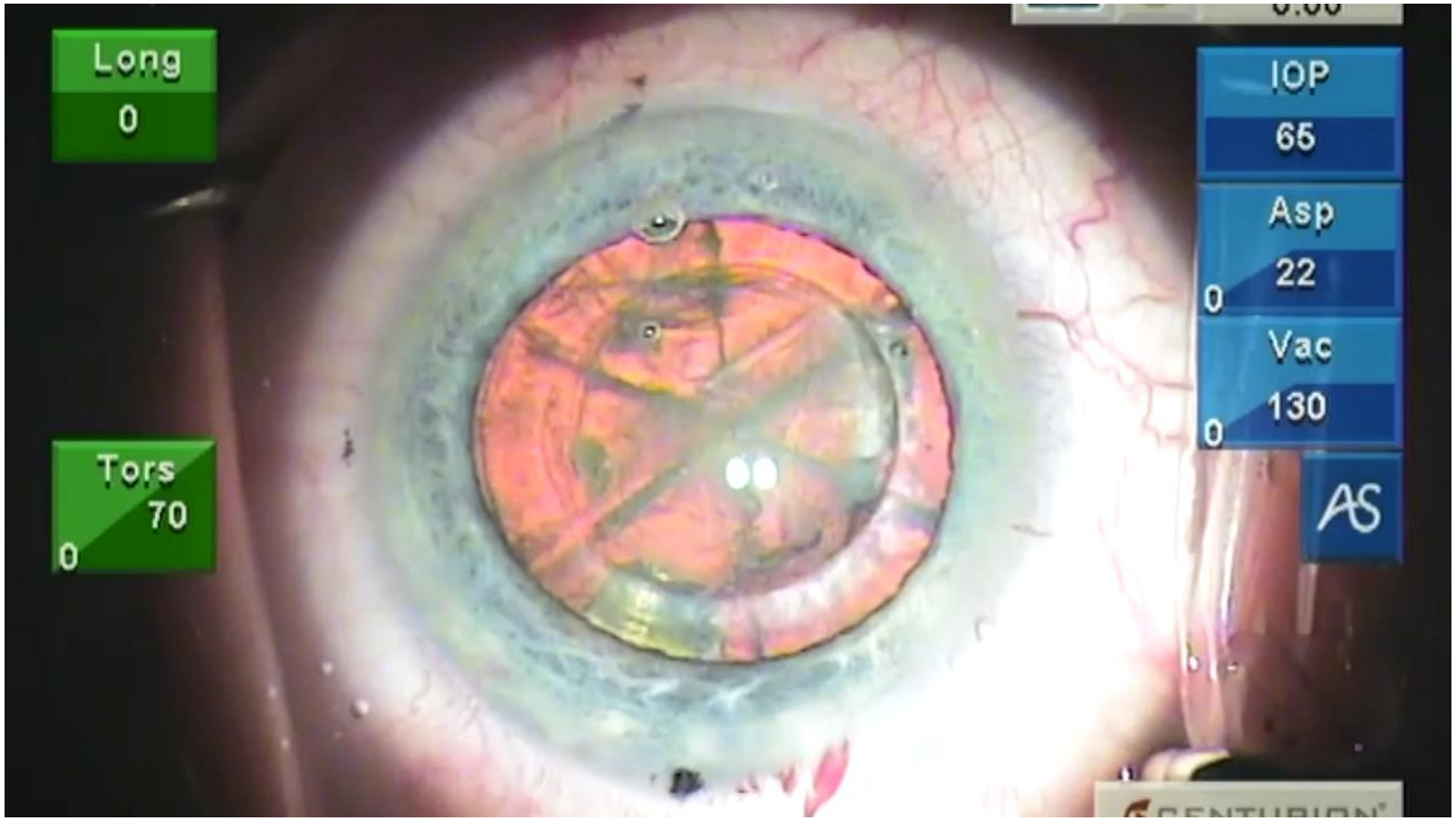
Visco-lift technique:

- small rexhis 4.50mm or less
- rents in capsule

Soft to Medium Cataracts: Visco-dissection

Viscoelastic canula removed and replaced with 27-gauged flat tipped hydrodissection canula

Canula rotated 90 degrees for insertion



Its all about avoiding hazards

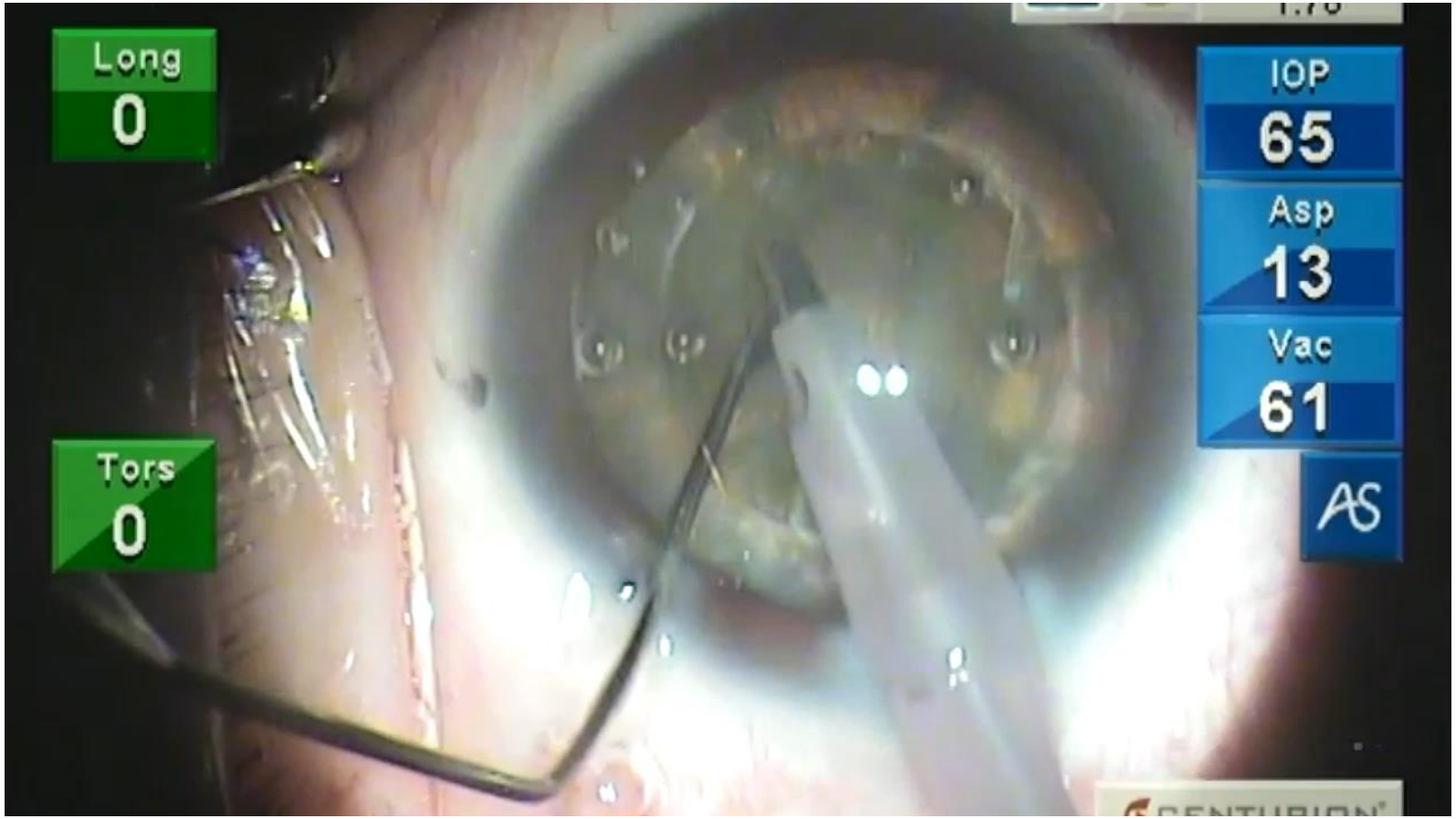
Hard Cataracts: Visco-lift technique

Resistant to cracking

Cataracts that will not rotate with hydrodissection

Small rexhis < 4.5mm

Rents in capsule



Conclusion

Femtosecond laser-assisted cataract surgery performed using a new custom fragmentation pattern was found to be:

- Safe
- 2 vitrectomies in 3259 cases
- Statistically significant lower incidence of vitrectomies between factory loaded laser patterns and customized laser patterns

Thank You