

Quick Reference for Cataract Surgeons

Anterior Vitrectomy & Sulcus IOL with Optic Capture

Adapted from Uday Devgan, MD's step-by-step technique, with additional surgical pearls and references

When posterior capsule rupture is recognized:

Avoid abruptly withdrawing the phaco or I/A instrument. **Maintain the anterior chamber and inject dispersive OVD before removing the instrument** to minimize vitreous prolapse and extension of the capsular tear.

Anterior Vitrectomy

1. Avoid the main incision for vitrectomy.

The main cataract incision may leak excessively during small-gauge bimanual vitrectomy and make chamber stability more difficult.

2. Create a second paracentesis as needed.

Provide separate access for irrigation and the vitrectomy cutter. Slightly enlarge the paracentesis if necessary for your instrumentation.

3. Prepare the vitrector and triamcinolone.

Set up and prime the phaco machine for anterior vitrectomy. Have triamcinolone available to identify prolapsed vitreous.

4. Use true Anterior Vitrectomy Mode.

Use the machine configuration in which cutting occurs before or independently of significant aspiration. Avoid simply using I/A with intermittent cutting.

5. Use high cut rates with conservative aspiration.

Use the **highest practical cut rate available and the lowest effective aspiration flow/vacuum** to minimize vitreoretinal traction. Cut vitreous **where it lies** rather than drawing vitreous toward the cutter. Avoid withdrawing the cutter while vitreous is engaged; instead, **engage and advance** as appropriate.

6. Stain the vitreous.

Place a small amount of dilute triamcinolone into the anterior chamber and gently distribute it with BSS or the irrigation handpiece. Triamcinolone particles highlight otherwise difficult-to-see vitreous strands. *Dr. Megur suggests dilution approximately 1:4 to 1:10.*

7. Position the instruments carefully.

Identify triamcinolone-stained vitreous and keep the cutter centrally positioned near the lens plane. *(Dr. Megur advises directing irrigation away from the open posterior capsule and toward the angle.)*

8. Maintain infusion and remove vitreous deliberately.

Maintain irrigation during vitrectomy to preserve chamber stability. Avoid sweeping, pulling, or aspirating intact vitreous strands. **Cut vitreous where it lies rather than bringing vitreous to the cutter.**

9. Re-stain as needed.

Inject another small aliquot of triamcinolone to identify residual vitreous.

10. Check the wounds.

Inspect the pupil, anterior chamber, and all incisions for residual vitreous. Any vitreous which presents to a wound should be returned into the eye and **cut with the vitrector rather than pulled**. (*Dr. Charles advises against cellulose sponges or sweeping the wound with a spatula to manipulate vitreous because these maneuvers may transmit vitreoretinal traction.*)

IOL Placement

11. Assess remaining support.

Inspect the posterior capsular defect and determine the integrity of the **anterior capsulorhexis, zonules, and residual capsular support**.

12. Open the sulcus.

If adequate anterior capsular support remains, gently place OVD in the anterior chamber and beneath the iris to open the ciliary sulcus.

13. Place a three-piece IOL in the sulcus.

Insert an appropriate **three-piece posterior chamber IOL** with both haptics securely positioned in the ciliary sulcus. Avoid iris entrapment.

Do not place a single-piece acrylic IOL in the ciliary sulcus because of the risk of iris chafing, pigment dispersion, inflammation, elevated IOP, and UGH syndrome.

14. Perform optic capture when appropriate.

If the continuous anterior capsulorhexis is intact and appropriately sized, gently push the optic posteriorly through the capsulorhexis while leaving the haptics in the sulcus—similar to passing a button through a buttonhole. Optic capture improves IOL centration and stability.

15. Complete the case.

Suture the main incision as indicated. Carefully remove residual OVD with controlled bimanual irrigation/aspiration. Re-check the pupil, anterior chamber, and wounds for residual vitreous before concluding the case.

Avoid Vitreous Traction

- **Cut vitreous—never pull it.**
- Use the **highest practical cut rate and lowest effective aspiration.**
- Keep irrigation separate from the cutter and maintain infusion.
- **Cut vitreous where it lies** rather than aspirating it toward the cutter.
- Avoid withdrawing the cutter while vitreous is engaged.
- Keep irrigation directed **away from the posterior capsular defect.**
- Use triamcinolone to identify residual vitreous.
- Avoid cellulose sponges and wound sweeping with a spatula to manipulate vitreous.
- **Do not chase posteriorly dislocated lens material.** Obtain vitreoretinal assistance when indicated.
- **Three-piece IOL in the sulcus + optic capture** is preferred when an intact, appropriately sized anterior capsulorhexis provides adequate support.
- **Never place a single-piece acrylic IOL in the sulcus.**

References & Additional Resources

1. **Devgan U.** *Anterior Vitrectomy & Sulcus IOL with Optic Capture.* Cataract Coach. June 11, 2019. [Cataract Coach — Anterior Vitrectomy & Sulcus IOL with Optic Capture](#)
2. **Charles S.** *Anterior Vitrectomy: Concepts From a Retina Specialist.* Cataract & Refractive Surgery Today. 2020. Emphasizes high cut rates, low effective flow, bimanual vitrectomy, maintaining infusion, and minimizing vitreoretinal traction.
3. **Goel RD.** *Cataract Surgery & Anterior Vitrectomy – Favorite Videos.* Protecting Sight. July 5, 2022; updated August 16, 2023. Curated resources include anterior vitrectomy techniques and presentations from Uday Devgan, Deepak Megur, D. Brian Kim, Josepine Christy, Steve Charles, Robert Cionni, AIOS, and Susan MacDonald/AAO. [ProtectingSight.com — Cataract Surgery & Anterior Vitrectomy Resources](#)
4. **MacDonald SM.** *Anterior Vitrectomy.* American Academy of Ophthalmology ONE Network. 2016. Available through the AAO ONE Network; login may be required.

Educational surgical reference only. Technique, instrumentation, fluidic parameters, and IOL selection should be individualized to the clinical situation, surgeon experience, and specific equipment being used.