

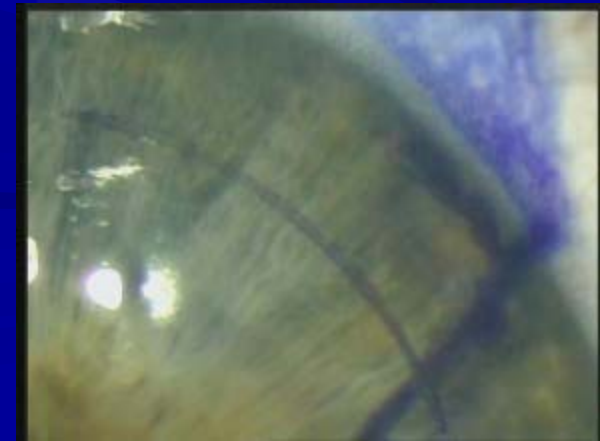


Refractive outcome after myopic LASIK with a mechanical microkeratome or a femtosecond laser keratome

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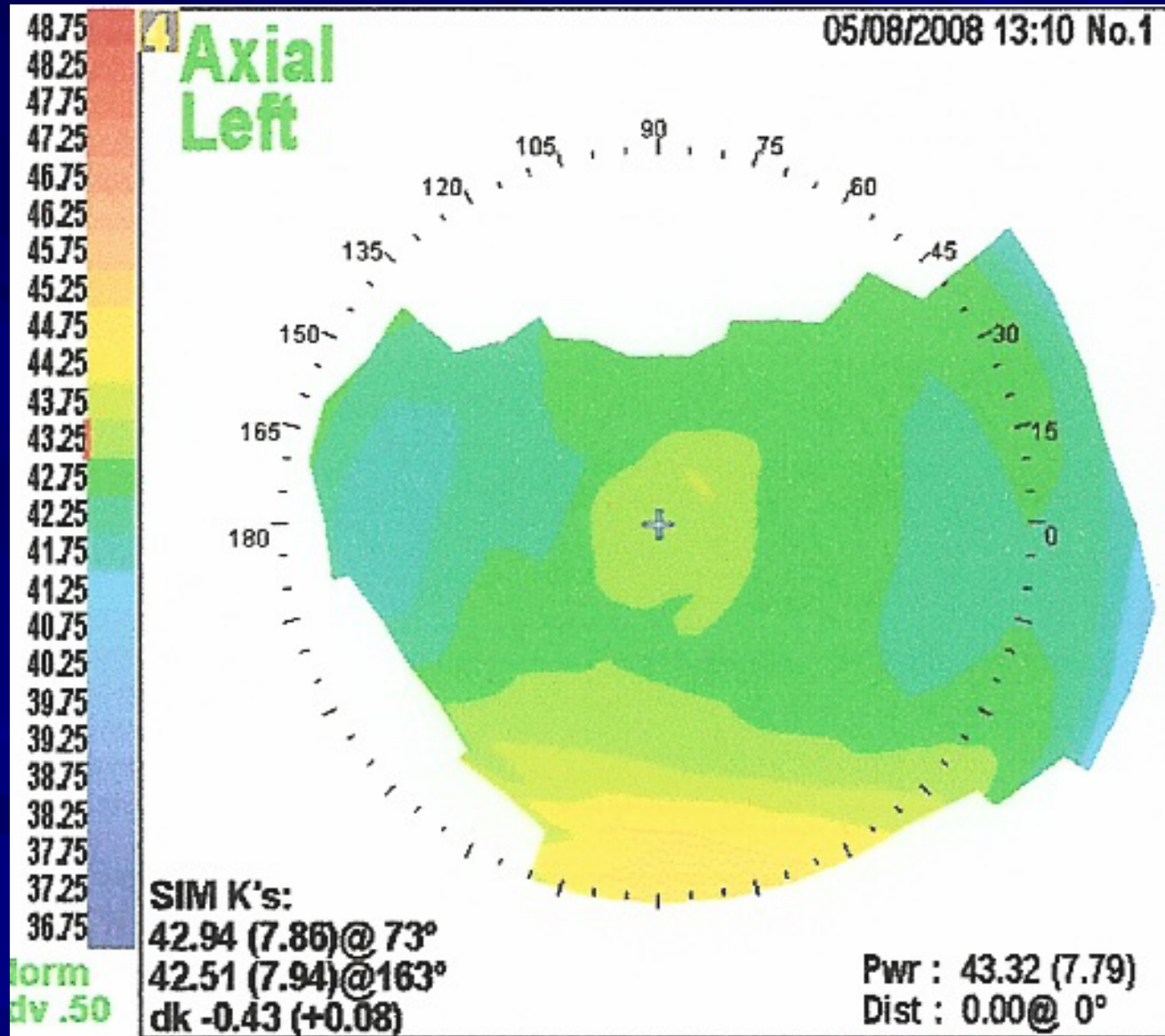
No financial interests in any product



Purpose:

- An increased number of myopic enhancements were noted following Lasik with a femtosecond keratome.
- This study was undertaken to refine our nomogram; particularly to differentiate between
 - low myopia vs high myopia
 - spherical equivalent under/over -6.00 Diopters
 - younger vs older patients
 - under / over age 40

Central island and undercorrection with IntraLase



Corneal incisions can create a myopic refractive error

Corneal flattening by shallow circular trephination in human eye bank eyes.

Gilbert ML, Roth AS, Friedlander MH.
Refract Corneal Surg. 1990 Mar-Apr;6(2):113-6.

- **The mean acute central keratometric flattening from the shallow trephine incision was 2.81 D (SD 2.28, P = .017)**

Clinical: Edge profile

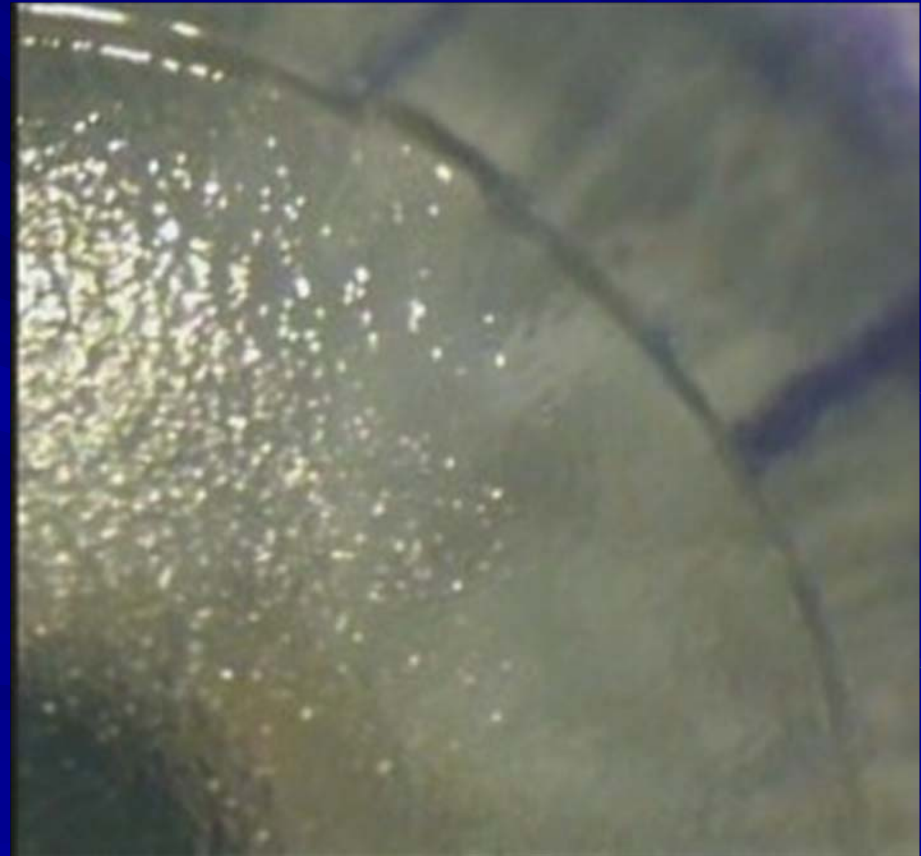
Microkeratome:

Stepped / beveled



IntraLase:

Sharp edge / steep



METHODS:

- Lasik flaps were made with a Zyoptix XP microkeratome® 140 micron blade (MK) or IntraLase® 130 micron (IL).
- VISX® wavefront guided ablations were done.
- During the study period we treated 1081 eyes in the microkeratome group and 644 eyes in the IntraLase group.
- Small target adjustments were made for age, spherical aberration and cylinder.
- IntraLase was done if preferred by the patient or when recommended by the surgeon, most commonly older patients (over 40) and patients with higher corrections.
- The Refractive Surgical Consultant® was used to analyze all available results at one, three and six months after surgery.
- Statistical analysis was done with two-tailed p value, statistical significance at $p < 0.05$.

Results:

Difference between spherical equivalent (SE) outcome and predicted SE outcome with standard deviation (SD)

	Zyoptix XP			IntraLase			P value
	Sph Eq	St Dev	#	Sph Eq	St Dev	#	
All patients							
1 mo	-0.05	0.41	915	-0.14	0.48	521	0.0002
3mo	-0.12	0.44	411	-0.21	0.52	292	0.0135
6mo	-0.16	0.43	333	-0.28	0.55	248	0.0035
*The subsets of under/over age 40 with low myopia showed similar trends							
High myopia & under 40							
1 mo	+0.08	0.52	56	-0.29	0.59	63	0.0005
3 mo	-0.04	0.80	23	-0.45	0.59	29	0.0384
6 mo	-0.13	0.50	22	-0.55	0.90	32	0.0589 [^]
*There were an insufficient number of cases in the over 40/high myopia subset for clinical significance							
[^] Borderline statistically significant							

Clinical observations

Hansatome: Gutter usually only visible with manipulation



Intralase: Gutter usually visible with the microscope

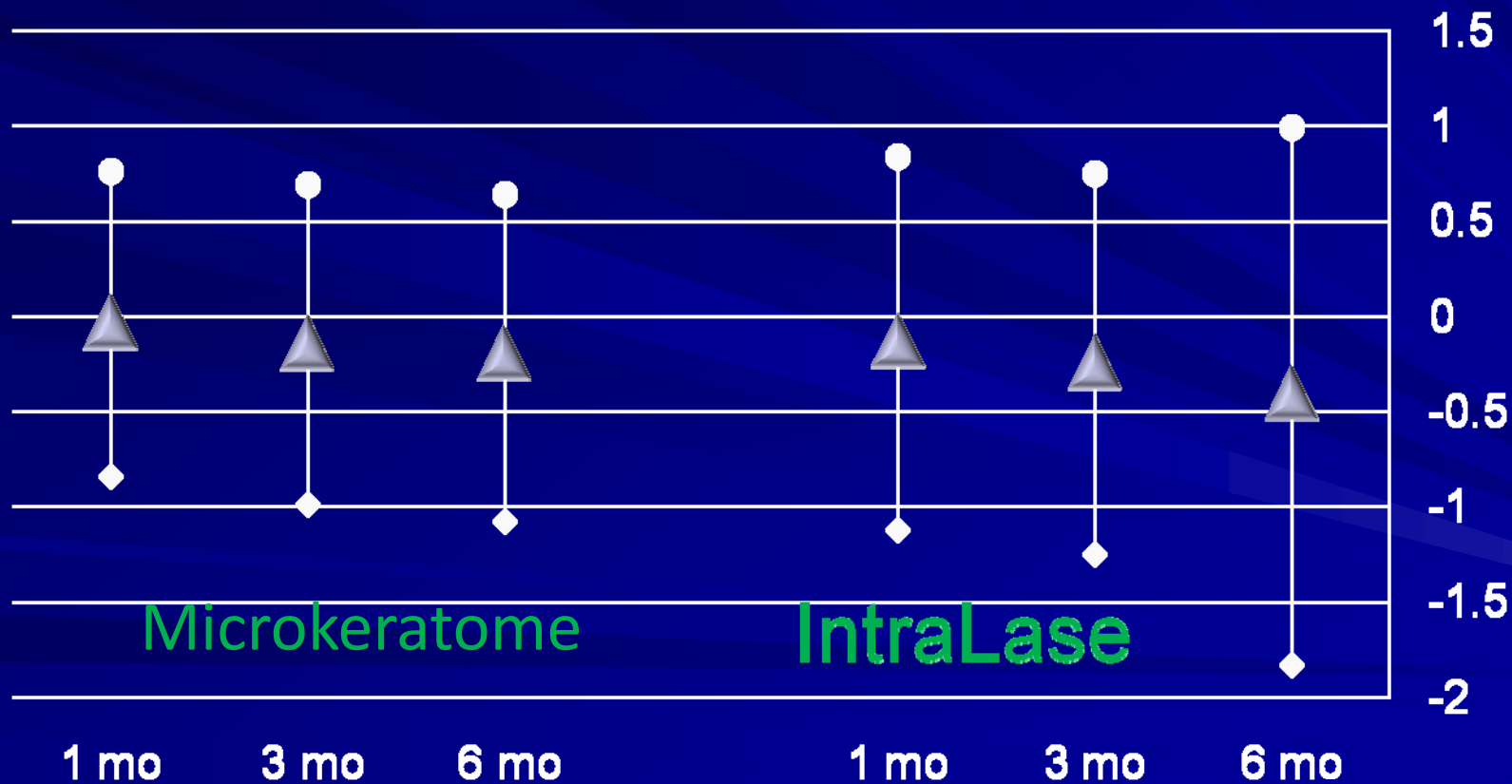


IntraLase gutter : depressed scar with pooling of stain



Myopic shift: Zyoptix XP vs IntraLase

Shown are the mean SE outcome
+/- 2 standard deviations

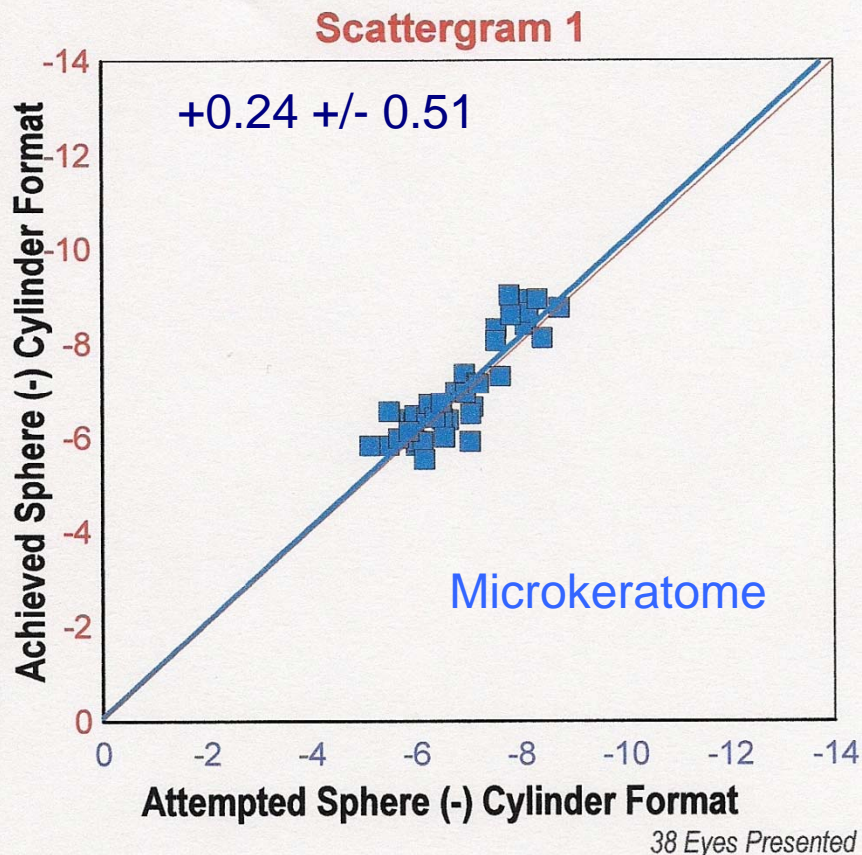


Zyoptix XP vs IntraLase: over age 40, high myopia*

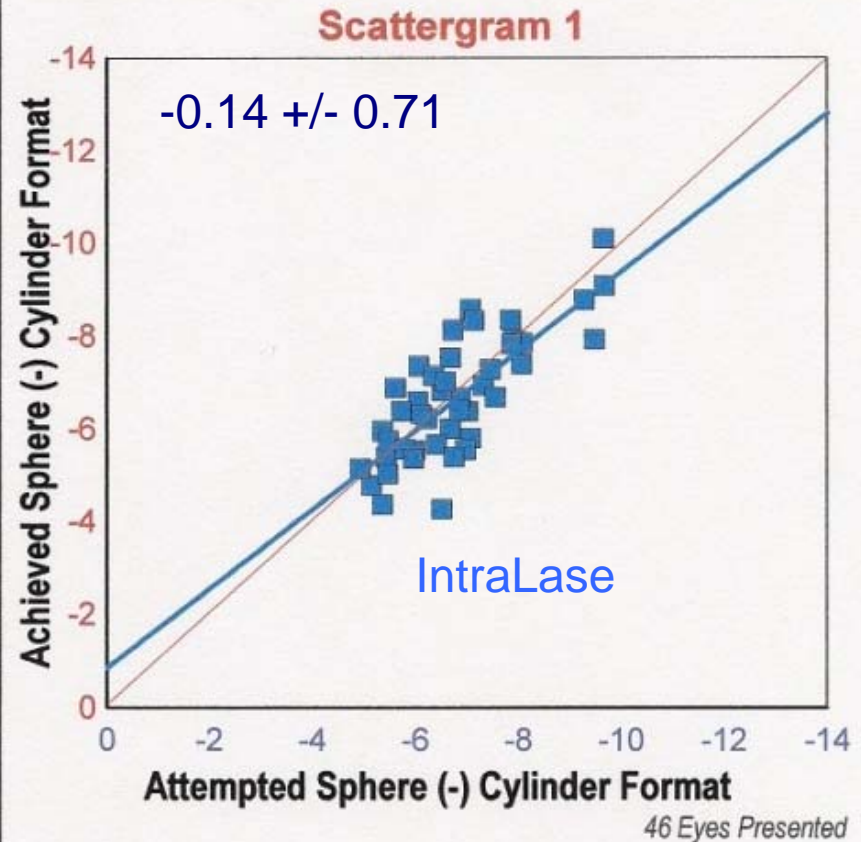
Initial study with additional cases for 6 months : P=0.0071

(The initial study had an insufficient number of cases in the over 40 / high myopia subset
for statistical significance)

1 Month



1 Month



Conclusion:

- When compared to the Zyoptix XP microkeratome, IntraLase is associated with a greater average myopic shift and a higher standard deviation. Using these results, adjustments have been made to our treatment nomogram, especially for **patients with higher corrections**