

Original Article

Role of Yag Laser Iridotomy as Initial Treatment of Primary Angle Closure Glaucoma.

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ABSTRACT

Objective: To assess the efficacy of Nd: YAG laser iridotomy as initial treatment for primary angle closure glaucoma.

Methods: Eighty four eyes of 55 patients were treated with YAG laser and their results were assessed.

Results: Patent iridotomies were present in 79 eyes out of 84 (94%) eyes. Twenty seven out of 84 (32.14 %) eyes were treated as failures.

Conclusion: YAG laser iridotomy is effective in widening the drainage angle and reducing elevated intra ocular pressure. (Rawal Med J 2005;30:88-90).

Key Words: Iridotomy, laser, glaucoma

INTRODUCTION

Primary angle-closure glaucoma (PACG) accounts for approximately 6% of all patients with glaucoma and occurs in 0.6% or less of the general population; women are affected three times as often as men.¹⁻³ In the chronic forms of the disease, the diagnosis can be difficult because of the subtlety of signs and symptoms. In these patients the angle closure and subsequent rise in intraocular pressure may be sporadic

or occur over time; and can be the cause of significant visual loss.⁴ Identification and proper treatment of affected individuals may eliminate significant ocular damage.⁴

Theoretically laser peripheral iridotomy should prevent the onset of chronic angle closure glaucoma as well as acute angle closure glaucoma, although once chronic angle closure glaucoma is established, limited evidence suggest that laser peripheral iridotomy may be sufficient to control intraocular pressure.^{5,6} Aim of this study was to assess the effects of YAG laser iridotomy as initial treatment of primary angle closure glaucoma.

MATERIAL AND METHODS

The study was a prospective, descriptive and observational carried out at Holy Family Hospital Rawalpindi from July 2000 – November 2003. The Holy Family Hospital is a 450 bed teaching institution affiliated with Rawalpindi Medical College Rawalpindi. PACG patients aged 20-60 years were included in the study and 84 eyes of 55 subjects were treated with YAG laser iridotomy and their results were assessed. After first visit, patients were followed, one day after the procedure, one week after the procedure, two weeks, one month and six months after the procedure with special emphasis on the intra ocular pressure (IOP), visual acuity and status of the angle. The examination included visual acuity, slit lamp examination, Goldman applanation tonometry, gonioscopy and fundus examination, where it was possible.

Patients with diagnosis of primary angle closure glaucoma, intermittent angle closure glaucoma, first acute congestive attack of short duration, post congestive angle closure glaucoma, prophylactic treatment in the fellow eye of the patient of PACG were included in the study. All those patients in whom angle is not visible due to

corneal opacity or haze and those with, neovascular glaucoma, malignant glaucoma, inflammatory glaucoma, chronic angle closure glaucoma, chronic simple glaucoma, pigmentary glaucoma and chronic angle closure glaucoma with extensive peripheral anterior synechiae were excluded from the study.

An occludable angle was defined as one in which three quarters of the posterior pigmented trabecular meshwork was not visible on viewing with a Goldmann gonioscope in the primary position of gaze without indentation.

PACG was diagnosed in eyes with an occludable angle and glaucomatous optic neuropathy. Glaucomatous optic neuropathy was defined as a cup: disc ratio (CDR) of ≥ 0.7 or ≥ 0.2 CDR asymmetry or by ischemic sequelae of primary angle closure and iris stromal atrophy with sectoral distortion of radially oriented musculature.

RESULTS

Eighty four eyes of 55 subjects were treated with YAG laser iridotomy. Out of 55 patients 15 (27.27%) were males and 40 (72.72%) were females. PACG was more common in 5th decade of life. The distribution of diagnosis by eye at initial examination is set shown in Table 1.

Table 1. Initial diagnosis in eyes treated with YAG laser iridotomy

Diagnosis	No. of eyes	% age
PACG	32	38
PAC	36	42.8
PACS	12	14.3
Sec. Pupil block	4	4.8
Total	84	100

PACG= Primary Angle Closure with glaucomatous optic neuropathy.

PAC = Primary Angle Closure.

PACS= Primary Angle Closure suspect.

Iridotomy was considered unsuccessful in those cases where IOP was > 20 mm Hg after iridotomy without medication in the follow up period with patent iridotomy and further surgical intervention or topical medication was required to lower IOP. Patent iridotomies were present in 79 eyes out of 84 (94%) eyes. In remaining 5 cases, either the iridotomy was closed fully or partial closure due to blood clot or fibrinous membrane formation in follow up period. 27 out of 84 (32.14%) eyes treated were classified as failures at follow up; 15 from PACG, 9 from PAC, 1 from PACS, and 2 from secondary pupil block.

The failure rate in PACG eyes was 15/32 (46.87%), in PAC 9/36 (25%), in PACS 1/12 (8.33%), and in the secondary pupil blocks eyes it was 2/4 (50%). Extent of change in IOP after iridotomy is shown in table 2.

Table 2. Pre and Post laser IOP greater than 19 mm Hg

IOP > 19 mm Hg	PACG (No. of eyes)	PAC (No. of eyes)	PACS (No. of eyes)	Sec ACG (No. of eyes)
Before Laser	27/ 32	30/ 36	4 / 12	4 / 4
After Laser	12/ 32	8 / 36	0 / 12	2 / 4

It was observed that in those eyes which have PAS in 3 or 4 quadrants have little chance of IOP reduction with iridotomy alone. In most of these eyes further surgical intervention was required. Patients classified as failures, 17 had a combination of $CDR \geq 0.8$, three or four quadrants containing PAS and IOP >19 mm Hg at pre laser examination

DISCUSSION

Long term patency rates of YAG laser iridotomy were very good in these patients. Closure, or reduced effectiveness of the iridotomy, seemed to be related to a “small” initial hole. Our results show normalisation of IOP without medication in 57/84 of eyes with elevated pressure before iridotomy. None of the eyes with an IOP ≤ 19 mm Hg before treatment had elevated IOP at follow up. Other studies have shown rates of IOP normalisation ranging from 9% without medication and 51% with medication to 90% in a mixture of cases with and without maintenance medication.^{7,8}

$CDR \geq$ than 0.8, PAS involving three to four angle quadrants and IOP > 19 mm Hg at diagnosis were all significantly associated with failure of iridotomy. In eyes where two of these factors were present; approximately half were controlled with iridotomy. Eyes with all three factors present appear to be at higher risk of failure of iridotomy. Quigley found no association between any examination findings before treatment and outcome of argon laser iridotomy,⁹ but several studies demonstrate a relation between the extent of angle closure by PAS and failure of iridotomy to control IOP and progression of glaucoma.^{7,10,11} Iridotomy or iridectomy is less effective in eyes with

glaucomatous visual field loss and further surgical or medical treatment is often required to control IOP.^{12,13} In conclusion, our results suggest that in PACG eyes with advanced optic disc damage and three to four quadrants of PAS; trabeculectomy would be a better option than iridotomy. CDR is more useful than visual fields in predicting outcome of treatment.

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