Automated non-contact Direct Selective Laser Trabeculoplasty (DSLT) at the National Treatment Centre - Highland: Initial real world results on safety and efficacy

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Introduction

- Glaucoma is a leading cause of blindness and approximately 2% of those age > 40 will be affected, which may rise to ~10% in people aged over 75, OHT is present in 3-5% in those over 40
- NICE recommends the use of SLT as a first-line treatment for those newly diagnosed with OHT and glaucoma [1] (except PDS/G), based on the findings of 6 trials including the LiGHT trial [2]
- This was recognised to lead to an increase in demand and would require future planning by trusts to train staff to have the ability to deliver this service [3]
- We acquired the DSLT at the NTC-H in March 2023; its ease of use and efficiency was seen as an advantage over traditional SLT
- In this study, we evaluated the efficacy and safety profile of the DSLT in our glaucoma service.

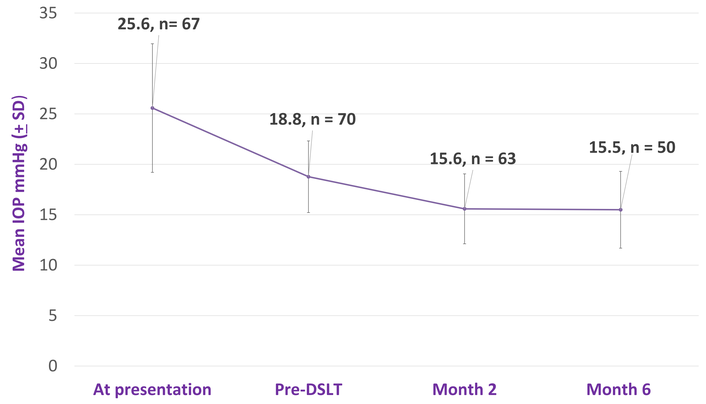
Methods

- A retrospective audit of DSLT use between March - November 2023
- 64 patients (88 eyes) of which **53** patients (**70** eyes) are included in the main analysis
- DSLT settings (Q-switched Nd:YAG laser): automated application of 120 sequential non-contact laser shots (1.6 mj/shot in 16 eyes, 1.8 mJ/shot in all others)
- Area Treated: 68 eyes (360 deg), 2 eyes (180 deg). Mean energy delivered: 235.64 ± 35mJ
- Post procedure: Apraclonidine (Iopidine) 1% drops stat, IOP check 30 mins, Ketorolac (Acular) 0.5% drops given QDS for 5 days
- IOPs were assessed before and at 30 minutes, 2 months, and 6 months

Results

Patient demographics	
Age (mean ± SD, years)	74.3 ± 9.9
Male (%)	49
POAG (%)	62.9
OHT (%)	8.6
PXF + PDS (%)	7.1
Baseline/presenting IOP (mean ± SD, mmHg)	25.6 ± 6.4
IOP pre-DSLT (mean + SD, mmHg)	18.8 ± 3.6
Medications 0-1 agent (%)	21.4
Medications 2-3 agents (%)	51.4
Medications > 4 agents (%)	27.1

Mean IOP following DSLT



Other outcomes

	Mean ± SD
IOP change from pre-DSLT to 6M (n = 50)	-3.1 ± 4.2 mmHg
IOP % change from pre-DSLT to 6M (n = 50)	-15.57 ± 19.9 %
Change in number of drops from pre-DSLT to last FU (n = 69)	-0.03 ± 0.51
Proportion of patients with post-DSLT IOP spike at 30 mins (n = 70)	10%

- **Additional management:** 3 patients were started on Diamox at 6M
- **Exclusions:** 1 patient was not compliant with medication, 2 patients had repeated DSLT within the 6 months, 3 were lost to FU, and 6 patients had a trabeculectomy within 6 months of DSLT
- **Adverse events:** All IOP spikes were short-lived and resolved with 3 days of oral Diamox, we had no other adverse events. There was no loss of vision of >2 Snellen lines of visual acuity. Few patients had subconjunctival haemorrhages immediately post-DSLT with no sequelae.

Conclusions

- Our real-world results show that DSLT is a safe, well-tolerated and efficient procedure, producing comparable effects to traditional SLT
- Numbers were too small to perform subgroup analyses; 2 patients were treatment naïve and had mean IOP change of **-4.5 ± 2.1 mmHg** and % IOP change of **-21.9 ± 6.0 %**
- 5 patients had DSLT and drops started the same day and were excluded: mean IOP change at 6M was **-11.0 ± 9.0 mmHg** and % IOP change was **-36.7 ± -28.8 %**
- **Comparable results were found when we last audited our old SLT machine** in 2017: IOP >3 months after SLT was -3.9 ± 5.1 with a -12.1 ± 19.3 % change (n = 61), *(A.Khan, pers comm)*
- It is difficult to make direct comparison to the LiGHT trial [2] but reported mean IOP in the SLT group at baseline was **24.5 ± 5.2 mmHg vs 16.6 ± 3.6** at 36M after SLT
- Other preliminary data shows similar findings: mean IOP change at 12M was **-3.97 ± 6.21** and mean % IOP change of **-12.6 ± 27.9 %** *(GLAUrious study, Belkin, pers comm)*
- ***In conclusion:*** **DSLT is non-inferior** to traditional contact SLT, and has additional benefits of ease of use, efficiency, and potential to train non-specialists to perform – this would allow an increase in capacity if we are to fulfil NICE/RCOphth recommendations
- More work and data needs to be collected to determine if DSLT is as effective as SLT as a first-line treatment for OHT and glaucoma.

References 1.NICE. №81. 01/2022. 2. Gazzard et al. The Lancet. 2019. 3. RCOphth response to NICE guidance on SLT to treat glaucoma and OHT. 04/2022

Disclosures: LYN receives honoraria and lecture fees from Belkin, Sight sciences and Santen