# Avoiding Mistakes with DSAEK

## Pearls for the Converting Corneal Surgeon

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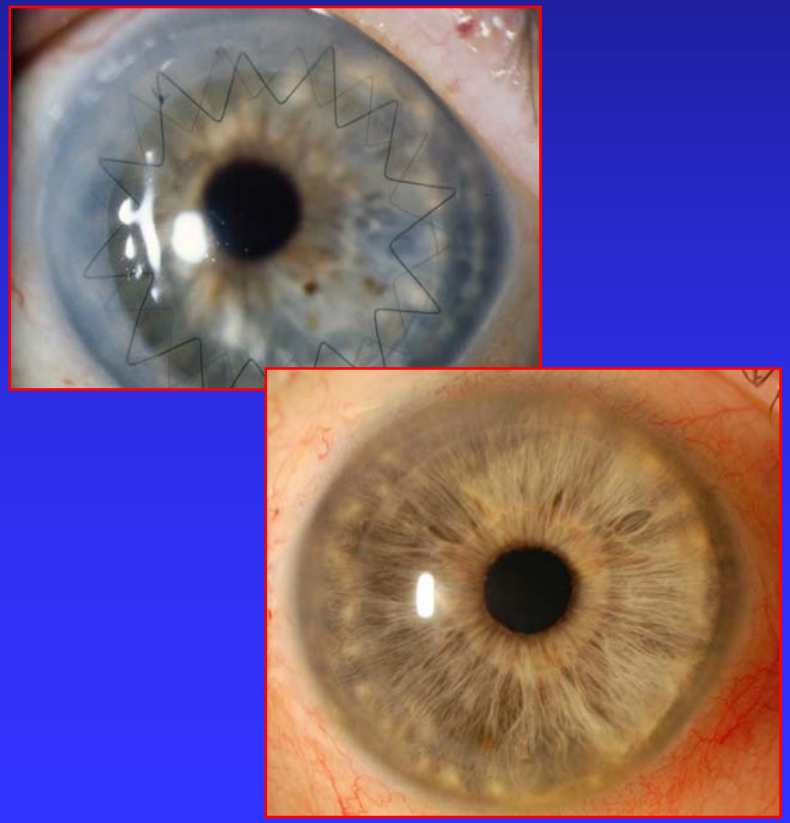


# DSAEK : Pearls for the converting surgeon

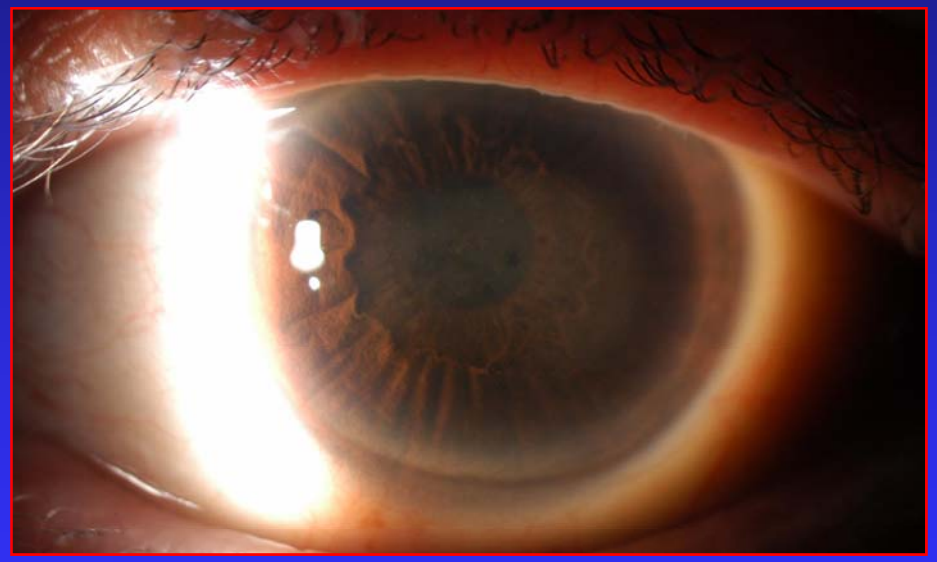
## DSAEK technique

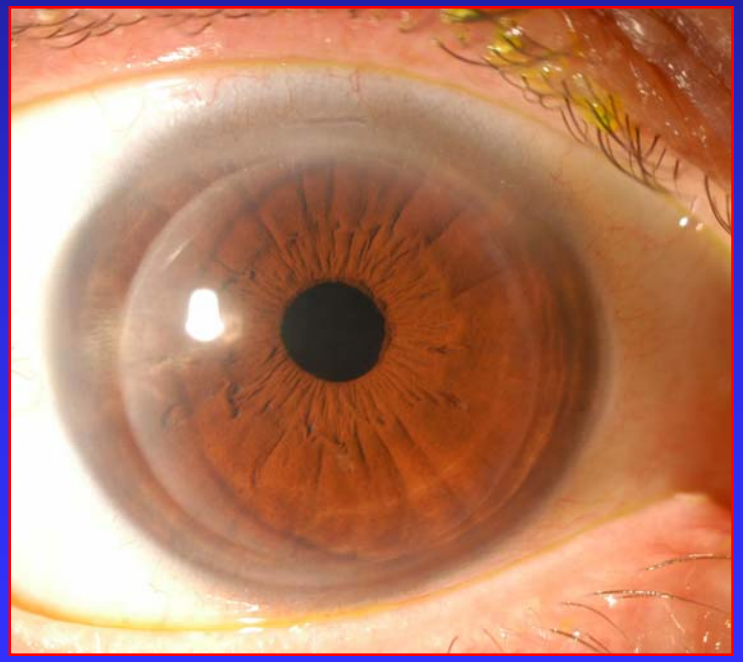
1. Removal of recipient's Descemet's membrane with dysfunctional endothelium
2. Microkeratome-assisted preparation of donor tissue (posterior stromal lamella with Descemet / endothelium)
3. Transfer of donor tissue into host, and air tamponade

# PK *vs* DSAEK

## Descemet stripping endothelial keratoplasty

## DSAEK





# DSAEK : Pearls for the converting surgeon

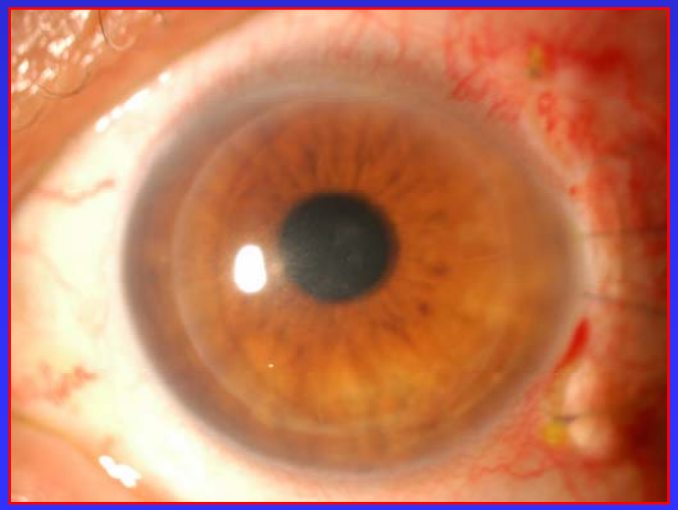
## DSAEK: Advantages

1. Rapid visual rehabilitation
2. ?Decreased allograft rejection
3. No permanent sutures ⇩ no suture-related complications
4. Intact globe (resistant to trauma)
5. Predictable corneal toricity
6. Small hyperopic shift

# DSAEK : Pearls for the converting surgeon

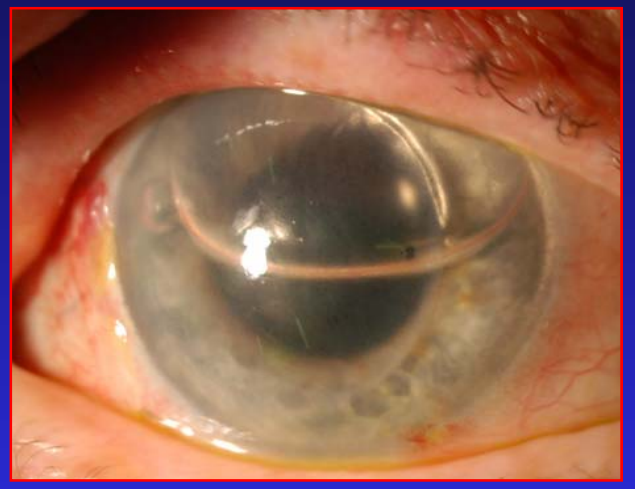
## DSAEK: Disadvantages

1. Totally new procedure for the corneal surgeon
2. Technically demanding
3. Incidence of dislocation
4. Lamellar interface ⇩ no 20/20 …yet !



# DSAEK : Pearls for the converting surgeon

## DSAEK: Causes of button dislocation



1. Patient selection
2. Tissue preparation
3. Surgical technique
4. Retained viscoelastic
5. Inverted endothelial graft
6. Endothelial dysfunction
7. Unknown (delayed endothelial pump function recovery) !

# DSAEK: Personal Results

- 91 grafts (Oct 05 - Apr 07)

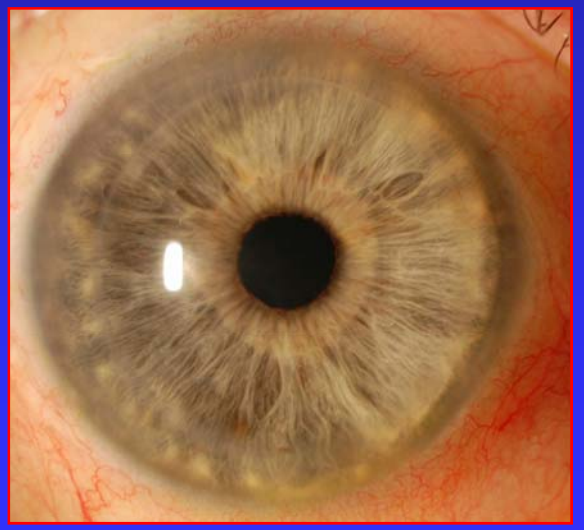
  Hannush)
- Preop dxs: Fuchs', PCE (pseudophakic corneal edema) / PBK (pseudophak keratopathy)
- Preop VA:

  20/50 - CF 1 ft

# DSAEK: Personal Results

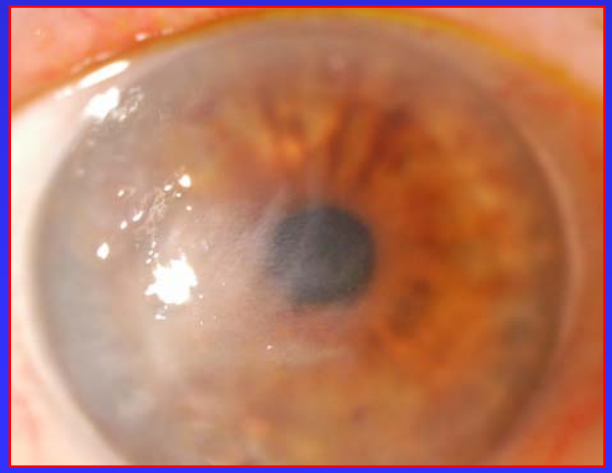
- Follow up: 1 week to 18 months
- Dislocation rate: 9 of 91 (2 in last 40)
- Eight rebubbled successfully, one repeat DSAEK, two PK
- Postop VA 20/25 - 20/80
- Three graft rejections

  (two reversed with meds.)



# DSAEK: Patient selection

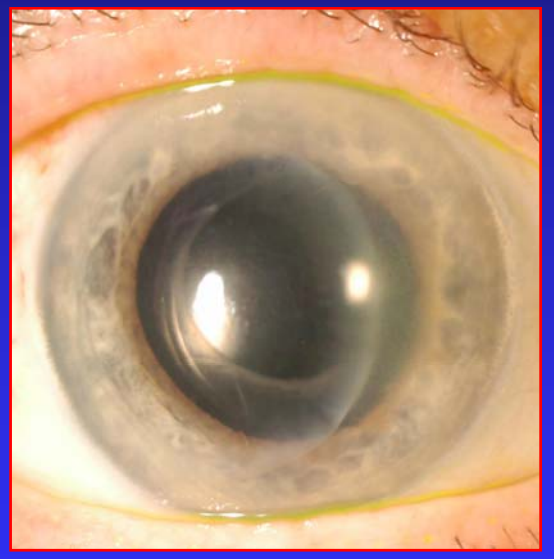
- **Important during early cases**
  - **Choose:**
    - ✓ **Pseudophakic eyes with posterior chamber intraocular lens implants and, if possible, intact capsules**



# DSAEK : Pearls for the converting surgeon

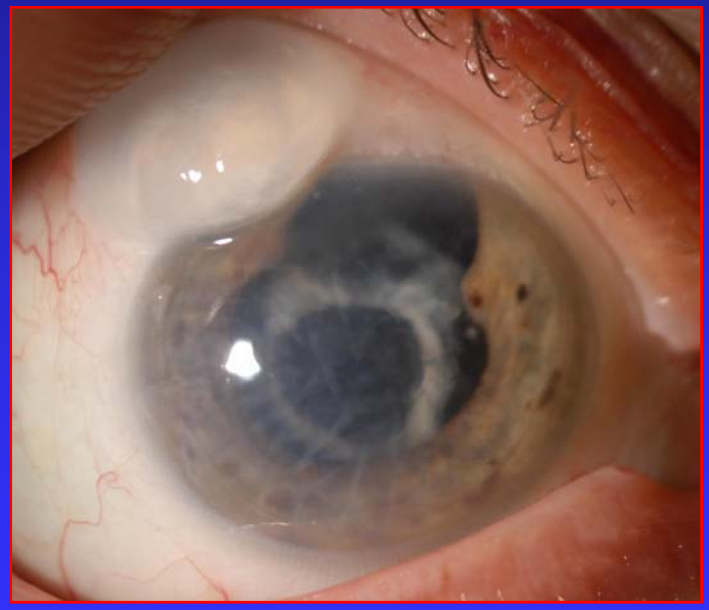
## DSAEK: Patient selection

- Important during early cases
- Avoid :
  - Patients with anterior chamber implants
  - Patients with direct communication between anterior chamber and vitreous cavity (monocameral eyes)



# DSAEK: Patient selection

- **Avoid :**
  - …
    - **Phakic patients**
    - **Patients with large blebs**



# DSAEK : Pearls for the converting surgeon

## DSAEK: Donor tissue selection

- Cell count ≥ 2500 cells/mm
- Scleral rim: 15.5 mm shortest diameter
  - Note: consider allowing tissue to warm up to room temperature before start of procedure

# DSAEK : Pearls for the converting surgeon

## DSAEK: Preparation of donor tissue

- Do not proceed unless artificial chamber properly pressurized
- Do not proceed unless artificial chamber properly pressurized
- Avoid chamber collapse

# DSAEK : Pearls for the converting surgeon

## DSAEK: Preparation of donor tissue

- Remember to remove epithelium
- Place on punch block endothelial side up
- Use a 300 µm head of Moria BLTK Carriazo Barraquer microkeratome
- Mark stromal side of donor button with “S” or “Z” to help with orientation

# DSAEK : Pearls for the converting surgeon

## DSAEK: Preparation of donor tissue

- Mark edge and center of donor
  if donor tissue is eccentrically placed on artificial chamber, make appropriate adjustment before punching donor button
- Position resected cap
  under posterior lamellae before placing on punching block

# DSAEK : Pearls for the converting surgeon

## DSAEK: Preop patient preparation

- Regional block and 100% topical glycerin drops
- Mannitol (consider if positive P$^{o}$)
- Topical dilating drops (2.5 % phenylephrine) to obtain red reflex

# DSAEK: Intraoperative

- Scleral tunnel or corneal incision
  - internal lumen peripheral to proposed donor button location
- Place paracentesis at 6 o'clock and at 2 or 10 o'clock to allow for controlled air release during burping
- Make paracentesis perpendicular to corneal plane so that internal lumen is peripheral to donor button

# DSAEK : Pearls for the converting surgeon

## DSAEK: Intraoperative

- Determine size of incision (3.2 - 5.2) early in procedure to avoid having any blood in anterior chamber just before donor button insertion
- Use chamber maintainer or Healon
- When scoring with reverse Sinskey avoid unnecessary pressure on stroma

# DSAEK : Pearls for the converting surgeon

## DSAEK: Intraoperative

- Use 90° stripper to strip Descemet's membrane. It usually comes off rather easily
- Gently scrape peripheral aspect of host posterior stroma to potentially improve adherence
- Inspect stripped Descemet's membrane
- ♍ Irrigate Healon out completely!
- ♍ Irrigate Healon out completely!!

# DSAEK : Pearls for the converting surgeon

## DSAEK: Intraoperative

- Place drop of Healon on donor endothelium before folding into 60/40 taco
- When inserting donor button into AC watch for chamber collapse; use second instrument to prevent retraction of donor button out of eye. Consider use of chamber mantainer if not already in eye (control with foot pedal; avoid free flow)

# DSAEK : Pearls for the converting surgeon

## DSAEK: Intraoperative

- When reforming AC inject on stromal side of button to create fluid wave onto endothelial side (Ocean Spray™ Cranberry Juice wave effect)
- If no response, use two reverse Sinskey hooks to unfold
- Confirm “S” or “Z” mark is in correct orientation

# DSAEK : Pearls for the converting surgeon

## DSAEK: Intraoperative

- Place 10-0 nylon suture in surgical incision. If wound construction is less than ideal (incompetent valve) place sutures before any AC irrigation to avoid extrusion of button
- Inject air for tamponade. Make sure air is posterior to donor button. If air is entrapped anterior to button remove and start again

# DSAEK : Pearls for the converting surgeon

## DSAEK: Intraoperative

- Position (center) button with reverse Sinskey hook
- Place as much air in AC as possible ( 80-90% fill) to achieve good tamponade (30-50 mm Hg). Avoid rock hard eye. The globe will remain firm until pupillary block is broken at the time of burping

# DSAEK : Pearls for the converting surgeon

## DSAEK: Intraoperative

- Vent interface, preferably with diamond blade (look for egress of fluid or small movement of donor button.) Vents may be further manipulated with Sinskey hook
- Close conjunctiva with 8-0 Vicryl suture
- Place atropine 1% and antibiotic, tape and shield

# DSAEK : Pearls for the converting surgeon

## DSAEK: Intraoperative

- **Transfer patient to PACU. Patient to lie supine for 30- 60 minutes**

# DSAEK : Pearls for the converting surgeon

## DSAEK: Immediate postop

- Confirm position of donor button at slit lamp
- Burp air out of superior or oblique paracentesis until inferior air bubble meniscus clears the inferior pupillary margin to break pupillary block

...

# DSAEK : Pearls for the converting surgeon

## DSAEK: Immediate postop

- If unable to burp, may need to insert cannula into AC to remove air
  - Caution: make sure tip of cannula is posterior to donor button
- In the event of excessive manipulation, offer Avelox™ 400 mg qd x 5
- Patch and shield …

# DSAEK: Post-op Day 1

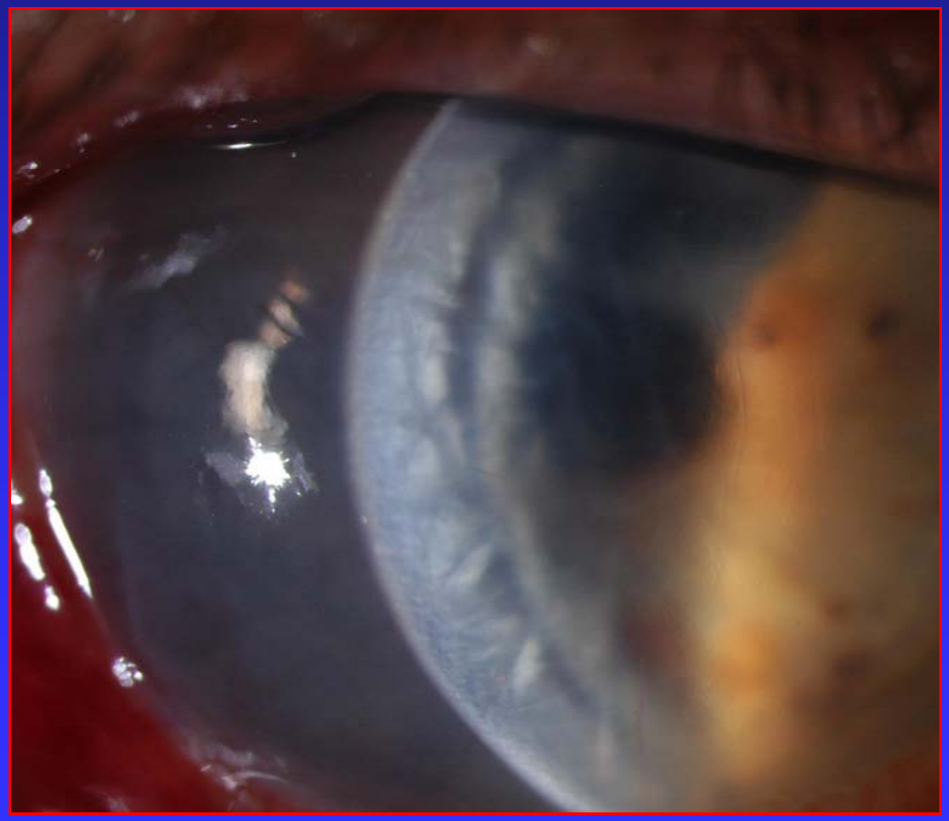
- Expect 30% air bubble. If not, consider posterior migration of air into vitreous cavity
  Expect VA: 20/200 - CF @ 6 ft
- If VA ≤ CF @ 4ft look for donor button dislocation
- Inspect donor button for apposition and centration
- If well apposed but decentered do not manipulate

# DSAEK: Post-op Day 1

- If dislocated posteriorly consider rebubbling AC same day or after 5-7 days for endothelial pump recovery
- Instruments for rebubbling: 3 cc syringe, 30 gauge cannula or needle, lid speculum, sharp blade, and 2 reverse Sinskey hooks. Offer Avelox 400 mgs po qd x 5

# DSAEK : Pearls for the converting surgeon

- 12/29/05 DSAEK
- 12/30/05 bubble gone, migration into filtering bleb, button dislocated
- Rebubble!
- 12/31/05 button still dislocated, rebubble again!!
- 01/01/06 VA 20/200
- 03/05/06 VA 20/30

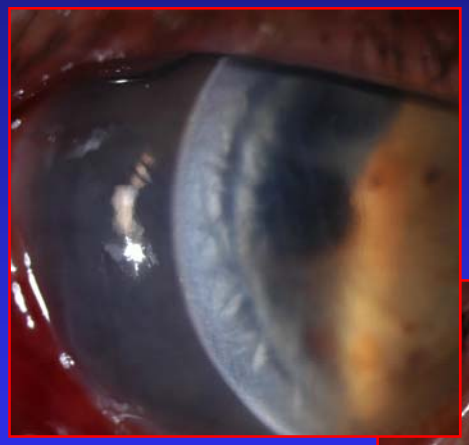


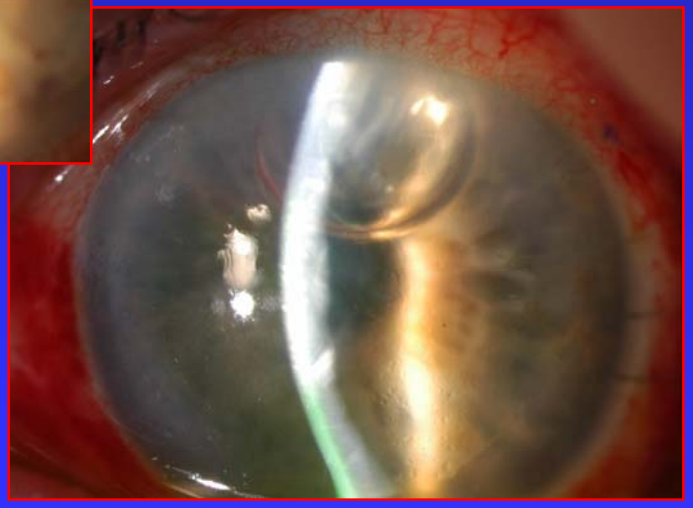
# DSAEK : Pearls for the converting surgeon

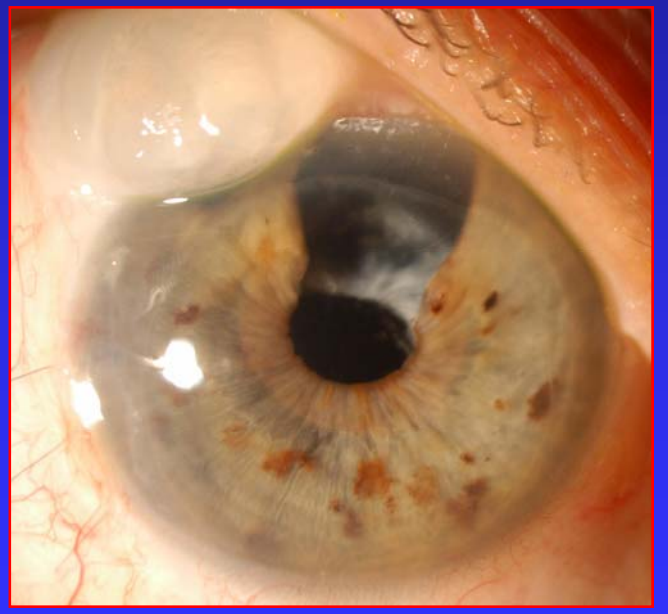
**Descemet stripping automated**

**endothelial keratoplasty**

**DSAEK**







# DSAEK : Pearls for the converting surgeon

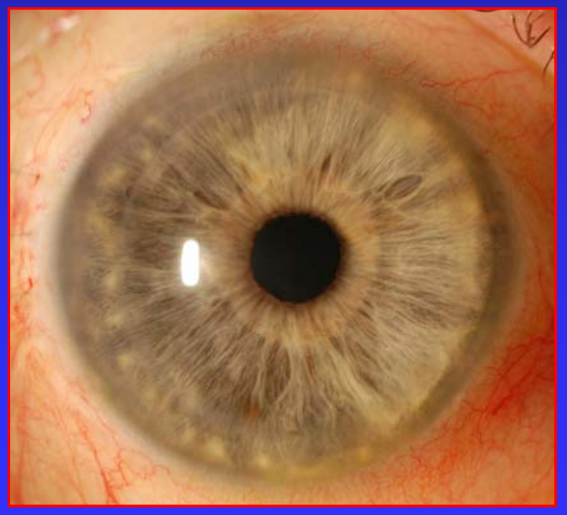
## DSAEK: Post-op Day 1

- **Start post-operative steroids and antibiotics. Consider NSAID if combined procedure with cataract removal**

- **Follow up in one week**

# Conclusions

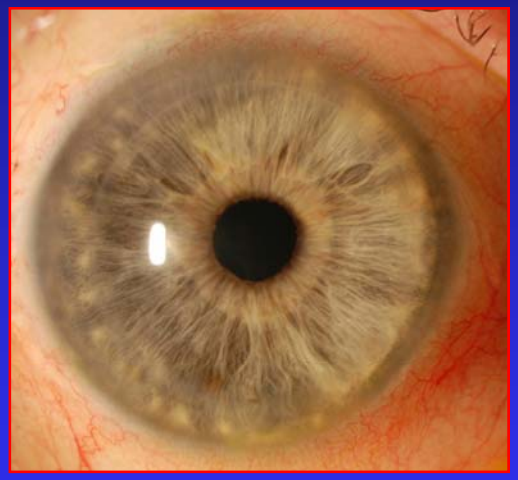
- DSAEK is a new method for endothelial replacement in patients with Fuchs' dystrophy and corneal endothelial dysfunction
- Although still evolving, DSAEK compares well with PK



# DSAEK : Pearls for the converting surgeon

## Conclusions

- **Command of pre-, intra-, and post-operative management, especially of button dislocation, is essential to success of the procedure !**



- **DSAEK is here to stay !!**