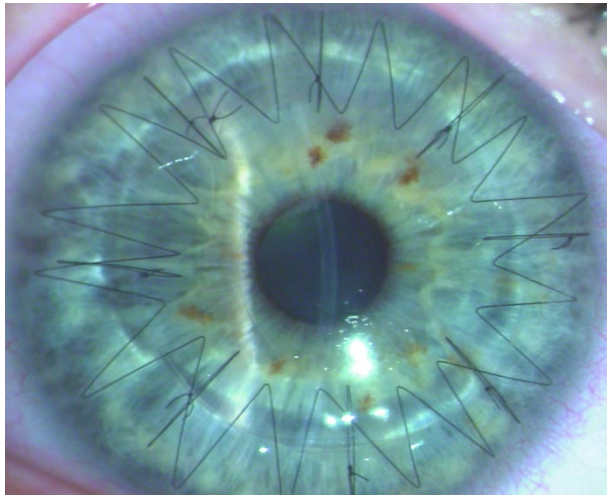
“XIV corso nazionale SIBO”

20 anni di trapianti di tessuti oculari in Piemonte e Valle d’Aosta

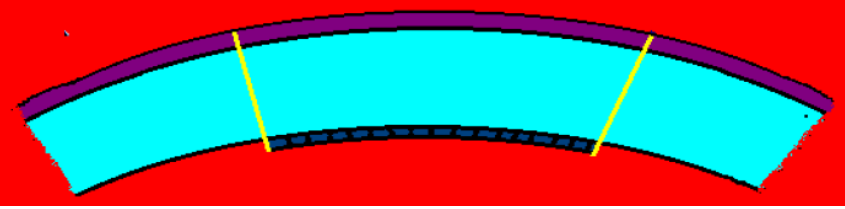


Ugo de Sanctis

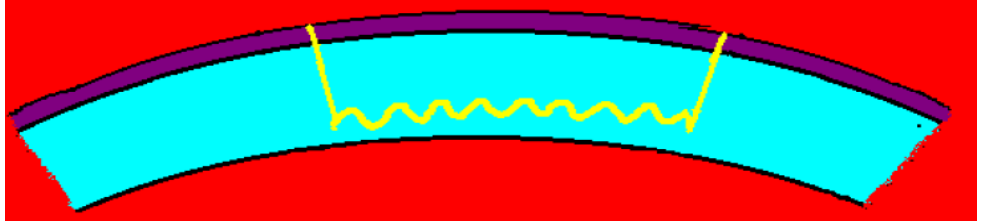
Dipartimento di Scienze Chirurgiche - Clinica Oculistica dell’Università di Torino

Dalla perforante alla lamellare

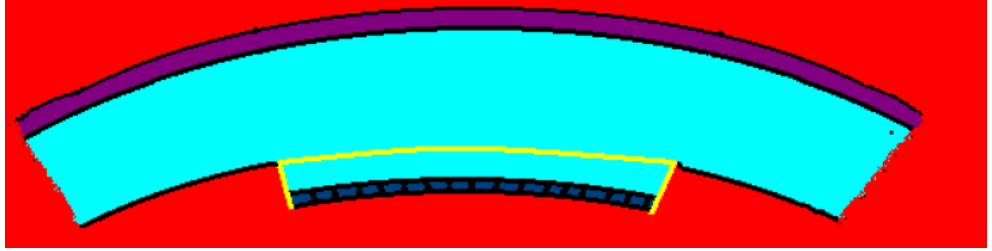
perforante



anteriore profonda

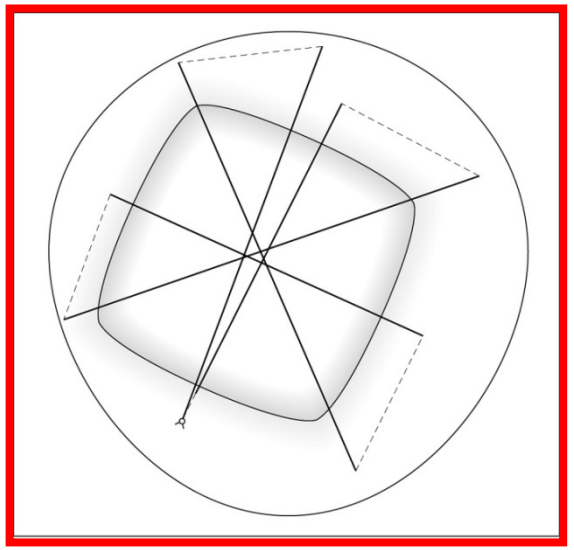


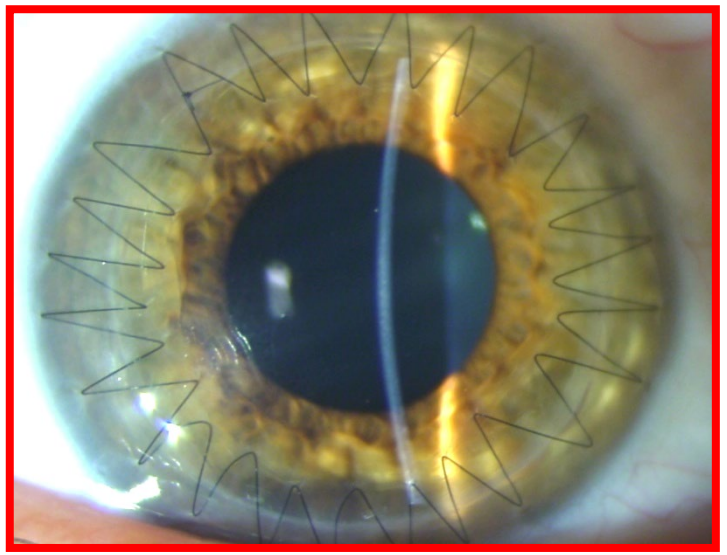
endocheratoplastica



Cosa succedeva 20 anni fa ….

- **Cheratoplastica perforante nel 90-95% dei casi [1]**



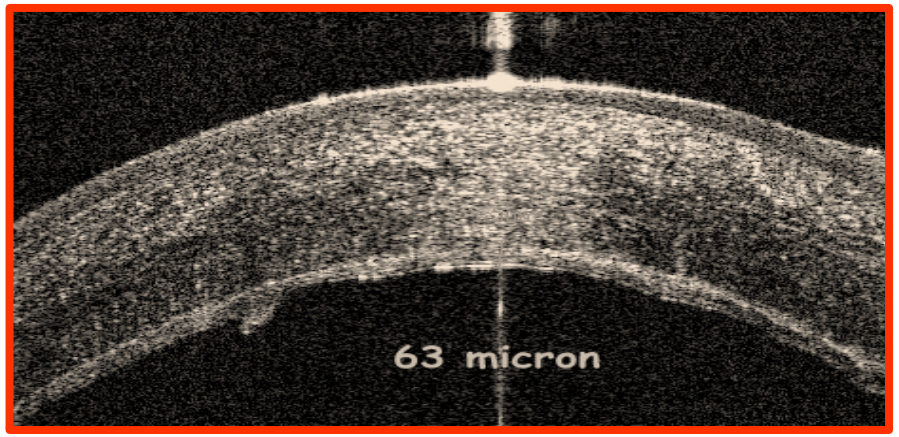


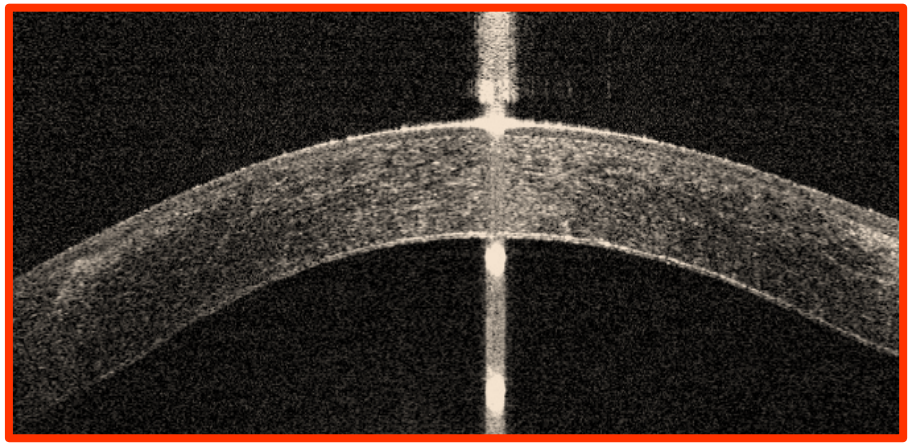
1) Zirm. "A successful total keratoplasty" Graefes Arch Ophthalmol 1906

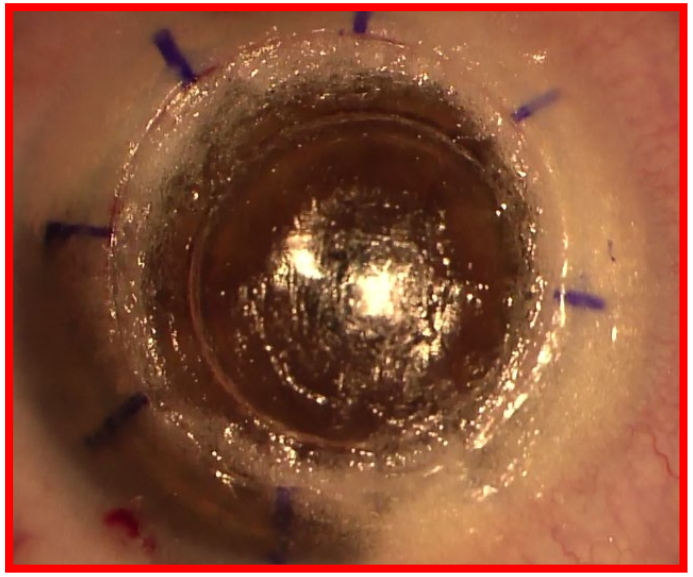
Tipologia di cheratoplastica nel 2002 in Piemonte

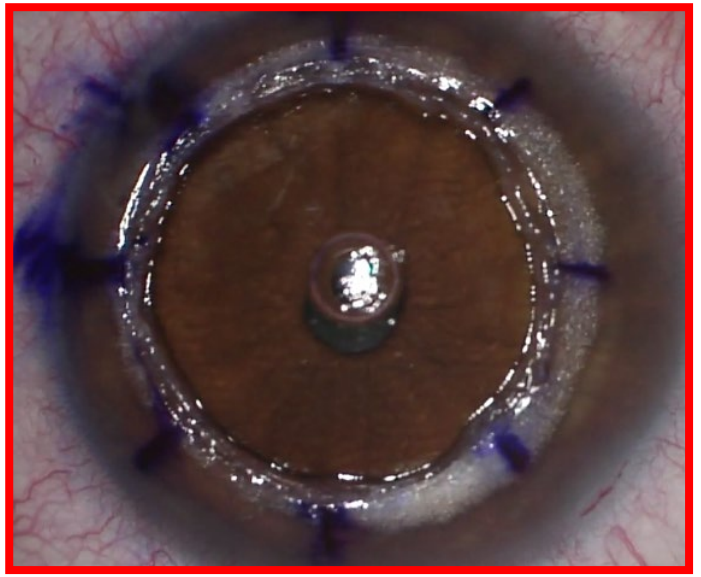
- 97% perforanti
- 3% lamellari anteriori (ALK)
  - 4 a scopo tettonico
  - 4 profonde (1.5%)
- nessuna cheratoplastica endoteliale (EK)

Da ALK a DALK



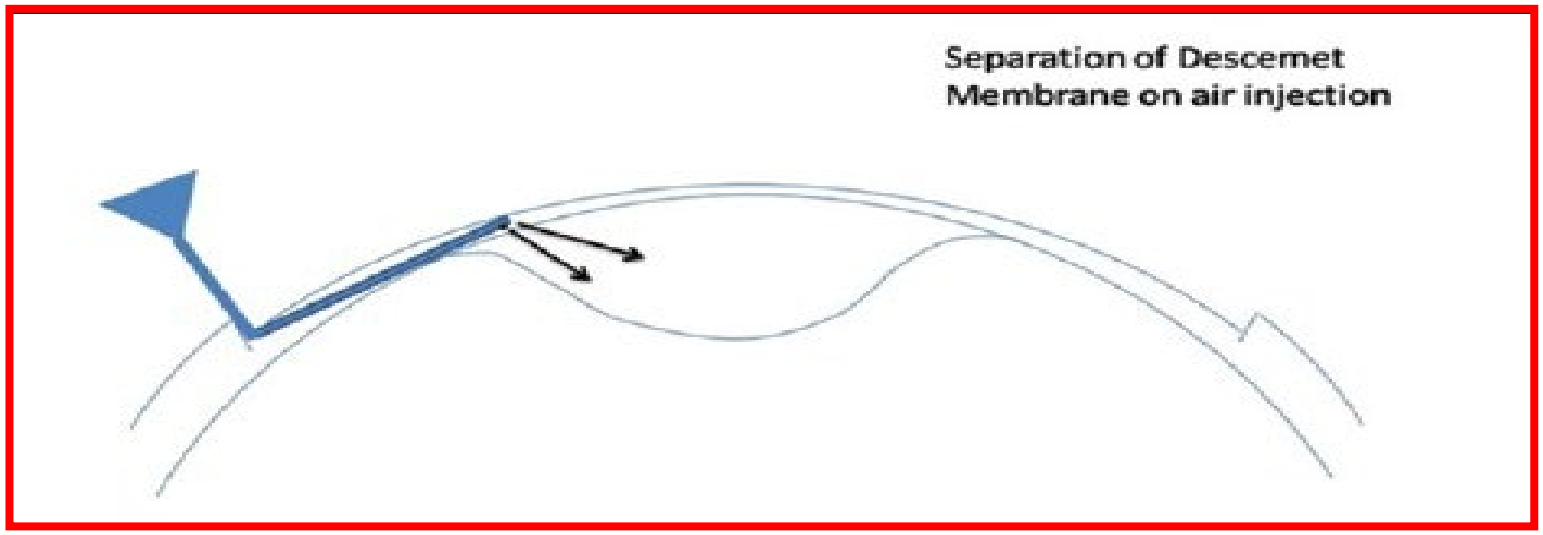


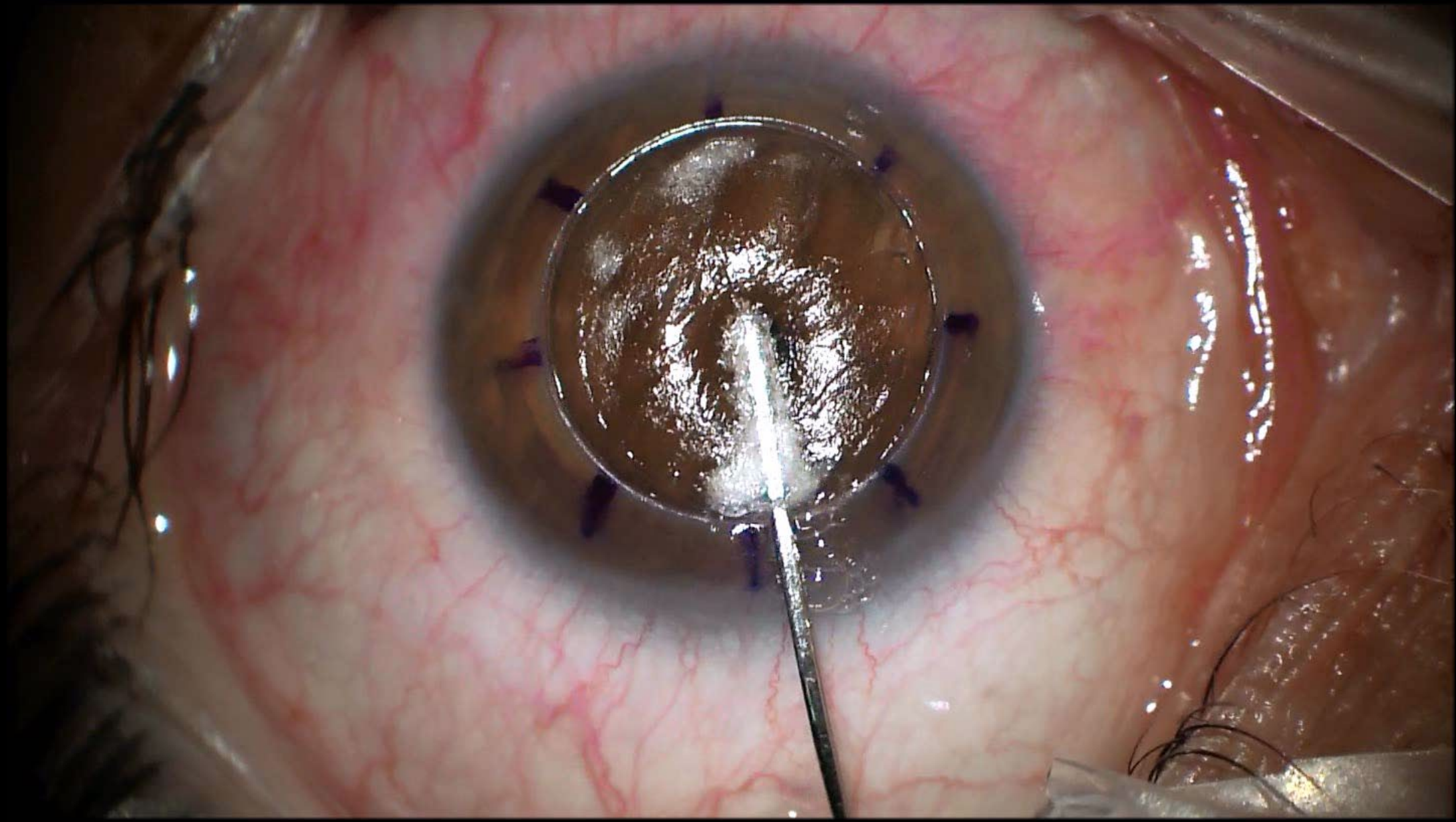


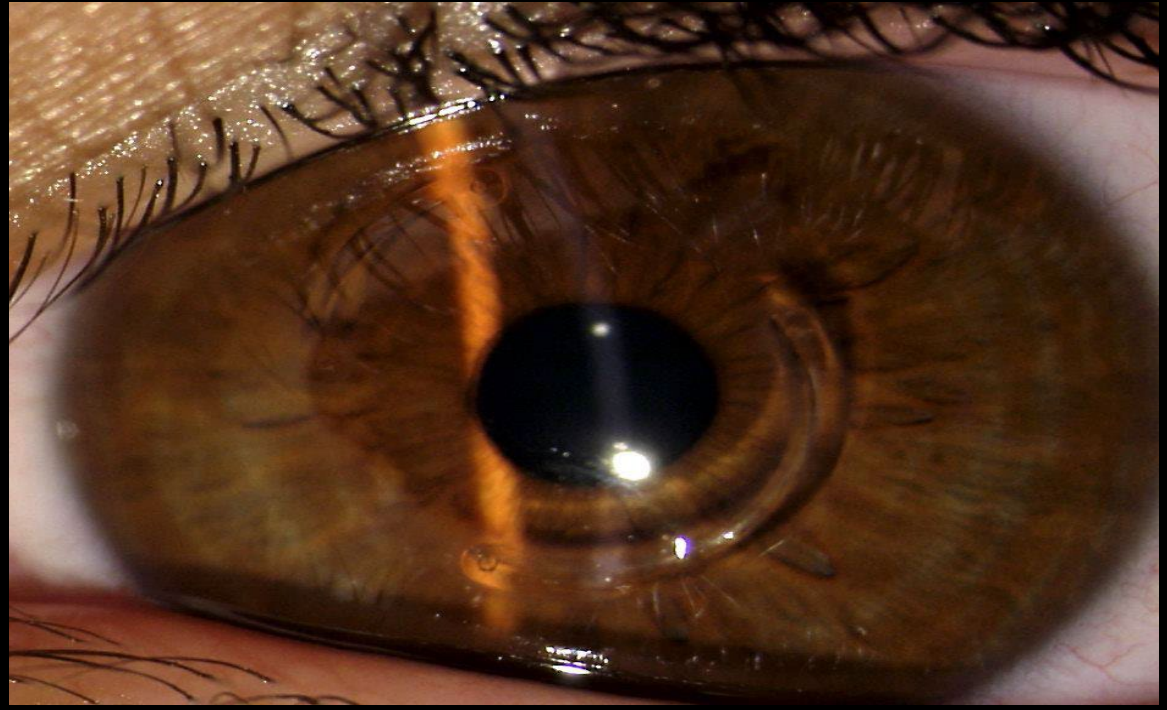


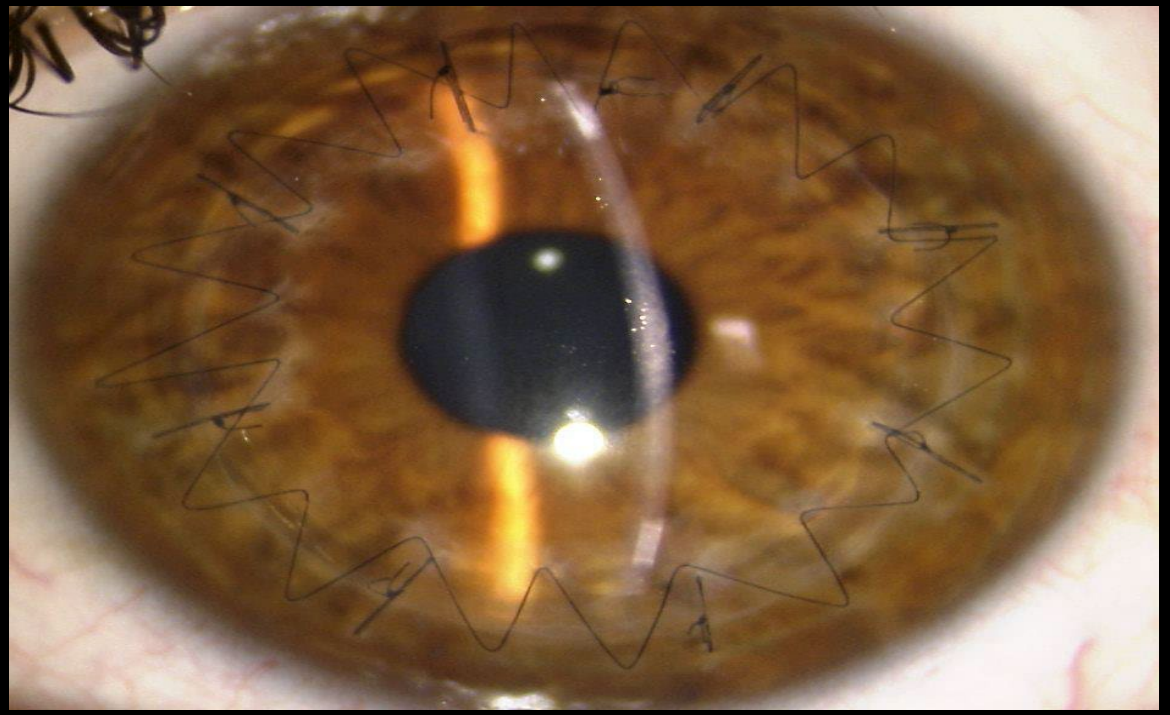
Tecniche di dissezione stromale profonda

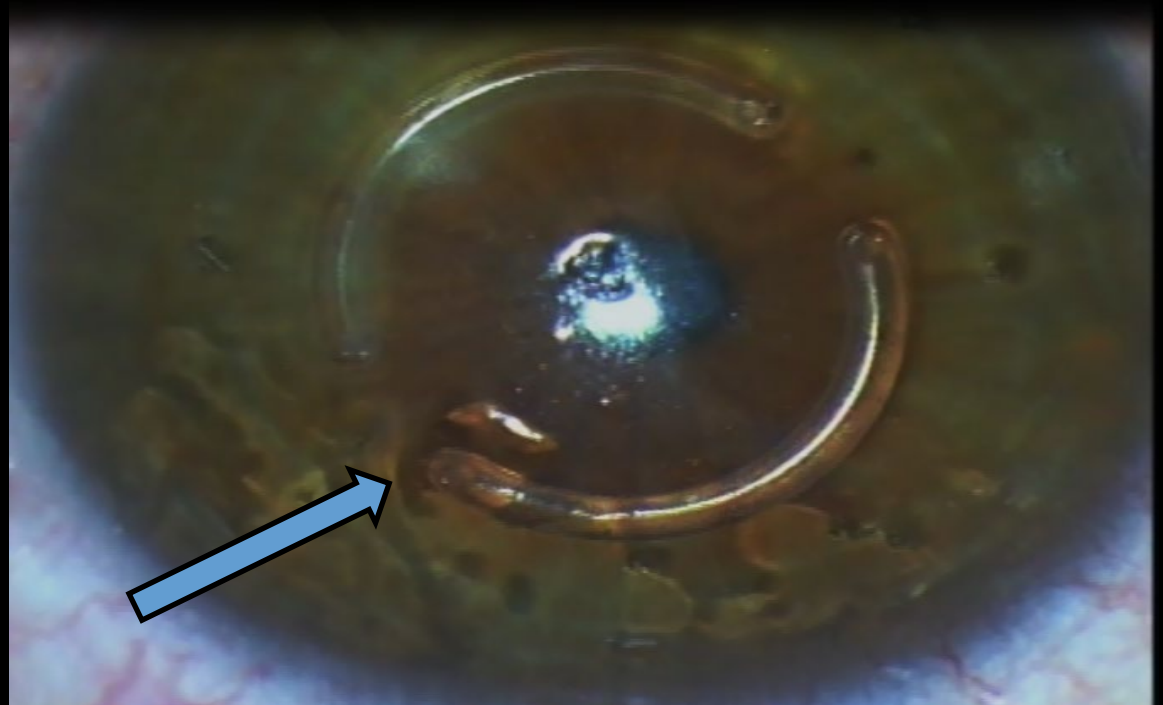
- **idrodissezione (*Sugita & Kondo, BJO 1997*)**
- **viscodissezione (*Melles, Cornea 2000*)**
- **pneumodissezione (*Anwar & Teichman, JCRS 2002*)**

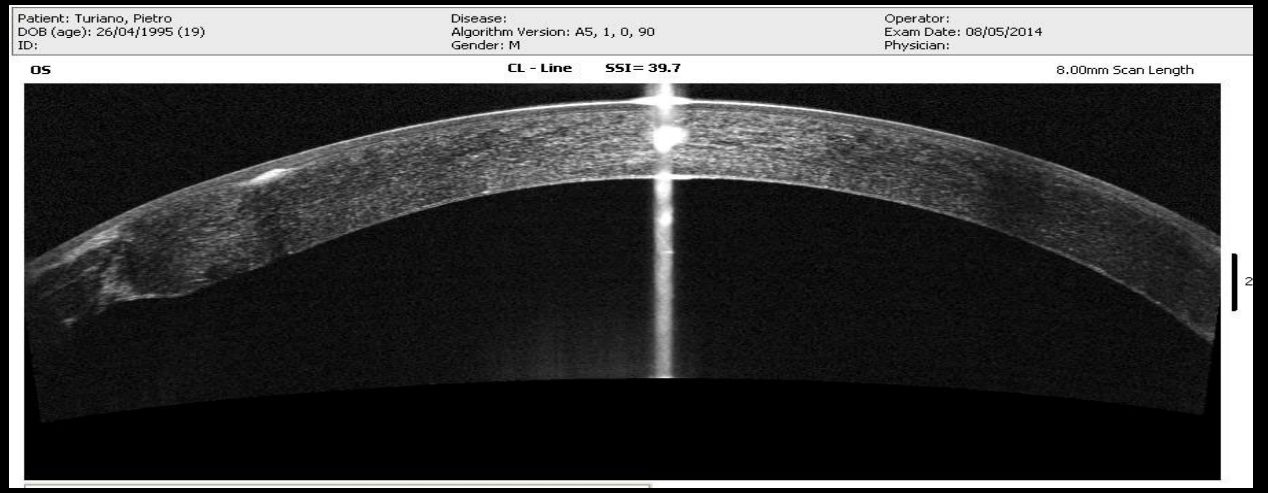








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DOB (age): 26/04/1995 (19)
ID:
Disease:
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Gender: M
Operator:
Exam Date: 08/05/2014
Physician:
OS
CL - Line
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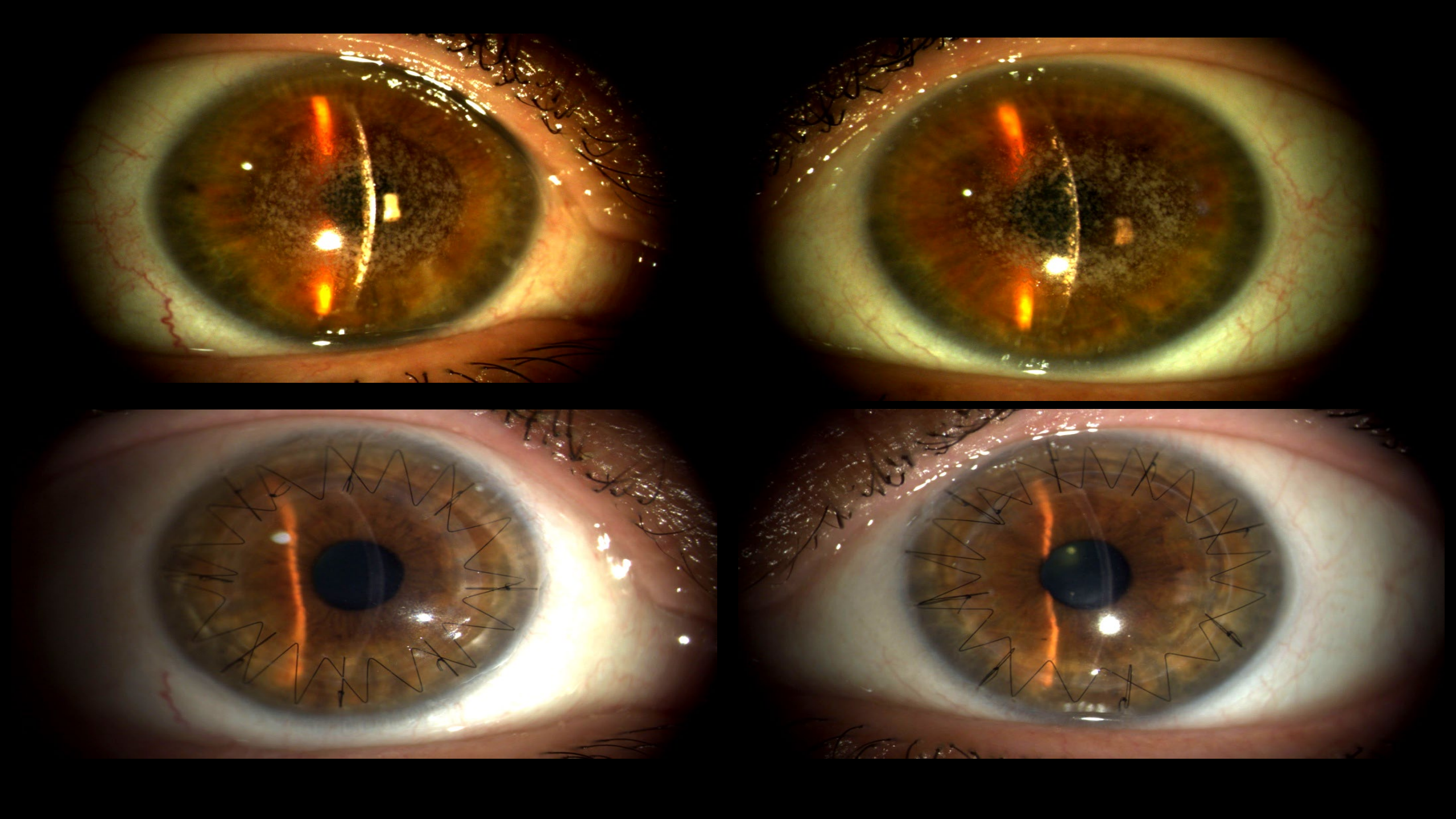
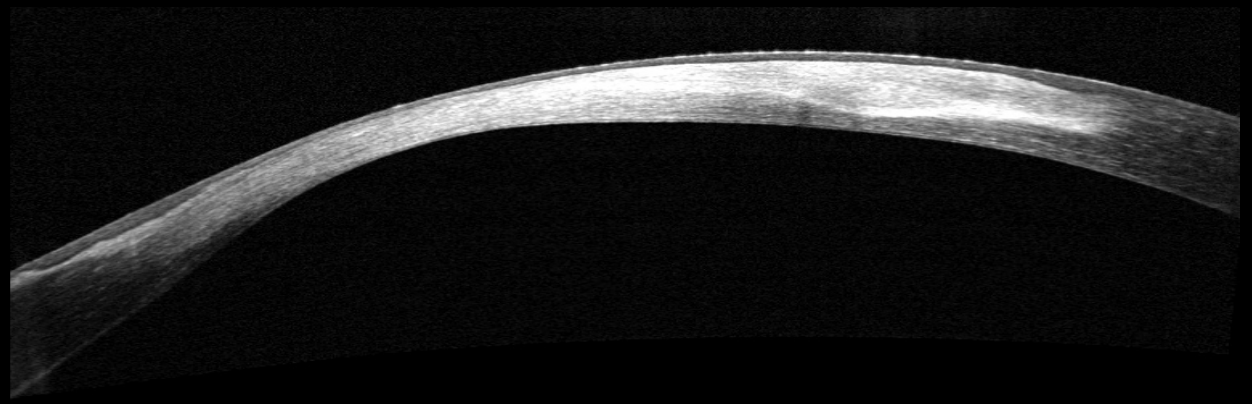
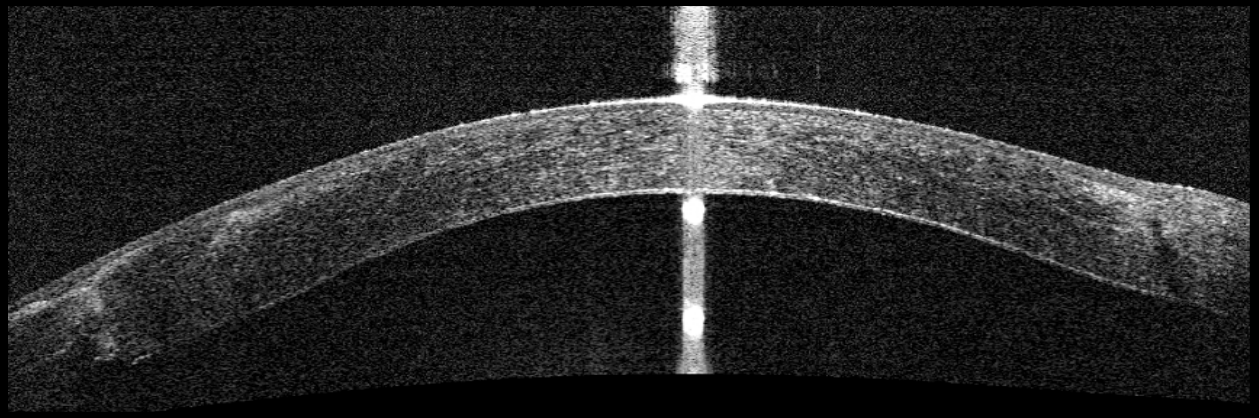
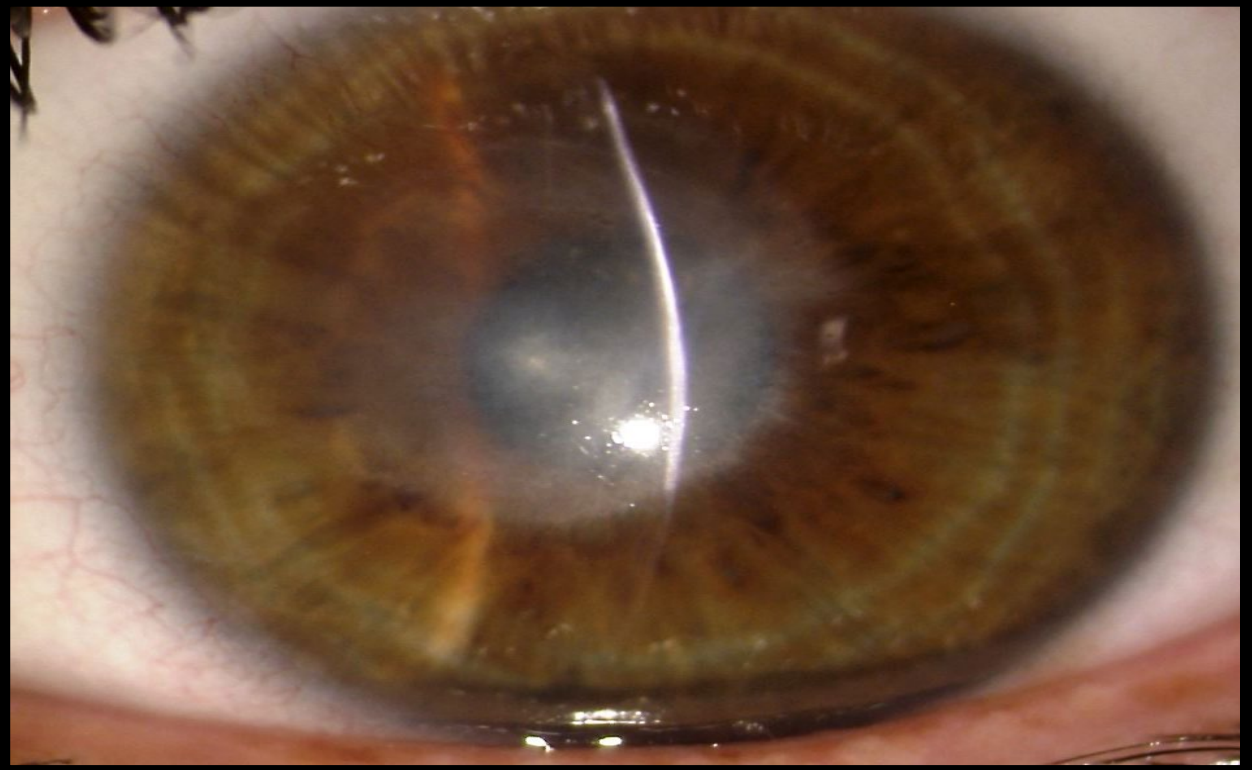
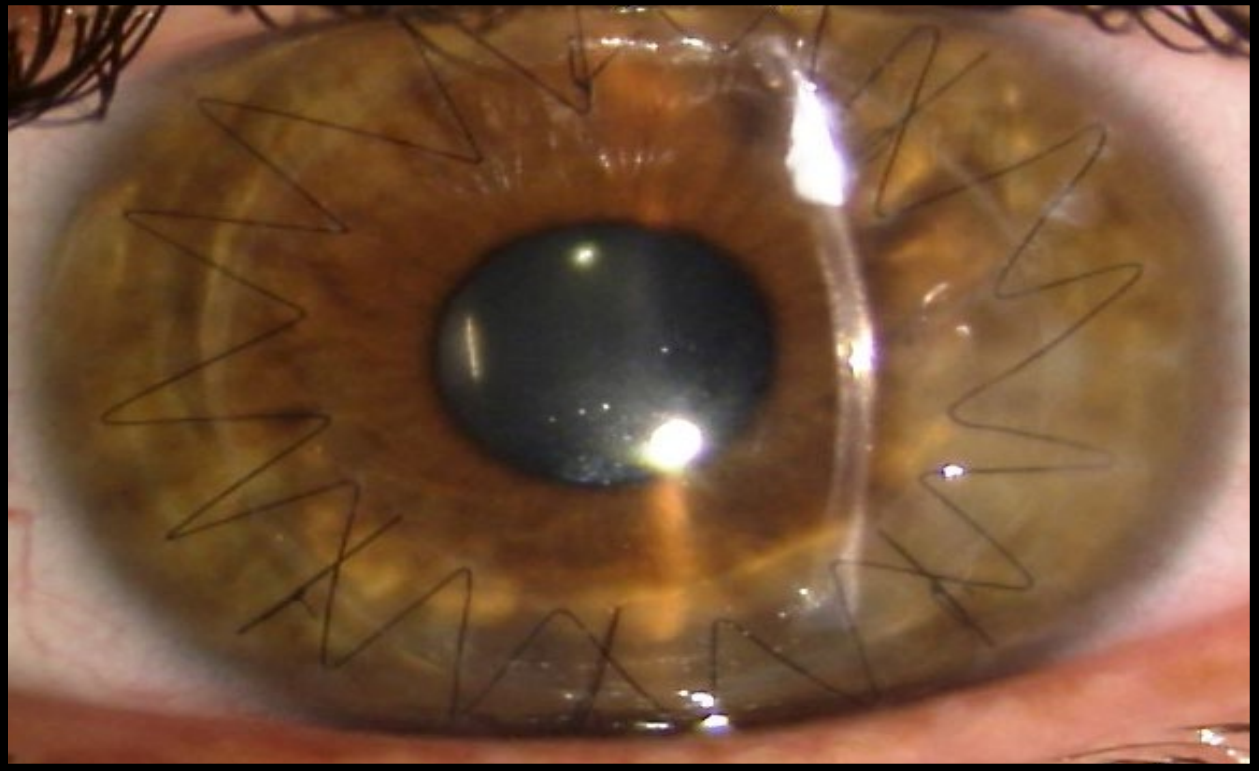
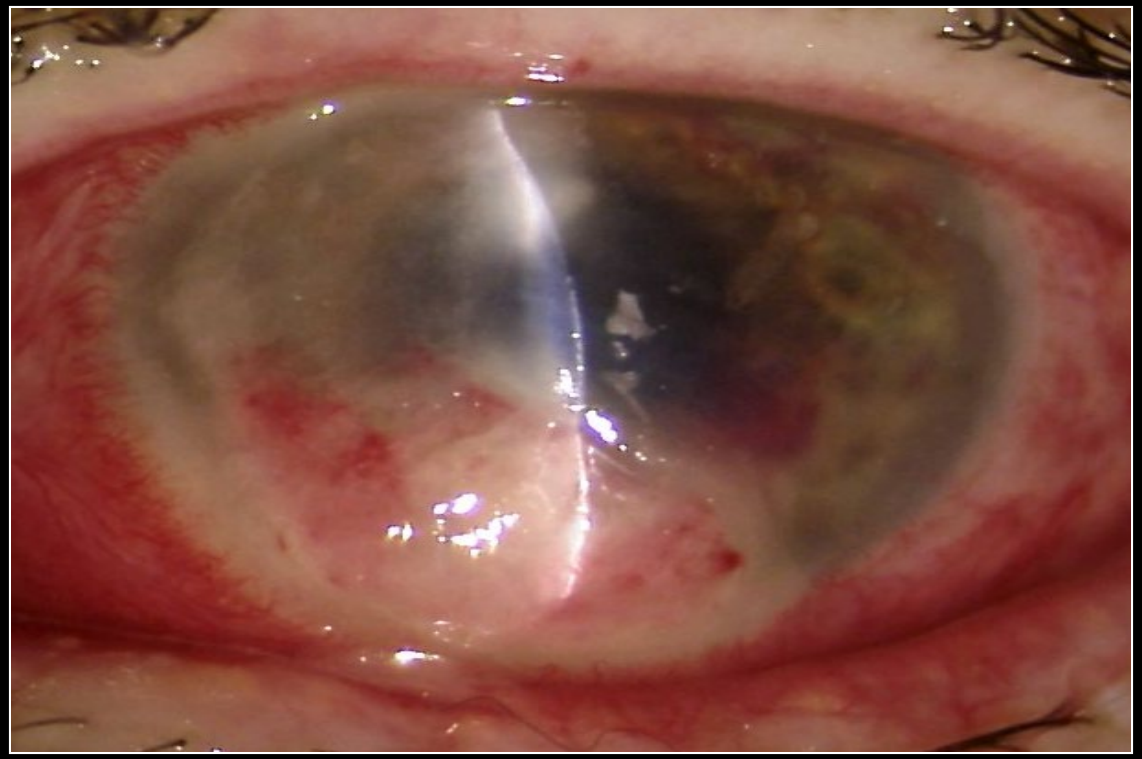


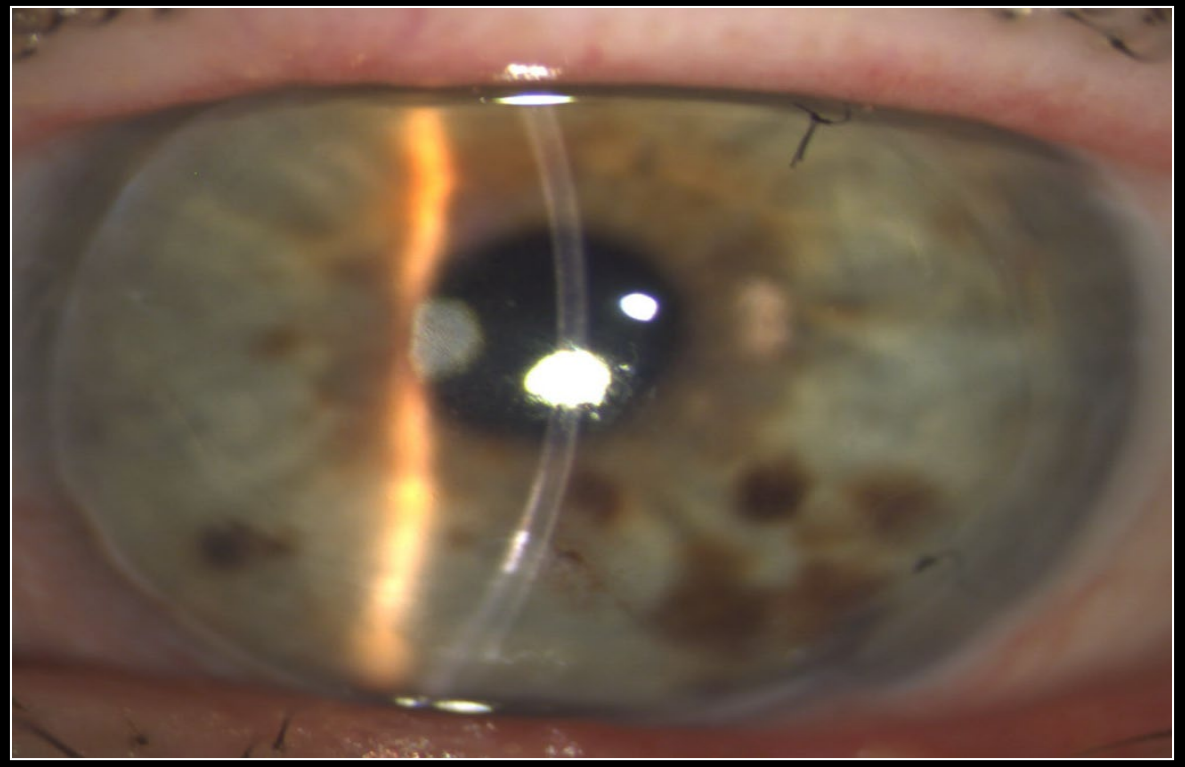


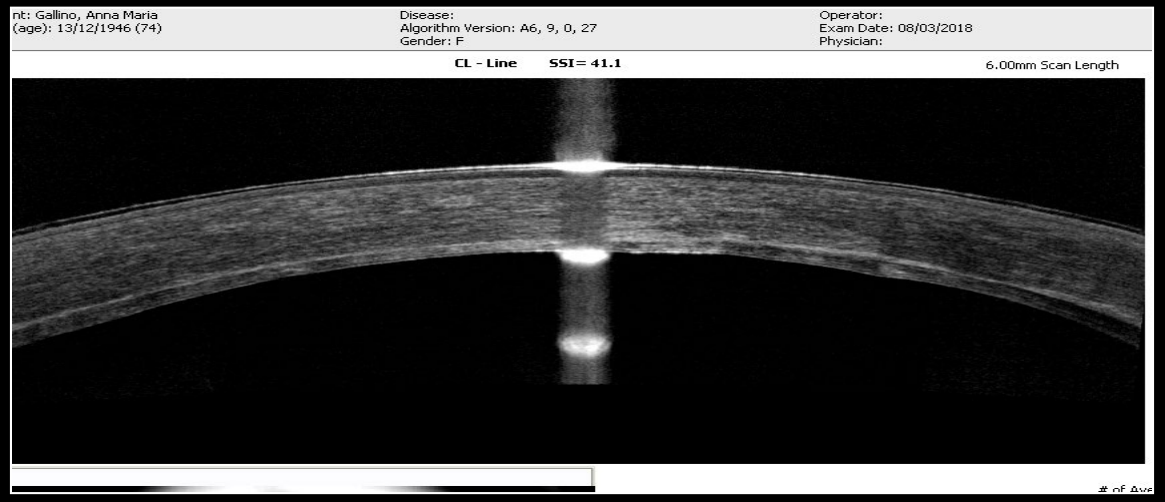




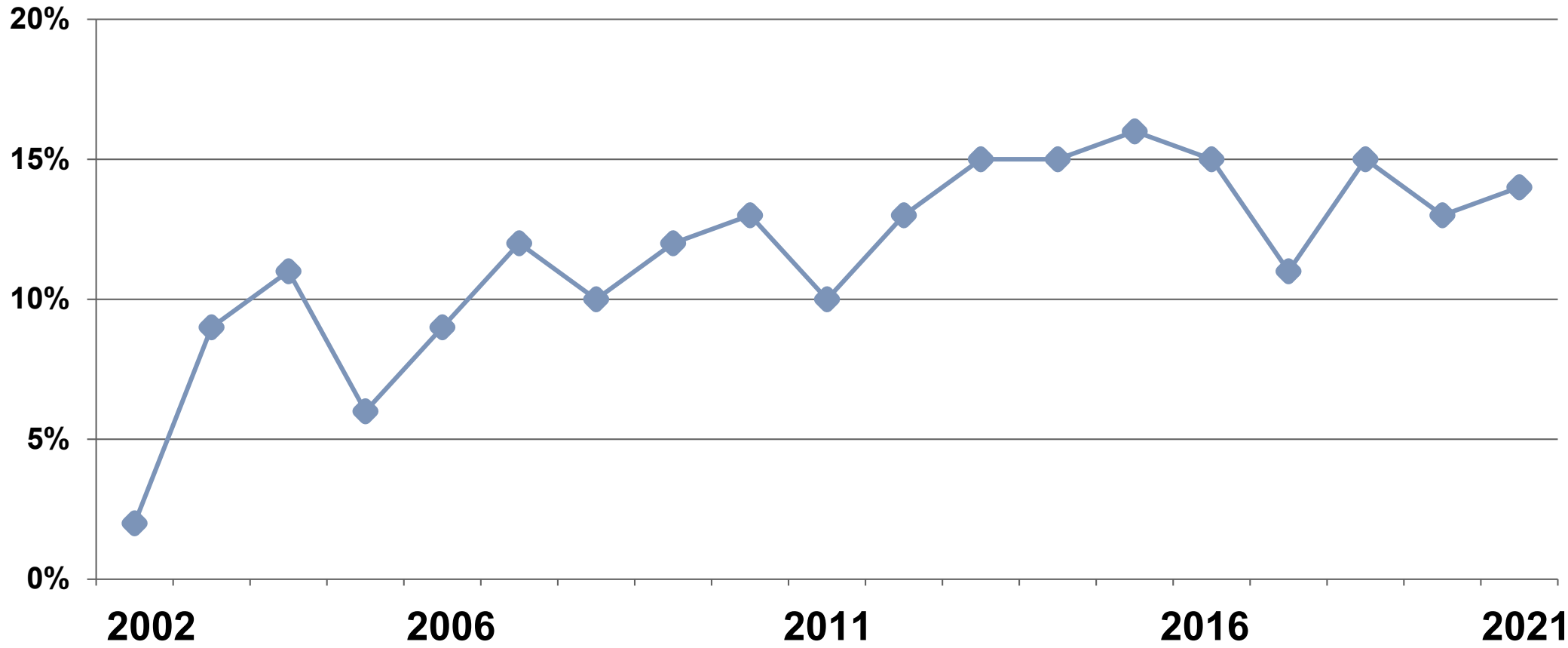







nt: Gallino, Anna Maria
(age): 13/12/1946 (74)
Disease:
Algorithm Version: A6, 9, 0, 27
Gender: F
Operator:
Exam Date: 08/03/2018
Physician:
CL - Line
SSI= 41.1
6.00mm Scan Length

Proporzione di DALK in Piemonte dal 2002 al 2021



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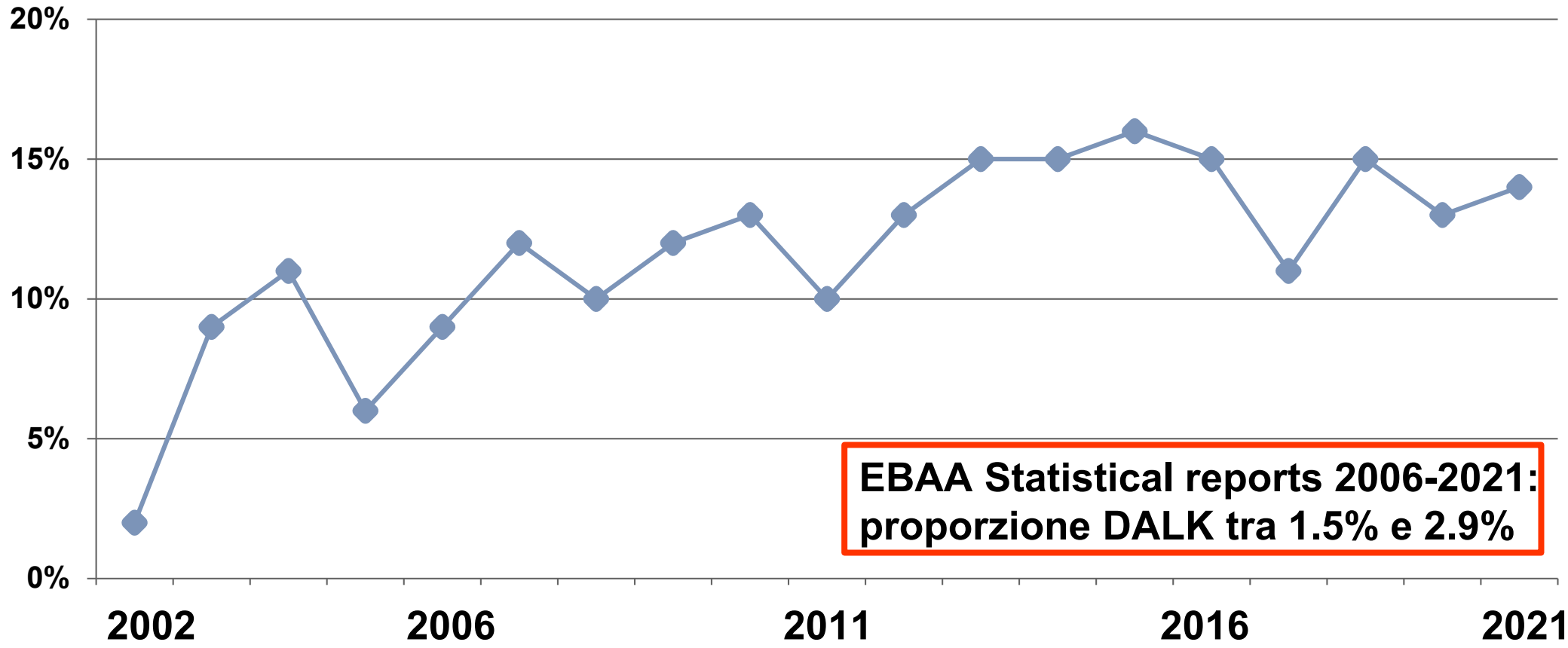
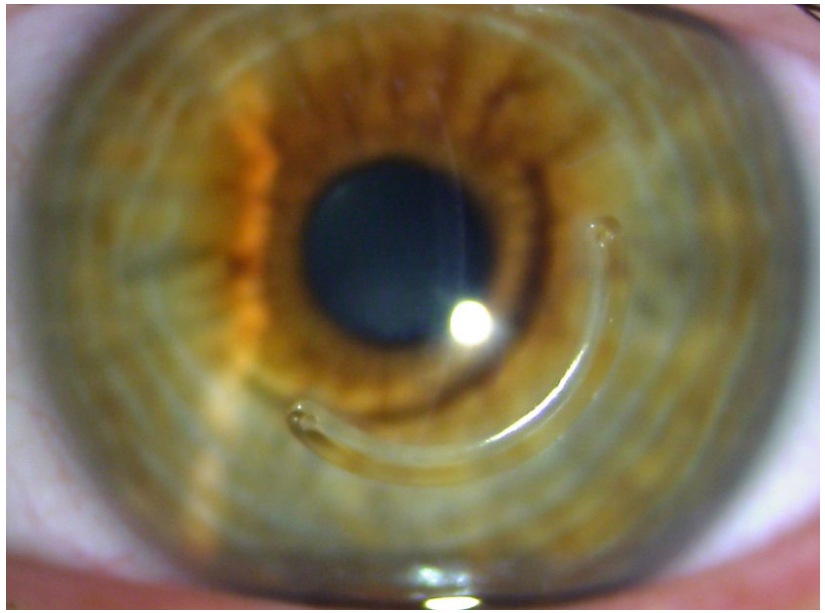


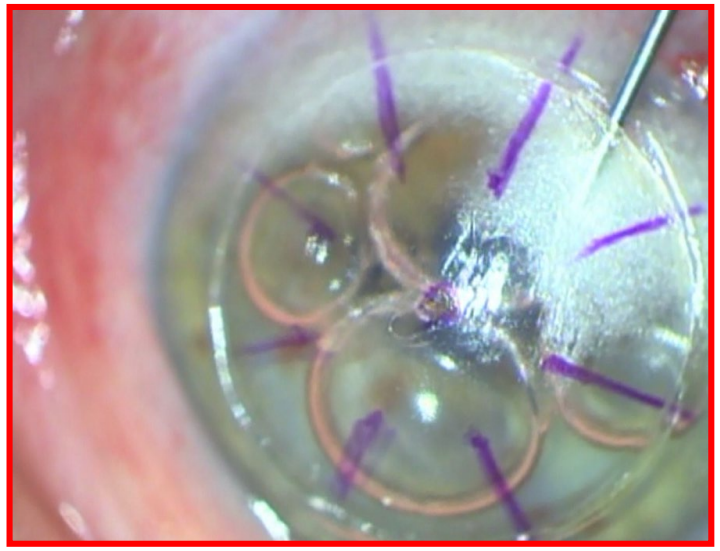
Perché il numero di DALK non cresce ?

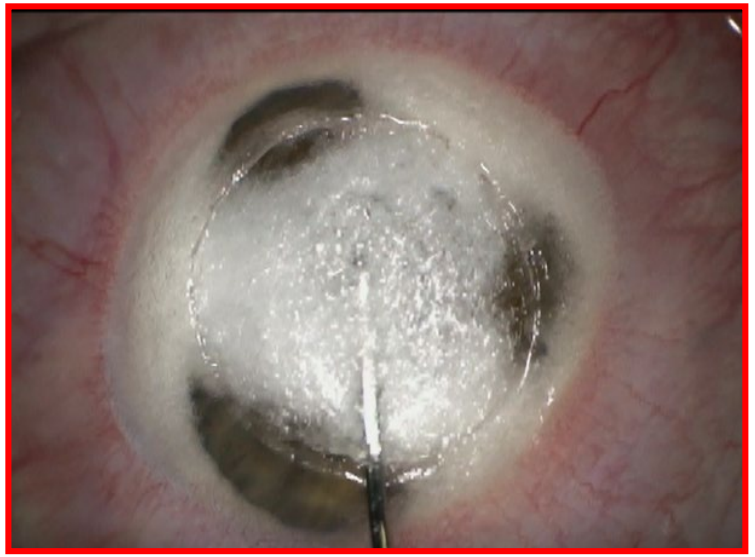
- interventi alternativi per cheratocono



Perché il numero di DALK non cresce ?

- interventi alternativi per cheratocono
- tecnica più difficile (10-40% conversioni in PK)





Perché il numero di DALK non cresce ?

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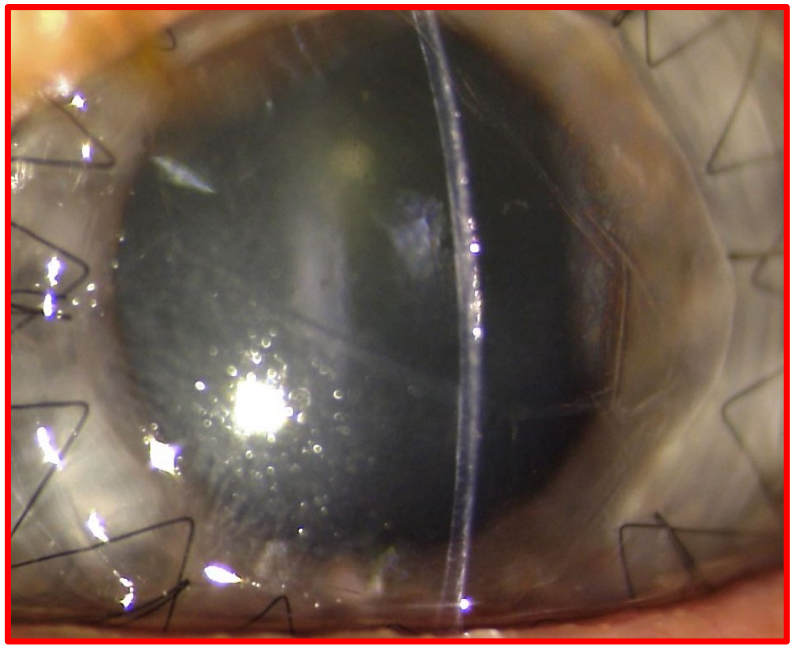


Perché il numero di DALK non cresce

- interventi alternativi per cheratocono
- tecnica più difficile (10-40% conversioni in PK)
- tempo operatorio superiore alla PK
- complicanze da interfaccia
- problema dell'astigmatismo irrisolto

Tipologia di cheratoplastica nel 2002 in Piemonte

- 97% perforanti
- 3% lamellari anteriori (ALK)
  - a scopo tettonico
  - 1.5% profonde (DALK 4/262 interventi)
- nessuna cheratoplastica endoteliale (EK)

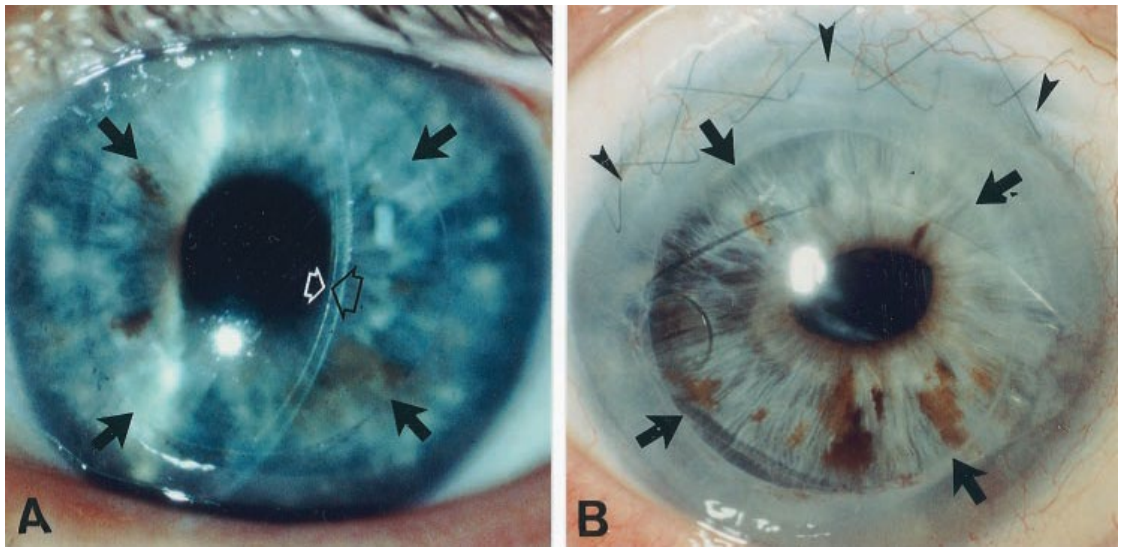
Nuove tecniche di EK (PLK e DLEK)

Melles et al (Cornea 1998)

*"A surgical technique for **posterior lamellar keratoplasty**".*

Terry (Cornea 2001)

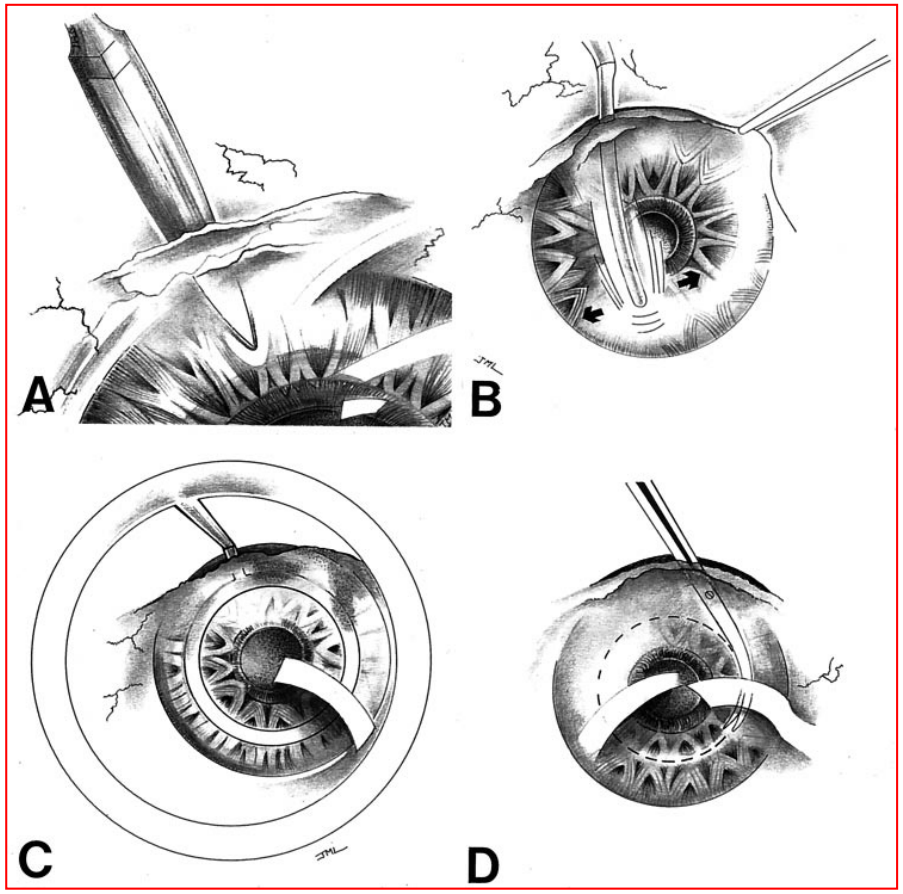
*"**DLEK** in the first United States patients; early clinical results"*



PLK: preparazione della lamella

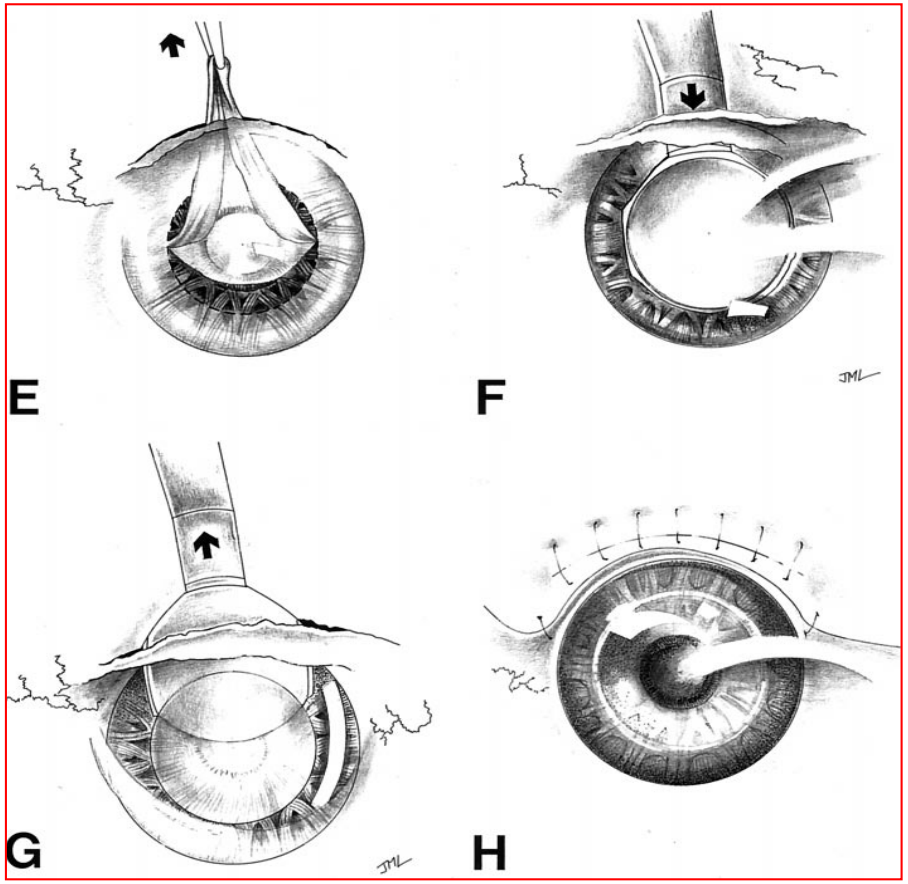
PLK: intervento sul ricevente

A. incisione sclerale di 9 mm
B. preparazione di tasca intrastromale (80% della profondità corneale)
C. introduzione del trapano corneale posteriore all'interno della tasca intrastromale
D. completamento della rimozione di un disco lamellare posteriore mediante forbici



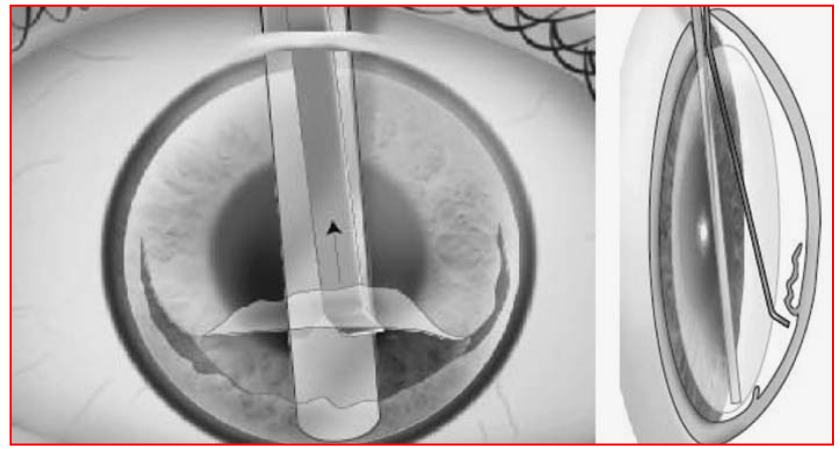
PLK: intervento sul ricevente

E. Prelievo della lamella posteriore dal donatore
F. introduzione del tessuto nella tasca intrstromale
G. Posizionamento del tessuto
H. Sutura della ferita sclerale e riempimento della CA con aria



Evoluzioni della EK

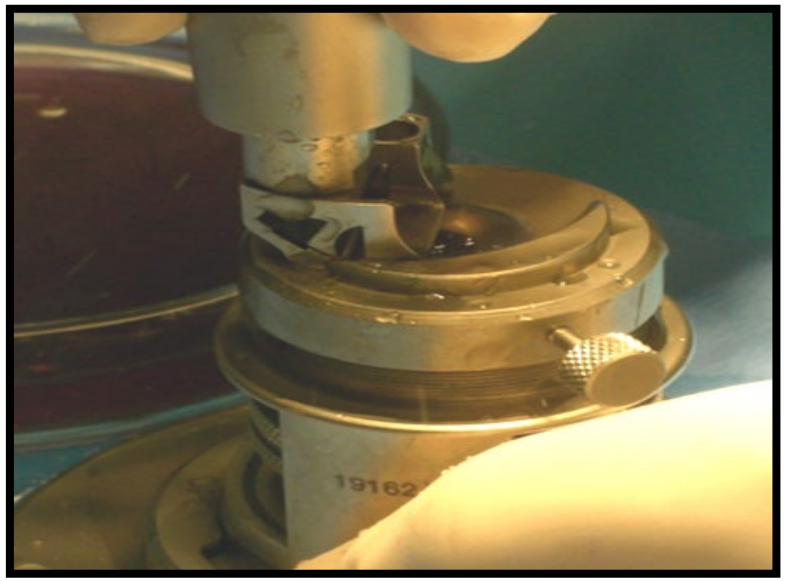
- 2004 descemetorhexis (DSEK)

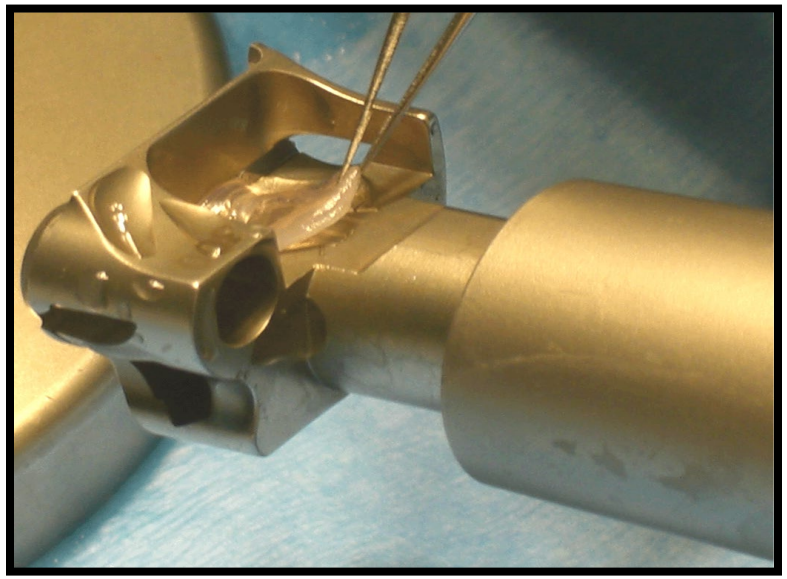


Melles et al. A technique to excise the Descemet membrane from a recipient cornea (descemetorhexis) Cornea 2004;23:286–288

Evoluzioni della EK

- 2004 descemetorhexis (DSEK)
- **2006 lamella preparata con microcheratomo (DSAEK)**





Gorovoy MS. Descemet-stripping automated endothelial keratoplasty. Cornea 2006;25:886–889

Evoluzioni della EK

- 2004 descemetorhexis (DSEK)
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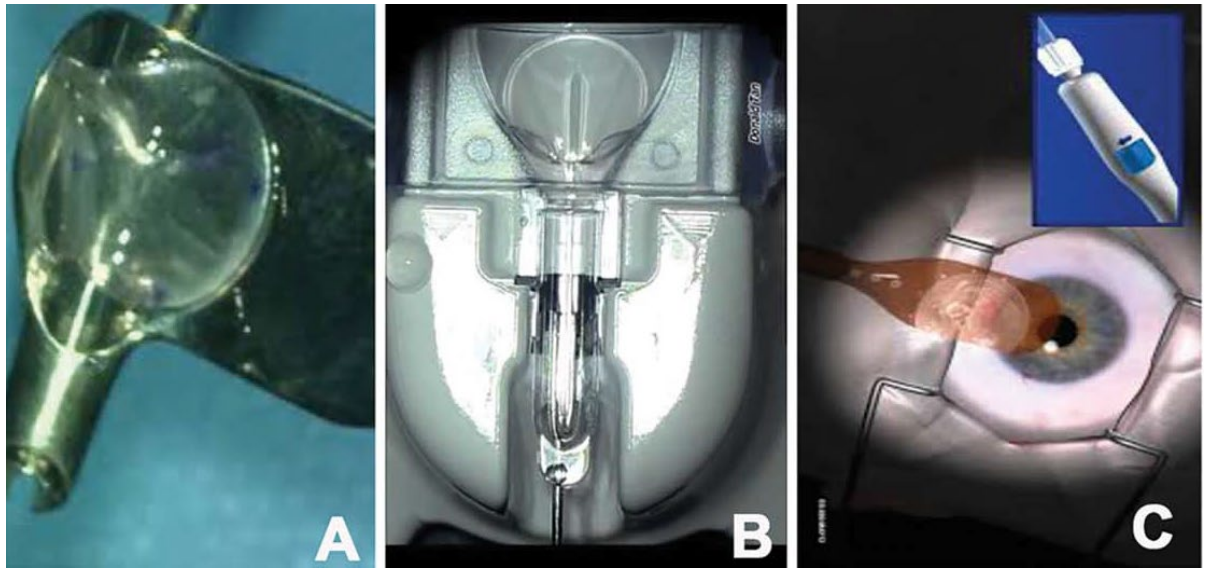
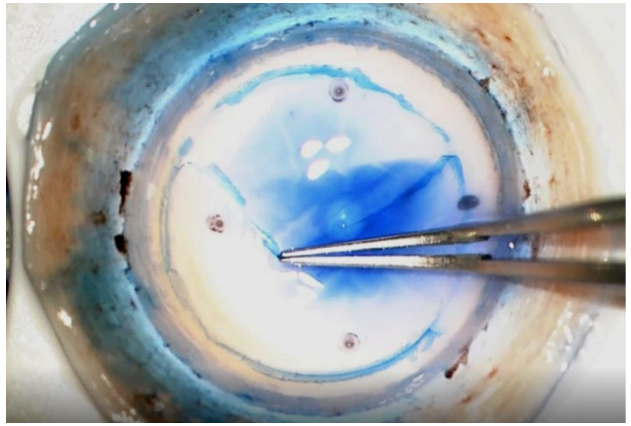
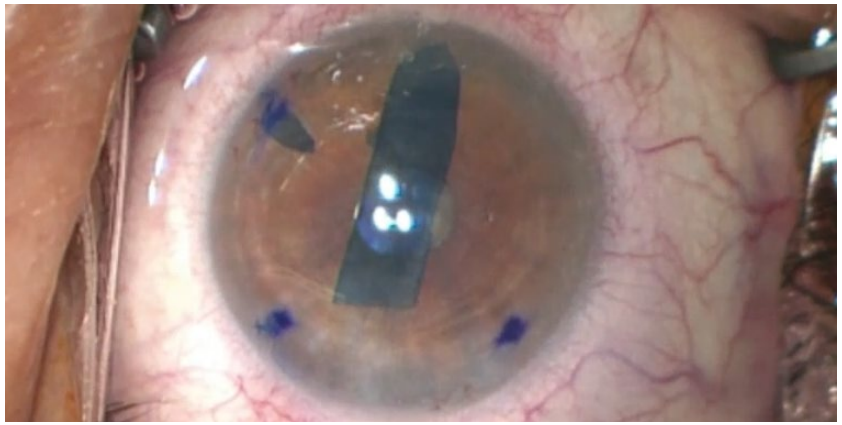


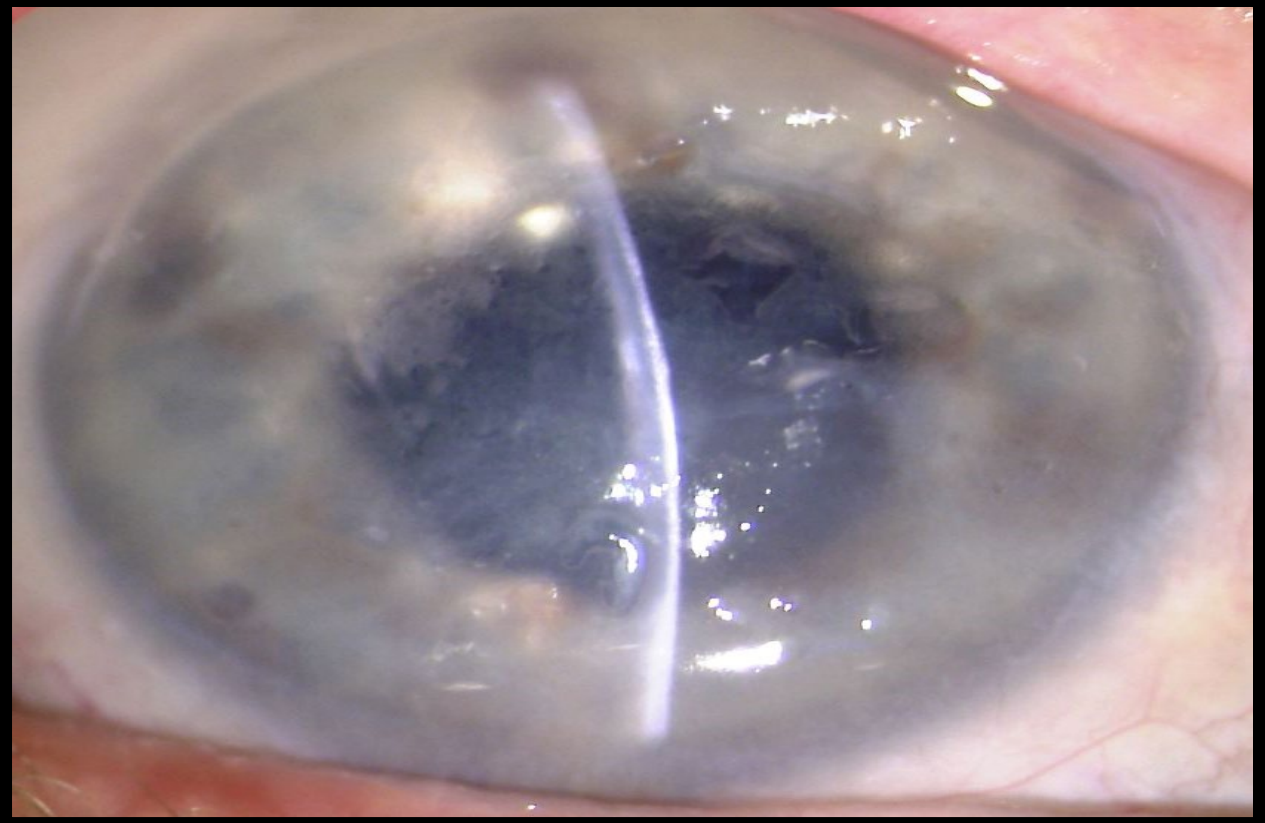
Evoluzioni della EK

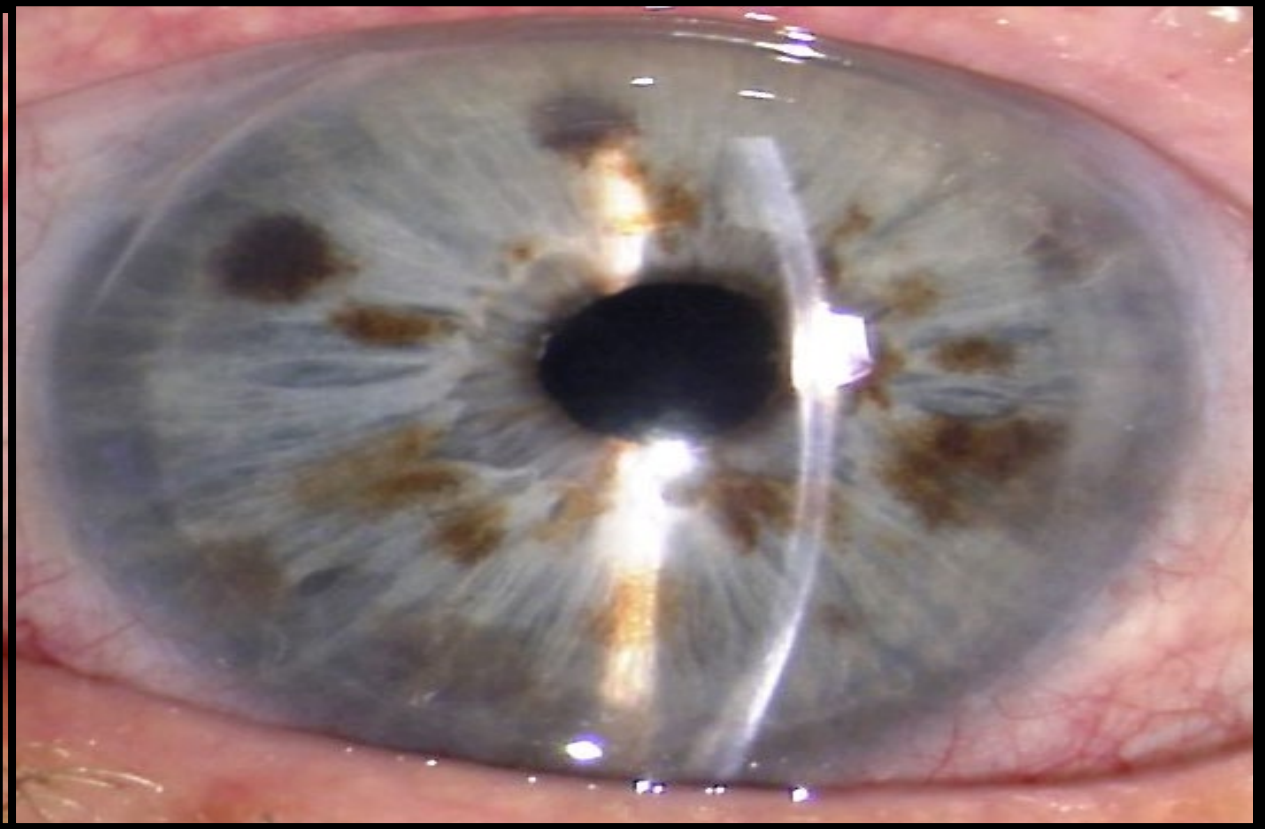
- 2004 descemetorhexis : DSEK
- 2006 lamella preparata con microcheratomo: DSAEK
- iniettori dedicati
- **2008 risultati preliminari della DMEK**

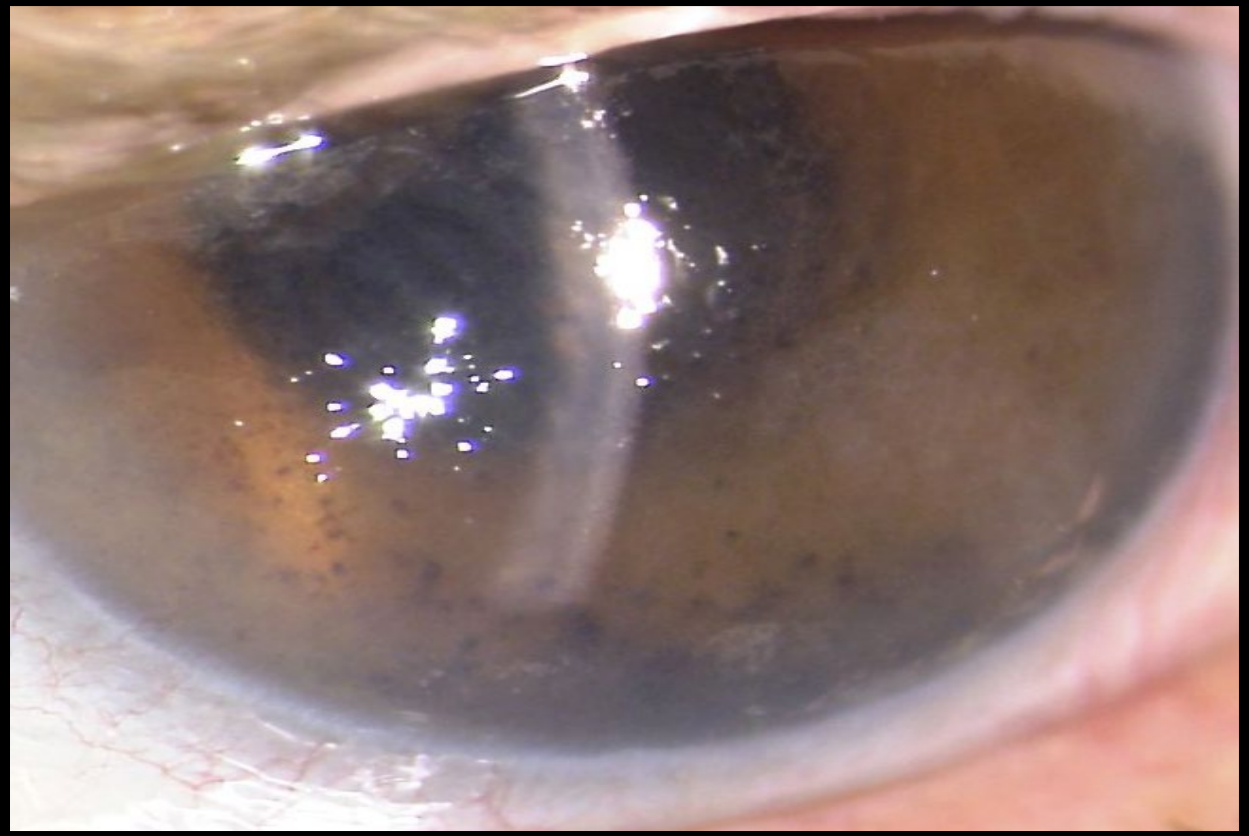


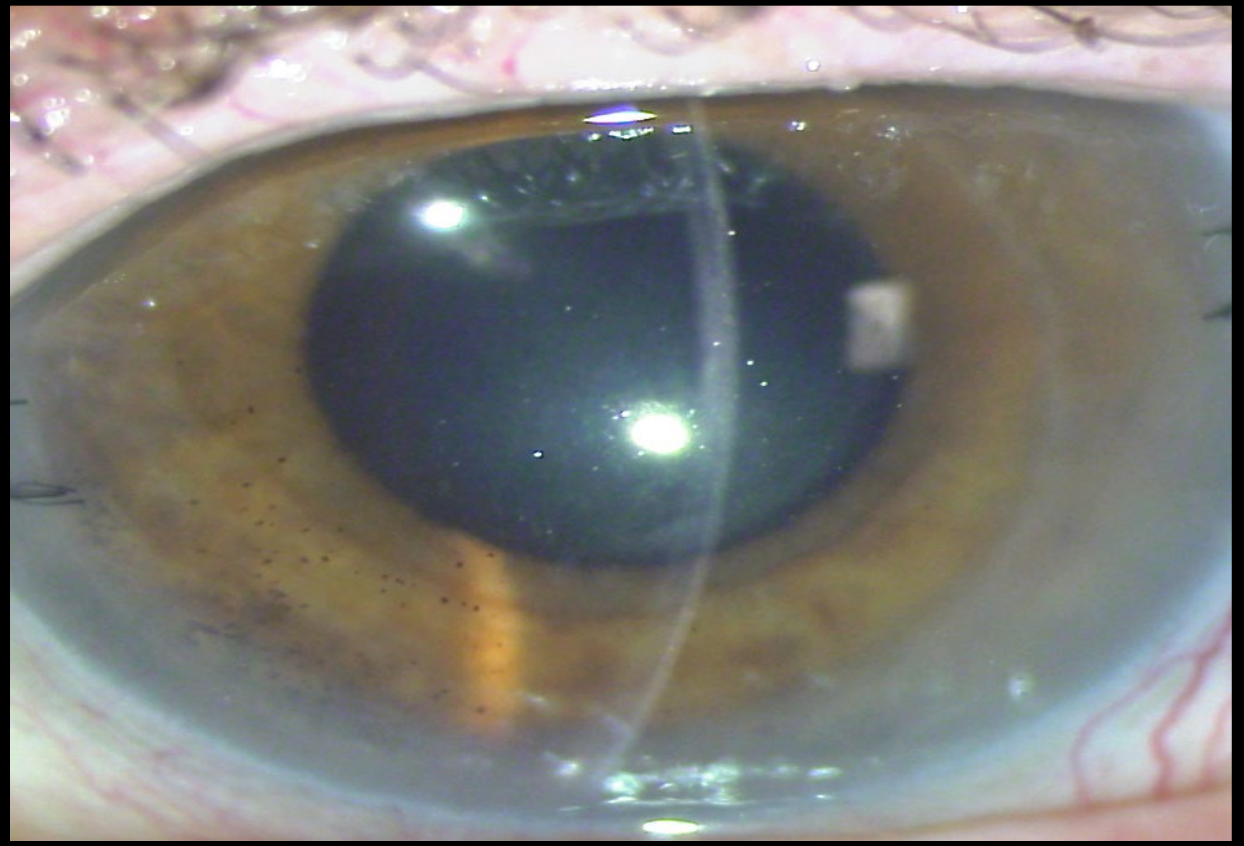


Melles et al. Preliminary clinical results of DMEK. AJO 2008; 145:222-227









EK in Piemonte dal 2005 al 2020

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Table 5: Annual Domestic Endothelial Keratoplasty Numbers (2013 – 2019)

Domestic Surgery Use	2013	2014	2015	2016	2017	2018	2019
Total Endothelial Keratoplasty Procedures	24,987	25,965	27,208	28,327	28,991	30,336	30,650
DSEK, DSAEK, DLEK Procedures	23,465	23,100	22,514	21,868	21,337	19,526	17,428
DMEK or DMAEK Procedures	1,522	2,865	4,694	6,459	7,628	10,773	13,215
PDEK					21	26	6
Other EK					7	11	1

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EBAA 2021 statistical report:
DSAEK 15,935 vs DMEK 14,128

DMEK in Piemonte (2012 vs 2021)

	EK totali	DSAEK	**DMEK**
2012	**236**	236 (100%)	**-**
2021	**307**	237 (77%)	**70 (23%)**
2021-22 (Clinica UNITO)	**123**	41 (33%)	**82 (66%)**

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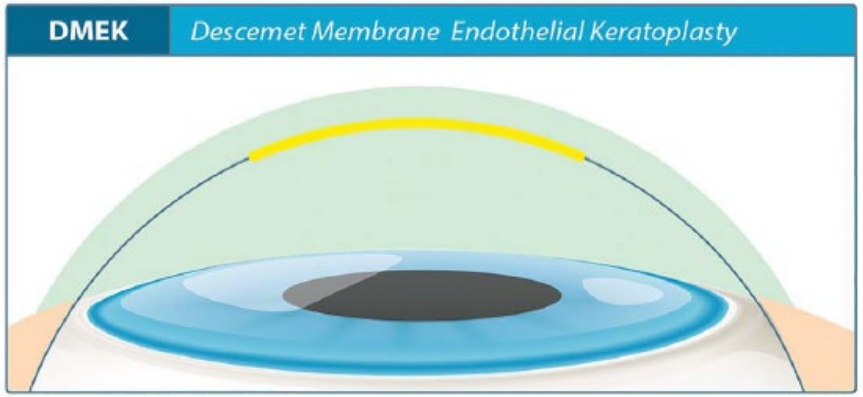
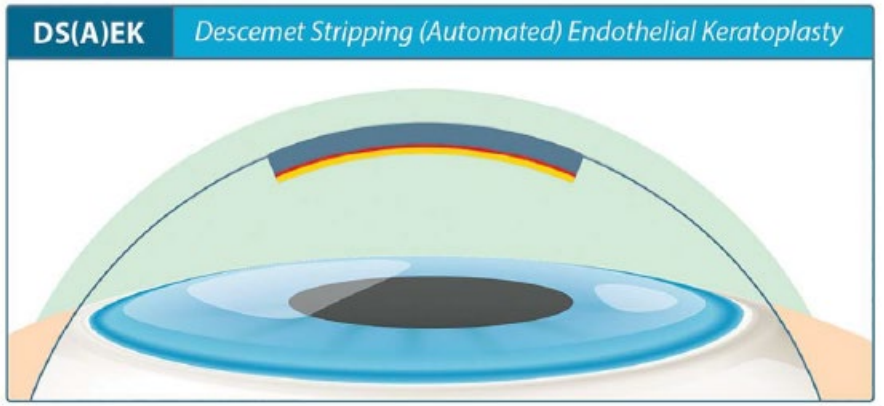
Vantaggi DMEK vs DSAEK

- recupero più rapido
- AV migliore
- minor rischio di rigetto





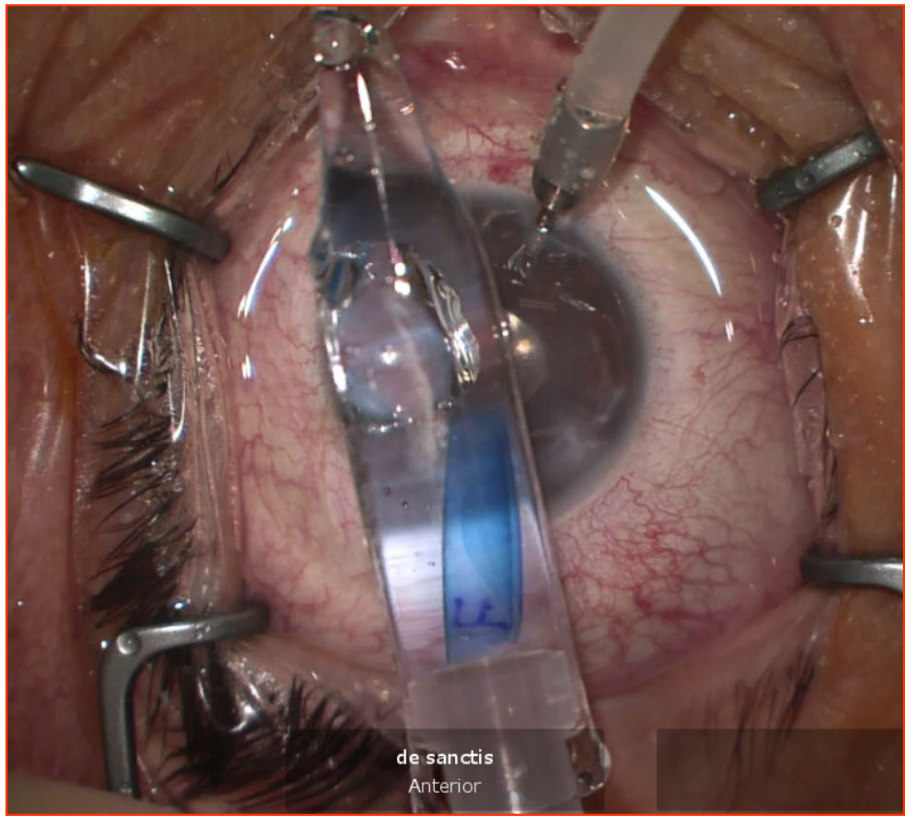
Melles et al. Preliminary clinical results of DMEK. AJO 2008; 145:222-227

Standardizzazione del prelievo Descemet/endotelio

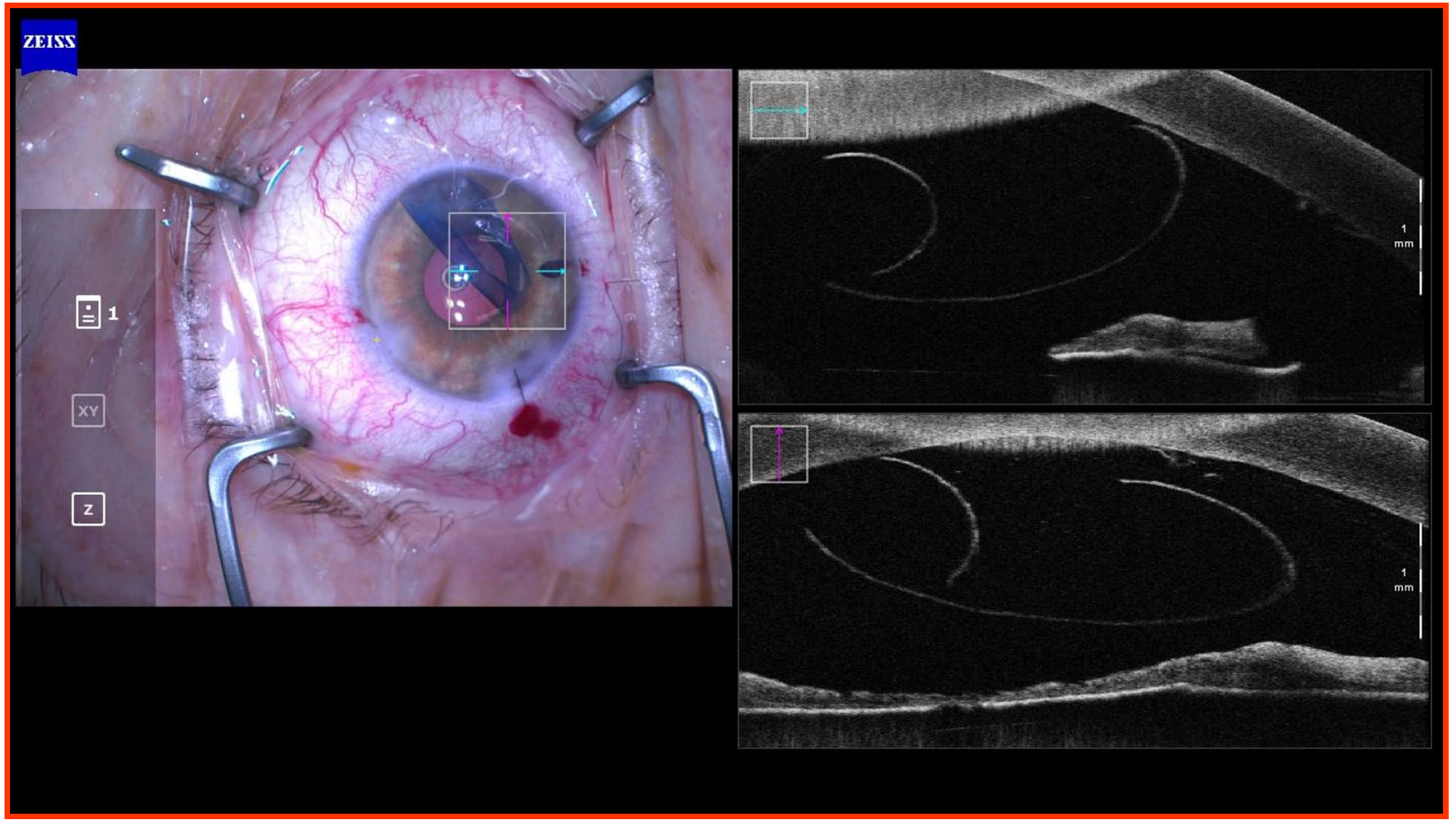
- **Melles standard tecnique *(Lie et al. JCRS 2008)***
- **SCUBA technique *(Price et al. Ophthalmology 2009)***
- **reverse big-bubble *(Venzano et al. JCRS 2010)***
- **Melles no-touch technique *(Groenenveldt van Beek et al Acta Ophthalmol 2013)***
- **scleral spurectomy *(Rootman ESCRS meeting 2016)***

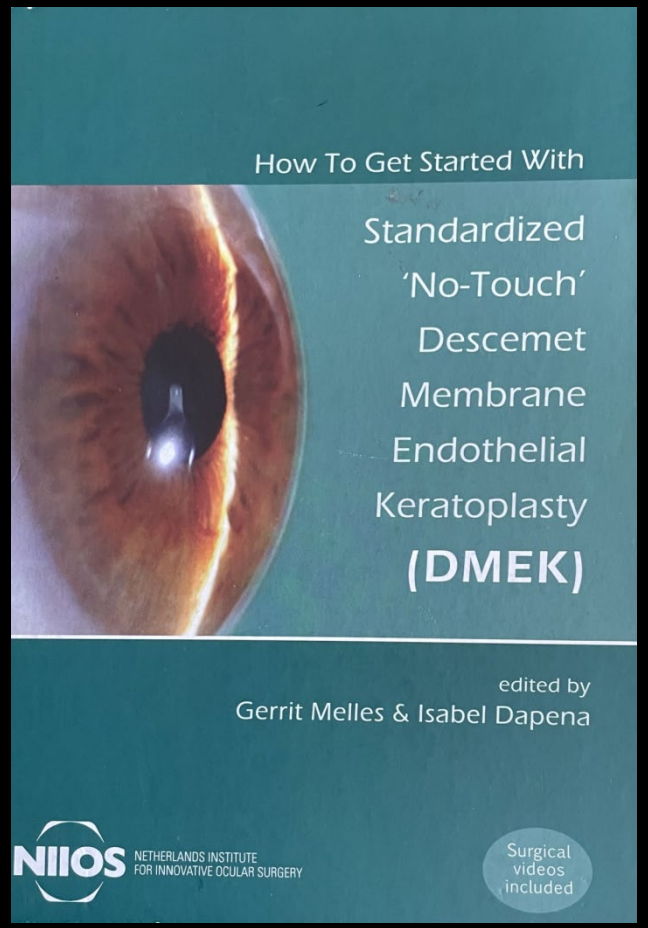
Preparazione dei tessuti in banca

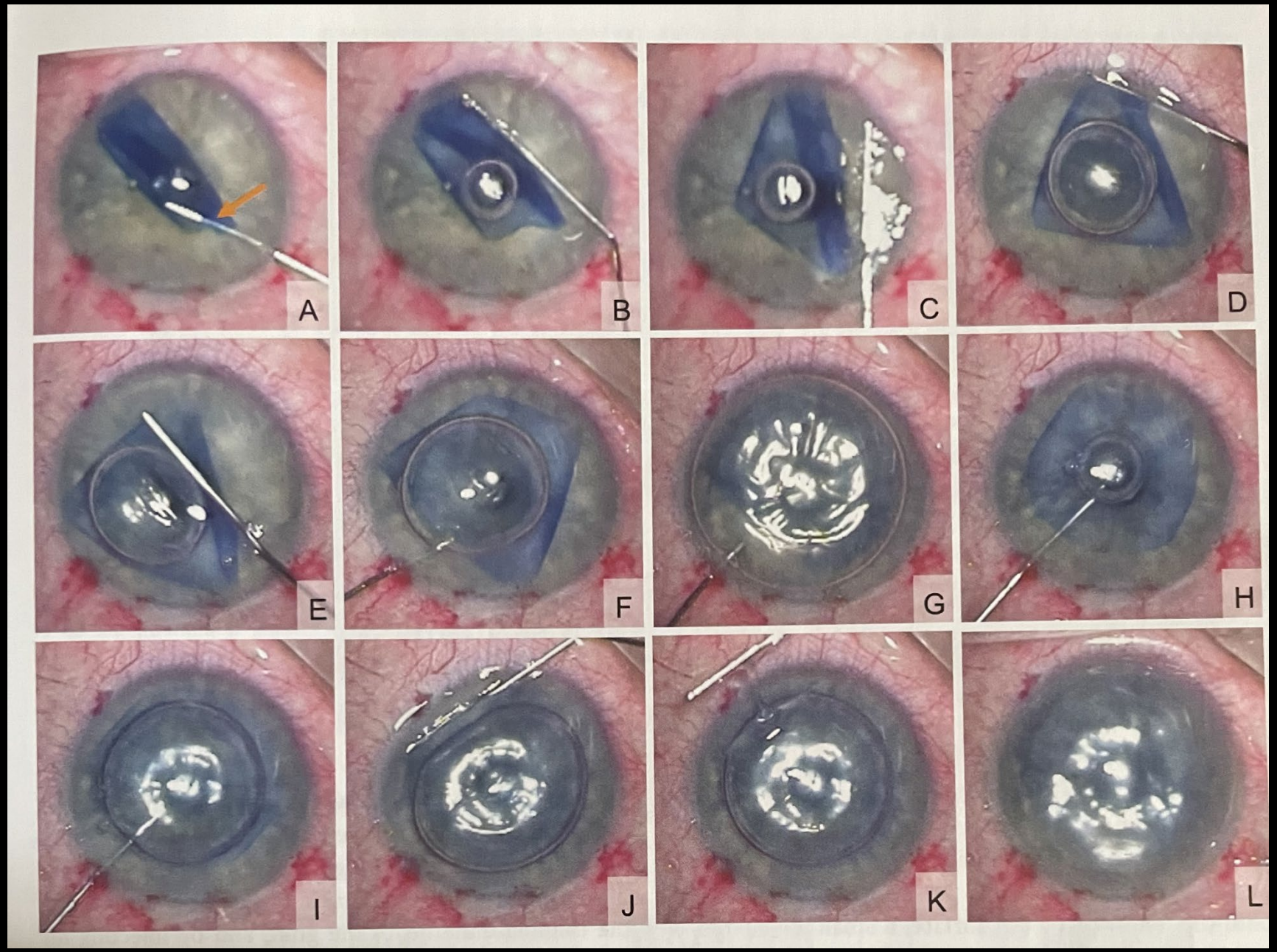
- pre-strippati
- pre-marcati
- pre-caricati



Srotolamento del tessuto

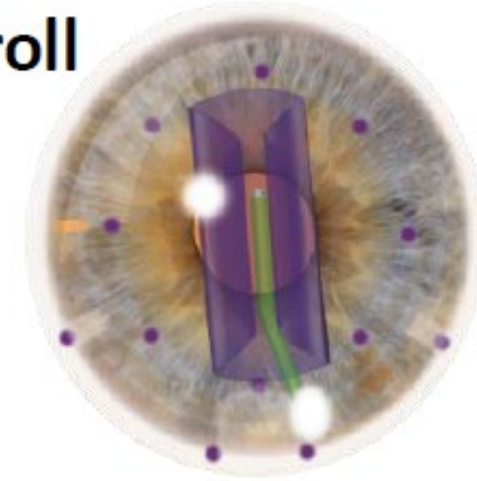



How To Get Started With
Standardized
'No-Touch'
Descemet
Membrane
Endothelial
Keratoplasty
(DMEK)
edited by
Gerrit Melles & Isabel Dapena
NIIOS
NETHERLANDS INSTITUTE
FOR INNOVATIVE OCULAR SURGERY
Surgical
videos
included


A
B
C
D
E
F
G
H
I
J
K
L

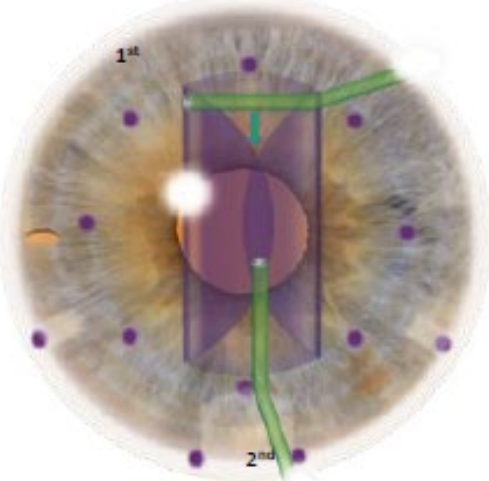
Pattern della Descemet in camera anteriore

Double Scroll



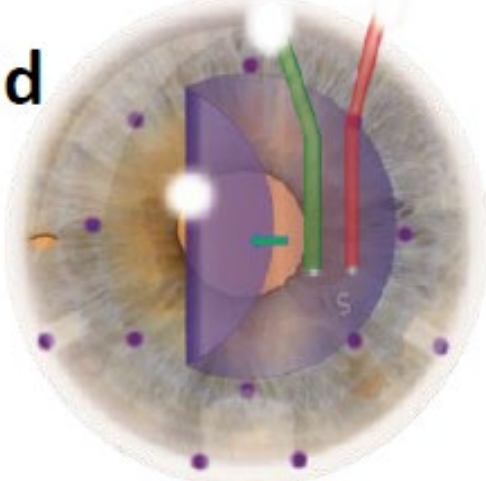
To Open:

Scroll



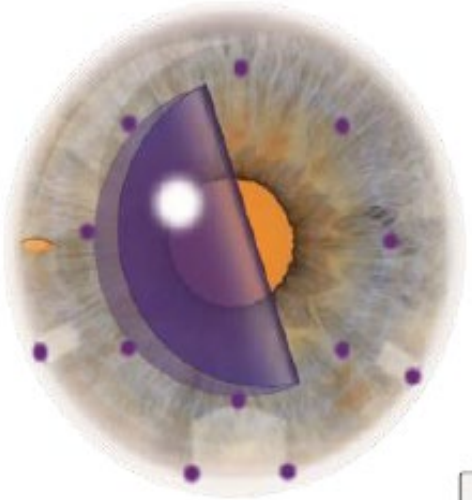
To Open:

Simple Fold



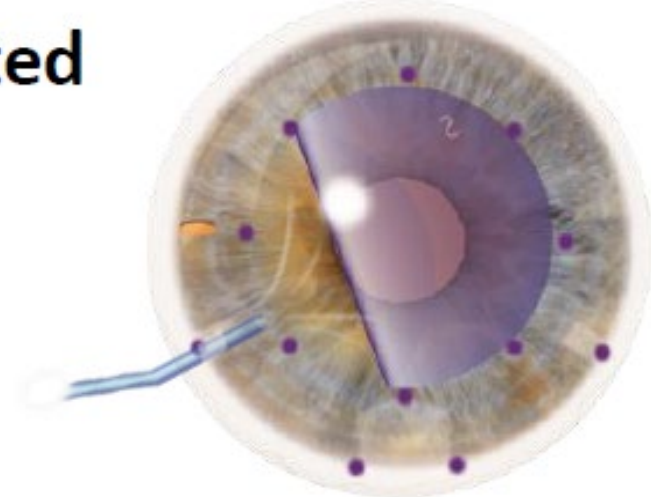
To Open:

Taco(s)



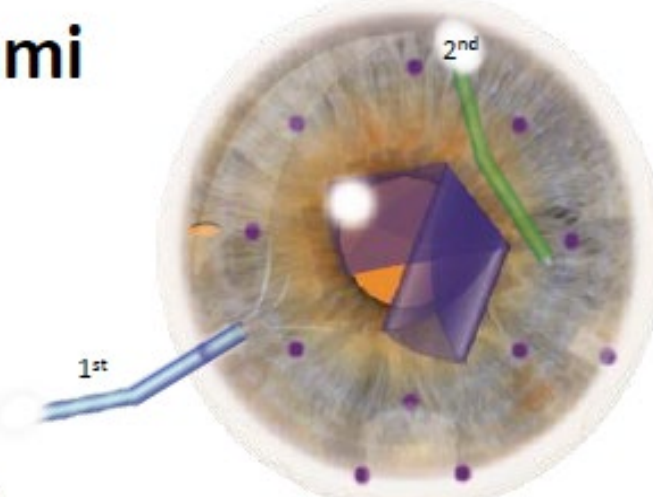
It Depends:

Inverted



To Flip:

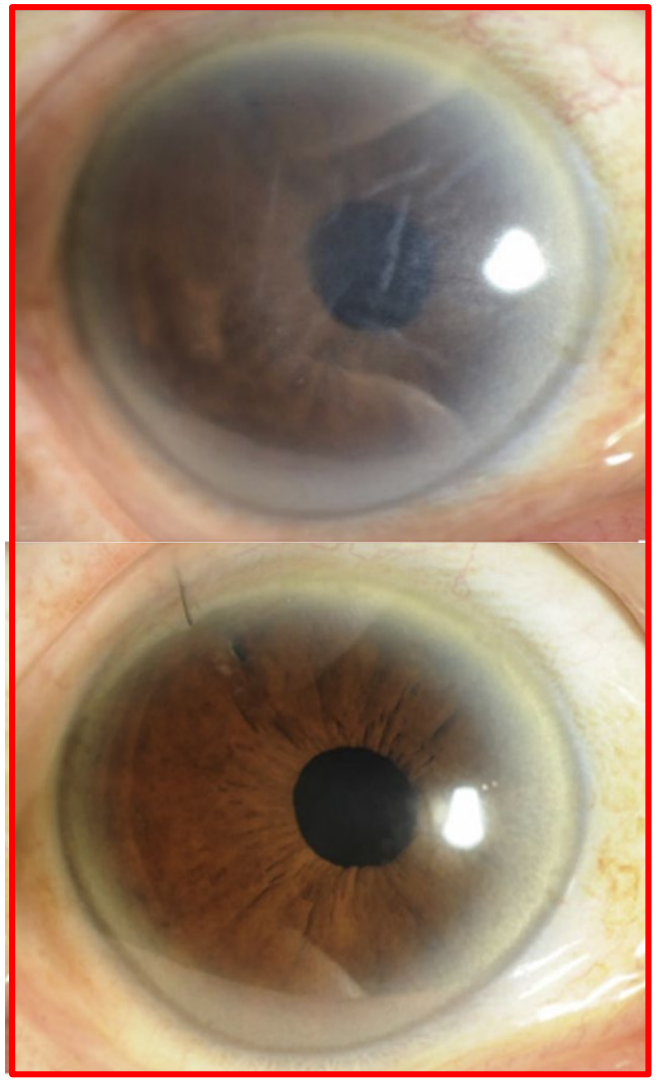
Origami



To Resolve:

Prospettive future

- DMET
- Hemi/Quater DMEK
- DSO
- Inibitori della Rho-chinasi
  - Ripasudil, Y27632
- Cellule endoteliali espanse in coltura



Da Numa et al. Ophtalmolgy 2021

AMERICAN ACADEMY
OF OPHTHALMOLOGY®

Five-Year Follow-up of First 11 Patients Undergoing Injection of Cultured Corneal Endothelial Cells for Corneal Endothelial Failure

Kohsaku Numa, MD,[1] Kojiro Imai, MD, PhD,[1] Morio Ueno, MD, PhD,[1] Koji Kitazawa, MD, PhD,[1] Hiroshi Tanaka, MD, PhD,[1] John D. Bush, BA,[1] Satoshi Teramukai, PhD,[2] Naoki Okumura, MD, PhD,[3] Noriko Koizumi, MD, PhD,[3] Junji Hamuro, PhD,[1] Chie Sotozono, MD, PhD,[1] Shigeru Kinoshita, MD, PhD[4]

Purpose: To report the safety and efficacy of a novel cell injection therapy using cultured human corneal endothelial cells (hCECs) for endothelial failure conditions via the report of the long-term 5-year postoperative clinical data from a first-in-humans clinical trial group.

Design: Prospective observational study.

Participants: This study involved 11 eyes of 11 patients with pseudophakic endothelial failure conditions who underwent hCEC injection therapy between December 2013 and December 2014.

Methods: All patients underwent follow-up examinations at 1 week, 4 weeks, 12 weeks, and 24 weeks and 1 year, 2 years, 3 years, 4 years, and 5 years after surgery. Specific corneal endothelial cell parameters (i.e., corneal endothelial cell density [ECD], coefficient of variation of area, and percentage of hexagonal cells) and central corneal thickness, best-corrected visual acuity (BCVA) on a Landolt C eye chart, and intraocular pressure (IOP) were recorded.

Main Outcome Measures: The primary outcome was the change in central ECD after cell injection therapy, and the secondary outcome was corneal thickness, BCVA, and IOP during the 5-year-postoperative follow-up period.

Results: At 5 years after surgery, normal corneal endothelial function was restored in 10 of the 11 eyes. The mean ± standard deviation central corneal ECD was 1257 ± 467 cells/mm^2 (range, 601–2067 cells/mm^2), BCVA improved significantly in 10 treated eyes, the mean visual acuity changed from 0.876 logarithm of the minimum angle of resolution before surgery to 0.046 logarithm of the minimum angle of resolution after surgery, and no major adverse reactions directly related to the hCEC injection therapy were observed.

Conclusions: The findings in this study confirmed the safety and efficacy of cultured hCEC injection therapy for up to 5 years after surgery. *Ophthalmology 2021;128:504-514*

Supplemental material available at www.aaojournal.org.

ECD media 1257 cell/mm^2
DCVA > 5/10 : 10/11 occhi

Conclusioni

- chirurgia lamellare dal 3% al 70% in 20 anni
- rapporto EK/DALK: 4/1
- interventi di DMEK in aumento
- perforante indispensabile in alcuni casi