IRIDEX IQ 577™ Does What Other Lasers Can’t

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IRIDEX IQ 577

One Machine That Treats
More Patients
More Diseases
IRIDEX IQ 577

Safely treats the macula without the side effects of other lasers and drugs.
Can you laser the center of the fovea?

How I saved $20K a month on drugs!

How to avoid macular atrophy

Can I strengthen the RPE? Bruch’s?

How to do less injections
The Take Home Message

1) Treats what other lasers can’t: the fovea—so more diabetic, more vein occlusion patients can be treated.

2) It treats conditions that other lasers can’t. (pseudophakic CME, CSR)

3) It treats without the side effects of traditional laser.

4) It saves the doctor, patient, insurance money on chronic Anti-VEGF drug treatment.

5) It’s not a laser that does one thing—ie SLT. It does glaucoma and retina.

6) It can be a traditional laser for cutting stitches, treating tears, but it can do all the above too.
What is MicroPulse Technology?

- A technology that “chops” CW laser emission into spaced, repetitive micropulses to allow:
  - Finer control of photothermal effects
    - Lower energy per pulse
    - Tissue cooling between pulses (based on Duty Cycle)
  - Equivalent or superior clinical outcomes with the benefits of no tissue damage detectable at any time point post-operatively¹

Begs the question?

- So if you can’t see the effect..what are you doing?

- Can I do the same by lowering the power to almost nothing? No, still get micro-perimetry effects or watermarks. Effect still seen on pathology with CW laser.

- Are you doing nothing? NO! The disease and vision get better.

- Must work in some non-traditional way.

- Not all laser retina treatment is the same
How does MicroPulse Laser Therapy Work?

Visible Conventional CW (DRS/ETDRS)

Tissue-sparing MLT

Heated tissue that remains viable after CW or MicroPulse laser treatment, produces a stress response and induces beneficial intracellular biological factors that are primarily anti-angiogenic and restorative.

PEDF¹

TSP1²

SDF1³

β-Actin³

Modulation of the expression of intracellular biological factors

Perhaps promotes a more normally functioning RPE?
• Treats a variety of conditions well

• Diabetic Macular Edema

• Macular Edema from Vein Occlusion

• Central Serous Retinopathy

• Pseudophakic Cystoid Macular Edema

• *Edema from Wet AMD?—game changer!*
Diabetes Case Pre-Op

• 70 y/o WF w/ NIDDM with h/o previous focal for CSME. Control now worse with Hbg A1c of 8 to 9. (October 2013)

• Works as legal secretary and computer vision is worse and reading speed slowing. Still has 20/25 vision. Exam shows CSME.

• Doesn’t smoke, takes 20 mg of Lutein x 10 years.
MicroPulse Treatment is Different than Traditional CW Laser

• Treat with different spot pattern than traditional laser

• Treat confluently.

• Treat a big area. Larger than edematous area.

• Effect will be minimal until month 4.
Baseline

23 months post MicroPulse
Baseline

4 month post MicroPulse

23 months later with no Avastin
Diabetes Case

- In the 23 months since laser:
  - Vision improved to 20/20 early (4 months after laser)
  - Vision subjectively improved without side effects
  - HbgA1c still bad but OCT looks good!
  - Treated in the center of fovea- something that can’t be done with traditional laser.
Central Serous Case

- 70 y/o WF with remote hx of CSR has recurrence after Crystalens surgery with vision of 20/70
- Smoker on Lutein.
MicroPulse works for one time therapy but does it work for more chronic diseases?
A Common Clinical Scenario

• Treat and Extend works but then less well with time.
• Fall back to ever-shortening intervals.
• More complex anti-VEGF regimens.
• Considerations when Ocular Hypertensive or have a Stroke during therapy?
• We now have another weapon for a two-front war.
Chronic Pseudophakic CME (can’t treat with old lasers)

- 72 y/o WF non-smoker has chronic CME after complicated cataract surgery.
- Great physical condition, doesn’t smoke, takes lutein.
- CME recurs but she is dependent on steroids and Avastin for years. NSAIDs not that helpful.
- 20/70 vision
Transfoveal 577 nm MicroPulse

- Test spot at 100 microns / .1 sec / 80 mW CW
- Transfoveal Micropulse 200 microns / .2 sec / 240 mW 5% duty cycle.
- Stopped steroids, no supplemental Avastin.
- 20/25 vision now on no steroids for 5 months.
High Definition Images: HD 5 Line Raster

Scan Angle: 0°  Spacing: 0.25 mm  Length: 6 mm

Name: [Redacted]
ID: 16446  Exam Date: 9/22/2014
DOB: 1/11/1942  Exam Time: 9:02 AM
Gender: Female  Serial Number: 4000-7685
Doctor:  Signal Strength: 9/10

4 months after focal

Comments

Doctor's Signature

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Can we get away from repeat injections?

- Newer Pharma funded studies suggest that most don’t keep up with the recommended label protocols.

- NO SURPRISE THERE

- Do all patients need robo-injections forever?

- There are undesirable effects after multiple injections.
Reasons that patients drop injections

- Cost
- Frustration
- Tachyphylaxis with no alternatives agents on their insurance
- Side Effects—-ATROPHY!
Macular Atrophy

- Can be just as bad as wet AMD for visual function
- Can slow reading speed
- Can cause water spots in the vision
- Is just as bad no matter the cause, whether from GA, or atrophy secondary to chronic anti-VEGF drugs
Need to have options

- Don’t have to stop using Anti-VEGF drugs.
- Need to find a way to minimize drug use, cost, and side effects while maximizing vision.
- Micropulse is an option
Advantages of MicroPulse

- Works in patients unresponsive to VEGF.
- Works with patients with “good” vision.
- NO glaucoma, pregnancy, stroke concerns.
- Reduces visits.
- No fear and burden of repeated injections.
One Eye Lost — How to save other?

- 71 y/o WM lost OS to wet AMD 10 years ago.
- Smoking Cessation, Preservision, separate 20mg Lutein, Fish oil
- Develops Wet AMD OD in 2010. Has 31 injections.
- Intervals becoming shorter and atrophy and slowed reading become issues with 20/40 vision by 12/2013
One Good Eye

- Has Transfoveal MicroPulse at 5% duty cycle in January.
- Fluid Remains in May so repeat done at 5% duty cycle
- In September 2014 his vision is 20/25. No intravitreal injections in 9 months!
Fovea Friendly
Low-intensity MicroPulse exposures avoid thermal retinal injury. Therefore, high-density (confluent) coverage of the diseased retina is needed to maximize clinical effectiveness of MPLT.1-8

Vermillion = Retina unaffected by laser treatment. Brown = Area of retina destroyed by laser and inactive with respect to ability to produce extracellular cytokines. Yellow = Area of retina affected by the laser but not destroyed, able to contribute to the therapeutic effects of laser treatment via laser-induced alteration / normalization of cytokine expression.8

1. Luttrull, et al. BJO 2005
2. Luttrull, et al. OSLI 2006
5. Ohkoshi, et al. AJO 2010
Second AMD case

• 70 y/o WM develops Wet AMD 3 years after cataract surgery despite Preservision, Lutein, Omega-3, oil.

• Vision varies from 20/40 to 20/60 on q6 Avastin but fluid is getting harder to eliminate.
Wet AMD case #2

- Did transfoveal Yellow MicroPulse Laser in January at 5% duty cycle.
- No injections in 9 months since Laser.
- Vision improved to 20/40.
- No side effects
Pre-Micropulse OCT

3 weeks after Avastin

1/2014
8 months post-op

- OCT not worse despite no Avastin in 9 months.
- Vision better 20/40
Success in Chronic Disease

- May need more than one treatment.
- May just stabilize OCT - not perfect it.
- May reduce but not eliminate anti-VEGF treatment.
- You may achieve a stable vision and OCT without the cost and atrophy associated with repeat injections.
- You have a financially better situation for all except the drug company.
Yellow MicroPulse
Advantages

- Can safely treat fovea at 5% duty cycle.
- Does not harm.
- Does not leave watermarks in vision.
- Easy to administer.
- Good insurance coverage with allowance for profit-as opposed to pass through only for drug.
Not a one trick pony!

• Ahad Mahootchi, MD
• www.SeeBetterFlorida.com
Trabecular meshwork after ALT CW laser exposures can cause high thermal rise resulting in tissue damage.

MLT Meshwork remains intact without the signs of tissue damage while still as effective as ALT.
Yellow (577nm) MicroPulse Laser Trabeculoplasty (MLT) Personal Experience

- Advantage over ALT: Can treat patients without TM pigment.
- Patient Volume Doubles.
- Advantage over SLT: No pressure spikes, treats more than SLT.
- 85% response in 6 - 8 weeks.
- Can retreat with same response.
You can use it in traditional mode.

Traditional ALT, Treatment of Retinal Tears, Cutting Sutures after Trabeculectomy but you can do so much more!
You need it.
It does what other laser can’t.
It safely treats the center of the fovea.