The New Laser Trabeculoplasty

SOLX®

790 Laser

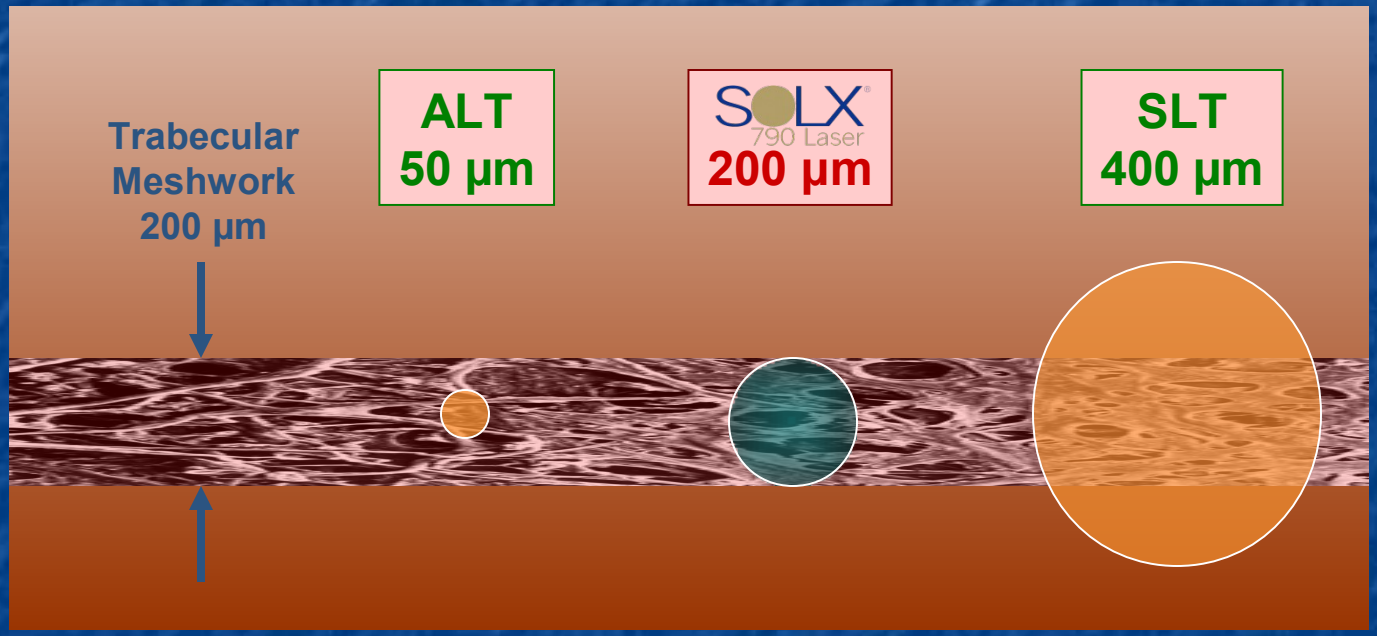
Trabeculoplasty Laser Comparison

	ALT	SLT	SOLX 790 Laser
Absorption	Strong	Strong	Moderate
Penetration	Short	Short	Deep
Energy	High	Low	Moderate
Peak Power	Very Low	Very High	Moderate
Pulse Duration	Long	Very Short	Moderate
Thermal Damage	High	Low	Low
Repeatable	No	Yes	Yes

Trabeculoplasty Laser Specifications

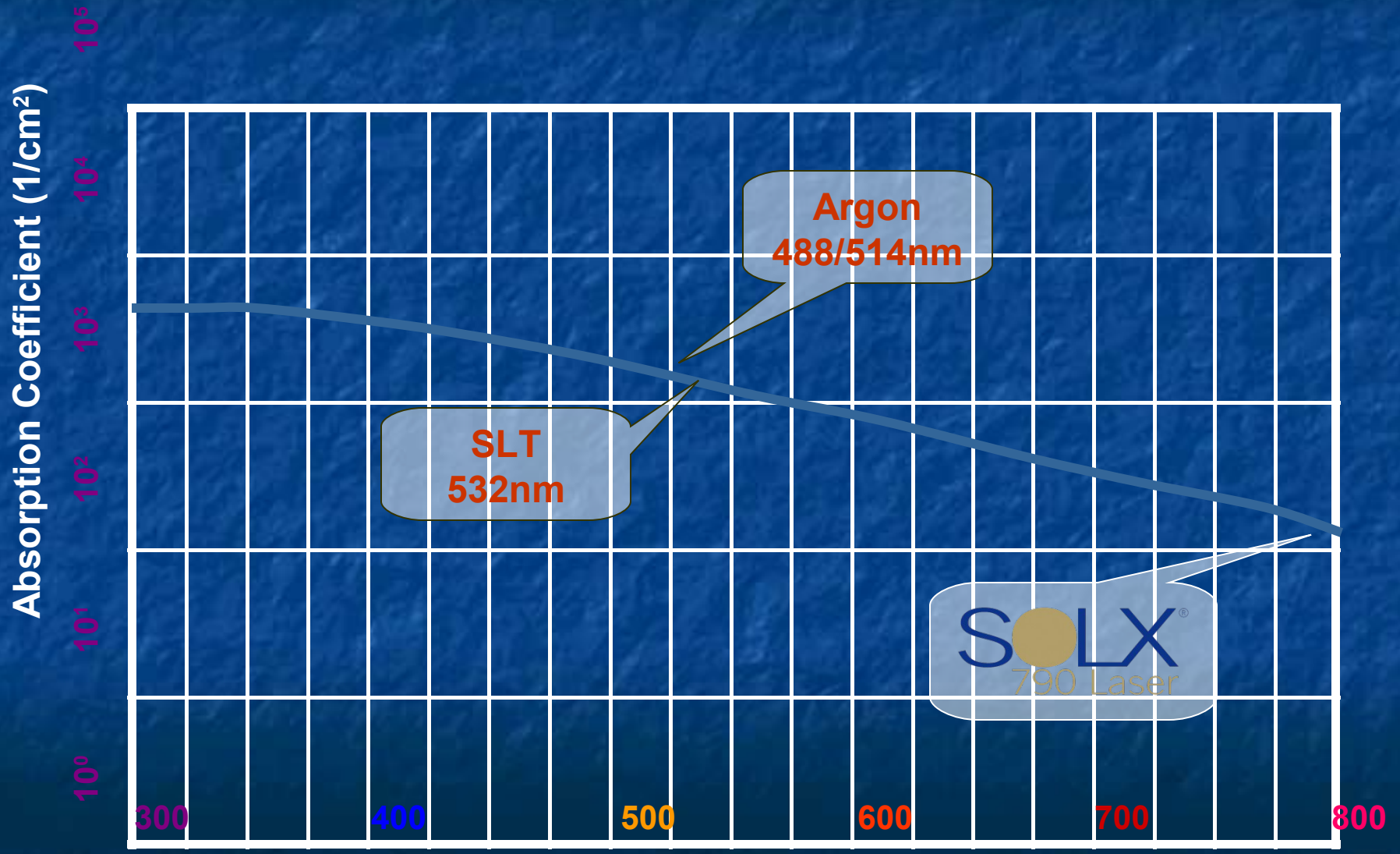
	ALT	SLT	SOLX 790 Laser
Laser Type	Argon	Frequency Doubled Q-switched Nd:YAG	Titanium:Sapphire
Laser Delivery	Continuous Wave	Single Pulse	Single Pulse
Power (mW)	50 - 1000	-	-
Pulse Energy (mJ)	-	0.1 – 2.0	30 – 80 mJ
Wavelength (nm)	488/514	532	790
Spot Size (microns)	50 - 500	400	200
Pulse Duration	0.1 – 1 sec	3 nsec	7 µsec

Treatment Spot Size

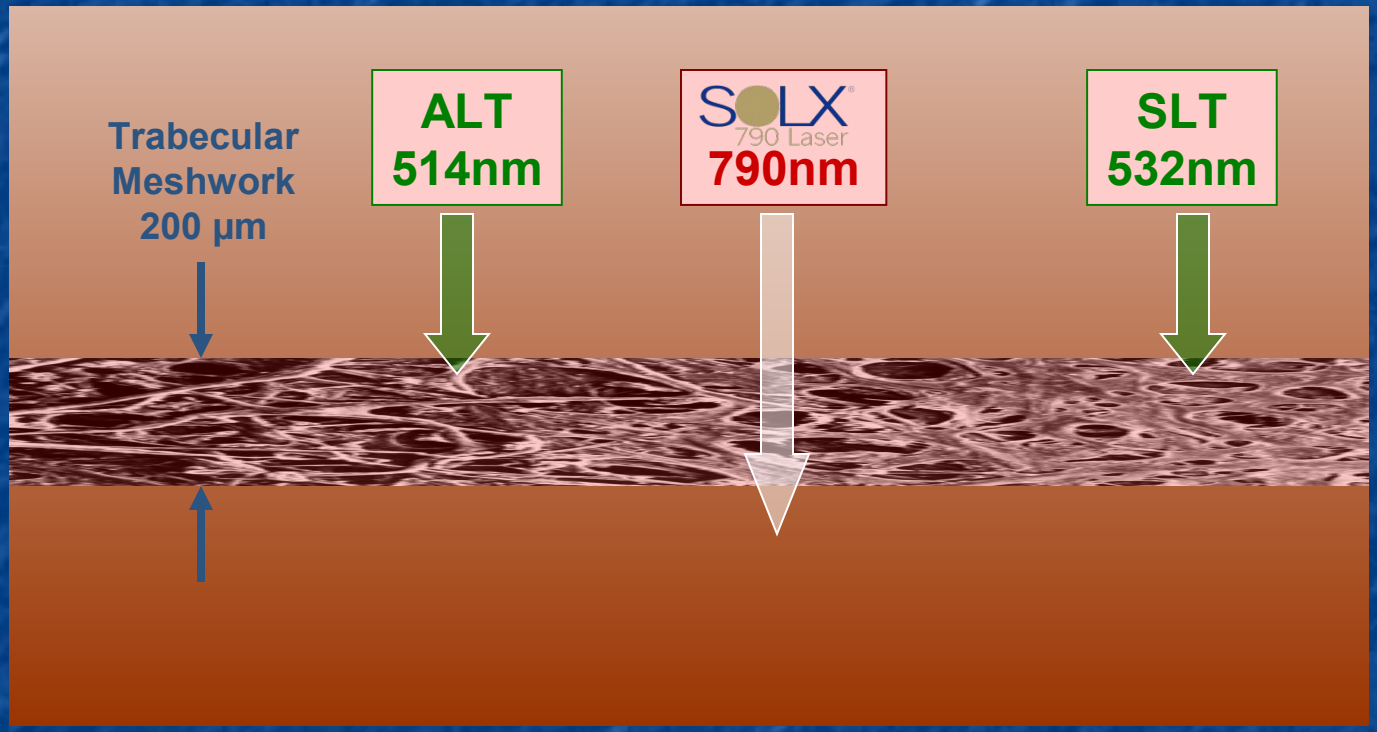


SOLX 200 micron spot size
matches the typical with of the trabecular meshwork band

Absorption of Meshwork Pigment



Laser Energy Penetration



SOLX 790 nm wavelength
allows full thickness penetration of the trabecular meshwork

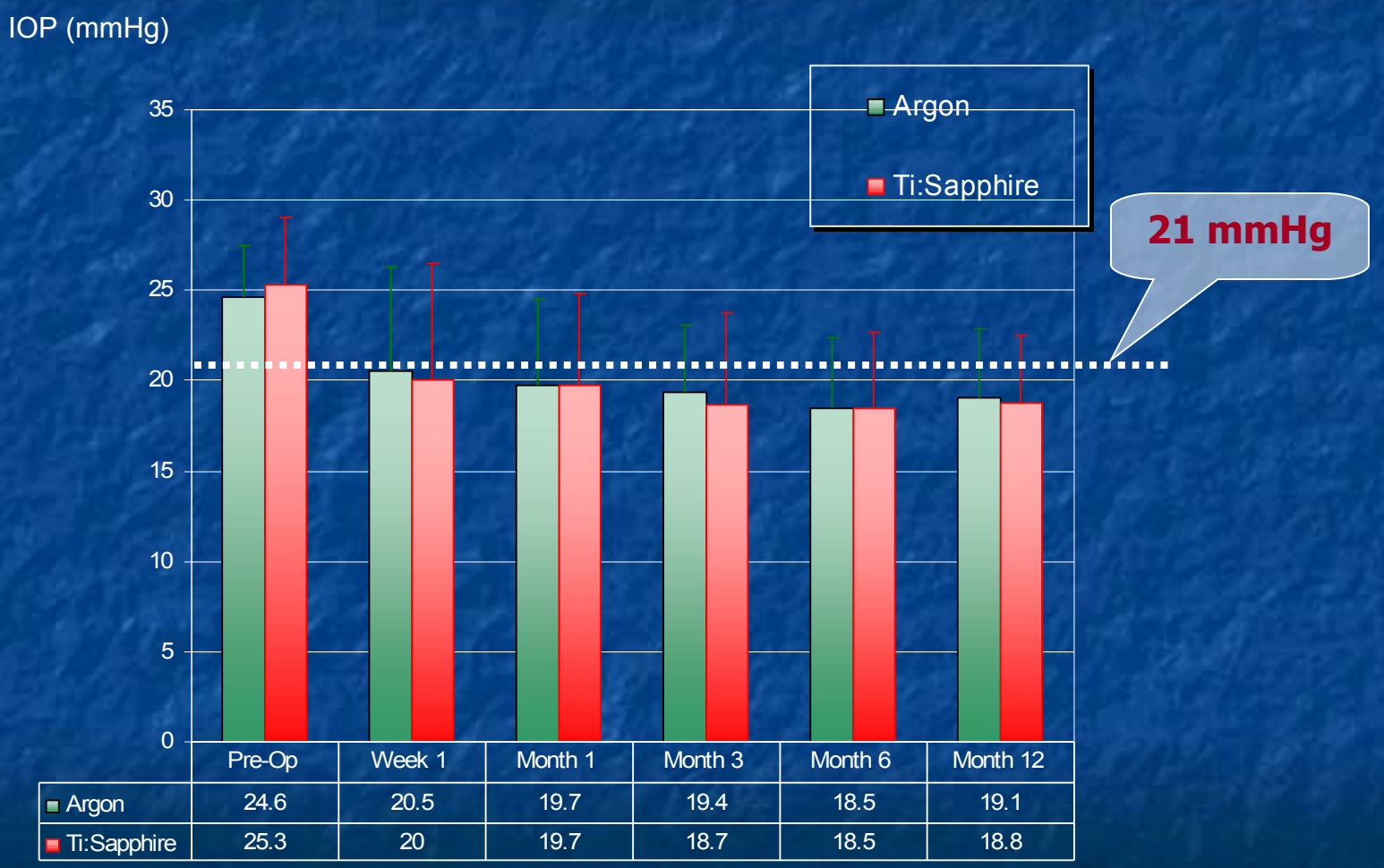
Key Differences with Ti:Sapphire

- Near Infrared 790 nm wavelength allows energy to penetrate deeper than SLT, which should deliver lower pressures longer
- 200 micron spot size delivers laser energy where it is needed, on the trabecular meshwork, not to surrounding tissue
- Unlike Argon, there is no permanent thermal damage or scarring to the trabecular meshwork, which allows repeat treatment

The ALT vs. TLT Clinical Trial

- Diagnosis of Primary Open Angle Glaucoma
- Baseline IOP $\geq$ 22mmHg
- Failed on maximally tolerated medical therapy and or prior trabeculoplasty
- Success Criteria
  - IOP < 21mmHg
  - 20% IOP reduction

Mean Intraocular Pressure
Ti:Sapphire (n=85) vs. Argon Laser Trabeculoplasty (n=89)

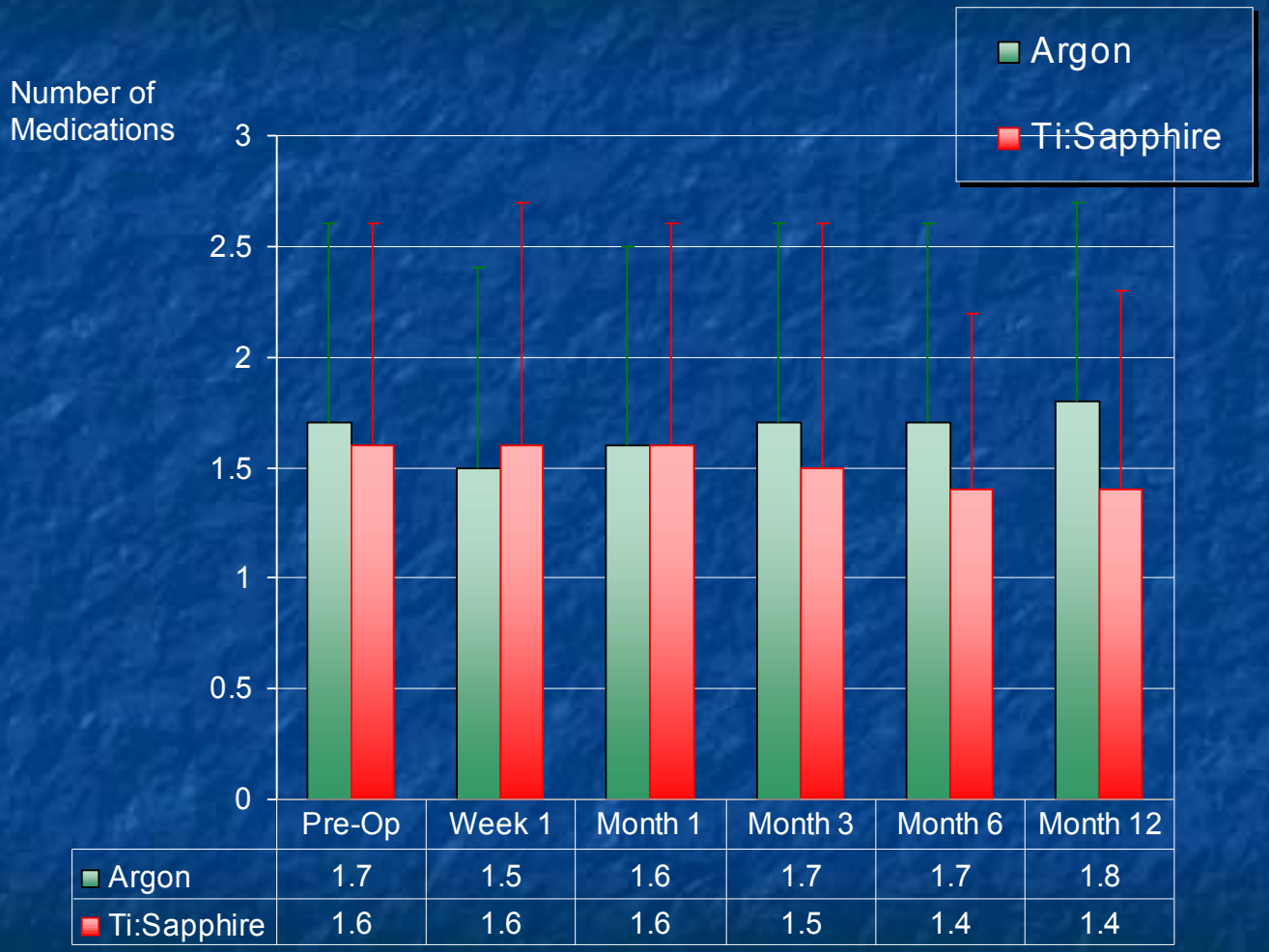


	Pre-Op	Week 1	Month 1	Month 3	Month 6	Month 12
Argon	24.6	20.5	19.7	19.4	18.5	19.1
Ti:Sapphire	25.3	20	19.7	18.7	18.5	18.8

Percentage IOP Reduction from Baseline

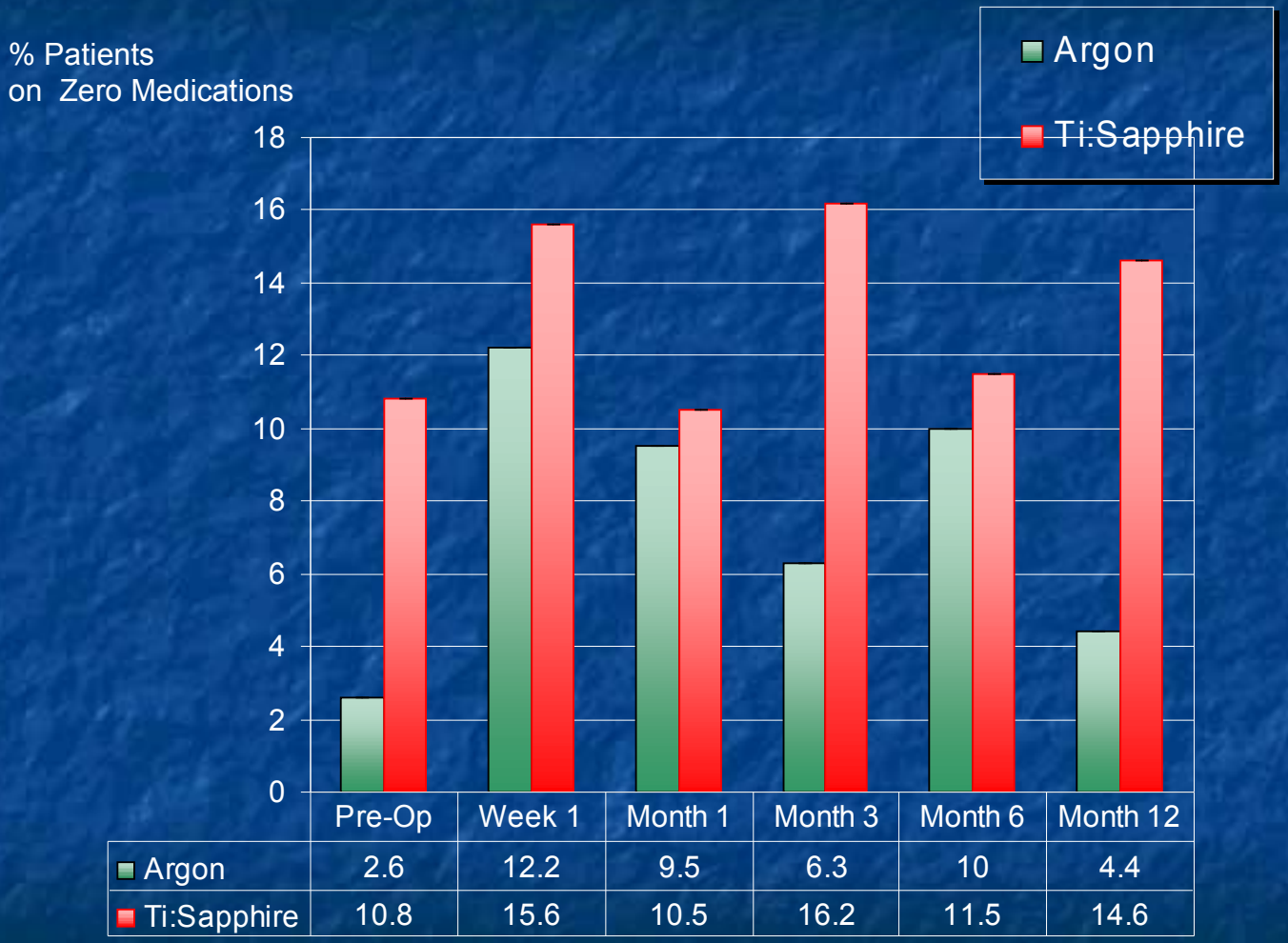
	Pre-Op	Week 1	Month 1	Month 3	Month 6	Month 12
Argon	0	16.6	20.1	20.7	23.9	20.2
Ti:Sapphire	0	20.8	21.8	26.2	26.9	26.8

Mean Number of Glaucoma Medications



	Pre-Op	Week 1	Month 1	Month 3	Month 6	Month 12
Argon	1.7	1.5	1.6	1.7	1.7	1.8
Ti:Sapphire	1.6	1.6	1.6	1.5	1.4	1.4

Percentage of Patients on Zero Glaucoma Medications

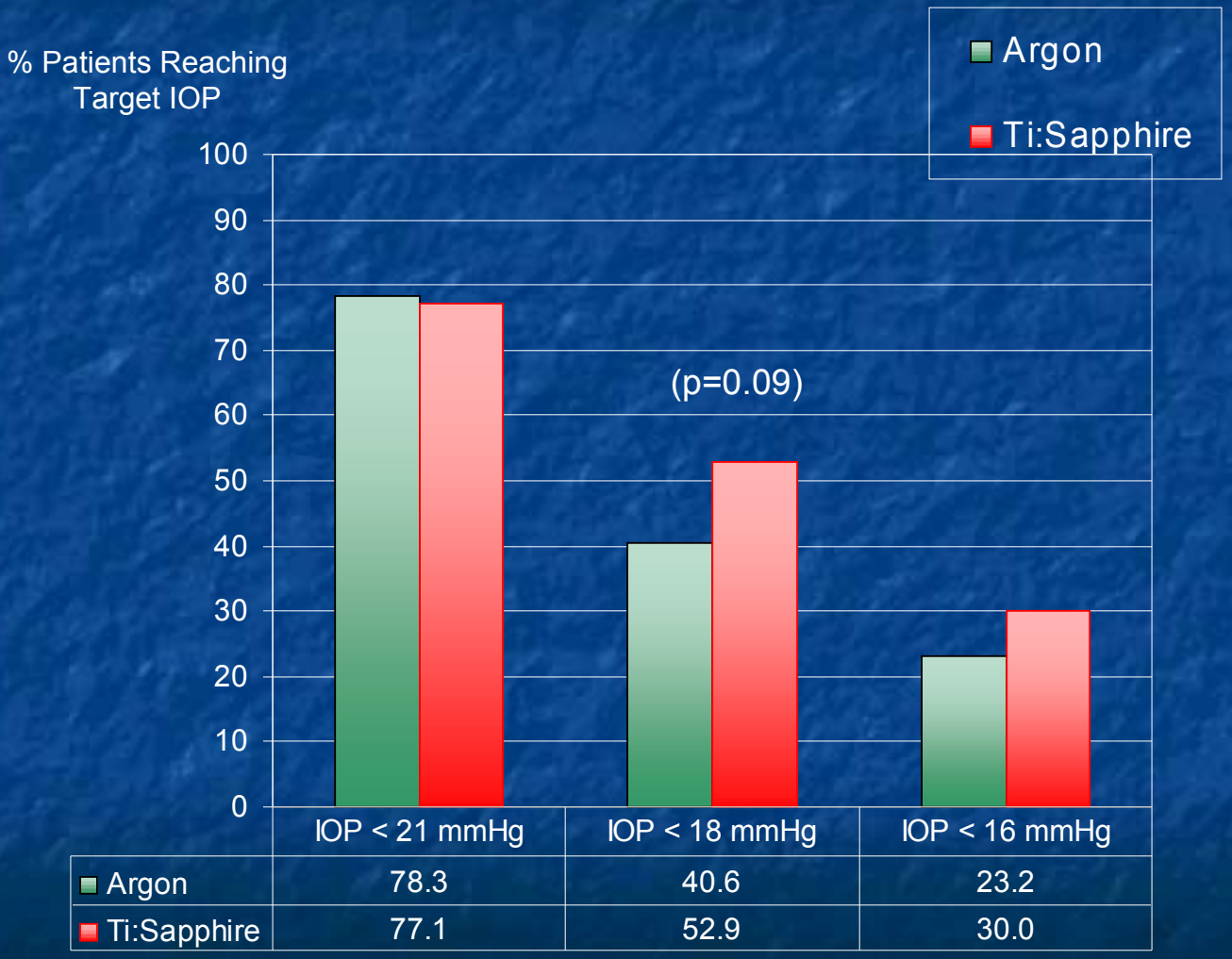


	Pre-Op	Week 1	Month 1	Month 3	Month 6	Month 12
Argon	2.6	12.2	9.5	6.3	10	4.4
Ti:Sapphire	10.8	15.6	10.5	16.2	11.5	14.6

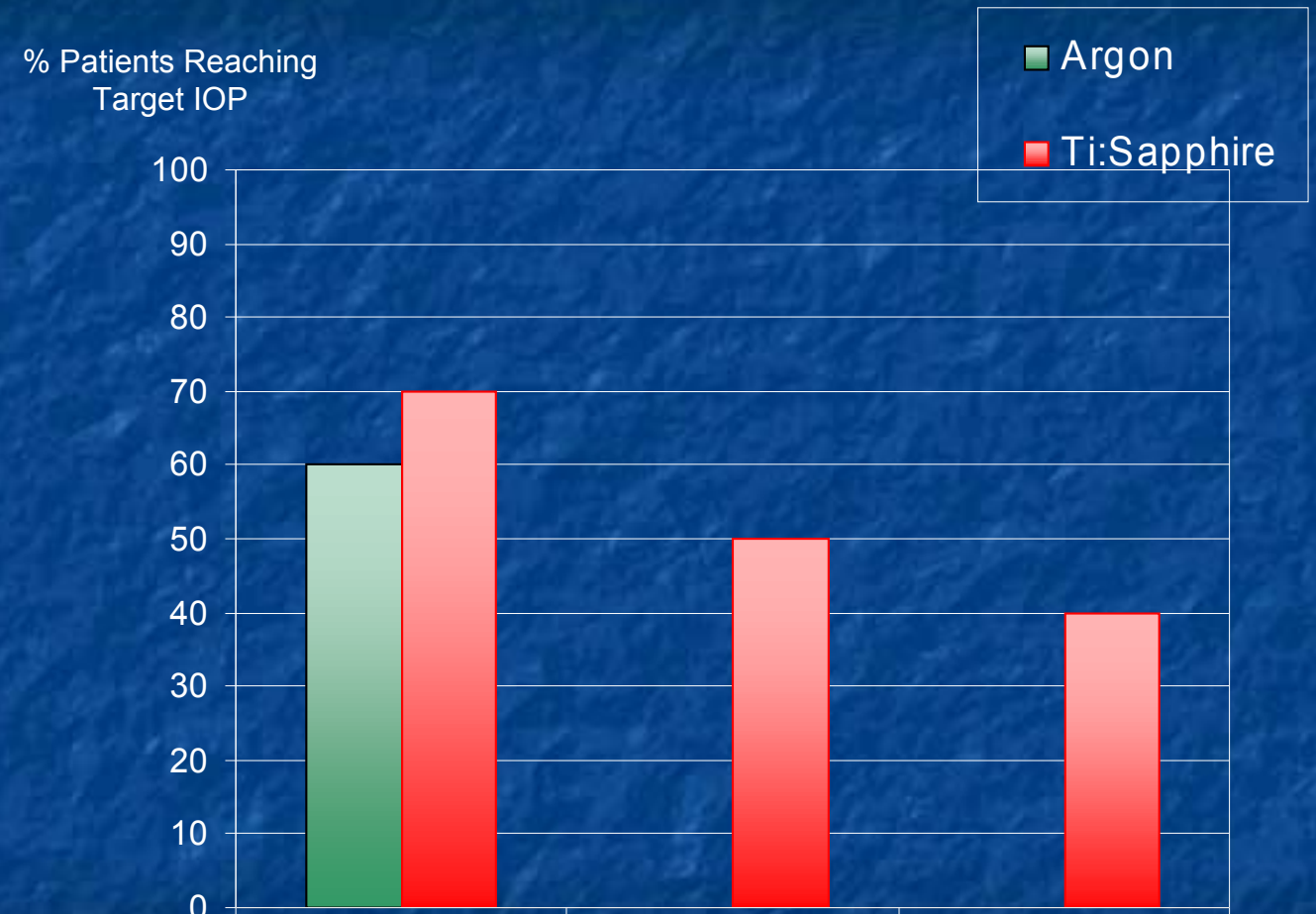
Percentage of Eyes with No Complications Reported

	Pre-Op	Week 1	Month 1	Month 3	Month 6	Month 12
Argon	0	90.5	93.2	92.1	95	97.8
Ti:Sapphire	0	77.9	92.1	94.1	98.4	95.1

% Patients Reaching Target IOP at 12 Months



% Patients with Prior Failed Laser Trabeculoplasty Reaching Target IOP at 12 Months



	IOP < 21 mmHg	IOP < 18 mmHg	IOP < 16 mmHg
Argon	60	0	0
Ti:Sapphire	70	50	40.0

Conclusions

- IOP reduced to clinically significant levels ≤ 21mmHg with both lasers
- TLT delivered a higher percentage of patients at lower target IOPs: ≤ 18mmHg and ≤ 16mmHg
- In patients with failed prior laser trabeculoplasty: 50% of TLT patients met target IOP ≤ 18mmHg at 12 months. No patients treated with ALT achieved this success.
- Similar mean glaucoma medications; but higher number of TLT patients required Zero Meds
- Complications were minor, transient and comparable between the two groups
- Less thermal damage with TLT should allow for repeat treatment as an advantage over ALT

Final Result

- FDA Cleared the SOLX 790 in September 2008