

# Lenticoli DMEK e Follow-up clinico: Esperienze a confronto

Davide Venzano

# Conflitto di interesse

Non ho interessi finanziari in nessuna delle tecniche o dei prodotti discussi.

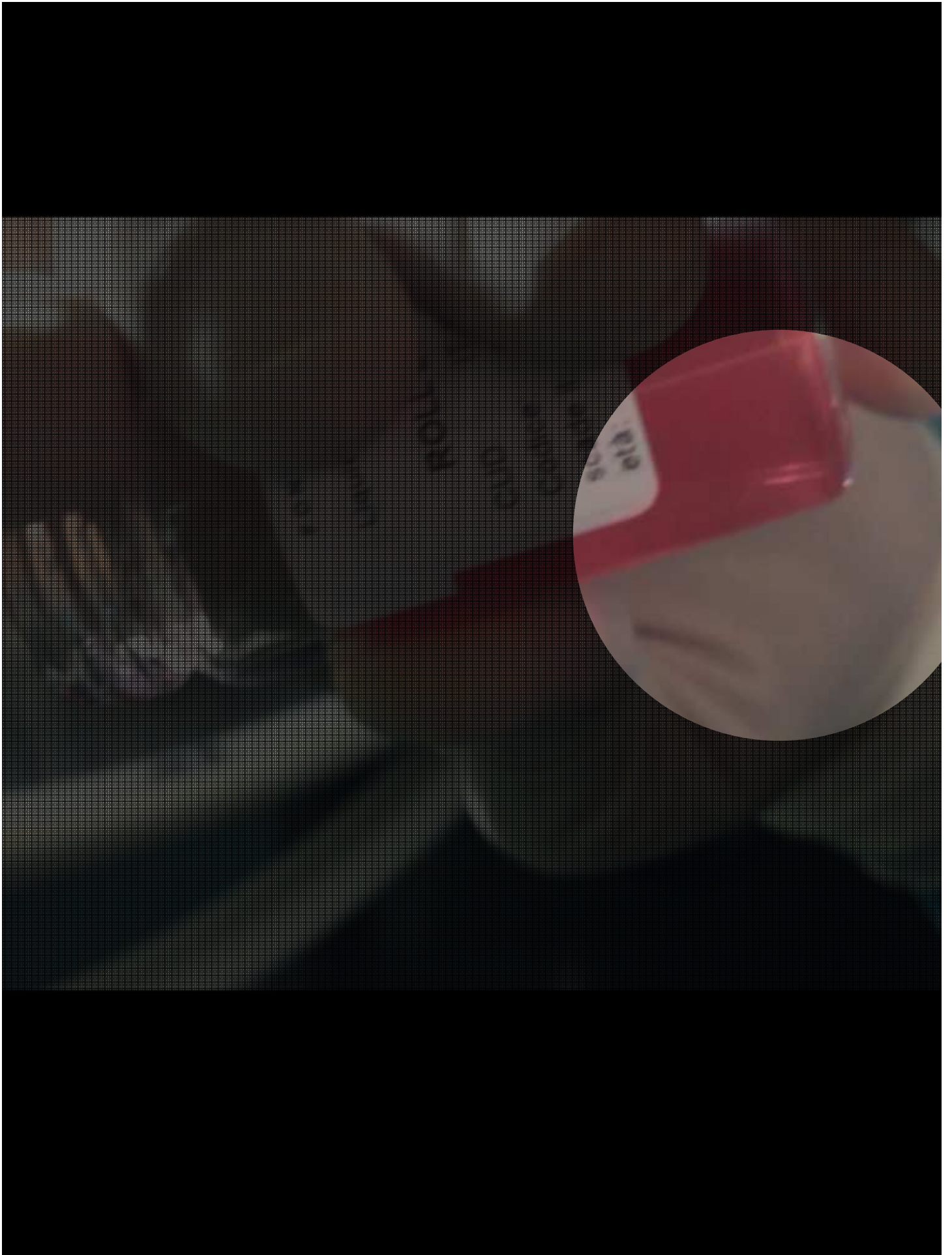
Dichiaro di aver avuto, negli ultimi due anni, i seguenti rapporti, anche di finanziamento, con soggetti portatori di interessi commerciali in campo sanitario e di aver in atto rapporti diretti con le aziende:

Novartis, Roche, Sanofi, Galxo, Serono, Merk.

# Lenticoli per tecnica DMEK

Preparazione in Banca vs preparazione in sala operatoria

- spreco di tempo
- spreco di tessuto
- Controllo qualità



# Raccolta del roll descemetico con pipetta da trasporto

diametro alla punta 4 mm accoppiata a siringa da 2.5 ml

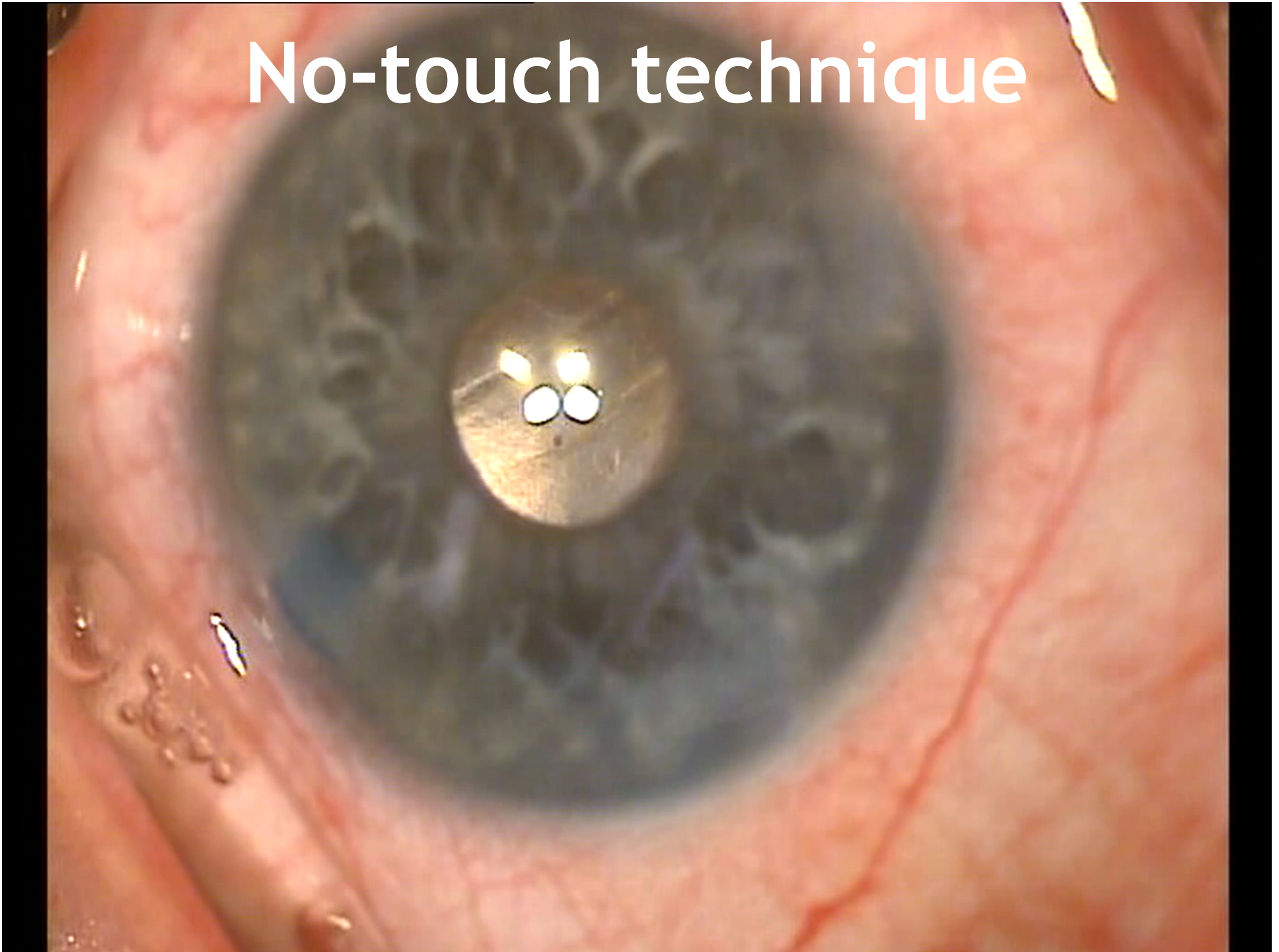


# Colorazione e caricamento del roll descemetico su pipetta da innesto

diametro alla punta 2,5 mm accoppiata a siringa da 2.5 ml

**No-touch technique**

# No-touch technique



Original Investigation

# Multicenter study of descemet membrane endothelial keratoplasty first case series of 18 surgeons

Monnereau C, Quilendrin R, Dapena I, Liarakos VS, Alfonso JF, Arnalich-Montiel F, Böhnke M, Pereira NC, Dirisamer M, Parker J, Droutsas K, Geerling G, Gerten G, Hashemi H, Kobayashi A, Naveiras M, Oganessian O, Orduña Domingo E, Priglinger S, Stodulka P, Torrano Silva J Jr, Venzano D, Vetter JM, Yiu E, Melles GR. *JAMA Ophthalmol.* 2014 Oct



### World map of participating surgeons and their location

(1) Francisco [Arnalich-Montiel](#), MD, PhD, Hospital Ramon y Cajal Madrid, Spain; (2) Matthias [Böhnke](#), MD, PhD, [Augentagesklinik und Laserzentrum](#) Hamburg, Germany; (3) Nicolas [Cesário Pereira](#), MD, [Banco de Olhos de Sorocaba](#), Brazil; (4) Siegfried [Priglinger](#), MD, FEBO, and Martin [Dirisamer](#), MD, Department of Ophthalmology, [AKh Linz](#), Austria; (5) John Parker, MD, UAB Callahan Eye Hospital, Birmingham, Alabama, USA; (6) [Konstantinos Droutsas](#), MD, PhD, Department of Ophthalmology, [Philipps University Marburg](#), UKGM GmbH, Marburg, Germany; (7) [Gerd Geerling](#), MD, PhD, [Heinrich-Heine-Universität](#) Dusseldorf, Germany; (8) Georg [Gerten](#), MD, PhD, [Augenklinik am Neumarkt](#) Köln, Germany; (9) Hassan [Hashemi](#), MD, NOOR Ophthalmology Research Center, Noor Eye | Hospital Tehran, Iran; (10) Akira Kobayashi, MD, PhD, Department of Ophthalmology, Kanazawa University, Japan; (11) Jose F. Alfonso, MD, PhD, and Miguel [Naveiras](#), MD, [Instituto Oftalmológico Fernández-Vega](#) Oviedo, Spain; (12) [Oganes Oganessian](#), MD, PhD, Moscow Helmholtz Eye Research Institute; Russia; (13) [Emeterio Orduña Domingo](#), MD, UOB [Clínica Palmaplanas](#) Palma de Mallorca, Spain; (14) [Pavel Stodulka](#), MD, Gemini Eye Clinic [Zlín](#), Czech Republic; (15) José [Torrano Silva Jr](#), MD, PhD, [Centro Oftalmológico Sertãozinho-SP](#), Brazil; (16) [Davide Venzano](#), MD, [University Eye Clinic Genova](#), Italy; (17) [Jan-Martin Vetter](#), MD, PhD, [Comer Eye Clinic](#), Germany; (18) [Yiu E. Melles](#), MD, PhD, [Singapore Eye Research Institute](#), Singapore

“...more variable endothelial cell damage with plastic than with GLASS INSERTERS and a somewhat different behavior of the graft during insertion and unfolding, possibly owing to electrostatic forces induced by plastics.”



# Multicenter Study of 6-Month Clinical Outcomes After Descemet Membrane Endothelial Keratoplasty

*Silke Oellerich, PhD,\* Lamis Baydoun, MD,\*† Jorge Peraza-Nieves, MD,\*† Abbas Ilyas,\* Laurence Frank, PhD,\* Perry S. Binder, MS, MD,† and Gerrit R. J. Melles, MD, PhD,\*† on behalf of the International DMEK Study Group*

**Cornea 2017**

## STATISTICAL REPORT

The *2017 Eye Banking Statistical Report* includes data from all 57 U.S. and 11 international member eye bank reporting entities for the calendar year 2017 and represents an essentially complete picture of eye banking activity among eye banks in the United States.

The number of penetrating keratoplasty (PK) grafts in the U.S. was 18,346 (a decrease of 1.3%), while endothelial keratoplasty (EK) numbers increased 2.6% to 28,993, **largely due to the 18.1% increase in DMEK procedures.**

## Case 1

G D 77 Fuchs dystrophy IOL PC Previous EK (Tappin) CF

(DMEK; Nov 10<sup>th</sup>, 2008)

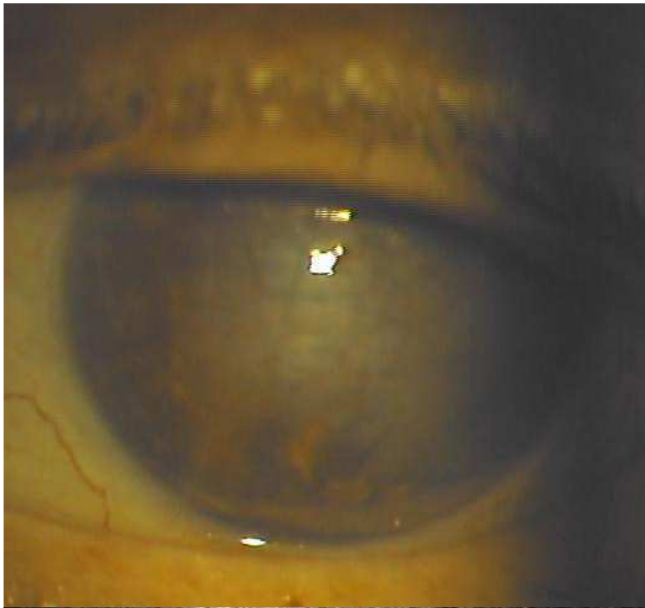
This is an emblematic case after the total failure six months ago (phaco + iol + endothelial graft with Tappin technique, never attacked)

The first day after DMEK, the central cornea was clear and visus was 0.4

DOB (age): 29/11/1930 (78)  
ID:

Algorithm Version: A3, 5, 2, 5  
Gender: M

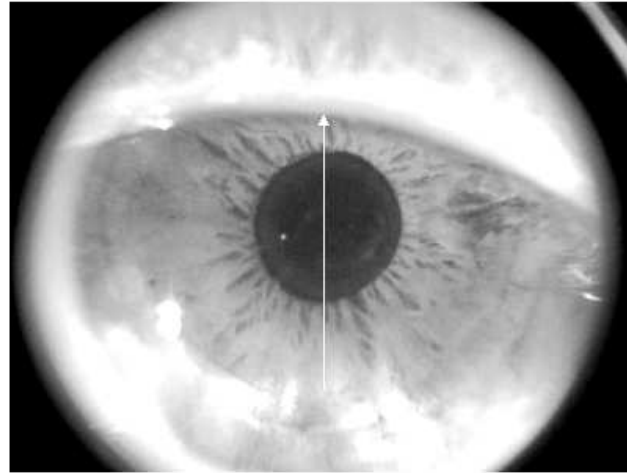
Exam Date: 23/02/2009  
Physician: Venzano, Davide



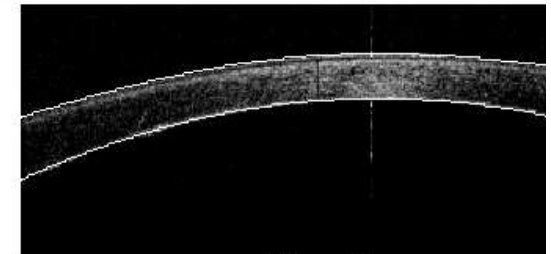
OS

Pachymetry

SSI= 44.3



Keratoconus Analysis		2 - 5 mm
Zonal / Hemispheric Analysis		
SN - IT	16	
S - I	-14	
ST - IN	-35	
Superior - Inferior	8	
Min = 484 µm, Min - Median = -18 µm, Min - Max = -55 µm within 5 mm diam		
Minimum thickness: 484 µm Location at (1.031 mm, -0.177mm) indicated as		

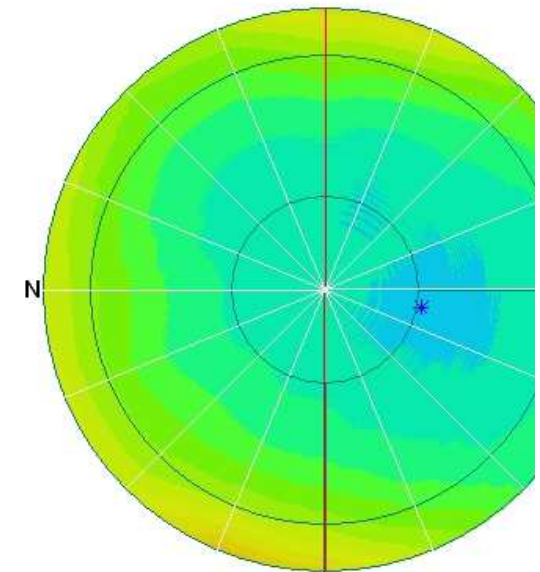
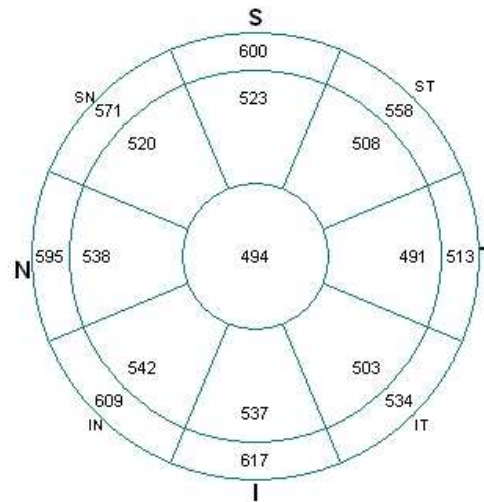


Thickness: 492 µm

6m

Show Boundary Curves

Show Lines



Diagnosis:

**14 weeks Follow-up**

Cornea Sequence [3], 23/02/2009, OS

#89 / 100: 440 µm

HEIDELBERG

Report Date: Thursday March 05 12:05:02 2009

VISUAL ACUITY WORKSHEET

Patient Name: LAYLE GIOVANNI

Screening  Month 3  Month 6  Month 9  Month 12  Interim Visit

VISUAL ACUITY / LEFT EYE CHART 2

Date: 6/5/09 (d/m/y)

Record correction obtained by subjective refraction on the Subjective Refraction Form. Write the total correct for each row in the column at the right (circle letters patient could read, cross out letters patient read incorrectly, and leave blank letters not read). If the total number of letters read correctly is less than 20, add a +0.50 sphere to the distance correction and have the patient read the first 3 rows of the letters again at 1 meter

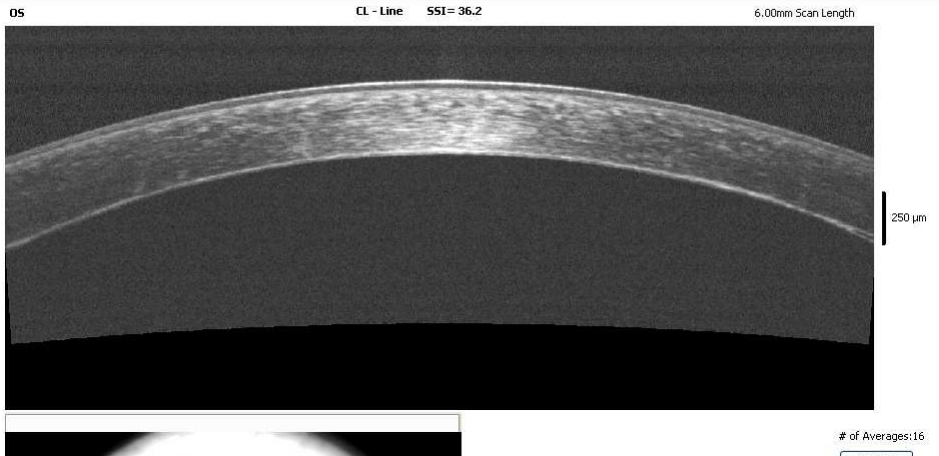
ROW	ACUITY EQUIVALENT	CHART 2 LETTERS	NUMBER CORRECT AT 2 METERS	ROW	ACUITY EQUIVALENT	CHART 2 LETTERS	NUMBER CORRECT AT 1 METER
1	20/400	<u>D</u> <u>S</u> <u>R</u> <u>K</u> <u>N</u>	<u>5</u>	1	20/800	D S R K N	_____
2	20/320	<u>C</u> <u>K</u> <u>Z</u> <u>O</u> <u>H</u>	<u>5</u>	2	20/640	C K Z O H	_____
3	20/250	<u>O</u> <u>N</u> <u>R</u> <u>K</u> <u>D</u>	<u>5</u>	3	20/500	O N R K D	_____
4	20/200	<u>K</u> <u>Z</u> <u>V</u> <u>D</u> <u>C</u>	<u>5</u>	TOTAL # CORRECT AT 1 METER			_____
5	20/160	<u>V</u> <u>S</u> <u>H</u> <u>Z</u> <u>O</u>	<u>5</u>	If zero letters are read correctly at 1 meter please indicate:			
6	20/126	<u>H</u> <u>D</u> <u>K</u> <u>C</u> <u>R</u>	<u>5</u>	<input type="checkbox"/> LIGHT PERCEPTION			
7	20/100	<u>C</u> <u>S</u> <u>R</u> <u>H</u> <u>N</u>	<u>5</u>	<input type="checkbox"/> NO LIGHT PERCEPTION			
8	20/80	<u>S</u> <u>V</u> <u>Z</u> <u>D</u> <u>K</u>	<u>5</u>	VISUAL ACUITY SCORE - LEFT EYE			
9	20/64	<u>N</u> <u>C</u> <u>V</u> <u>O</u> <u>Z</u>	<u>5</u>	A:	TOTAL # CORRECT AT 2 METERS		<u>66</u>
10	20/50	<u>R</u> <u>H</u> <u>S</u> <u>D</u> <u>V</u>	<u>5</u>	B:	IF ≥ 20 ADD 15		<u>15</u>
11	20/40	<u>S</u> <u>N</u> <u>R</u> <u>K</u> <u>H</u>	<u>4</u>	C:	TOTAL # CORRECT AT 1 METER, (Must be tested if <20 letters read at 2 meters)		<u>1</u>
12	20/32	<u>O</u> <u>D</u> <u>H</u> <u>K</u> <u>R</u>	<u>5</u>	D:	VISUAL ACUITY SCORE (SUM OF A, B, AND C)		<u>81</u>
13	20/26	<u>Z</u> <u>K</u> <u>X</u> <u>S</u> <u>N</u>	<u>3</u>	APPROXIMATE SNELLEN EQUIVALENT			
14	20/20	<u>C</u> <u>R</u> <u>X</u> <u>D</u> <u>V</u>	<u>4</u>	LEFT EYE <u>20, 20</u>			
TOTAL # CORRECT AT 2 METERS			<u>66</u>	(SMALLEST LINE WITH 1 OR NO ERROR) OR INDICATE:			
If <20 letters, perform 1 meter test				<input type="checkbox"/> LEFT EYE <20/800			
				(No line read with 1 or no error)			

Visual Acuity Examiner's Name (Print)

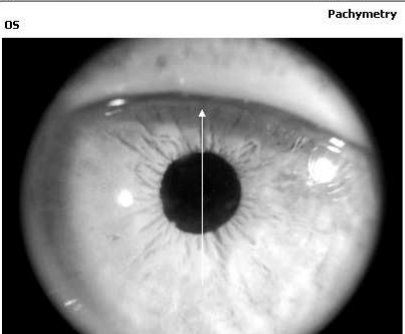
Visual Acuity Examiner's Signature

26 weeks Follow-up

Patient: Giovanni, Davide  
 Disease: Algorithm Version: A4, 0, 3, 1  
 DOB (age): 25/11/1979 (79)  
 ID: Gender: M  
 Photographer: Scotto, Riccardo  
 Exam Date: 26/05/2009  
 Physician: Venzano, Davide

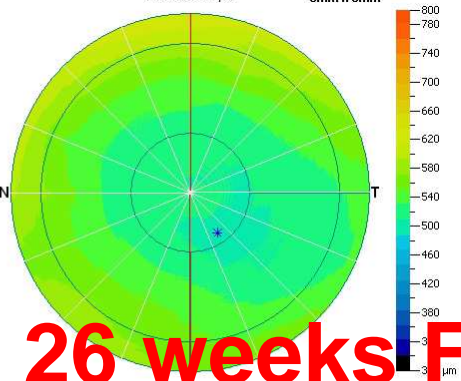
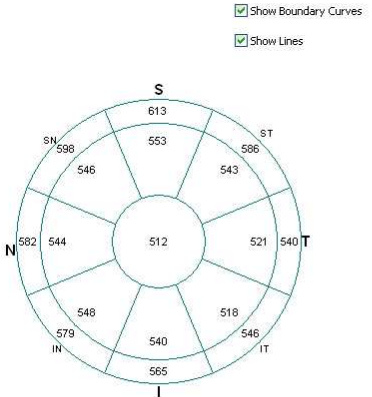
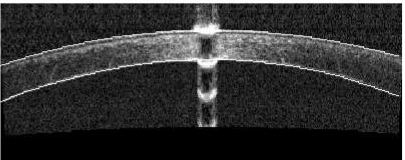


Patient: Giovanni, Davide  
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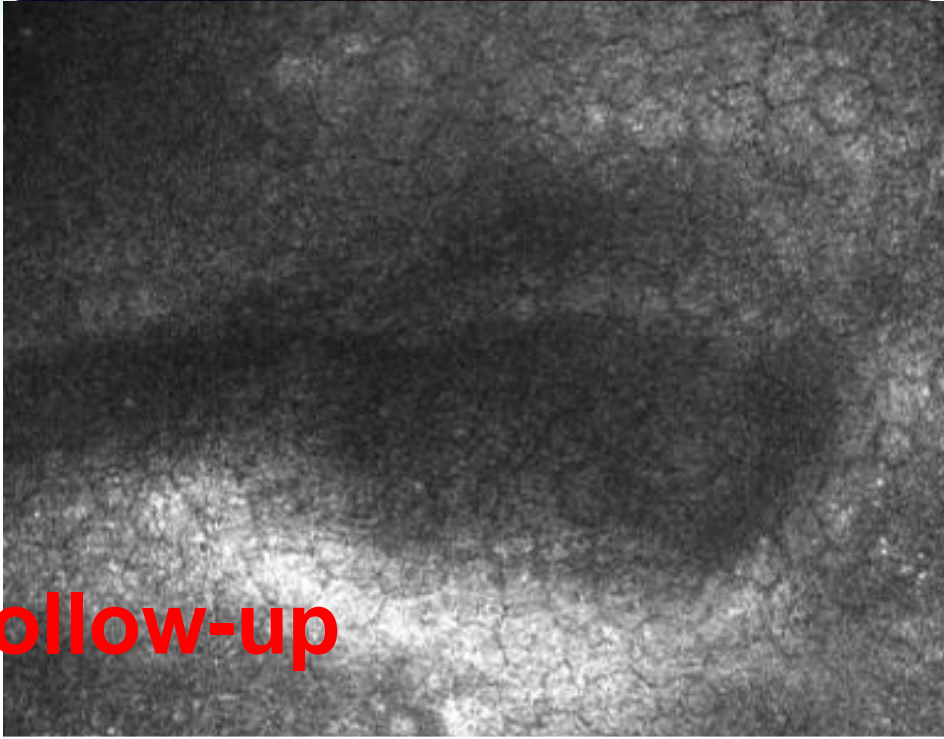


Keratoconus Analysis	2 - 5 mm	5 - 6 mm
Zonal / Hemispheric Analysis		
SN - IT	28	52
S - I	13	48
ST - IN	-5	8
Superior - Inferior	10	31

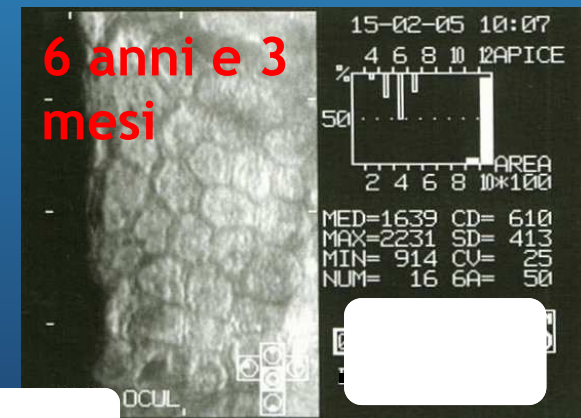
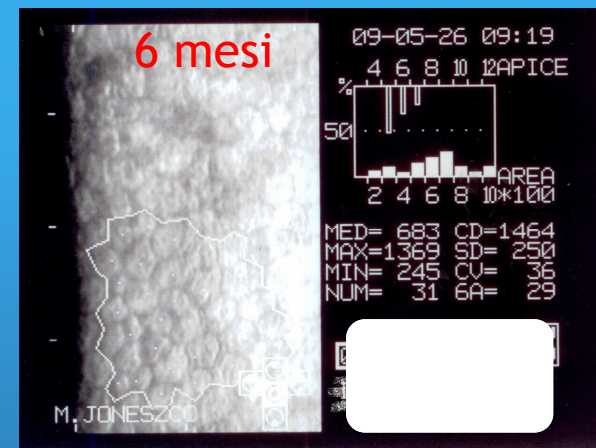
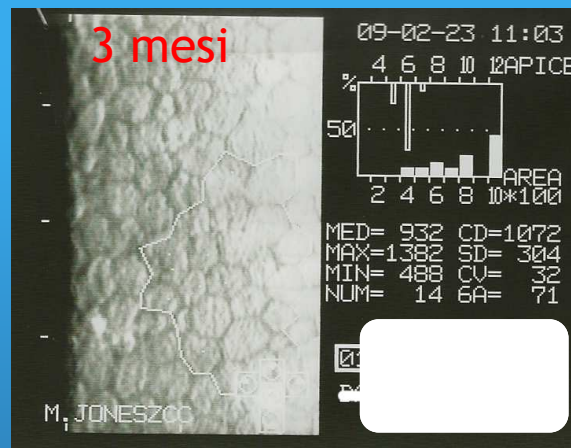
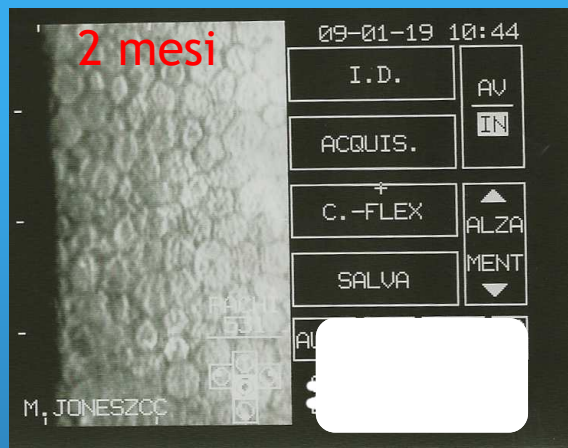
Min = 504 µm, Min - Median = -20 µm, Min - Max = -45 µm within 5 mm diameter circle  
 Minimum thickness: 504 µm Location at (0.460 mm, -0.660mm) indicated as \*



Diagnosis:



**26 weeks Follow-up**



OSV + 0,50 + 1,50 X 170 = 10/10

9 anni e mezzo

18-05-11 08:27

I.D.

AU

ACQUIS.

IN

C.-FLEX



ALZA

SALVA

MENT



PACHI  
593

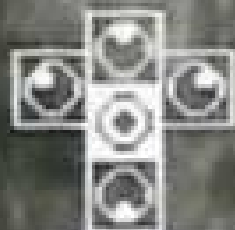
AUTO

UTIL.

PACH



CLIN OCUL





Letter to the Editor

## Clinical feasibility of using multiple grafts from a single donor for Quarter-DMEK

Lamis Baydoun, Vasiliki Zygoura, Shugi Hsien, Rénuka S. Birbal, Daniele Spinozzi, Jessica T. Lie, Lisanne Ham, Silke Oellerich, Gerrit R. J. Melles 

First published: 02 March 2018 | <https://doi.org/10.1111/aos.13720>

ORIGINAL ARTICLE

# Injection of Cultured Cells with a ROCK Inhibitor for Bullous Keratopathy

Shigeru Kinoshita, M.D., Ph.D., Noriko Koizumi, M.D., Ph.D.,  
Morio Ueno, M.D., Ph.D., Naoki Okumura, M.D., Ph.D.,  
Kojiro Imai, M.D., Ph.D., Hiroshi Tanaka, M.D., Ph.D.,  
Yuji Yamamoto, M.D., Takahiro Nakamura, M.D., Ph.D.,  
Tsutomu Inatomi, M.D., Ph.D., John Bush, B.A., Munetoyo Toda, Ph.D.,  
Michio Hagiya, Ph.D., Isao Yokota, Ph.D., Satoshi Teramukai, Ph.D.,  
Chie Sotozono, M.D., Ph.D., and Junji Hamuro, Ph.D.

N ENGL J MED 378;11 nejm.org March 15, 2018

## Limite minimo di età per il donatore di tessuto corneale: evidenze scientifiche e considerazioni regionali

**SCOPO:** evidenziare la reale impossibilità di utilizzazione di tessuti corneali provenienti da donatori pediatrici ancora non verificata da studi epidemiologici o da pubblicazioni scientifiche. Effettuare una ricerca sistematica della letteratura per cercare di evidenziare un limite minimo di età al di sotto del quale il tessuto non consenta l'utilizzo in piena sicurezza e con risultati prevedibili.

**OBIETTIVO:** condurre una revisione sistematica della letteratura in materia di innesto di cornea con tessuti provenienti da donatori pediatrici e valutare l'utilizzazione in Italia

**PAROLE CHIAVE:** sono stati ricercati su pubmed e scopus i seguenti termini: pediatric donor tissue, descemet stripping endothelial keratoplasty, newborn donor, corneal graft, infant donor tissue, endokeratoplasty, infant donor corneas, predescemet keratoplasty, neonate donors, endothelial keratoplasty, pediatric donor tissue, penetrating keratoplasty, infant and adult donor corneas, donor age of the outcome penetrating keratoplasty. Gli articoli non presenti on line sono stati recuperati con la collaborazione di Nilde Network Inter-Library Document Exchange.

**RISULTATI:** i dati in letteratura sono limitati. Sono stati trovati 12 articoli scientifici pubblicati su riviste internazionali da autori provenienti da 7 paesi nel mondo.

**CONCLUSIONI:** dalla seppur scarsa bibliografia si può concludere che la cornea di donatori pediatrici (età compresa tra 0 e 5 anni) non possa essere utilizzata per gli innesti a tutto spessore o lamellari anteriori per difficoltà di manipolazione sia nella preparazione del tessuto che nel suo innesto per anomala consistenza del tessuto stesso. L'utilizzo per innesti lamellari posteriori DSEK o DMEK sembra da alcuni autori vada perseguita per la grande carica endoteliale che questi tessuti possono garantire. L'articolo più recente conferma l'utilizzo nelle endoheratoplastiche con la sola preparazione manuale del tessuto essendo inutilizzabile il microcheratomo in donatori di età compresa tra 1 e 3 anni. L'utilizzo della tecnica DSEK in Italia appare sporadica mentre l'utilizzo con tecnica DMEK è stato proposto ma non studiato. Il forte sospetto riportato in letteratura che tessuti da donatori pediatrici possano contenere una carica antigenica maggiore tale da aumentare notevolmente l'incidenza di reazione da rigetto unito alle considerazioni di cui sopra costringono a sospendere i prelievi di cornea da donatori minori di anni 5 in attesa di risultanze scientifiche che sovvertano le soprascritte conclusioni.