

# CORNEAL TRANSPLANTS

The good, the bad, and the ugly

Swarupa Kancherla, MD  
Cataract, Cornea & Refractive Surgery



# QUIZ TIME

HOW MANY LAYERS MAKE UP THE CORNEA?

1 - Clap your hands once

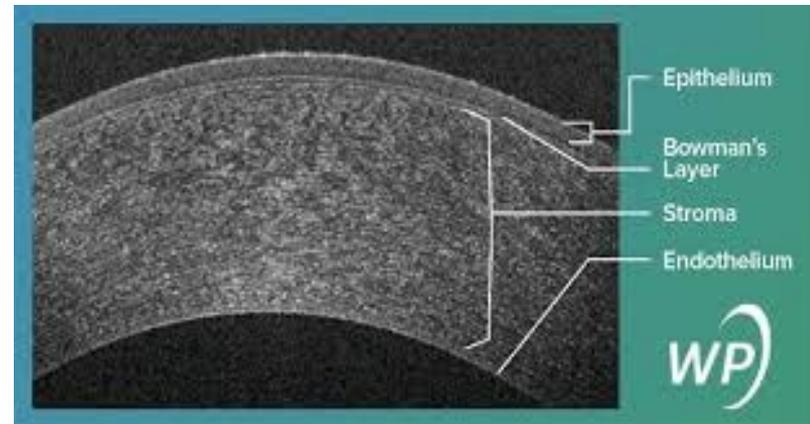
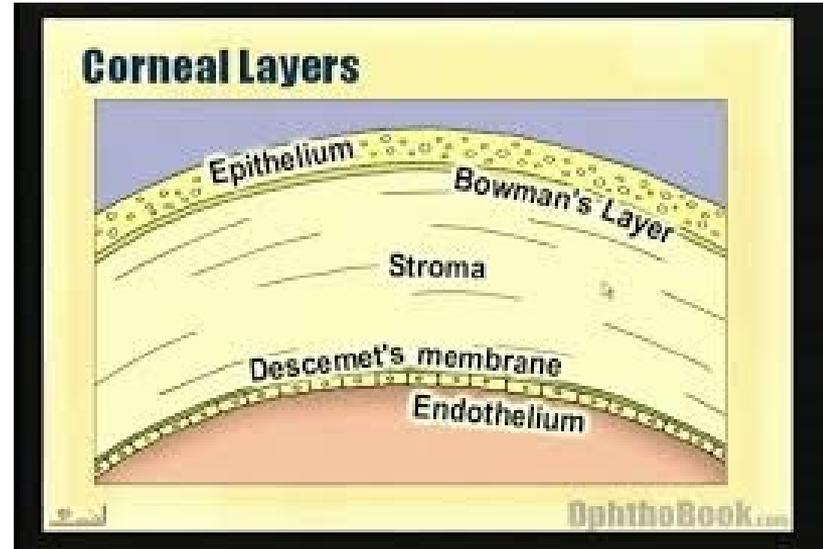
3 - Say “WOOHOOOOOOOOO!”

5 - Do the wave in your row

# Corneal Architecture

Five Distinct Layers

<b>Epithelium</b>	Protective barrier
<b>Bowman's Layer</b>	Structural support
<b>Stroma</b>	90% of thickness
<b>Descemet's</b>	Basement membrane
<b>Endothelium</b>	Fluid regulation

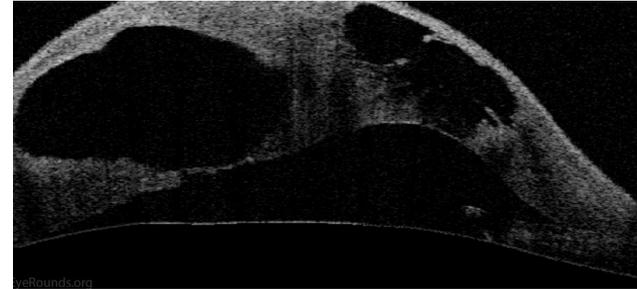
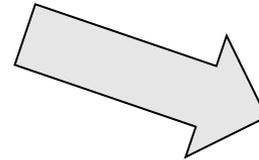
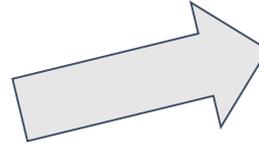


# Corneal Architecture

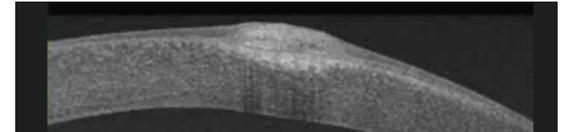
Five Distinct Layers

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Corneal edema



Salzmann's Nodule



# Corneal Architecture

Five Distinct Layers

## Epithelium

Protective barrier

## Bowman's Layer

Structural support

## Stroma

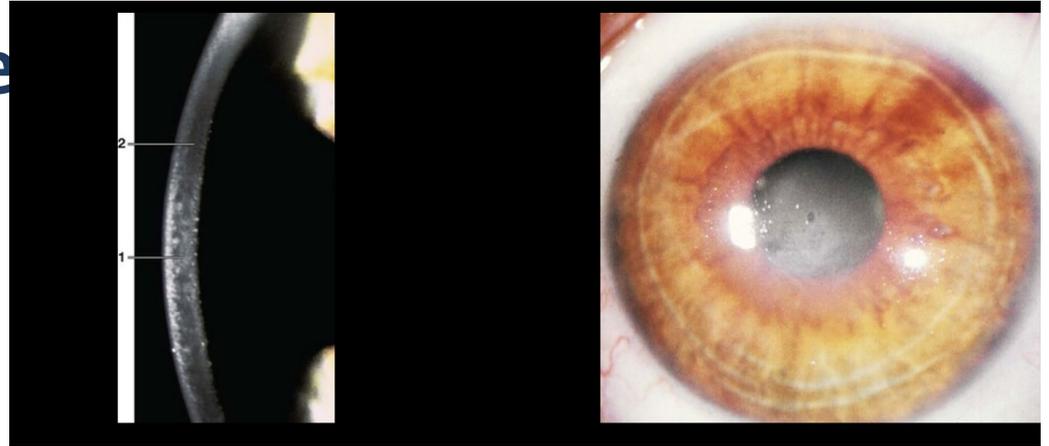
90% of thickness

## Descemet's

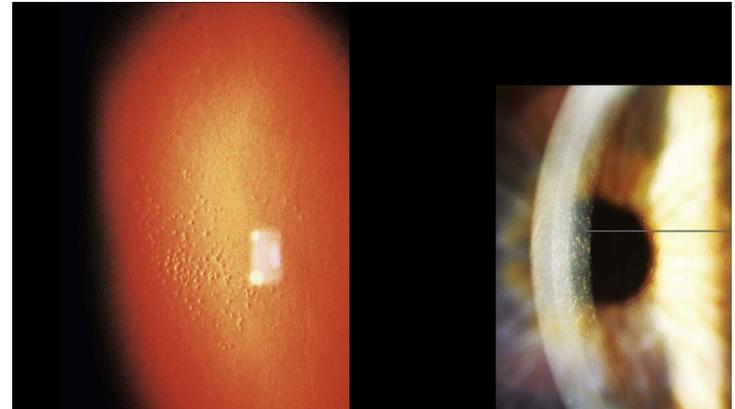
Basement membrane

## Endothelium

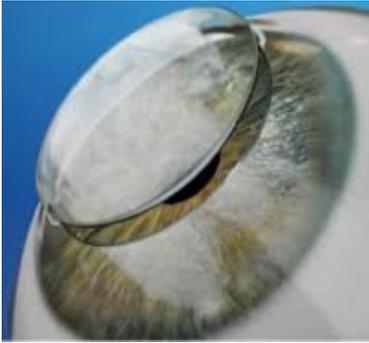
Fluid regulation



## Fuchs' Dystrophy



# Four Transplant Modalities

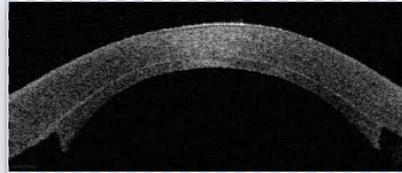


**PKP**

Full Thickness

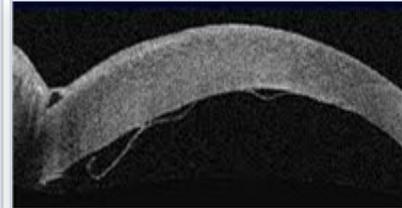
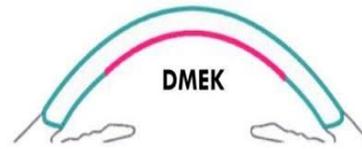


*Insert Photo*



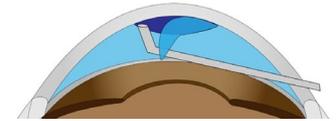
**DSAEK**

Partial Thickness



**DMEK**

Ultra Thin



**DSO**

Stripping Only

# PKP

Penetrating Keratoplasty

# PKP: Full-Thickness Transplant



## KEY CHARACTERISTICS

- ✓ Removes all five corneal layers
- ✓ Replaces with full-thickness donor
- ✓ Requires 16-24 sutures
- ✓ Sutures remain 12-18 months

*Analogous to replacing an entire window pane*

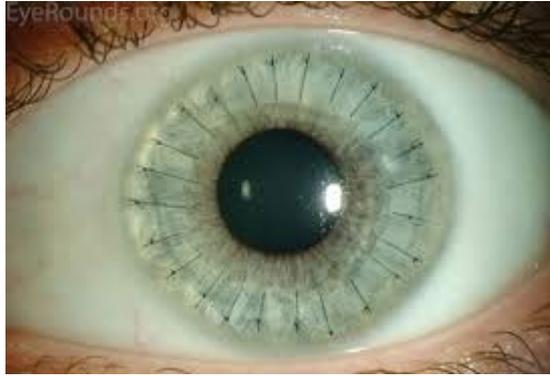
# PKP: Clinical Indications

- ✓ Advanced keratoconus
- ✓ Full-thickness corneal scars
- ✓ Severe infectious keratitis
- ✓ Failed previous transplants
- ✓ Stromal dystrophies
- ✓ Corneal perforations





# PKP: Post op

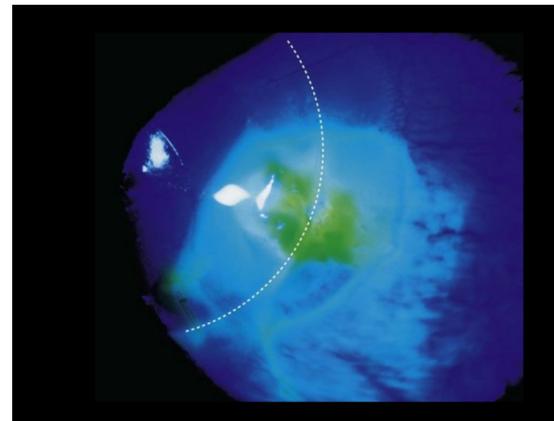
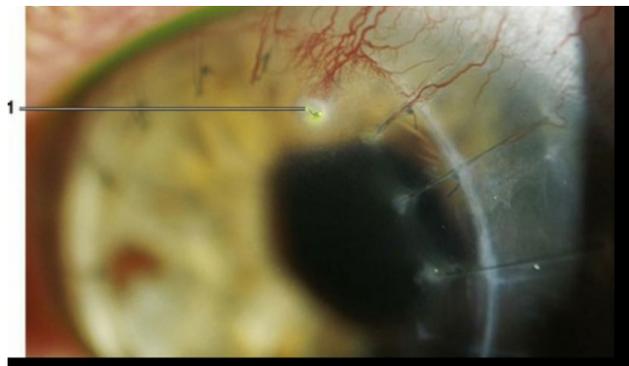
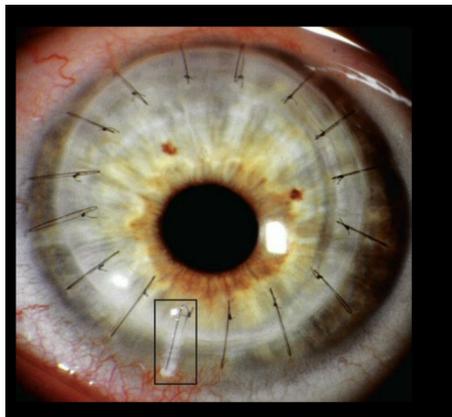


Steroid drop

Suture removal

RGP/Scleral lens

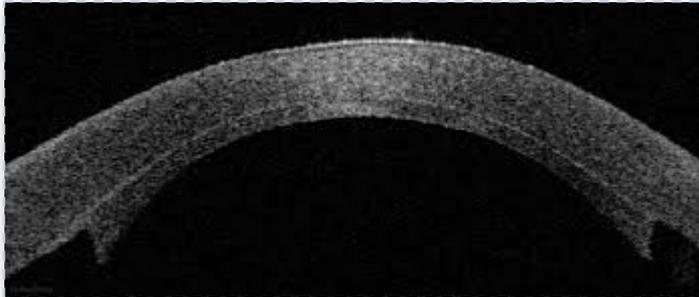
# PKP: Post op flops



# DSAEK

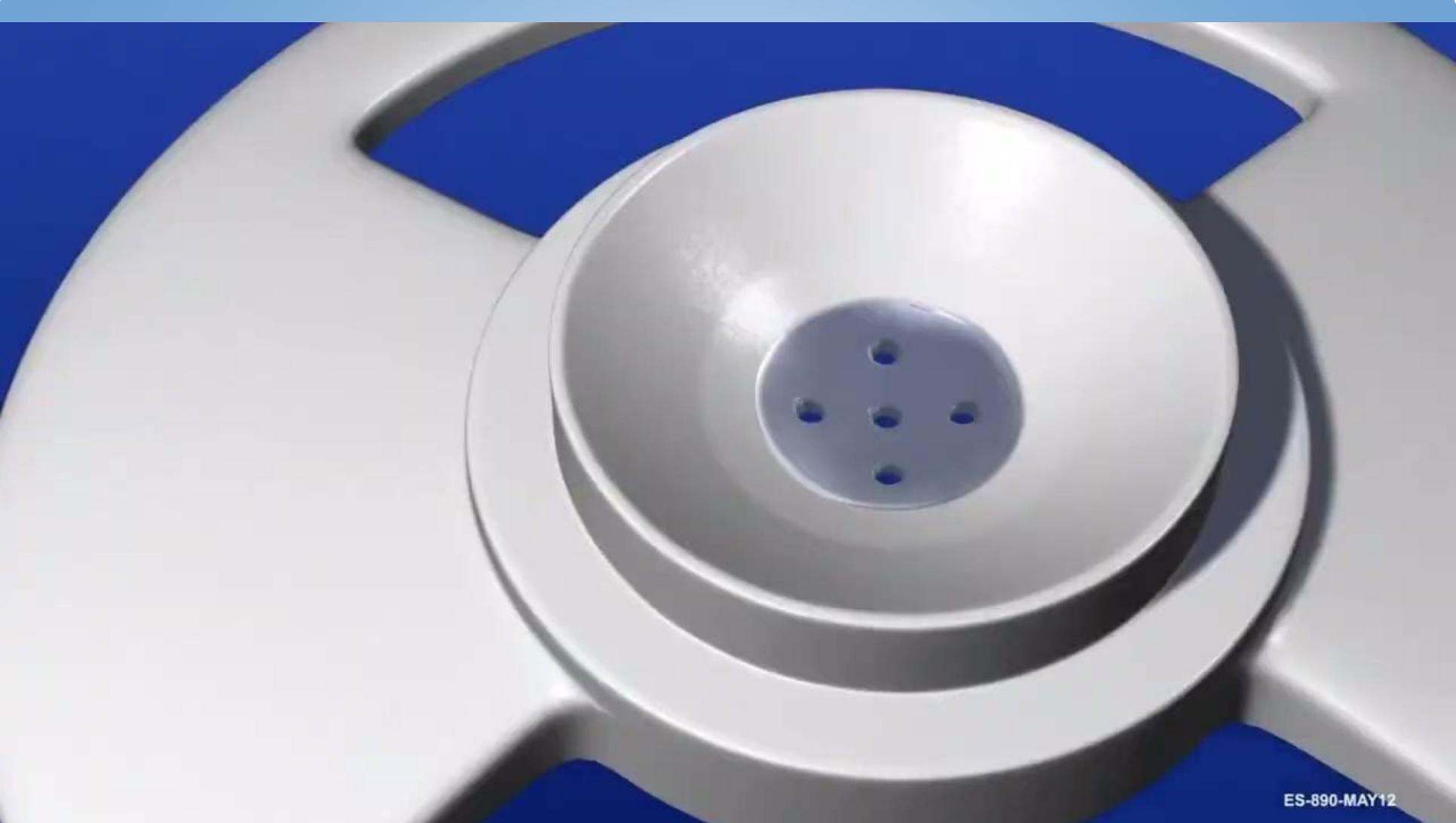
Descemet Stripping Automated Endothelial Keratoplasty

# DSAEK: Partial-Thickness Transplant

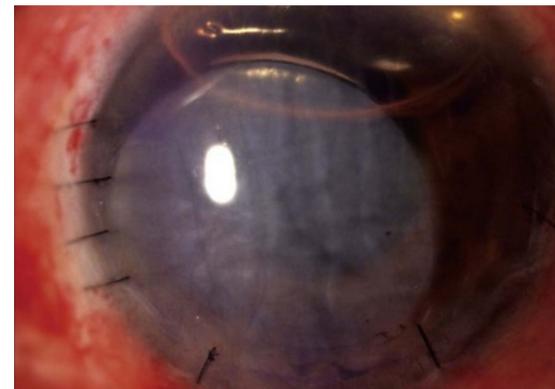
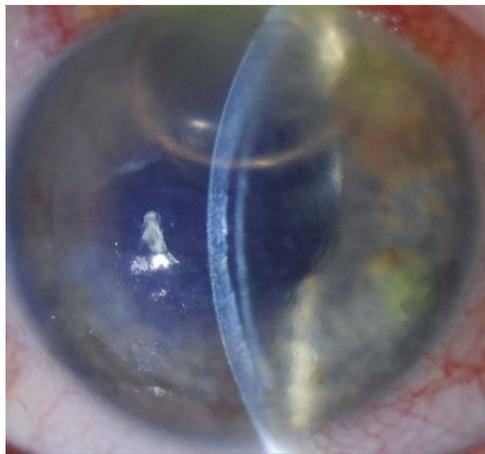
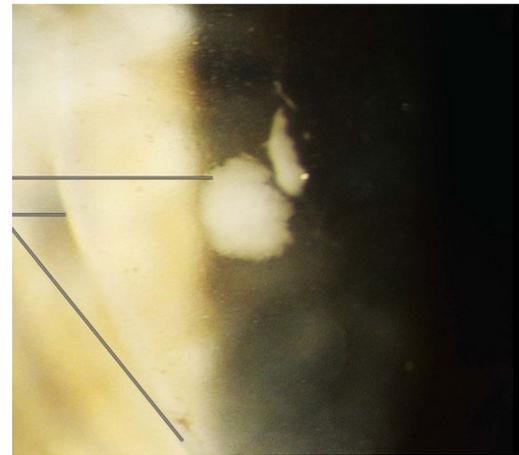
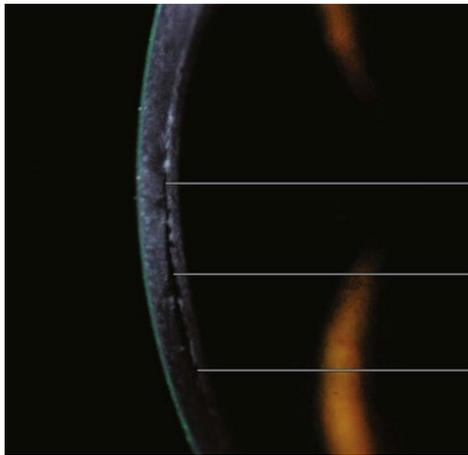


## KEY CHARACTERISTICS

- ✓ < 60 microns thick
- ✓ No sutures required
- ✓ Easier handling than DMEK
- ✓ Less strict positioning



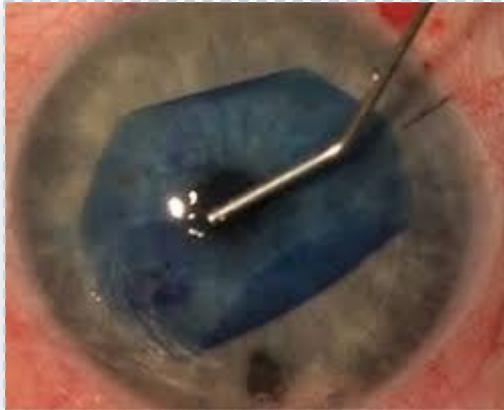
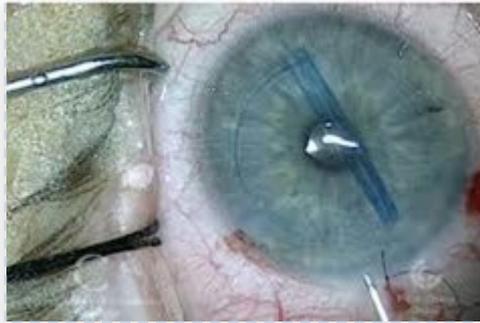
# DSAEK: Post op flops



# DMEK

Descemet Membrane Endothelial Keratoplasty

# DMEK: Ultra-Thin Endothelial Transplant



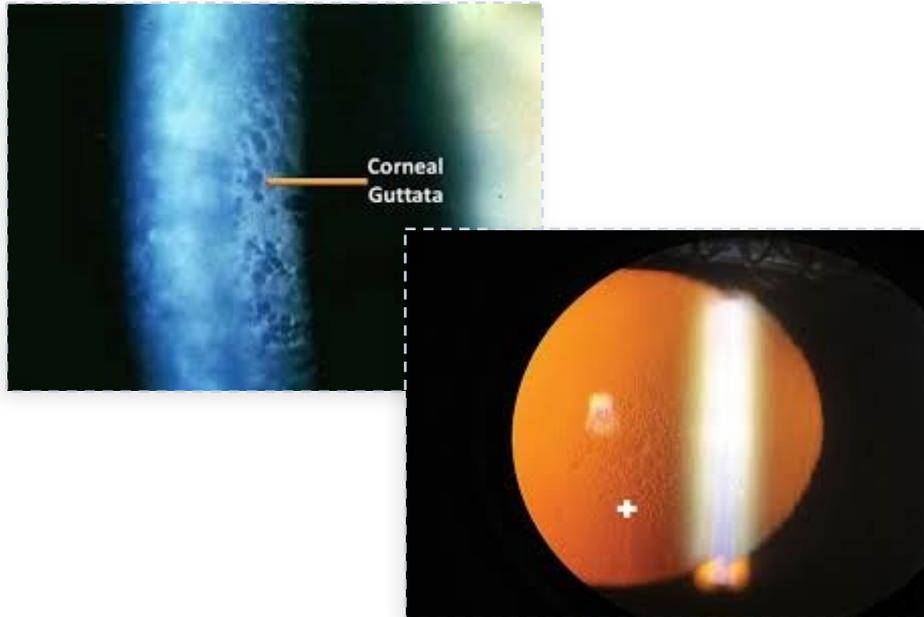
## KEY CHARACTERISTICS

- ✓ Only 10-15 microns thick
- ✓ No sutures required
- ✓ Air or gas bubble tamponade
- ✓ Critical supine positioning

# DMEK: Primary Indications

## Fuchs' Endothelial Dystrophy

*Most common indication*



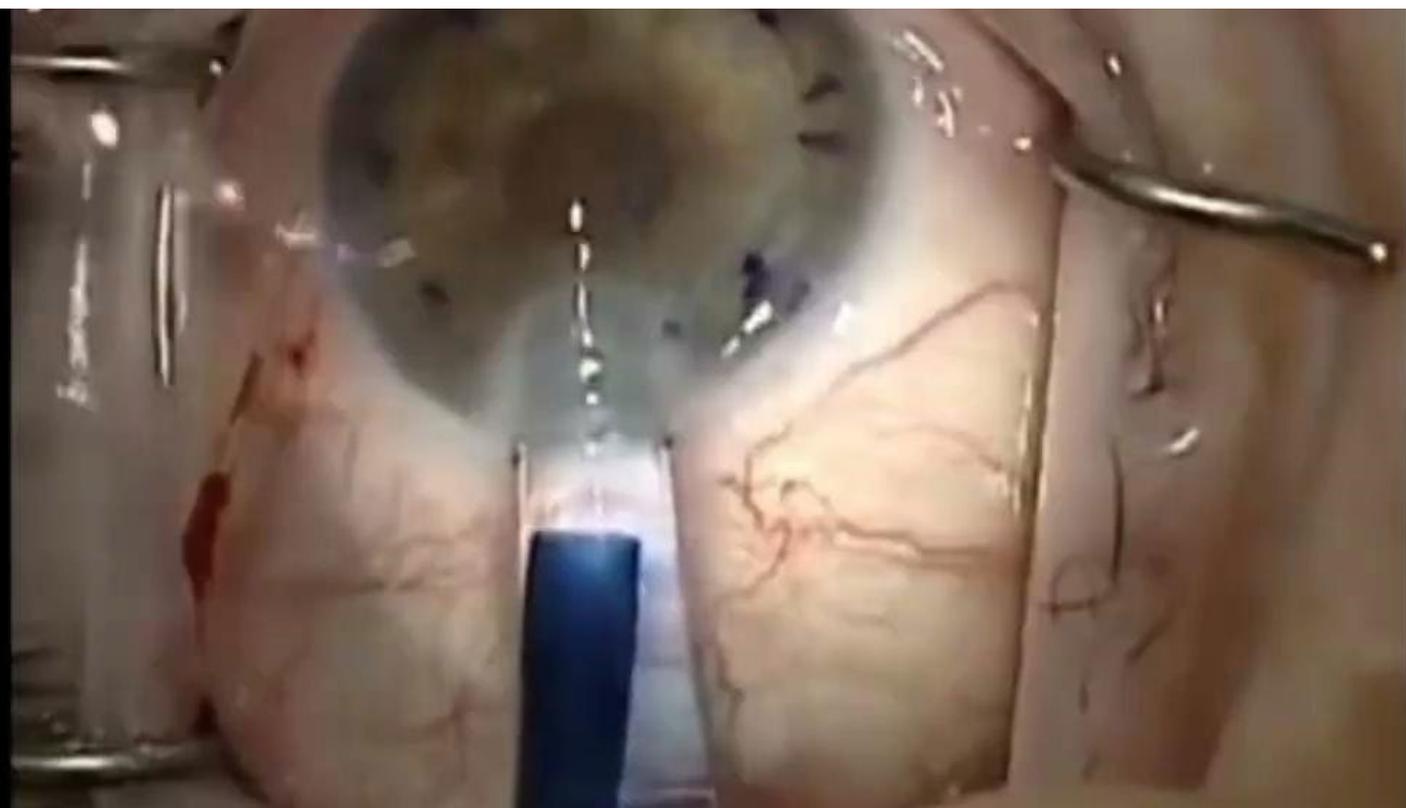
## Pseudophakic Bullous Keratopathy

*Post-cataract surgery*

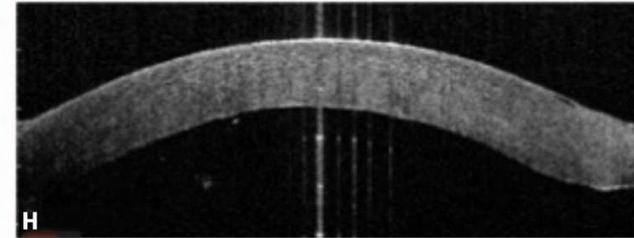
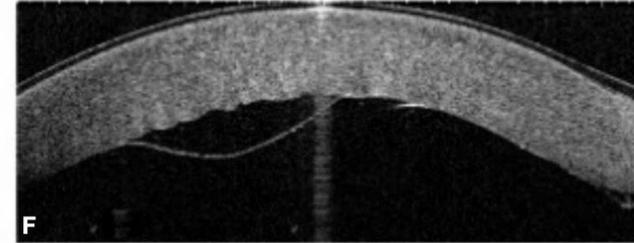
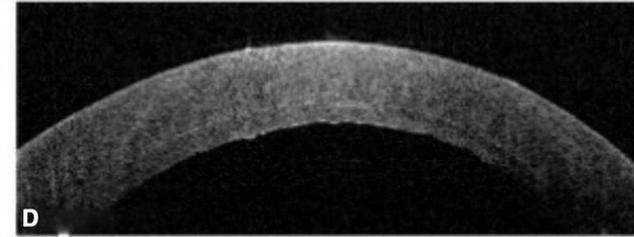
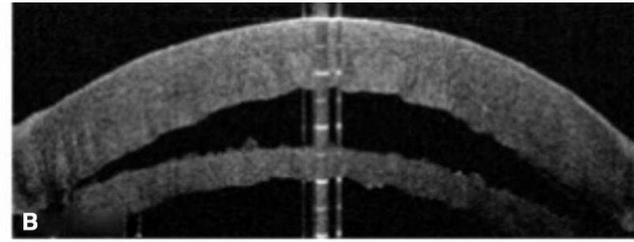
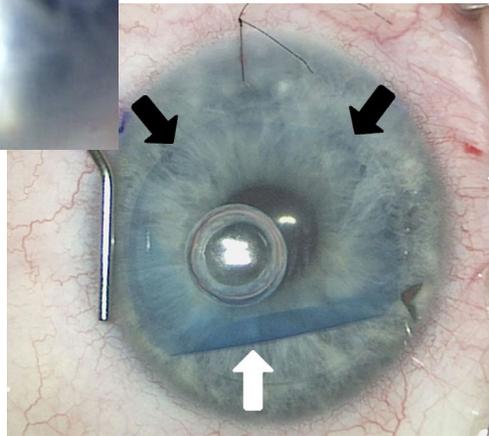
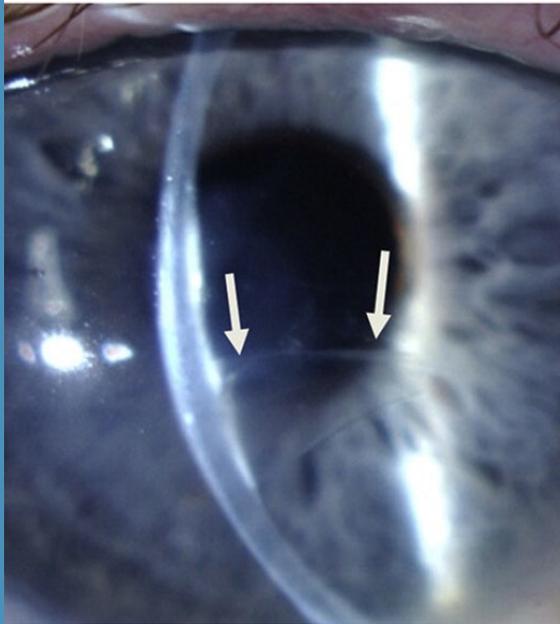


# Surgery





# DMEK: post op flops





# DSO

Descemet Stripping Only

# DSO: Endogenous Regeneration



## KEY CHARACTERISTICS

- ✓ Strip diseased membrane
- ✓ No donor graft required
- ✓ Peripheral cells migrate centrally
- ✓ Patient regenerates own tissue

*Zero rejection risk - autologous tissue*

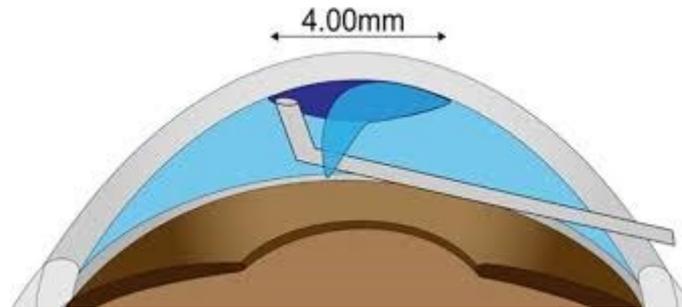
# DSO: Risk-Benefit Analysis

## ADVANTAGES

Zero rejection risk  
No donor requirement and therefore no  
positioning requirement  
Cost-effective

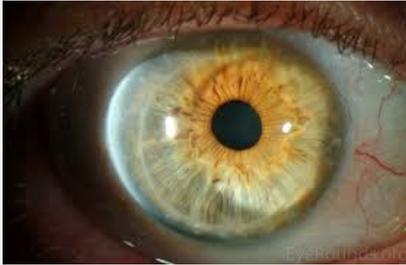
## LIMITATIONS

60-85% success rate  
Unpredictable outcomes  
May require subsequent transplant



# Comparative Overview

## PKP



Recovery  
**12-18 mo**

Rejection  
**15-30%**

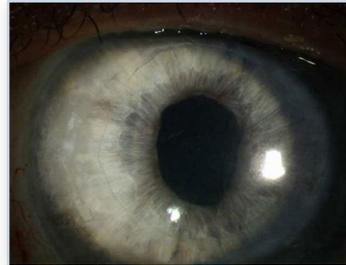
## DSAEK



Recovery  
**3 mo**

Rejection  
**<5%**

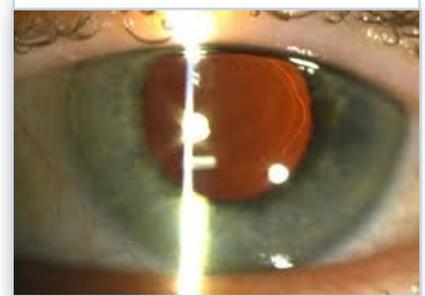
## DMEK



Recovery  
**1-3 mo**

Rejection  
**<5%**

## DSO



Recovery  
**2-6 mo**

Rejection  
**0%**

# Rejection Recognition



**Decreased visual acuity**

**Conjunctival injection**

**Photophobia**

**Ocular discomfort**

**Immediate evaluation required**



# Patient Education Essentials

**Establish realistic recovery expectations**

**Emphasize medication adherence**

**Teach positioning requirements**

**Ensure follow-up compliance**

# Summary

Questions & Discussion

