



JOHNS HOPKINS  
M E D I C I N E

# SICS: Review of cases and indications



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May 12, 2018

# Financial Disclosures

- None



# Acknowledgements

- Xinyi Chen
- Wilmer residents

# True or False?

- I do not need to learn SICS since I am an ophthalmology resident in the U.S.

# True or **False**?

- I do not need to learn SICS since I am an ophthalmology resident in the U.S.

# True or False?

- Any cataract can be removed by modern day phacoemulsification techniques

# True or **False**?

- Any cataract can be removed by modern day phacoemulsification techniques



# Manual Small Incision Cataract Surgery

An alternative technique to  
Instrumental Phacoemulsification

Second Edition



**Aravind Eye Hospitals**

A Postgraduate Institute of Ophthalmology

Chennai - developed by Global Sight Alliance

# SICS in the developing world

- Low cost
- High efficiency
- Requires less technology
- Better outcomes than ECCE
- Similar outcomes to phacoemulsification

# A Prospective Randomized Clinical Trial of Phacoemulsification vs Manual Sutureless Small-Incision Extracapsular Cataract Surgery in Nepal

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**SANDUK RUIT, MD, GEOFFREY TABIN, MD, DAVID CHANG, MD,  
LEENA BAJRACHARYA, MBBS, DANIEL C. KLINE, MD, WILLIAM RICHHEIMER, MD,  
MOHAN SHRESTHA, MA, AND GOVINDA PAUDYAL, MD**

**Am J Ophthalmol 2007;143:32–38.**



## **Abstract**

**PURPOSE:** To compare the efficacy and visual results of phacoemulsification vs manual sutureless small-incision extracapsular cataract surgery (SICS) for the treatment of cataracts in Nepal.

**DESIGN:** Prospective, randomized comparison of 108 consecutive patients with visually significant cataracts.

**METHODS:** settings: Outreach microsurgical eye clinic. patients: One hundred eight consecutive patients with cataracts were assigned randomly to receive either phacoemulsification or SICS. intervention Cataract surgery with implantation of intraocular lens. main outcome measures: Operative time, surgical complications, uncorrected and best-corrected visual acuity (BCVA), astigmatism, and central corneal thickness (CCT).

**RESULTS:** Both surgical techniques achieved excellent surgical outcomes with low complication rates. On postoperative day 1, the groups had comparable uncorrected visual acuity (UCVA) ( $P = 0.185$ ) and the SICS group had less corneal edema ( $P = 0.0039$ ). At six months, 89% of the SICS patients had UCVA of 20/60 or better and 98% had a best-corrected visual acuity (BCVA) of 20/60 or better vs 85% of patients with UCVA of 20/60 or better and 98% of patients with BCVA of 20/60 or better at six months in the phaco group ( $P = 0.30$ ). Surgical time for SICS was much shorter than that for phacoemulsification ( $P < .0001$ ).

**CONCLUSION:** Both phacoemulsification and SICS achieved excellent visual outcomes with low complication rates. SICS is significantly faster, less expensive, and less technology dependent than phacoemulsification. SICS may be the more appropriate surgical procedure for the treatment of advanced cataracts in the developing world.

**ARTICLE**

# **Phacoemulsification versus manual small-incision cataract surgery for white cataract**

Rengaraj Venkatesh, MD, Colin S.H. Tan, MD, Sabyasachi Sengupta, DO, DNB,  
Ravilla D. Ravindran, MD, Krishnan T. Krishnan, MD, David F. Chang, MD

**PURPOSE:** To compare the safety and efficacy of phacoemulsification and manual small-incision cataract surgery (SICS) to treat white cataracts in southern India.

**SETTING:** Aravind Eye Hospital, Pondicherry, India.

**DESIGN:** Randomized prospective study.

**METHODS:** Consecutive patients with white cataract were randomly assigned to have phacoemulsification or manual SICS by 1 of 3 surgeons experienced in both techniques. Surgical complications, operative time, uncorrected (UDVA) and corrected (CDVA) distance visual acuities, and surgically induced astigmatism were compared.

**RESULTS:** On the first postoperative day, the UDVA was comparable in the 2 groups ( $P = .805$ ) and the manual SICS group had less corneal edema (10.2%) than the phacoemulsification group (18.7%) ( $P = .047$ ). At 6 weeks, the UDVA was 20/60 or better in 99 patients (87.6%) in the phacoemulsification group and 96 patients (82.0%) in the manual SICS group ( $P = .10$ ) and the CDVA was 20/60 or better in 112 (99.0%) and 115 (98.2%), respectively ( $P = .59$ ). The mean time was statistically significantly shorter in the manual SICS group (8.8 minutes  $\pm$  3.4 [SD]) than in the phacoemulsification group (12.2  $\pm$  4.6 minutes) ( $P < .001$ ). Posterior capsule rupture occurred in 3 eyes (2.2%) in the phacoemulsification group and 2 eyes (1.4%) in the manual SICS group ( $P = .681$ ).

**CONCLUSIONS:** Both techniques achieved excellent visual outcomes with low complication rates. Because manual SICS is significantly faster, less expensive, and less technology-dependent than phacoemulsification, it may be a more appropriate technique in eyes with mature cataract in the developing world.

**Financial Disclosure:** No author has a financial or proprietary interest in any material or method mentioned.

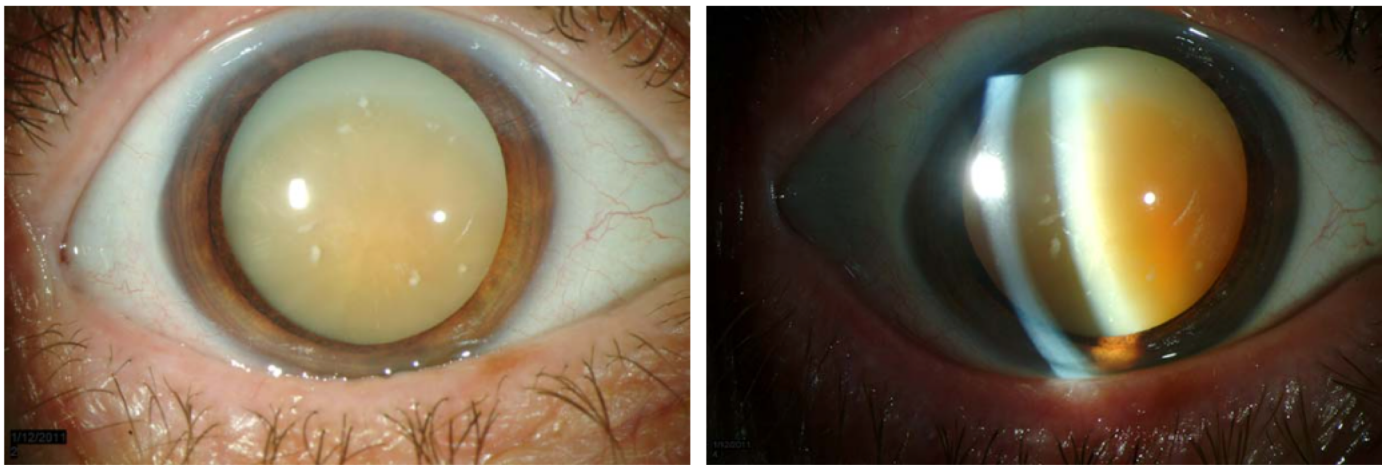
*J Cataract Refract Surg 2010; 36:1849–1854 © 2010 ASCRS and ESCRS*

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# SICS in the U.S.

- Indications
  - Mature/brunescent cataracts
  - Dense cataract in the presence of zonular weakness
  - To avoid corneal edema or PC tear or further zonular weakness
- Main disadvantage
  - Larger incision

*Figures 1 and 2: White cataract with 4+ brunescence nuclear sclerosis, nucleus appeared sunken inferiorly in surrounding cortex (click on either image for higher resolution photo)*

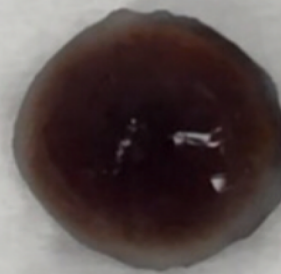


<http://webeye.ophth.uiowa.edu/eyeforum/cases/146-morgagnian-cataract.htm>



# **Black Cataract**

Resident Performed ECCE Surgery



RUTGERS OPHTHALMOLOGY

# Sutureless large incision cataract extraction: Indications and results from two teaching hospital eye departments in the United Kingdom

**Mohammad I. Khan, Shamsuzzoha Syed<sup>1</sup>, Mala Subash<sup>2</sup>, Ali Mearza<sup>2</sup>, Mohammed Muhtaseb**

Singleton Hospital, Abertawe Bro Morgannwg University, NHS Trust, Swansea, <sup>2</sup>Charing Cross Hospital, Imperial College Healthcare NHS Trust, London, United Kingdom, <sup>1</sup>Johns Hopkins University, Bloomberg School of Public Health, Baltimore, USA

Source: Oman Journal of Ophthalmology; 2012: 157-160.



**Objective:** To highlight the role of Sutureless Large Incision Cataract Extraction (SLICE) in the United Kingdom for the treatment of cataracts at high risk for intra- or postoperative complications.

**Setting:** Two University Hospitals in the United Kingdom

**Materials and Methods:** Retrospective case note review of planned SLICE performed over a 12-month period.

**Results:** SLICE was performed on 11 eyes of 11 patients (mean age, 79 years) having preoperative vision of hand motions (10 eyes) with very dense or

mobile cataracts and high risk for phacoemulsification. Mean follow up was 12 weeks, with no operative or postoperative complications. Nine patients (without ocular or systemic comorbidity) achieved best corrected vision of 0.3 LogMAR (20/40) or better.

**Conclusions:** SLICE is safe and effective for dense or mobile cataracts and can play a role in patients where conventional phacoemulsification carries higher risks of complications.

**Keywords:** Brunescant cataract, cataract, manual small incision cataract surgery, SLICE

# Supervised resident manual small-incision cataract surgery outcomes at large urban United States residency training program

*Ross Lynds, MD, Brock Hansen, MD, Preston H. Blomquist, MD, V. Vinod Mootha, MD*

*J Cataract Refract Surg 2018; 44:34–38© 2018*

## **Abstract**

**PURPOSE:** To examine the outcomes of resident-performed manual small-incision cataract surgery (SICS) in an urban academic setting.

**SETTING:** Parkland Memorial Hospital, Dallas, Texas, USA.

**DESIGN:** Retrospective case series.

**METHODS:** Manual SICS was used only in selected cases for which phacoemulsification was expected to be difficult, namely for mature or brunescient cataracts, traumatic cataracts, and pseudoexfoliation syndrome or other causes of zonular weakness. All manual SICS cases performed by resident physicians as the primary surgeon over a 5-year period were reviewed. Postoperative visual acuity, intraoperative complications, and early postoperative complications were the main outcomes measured.

**RESULTS:** For the 52 cases identified, the mean preoperative visual acuity was 2.165 logarithm of the minimum angle of resolution (logMAR)  $\pm$  0.141 (SD) (95% confidence interval) (slightly better than had motion acuity), improving to  $0.278 \pm 0.131$  logMAR (Snellen 20/38) corrected visual acuity postoperatively. Of the 52 cases, the most frequent intraoperative complications were iris prolapse (5 cases [9.6%]) and zonular dialysis (4 cases [7.7%]), with vitreous loss occurring in 1 case (1.9%). The most frequent postoperative complications were cystoid macular edema (3 cases [5.8%]), retained ophthalmic viscosurgical device (2 cases [3.8%]), intraocular lens displacement (2 cases [3.8%]), and microhyphema (2 cases [3.8%]).

**CONCLUSIONS:** Although the more advanced wound construction in manual SICS might be challenging to surgeons unfamiliar with the technique, it was a safe and efficacious technique in the hands of learning residents. With several advantages over phacoemulsification, such as cost and ability to remove very dense nuclei, manual SICS will play a valuable role in modern cataract surgery.

- Take home point:  
I have never regretted the decision to perform SICS  
  
I have regretted the decision to perform phaco

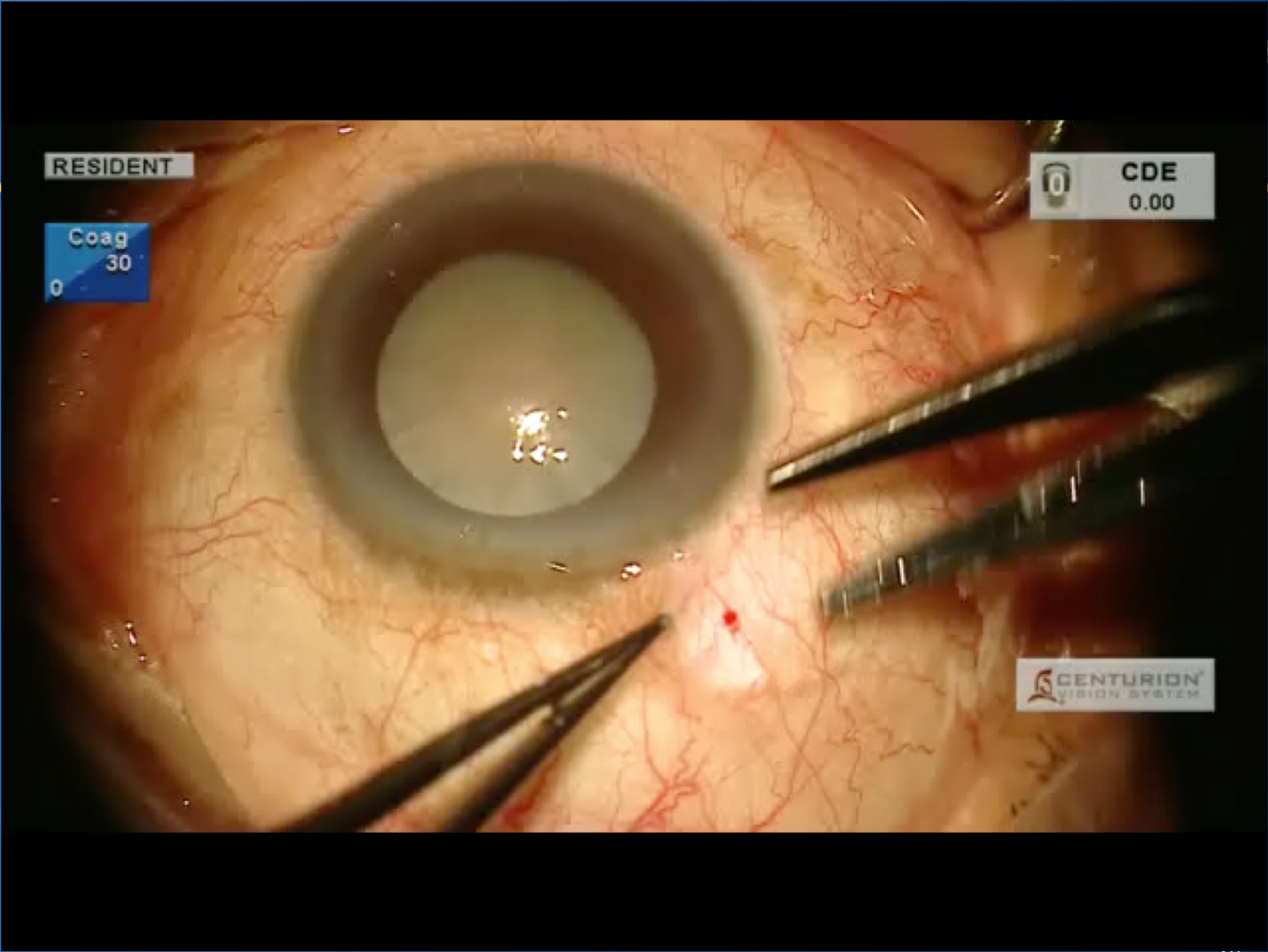
# My resident's first SICS case

RESIDENT

Coag  
30  
0

0 CDE  
0.00

CENTURION  
VISION SYSTEM



# Steps of SICS

- Peribulbar anesthesia
- Superior rectus bridle suture
- Conjunctival peritomy
- Cauterize bleeding vessels on scleral
- Sclerocorneal tunnel
- Paracentesis
- Trypan blue



# Steps of SICS

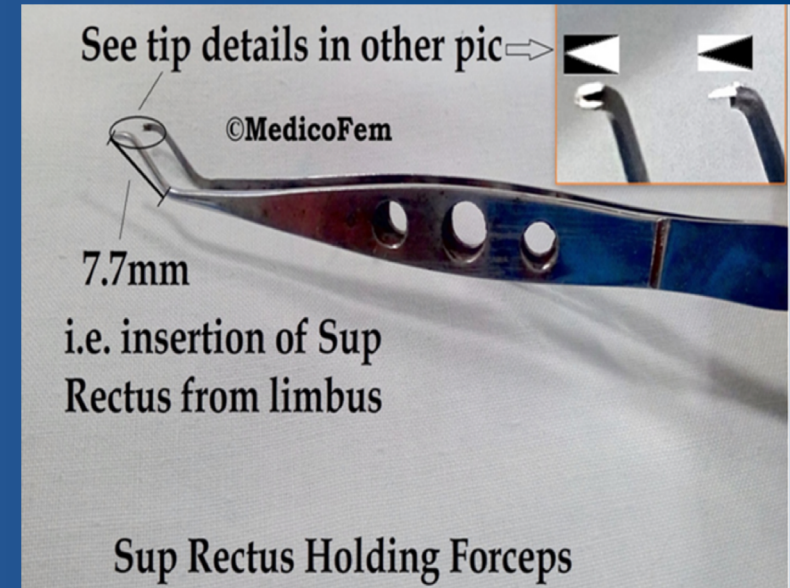
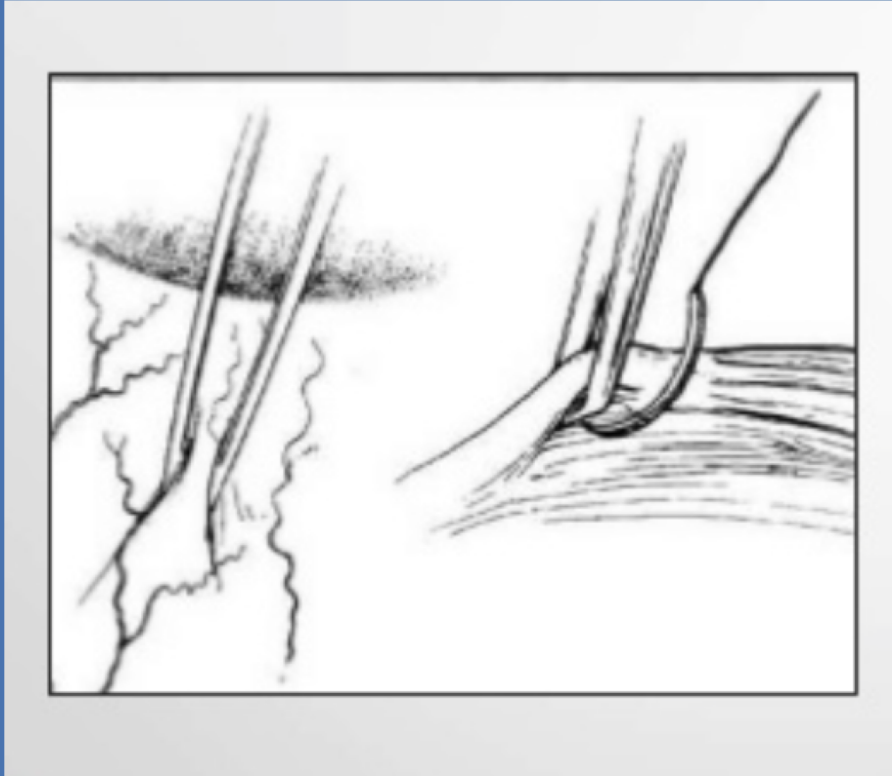
- Enter cornea with 2.75 mm keratome
- Perform large CCC
- Enlarge tunnel
- Hydrodissection (skip if mature)
- Prolapse nucleus into anterior chamber
- Deliver nucleus with irrigating vectis
- Remove cortex



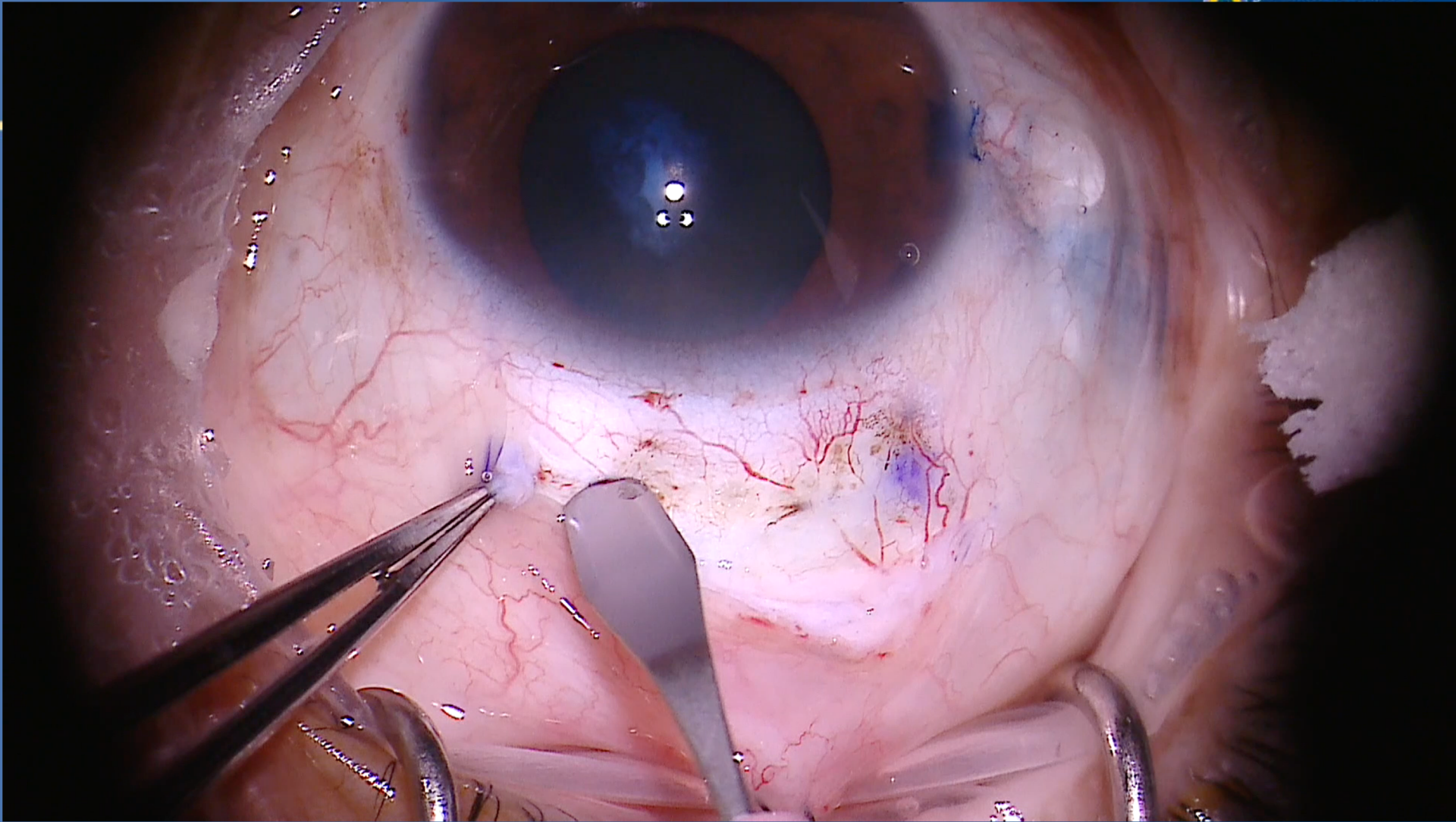
# Steps of SICS

- Insert viscoelastic in bag and IOL
- Remove viscoelastic
- Close sclerocorneal tunnel with 10-0 nylon if necessary
- Close conjunctival peritomy
- Remove bridle suture

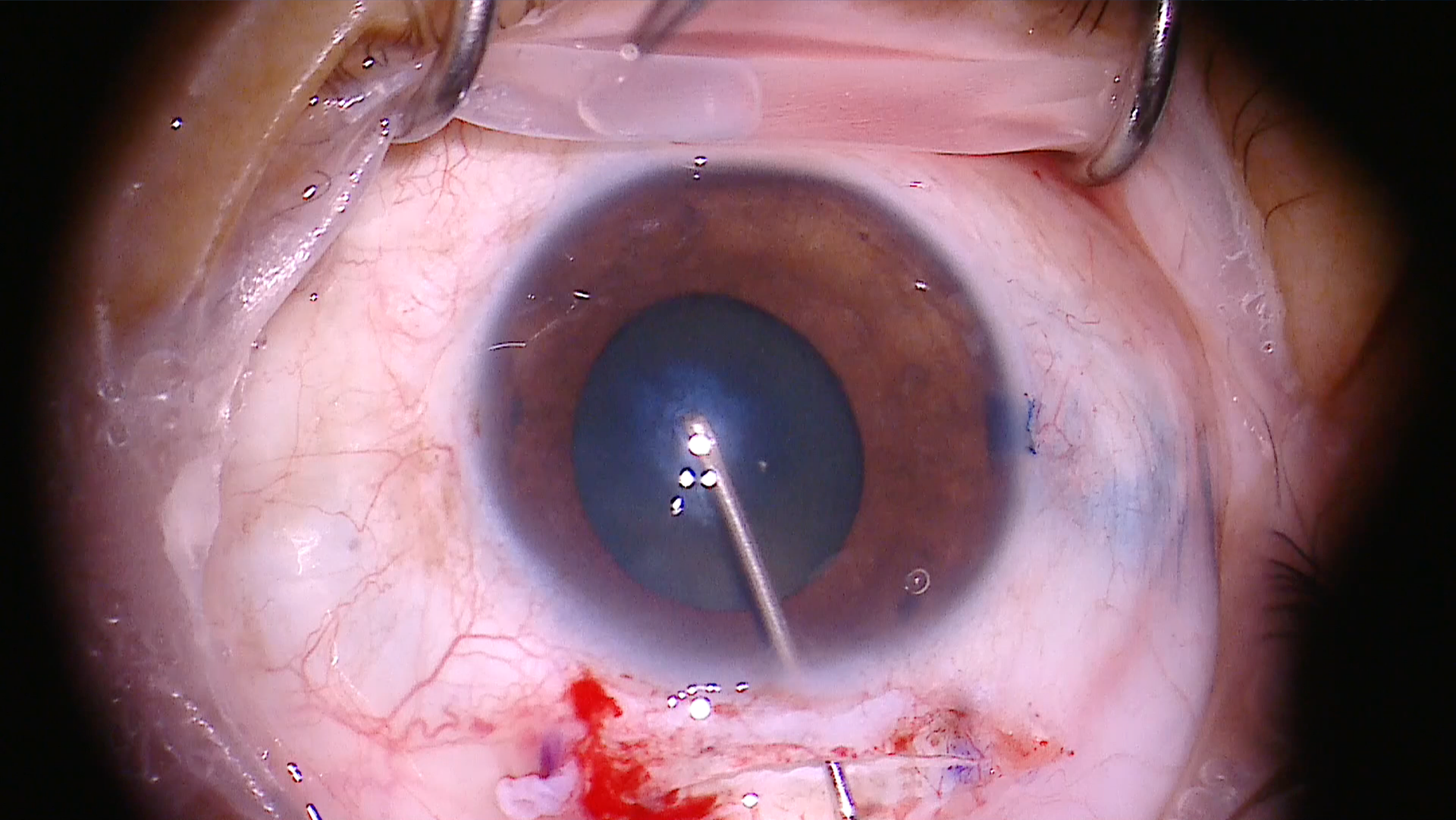
# Bridle suture

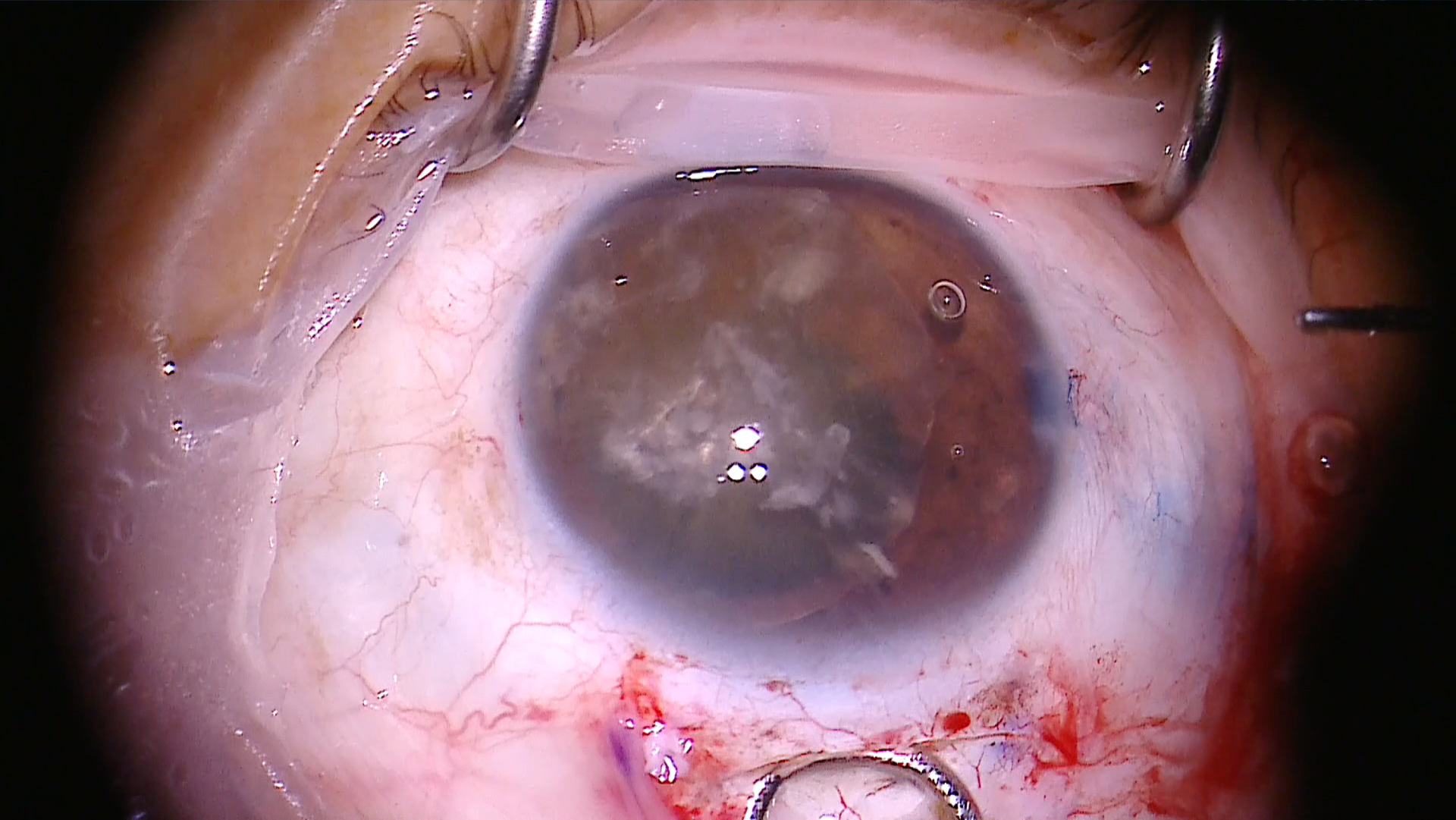


<https://www.slideshare.net/namratagupta96780/trabeculotomy-trabeculotomy-goniotomy-and-their-complications>

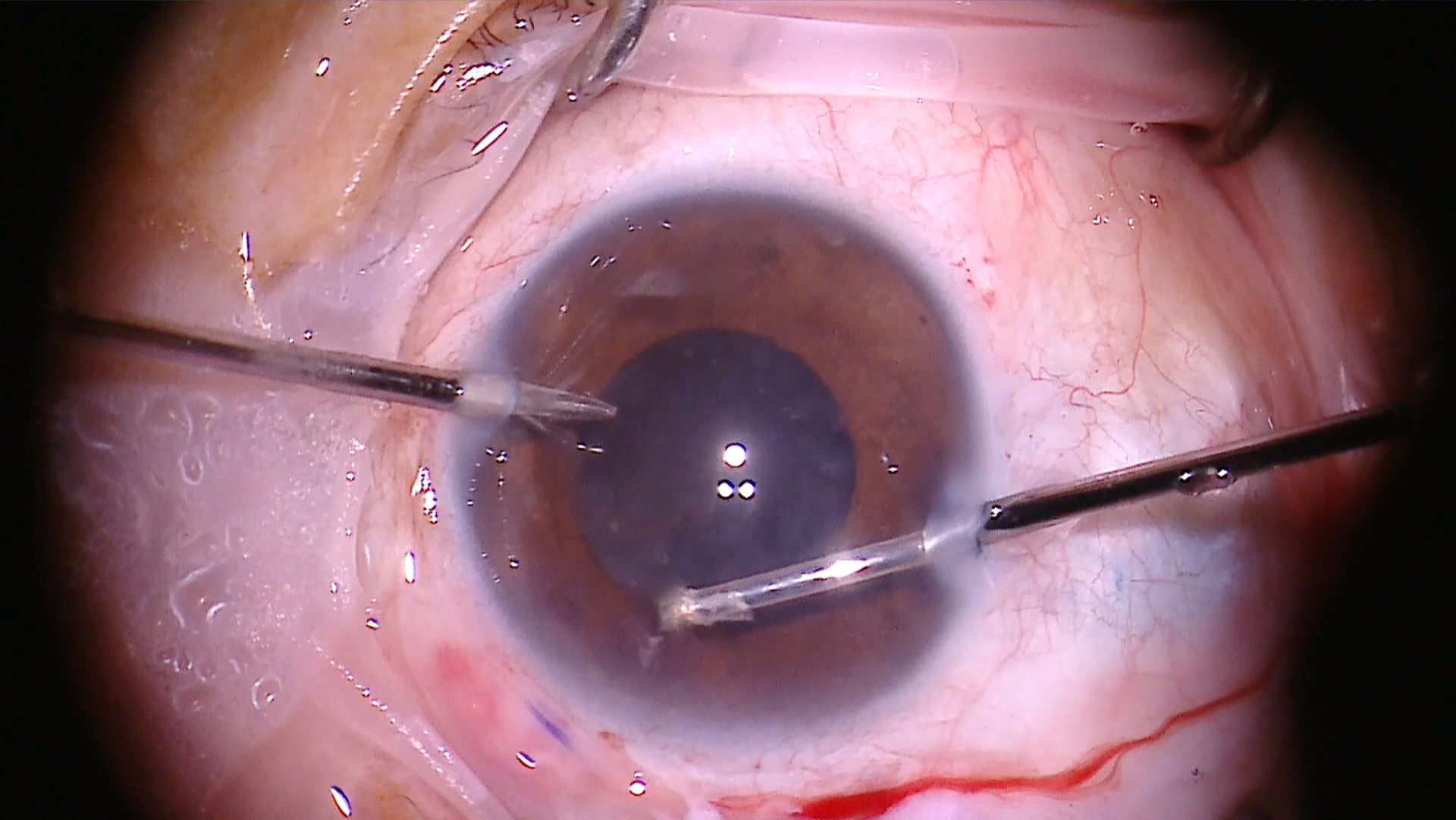


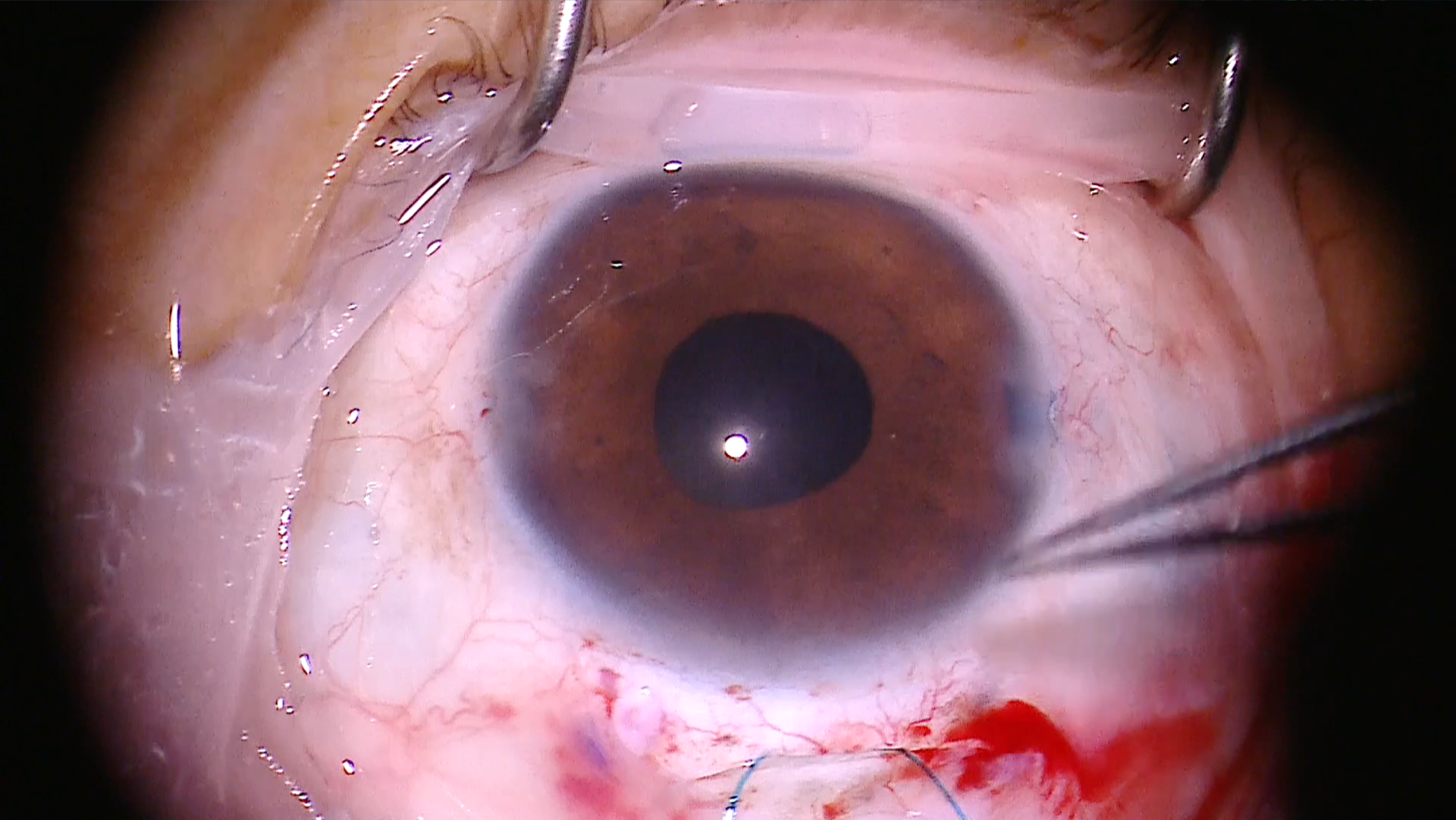












Questions?



Thank you