# Chapter 13
# Descemet's Stripping Automated Endothelial Keratoplasty (DSAEK)

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**Abstract** Patients evaluated and deemed appropriate for such surgical intervention. Endothelial dysfunction, pseudophakic corneal edema, bullous keratopathy, ICE syndrome, or any other pathology needing further surgical intervention. Patients should be educated about the risks and benefits of the procedure, including alternatives.

**Keywords** Descemet's stripping automated endothelial keratoplasty • DSAEK • Corneal transplant • Endothelium • Endothelial transplant • Endothelial dysfunction

## Indications

Endothelial dysfunction, Fuchs' dystrophy, pseudophakic corneal edema, pseudophakic and aphakic bullous keratopathy, repeat or failed corneal graft, and iridocorneal endothelial syndrome.

## Essential Steps

1. Scleral tunnel
2. Healon injection into AC
3. Descemetorhexis
4. Preparation of donor tissue
5. Tissue is folded
6. Graft insertion into the AC
7. Slow BSS and air injection to unfold donor tissue
8. Air injection into AC
9. Compression of the cornea
10. BSS exchanged for air in the AC
11. Patient in supine position

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E.D. Rosenberg et al. (eds.), *Operative Dictations in Ophthalmology*,
DOI 10.1007/978-3-319-45495-5_13

**Complications**

- Rejection of graft
- Graft dislocation
- Primary graft failure
- Elevated intraocular pressure
- Infectious keratitis
- Endophthalmitis
- Wound dehiscence
- Peripheral anterior synechia
- Irregular astigmatism

## Template Operative Dictation

**Preoperative diagnosis:** *Fuchs' dystrophy (OD/OS)*

**Procedure:** Descemet's stripping automated endothelial keratoplasty *(OD/OS) (and cataract extraction with placement of PCIOL).*

**Postoperative diagnosis:** *Same*

**Indication:** This is a ____-year-old (*male/female*) who was previously diagnosed with Fuchs' dystrophy ___ (*months/years*) prior. Medical treatment for corneal decompensation was initiated, and in attempts to continue preserving vision, surgical options were discussed. After a detailed review of risks and benefits, the patient elected to undergo the procedure.

**Description of the procedure:** The patient was identified in the holding area, and the (*right/left*) eye was marked with a marking pen. The pupil was dilated pharmacologically. Local anesthetic was injected in the standard (*retrobulbar/peribulbar*) fashion using ____ml of lidocaine and Marcaine in a 50:50 mix. The patient was brought into the OR on an eye stretcher in the supine position. After proper time-out was performed verifying correct patient, procedure, site, positioning, and special equipment prior to starting the case. The eye was prepped and draped in the usual sterile fashion. Steri-Strips were used to retract the eyelashes out of the field. The operating microscope was centered over the eye and an eyelid speculum was placed.

A superior peritomy was created with use of the 0.12 forceps and Westcott scissors. Hemostasis of the underlying scleral bed was achieved with electrocautery. Using a curved crescent blade, a ____mm scleral tunnel was created. A ___mm keratome blade was then used to connect the scleral tunnel into the anterior chamber. A diamond knife was used to make ___ additional mid-peripheral paracentesis incisions.

***If cataract extraction was completed****—Viscoelastic was placed in the anterior chamber. A ____mm continuous curvilinear capsulorrhexis was then carried out using capsulorrhexis forceps and a cystotome. Hydrodissection was gently performed with balanced saline solution on a cannula, and a fluid wave was noted.*

*Phacoemulsification and phacoaspiration was used to disassemble and remove the nucleus and was followed by coaxial irrigation and aspiration of the cortical material using an irrigation/aspiration (I/A) handpiece. A total _____ absolute phaco time (APT) was used during the procedure. Viscoelastic was injected to inflate the capsular bag and reform the anterior chamber. An intraocular lens, (Alcon/AcrySof/Tecnis) model #_____, serial #_____ with a power of _____ diopters, was inspected and found to be defect free and injected into the capsular bag without difficulty. The IOL was well centered and in good position before continuing.*

The ___-mm trephine was used to mark the anterior surface of the cornea with methylene blue ink, and a reverse sinskey hook was used to score a ____-mm-diameter circle on Descemet's membrane. Descemet's membrane was then stripped away using a DSAEK rake. The removed tissue was unfurled externally and inspected to ensure complete removal of host Descemet's membrane. Irrigation and aspiration was utilized to remove remaining viscoelastic.

The donor tissue had been previously trephinated with a ____-mm-diameter blade. The anterior corneal button was discarded. The donor endothelium was coated with viscoelastic and folded into a "taco" with the endothelial side interiorly. The donor tissue was then inserted into the anterior chamber and opened with the donor endothelial cells oriented posteriorly.

The donor graft was positioned to cover the area of the previously stripped Descemet's membrane. The incision was closed with ____ interrupted *#10-0 nylon*. An air bubble was placed under the graft in the anterior chamber to hold the transplant tissue in position for ____minutes. A diamond blade was used to tap through host cornea into the donor-host interface. Interface fluid was massaged out using a Lindstrom LASIK roller. After the full ____ minutes, partial fluid-air exchange was performed to relieve pupillary block. Eye pressure was noted to be appropriate, and the eye was leak-free. The conjunctiva was then re-approximated and closed with electrocautery. Solu-Medrol and Ancef subconjunctival injections were placed. Antibiotic drops and Maxitrol ointment were placed in the eye, and the speculum was removed. The eye was then patched and shielded. The patient tolerated the procedure well and was sent to the recovery room in the supine position for 1 h, prior to reexamination by the surgeon.