The Real World Management and Two Year Outcomes of Patients Undergoing Cyclodiode Laser Treatment

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Introduction

Cyclodiode laser (CL) is traditionally reserved for patients with poor visual potential and painful ocular symptoms. Increasingly it is seen as a primary treatment option in eyes with good visual potential in patients who are not candidates for surgery or who struggle with the burden of topical treatment. We wanted to examine the use of CL in patients in a single centre in the UK, the indication for its use and whether any major complications occurred as a result.

Method

A retrospective computer search was carried out over 2 years from December 2022 to December 2024 and the notes of all adult patients who had undergone CL were reviewed. Four main outcomes were reviewed:

1. Patients were undergoing cyclodiode for correct indications: no perception of light (NPL) and reporting pain; NPL and reporting no pain but needing intraocular pressure (IOP) control; poor visual potential (6/60 – PL) and reporting pain; poor visual potential and reporting no pain but needing IOP control; good visual potential (>6/60) requiring IOP control without pain.
2. For patients with good visual potential - whether low power settings were being employed for their treatment. As per the UK National Cyclodiode Laser Survey (2011) we consider this to be 1500mv and 2000ms
3. Rate and type of complications (phthisis, inflammation or decreased vision/wipe out)
4. Mean IOP reduction in patients for each indication

References: Morgan WH, Yu DY. Surgical management of glaucoma: a review. Clin Exp Ophthalmol. 2012 May-Jun;40(4):388-99. Lin SC. Endoscopic and transscleral cyclophotocoagulation for the treatment of refractory glaucoma. J Glaucoma. 2008 Apr-May;17(3):238-47. Manna A, Foster P, Papadopoulos M, Nolan W. Cyclodiode laser in the treatment of acute angle closure. Eye (Lond). 2012 May;26(5):742-5. [PMC free article] [PubMed] Ansari E, Gandhewar J. Long-term efficacy and visual acuity following transscleral diode laser photocoagulation in cases of refractory and non-refractory glaucoma. Eye (Lond). 2007 Jul;21(7):936-40. [PubMedMa A, Yu SWY, Wong WW. Micropulse laser for the treatment of glaucoma: A literature review. Surv Ophthalmol. 2019 Jul-Aug;64(4):486-497. Aujla JS, Lee GA, Vincent SJ, Thomas R. Incidence of hypotony and sympathetic ophthalmia following trans-scleral cyclophotocoagulation for glaucoma and a report of risk factors. Clin Exp Ophthalmol. 2013 Nov;41(8):761-72. Agrawal, P., Dulku, S., Nolan, W. *et al.* The UK National Cyclodiode Laser Survey. *Eye* **25**, 168–173 (2011).

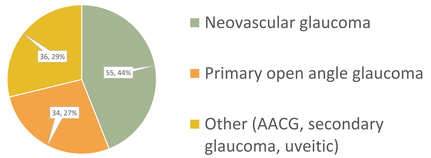
Results

125 adult patients underwent CL between December 2022 and December 2024:

Outcome	Results
Patients are undergoing cyclodiode for correct indications	**99%**
Those with cyclodiode laser and good visual potential are having low power settings employed	**93.5%**
No major complications following cyclodiode	**96%**

Complications: 5 patients with poor visual potential progressed to NPL following treatment and one patient with good visual potential progressed to hand movements. The main subtype of glaucoma requiring CL was neovascular glaucoma.

Glaucoma subtypes required cyclodiode laser



Indications for CL	No. of patients	Mean IOP Reduction
NPL, reporting pain	22	18
NPL, no pain, but needing IOP control	1	24
Poor visual potential , reporting pain	34	23
Poor visual potential, no pain, but needing IOP control	37	16
Good visual potential (>6/60) requiring IOP control without pain	31	8

Analysis

The largest cohort requiring cyclodiode laser was in eyes with poor visual potential (6/60-PL) who reported no pain, but needed IOP control in 29.6%. This was followed by 25.6% of cases who had poor visual potential and pain and 25% of cases who had NPL vision and pain. The largest mean IOP reduction was 27.5mmHg and this was in patients with poor visual potential, reporting pain. Painful NPL eyes had a mean reduction of 18.7mmHg. Those with good visual potential needing IOP control had a mean reduction of 8mmHg.

The largest reductions in IOP were seen in patients with poor visual potential which could be attributed to the more aggressive settings utilised. No patients who had good visual potential suffered from wipeout of vision.

Reasons for cyclodiode if a patient had poor visual potential without any pain was mainly done to reduce the burden of drops, avoid the use of long term acetazolamide and patient preference to avoid glaucoma surgery.

Conclusions

We conclude that cyclodiode laser need not be reserved for solely painful blind eyes and can be safely utilised in patients with poor and even good visual potential to control both pain and intraocular pressure.

For patients with good visual potential we recommend the use of more gentle settings, this is with the understanding that this comes with more modest reductions in IOP