"Refractive Results Following Femtosecond Laser-assisted Capsulotomy"

American Society of Cataract and Refractive Surgery

Boston, April 2014

Louis D. "Skip" Nichamin,MD
Medical Director
Laurel Eye Clinic
Brookville, Pa.

Financial Disclosure

Allergan
AMO Abbott
Bausch and Lomb
Eyeonics
Glaukos
Harvest Precision
iScience
3 - D Vision
LENSAR
PowerVision
ReVitalvision
SLACK Publications
SMI, Inc
WaveTec

***** *I have no financial interest in any Surgical Instrumentation Referenced in this Presentation*

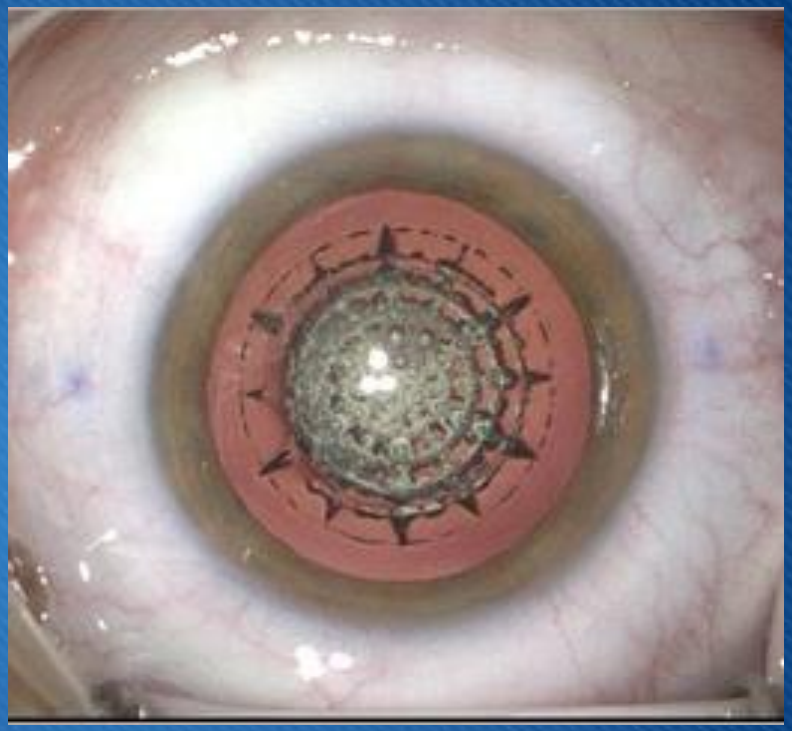
Background / Precis

- **Background:**
  - **Several investigations have validated the safety and symmetry of femtosecond laser-assisted capsulotomy. Use of this technology provides reproducibility to cataract surgeons and potentially protects from some causes of inter-surgeon variability in surgical outcome. Refractive outcomes following laser-assisted capsulotomy must also be investigated prior to enhancement procedures such as PRK or epi-LASIK, and without the use of confounding technologies such as intraoperative aberrometry.**
- **Precis:**
  - **A single center prospective evaluation of 121 patients (61 laser, 60 manual) scheduled to undergo laser-assisted cataract surgery was conducted. Correlation between intended and achieved absolute mean refractive spherical equivalent was greater in the cohort. The population which fell within 0.50 D and 1.00 D of intended outcome was also greater in the laser cohort.**

Purpose and Methods

- **Purpose:**
  - **To report the refractive outcomes of IOL implantation following femtosecond laser-assisted capsulotomy. To compare these results to typical refractive outcomes following manual continuous curvilinear capsulorrhexis.**
- **Method:**
  - **Patients presenting for cataract surgery were treated with LENSAR capsulotomy and/or phacofragmentation. All capsulotomies were centered about the pupil center and created to allow for 500 microns of circumferential capsule-optic overlap. Preoperative examinations and three month postoperative examinations were obtained.**

Methods



Intraoperative image of a completed femtosecond laser-assisted anterior capsulotomy and lenticular fragmentation

Intraoperative image demonstrating precise and circumferential capsule-optic overlap of laser-assisted capsulotomy

Demographic Data

	Manual Cohort	Laser Cohort
Mean Age ± SD (Min, Max)	62.2 ± 10.6 years (19, 78)	65.2 ± 7.9 years (43, 82)
Completed 3 Month Follow-up	60	61
% Female (N)	56.7% (34)	60.7% (37)
% OD (N)	50% (30)	44.3% (27)
Mean Absolute Preoperative MRSE ± SD	2.53 ± 1.98 D	2.72 ± 2.36 D

- **Demographic data shows higher mean absolute preoperative MRSE with greater variation in the laser cohort as compared to the manual cohort.**

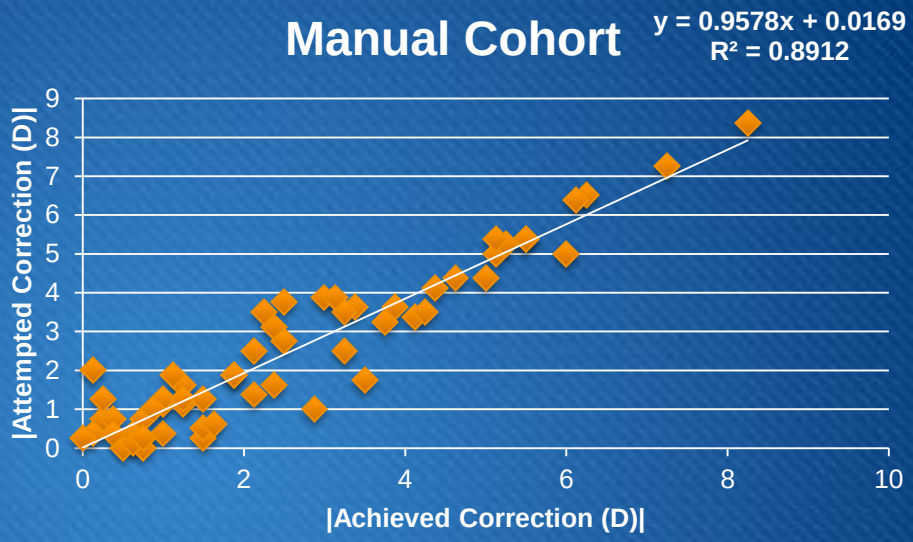
Results

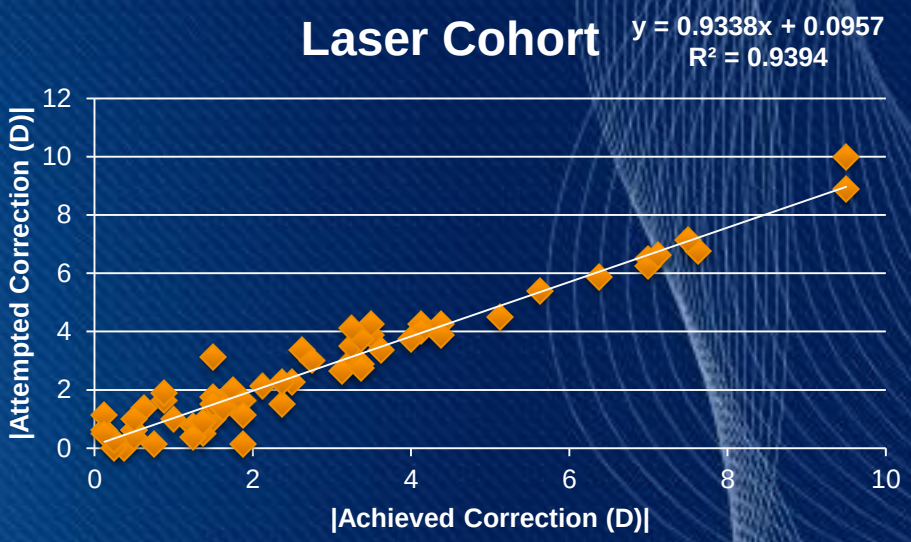
Absolute Deviation Target MRSE		
	Manual	Laser
Mean	0.52	0.51
Std. Dev.	0.47	0.36
median	0.375	0.5
n	59	60

Overall Accuracy				
	Manual		Laser	
	n	%	n	%
≤ 0.50 D	35	58.3	39	63.9
≤ 1.00 D	54	90.0	58	95
p	>0.5			

- **Results demonstrate a tighter standard deviation in the laser cohort.**
- **Population that fell within 0.50 D and 1.00 D of intended MRSE was 5% greater in the laser cohort.**

Results





	Manual	Laser
R value	0.89	0.94

- **Higher correlation between attempted and achieved spherical equivalent corrections in laser cohort.**

Conclusion

- **Precise refractive corrections are possible following laser-assisted capsulotomy.**

- **Initial results demonstrate that laser capsulotomy decreases deviation from intended manifest refractive spherical equivalent in cataract surgery.**

Thank You
Very Much!!