

Repeatability of Selective Laser Trabeculoplasty

Selective laser trabeculoplasty (SLT) is a newer treatment modality for primary open angle glaucoma (POAG) that selectively targets the melanin cells of the trabecular meshwork to enhance outflow and reduce intraocular pressure (IOP). Non-invasive, non-thermal and gentle, SLT has been widely used as primary or adjunctive therapy^{1,2} in a number of countries for over seven years.

Numerous studies have proven SLT to be both efficacious and safe³. In total, SLT has been shown to reduce IOP in 75-85 percent of all eyes treated, a reduction that lasts anywhere between 12 months to five years^{4,5,6}, depending on the patient. Due to the non-thermal laser characteristic of SLT, it does not cause any collateral damage or burn to surrounding tissues and trabecular meshwork structure. This unique clinical effect allows SLT to be potentially repeatable – i.e., treatment can be done on previously treated areas of the meshwork.

Clinical Evidence

One of the studies performed on the subject by Lai, et al described 30 eyes in which SLT had initially attained IOP reduction of at least 3 mmHg, with loss of effect by 18 months. A second SLT resulted in IOP reduction of at least 3 mmHg in 26 of those eyes. (J Lai, abstract, ARVO 2005). A second study involved a heterogeneous group of eyes with open angle glaucoma whose IOP, on presentation, was at least 21 mmHg. In this group, a second or third SLT treatment had a greater likelihood of success compared with the initial treatment. (JS de Leon, abstract, ARVO 2005).

Larger clinical trials on the effect of repeated SLT are currently being completed. These trials are intended to prove that POAG eyes that have received previous SLT

treatment can be retreated once IOP begins to rise after several years. The data provided to date by these clinical studies appeared in conference presentations during 2006, with the results leaving little doubt as to the IOP-lowering efficacy of repeated SLT.

Repeat SLT as Effective as Initial SLT

A case in point is a study by Lawrence Jindra, MD (Columbia University, USA), in the American Society for Laser Medicine and Surgery. He reported 919 SLT-treated eyes with a mean follow-up of 228 days. After initial SLT treatment, the IOP decreased by 27 percent (26 → 19 mmHg) and the number of medications decreased by 48 percent (2.1 → 1.7). Of these eyes, 101 required repeat SLT (repeat rate of 11 percent). He followed up with the repeated eye for a mean of 260 days and found that the IOP decreased by 32 percent (23.7 → 16.2 mmHg) and the number of medications decreased by 49 percent (1.7 → 0.9). The results were significant, with $p < 0.01$, and the conclusion would appear to be that repeat SLT is as effective as the first treatment.

Another ongoing study was presented by Madhu Nagar, FRCS Ophth, MS Ophth (Wakefield, UK) at the AAO 2006 meeting. In her study, 27 eyes had enhancement of SLT (i.e., SLT in the angle areas that were not previously treated) and 15 eyes had repeat SLT. On average, SLT enhancement kept the IOP below the target pressure for 18.26 months, and repeat SLT for 17.47 months. The SLT enhancement success rate was 70.37 percent after one year, 55.55 percent after two, and 25.93 after three. The success rate of repeat SLT was 70.37 percent at one year and 53.33 percent after two.

At the same AAO meeting, even more striking results on the subject were reported by Dr. Thomas Bournias. He performed 360° SLT treatment in 52 eyes of 52 POAG patients previously treated with SLT where IOP reduction was maintained for at least one year. Dr. Bournias reported that while the average IOP reduction after the initial treatment was 4.1 mmHg, the average reduction in IOP of re-treated eyes was 3.6 mmHg ($P < .05$). His conclusion was that SLT can be successfully repeated in eyes with OAG.

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Worldwide

82 Gilbert Street
Adelaide, SA
5000 AUSTRALIA
+61 8 8104 5200

USA

7138 Shady Oak Road
Minneapolis, MN
55344 USA
1 800 824 7444

Japan

4-3-7 Miyahara 4F
Yodogawa-ku Osaka
532-0003 JAPAN
+81 6 6396 2250