### Introduction

CO2 laser was used to perform CLASS procedure – a filtering surgery for the treatment of glaucoma. CLASS utilizing CO2 laser is a self regulatory procedure due to this laser's unique property of effectively ablating dry tissue while being highly absorbed by aqueous [1]. The sclera was ablated over the Schlemm’s canal and trabecular meshwork zone while preserving an intact thin trabecular Descemet’s membrane resulting in aqueous percolation [2]. Upon achieving adequate percolation, laser energy is absorbed by the percolating fluid, automatically preventing further tissue abrasion and inadvertent penetration into the anterior chamber.

### Subjects & Methods

#### Study design and settings:
A prospective, single-arm, non-randomized clinical trials were conducted at 5 sites: Mexico City – Mexico, Madanapalle – India, Moscow – Russia, Ancona – Italy, Valencia-Spain.

#### Subjects:
Primary open angle glaucoma (POAG) or pseudoexfoliative glaucoma (PEXG) patients, with baseline IOP > 18 mmHg on maximally tolerated medical treatment, who were candidates for devices.

#### Devices Used:
- IOPtiMate™ system (by IOPtima, Israel), and CO2 laser system (40C by Lumenis). The IOPtiMate™ is attached to the ophthalmic microscope and includes a scanner and micromanipulator.

#### Surgical procedure:
- Clear cornea (Figure 1)
- Laser ablation zone distal to the limbus (Figure 2)
- Laser ablation aimed at Schlemm’s canal (Figure 3)
- Suturing (Figure 4).

Intra-operative Mitomycin C was used in 50 procedures (80.6%).

#### Post-operative treatment and follow-up:
- Follow up schedule: 1 day post-op, 1 week, 4 weeks, 6 weeks, and 3, 6, and 12 months post surgery.

#### Outcome measures:
- Intraocular pressure (IOP) at 1 year after surgery.
- Number of anti-glaucoma medications per patient.
- Intra-operative perforations.
- Intra-operative and post-operative complications.

#### Results

- **Number of patients:** 62
  - 11 patients were excluded: 9 protocol deviations, 2 procedures converted to trabeculectomy during the primary surgery.
- **Mean ± SD:**
  - **Gender:** 38 males (61%)
  - **Race:**
    - Hispanics: 14 (22.6%)
    - Asians (Indians): 13 (21%)
    - Caucasians: 35 (56.4%)
  - **Glaucoma type:**
    - POAG - 51 (82%)
    - PEXG - 11 (18%)

#### Mean IOP ± SD at baseline and at 12 months endpoint and success rate

<table>
<thead>
<tr>
<th></th>
<th>Baseline IOP</th>
<th>Mean IOP at 1 year</th>
<th>Average IOP (%) reduction</th>
<th>Qualified success</th>
<th>Complete success</th>
<th>Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Random IOP</td>
<td>29.2 ± 5.6 mmHg</td>
<td>16.4 ± 3.8 mmHg</td>
<td>43.2% ± 18.3%</td>
<td>92.6%</td>
<td>77.1%</td>
<td>11.1%</td>
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<tr>
<td>5% IOP reduction</td>
<td>29.2 ± 5.6 mmHg</td>
<td>16.4 ± 3.8 mmHg</td>
<td>43.2% ± 18.3%</td>
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#### Discussion

CLASS procedure was developed to turn minimally invasive filtering surgery a practical option for all surgeons, by utilizing simple self regulated laser scleral tissue removal.

CLASS procedure was relatively safe and effective for treating primary open angle glaucoma and pseudoexfoliative glaucoma. Average IOP and anti-glaucoma medications use were significantly reduced during follow-up.

The rate and type of post-operative complications was similar to those published in the literature for NPIG [3].

CLASS procedure is self-regulated and easy to perform, minimizing the possibility of perforation and related complications.

### Conclusion

The results suggest that CLASS may become simple, safe and effective means of choice for the treatment of open-angle glaucoma.