

# UP-DATE CHIRURGIA: CHERATOPLASTICA

SOSI XXXVI CONGRESSO  
14-16 APRILE 2011

Dott. Salvatore Azzaro  
Dott. Maurizio Parisi

ASP 7 Ragusa



# STORIA DELLA CHERATOPLASTICA

- **VON HIPPEL 1877**: primo trapianto perforante
- **VON HIPPEL 1888**: primo trapianto lamellare sull'uomo
- **BARRAQUER 1971**: interfaccia profonda e trasparente  
spessori uniformi
- **ANWAR 1974**: primo a mettere a nudo la  
descemet;  
primo ad asportare l'endotelio  
del donatore

LEGGE 301 del 1993

# INDICAZIONI ALLA CHIRURGIA CORNEALE

## TRASPARENZA

### CURVATURA

- Cheratocono 46,9%
- Ectasie corneali:
  - deg.pellucida
  - ectasia di Terrier
- Cheratoglobo

- Scompenso corneale 13,8%
- Malattia del lembo 14,1%
- Distrofie stromali
- Endoteliopatie corneali primarie:
  - D. Fuchs 3,6%
  - S. Chandler
  - D. endoteliali congenite
- Leucomi infettivi 6,2%
- Opacità congenite

### PATOLOGIA ACUTA

- Perforazioni infettive
- Perforazioni infiammatorie:
  - artrite reumatoide
  - granulomatosi
  - ulcera di Mooren
  - vasculiti sistemiche
  - S.Sjogren
- Perforazioni traumatiche 4,4%

## The CORTES Study: Corneal Transplant Indications and Graft Survival in an Italian Cohort of Patients

*Adriano Fasolo, \* Anna Chiara Frigo, † Elisabetta Böhm, § Claudio Genisi, ‡ Paolo Rama, || Leopoldo Spadea, ¶ Barbara Mastropirro, † Michela Fornea, † Diego Ponzin, \* Francesco Grigoletto, † and on behalf of the CORTES Group*

*(Cornea 2006;25:507-515)*

- **PK:** penetrating keratoplasty
- **EK:** endothelial keratoplasty

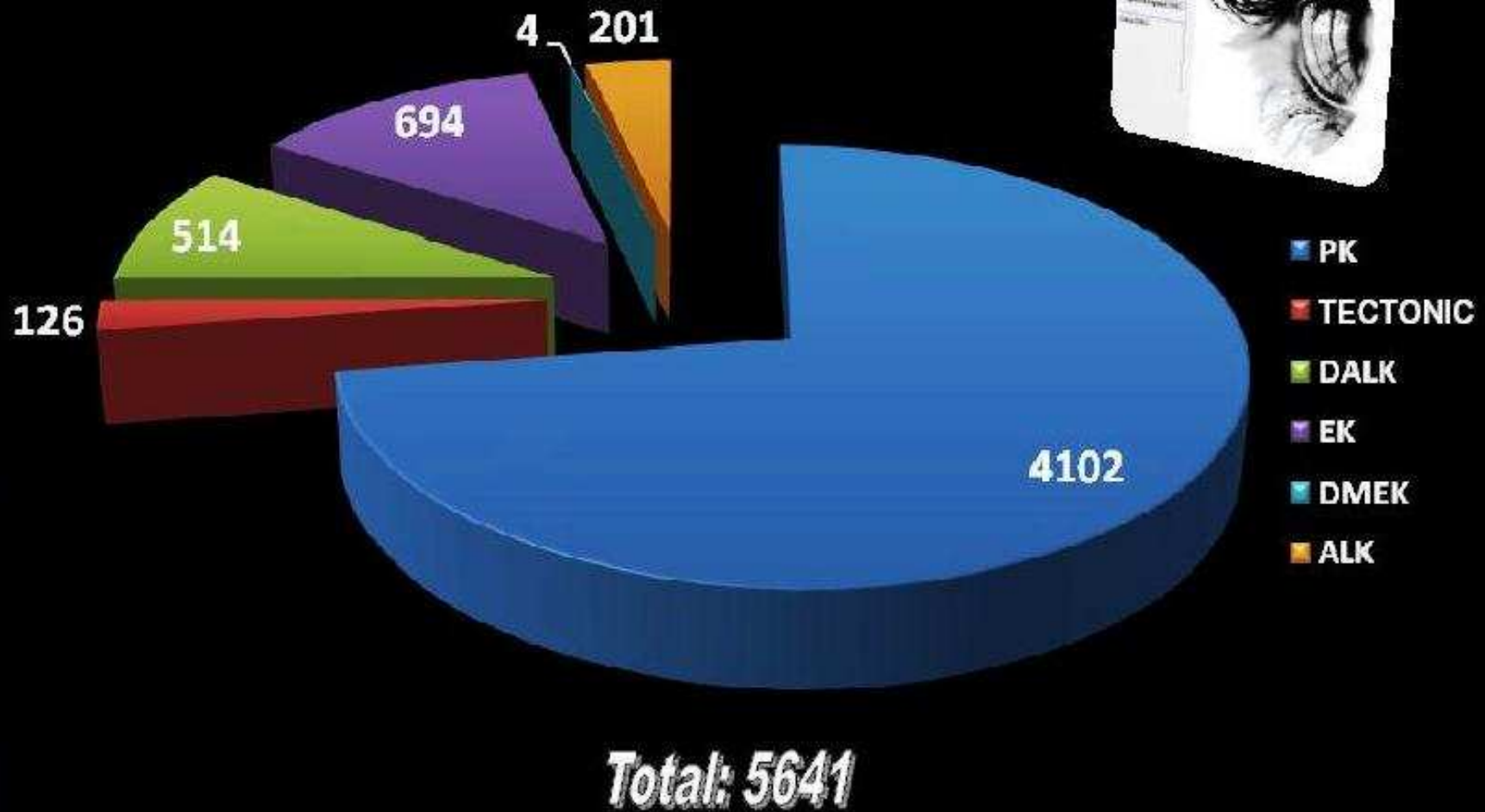
- **DALK:** deep anterior lamellar keratoplasty

- **DMEK:** descemet membrane endothelial keratoplasty

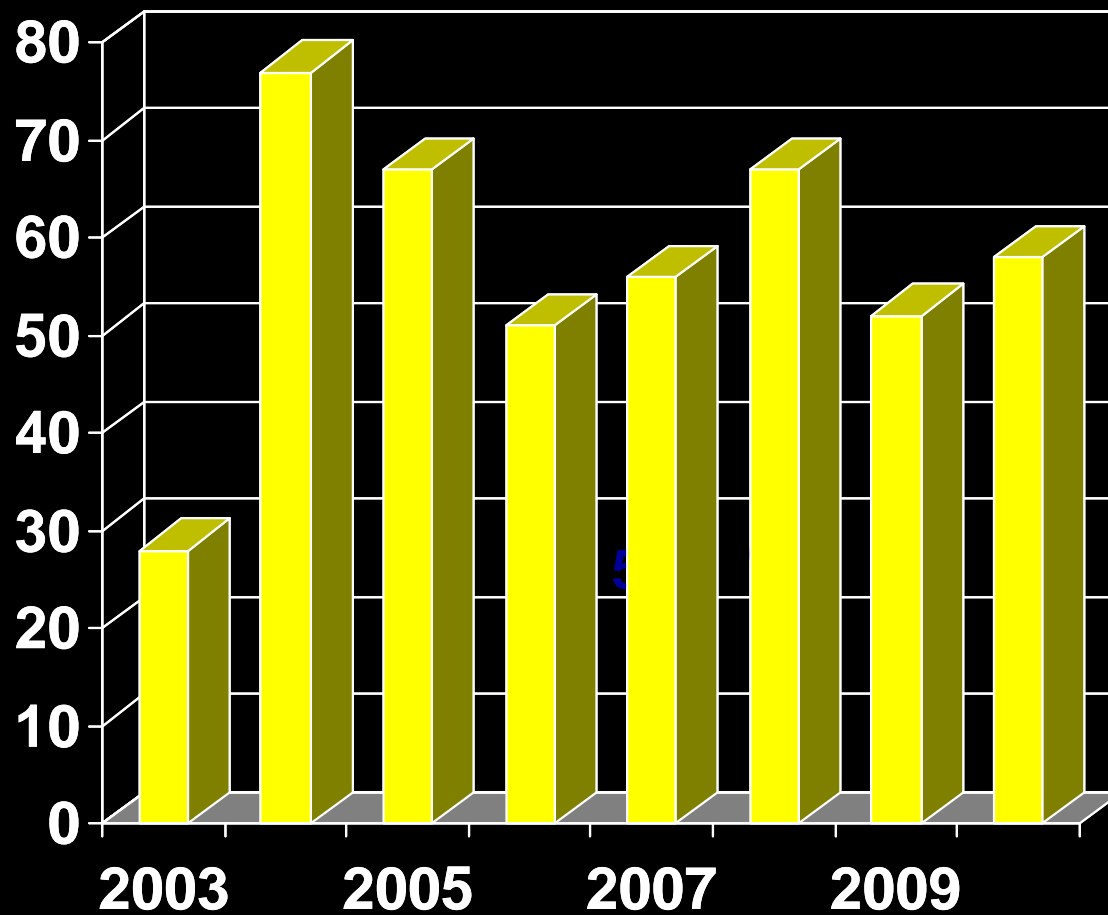
- **DSAEK:** descemet stripping automated endothelial keratoplasty

- **ELLK:** excimer laser lamellar keratoplasty

2009 Eye Banking Statistics  
Distribution of Tissues  
12 Eye Banks Reporting



# CORNEE TRAPIANTATE (n.456)



Banca degli Occhi *Lions* della Regione Siciliana *Francesco Ponte*  
A.O. Ospedali Riuniti Villa Sofia - Cervello, P.O. Cervello Palermo

# CHERATOPLASTICA PERFORANTE

## COMPLICANZE

- Espulsiva
- Rigetto
- Scarsa tenuta della cicatrice anche dopo anni
- Astigmatismo elevato
- Lento recupero visivo



## CHERATOPLASTICA LAMELLARE

- PK rigetto 28%
- DALK rigetto 8%



Non è necessaria  
l'immunosoppressione nella  
DALK

# PK: Complicanze intraoperatorie

- Decentramento del taglio
- Lacerazione dell'iride
- Emorragia in CA
- Rotture della capsula anteriore
- Congestione della coroide





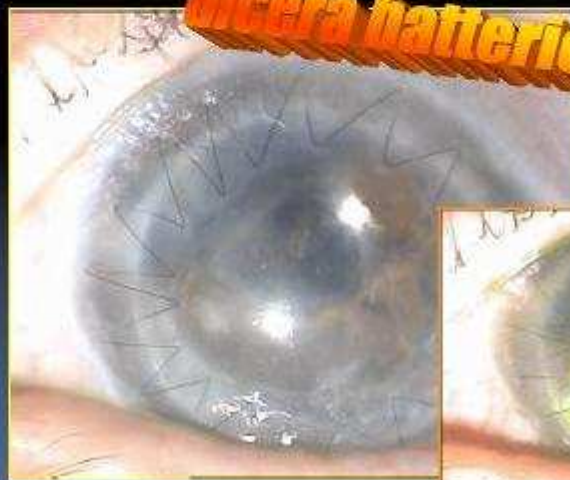
# PK: Complicanze post-operatorie precoci



**endofalmitide batterica**



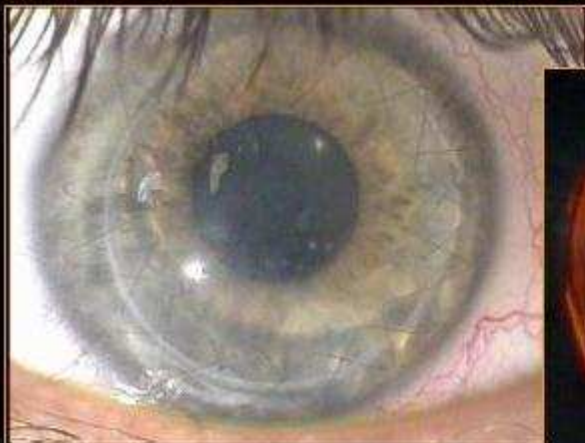
**scompenso primario del lembo**



**ulcera batterica su lembo**



# PK: Complicanze post-operatorie tardive



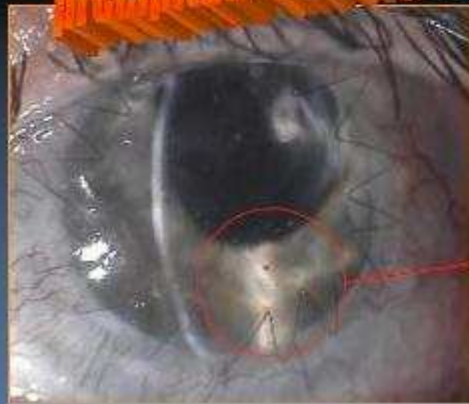
Rigetto endoteliale



rottura della sutura



precipitati endoteliali su lembo



# PK: Complicanze post-operatorie tardive

neovasi superficiali



malattia del lembo

# CHERATOPLASTICA LAMELLARE ANTERIORE

## 1. MANUALE

- Krumeich (Guided-Trephine-System)
- Tsubota (*Devide and conquer*)
- Anwar (Big Bubble)
- Archila, Manche (DALK con sostanza viscoelastica)
- Melles ( DALK con sostanza viscoelastica e iniezione di aria in CA)
- Sugita (Idrodelaminazione lamellare profonda)
- Balestrazzi (Dissezione con trypan blue)
- Caporossi
- Sarnicola

## 2. CON LASER A ECCIMERI (ELLK)

## 3. MECCANIZZATA CON MICROCHERATOMO

## 4. CON FEMTOLASER

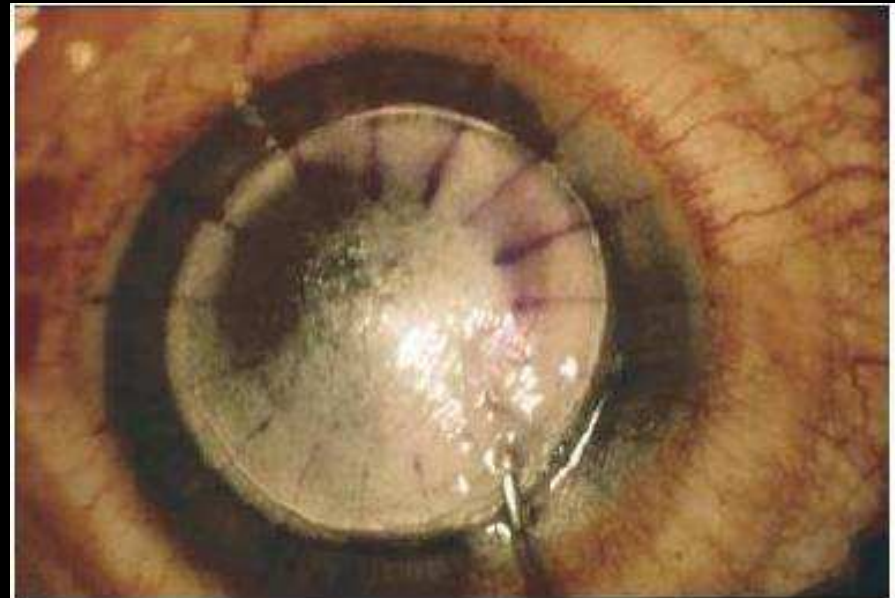
## techniques

### Big-bubble technique to bare Descemet's membrane in anterior lamellar keratoplasty

Mohammed Anwar, FRCS, Klaus D. Teichmann, MD  
J CATARACT REFRACT SURG—VOL 28, MARCH 2002

#### *Indications and Precautions*

Optical LKP requires a functioning endothelium. The techniques described work best in cases of keratoconus, stromal corneal dystrophies, and corneal scars that do not reach Descemet's membrane. If there is a history of hydrops, air injection into the deep stroma invariably leads to entry of air into the anterior chamber through the break(s) in Descemet's membrane; a big bubble will fail to form. In these cases, air injection is not advisable and complete baring of Descemet's membrane is not possible. Some stroma must be left behind to cover the area of the ruptured Descemet's membrane, a technique called near-full-thickness dissection. When firm scars extend to Descemet's membrane, baring the membrane is not possible or is very hazardous, and perforation is a likely outcome.



**Figure 2.** (Anwar) A white, semiopaque disk with a near-circular outline develops after air injection. This indicates the formation of a big bubble, which detaches the central Descemet's membrane, even though the bubble is not visible.

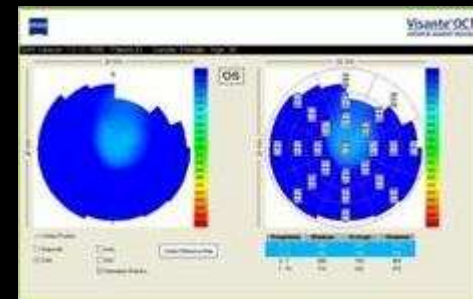
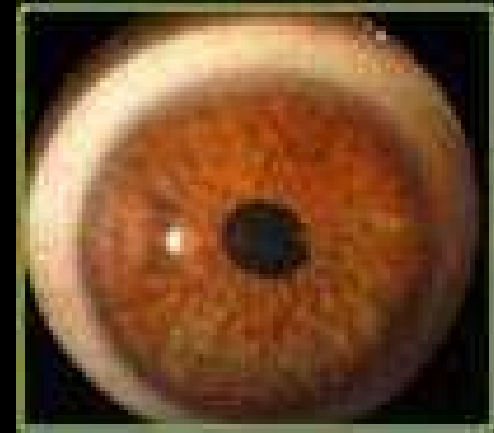
# FEMTOLASER



# FEMTOLASER

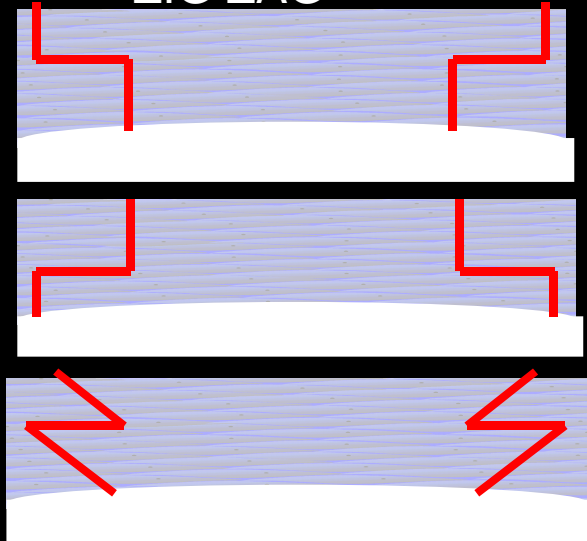
## CONTROINDICAZIONI

- Precedente chirurgia incisionale
- Opacità corneali dense che schermano l'iride fino alla zona paralimbare (leucomi)
- Pachimetria corneale periferica (9mm) $>1200\mu\text{m}$

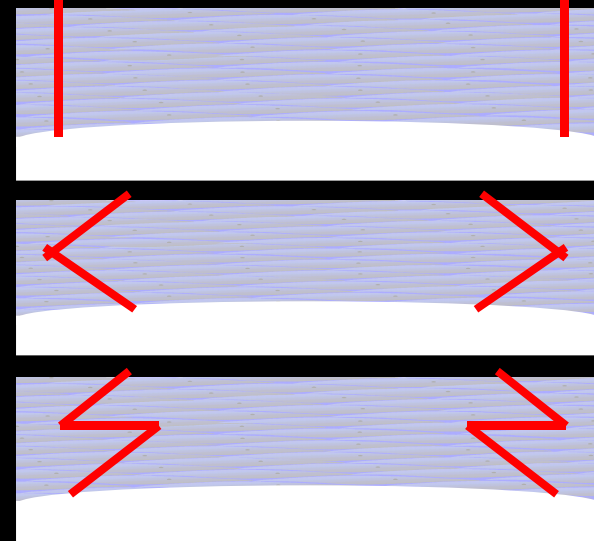


# FEMTOLASER

- TOP HAT
- MUSHROOM
- ZIG ZAG



- PLAIN
- DIAMOND
- CHRISTMAS TREE

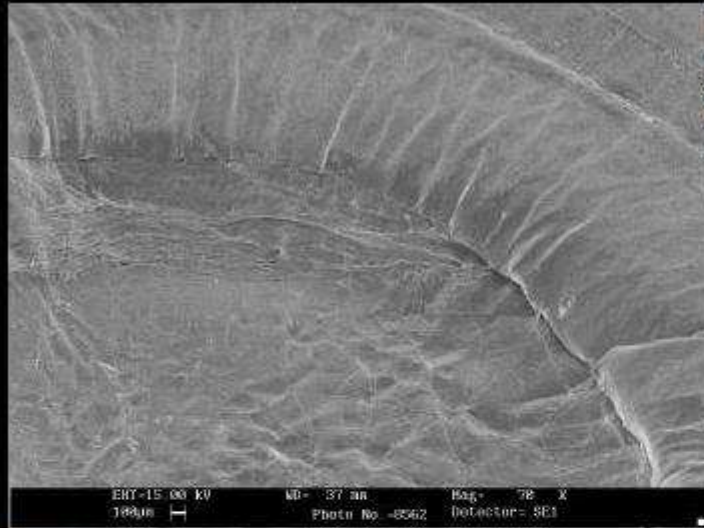


## VANTAGGI

- Maggiore superficie di contatto
- Presenza di angoli che si giustappongono
- Minor astigmatismo
- Minor apporto personale del chirurgo
- Miglior risultato visivo

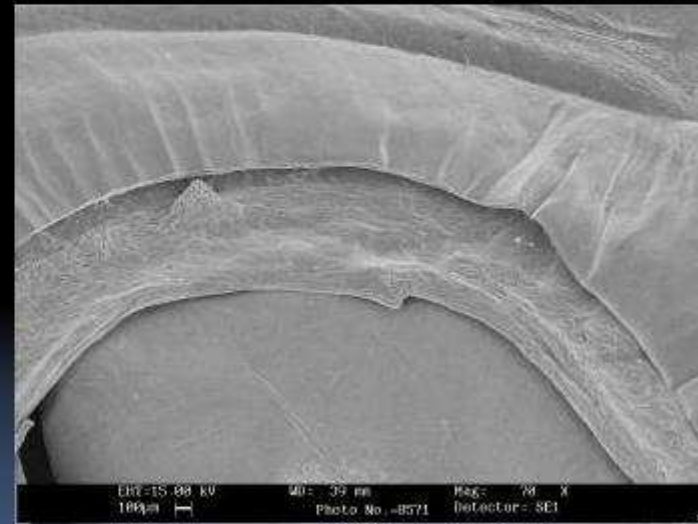
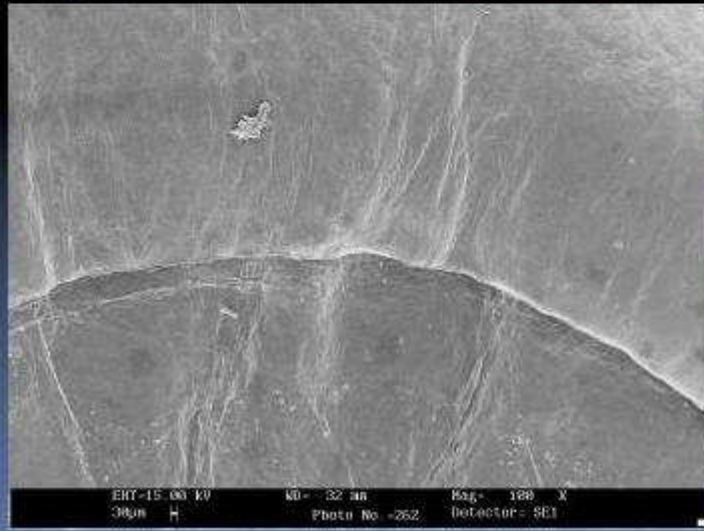






**SEM:**  
*stromal interface of  
Microkeratome dissection*

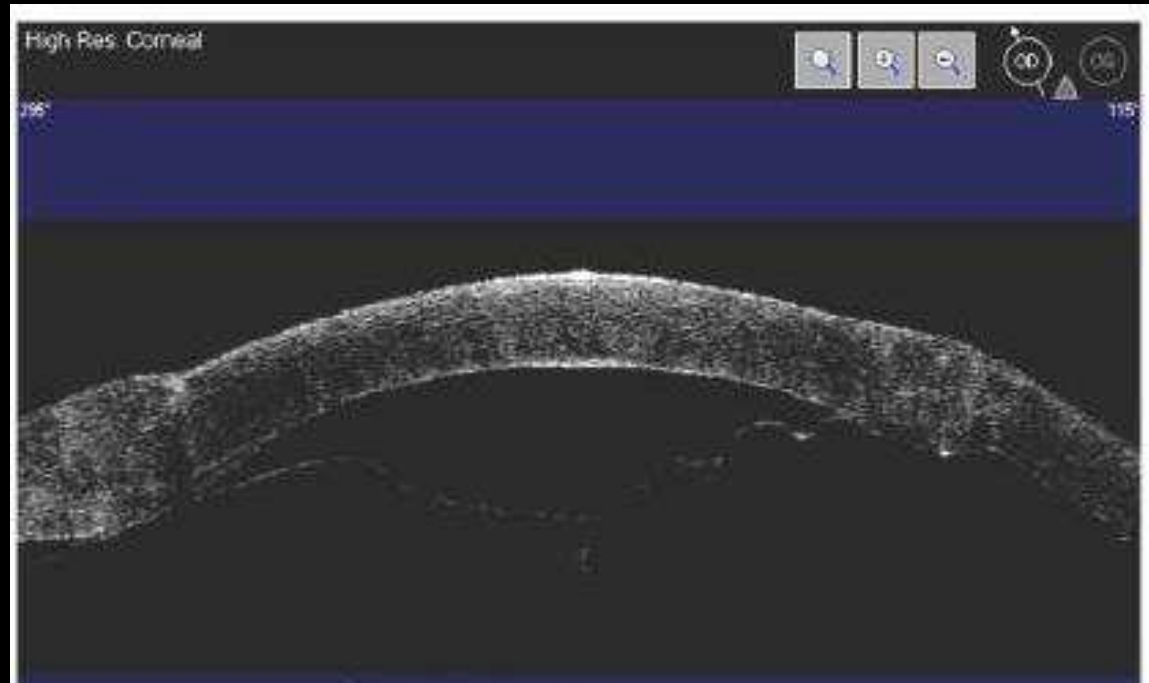
**SEM:**  
*Deep stromal interface of FSL dissection*



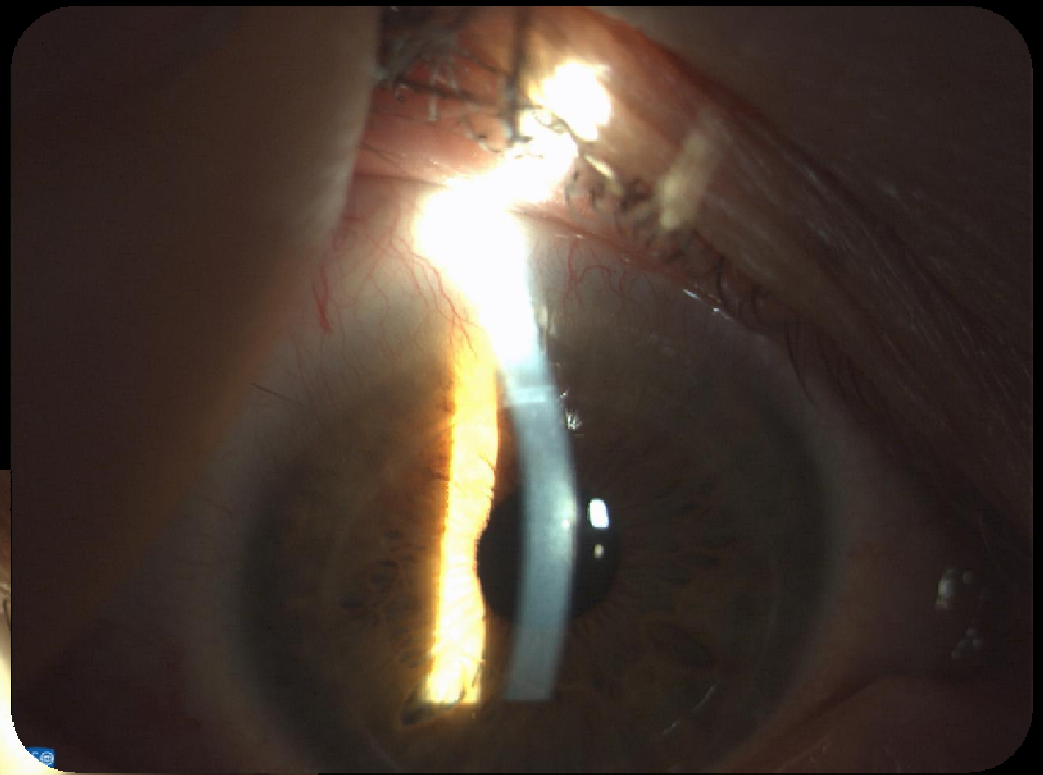
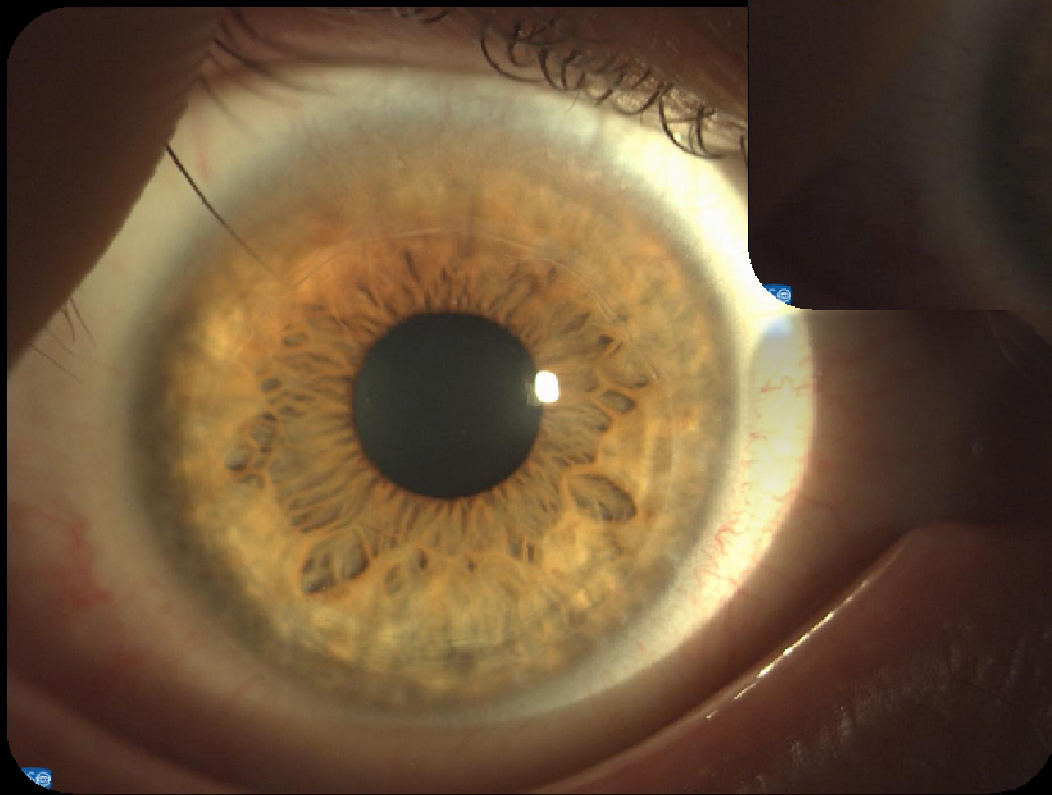
**SEM:**  
*Descemetic interface of big bubble dissection*

Unpublished data: Nubile M, Fontana L, Mastropasqua L

# COMPLICANZE DELLA DALK



- Formazione di una doppia camera anteriore
- Microperforazioni della DM
- Rottura della DM



# TRAPIANTO DI ENDOTELIO

## INDICAZIONI

- Cheratopatia bollosa post-FACO
- Distrofia endoteliale di Fuchs
- Endoteliopatie post-uveiti
- Endoteliti virali



# Endothelial keratoplasty: DSEK/DSAEK or DMEK - the thinner the better?

Isabel Dapena<sup>a,b</sup>, Lianne Ham<sup>a,c</sup> and Gerrit R.J. Melles<sup>a,b,c</sup>

Current Opinion in Ophthalmology 2009, 20:299-307

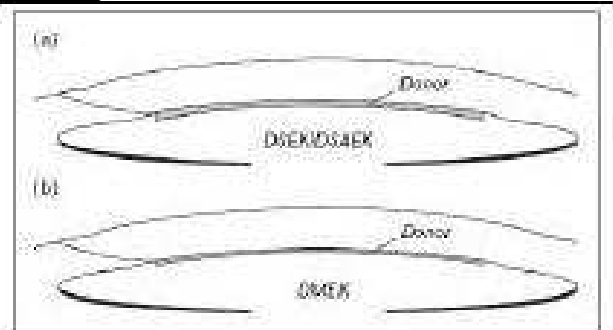
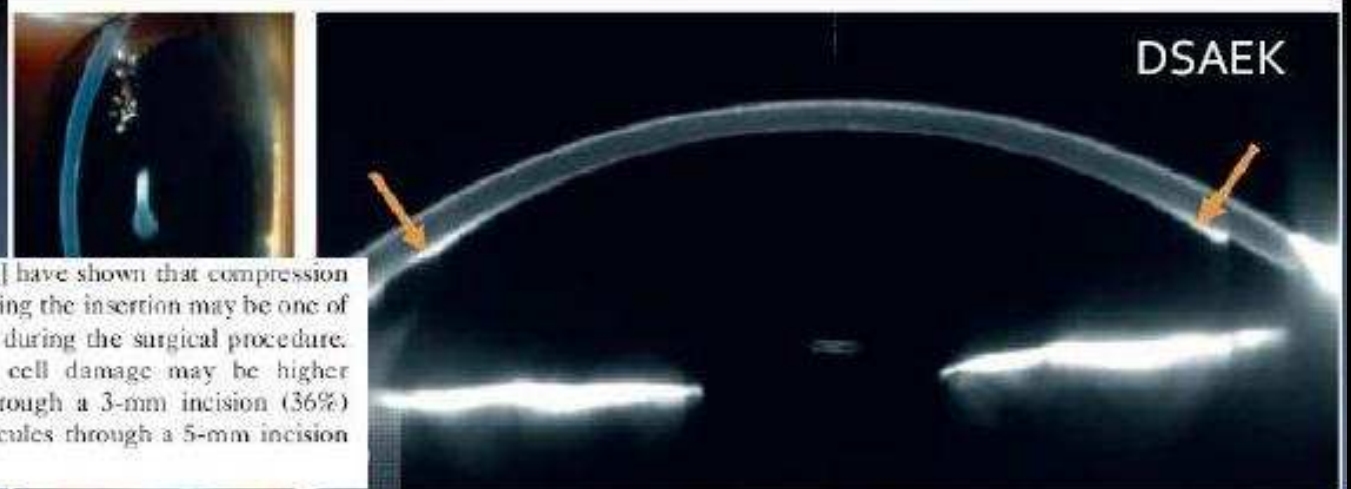
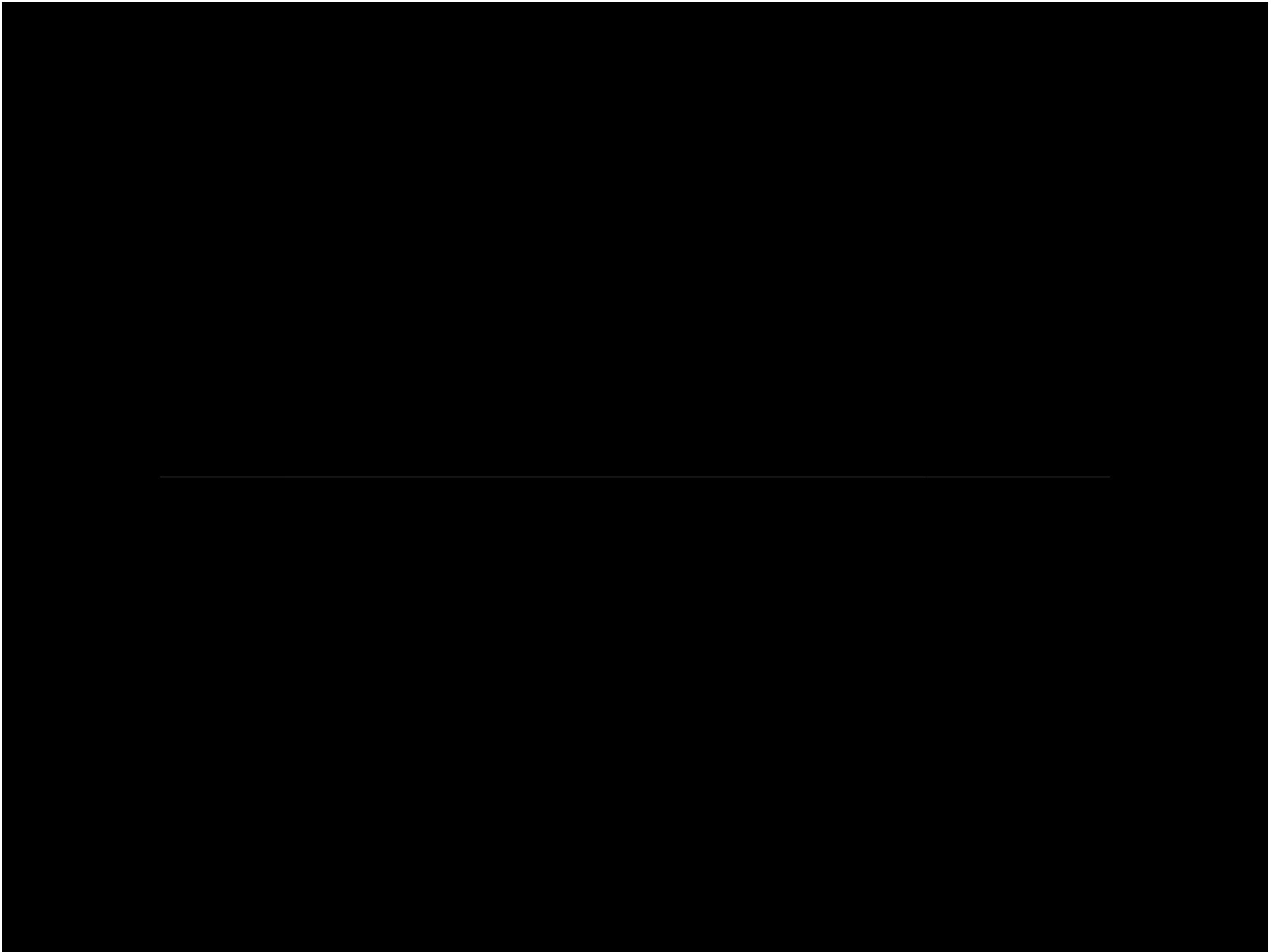


Diagram displaying (a) DSEK/DSAEK and (b) DMEK procedures. In both techniques, the recipient Descemet membrane is excised by descemetorhexis. In DSEK/DSAEK, a donor posterior lamellar disk consisting of anterior stroma, Descemet membrane, and its endothelium is transplanted, whereas in DMEK, only an isolated donor Descemet membrane with its endothelium is transplanted. In DSEK, donor stromal dissection is performed manually, and in DSAEK, with the use of a microkeratome. In DMEK, the donor Descemet membrane is stripped off from a corneal donor button. DMEK, Descemet membrane endothelial keratoplasty; DSAEK, Descemet stripping automated endothelial keratoplasty; DSEK, Descemet stripping endothelial keratoplasty.



Several studies [21\*,47,48] have shown that compression of the donor lenticule during the insertion may be one of the most traumatic steps during the surgical procedure. In DSAEK, endothelial cell damage may be higher with 'trifolded' grafts through a 3-mm incision (36%) than 'bifolded' two lenticules through a 5-mm incision (19%) [47].



# CONCLUSIONI

1. Visus sovrapponibile tra PK e DALK
2. Assenza di rigetto endoteliale nella DALK
3. Più rapido recupero visivo (DALK)
4. Migliore possibilità di chirurgia endoculare post-trapianto (DALK)

## SVANTAGGI NELLA DALK

1. Costo apparecchiature laser
2. Curva di apprendimento nella DALK manuale



# CONCLUSIONI

Le indicazioni della PK sono cambiate e si sono ristrette a quelle patologie coinvolgenti l'intera cornea per le quali non è ipotizzabile la chirurgia lamellare



LAMELLARE  
ANTERIORE

LAMELLARE  
POSTERIORE

**GRAZIE PER L'ATTENZIONE**

