

Technique for performing CAIRS with a femtosecond laser

Set-up and procedure

Ensure you have a surgical plan made at www.cairsplan.com Print this out and take it to theatre with you.

↓

Ensure patients cornea is marked to facilitate accurate segment positioning

↓

Set-up your theatre – CAIRS instruments are available from sam@srbdevices.com

↓

Gloves and gown

↓

Prepare donor (unless using Keranatural) – see next slide for further details on graft preparation

↓

Now bring the patient into theatre

↓

Cut tunnel on patient

↓

This will de-sterilize you so now you need to re-sterilize and get a new gown and gloves. (This can be avoided if you cut the tunnels on the patient first but this runs the risk of donor cut failure and an unused tunnel in the patient's cornea.)

If using FS200 manually cut a second incision (typically using a guarded 350 micron blade)

↓

Open tunnel with CAIRS instruments

↓

Insert segment into tunnel and position correctly

↓

Check wounds to ensure no wound gape antibiotics and or contact lens per your preference

Preparing your donor tissue

Remove epithelium and endothelium (for deep or full thickness grafts)



Mount on artificial anterior chamber



Clamp off the tubing from your femto to the interface – this tricks to laser into acknowledging that appropriate occlusion and suction has been achieved when you dock onto the artificial anterior chamber



Cut 1 outer cut – the depth of this cut is the depth of your donor
(Remember the width of your tissue ring will be HALF of the difference between the diameters of your inner and out cuts)



Readjust pressure in artificial AC as it is often too soft after initial cut



Cut 2 inner cut (make this cut deeper than your outer cut)



Remove tissue ring from donor cornea and customize as needed



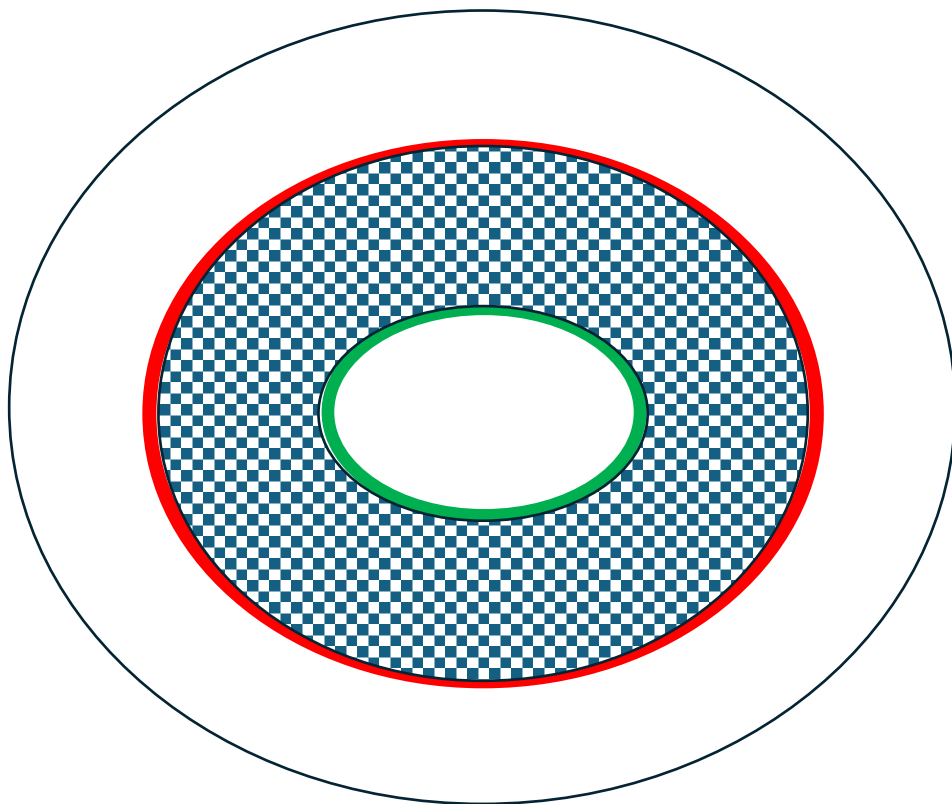
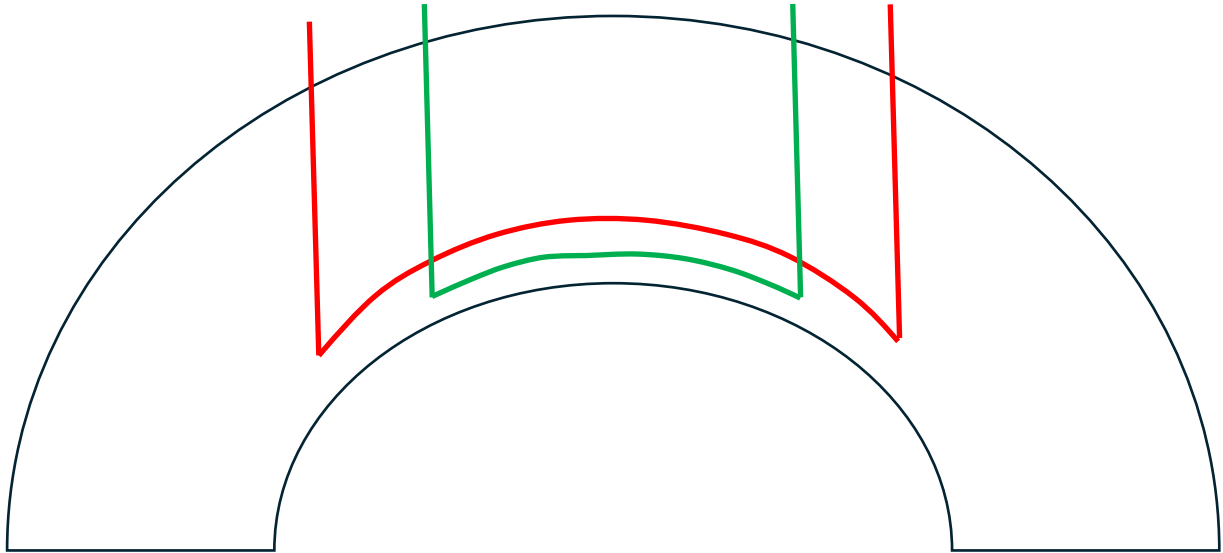
Place donor tissue on preparation and measuring stand – this assists with measuring the tissue and drying to facilitate easier insertion

Note on tissue preparation

- There are alternatives to preparing your tissue with the femtosecond laser
- Keranatural is a pre-prepared tissue that has already been cut into segments – contact sam@srbdevices.com for ordering in Australia
- Soosan Jacobs has developed a CAIRS trephine that cuts the ring segment with 1 trephination for repeatable and accurate segments – available from Emagin www.emagin.com.au in Australia

Donor Cut 1

Donor Cut 2



Post op care

- Antibiotic drops for 1 week
- Dexamethasone drops 4 x per day for 1 month
- I review a few days post-op, 4-6 weeks post op and 4 months post op.
- I wait at least 4 months post operatively before performing topo-PTK or ICL surgery. Preferably a bit longer to ensure the refraction is completely stable. I like to see the same refraction twice at least 4 weeks apart to know it is stable
- CAIRS can be combined with cross-linking either epithelium-on or epithelium-off but I do not perform topography guided cross-linking at the same time that I perform CAIRS.
- I happily perform CAIRS on patients who have been cross-linked. I have not seen convincing evidence that performing the procedure pre or post cross-linking makes a significant difference to the outcome.

Adjustments

- It is important to tell patients preoperatively that their CAIRS segment may need to be adjusted in order to achieve an optimal visual outcome.
- This may involve moving the segment along the tunnel or potentially further towards the periphery of the tunnel or further towards the centre of the tunnel.
- The segment may need to be trimmed or customised in order to achieve less flattening.
- I usually wait a few weeks before considering an adjustment procedure but patients should be made aware that adjustments are common and a normal part of the process of achieving the best visual outcome from their surgery.
- General it is usually better to insert more tissue rather than less. It is very easy to remove the segment and trim some tissue from it, however, if you remove the original segment and replace it with a larger one, you are wasting valuable donated corneal tissue.