Nd:YAG Laser Posterior Capsulotomy in Patients with Uveitis

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Purpose

- Nd:YAG laser posterior capsulotomy is a safe and effective treatment for posterior capsule opacification (PCO), although serious post-laser complications have been described
- Cataract surgery can be challenging in the uveitic eye with a high incidence of PCO (13-60%) and laser posterior capsulotomy (18-58%)
- This may depend on type of uveitis and IOL material
- Little is known about the safety profile of laser treatment in these eyes as they may be more prone to develop post-laser complications

Aim

- To study the complication rate of Nd:YAG laser posterior capsulotomy in patients with uveitis
- The study was registered as a clinical audit with the Clinical Effectiveness Department, Sandwell and West Birmingham Hospitals NHS Trust (#793)

Methods

- Retrospective case note analysis of pseudophakic uveitis patients having undergone Nd:YAG laser posterior capsulotomy between January 2016 and December 2018
- Data was collected from the hospital in-house online patient database (Clinical Data Archive), Lorenzo clinic management software, Medisoft ophthalmic electronic patient record and a dedicated procedures book in the Nd:YAG laser room. It was not possible to locate all clinical information for every patient
- The parameters and outcomes collected were:
  - Gender and age
  - Anatomical and clinical classification of the uveitis
  - Type of cataract surgery and intraocular lens (IOL) material
  - Duration between cataract surgery and laser
  - Pre-existing ocular pathology e.g. cystoid macular oedema (CMO), glaucoma
  - Total laser energy used
  - Pre- and post-laser visual acuity
  - Laser-induced flare of uveitis (2-step worsening of AC cells and/or vitreous haze)
  - Development or exacerbation of CMO
  - Raised IOP >25 mmHg or worsening of pre-existing glaucoma
  - IOL pitting/ cracking/ decentration/ subluxation/ dislocation
  - Retinal detachment
- Outcomes were documented at 3, 6, 9 and 12 months' post-laser

Results

- During the study period, 41 Nd:YAG laser posterior capsulotomies were undertaken on 39 eyes as two eyes required additional laser
- There were 38 uveitis patients (20M, 18F; age 27–89 years) with one patient having laser treatment to both eyes
- The anatomical classification of uveitis in 38 patients was anterior (17), intermediate (6), pan (11) and posterior (4).
- The clinical classification of uveitis is shown in **Table 1**
- There was pre-existing glaucoma in nine eyes (23%) and three eyes (8%) had chronic CMO
- All eyes had no anterior chamber cells for a minimum of 3 months prior to laser treatment
- Post-procedure all patients had topical corticosteroids started or dose increased for 4-6 weeks

Clinical classification	Number of patients
Idiopathic	23
Fuchs' heterochromic cyclitis	3
Sarcoidosis	3
Multiple sclerosis	2
Behçet's disease	1
HLA-B27	1
Tuberculosis	2
Syphilis	1
Herpes simplex virus	1
Toxoplasmosis	1

Table 1: Clinical classification of uveitis (38 patients)

- **Type of cataract surgery**
  - Phakoemulsification + IOL (36)
  - Phakoemulsification + IOL + vitrectomy (2)
  - Extracapsular cataract extraction + IOL (1)
- **IOL material**
  - Hydrophilic acrylic (32)
  - PMMA (2)
  - Unknown (5)
- **Interval between cataract surgery and laser**
  - Range 8-286 months in 36 eyes, mean 55 months
  - Not known in 3 eyes
- **Laser energy used**
  - Range 33-207 mJ, mean 79 mJ in 28 eyes
  - Not known in 11 eyes

Snellen line improvement at 3 months*	Number of eyes
5	10
4	1
3	3
2	7
1	5
Same	8
Worse	0
Not known	5

**unchanged at 6, 9, 12 months post-laser*

Table 2: Post-laser visual acuity (39 eyes)

Reason	Number of eyes
Chronic CMO	3
Macular atrophy	2
Longstanding optic neuropathy	1
Previous macula off retinal detachment	1
Mild amblyopia	1

Table 3: Reason for no improvement in vision (8 eyes)

Complication	3 months post-laser	6 months post-laser	9 months post-laser	12 months post-laser
Uveitis flare	0	0	0	0
Development or exacerbation of CMO	0	0	0	0
Raised IOP >25 mmHg or worsening of existing glaucoma	0	0	0	0
IOL pitting /cracking/ decentration/ cracking/ dislocation	0	0	0	0
Retinal detachment	0	0	0	0
Other	0	0	0	0

Table 4: Complications of laser treatment (41 eyes)

Conclusion

With a minimum of 12 months follow-up Nd:YAG laser posterior capsulotomy in eyes with quiescent uveitis is a safe procedure, resulting in a good improvement in vision unless there are pre-existing pathologies