



## INTRAOCULAR PRESSURE AND ANTERIOR CHAMBER DEPTH CHANGES AFTER LASER IRIDOTOMY IN PRIMARY ANGLE CLOSURE SUSPECTS

### Ophthalmology

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### ABSTRACT

Laser peripheral iridotomy (LPI) is widely accepted first-line interventions for acute and chronic PACG & treatment of choice for fellow eyes of acute angle closure attack. This hospital based observational study with 30 eyes of 24 patients with PACS (iridotrabecular contact in  $\geq 3$  quadrants) were evaluated for funduscopy and indentation gonioscopy, goldmann applanation tonometry and ACD recorded at baseline, after 2% pilocarpine, immediately and 1 month after Nd YAG LPI. Post LPI acetazolamide 250mg stat and antibiotic-steroid eye drops for 1 week were prescribed. Central ACD did not increase significantly ( $2.13 \pm 0.05$ mm to  $2.15 \pm 0.05$ mm). Immediately after laser iridotomy IOP decreased by 1-2mmHg in 17 eyes, 2-3mmHg increased in 4 eyes and no change in 9 eyes ( $18 \pm 0.5$ mmHg to  $17 \pm 0.5$ mmHg). There is statistically significant decrease in baseline IOP by 3-4mmHg at 1 month in all eyes. LPI is effective and safe out patient procedure in the management of PACS.

### KEYWORDS

Laser Peripheral Iridotomy, Intraocular Pressure, Anterior Chamber Depth, Primary Angle Closure Suspects

### INTRODUCTION:

By 2020: 80 million will have glaucoma. 11 million will be blind in both eyes. Half of this blindness is result of primary angle closure glaucoma (PACG)<sup>1</sup>. Estimated 28.2 million primary angle-closure suspects (PACS) in China alone and 10% worldwide are at high risk of having PACG.<sup>2</sup> Laser peripheral iridotomy (LPI) is widely accepted first-line interventions for acute and chronic PACG<sup>3-6</sup> & treatment of choice for fellow eyes of acute angle closure attack.<sup>7-8</sup> Laser peripheral iridotomy in primary angle-closure suspects resulted in significant IOP rise in 9.8% and 0.82% of cases at 1 hour and 2 weeks, respectively. Eyes in which more laser energy and a higher number of laser pulses were used and those with shallower central anterior chambers were at increased risk for IOP spikes at 1 hour after laser peripheral iridotomy.<sup>9</sup> With this background, we undertook present study with objective of controlled laser parameters and appropriate pre and post laser management would reduce IOP spikes and AC changes.

### MATERIALS AND METHODS:

It was a Hospital based observational study done for duration of 1 year. Sample size was 30 eyes of 24 patients with PACS (iridotrabecular contact in  $\geq 3$  quadrants). Patients evaluated at baseline, after 2% pilocarpine, immediately and 1 month post LPI for funduscopy, indentation gonioscopy, goldmann applanation tonometry, anterior chamber depth. Patients received acetazolamide 250mg stat and antibiotic-steroid eye drops for 1 week.

### RESULTS:

Mean patient age was  $60.23 \pm 10.43$  yrs (range: 50 to 70 yrs). Study included 15 female & 9 male patients. Laser parameters were: mean energy used was 1.5 mJ/pulse and average total pulse was 6 (range: 4 - 10). Site: peripheral superonasal or superotemporal iris. All iridotomies performed using an Abraham lens. The minimum size of an iridotomy was 200  $\mu$ m (0.2 mm) in diameter. P value <0.05 was considered statistically significant.

**Table 1 : ACD over time (mm)**

|            | ACD Baseline | After 2% pilocarpine | Immediate After laser | one month After laser |
|------------|--------------|----------------------|-----------------------|-----------------------|
| Mean (SD)  | 2.13(0.05)   | 2.13(0.03)           | 2.15(0.05)            | 2.15(0.12)            |
| Difference |              | 0.00                 | 0.02                  | 0.02                  |
| P-value    |              | 0.98                 | 0.78                  | 0.80                  |

**Notes:** statistics done using Paired t-test

**Abbreviations:** ACD, anterior chamber depth; SD, standard deviation.

**Table 2 : IOP over time (mmHg)**

|            | IOP Baseline | After 2% pilocarpine | Immediate After laser | one month After laser |
|------------|--------------|----------------------|-----------------------|-----------------------|
| Mean (SD)  | 18(0.5)      | 17.5(0.3)            | 17.8 (2.0)            | 14.8(0.5)             |
| Difference |              | 0.5                  | 0.2                   | 3.2                   |

|         |  |      |      |       |
|---------|--|------|------|-------|
| P-value |  | 0.75 | 0.91 | 0.038 |
|---------|--|------|------|-------|

**Notes:** statistics done using Paired t-test

**Abbreviations:** IOP, intraocular pressure; SD, standard deviation.

Immediately after laser iridotomy IOP decreased by 1-2mmHg in 17 eyes, 2-3mmHg increased in 4 eyes and no change in 9 eyes ( $18 \pm 0.5$ mmHg to  $17 \pm 0.5$ mmHg). There is statistically significant decrease in baseline IOP by 3-4mmHg at 1 month in all eyes. Bleeding during procedure was managed by digital pressure on the contact lens was applied to achieve hemostasis. Inflammation following procedure subsided by 1 week with antibiotic-steroid eye drops. There was no damage to crystalline lens.

### CONCLUSIONS:

LPI primarily affects the iris contour and has no effect on the lens position, and hence is unlikely to affect AC depth measurements.<sup>10</sup> Talajic et al<sup>11</sup> and majority of other studies concluded that central AC depth does not change after PI, similar to this study with no change in ACD immediately and at 1 month of follow-up. According to Yuzhen Jiang, Dolly S. Chang et al<sup>12</sup> mean IOP in treated eyes was slightly higher at 1 hour after LPI as compared with the baseline level and decreased at 2 weeks after treatment. In this study the mean IOP was slightly at lower level immediately and with significant decrease at 1 month follow-up. LPI is effective and safe out patient procedure in the management of PACS. Adequate IOP control seen with no change in ACD.

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