

The Results from a Multi-Center, Randomized Clinical Trial Comparing Argon Laser (ALT) and Titanium:Sapphire Laser Trabeculoplasty (TLT)

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Purpose

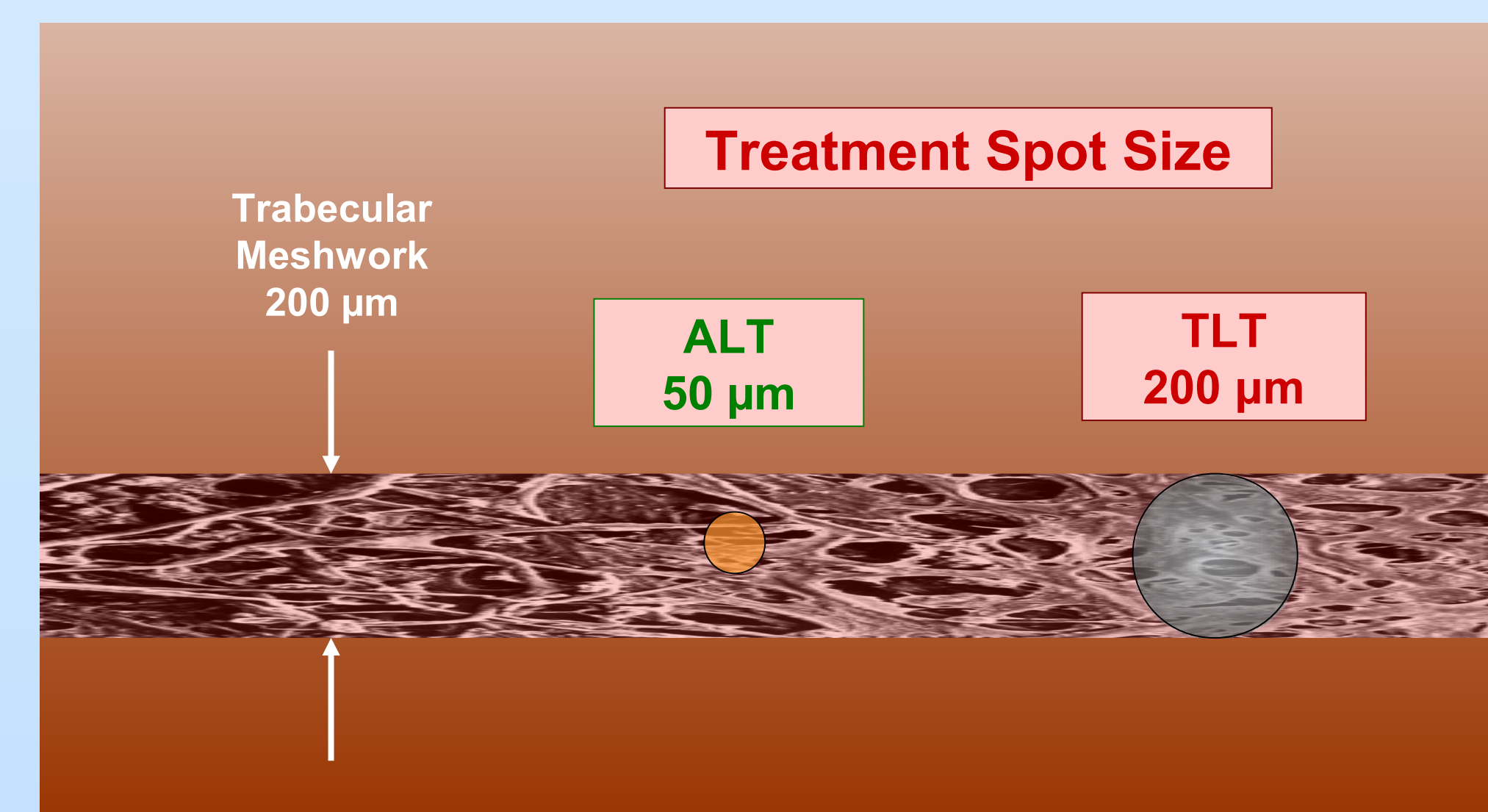
To compare the clinical findings following laser trabeculoplasty using the argon laser (ALT) or the Titanium:Sapphire laser (TLT) in eyes with primary open angle glaucoma (POAG).

Methods

182 eyes of 182 patients (91 ALT; 91 TLT) \geq 18 years of age, diagnosed with POAG, and having baseline intraocular pressure (IOP) greater than or equal to 22 mmHg while having failed maximally tolerated glaucoma medication therapy or at least one prior failed laser trabeculoplasty (PFLT) procedure were included in the study. All clinical sites had received prior IRB or Ethical Committee approvals, and all patients provided signed, informed consent. Patient demographic breakdown and baseline medication use appears below.

	ALT	TLT
N	91	91
Age (years) (p=0.90)	67.8 \pm 12.9	67.5 \pm 11.0
Gender: Female Male (p=0.80)	63.7 % 36.3 %	62.6 % 37.4 %
Eye: OD OS	53.8 % 46.2 %	46.2 % 53.8 %
Baseline Number of Medications (p=0.44)	1.7 \pm 0.9 Range 0 - 3	1.6 \pm 1.0 Range 0 - 4

ALT procedures were performed using a continuous wave argon laser, (488/514 nm 100mW, 100 msec, 50 micron diameter spot). TLT procedures were performed using a flashlamp-excited Titanium:Sapphire (790 nm, 30 to 60 mJ/pulse, 7 μ sec) with a 200 micron diameter spot to match the approximate width of the trabecular meshwork band.



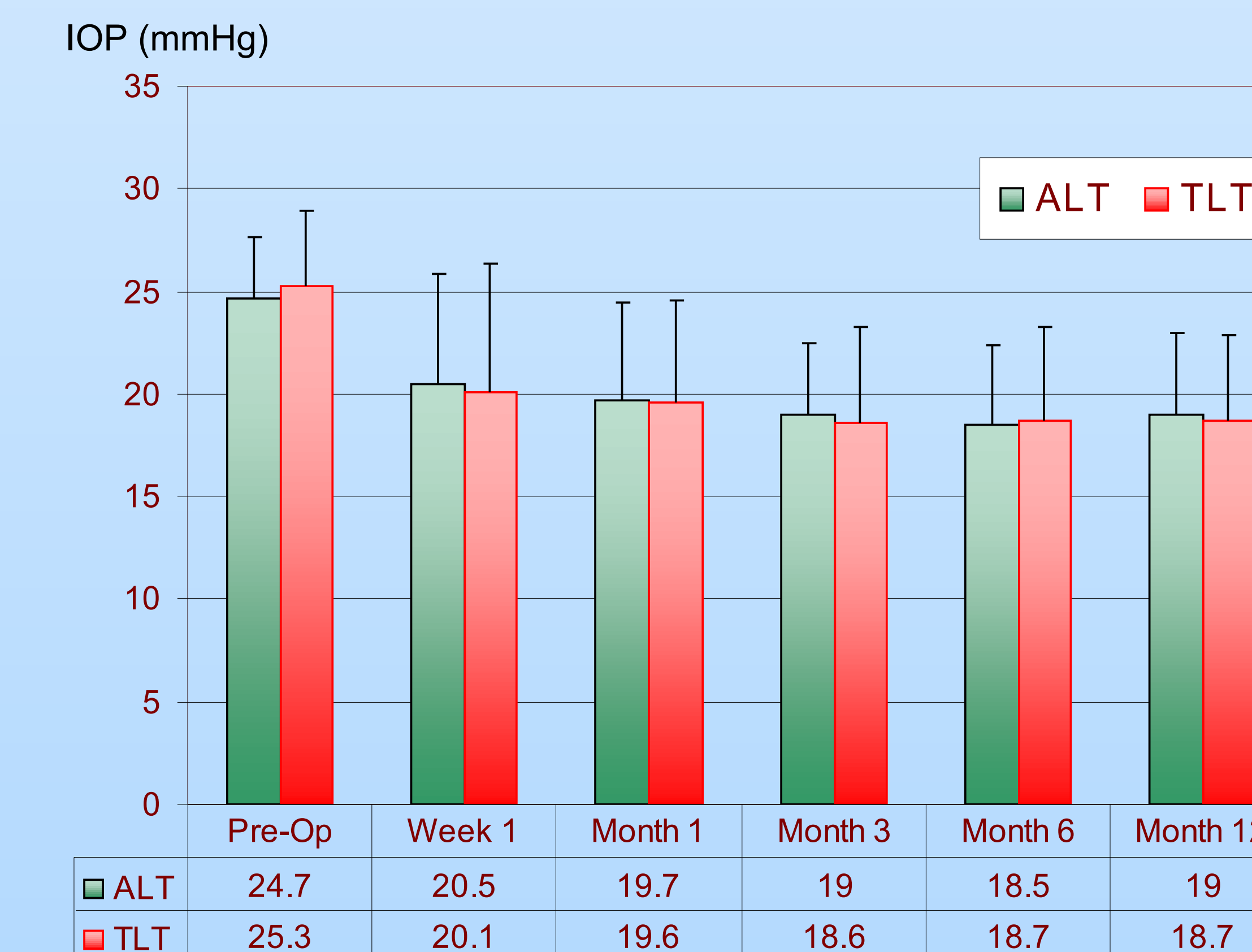
Treatment with both lasers consisted of 50 laser exposures placed across 180 degrees of the trabecular meshwork, delivered gonioscopically at a slit lamp.

Pulse energy with TLT was determined uniquely for each patient as the minimum energy that produced the desired clinical endpoint, defined as the appearance of a small vapor bubble, or the visible dispersion of pigmented debris from the trabecular meshwork without disruption of the meshwork architecture.

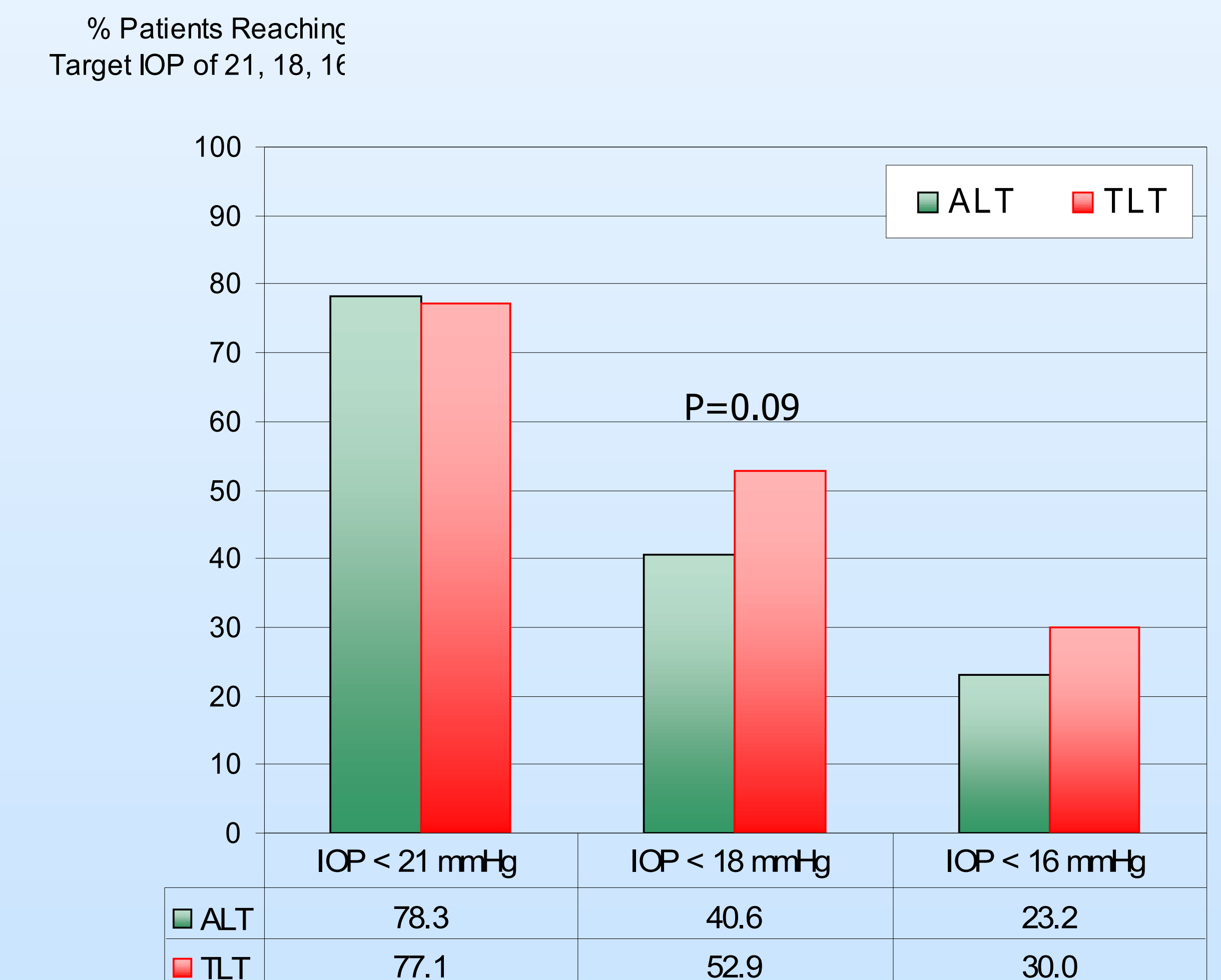
Patients in both groups returned at follow-up visits of Week 1, Week 4, Week 12, Week 26 and Week 52 following treatment.

Results

Both ALT and TLT achieved a clinically beneficial IOP lowering effect, with 78% of ALT patients and 77.1% of TLT patients having IOP <21mmHg at 1 year. More patients reached lower target IOPs with TLT with 52.9% of patients below 18mmHg vs. 40.6% with ALT (p=0.09); and 30.0% of TLT patients <16mmHg vs. 23% with ALT. The mean number of glaucoma medications was similar for both groups at baseline (1.6 TLT; 1.7 ALT) and changed little throughout the study.



At 1 year 92.8% of ALT patients and 95.7% of TLT patients were reported as complication free. Most commonly reported were similar with both groups: mild inflammation of the AC (25% of eyes); mild blurred vision (3%); and mild discomfort or pain (5%) which typically resolved by 1 week. IOP elevation >10 mmHg was reported in about 2% of eyes.



Conclusions

This study demonstrated that both TLT and ALT can provide patients with clinically beneficial IOP out to 1 year. TLT was able to deliver lower target IOP in a higher percentage of patients overall, and also in a sub-population of patients with prior failed laser trabeculoplasty (PFLT) where at 1 year 50% of PFLT patients treated with TLT had IOP <18 mmHg and 40% <16 mmHg; 0% of PFLT patients treated with ALT had IOP <18 mmHg at 1 year.