

# Methotrexate For Prevention Of Recurrent PVR. (Preliminary Results)

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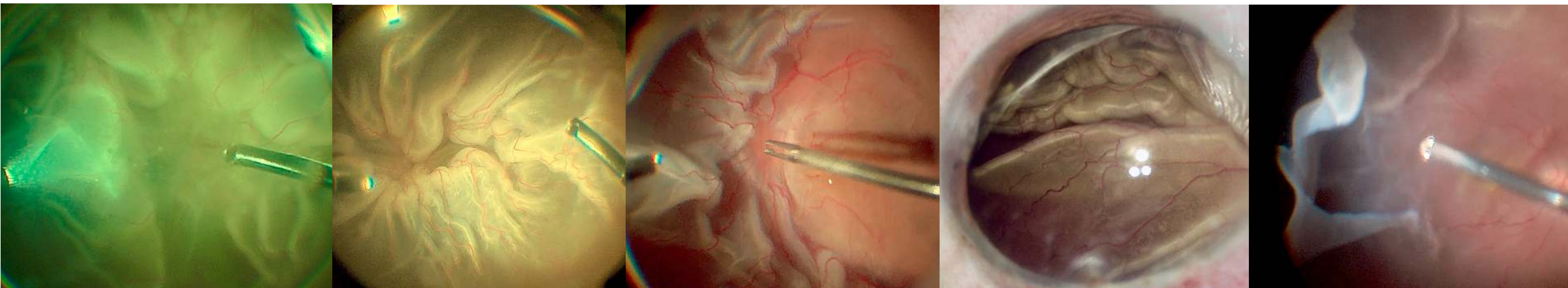
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Consultant, VR Surgery  
Cairo University  
Egypt.



# Introduction & Aim of Work:

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- PVR accounts for 75% of all 1ry surgical failures
- Methotrexate (MTX) is a folate analogue with anti-proliferative & anti-inflammatory properties, recently shown promise for PVR when given as a series of intravitreal injections.
- The purpose of this study is to report preliminary results, concerning the efficacy & tolerability of a series of intravitreal MTX injections as a surgical adjunct for the prevention of recurrent RD related to PVR, in high risk cases.

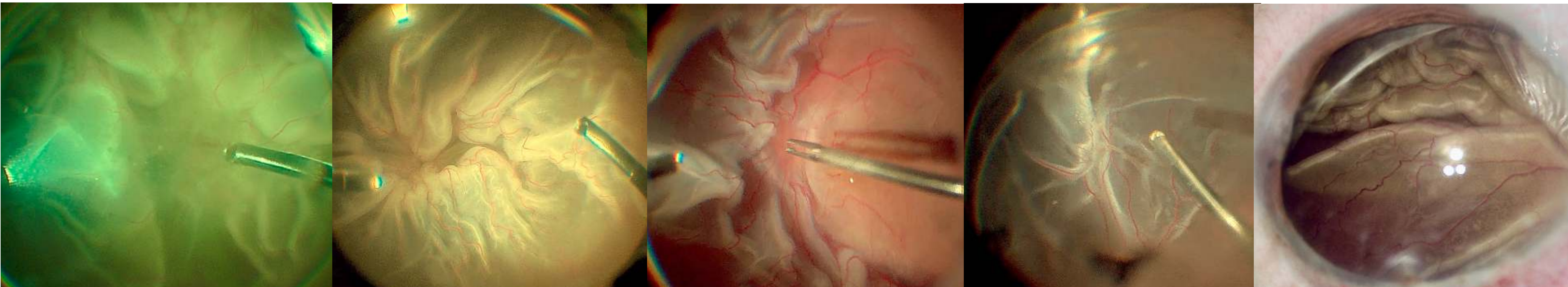




# Surgical Technique:

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- SiO removal in recurrent cases
- PPL / Phaco + PCIOL, 23G Vx, membrane peeling, Extended ILM Peeling, PFC, retinotomy/retinectomy, endolaser, direct PFC/SiO exchange .
- MTX ( 400mg / 0.05 ml) 4 intravireal injection, starting intraoperative & then every 2 weeks.



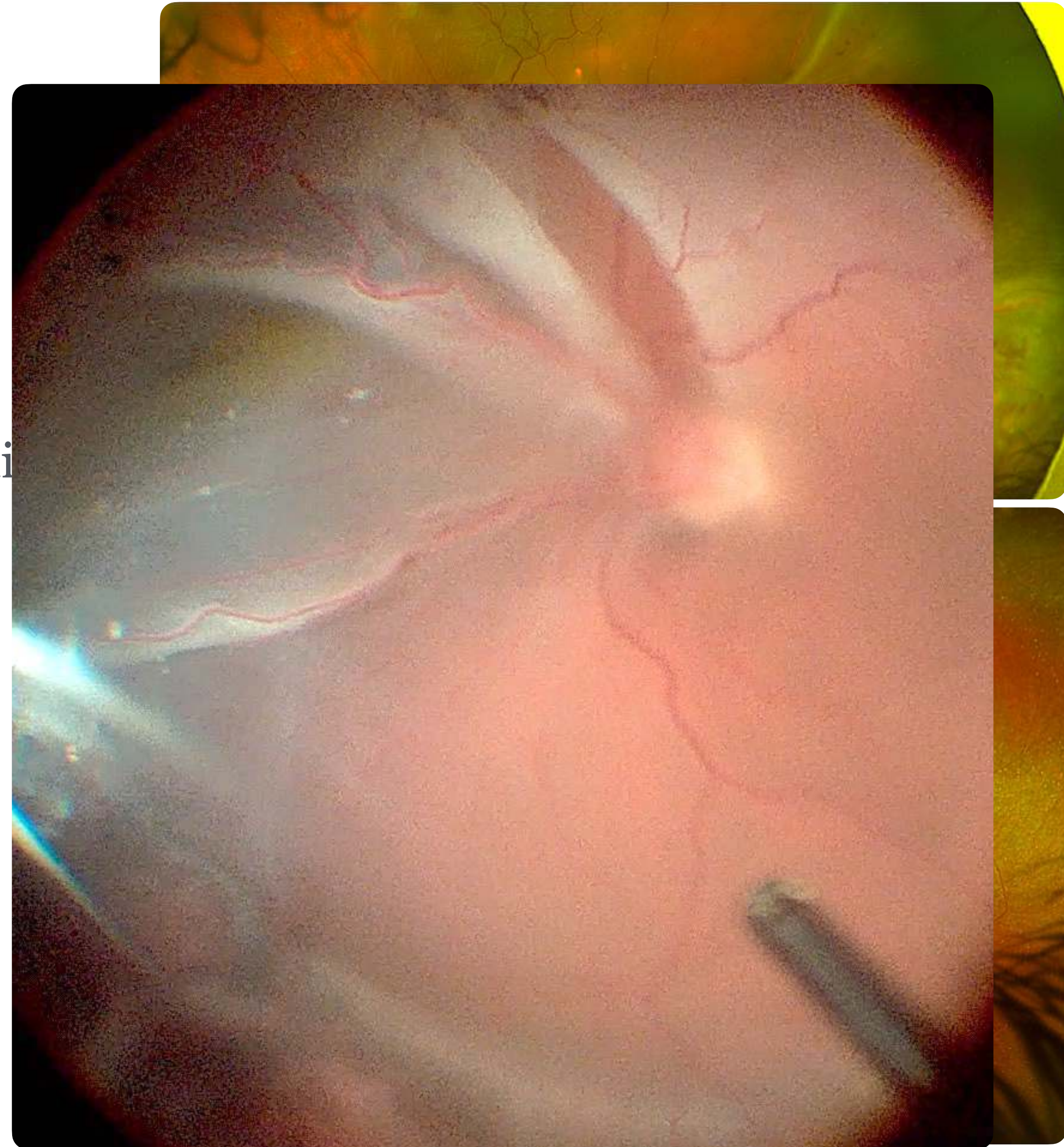
# Pediatric RRD & PVR



- 10 year old boy,
- History of prematurity & incubator
- C/O: Diminution of vision since 7 days, CF 1 m
- Temporal RRD
- SB ( #287 tyre & # 240 band) + External SRF drain
- 3 weeks later: Recurrent RD & PVR



- 23G PPL Vx, PH & ERM peeling
- Bimanual dissection of anterior PVR
- Temporal 180° retinotomy/retinectomy
- SiO tamponade
- Intravitreal MTX (400μ/0.05 mL)





01:17:55

OS - devid, ayad | postROP, SB, recurrent RD

0

Inf/IOP

30

mmHg

0.2

cc/min

Vacuum

0

mmHg

0

500

Chandelier

60

%

25GA

Cut Rate

0

cpm

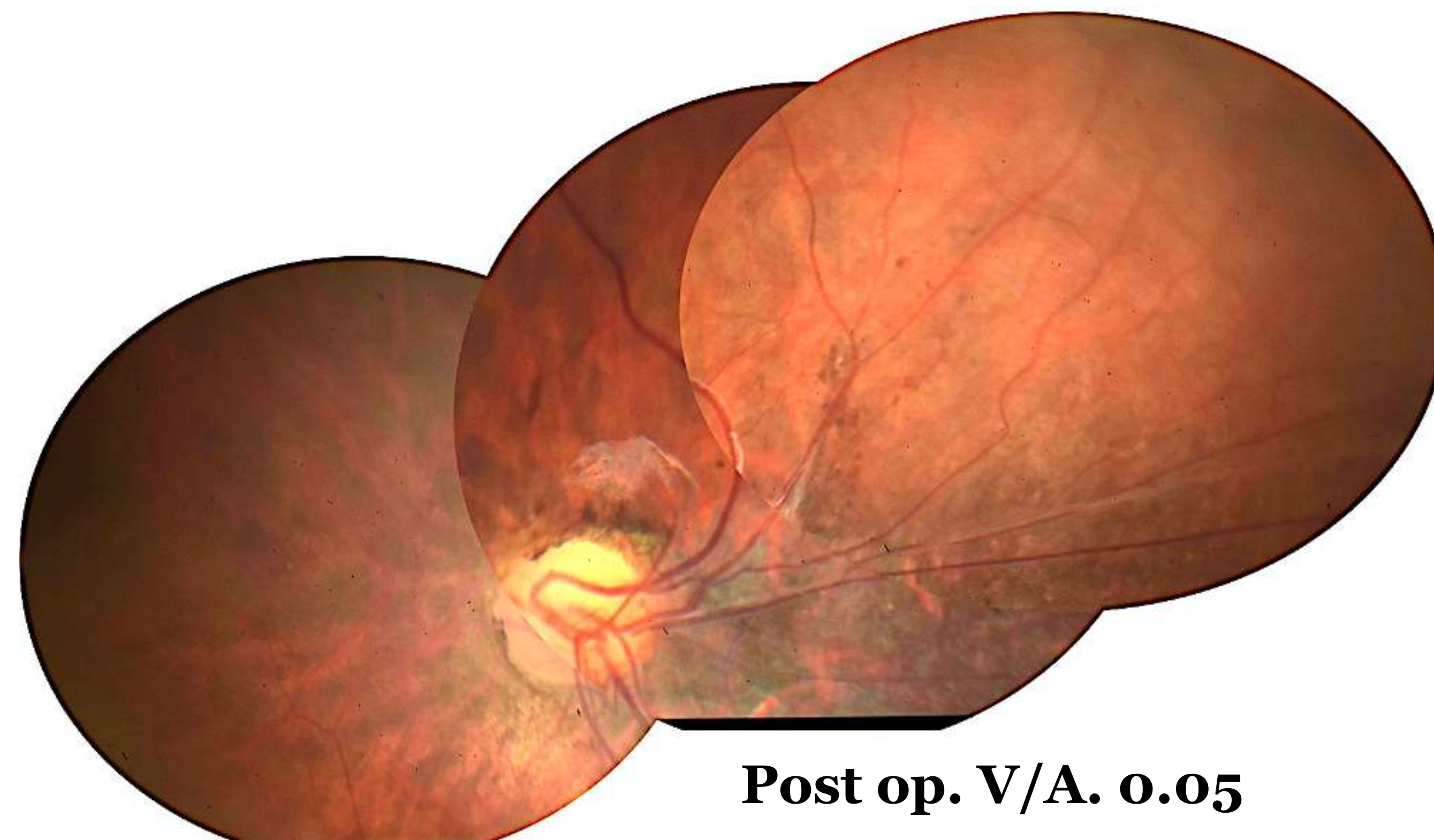
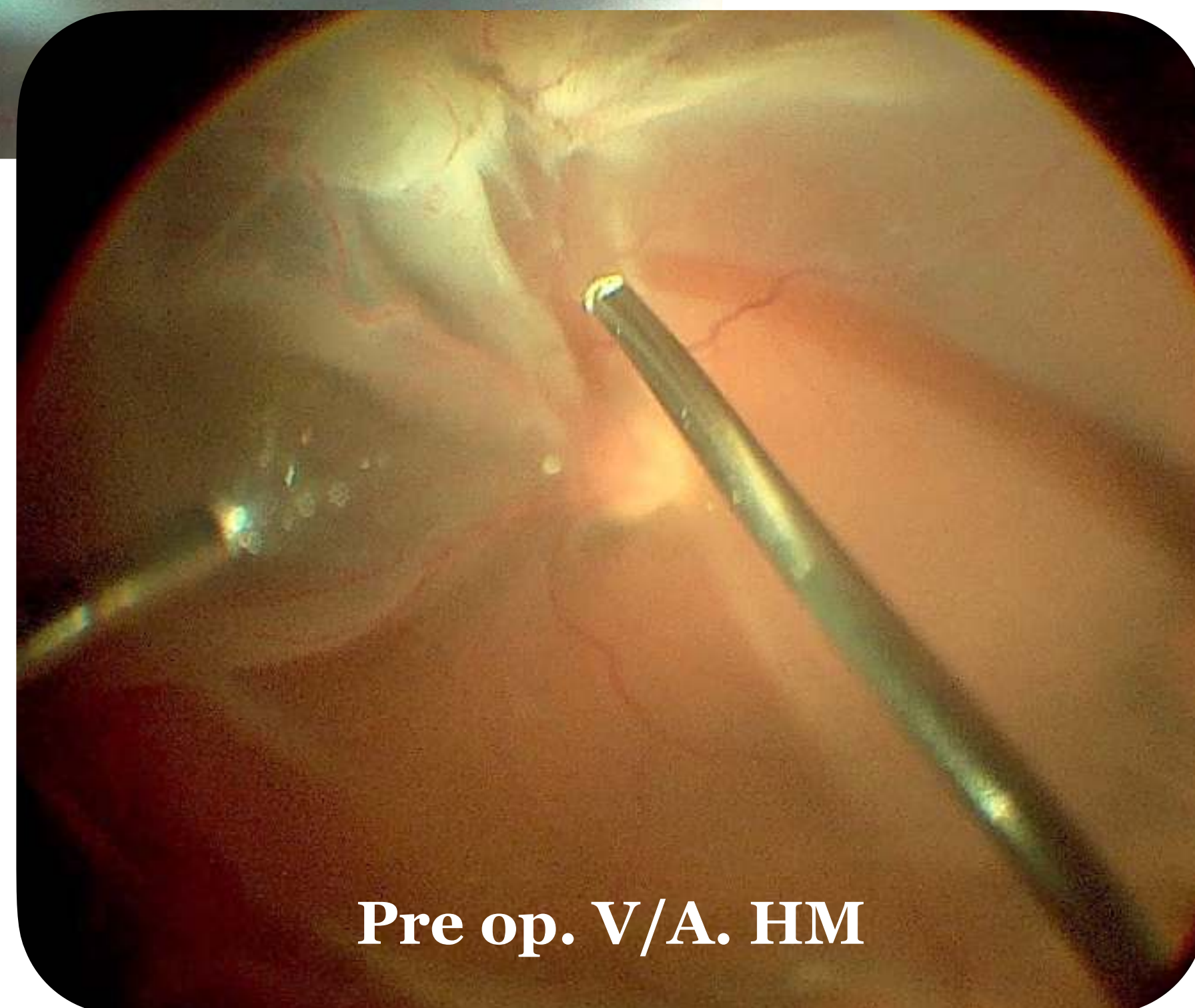
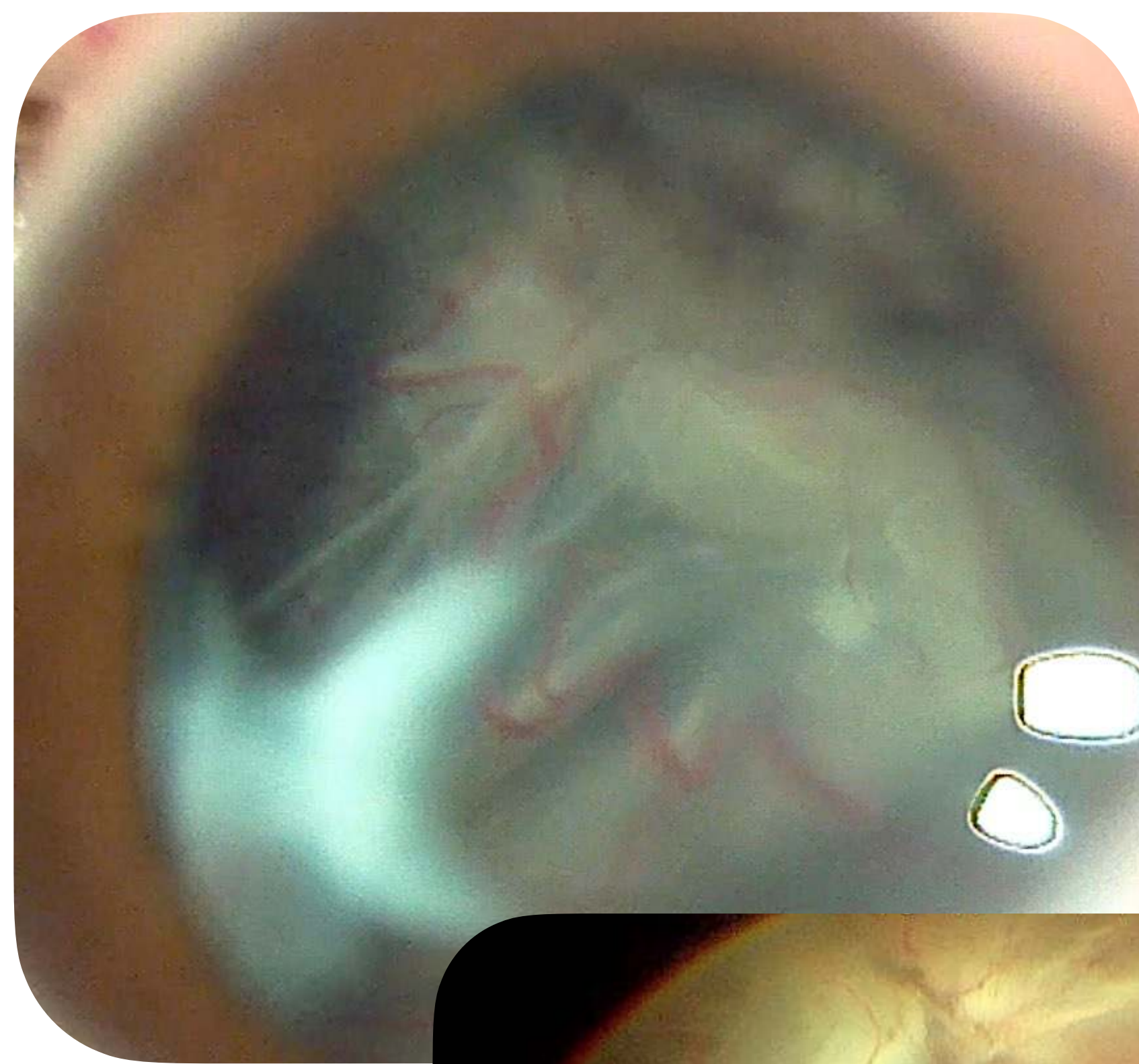
7500

7500

Cut Table

Core







11:01

OD - adel, ronaa | pvr, rd

Vacuum

0

mmHg

0

500

Inf / IOP

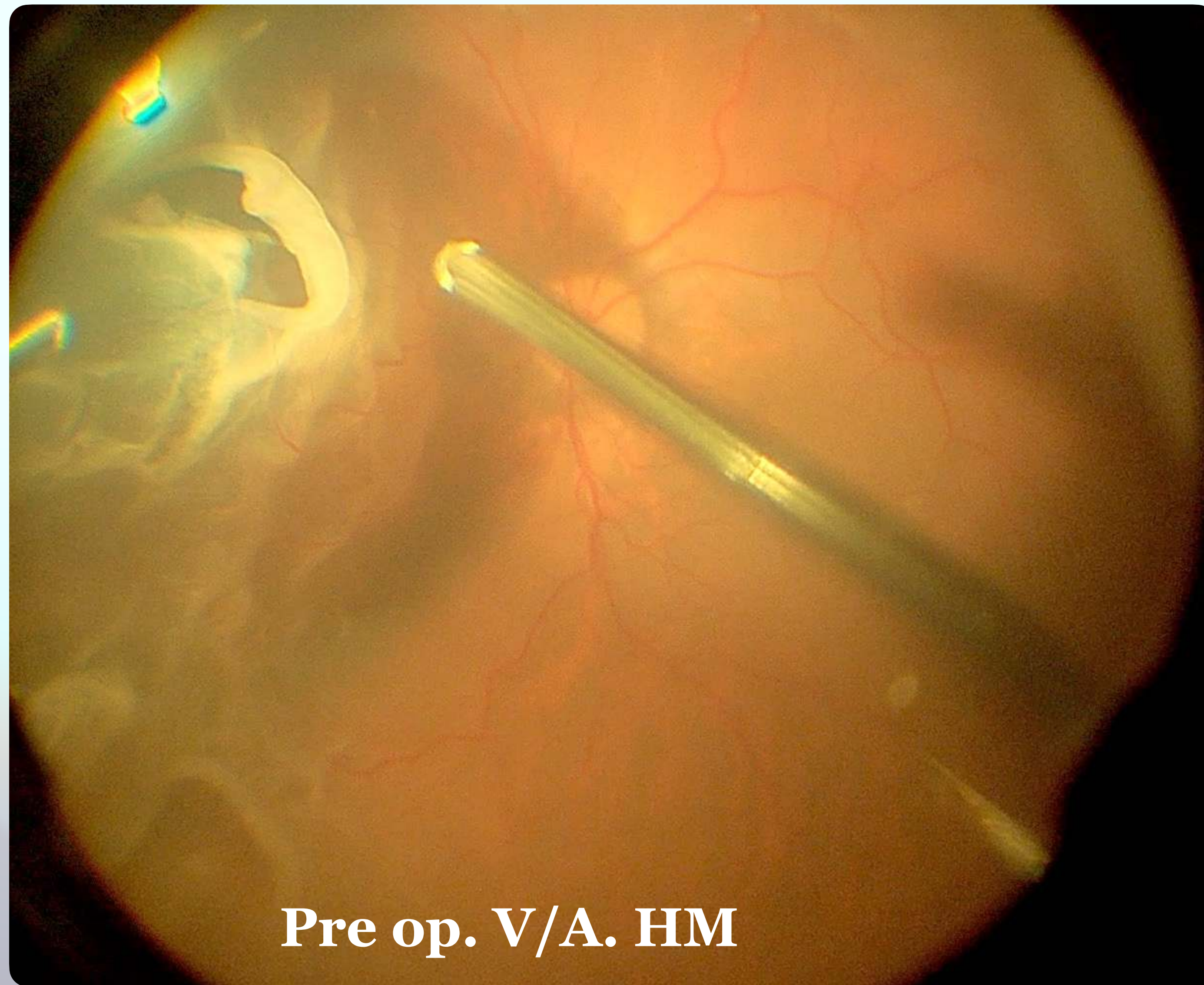
25

mmHg

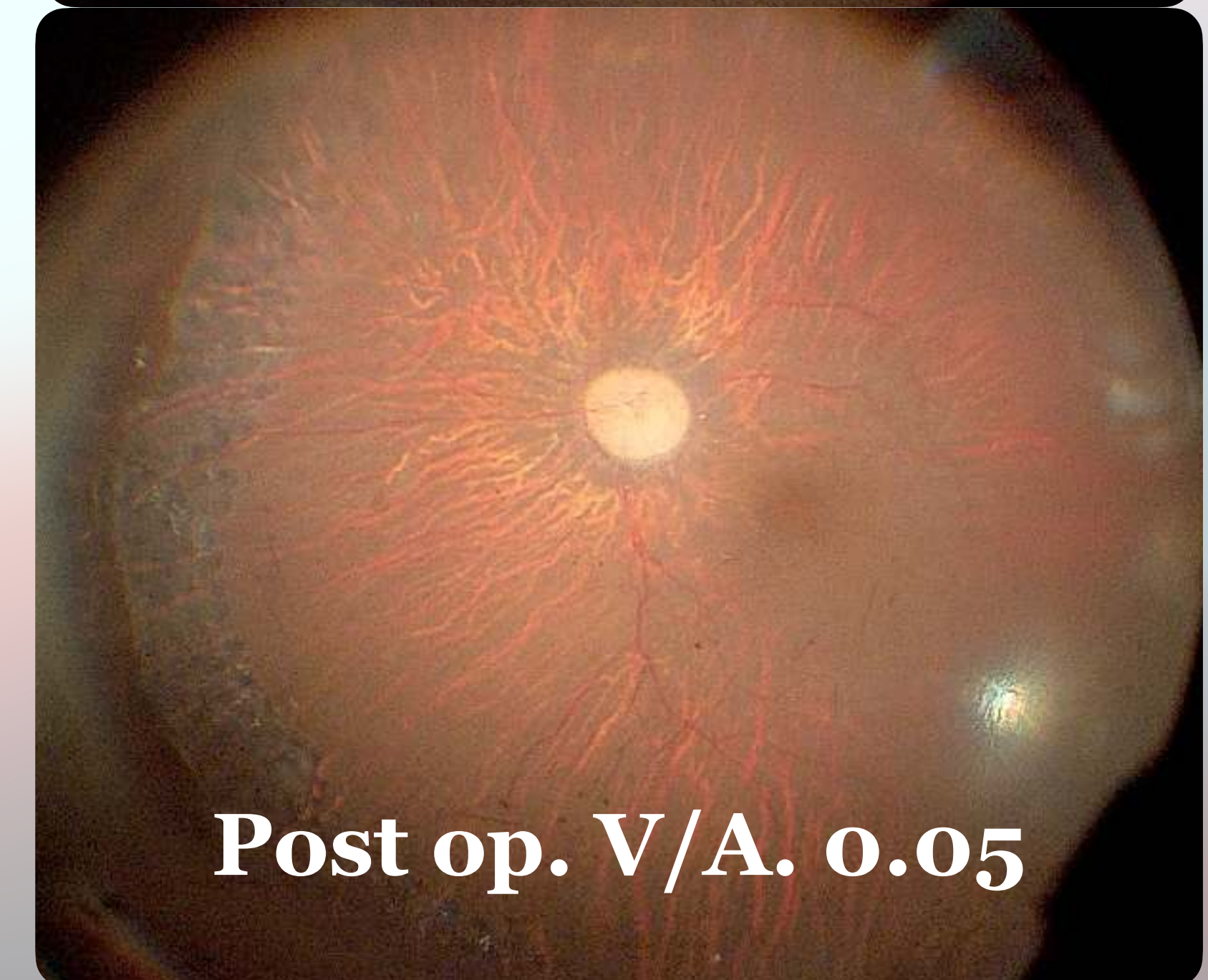
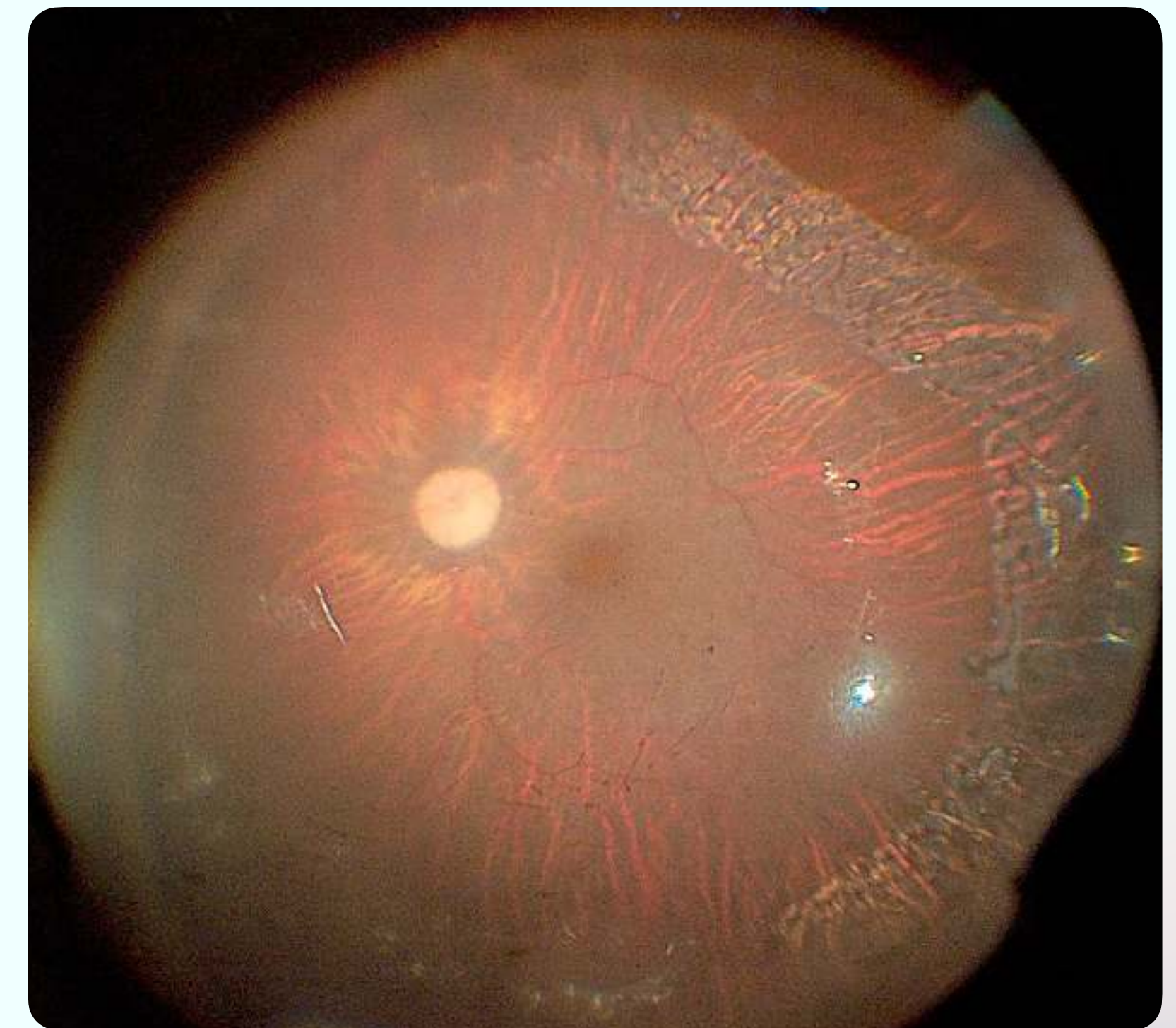
-0.6

cc/min





**Pre op. V/A. HM**



**Post op. V/A. 0.05**



32:38



Inf / IOP

26

mmHg

7.2

cc/min

Chandelier

10

%

25GA

Straight

60

%

23GA

Vacuum

500

mmHg

50

500

Cut Rate

5000

cpm

5000

5000

Cut Table

Shave

- GRT Complicating Stickler 's Syndrome, Type I.
- 8 year old boy
- Bimanual PH Dissection.



11:58



# 3 months later at SiO removal

Inf / IOP

30

mmHg

21

cc/min

Straight

70

%

23GA

Vacuum

323

mmHg

0

500



- 6 year old boy
- History of blunt trauma since 8 months
- C/O: Accidentally discovered diminution of vision , CF
- Long standing RD + PVR, closed funnel
- Phaco + PC IOL, 23G Vx, Peeling, SiO.
- Intraoperative 1st MTX injection.
- 3 post operative injections, once every 2 weeks





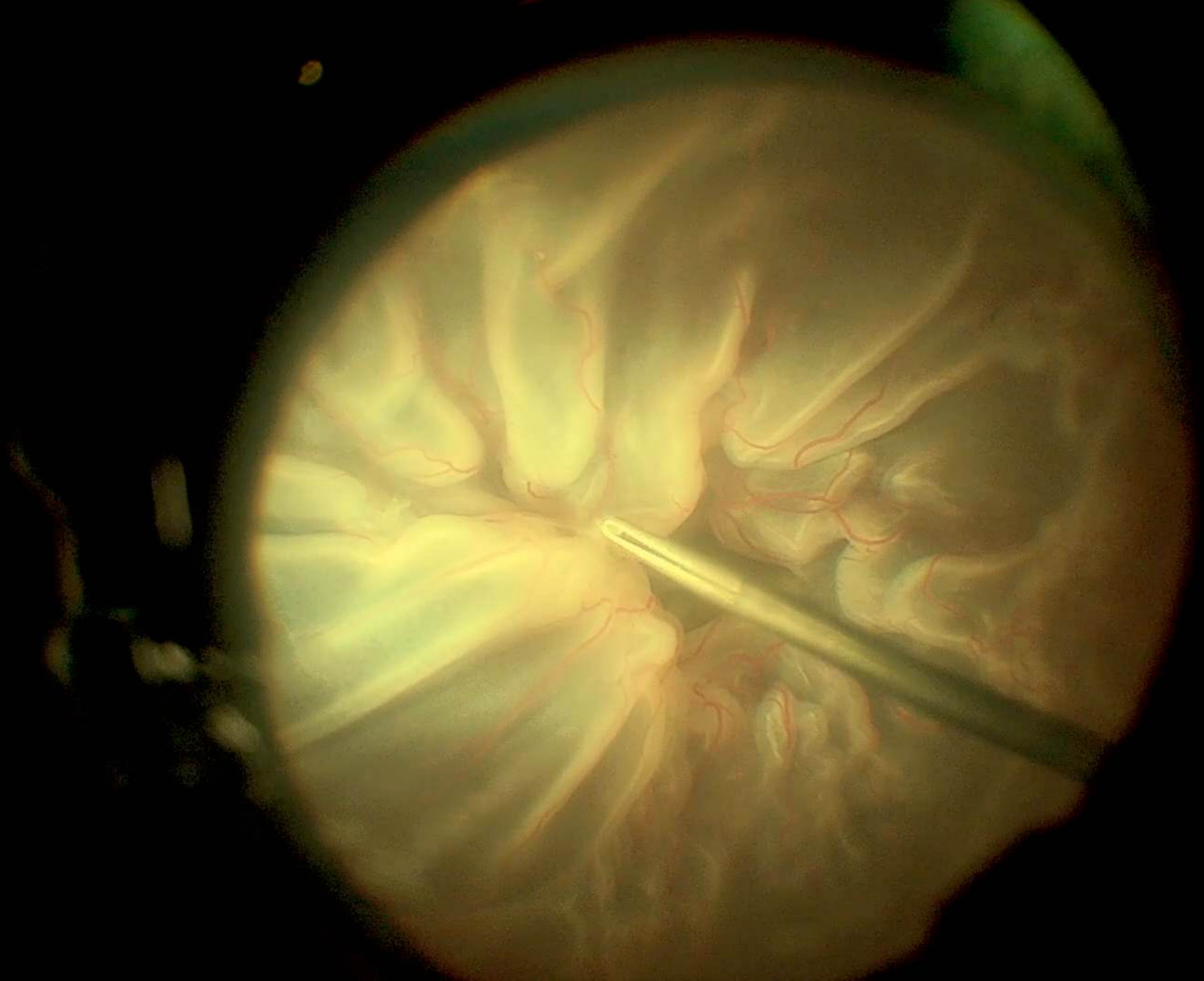
32:00

0  
Infusion  
25  
mmHg  
0.8  
cc/min

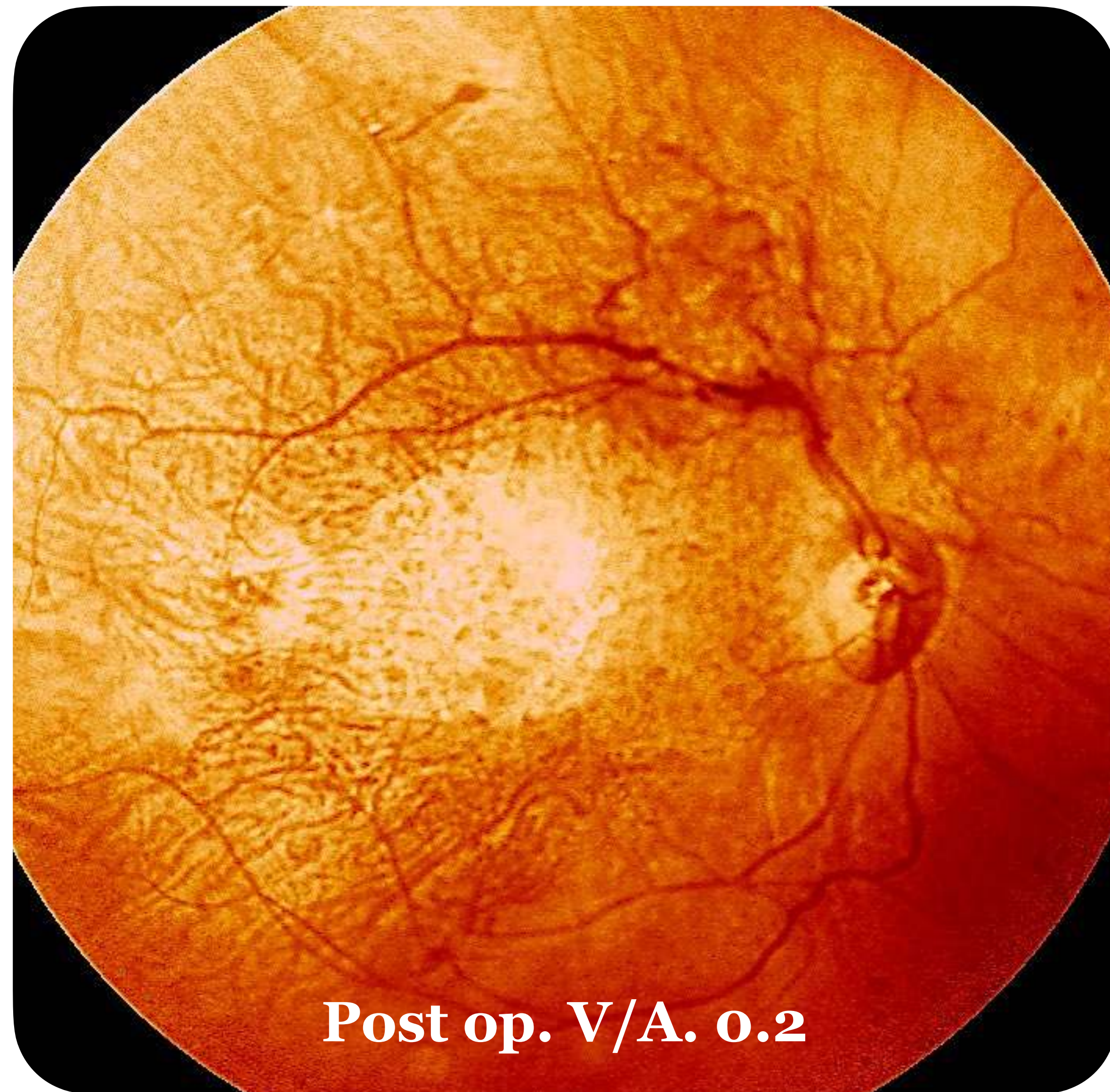
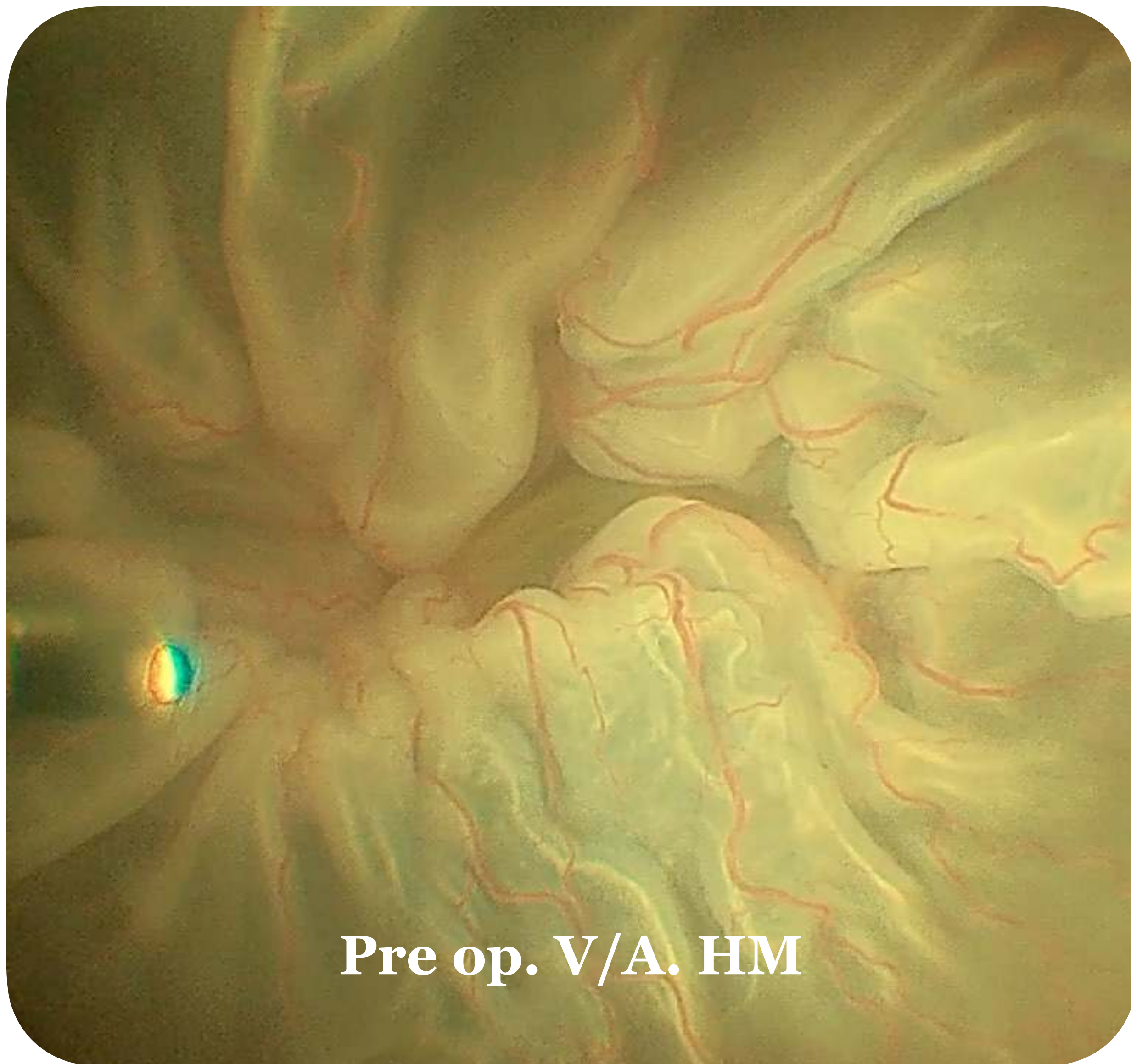
Chandelier  
10  
25GA  
Straight  
60  
23GA

Vacuum  
0  
mmHg  
55  
500

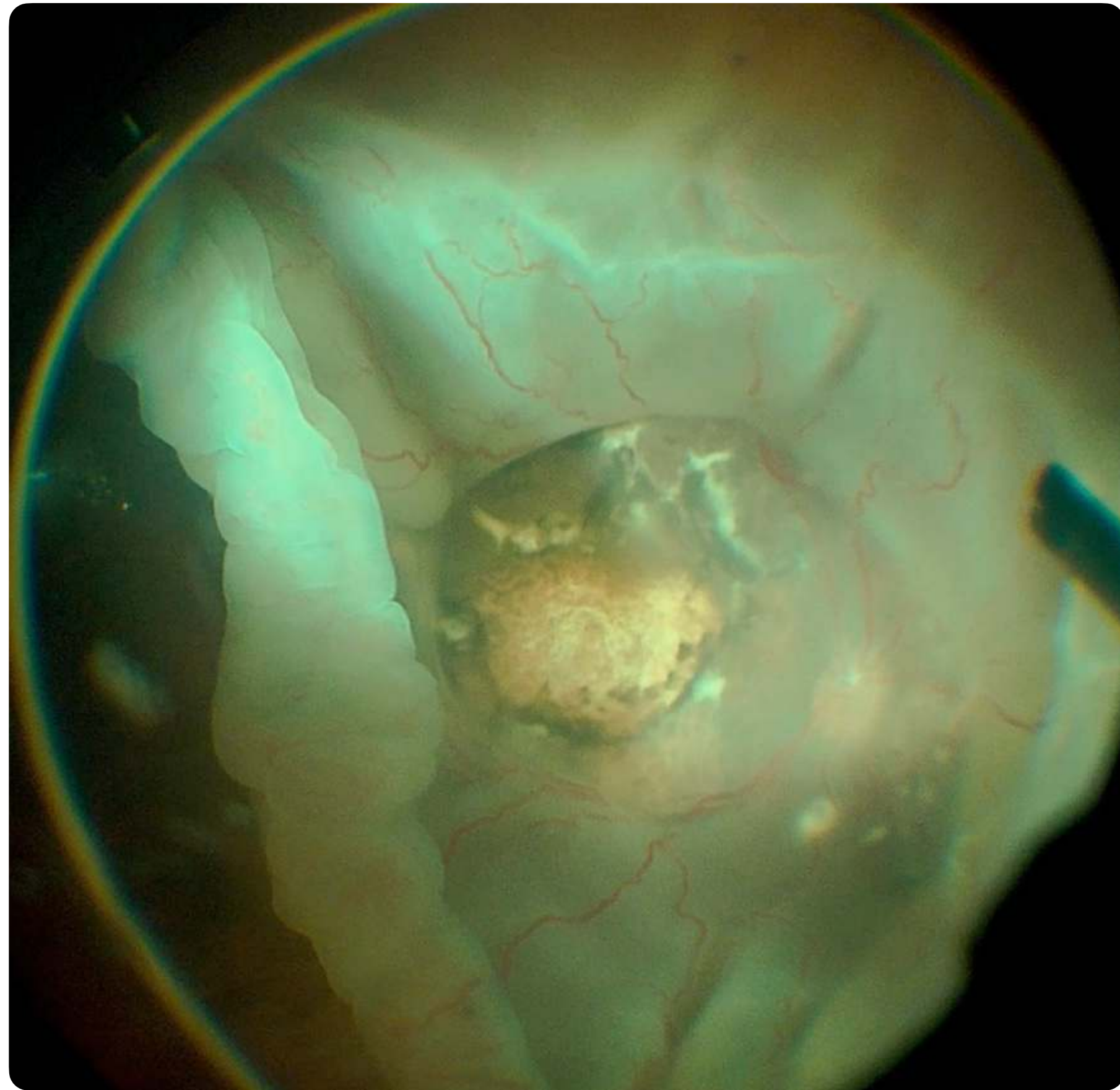
Cut Rate  
0  
cpm  
7500  
7500  
Cut Table  
Shave











- 20 year old boy, congenital coloboma, choroidal scarring
- 180 degrees GRT complicated with severe PVR
- Phaco + PCIOL, 23G Vx., peeling, SiO.
- Intraoperative MTX injection, 4 consecutive injections at 2 weeks intervals .





● 02:21:46

Recording started. Approx. 221 hrs remaining.

Inf / IOP  
**25**  
mmHg  
**0.3**  
cc/min

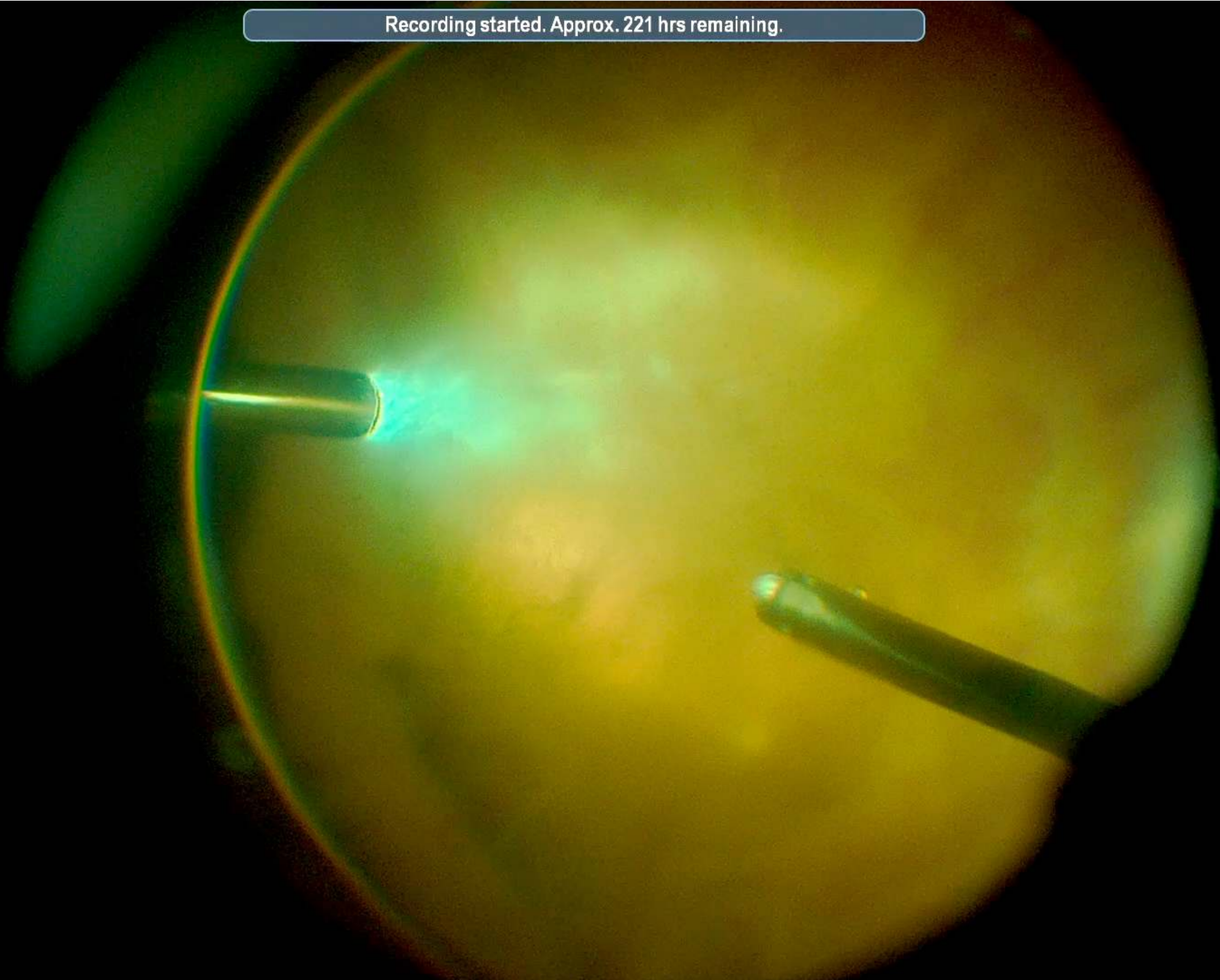
Vacuum  
**304**  
mmHg  
50 500

Chandelier  
**30**  
% 25GA

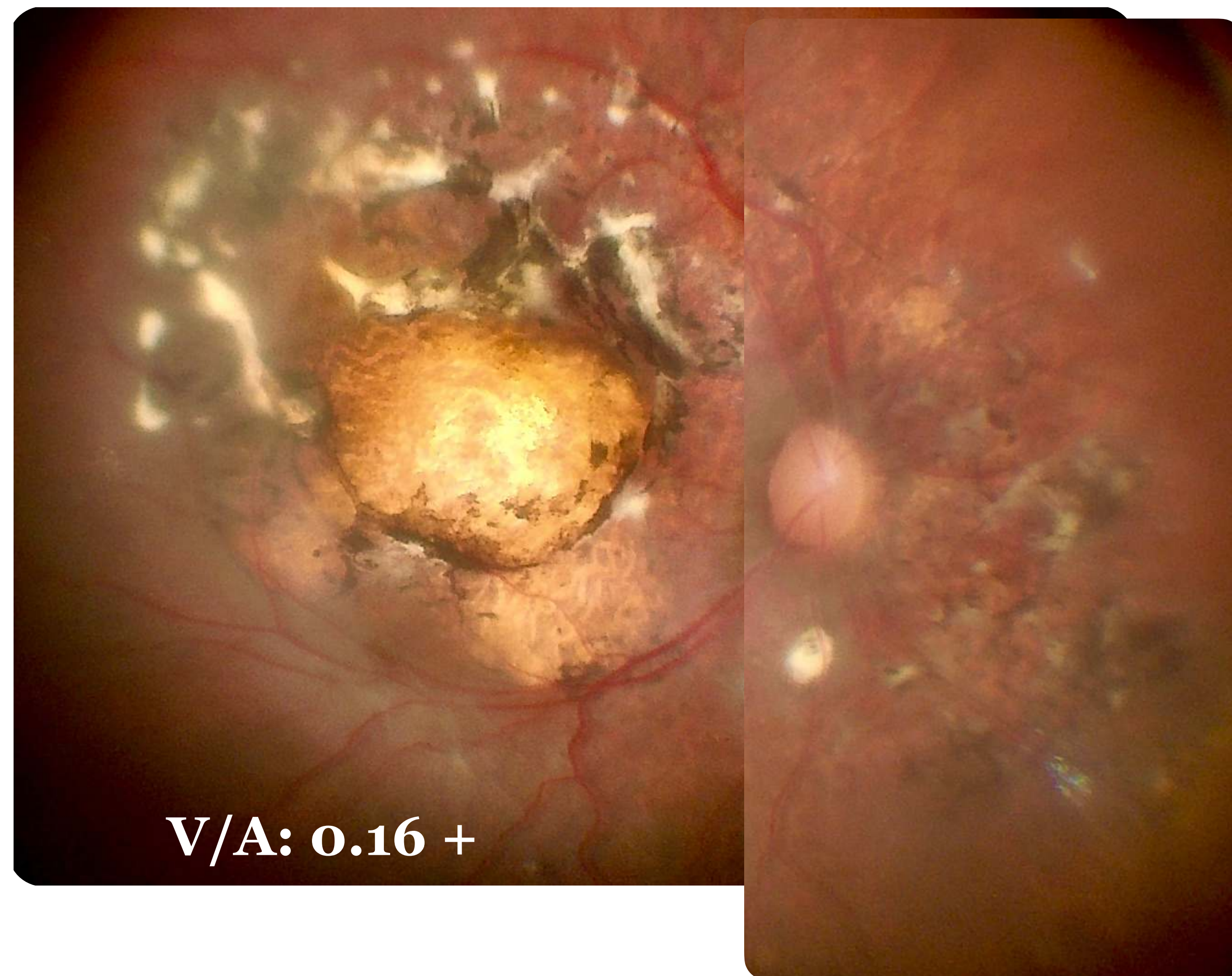
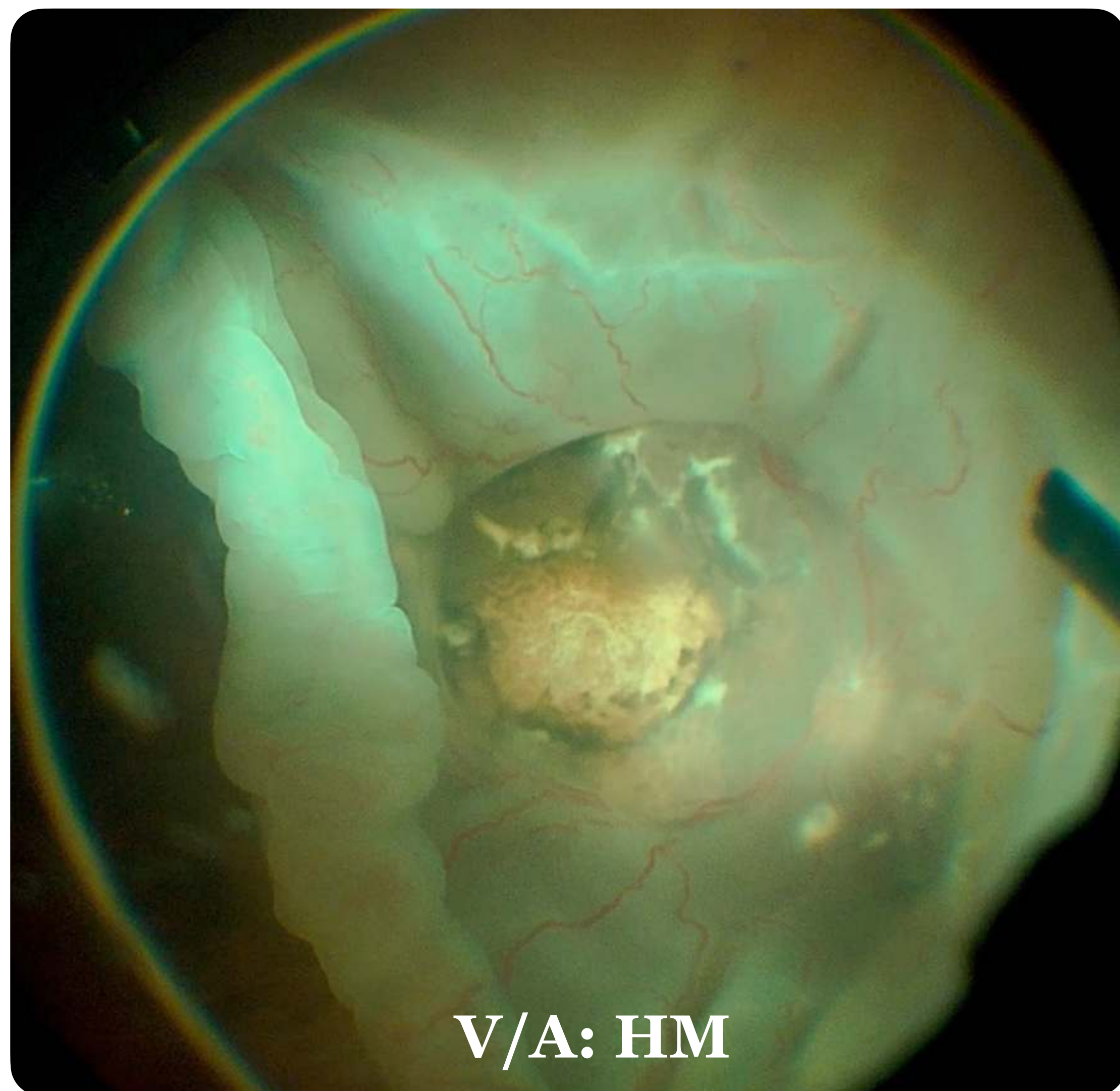
Cut Rate  
**7500**  
cpm  
7500 7500

Straight  
**80**  
% 23GA

Cut Table  
Shave





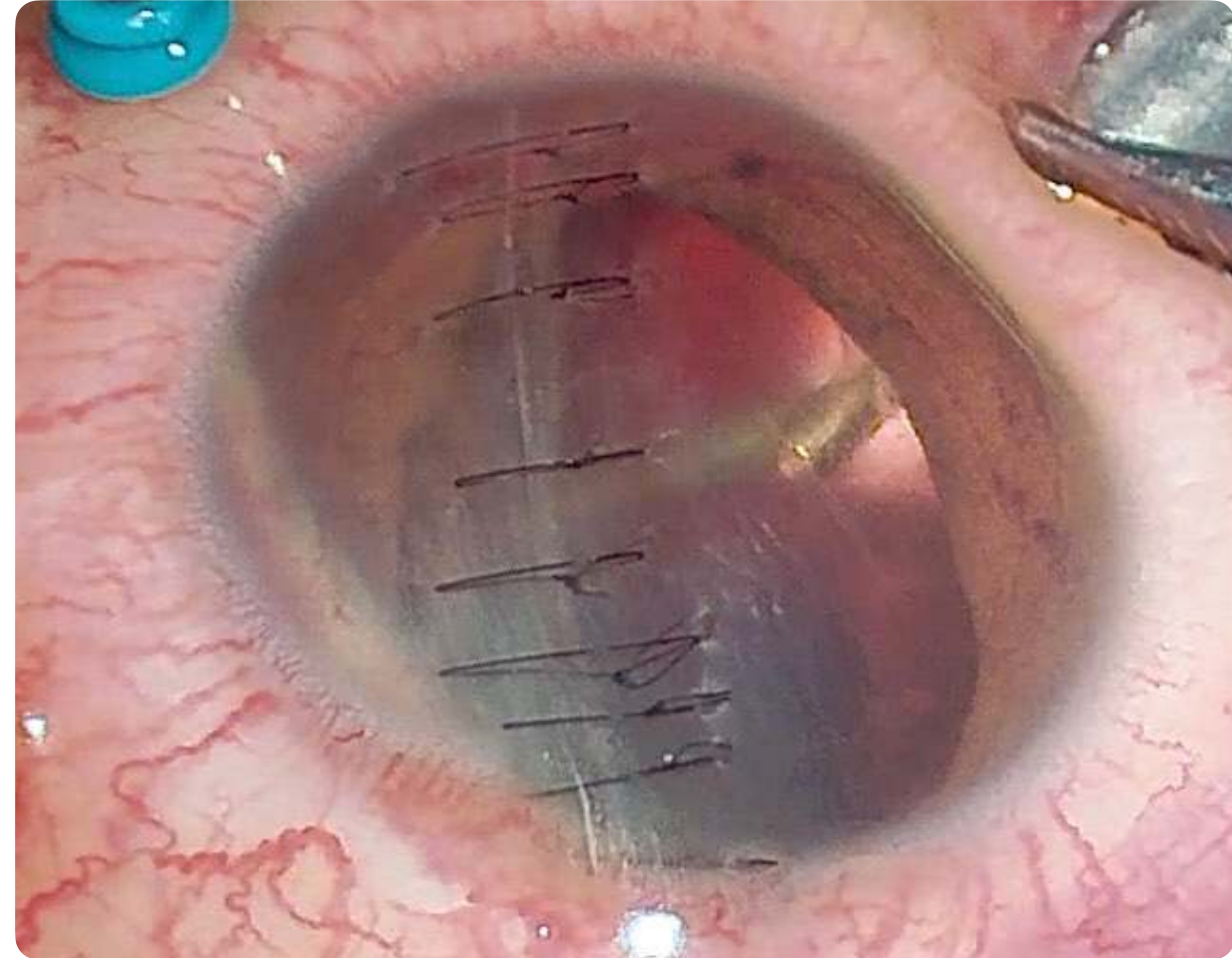




# Severe Open Globe Injuries & RD.



- 18 year old boy
- History of severe blunt trauma since 2 weeks
- 1ry repair of corneal wound, V/A: HM
- Torn iris, extruded crystalline lens, massive vit. Hge, RD (U/S)
- 23G Vx, Extended ILM peel, endolaser, SiO.
- No intraoperative MTX injection.
- 6 weeks later: recurrent nasal RD, extensive SR proliferation







● 36:40

Inf / IOP

30

mmHg

8.9

cc/min

Chandelier

10

%

25GA

Straight

50

%

23GA

Vacuum

500

mmHg

0 500

Cut Rate

7500

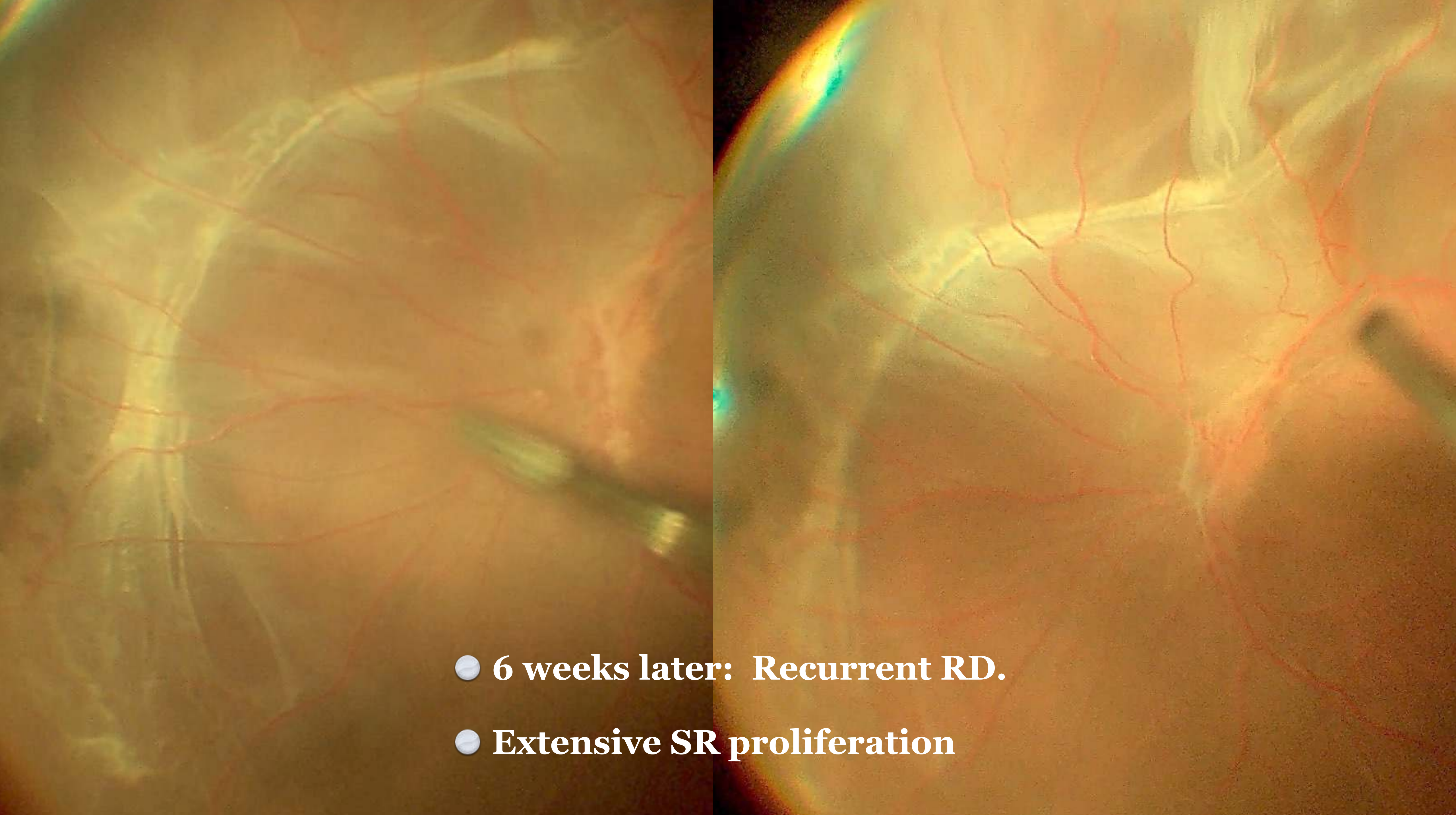
cpm

7500 7500

Cut Table

Core





- 6 weeks later: Recurrent RD.
- Extensive SR proliferation





0

36:35

Inf / IOP

30

mmHg

-0.4

cc/min

Vacuum

0

mmHg

50

500

Chandelier

20

%

25GA

Straight

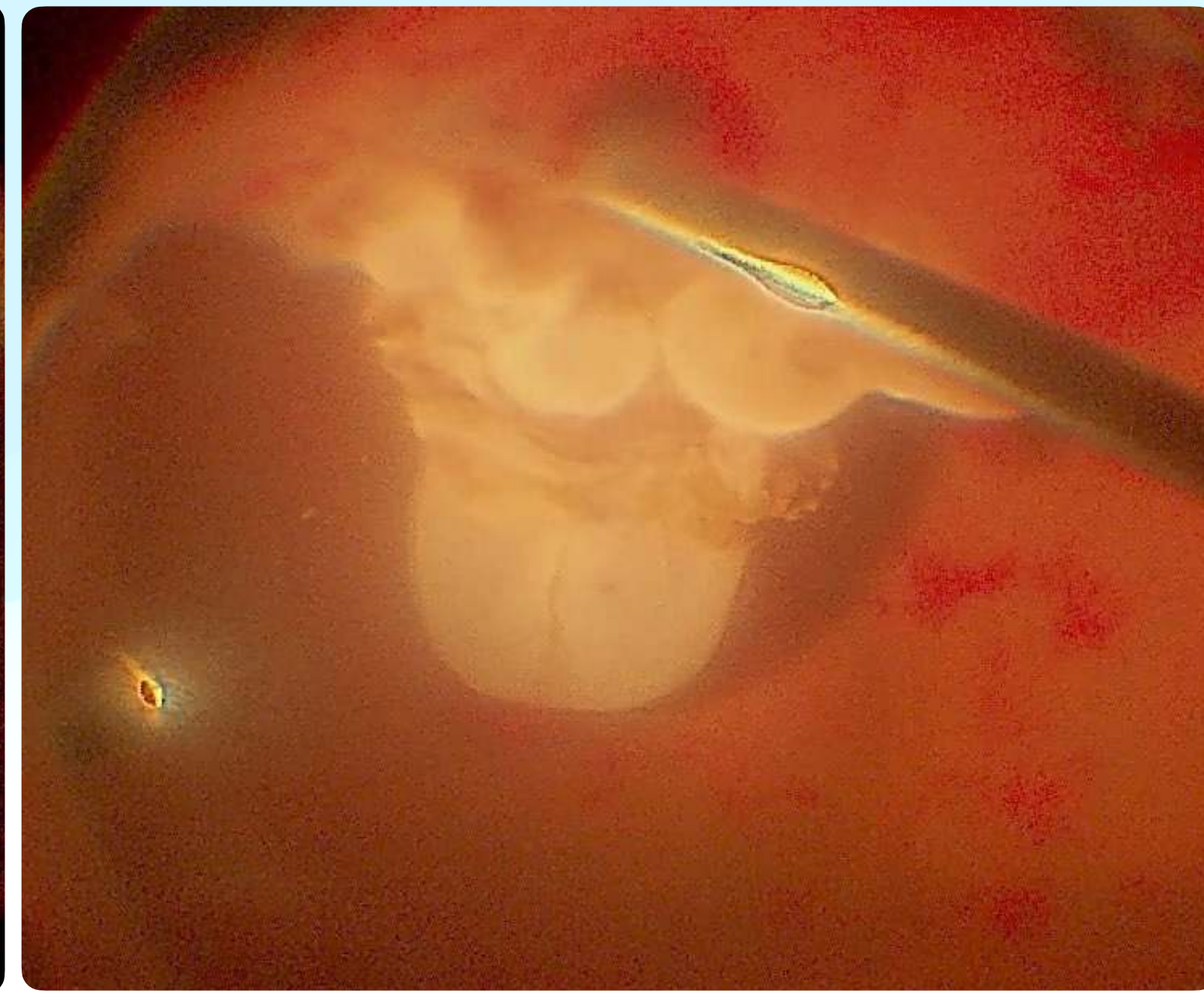
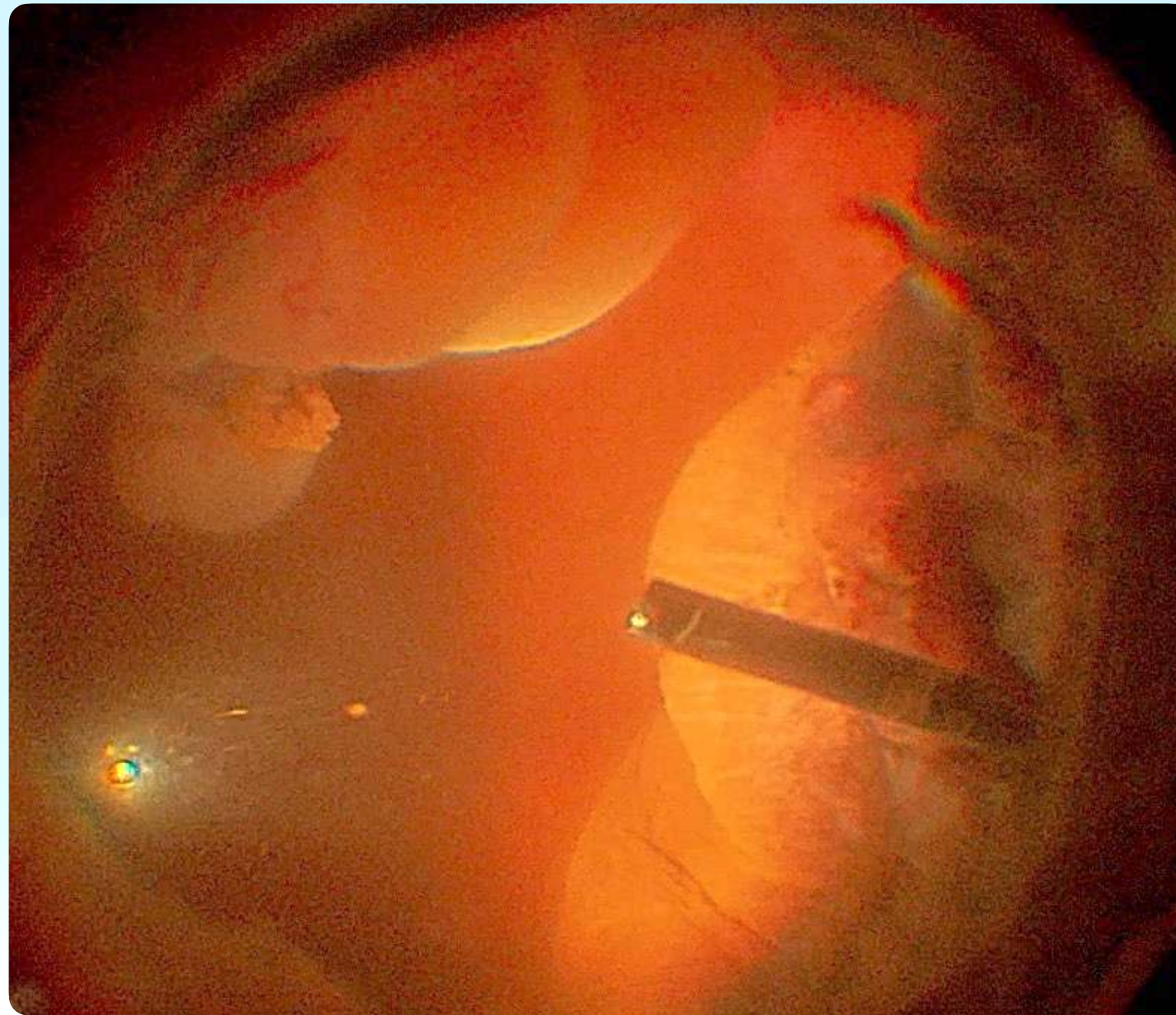
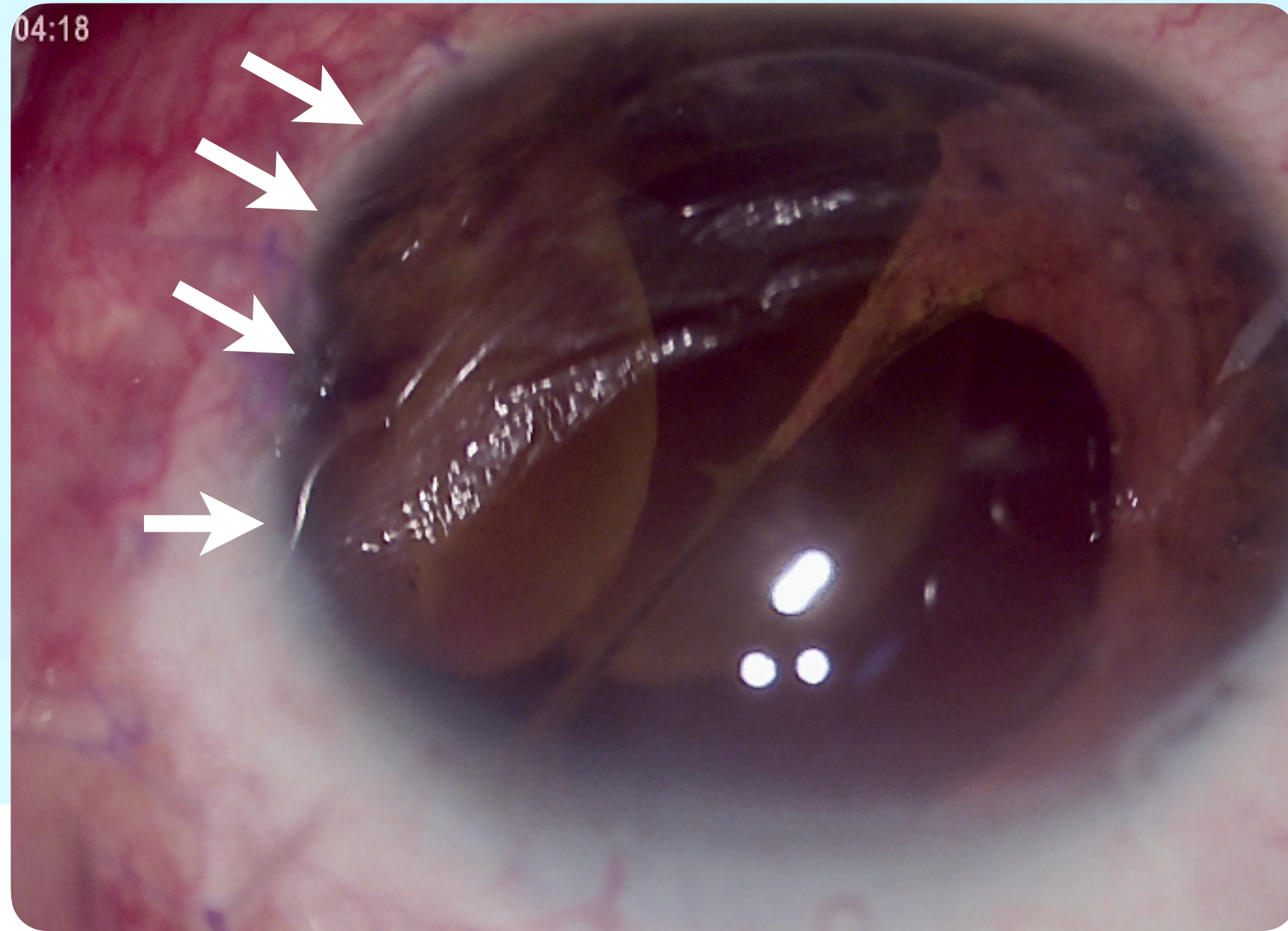
40

%

23GA

NOENUITY





- 35 year old male
- History of severe blunt trauma since 3 weeks
- 1ry repair of limbal corneoscleral wound, V/A: HM
- Torn iris, extruded crystalline lens, massive vit. Hge, choroidal hgic RD (U/S)



05:49



0

Inf / IOP

25

mmHg

0.3

cc/min

Vacuum

0

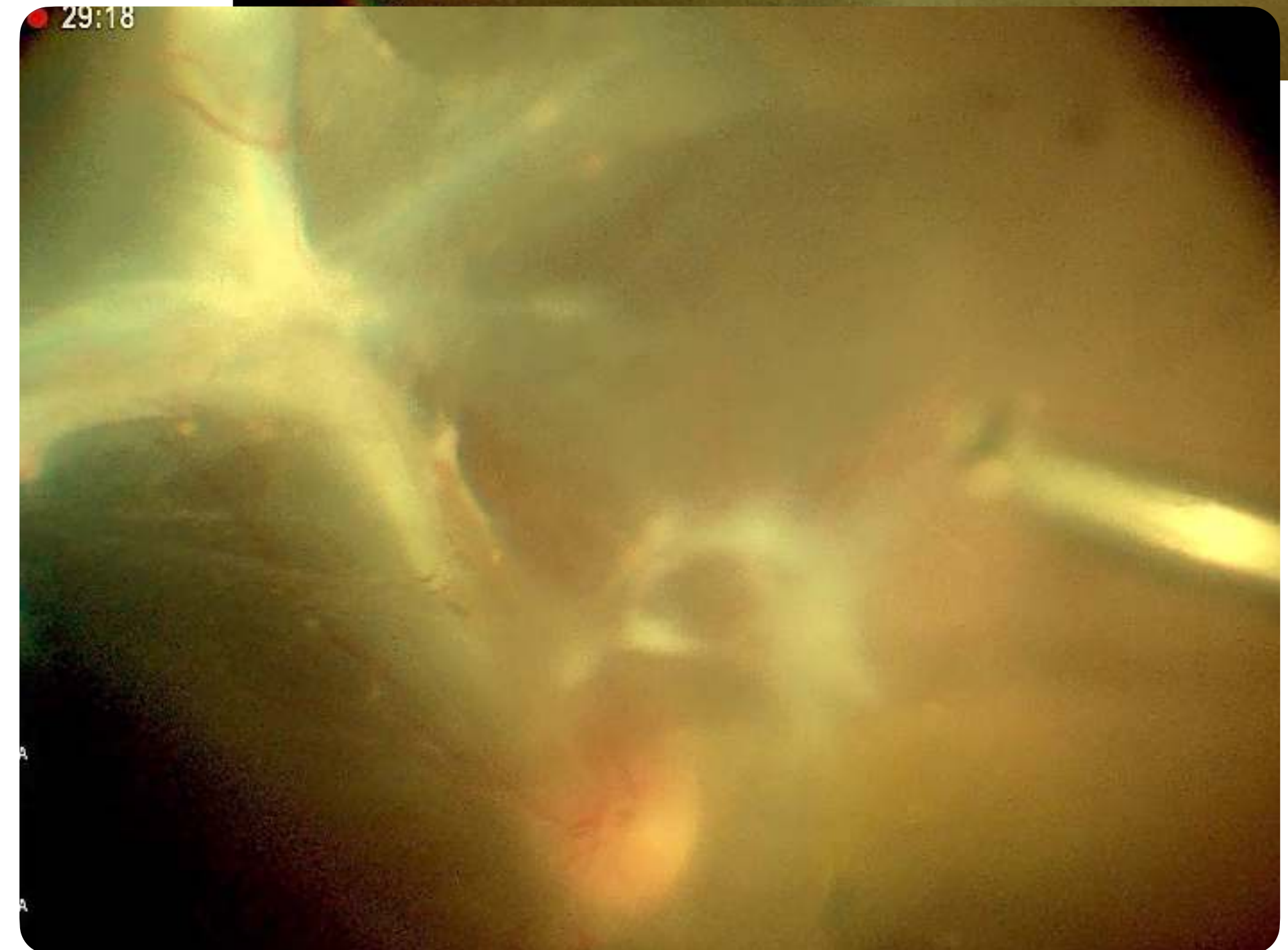
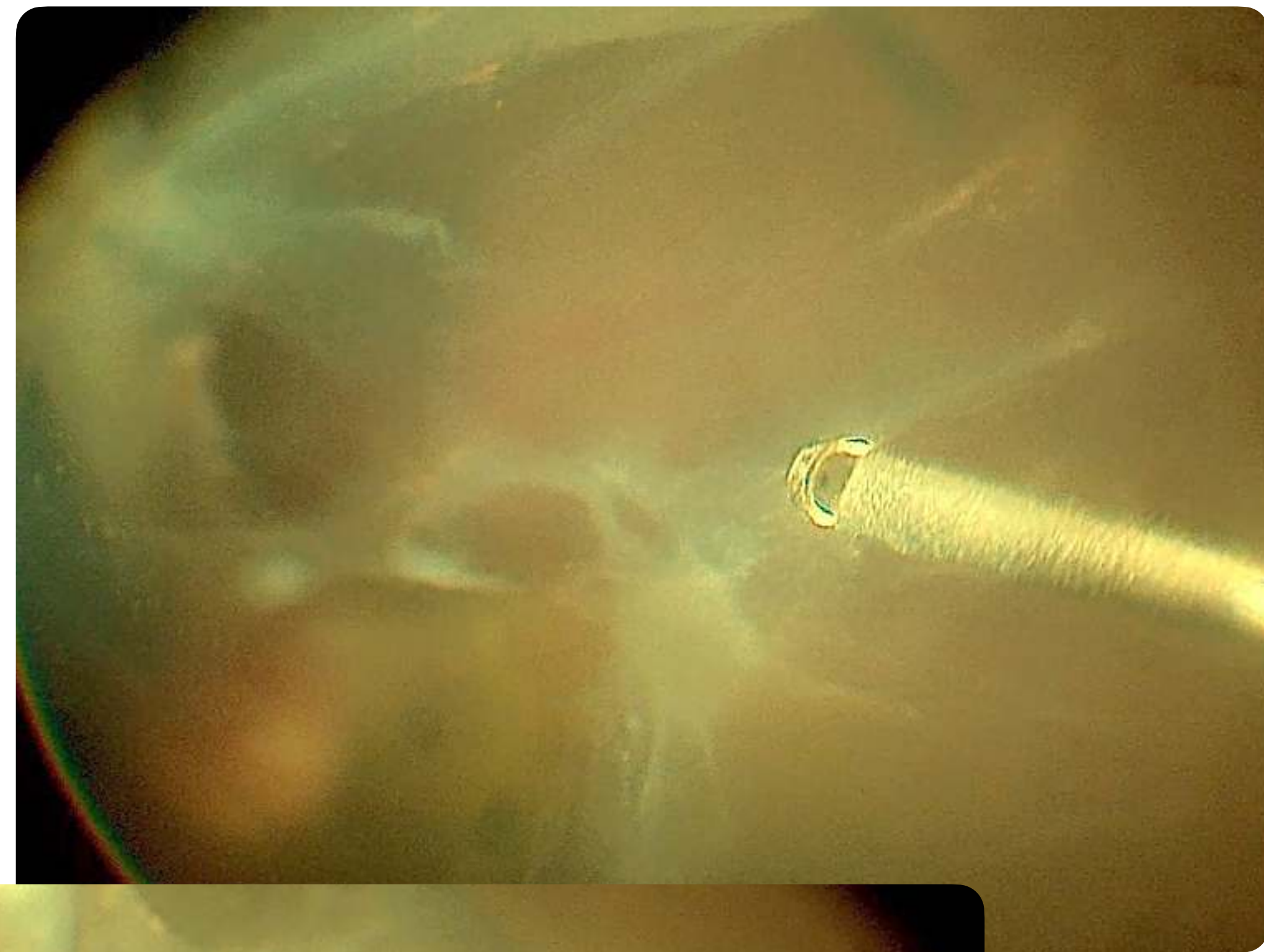
mmHg

0

600



- 8 year old girl
- History of blunt trauma since 6 months
- C/O: Accidentally discovered diminution of vision , CF
- Long standing RD + PVR
- Phaco + PC IOL, 23G Vx, Peeling, SiO.
- Intraoperative 1st MTX injection.
- 3 post operative injections, once every 2 weeks







● 29:03

Infusion

25

mmHg

0.4

cc/min

Chandelier

20

%

25GA

Straight

60

%

23GA

Vacuum

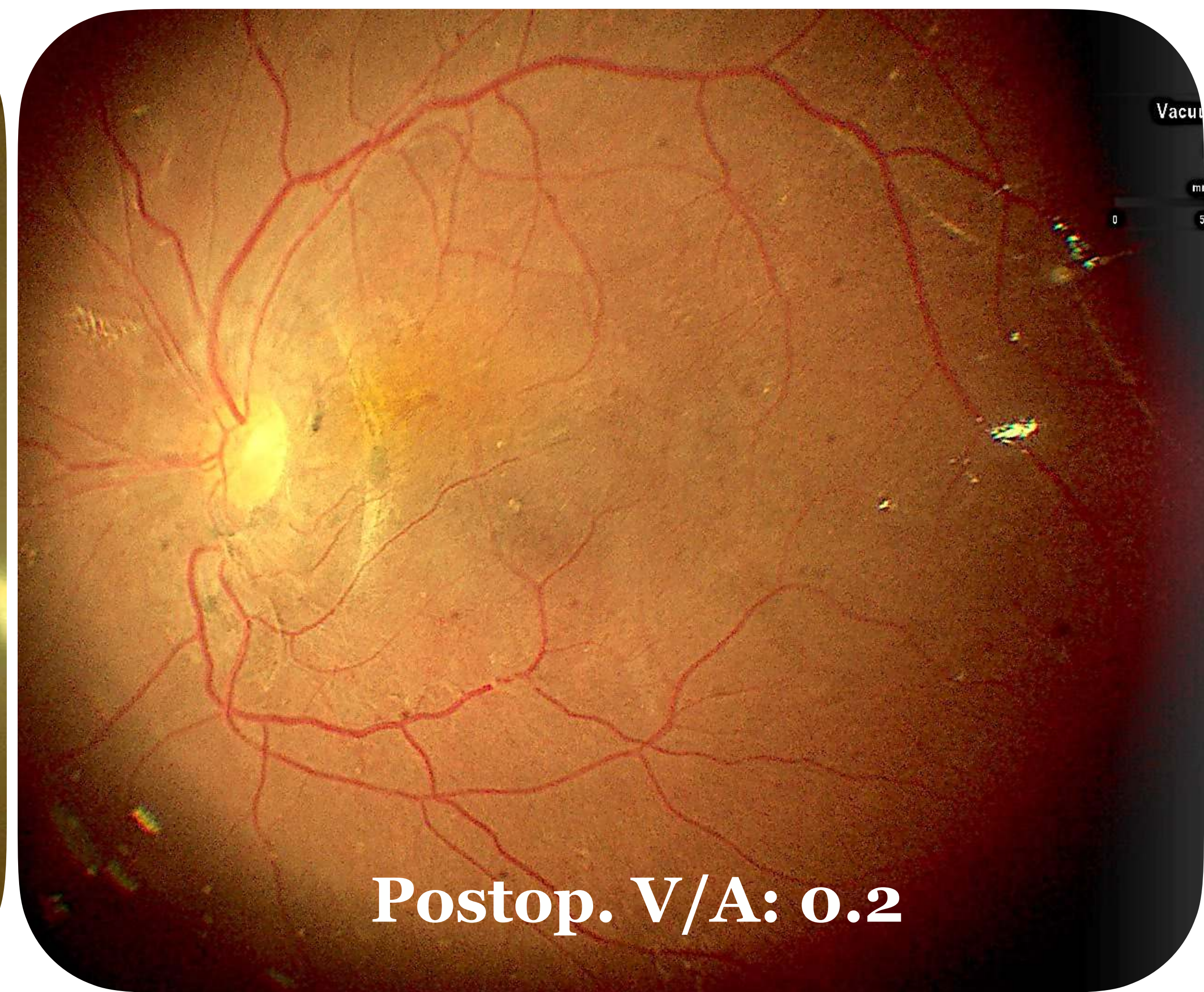
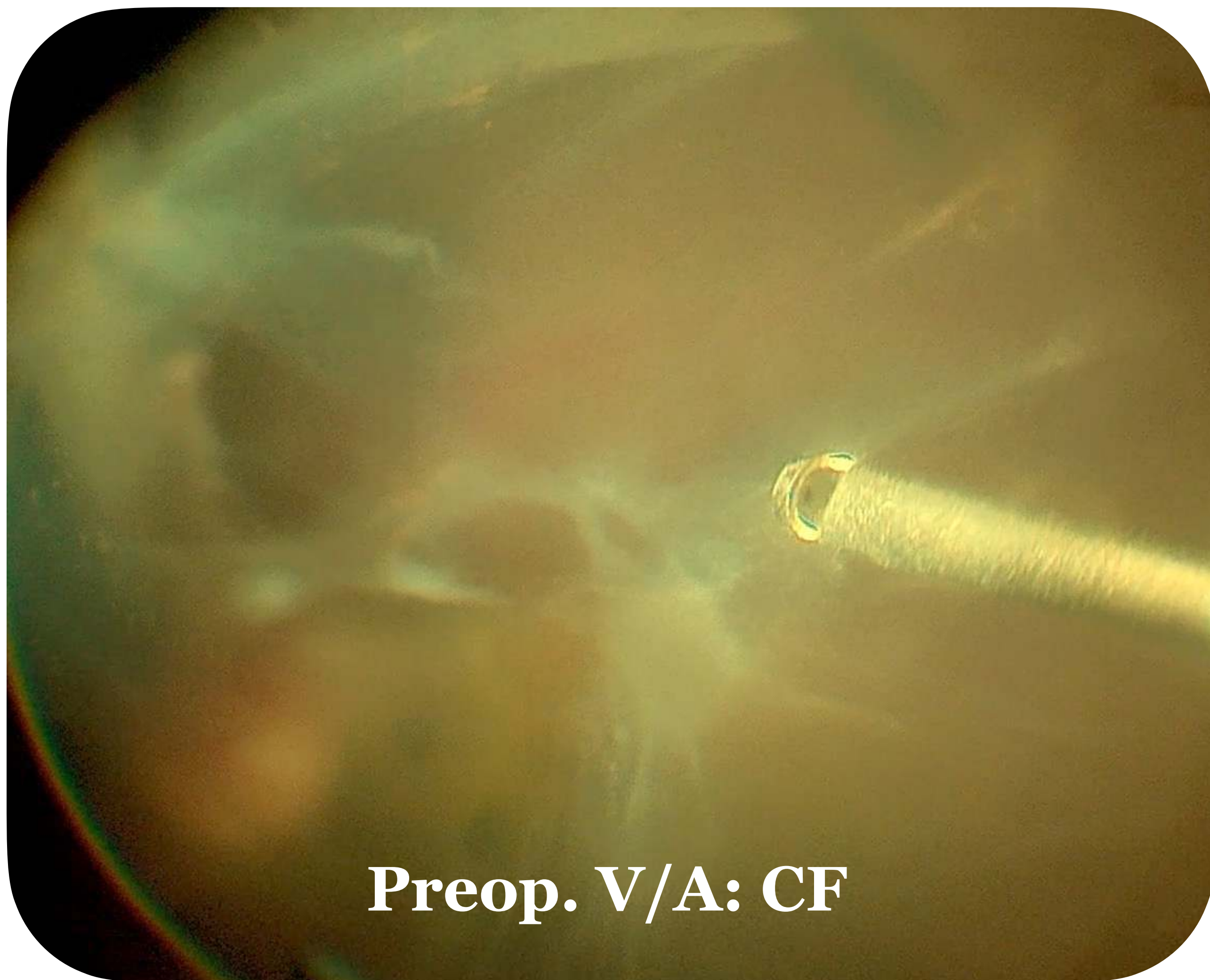
0

mmHg

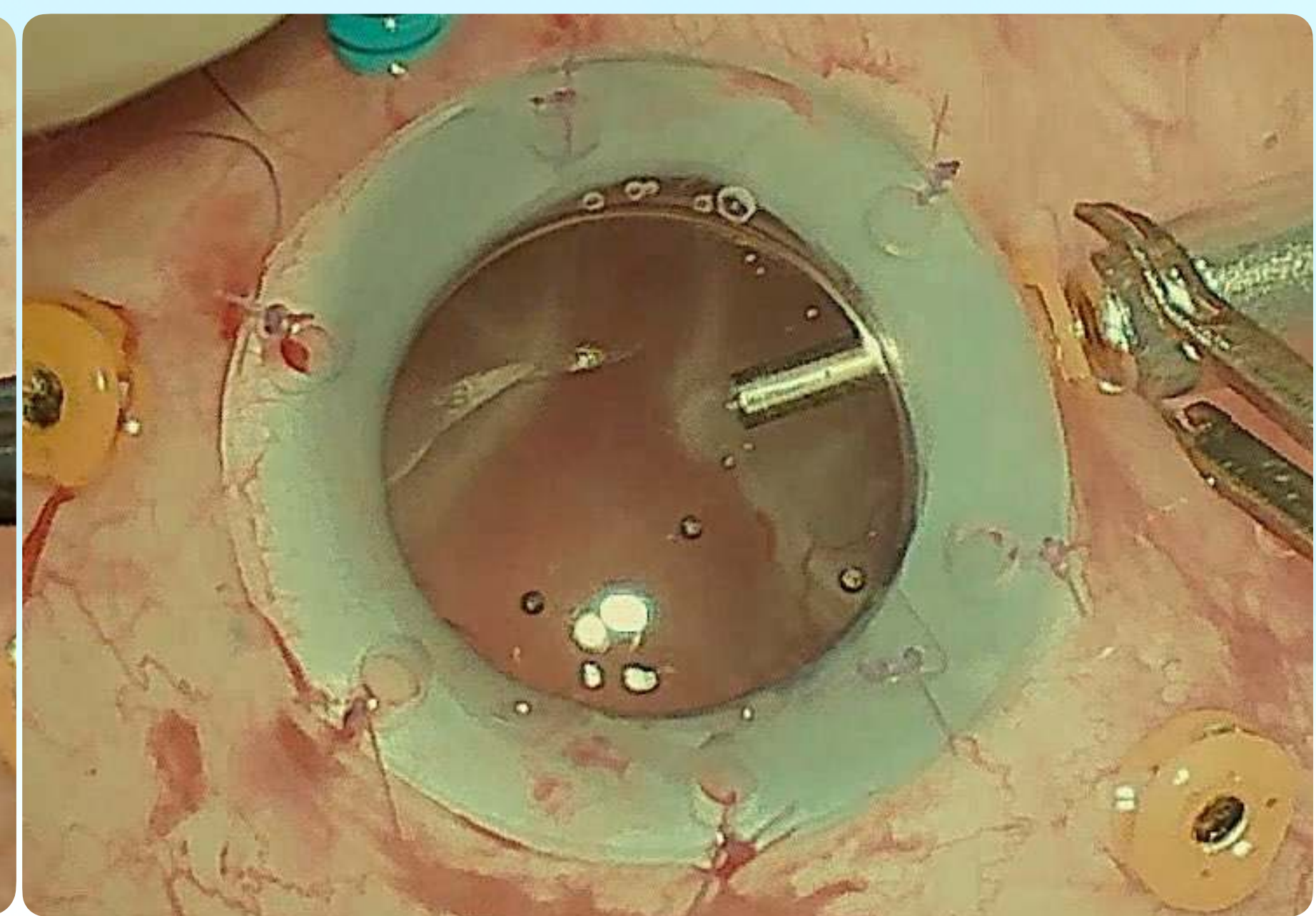
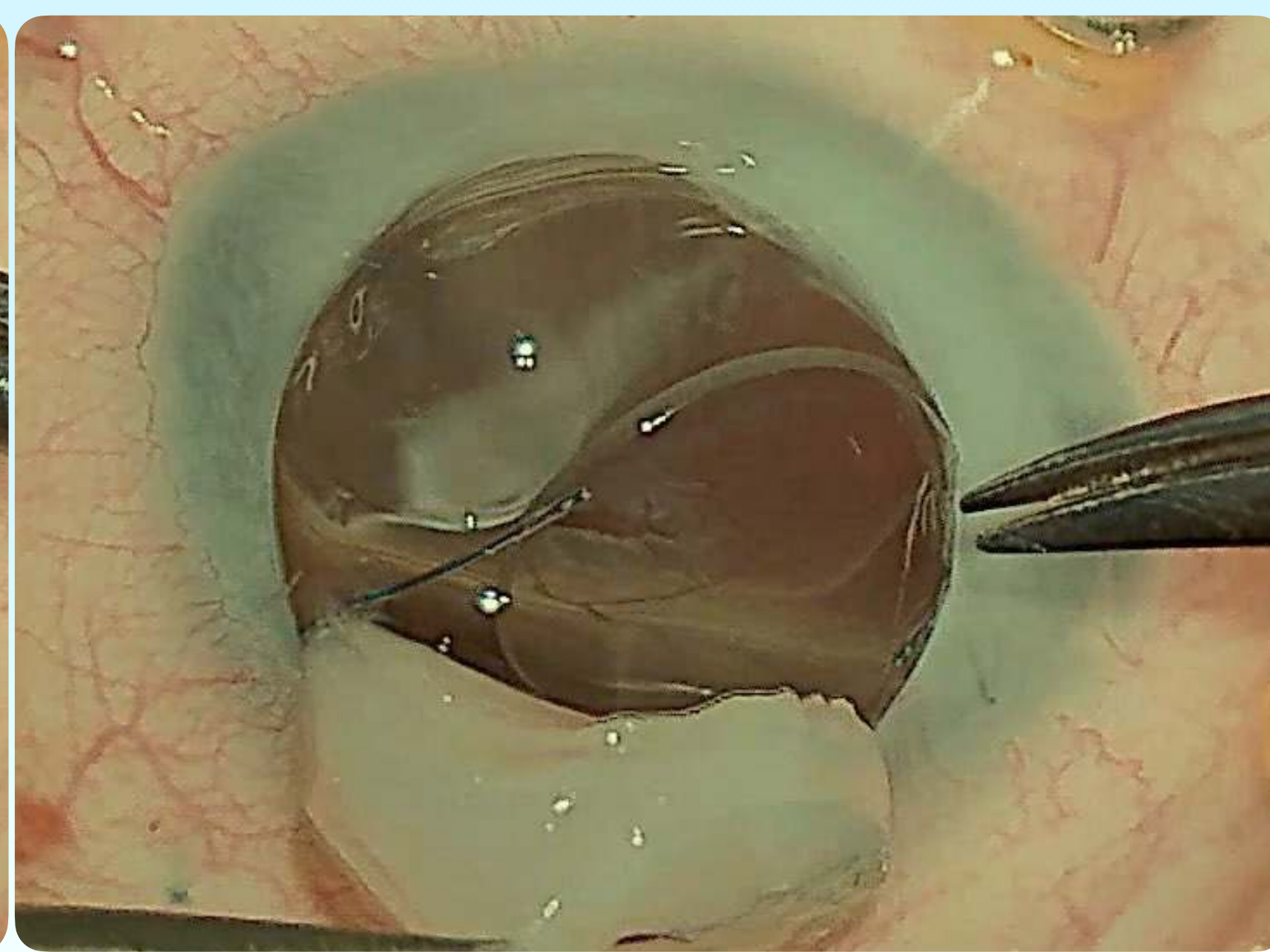
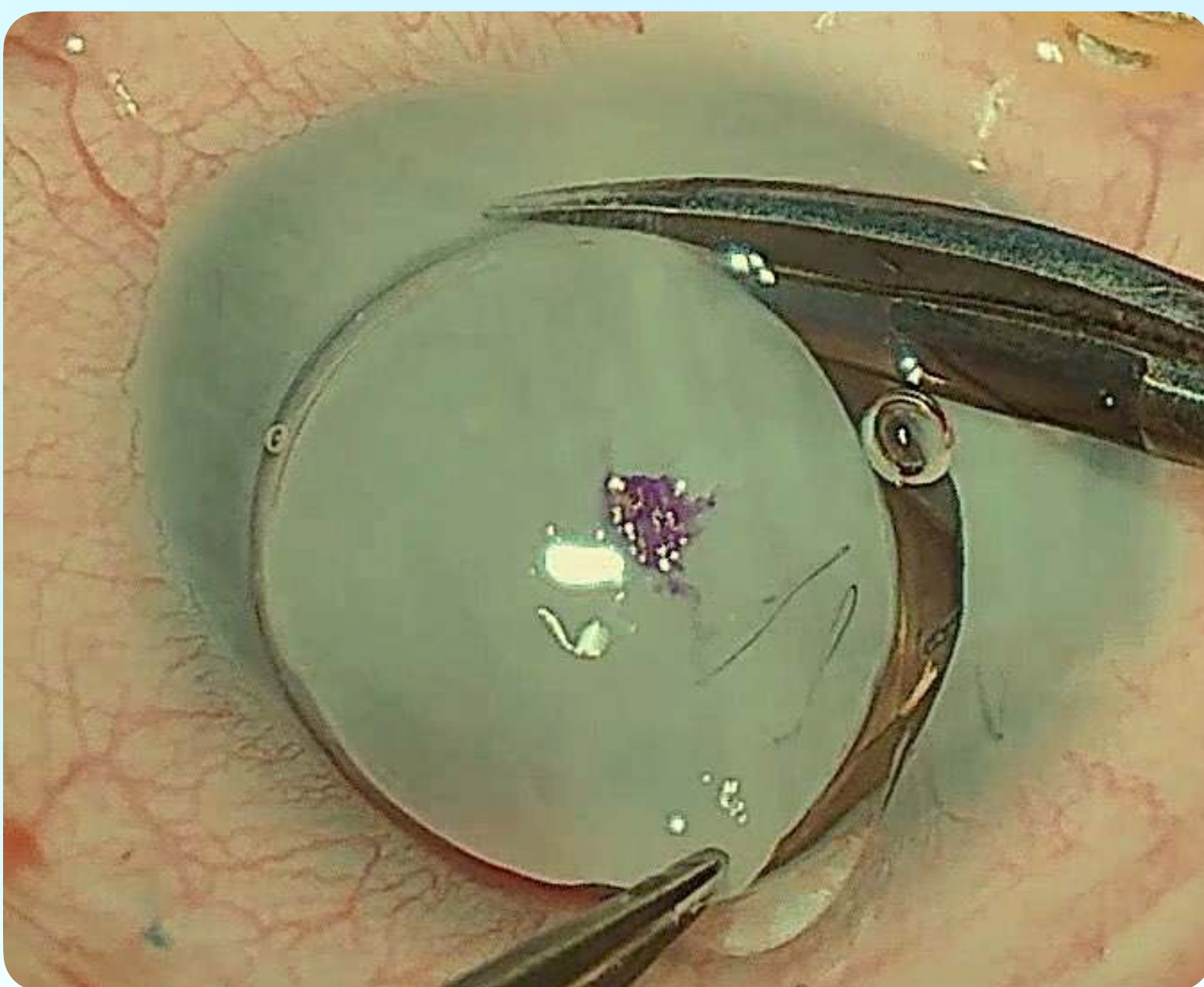
0

500









- 40 year old male, sustained car accident
- 1ry corneal repair, followed by cataract surgery & 2ry scleral fixation IOL (Yamane Technique)
- Presented with total corneal opacification & decompensation, marked diminution of vision (HM, bad projection), severe hypotony.
- U/S: Total RD of limited mobility, narrow funnel configuration
- UBM: IOL optic in contact with back of the cornea



23:28

0

Infusion

25

mmHg

-0.9

cc/min

Vacuum

0

mmHg

0 500

Cut Rate

0

cpm

7500 7500

Cut Table

Core



# Severe PVR





● 27:50

Infusion

25  
mmHg

14  
cc/min

Straight

50  
%

23GA

Chandelier

25  
%

25GA

Vacuum

491  
mmHg

0 600





# Patient Demography & Results

| Eye | Etiology   | Age | Sex | No. Of VR surgeries prior to MTX injection | Baseline V/A | No. Of MTX injections | Final Attachment status | Final PVR status | Final V/A |
|-----|--|-----|-----|--|--------------|-----------------------|-------------------------|------------------|-----------|
| 1   | Stickler/ GRT.                                       | 9   | F.  | 4 (Vx, SiO)                                | HM           | 4                     | Attached                | Absent           | 0.05      |
| 2   | Late RD complicating Aborted ROP                     | 10  | M.  | 1 (SB.)                                    | CF           | 4                     | Attached                | Absent           | 0.05      |
| 3   | Globe rupture, vit. Hge, GRT, SR Hge                 | 18  | M.  | 1 ( Vx, SiO)                               | HM           | 4                     | Attached                | Absent           | 0.1       |
| 4   | Buphthalmos, GRT + PVR                               | 8   | M.  | 1 (PPL, Vx, SiO)                           | PL           | 4                     | Attached                | Absent           | HM        |
| 5   | Blunt trauma, Dialysis, Closed Funnel                | 6   | M.  | 0  | HM           | 4                     | Attached                | Scattered ERMs   | 0.2       |
| 6   | Congenital, coloboma, GRT, PVR                       | 20  | M.  | 0  | HM           | 4                     | Attached                | Scattered ERMs.  | 0.05      |
| 7   | Blunt trauma, choroidal rupture, giant dialysis, PVR | 8   | F.  | 0  | HM           | 4                     | Attached                | Absent           | 0.2       |



# Discussion & Conclusion:

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- This retrospective study suggest that MTX, given in multiple intravitral injections over 2 months, may be safe and effective adjunct to surgery for reducing / preventing recurrent PVR and RD in high risk cases
- Eyes at risk to develop recurrent ER & SR proliferation & RD includes:
  - ▶ Pediatric RRD + PVR / GRT (Syndromic & Non-Syndromic)
  - ▶ Traumatic RD ( Open globe injuries)
  - ▶ PVR + GRT, multiple retinal tears, large tears
  - ▶ Recurrent RD ( ER, SR proliferation & intrinsic retinal shortening)
  - ▶ RD + hypotony & choroidal detachment



# Study Limitations & Recommendations:

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- Small sample size
- Retrospective design
- Short follow up (6 - 24 months), ?? Long term safety & effectiveness
- Multiple factors & variables
- Recommendations:
  - ▶ Multicentral & Prospective Study
  - ▶ Large no. of patients & Control group(s)
  - ▶ Longer follow up period





# Thank You

SubSiO IV Methotrexate Injection