The gap in the care for glaucoma patients
Noncompliance with drugs versus invasive surgery
What is ideal solution for chronic disease management?

- Effectively and significantly lowers eye pressure
- Gives physician control of therapy compliance
- Efficient
- Repeatable
- Leaves future options open
The gap in care for glaucoma patients – noncompliance with drugs versus invasive surgery

©2015 IRIDEX Corporation. All rights reserved. 019PPT 02/2015

CYCLO G6™ Glaucoma Laser System

©2015 IRIDEX Corporation. All rights reserved. 019PPT 02/2015
MicroPulse® P3 – Innovative Cyclophotocoagulation with MicroPulse Technology

• Excellent Safety Profile
• Efficient & Straightforward for physician and patient
• Can be performed in the Office & OR
• Predictability
Excellent Safety Profile

- Non-incisional
- Minimal to no inflammation post-op
- Patient downtime is significantly low
- Repeatable
Long-term results from early work at NUHS
73% success rate @ 18 months

- 33% IOP reduction at 18 mos
- Med reduction from mean of 2.1 to 1.3
- 1.3 sessions

<table>
<thead>
<tr>
<th>Chew Study</th>
<th>Baseline</th>
<th>1 day</th>
<th>1 wk</th>
<th>1 mo</th>
<th>3 mos</th>
<th>6 mos</th>
<th>12 mos</th>
<th>18 mos</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40.0</td>
<td>39.3</td>
<td>31.1</td>
<td>28.0</td>
<td>27.4</td>
<td>27.1</td>
<td>25.8</td>
<td>26.6</td>
</tr>
<tr>
<td># of Patients</td>
<td>38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Early US work with Ahmed, Kammer, Khatana, Noecker, Parekh, Radcliffe, Vold also shows IOP reduction even with lower pre-op IOP starting point.


- Ongoing patient case series
- 30% IOP reduction at 3 months
- Meds reduced from mean of 3.3 to 2.4
MicroPulse P3 AGS Abstract by Wills Eye Hospital
Dr. Marlene Moster

39.1% IOP reduction
Med reduction from mean of 2.54 to 1.77
Pilot case series of 19 consecutive patients with mean 50.1 day follow-up

MicroPulse vs normal TSCPC – 2014 controlled, randomized study showed similar IOP reduction as G-Probe with higher success rate and no hypotony


**Micropulse versus continuous wave trans-scleral diode cyclophotocoagulation in refractory glaucoma: a randomised exploratory study.**

Aquino MC¹, Barton K, Tan AM, Sng C, Li X, Loon SC, Chew PT.

<table>
<thead>
<tr>
<th></th>
<th>MicroPulse TSCPC</th>
<th>TSCPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-op IOP</td>
<td>36.5 mmHg</td>
<td>35.0 mmHg</td>
</tr>
<tr>
<td>N Total of 48</td>
<td>24 pts</td>
<td>24 pts</td>
</tr>
<tr>
<td>Average Followup</td>
<td>17.5 months</td>
<td>17.5 months</td>
</tr>
<tr>
<td>IOP reduction</td>
<td>45% reduction in IOP</td>
<td>45% reduction in IOP</td>
</tr>
<tr>
<td>Success Rate (≤21 mmHg at 12 months)</td>
<td><strong>75%</strong></td>
<td>29%</td>
</tr>
<tr>
<td>Prolonged Hypotony</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Mean number of treatments</td>
<td>1.6</td>
<td>1.3</td>
</tr>
</tbody>
</table>
### Efficacy – Dr. Robert Noecker’s Personal Experience @ 6 months follow-up

<table>
<thead>
<tr>
<th>Dr. Noecker – MicroPulse P3 Patient Case Series</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of patients</td>
<td>50</td>
</tr>
<tr>
<td>Mean pre-op IOP</td>
<td>25.5 mm Hg</td>
</tr>
<tr>
<td>Mean 6 mo. post-op IOP</td>
<td>9.8 mm Hg</td>
</tr>
<tr>
<td>IOP reduction</td>
<td>62%</td>
</tr>
</tbody>
</table>

- No IOPs lower than 8 mm Hg long-term
- 10 cases retreated to achieve target
Efficacy – Dr. Robert Noecker’s Personal Experience @ 12 months follow-up

### Dr. Noecker – MicroPulse P3 Patient Case Series

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>46</td>
</tr>
<tr>
<td>Mean pre-op IOP</td>
<td>26.2 mm Hg</td>
</tr>
<tr>
<td>Mean 12 mo. post-op IOP</td>
<td>15.4 mm Hg</td>
</tr>
<tr>
<td>Mean IOP reduction</td>
<td>41%</td>
</tr>
</tbody>
</table>

- No IOPs lower than 8 mm Hg long-term
- 12 cases retreated to achieve target

Data submitted to ARVO 2016
Patient Case 1

- 65 year old male, CRVO in right eye
- Treated by retina specialist with PRP and anti-VEGF
- VA 20/80 right eye, 20/20 left
- IOP 40 right eye on maximal meds including Diamox
- Treated with MicroPulse P3 in office (with block)
- IOP 10, no pain, no change in vision
- 2 post-op visits – sent back to referring MD
Patient Case 2

- 78 year old woman with PXG right eye
- IOP 38 on 3 meds - recent loss of IOP control
- VA 20/40 right eye with significant visual field loss; VA 20/25 left eye with mild loss
- MicroPulse P3 performed in OR with sedation
- Transient low IOP of 6-10 mm Hg for 1-2 weeks; treated with Durezol
- Final IOP at 12 weeks 15 mm Hg on no meds
Standard TSCPC is Destructive

Pre TSCPC

Post TSCPC

Images courtesy of A/Professor Paul Chew, NUHS

Characteristic evidence of cyclo-destruction

©2015 IRIDEX Corporation. All rights reserved. 019PPT 02/2015
MicroPulse® TSCPC is Not Visibly Destructive

Pre MicroPulse

Post MicroPulse

No detectable evidence of tissue damage

Images courtesy of A/Professor Paul Chew, NUHS
Evolving Treatment Paradigm: Where MicroPulse P3 Fits

Drugs
Trabeculoplasty
MIGS
Traditional Surgery

©2015 IRIDEX Corporation. All rights reserved. 019PPT 02/2015
MicroPulse® Technology
MicroPulse technology finely controls thermal elevation by “chopping” a continuous-wave (CW) beam into an envelope of repetitive short pulses.

**How MicoPulse® Works?**

- **Continous-Wave (CW) Mode**
- **MicroPulse Mode**
The gap in care for glaucoma patients—noncompliance with drugs versus invasive surgery

©2015 IRIDEX Corporation. All rights reserved. 019PPT 02/2015

Pre-treatment 1 Yr Post-treatment 1
Pre-treatment 1 Yr Post-treatment 1

Prospective, Masked, Randomized Clinical Trial
- 62 eyes (50 patients)
- Untreated, center-involving CSME
- Randomized to mETDRS or 810 nm MicroPulse

1 Year Results
- MicroPulse was as effective as mETDRS in
  - stabilizing VA
  - reducing macular edema
- With added benefits of
  - no tissue damage detectable at any time point postoperatively
  - significant improvement in retinal sensitivity

1. Vujosevic S, Bottega E, Casciano M, Pilotto E, Convento E, Midena E. Retina 2010
What we’ve learned the last 10 years - MicroPulse® Stimulates Biological Factors

**PEDF**
- plays a role in inhibiting neovascularization by its anti-angiogenic activity

**TSP1**
- one of the most potent anti-angiogenic factors

**SDF1**
- plays a key role in recruitment of bone marrow-derived reparative cells

**β-actin**
- protein that is involved in cell motility, structure and integrity

MicroPulse laser treatment, produces a stress response and induces beneficial intracellular biological factors that are primarily anti-angiogenic and restorative without tissue damage as seen in CW.

Mechanism
What is MicroPulse Doing in the Case of TSCPC?
(Early Clinical Work Theorizes it May Be Increasing Uveoscleral Outflow Through Enlarged Extracellular Space)

Double arrows indicates enlarged extracellular space leading to suprachoroidal area

Latex spheres identified in ora serrata region in the opened suprachoroidal space

Proposed Mode of Action
Clinical evidence of uveoscleral outflow in primate models

• Laser energy delivered pars plana on 11 primates (below figure)
  – Lower IOP at 6 months with tracer particle accumulation at the enlarged extracellular space of the stroma and the opened suprachoroidal space.
    • Liu MD et al, Ophthalmic Res 1994; 26:65-79

• Post-mortem studies of aqueous outflow due to pars plana transscleral photocoagulation
  - 51% increase in outflow as compared to controls. Results suggested both transneuroepithelial and transscleral outflow.
    • Schubert MD et al, Ophthalmic Surgery 1990; 21:835-839

Extracellular space was widened.
Same mechanism as prostaglandin.
Treatment Techniques
What are the Treatment Techniques?

MicroPulse® P3 Probe (MP3)

Placement
Side view of the MP3 positioned perpendicularly to the surface of the globe.

Application
The tip design of the MP3 support a sweeping motion across the superior and inferior hemispheres.

G-Probe™

Placement
Side view of the G-Probe positioned on the limbus and held parallel to the visual axis.

Application
Wedged tip design of G-Probe supports precise placement around the circumference of the limbus.
CYCLO G6™
Glaucoma Laser System