

## Introduction

Selective Laser trabeculoplasty (SLT) produces significantly less disturbance to the trabecular meshwork, is safer than argon trabeculoplasty (ALT), and has been suggested as the future standard treatment of primary open-angle glaucoma<sup>1</sup>. We thus sought to assess the benefit the success rate of 360° SLT (known to be more efficient than SLT performed over only 180° of the trabecular meshwork<sup>2</sup>) in the treatment of advanced primary open-angle glaucoma (POAG) in our setting. To this end, we followed the intraocular pressure (IOP) of a series of patients treated with this technique over time under maximal medical treatment (MMT).

## Patients, Treatment and Follow-up

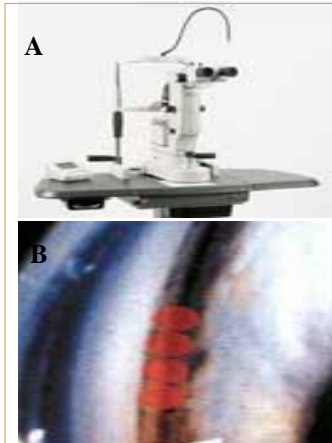
56 patients (70 eyes) with progressive advanced POAG under MMT underwent SLT (Ellex) in our institution between January 1<sup>st</sup> and September 30<sup>th</sup>, 2007 (**Figure 1A**).

A total of 100 adjacent but non overlapping spots were placed over 360 degrees of the trabecular meshwork using the 532 nm, Q-switched, Nd:Yag laser at energy levels ranging from 0.5-1.0 mJ per pulse (**Figure 1B**).

Successful procedures were defined as inducing a ≥20% IOP reduction at 3 and/or 6 months, with respect to baseline IOP.

IOP was assessed prior to, and 1 hour, 1,3 and 6 months after the procedure. TO assess the influence of measurement bias on the outcome, IOP was measured with two different tonometer (Goldmann tonometer (GAT) and Pascal digital contour tonometer (DCT)) in a subset of 44 patients.

Statistical comparisons of the mean IOP drops before and at 3 and 6 months after SLT were made by paired t-test. Two-Ways ANOVA with Tukey's post tests was used to compare the percentage of the IOP decrease measured by GAT and DCT over time<sup>3</sup>.



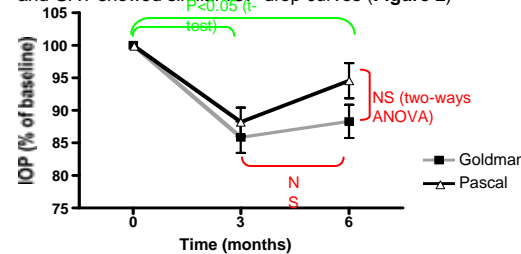
**Figure 1:** The Ellex® selective laser trabeculotome (A) and laser spot placement (B)

## Results and discussion

Consistent follow-up data were available for 64 eyes using the GAT. A successful SLT was obtained in 31 patients at 3 months (48.4%), 21 of which remained successful at 6 months. An additional 2 patients with early (3 Mo) failure recovered at 6 months (Total success rate at 6 months: 23/64, or 35.9 %).

Using absolute IOP values, the mean average pre-operative IOP was (18 ± 5) mmHg with GAT and the mean IOP reduction from baseline was 3.1 mmHg (15 ± 19 %) (p < 0.001) at 3 months, and 2.9 mmHg (13 ± 20%) (p < 0.001) at 6 months (p < 0.001).

Similarly, mean baseline IOP was 22.3 ± 3,5 mmHg with DCT and the IOP drops at 3 and 6 months were 2.8 mmHg (13 ± 15 %) (p < 0.001) and 1.8 mmHg (8 ± 18 %) (p < 0.001) respectively. Using the normalized data (ie % of baseline IOP), DCT and GAT showed similar IOP drop curves (**Figure 2**)



**Figure 2:** % IOP decrease from baseline

On an individual patient basis however, the success rate at 3 months was 14/44, or 31,8% using DCT, and 8/44 at 6 months (18%). 3 patients appeared to recover between 3 and 6 months.

In fact, a comparison between DCT and GAT at 3 months showed a discordance in almost 1/4 patients (22,5%) between the two techniques for the prediction of failure, with DCT providing a higher failure rate than GAT (65% vs 52,5%).

Adverse events were minimal, except for one eye that developed a transient corneal edema.

## Conclusions

Success rate of the SLT as an adjunctive therapy in a subset of advanced POAG was between 18% to 36 % at 6 months depending to the tonometer used. Thanks to this apparent efficacy and its known safety profile, SLT may thus be an adjunctive therapy for patients with advanced glaucoma for further pressure reduction prior to consider a challenging surgical option. Further research on the long term effectiveness of the SLT in different stages of POAG is however advocated.

1. Latina MA, Tumbocon JAJ. Selective lasertrabeculoplasty: a new treatment option for open angle glaucoma. Curr Opin Ophthalmol 2002;13:94-96.
2. Nagar M, Ogunyomade A, O'Brart DP, Howes F, Marshall J. A randomised, prospective study comparing selective laser trabeculoplasty with latanoprost for the control of intraocular pressure in ocular hypertension and open angle glaucoma. Br J Ophthalmol 2005; 89: 1413-1417.
3. SAS statview and GraphPad Prism softwares