

Tan Big Bubble Technique



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The original Anwar Big Bubble technique has been modified to ensure a higher rate of success in air delivery to the posterior stroma-Descemet's membrane interface while reducing the risk of inadvertent perforation.

1. Perform partial trephination (about 2/3 corneal thickness).
2. Perform manual lamellar keratectomy to remove the anterior 1/2 of the corneal stroma (this stage is important to enable a deep and paracentral placement of the cannula to increase the success of acquiring a big bubble).

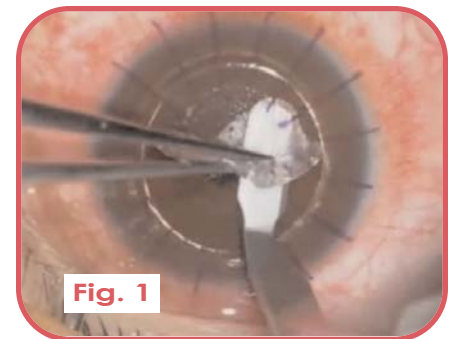


Fig. 1

- a. Initiate half-stromal depth dissection at the 12 o'clock position with the Tan Micro Lamellar Dissector (AE-2541). This lamellar dissector may be used along the periphery which may be hard to reach with the larger dissector.
- b. Complete dissection with the Tan Large Lamellar Dissector (AE-2547) which has a larger surface profile to help stay within the lamellar plane (Fig. 1).

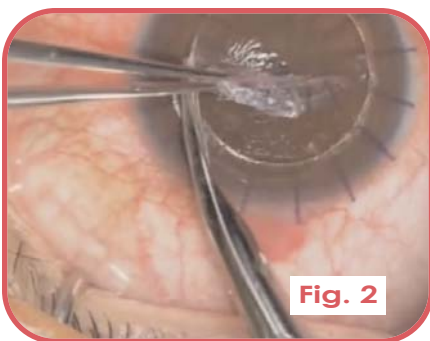


Fig. 2

- c. Dissection should proceed to just beyond the trephination margins.
- d. Open up the edges of the dissection with the Tan DALK Scissors (AE-5666 and AE-5667) to enable access to the inferior half of the corneal stroma (Fig. 2).
- e. To ensure a vertical edge without a ledge at all times, make sure the base plate of the scissors remains flat and opposed to the lamellar surface.
- f. A stromal bed of 200-250µ should be achieved at this stage, which aids in deep placement of the Tan DALK Cannula (AE-7803) for maximal big bubble success.
- g. In cases of extreme corneal thinning, such as thin and ectatic cones measuring less than 300µ centrally, this manual lamellar dissection stage may be omitted.

3. Initiate careful entry into the stromal bed at the 12 o'clock position with a sharp, 27G needle. Entry should be near parallel to the stroma bed at 2-4 mm from the corneal center. The depth should be approximately half of the stromal bed to leave a 100-125µ space between the cannula and the Descemet's membrane (Fig. 3).

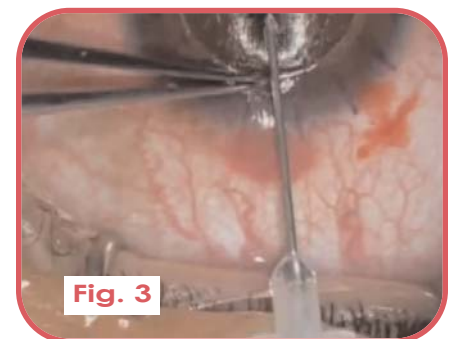
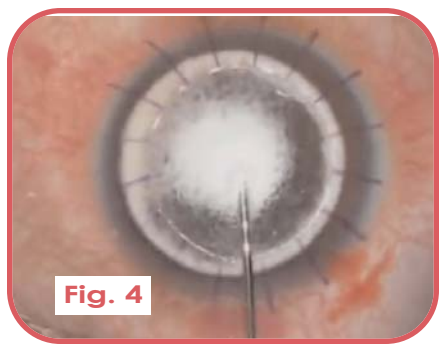


Fig. 3

4. Insert the DALK Cannula attached to a 5mm air-filled syringe into the opening created by the needle.
 - a. The cannula should be parallel to the stromal surface, bevel down, and tunnel towards the mid-central cornea.

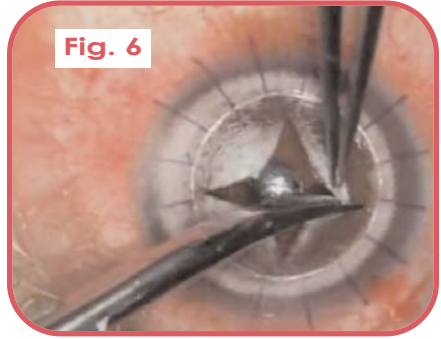
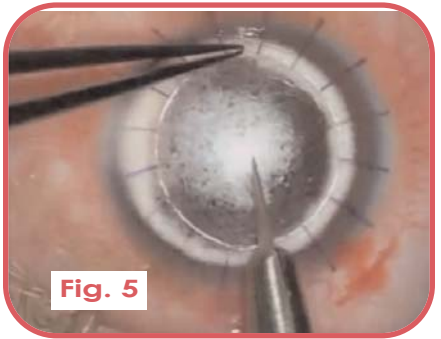
- b. The cannula tip should approach the corneal apex, and about 3-4mm of the needle shaft should be within the corneal stroma.
- c. There will be some resistance as the cannula is deliberately blunt-tipped to prevent inadvertent perforation, but gentle “wiggling” or side-to-side movements will assist in tunneling forward.



- d. There should be a tight fit to ensure no air leaks through the track when air is injected under high pressure.
5. Gradually apply a mild, constant, downward pressure on the syringe to release the air.
 - a. As the stromal threshold is reached, feathery opacities will appear in the stroma, indicating air entry into the stroma.
 - b. Continue to maintain pressure, or increase pressure slightly until a circular, silvery opacity develops and extends the trephination margins by about 1mm. This indicates successful

formation of the big bubble and the detachment of the Descemet’s membrane (DM) (Fig. 4).

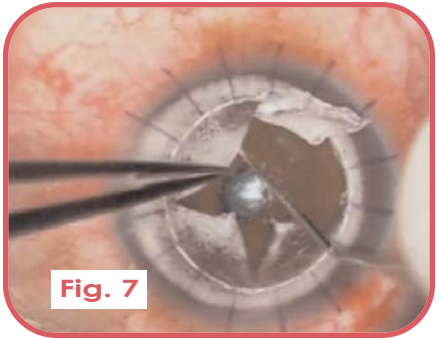
6. Carefully withdraw the cannula without losing the bubble.
7. Release the sub-DM air in the big bubble by cutting down with a razor blade to create a 1mm linear entry.
 - a. The tip and sharp edge of the blade are directed upwards, and short, quick, forward cuts are made until the bubble suddenly collapses (Fig. 5).



- b. Remove the blade before full big bubble collapse in order to prevent perforation of DM.
8. Using the DALK scissors, carefully cut the posterior stromal lamella into 4 equal quadrants similar to the lens in the “divide and conquer” phaco technique.
 - a. The longer blade should be inserted into the razor blade cut and the base

plate of the scissors should be on DM to prevent inadvertent perforation (Fig. 6).

- b. Each quadrant cut should extend about 2mm from the trephination margin.
9. Separate any stromal fibers along the peripheral edge with the Tan Marginal Dissector (AE-2549) (Fig. 7).
 10. Use the DALK scissors along the trephination edge to completely excise the quadrants.
 11. Perform donor graft.



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