Outcomes of Patterned Laser Trabeculoplasty Versus Selective Laser Trabeculoplasty in Open-Angle Glaucoma

Miho Nozaki, MD, PhD, Munenori Yoshida, MD, PhD
And Yuichiro Ogura, MD. PhD
Department of Ophthalmology and Visual Science,
Nagoya City University Graduate School of Medical Sciences,
Nagoya, Japan

*The authors have no financial interest in the subject matter of this e-poster.

Patterned Laser Trabeculoplasty (PLT)

- Patterned Laser Trabeculoplasty (PLT), the computer-guided laser trabeculoplasty is a newly developed treatment modality using PASCAL® (Topcon Medical Laser Systems, Santa Clara, CA, USA).
- PLT with PASCAL streamline® (532 nm) has been reported as precise and minimally traumatic treatment, and exhibiting a 24% reduction in intraocular pressure (IOP). [1)]
- Recently, not only green wavelength (532 nm) but also yellow wavelength (577 nm) became available with the pattern scan laser system.

1) Turati M, et al. Patterned laser trabeculoplasty. *Ophthalmic Surg Lasers Imaging 2010;41:538-45.*

Purpose

- The purpose of this study is to compare the efficacy of PLT with yellow wavelength (Fig 1) and selective laser trabeculoplasty (SLT).

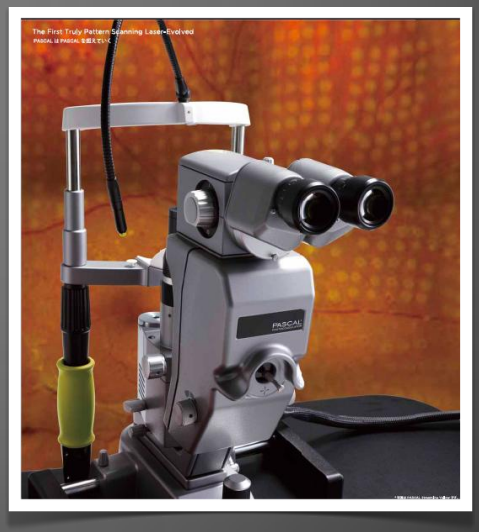


Fig 1. PASCAL Streamline 577

Methods

- We conducted a retrospective char review of 21 patients (24 eyes) with open-angle glaucoma (OAG) who received PLT or LST and were followed up for a maximum of 6 months.
- All patients were treated for 360 degrees.

【PLT】PASCAL Streamline 577 (Topcon)
Wavelength: 577 nm (yellow)
Number of spots: average 1277
Exposure energy: 1.5-2.3 mJ
(Average 1.7 mJ)

【SLT】Tango Ophthalmic Laser (Ellex)
Wavelength: 532 nm (green)
Number of spots : average 88
Exposure energy: 0.5-0.9 mJ
(Average 0.8 mJ)

* Both treatment was performed with Latina SLT gonio laser lens (Ocular)

Patients' characteristics

	PLT group (12 eyes)	SLT group (12 eyes)	P value
age	64 ± 15 (42-88)	64± 20 (18-88)	0.5[1]
sex	Male 6 Female 6	Male 9 Female 3	0.4[2]
Type of glaucoma	POAG* 7 Steroid-induced glaucoma 2 Pigmentary glaucoma 2 Pseudoexfoliation glaucoma 1	POAG* 9 Steroid-induced glaucoma 2 Pseudoexfoliation glaucoma 1	0.5[2]
IOP (mmHg)	21.8 ± 5.0	23.8± 6.7	0.2[1]
Medication score**	2.7± 0.8	3.1± 0.5	0.1[1]
Follow-up periods (months)	13±6 (6-23)	18±9 (6-28)	0.1[1]

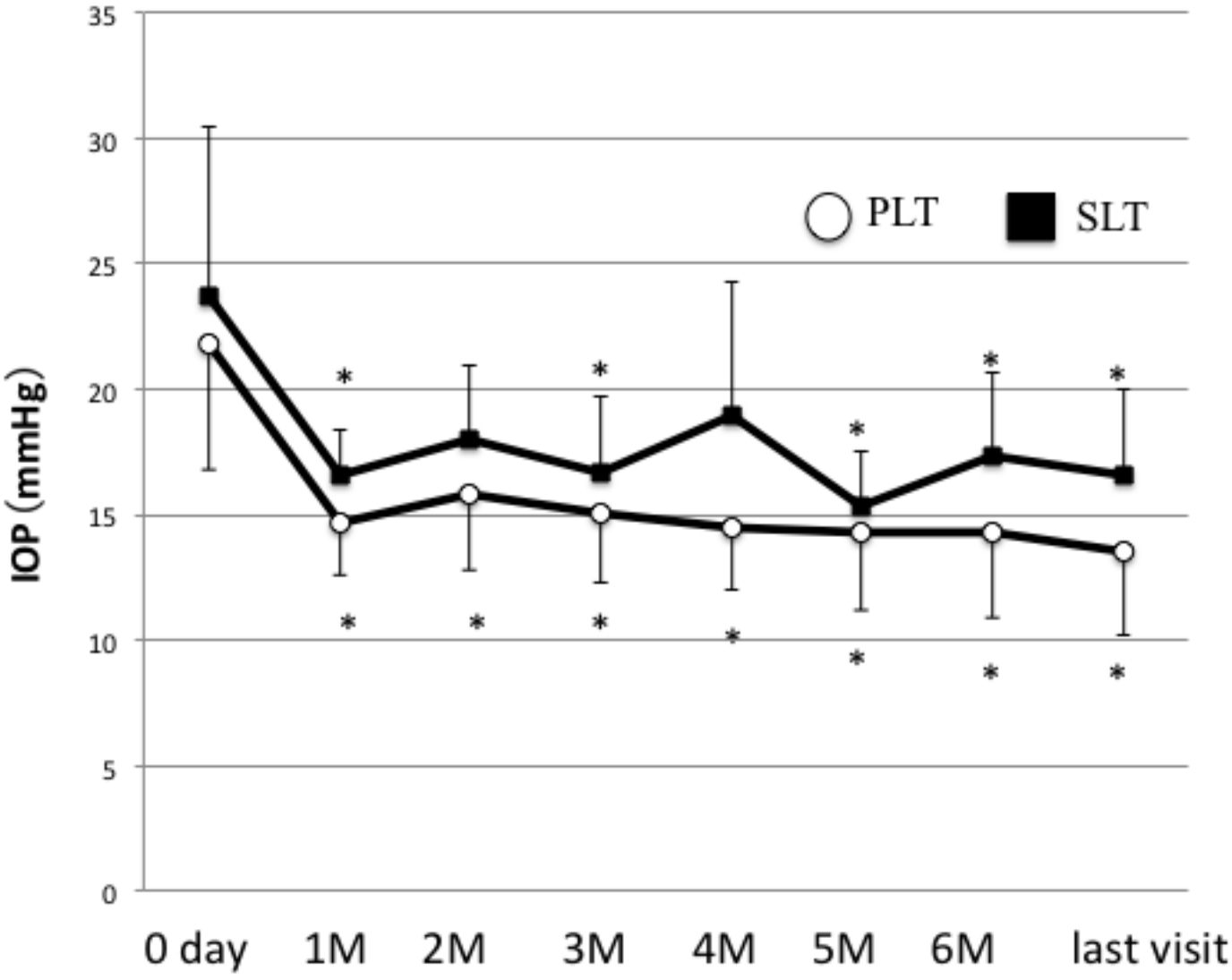
*POAG: primary open glaucoma

** Medication score was calculated by the number of topical anti-glaucoma drops, and fixed combination was count as a score of 2.

[1] Student's t-test

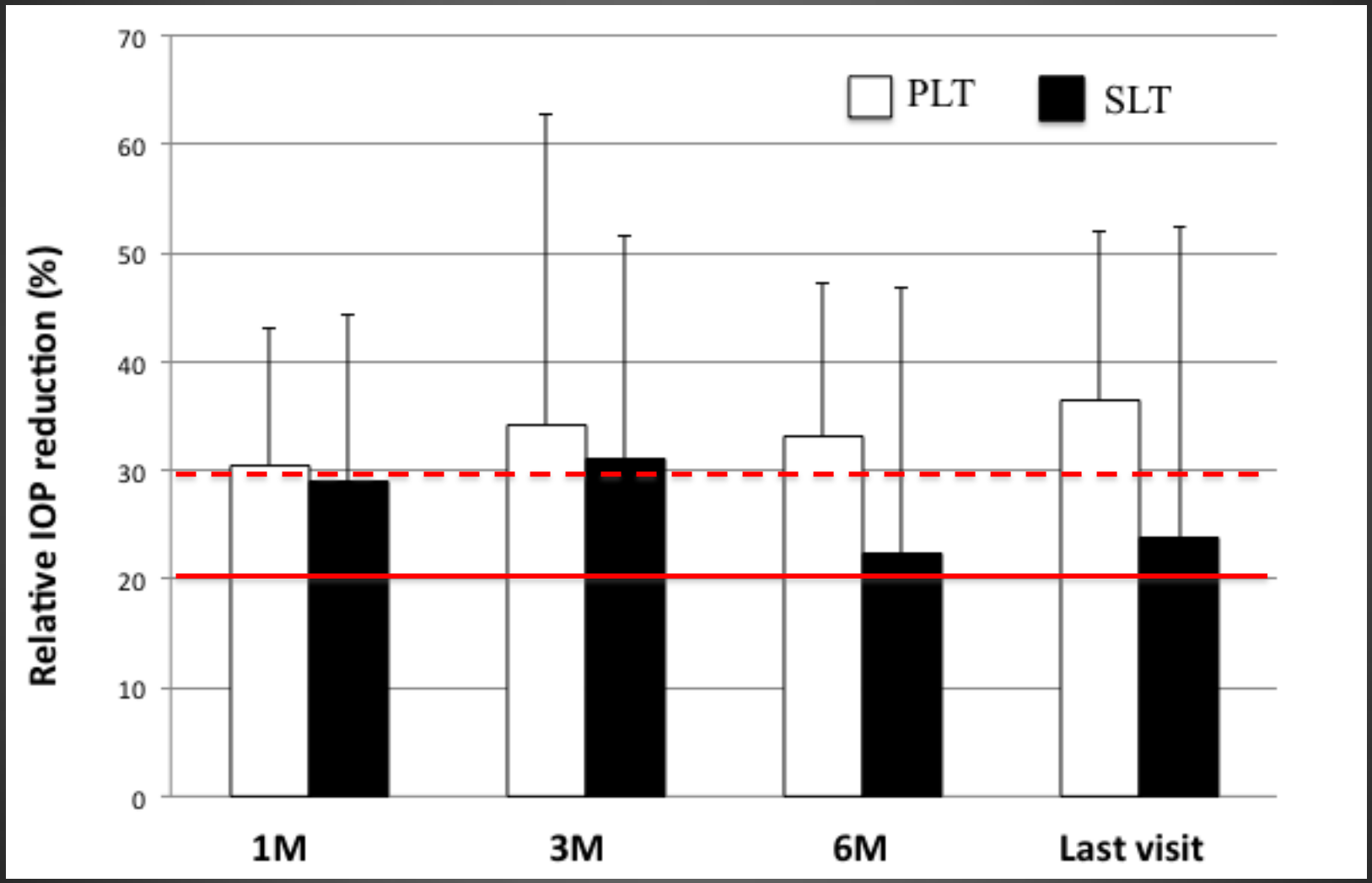
[2] Chi-square test

IOP follow-up during the first 6 months



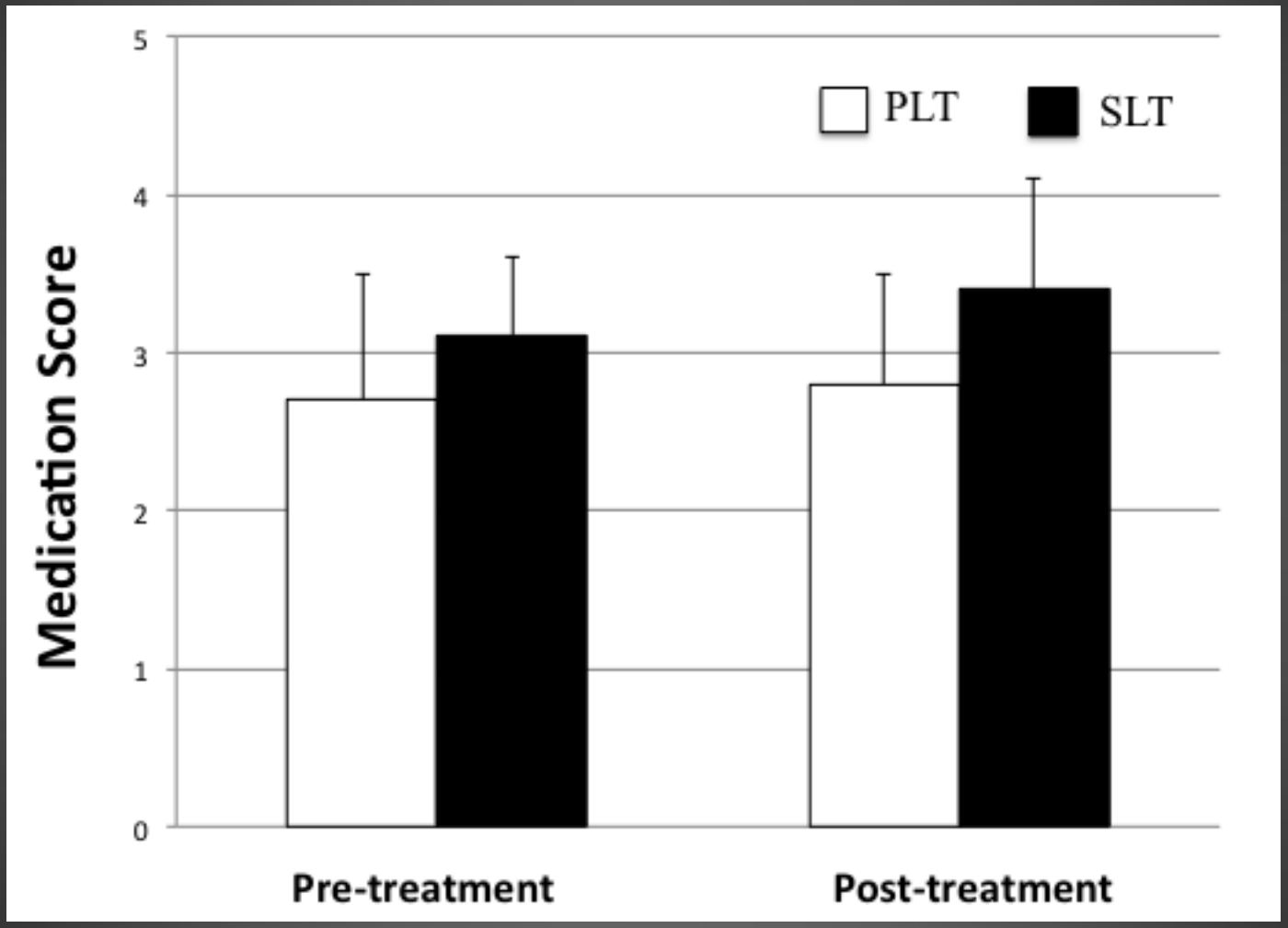
Student's t-test $p<0.05$

Relative IOP change overtime



Relative IOP reduction rate was 33% in PLT group and 21% in SLT group at 6 months and there was no significant differences.

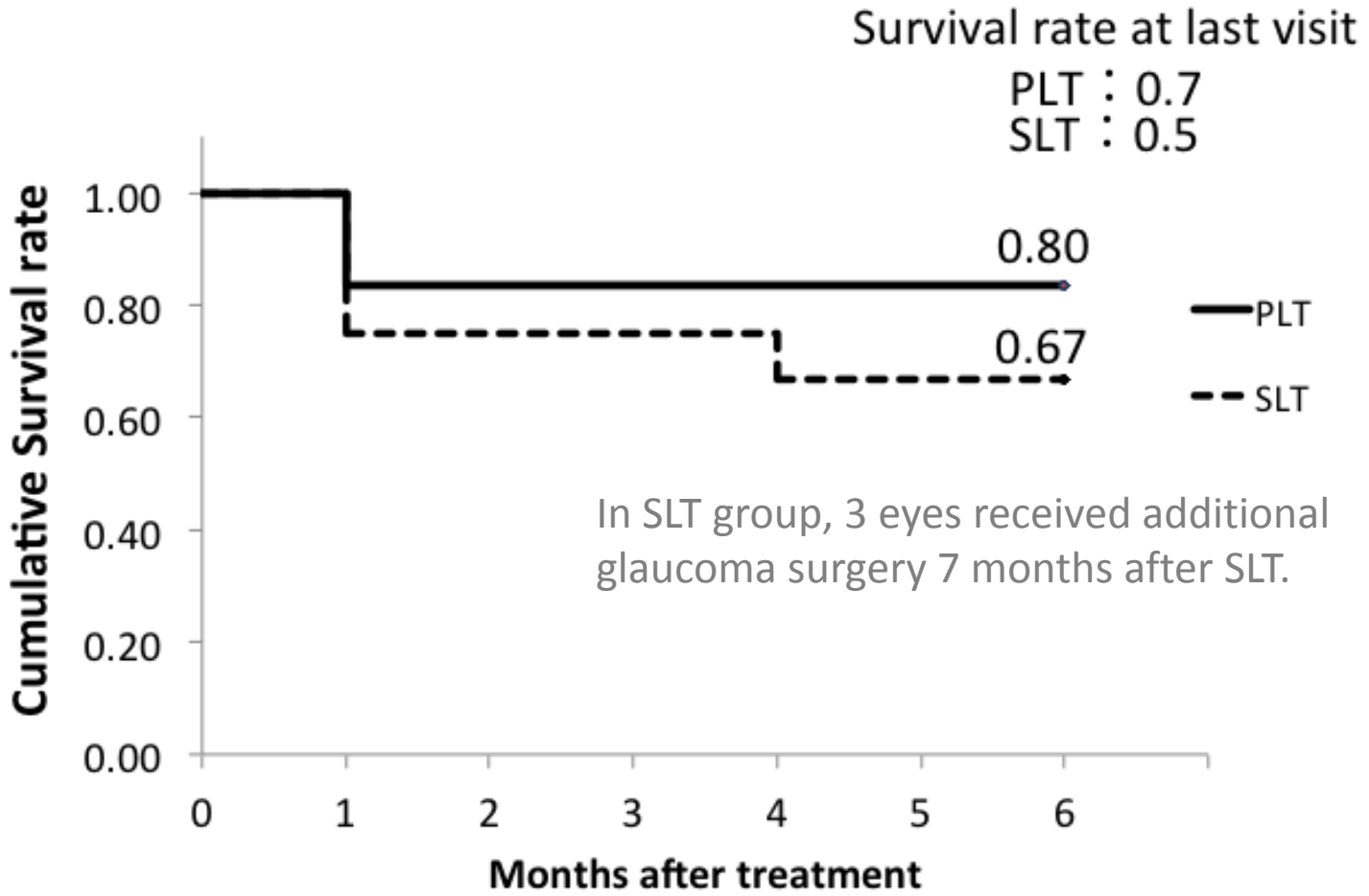
Medication scores



There was no significant differences in pre- and postoperative medication score in both group.

Kaplan-Meier Survival Curve

*Failure defined as IOP reduction rate < 20%



There was no significant difference in survival rate between PLT and SLT group.

Complications

	PLT	SLT
Transient IOP elevation (>5 mmHg)	1 (8 %)	1 (8 %)
peripheral anterior iris synechia	none	none
loss of corneal endothelial cells	none	none

Results

- In the PLT group, the mean IOP at baseline and 6 months was 21.8 (SD 5.0), 14.3 (3.3) mmHg, respectively.
- In the SLT group, the mean IOP at baseline and 6 months was 23.8 (6.7) and 17.3(3.4) mmHg, respectively.
- There was no significant difference in average reduction in IOP from the baseline between PLT and SLT (33 % and 21%, respectively).

Conclusions

- Patterned Laser Trabeculoplasty (PLT) is a computer-guided therapy that provides precise placement of the laser patterns along the trabecular meshwork, independent on visibility of the lesions.
- PLT with 577 nm was found to be as effective as SLT in lowering IOP over a 6-months period.
- A larger study with a control group will be required to verify the extent and the long-term stability of the pressure reduction.