

SimulEYE A-VIT

The SimulEYE A-Vit model eyes are pre-filled with a synthetic vitreous in the back and a viscoelastic substitute in the front. The vitreous and the viscoelastic are separated in the eye by a membrane representing the posterior capsule with a PC tear through which the vitreous gel has already migrated into the anterior chamber.

The synthetic vitreous has a visualizing agent to better see it. Under a microscope, look from the top down into the eye and observe the vitreous body shake as you tap on the eye. Rotate the eye and view the anterior chamber from the side to see the posterior capsule with the PC tear. Look closely to see a plume of vitreous coming up through the tear.

When practicing anterior vitrectomy, the use of a bimanual technique whereby the irrigation and vitrector are separated eliminates the need for a larger main incision and allows more effective management of the vitreous while reducing bubble formation in the anterior chamber. Only make a larger, main incision in the SimulEYE A-Vit model if practicing coaxial anterior vitrectomy.

Place extra viscoelastic or the viscoelastic substitute over the incisions if bubbles are coming into the anterior chamber.

Keep cornea clean and dry. If necessary, place viscoelastic agent over the cornea and allow it to settle to enhance the view.

USING THE MODELS:

Attach the SimuleYE A-Vit model to a stable, flat, smooth surface.

Incisions

- Mark incision locations with a Sharpie to be able to find them later
- Create 1mm side ports for a good seal to reduce bubbles in AC
- No Main incision unless performing coaxial vitrectomy

Check incision sites for the presence of vitreous

- Use Weck-Cel sponges
- If not present immediately after incisions, check again after introducing instruments into the AC and removing them

Introduce vitrectomy instruments and perform Anterior Vitrectomy

- Biaxial (Bimanual) is preferred vs. Coaxial
- Vitrector in AC vs. through PC tear vs. through Pars Plana

Note that vitreous continues to come forward through the PC tear and out the incisions when the vitrector is held up in the AC. Passing the vitrector down through the PC tear into the anterior vitreous body helps to clear the vitreous from the anterior chamber.

MVR blades and Trocar systems may be used to work through the pars plana. Valved cannulas are preferred to reduce the loss of vitreous gel. Measure first and then mark the incision location with a Sharpie if using an MVR blade to easily locate the incision site later.

Inject Kenalog (Triesence) 1:10 or Kenalog substitute into AC to enhance visualization of any remaining vitreous & determine if AC is clear.

SHAKE WELL just before each use to re-suspend particles.

Aspiration vs Cutting:

The vitreous gel can NOT be removed by aspiration. It must be cut using the vitrector and then aspirated. Similarly, any bubbles or debris trapped in the AC while vitreous is present cannot be aspirated. They can only be effectively removed using the cut setting.

Attempting to aspirate the synthetic vitreous will tug on the vitreous body (and the retina!) and will not clear it from the eye. This can be visualized by placing the vitrector tip into the vitreous body and putting the pedal into full aspiration with no cutting. Observe the vitreous body being pulled. Now move into the cut setting and watch the vitreous jump around as it is cut away and cleared from the eye into the vitrector.

The vitrector must be used on the cut setting to remove the synthetic vitreous. Once the vitreous has been removed, aspiration can be used to remove the residual viscoelastic and any bubbles or debris.

Understand when to use I-A Cut vs. I-Cut-A settings

BUBBLE MANAGEMENT:

- Bimanual anterior vitrectomy works best with these models as the smaller side ports allow less chance of introducing bubbles into AC
- Size the incisions appropriately for the instruments being used
- 1mm side ports are water tight and minimize bubbles in the AC
- Cover incision sites with viscoelastic or thicker viscoelastic substitute

VISUALIZATION:

- Keep cornea clean and dry
- If view is poor, place Viscoelastic (Ocucoat preferred) or Viscoelastic Substitute over entire cornea and incision sites and allow to settle

VISCOELASTIC SUBSTITUTE:

- thicker than normal viscoelastic to reduce bubbles in the AC
- place over the incision sites to prevent bubble formation
- use with a 19g cannula (Bishop Harmon)

KENALOG (Triesence) SUBSTITUTE:

- Particles in suspension will stain vitreous to improve visualization
- SHAKE WELL each time right before injecting it into the SimuleYE model as the particles settle quickly in the syringe
- ONLY FOR LAB USE

SUPPLY LIST FOR A-VIT LAB STATIONS:

Phaco machine with anterior vitrectomy capability

- Supporting packs, irrigation bottle/bag, and vitrector set (23g vs 25g)

SimuleYE A-Vit model

Platform

- Flat, Smooth & Stable platform to hold SimuleYE
- appropriate height for microscope focus

Sharpie Fine Point marker (Red)

Gloves, Viscoelastic, Weck-Cel sponges

Paper towels, Packing Tape to secure stand

Blades

- 1mm blades for side port incisions
- MVR Blades (23g vs 25g)
- Valved Cannulas on Trochar (23g vs 25g)

Viscoelastic vials with 27g cannulas

Viscoelastic Substitute (see instructions below)

- 5ml syringe with 19g Bishop Harmon cannula

Kenalog Substitute (see instructions below)

- 3ml syringe with 27g cannula

SINK Access

- DO NOT DISCARD SYNTHETIC VITREOUS INTO SINK

KENALOG “Triesence” SUBSTITUTE

Baby Powder 2 g (2.5 ml = ½ tsp.)

- Place into small plastic graduated cup and weigh on scale

Mix well with 200 ml water in large bowl

Draw up into syringes BEFORE SUSPENSION SETTLES

- Stir suspension right before filling syringes

3 ml syringe

Screw on cap to seal syringe

27g viscoelastic cannulas for injecting into eyes during training

SHAKE WELL JUST BEFORE USING TO RE-SUSPEND PARTICLES

VISCOELASTIC SUBSTITUTE

E-Z Jelly surgical lubricant

Place into 5ml syringe

- Fill cannula from back 80% full then insert plunger

Screw on cap to seal syringe

23g cannula – hard to inject but possible to fill AC with force

19g Bishop Harmon (BSS) cannula – easy to inject

USES

- FILL AC
- PLACE AROUND INCISIONS TO REDUCE BUBBLES IN AC
- COAT TOP OF SIMULEYE FOR VISUALIZATION