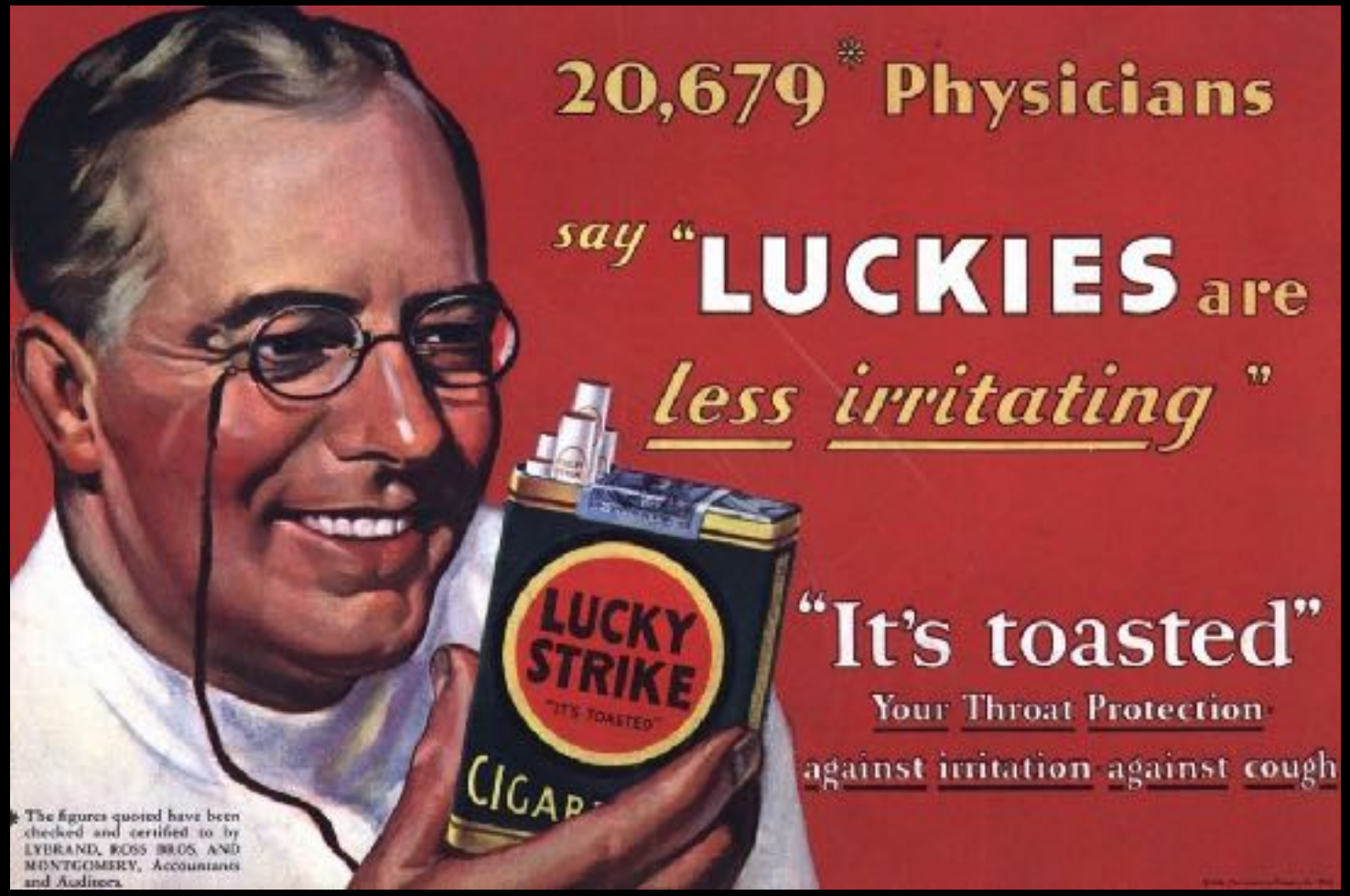
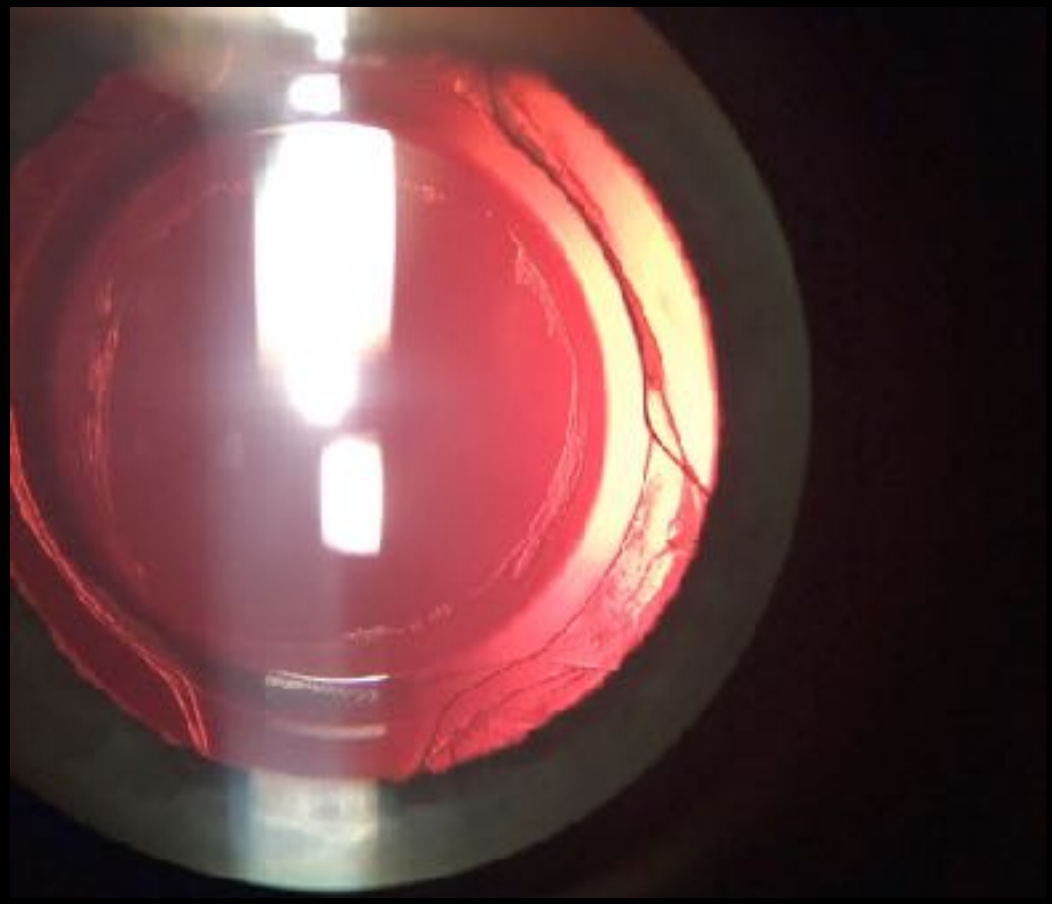
I need to acknowledge Dr. Inder Paul Singh for providing slides for this presentation

DISCLOSURES

- I AM A:
- CONSULTANT TO ELLEX
- SPEAKER FOR ELLEX
- RESEARCH FOR ELLEX



It’s a really good laser for capsulotomies



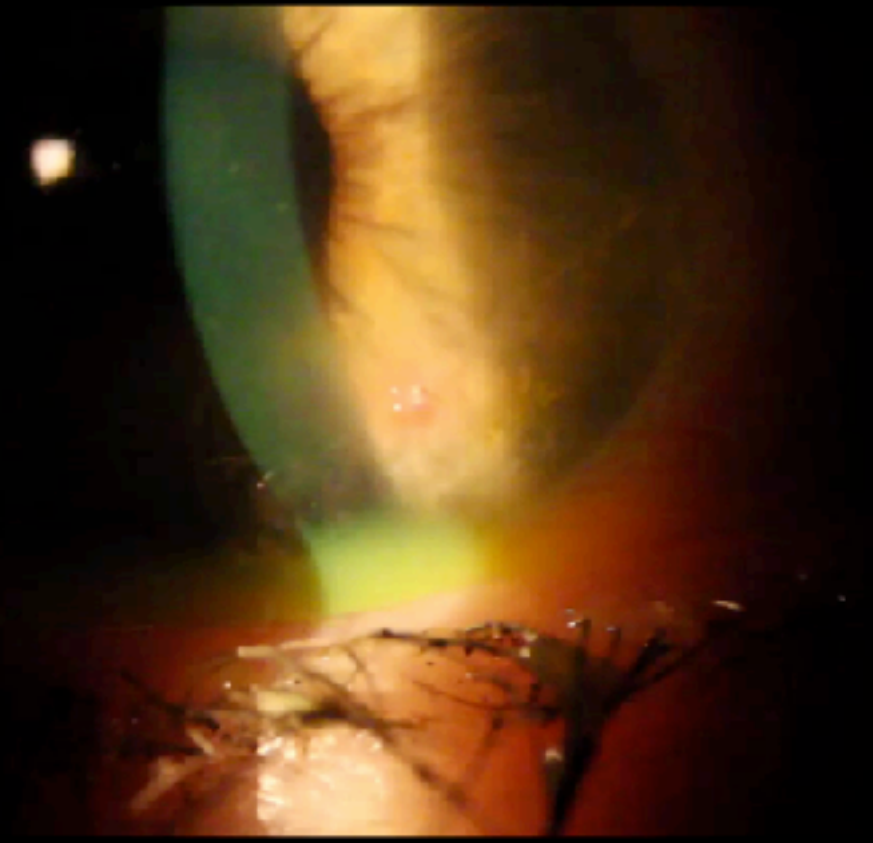
Even on the dense capsules

It allows for gentle treatments as well…

YAG PI’s are simple.

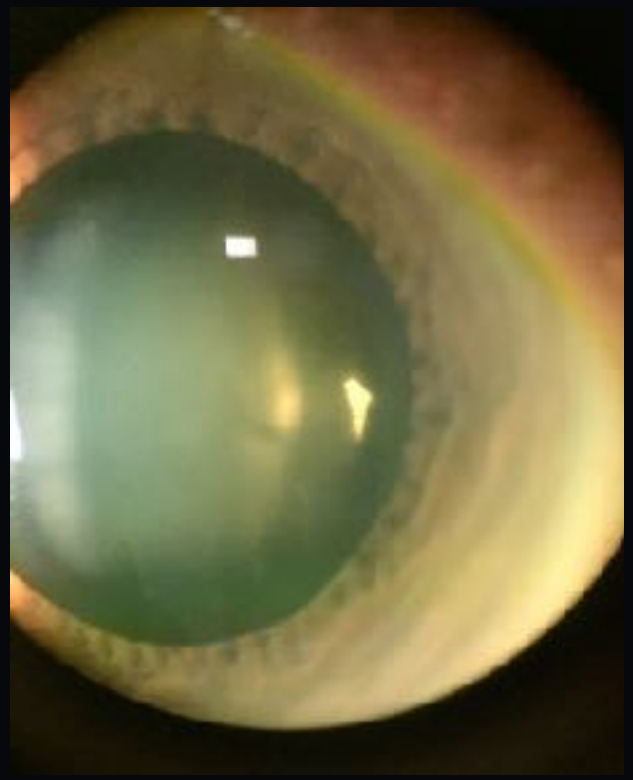
It works well on the stuff you rarely see….

LASER FOR EPITHELIAL INGROWTH



You may not have noticed but I didn’t use a contact lens for any of those treatments

What Would You Do?



History

65 y/o male complains of difficulty driving at night also has hard time focusing to read

Exam

20/25 BCVA but 20/60 with glare testing

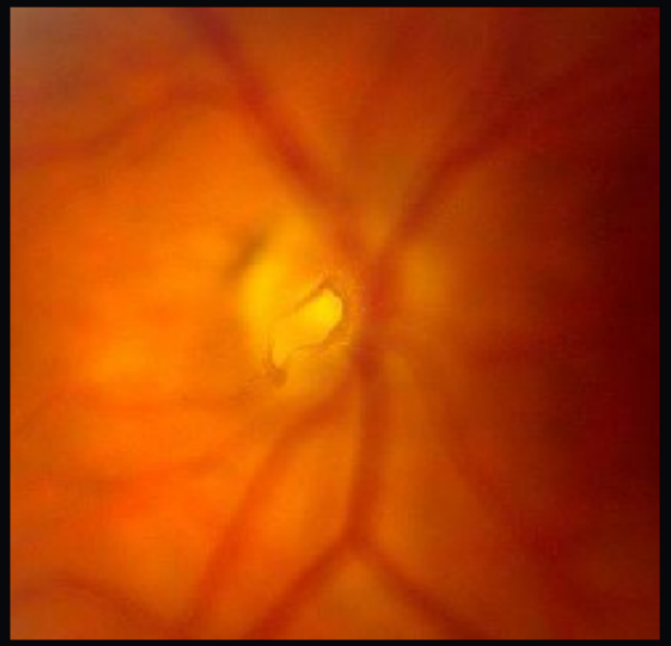
SLE

+2ns and 1+cortical cataract OU

Vit/Fundus

Normal

Now What Would You Do?



History

65 y/o male complains of difficulty driving at night also has hard time focusing to read because of a **floater** than causes him to lose focus

Exam

20/25 BCVA but has to shake his head to keep it clear

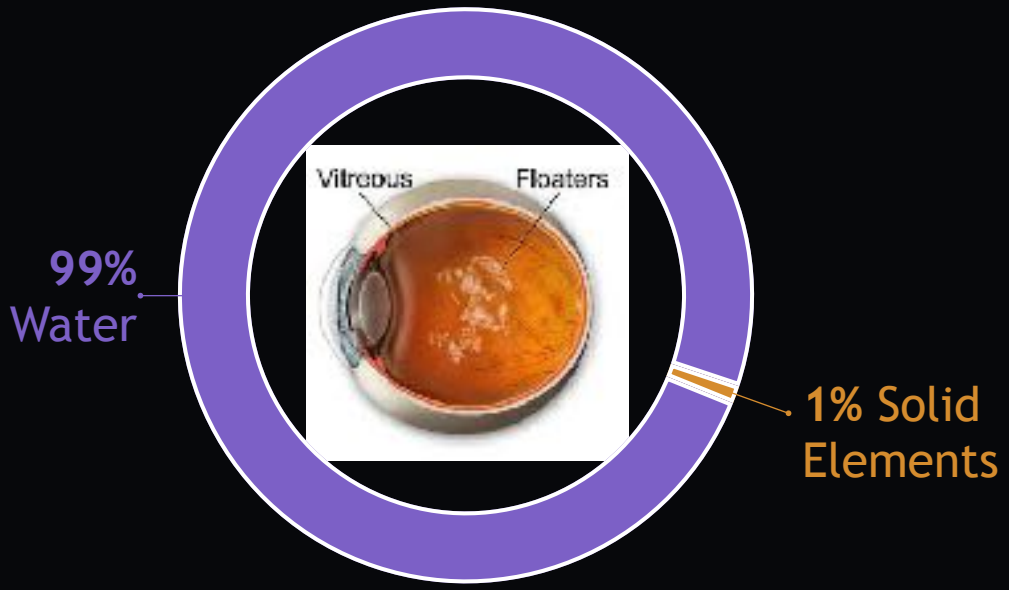
SLE

Trace NS cataract

Vit/Fundus

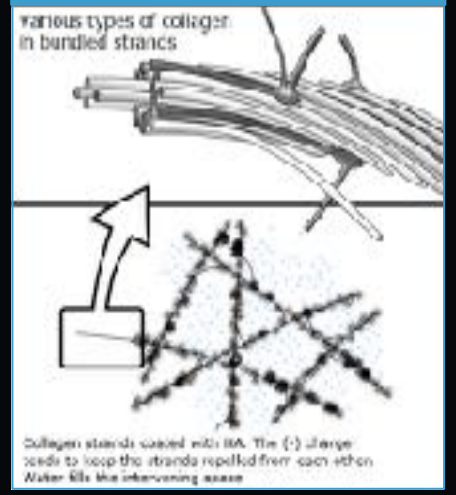
Normal but with large floater middle of the visual axis

How Do They Form?



Bare collagen tends to be sticky.
If the hyaluronic acid (HA) molecules are no longer attached or associated with the collagen, it will clump, and stick to itself squeezing water molecules out.

Molecular Structure of Vitreous Humour



With age, there is a **depolymerisation of hyaluronic acid**, causing these molecules to release their water and form lacunae i.e., pockets of liquefied vitreous.

The collagen 'filaments' aggregate to form larger 'fibrils', causing further collapse of the vitreous gel structure.

This process is known as vitreous degeneration and 'syneresis'. The collagen fibrils may 'float' within the liquid vitreous pockets, giving the patient a sensation of floaters.

Quality of life issues

Vitreous floaters may negatively affect health-related quality of life

Young Symptomatic Patients were More Likely to Risk Blindness to Rid Themselves of Floaters.

Comparable or Worse than ARMD, DR, or Glaucoma

Patients Aged 55 Years of Younger showed Lower Standard Gamble (blindness) Values when Compared with Patients Older than 55 Years. *(P=.007)*

More Severe than Angina, Mild Stroke, or Asymptomatic HIV

In Many Patients, they may significantly Interfere with Activities of Daily Living such as **Reading, Driving,** or **Watching TV**.

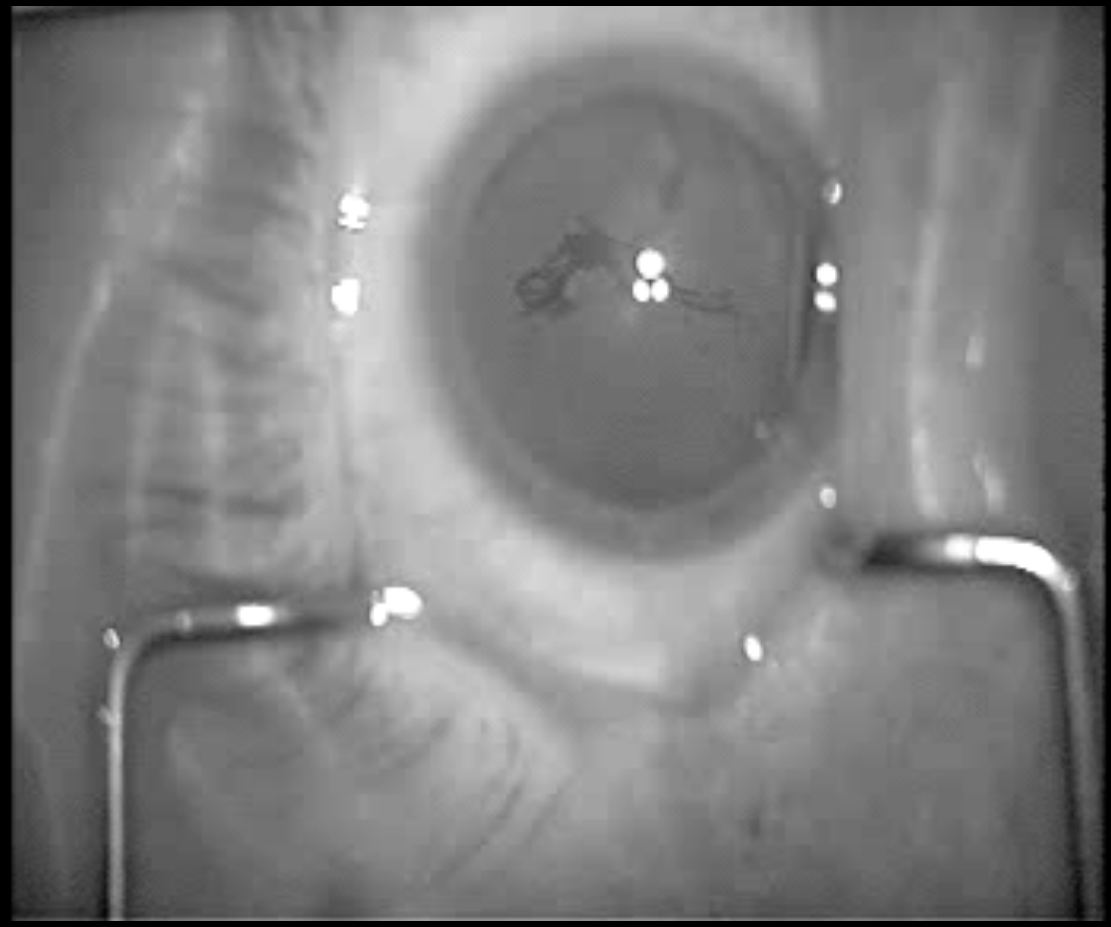
7 in 10 People will Suffer from Floaters at some Point in Their Lives.

Am J Ophthalmol. 2011;152(1):60-65.

WE HOPE TO TEACH YOU HOW TO MAKE THIS EASY

WWW.STILEPROJECT.COM

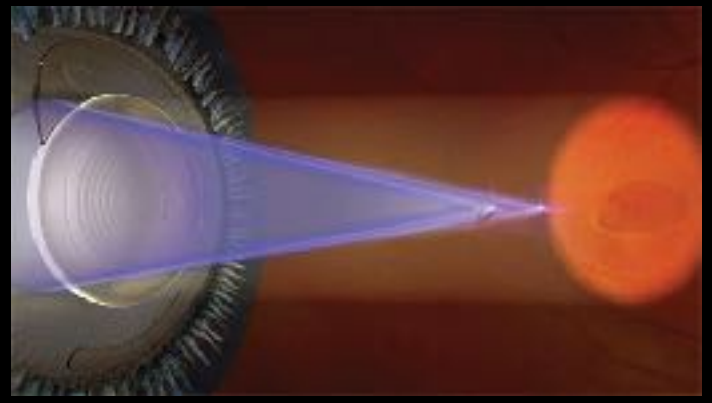
What's the problem?
Sorry live with it……



Floaters and the Ellex laser
CAN WE TREAT FLOATERS?

Historically

Technology was the limiting factor..



- Lack of visualization
- Energy settings too low
- Number of shots not enough
- Energy beam not as efficient

What Equipment Do I Need?

YAG laser- with *True* Coaxial Illumination

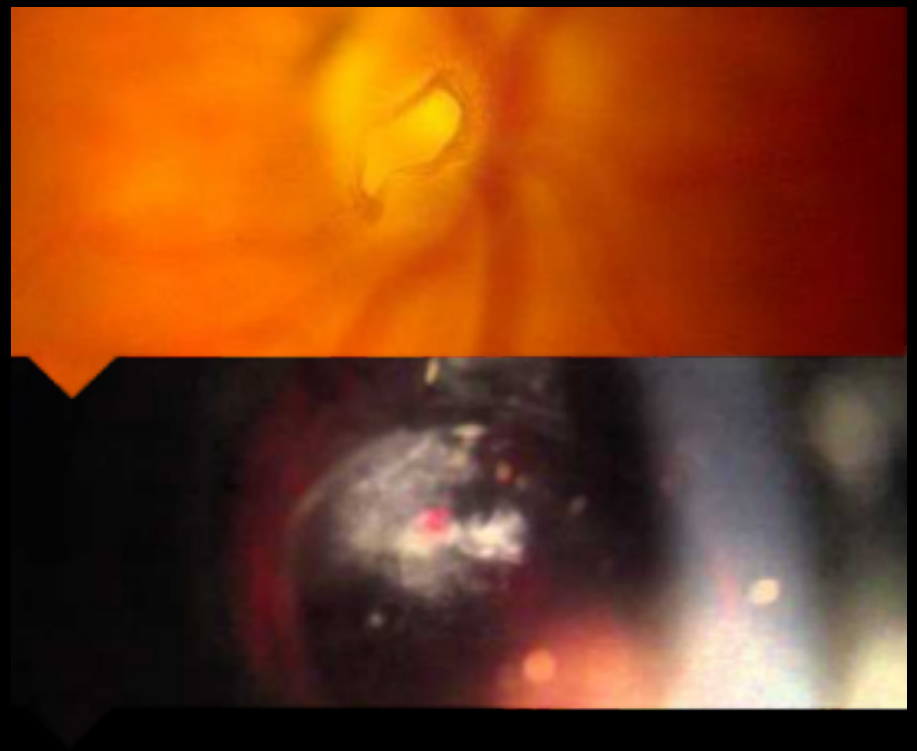
Lenses

Meds

What else do I need?

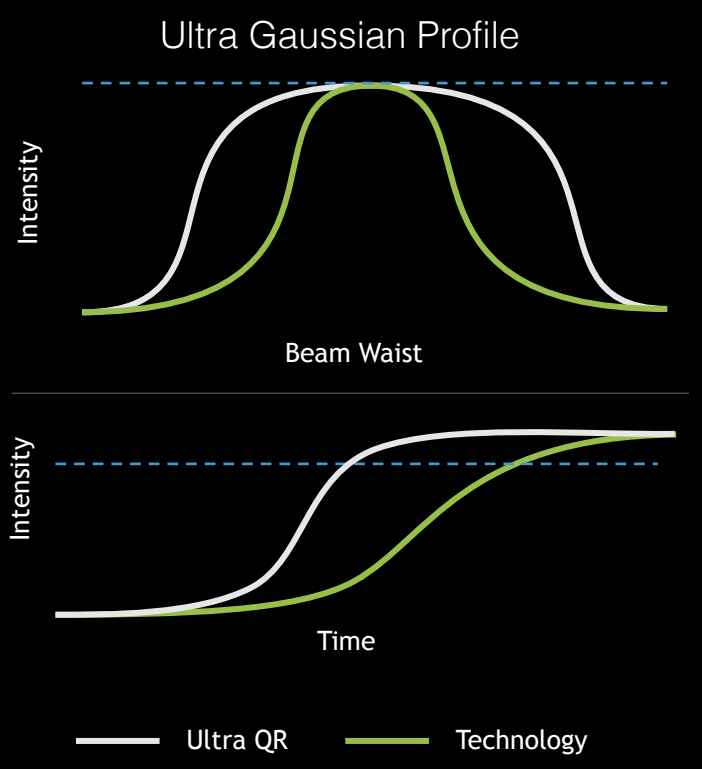
How has the ellex technology changed the procedure?

Coaxial/titratable illumination



Allows for visualization of the posterior beyond the posterior capsule all the way to the retina

“Energy Delivery”



More efficient energy delivery

Stable cooling cavity

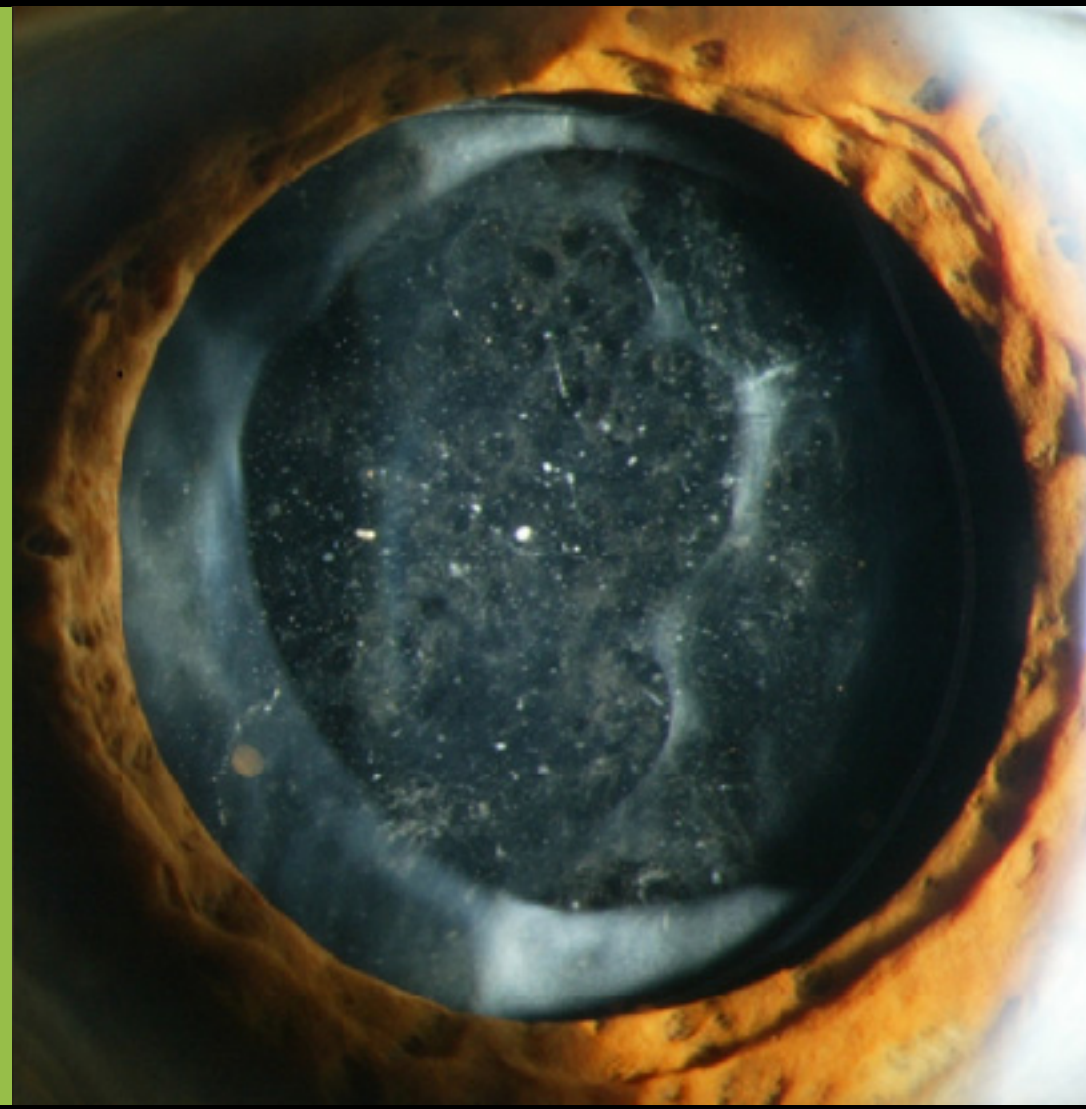
Allows for nonlinear rise in energy with minimal disruption of surrounding tissue.

Technical Considerations

Conventional YAG lasers are designed for posterior capsulotomy and iridotomy treatments:

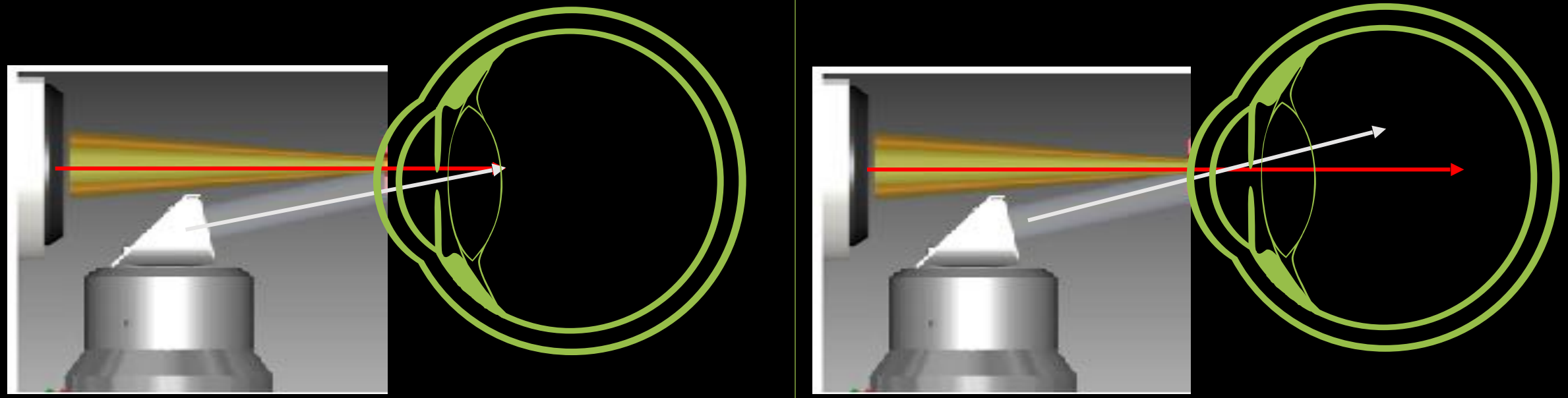
Limited view of the vitreous, which can make it difficult to identify the floaters
and membranes to target

Risk of damage to surrounding ocular tissue if not able to visualize



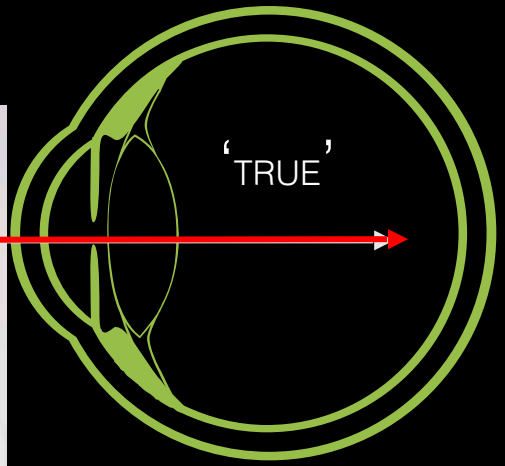
Visualization

Illumination Position



Let’s break it down step by step

Co-Axial Illumination



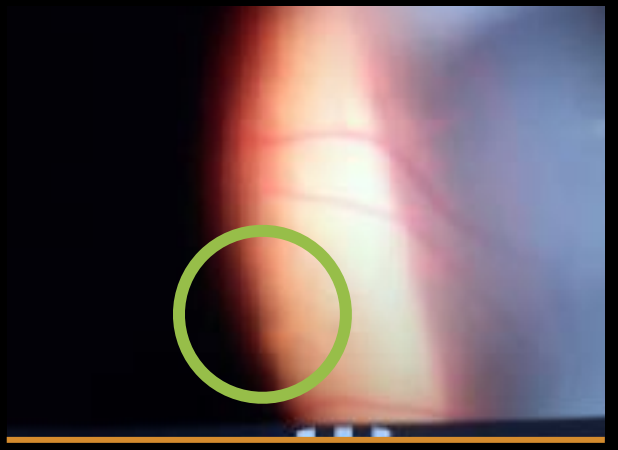
“On” Versus “Off” Axis

On Axis – Full Coaxial Illumination

- Gives you **great visualization** of the middle and posterior vitreous
- **Allows for spatial context** – especially near the retina
- Red reflex **helps with contrast** for certain floaters
- **Hard to see** anterior floaters very well…

Vessels too focused

Vessels obscured

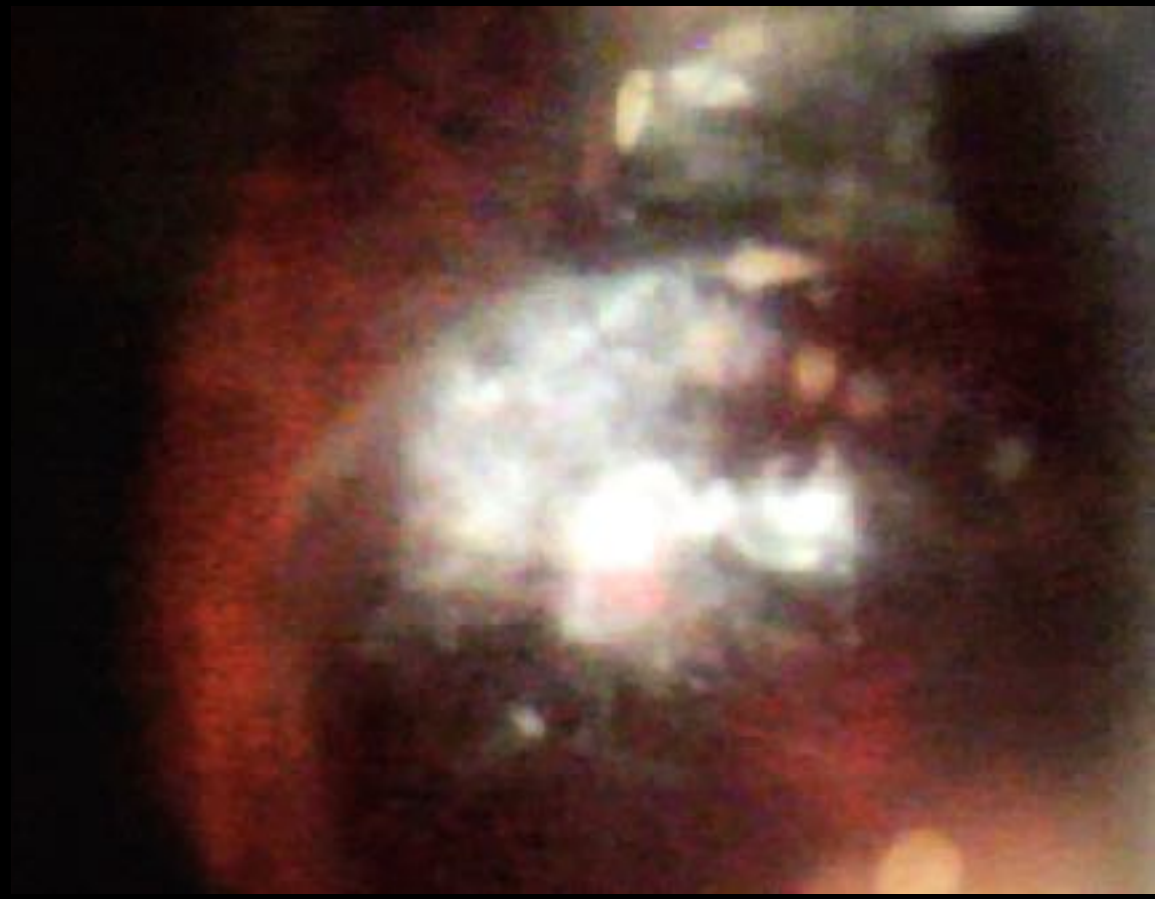


An example

“On” Versus “Off” Axis

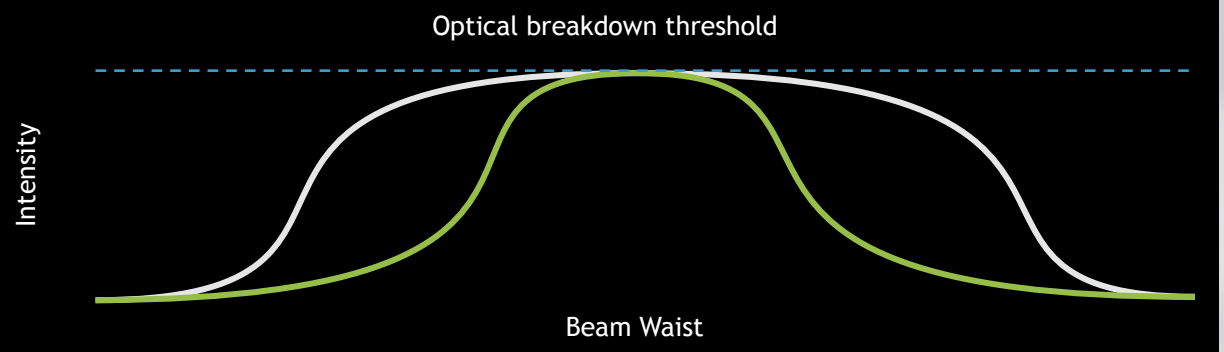
Off Axis – Full oblique Illumination

- **Can’t see floaters** behind anterior vitreous
- **Beneficial for visualizing** anterior floaters
- Lose red reflex which **allows for floaters to appear “white”**
- Helps with **defining posterior capsule**
- **Decreases glare** in some situations

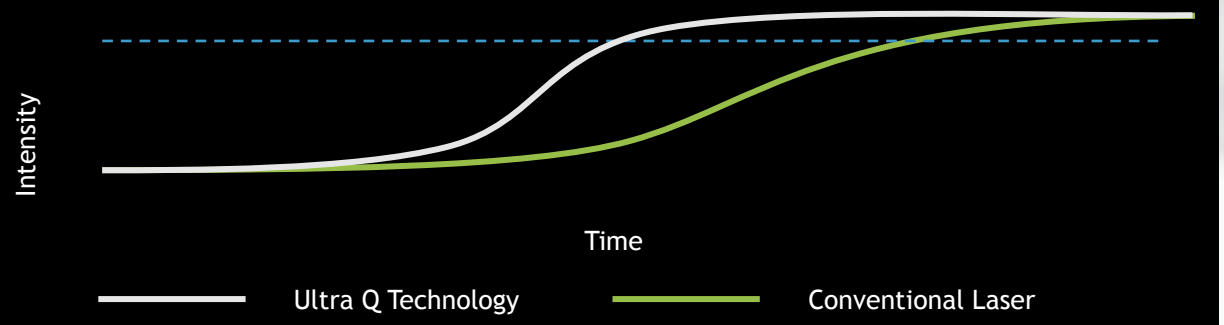


Ellex Ultra Q Reflex™ YAG Laser

Ultra Gaussian Profile



Fast Rise Time

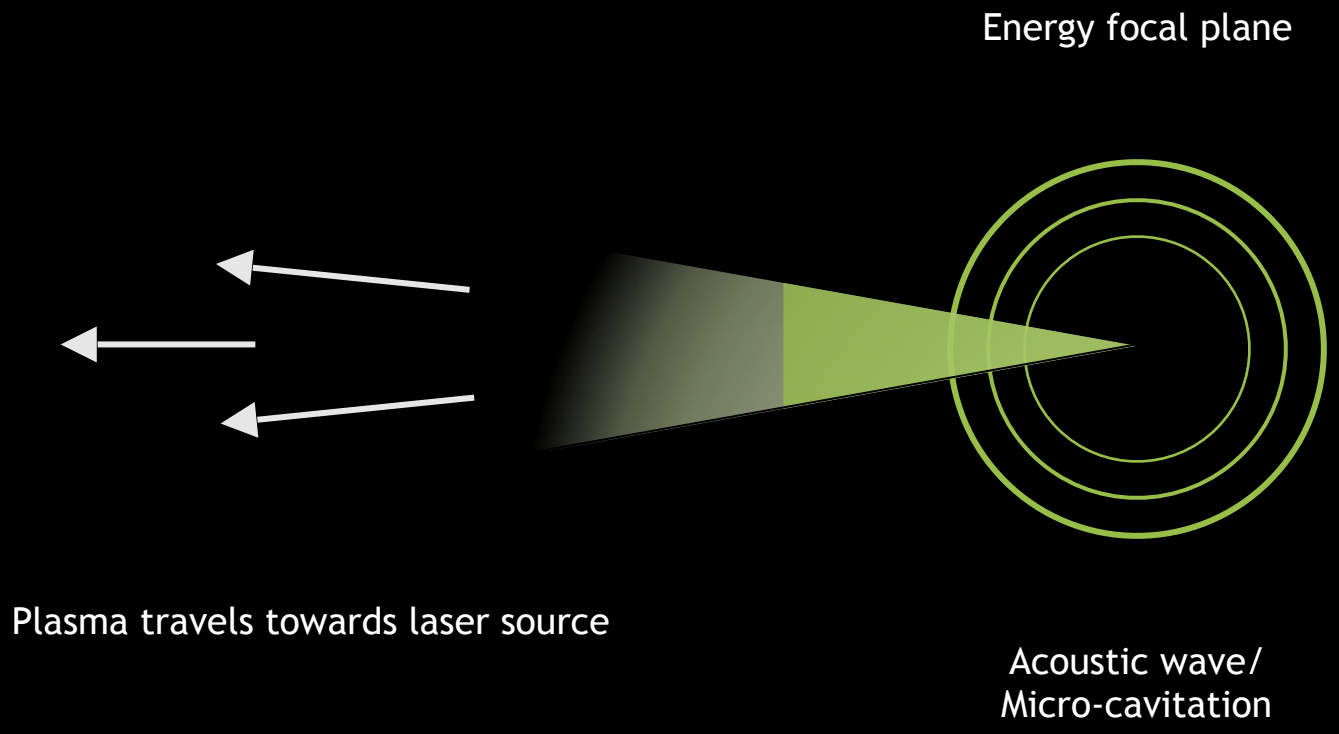


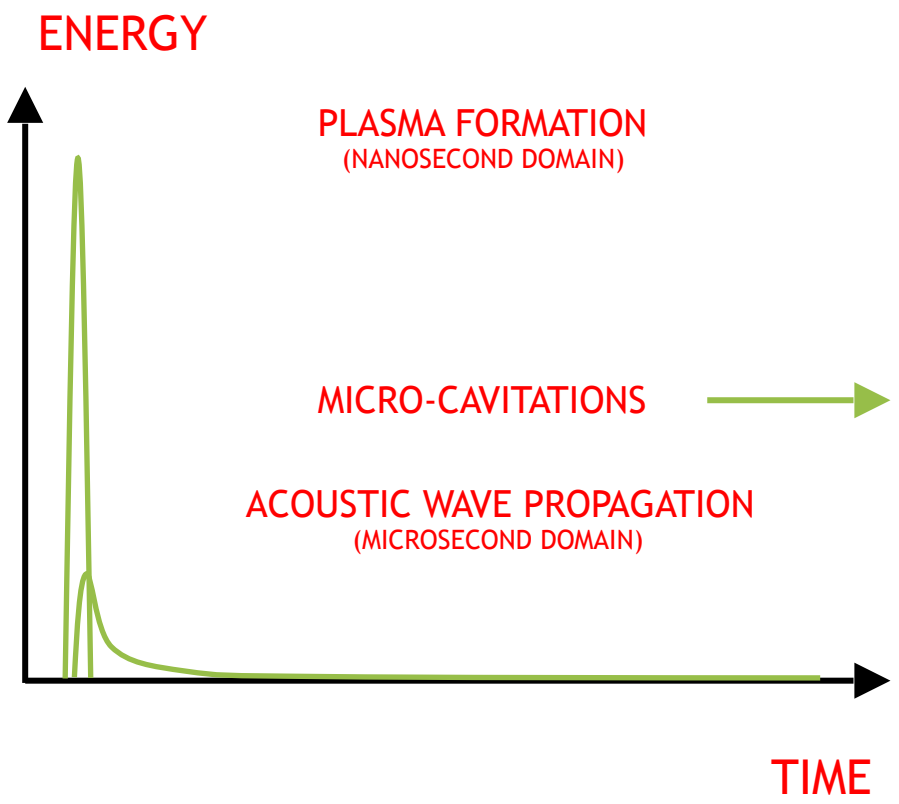
Ultra Gaussian beam profile and fast rise time enables the surgeon to cut tissue more efficiently, using fewer shots and less cumulative energy.

3 Nanosecond pulse
Short duration

Not enough time for heat to be accumulated
Increasing number of shots will not increase accumulation of energy

What happens in the Convergence Zone?

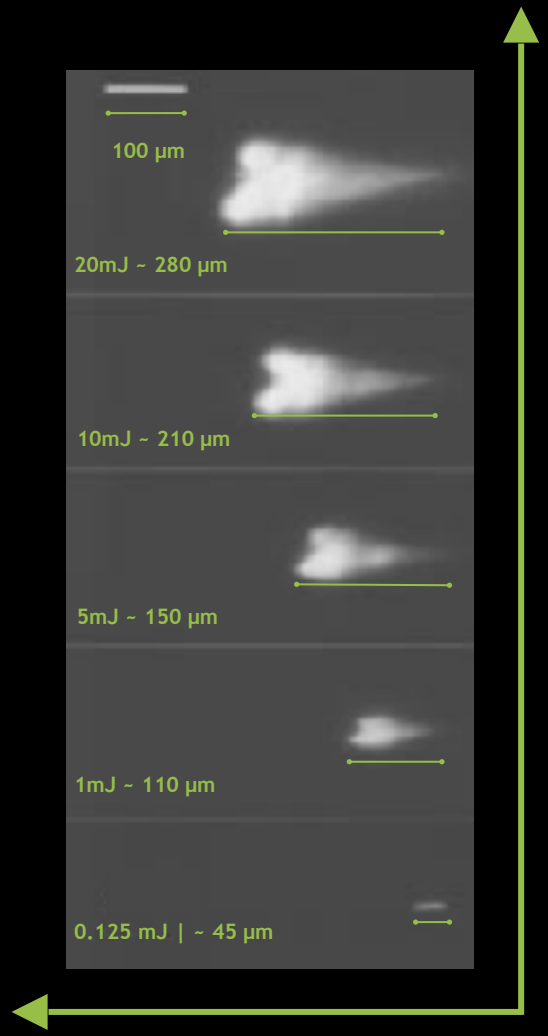




Convergence zone

Once the threshold amount of energy is reached, additional energy translates into the **propagation of the plasma zone towards the laser source** in an inverse exponential fashion.

Additional energy does not translate into a ‘longer’ plasma zone linearly, but the **plasma also propagates laterally**, thus forming a **plasma cone**.



The **cascade reaction breaks down** when the electromagnetic field is no longer strong enough.

The cascade reaction is very short, since all the **energy is delivered to the target zone in a 3ns pulse.**

B Scan View


4/29/2015 9:37:36 AM
1550m/s S1 90dB Probe: Posterior B 10MHz
Examiner: I. Paul Singh, MD Physician: I. PAUL SINGH, MD
0
5mm
Image Adjustments
90
Override Gain
Time Gain Compensation
Log S1 S2 S3
Media Velocity
Zoom and Navigate
Editing Tools
Clean All
Editing Options
Undo All

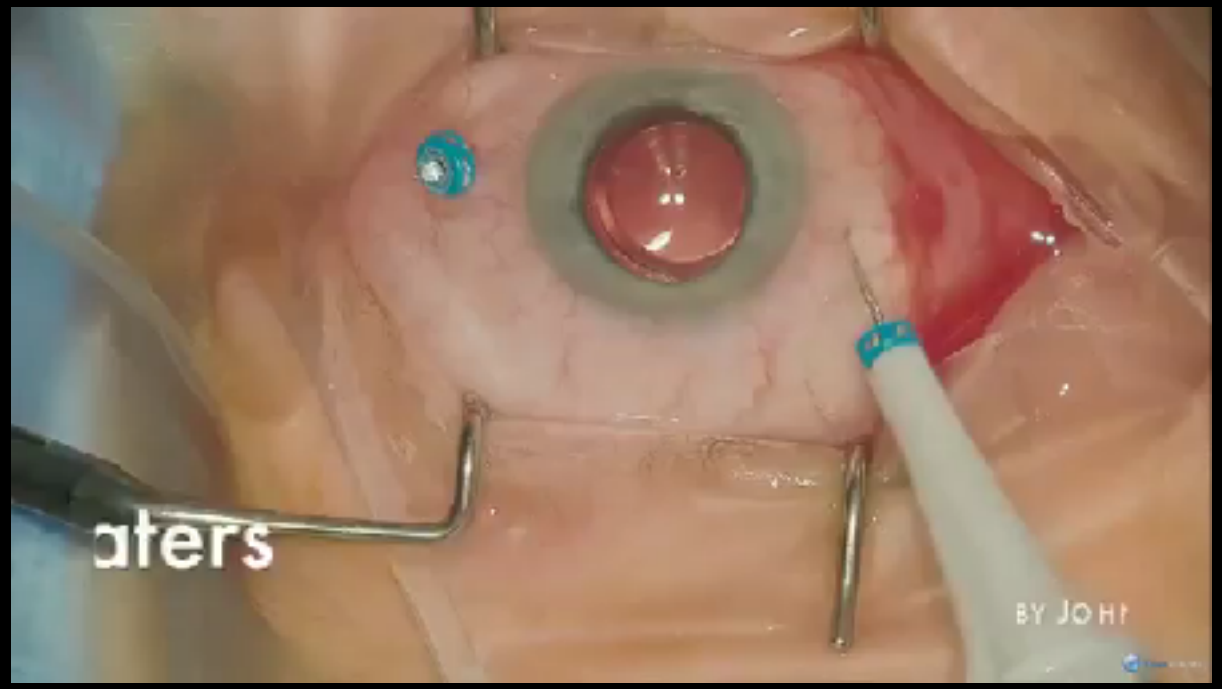
Case Report
What would you do?

Who should I treat?

- Pseudophakic patients
- Type B personalities
- Well defined mid-vitreous opacities
- People who get the concepts of enhancements

Who do you need?

- **Align with local retinal colleagues**
- **Referral sources who get the concept**
- **Staff who understand what you are doing**



Vitrectomy

High success rate but carries significant risk of complications

- Anterior Vitreous Detachment
- Glaucoma
- Cataract

- Infection
- Retinal Detachment
-

Sendrowski DP, Bronstein MA. Current treatment for vitreous floaters. Optometry. 2010 Mar;81(3):157-61

How do I charge

- Other vitreous opacities, unspecified eye
  - H43.39
- Vitreous membranes and strands, unspecified eye
  - H43.31
- Vitreous Degeneration
  - H43.81

Options for billing?

CPT Code 67031 – Laser Vitreolysis: Severing of Vitreous strands, vitreous adhesions, Sheets, Membranes or opacities (one or more stages)

1. Physician (Office): $381.90

2. Physician (at facility, Site of Service differential): $350.93

3. ASC: $218.59

4. HOPS: $378.93

5. The code is subject to multiple procedure rules when done on the same day as other procedures (such as the same eye, done on the same patient, etc.)

6. The patient pays out of pocket (Average Cost $1500.00)

Rules of Success

- Plan for extra chair time
- Under promise and over deliver
- Use the concept of enhancements
- Use animations whenever possible
- Discuss the potential for complications

NEODYMIUM: YAG LASER VITREOLYSIS: A RETROSPECTIVE SAFETY STUDY

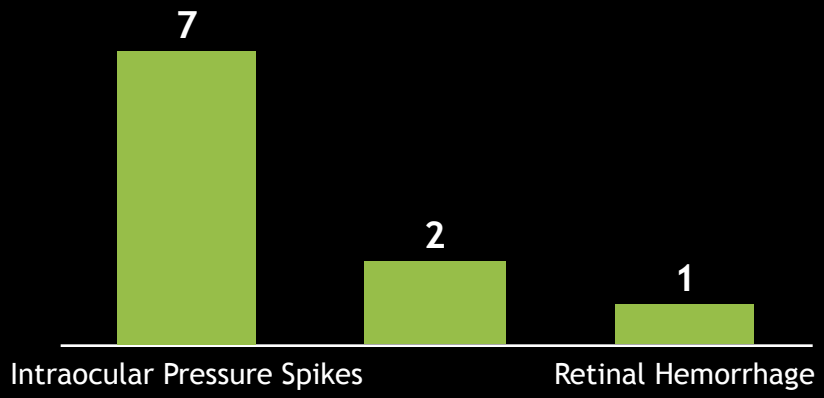
Inder Paul Singh, MD
The Eye Centers of Kenosha, Wisconsin, USA

Paper Presentation at ASCRS 2017

Results

RECORDED ADVERSE EVENTS

Total adverse event rate of 0.8%



NO AC OR VITREOUS REACTIONS WERE SEEN.
NO ANTI-INFLAMMATORY REACTIONS WERE SEEN.

4 patients had **history of uveitis** that did not worsen or was exacerbated.

NO MACULAR PATHOLOGY WAS INDUCED OR WORSENED.

27 patients had **diabetic retinopathy** that did not develop macular edema.

4 patients had VMT,in 2 patients, the VMT **resolved immediately** after the procedure.

NO RETINAL DEFECTS WERE NOTED

results

No glaucoma patients had increased IOP

One patient still on anti-hypertensive medications.

One of the phakic patients subsequently required cataract surgery and achieved a corrected visual acuity of 20/20.

The other patient, whose lens was hit in the periphery, is still being observed.

Patients with IOP spikes (28 mmHg-48 mmHg) were placed on topical antihypertensive medications (average post-medication IOP, 19 mm Hg).

All iop spikes were seen in pseudophakic post Yag capsulotomy patients

The case of retinal hemorrhage **resolved in 3 months** with no long-term negative effects.

No patients complained that their floaters were worse after treatment sessions were completed.

Average number of sessions: 2.4

Too Close to the retina

Stonecipher-Data

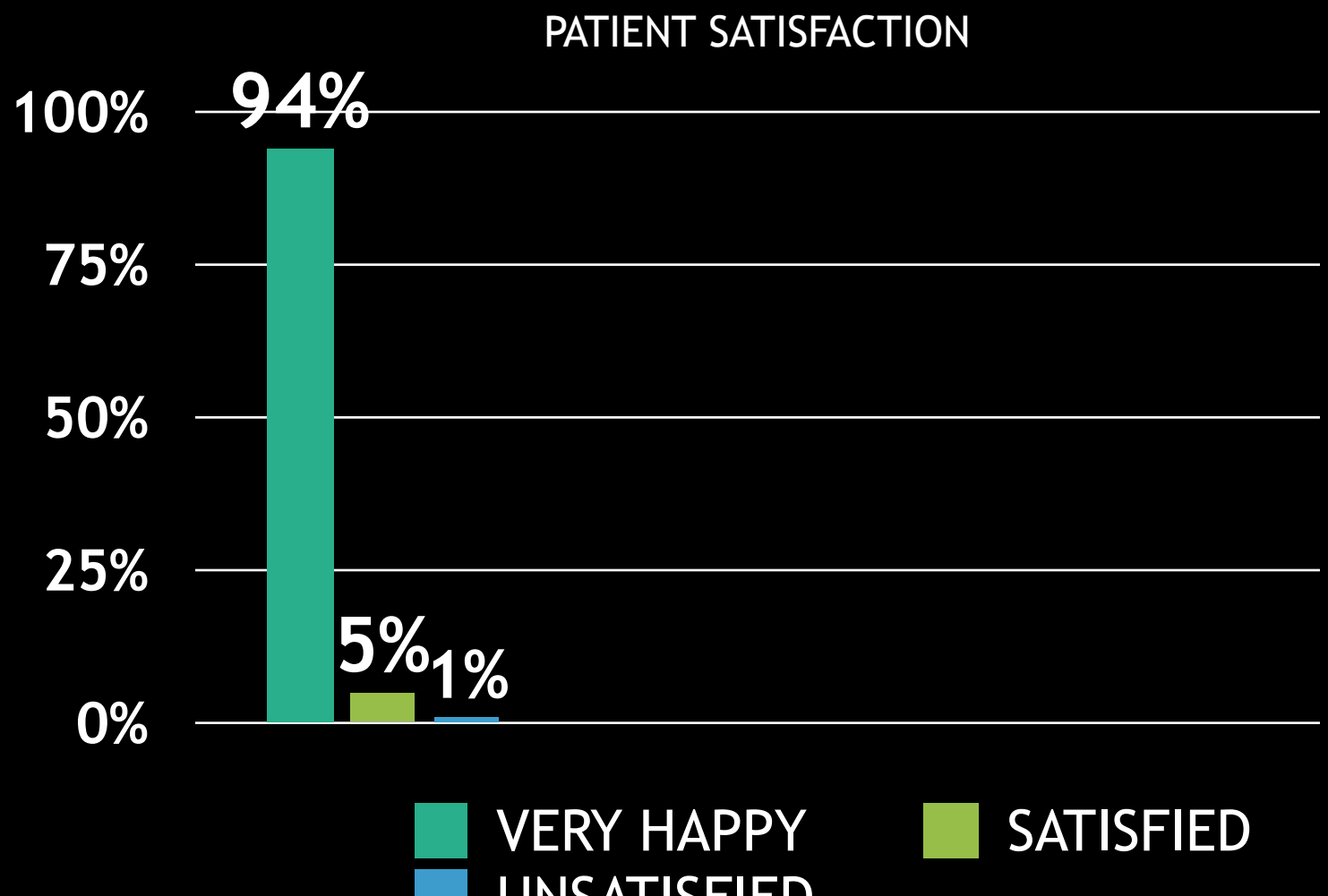
COMPLICATIONS (0.9%)

- 0.3% RETINAL DETACHMENT-1 (6 MONTHS AFTER THE PROCEDURE)
- 0.3% RETINAL HEMORRHAGE-1 (NOT A HOLE ACTUALLY HIGH ENERGY)
- 0.3% LENS HIT-1 (PATIENT MOVED BACK DURING PROCEDURE. NO NSC)

ENHANCEMENTS (1.9%)

- ONE PATIENT ENHANCED TWICE
- 0.63% FAILED AND WENT ON TO PPV

PATIENT SATISFACTION



Original Investigation | Journal Club

July 20, 2017

YAG Laser Vitreolysis vs Sham YAG Vitreolysis for Symptomatic Vitreous Floaters

A Randomized Clinical Trial

Chirag P. Shah, MD, MPH[1]; Jeffrey S. Heier, MD[1]

» Author Affiliations

JAMA Ophthalmol. Published online July 20, 2017. doi:10.1001/jamaophthalmol.2017.2388

JAMA Ophthalmology Journal Club Slides: YAG Laser Vitreolysis for Symptomatic Vitreous Floaters

Shah CP, Heier JS. YAG laser vitreolysis vs sham YAG vitreolysis for symptomatic vitreous floaters: a randomized clinical trial. *JAMA Ophthalmol*. Published online July 20, 2017. doi:10.1001/jamaophthalmol.2017.2388

Introduction

- **Importance:**
  - Vitreous floaters are common and have been reported to affect quality of vision and patient-reported vision-related quality of life.
  - YAG vitreolysis is a potential treatment for floaters, but precise risks and benefits are unknown.

- **Objective:**
  - To evaluate YAG laser vitreolysis vs sham vitreolysis for symptomatic Weiss ring floaters from posterior vitreous detachment.

Methods

- **Study Design, Setting, and Participants:**
  - Single-center, masked, sham-controlled randomized clinical trial.
  - Examined 52 eyes of 52 patients (36 cases in the YAG group and 16 controls in the sham group).

- **Outcomes:**
  - Primary 6-month outcomes were subjective change measured from 0% to 100% using a 10-point visual disturbance score, a 5-level qualitative scale, and National Eye Institute Visual Functioning Questionnaire 25.
  - Secondary outcomes included objective change assessed by masked grading of color fundus photography and Early Treatment Diabetic Retinopathy Study best-corrected visual acuity.

- **Limitations:**
  - Small sample size, short follow-up, only 1 treatment session, and narrow inclusion criteria of Weiss ring floaters.

Results

- 17 men and 35 women with a mean age of 61 years were included. The 36 eyes treated with YAG laser vitreolysis (69% phakic) received a mean of 218 laser shots with a mean power of 1316 mJ. Mean duration of symptomatic floaters was 6.7 years in the YAG group and 5.0 years in the sham group.

- The YAG group reported significantly greater improvement in self-reported floater-related visual disturbance (mean, 54%; SD, 38%; median, 63%; range, 0-100) than the sham group (mean, 9%; SD, 17%; median, 0%; range, 0-60), for a mean difference of 45% (95% CI, 25-64; $P < .001$).

- The YAG group reported significantly greater improvement in mean (SD) visual disturbance score (3.2 [2.9]) than the sham group (0.13 [1.7]), for a mean difference of −3 (95% CI, −4.3 to −1.7; $P < .001$).

Results

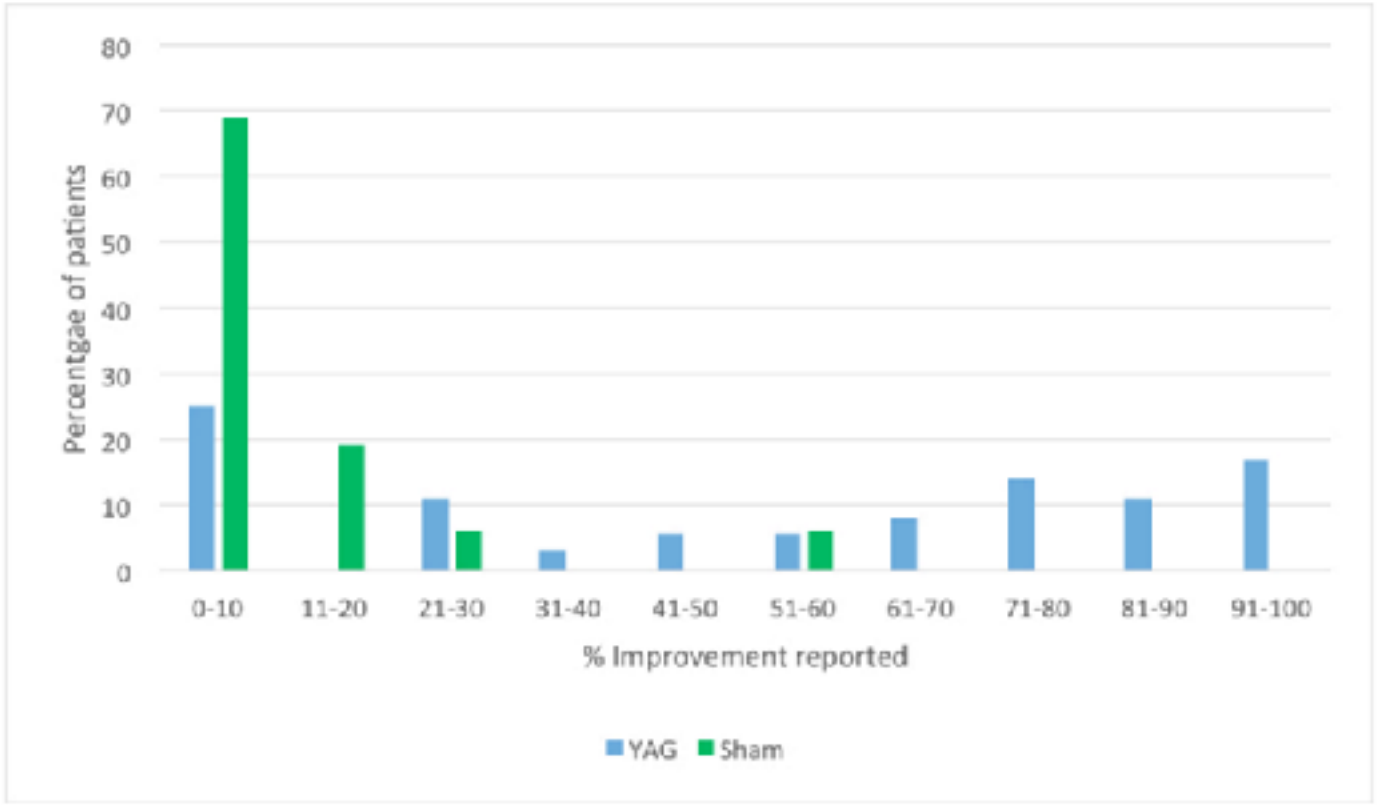
- Compared with the sham group at 6 months, National Eye Institute Visual Functioning Questionnaire 25 revealed improved general vision (difference, 16.3; 95% CI, 0.9-31.7; $P = .04$), peripheral vision (difference, 11.6; 95% CI, 0.8-22.4; $P = .04$), role difficulties (difference, 17.3; 95% CI, 8.0-26.6; $P < .001$), and dependency (difference, 5.6; 95% CI, 0.5-10.8; $P = .03$) among the YAG laser group.

- Masked grading of color photography showed 34 of 36 patients (94%) in the YAG group had significantly improved or completely resolved floaters compared with 0 in the sham group (difference, 94%; 95% CI, 87-102; $P < .001$).

- There was no difference in change in Early Treatment Diabetic Retinopathy Study best-corrected visual acuity identified between the YAG group (−0.2 letters) and the sham group (−0.6 letters).

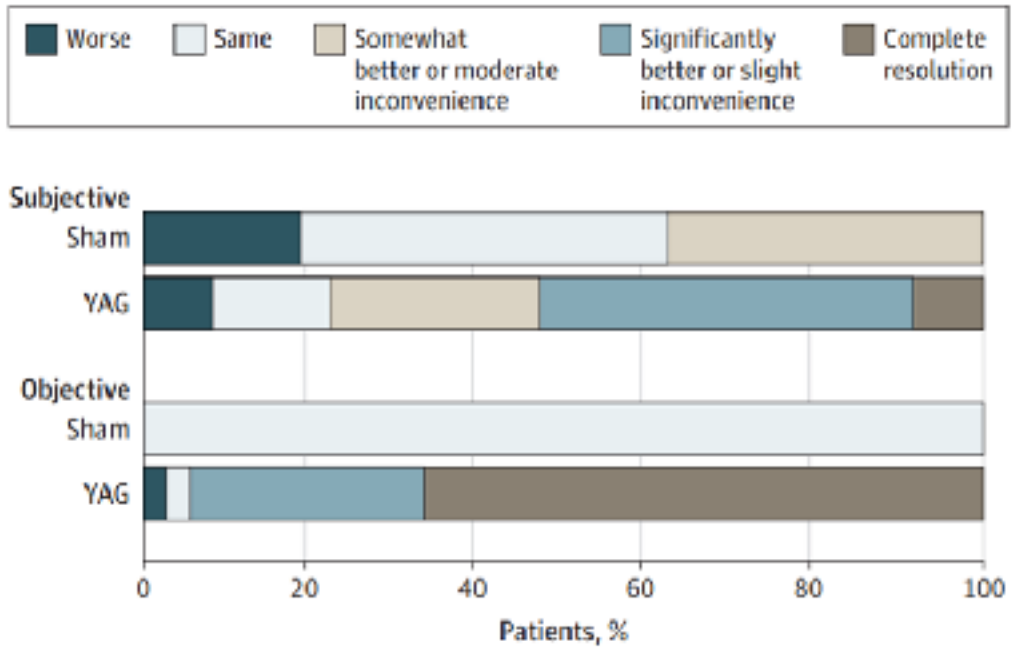
Results

Percentage of Postoperative Improvement in YAG Vitreolysis and Sham Groups at 6 Months



Results

Subjective vs Objective Grading of Floater Resolution at 6 Months Using a 5-Level Qualitative Score



Comment

- There was moderate improvement in floater symptoms 6 months after 1 YAG vitreolysis treatment for symptomatic Weiss rings compared with sham treatment.
- There was a small improvement in symptoms with sham YAG, presumably a placebo effect.
- The objective improvement in floater appearance was greater than the subjective improvement in symptoms.
- There were no identified adverse effects of concern after YAG laser vitreolysis. With use of the rule of 3, there is 95% confidence that there is no greater than a 1 in 12 (8.3%) risk of a serious adverse event after YAG vitreolysis.
- Large-scale, longer duration studies are required to validate these findings.

Contact Information

- If you have questions, please contact the corresponding author:
  - Chirag P. Shah, MD, MPH, Ophthalmic Consultants of Boston, 50 Staniford St, Ste 600, Boston, MA 02114 (cpshah@eyeboston.com).

Funding/Support

- None.

Conflict of Interest Disclosures

- All authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none were reported.

Finishing thoughts……

EYEFLOATERINSTITUTE.COM

THANK YOU ANY QUESTIONS?
LFR-LASER FLOATER REMOVAL

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