



# Approccio al Paziente con Ulcera Corneale

*Dott.ssa Rossella Spena*



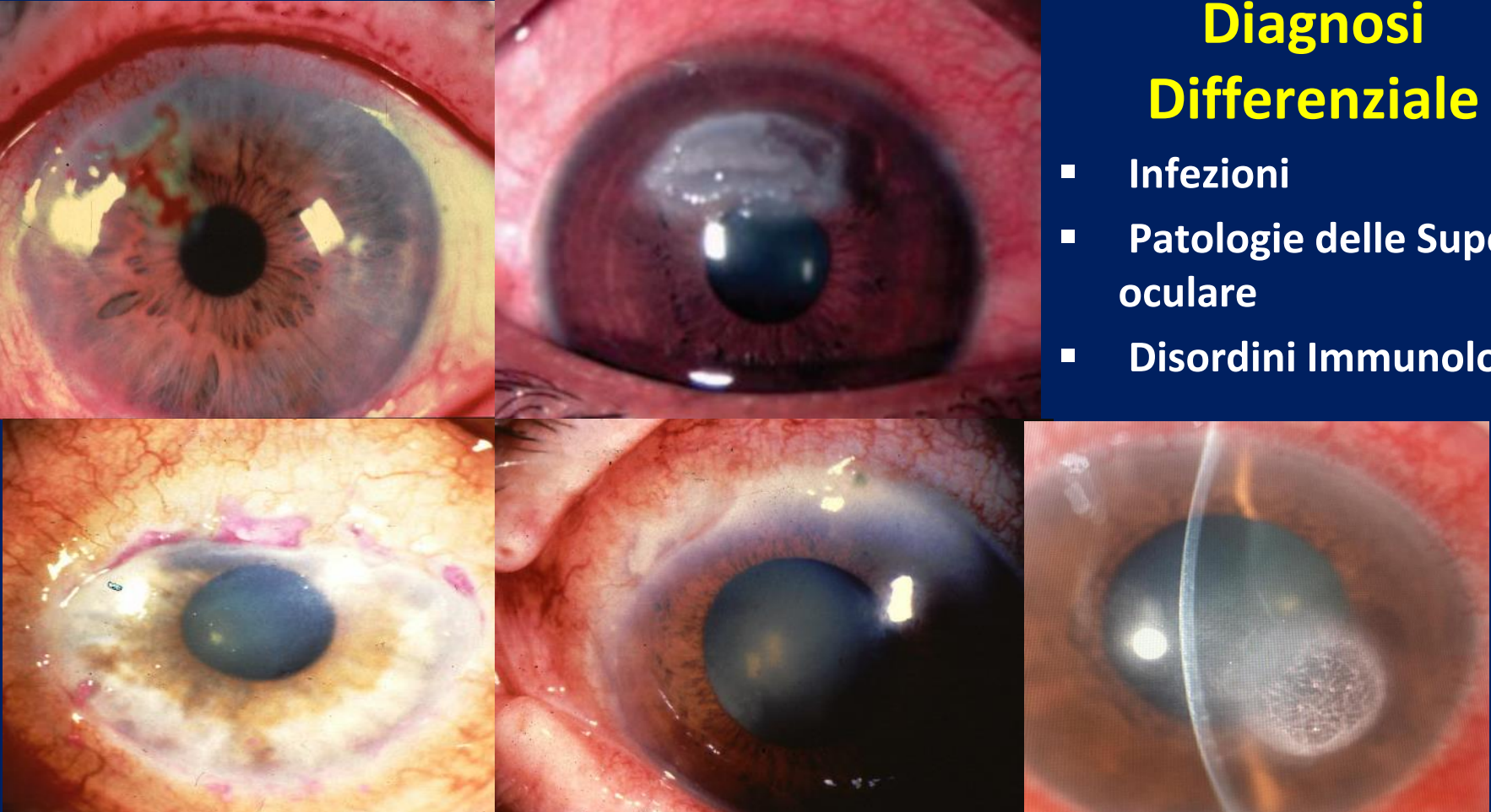
UNIVERSITÀ  
DEGLI STUDI  
DI FERRARA  
- EX LABORE FRUCTUS -



VILLA SERENA  
VILLA IGEA  
Ospedali Privati in Forlì

## Diagnosi Differenziale

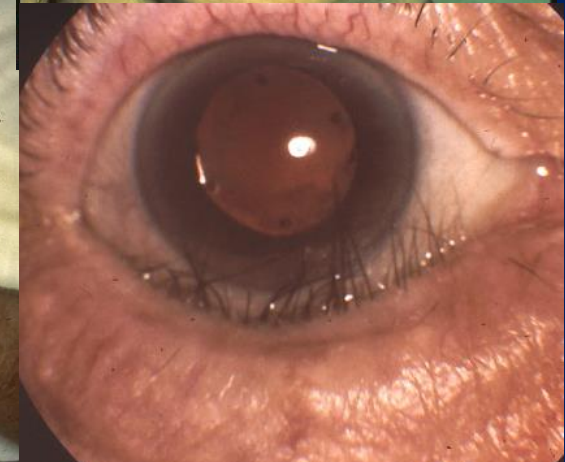
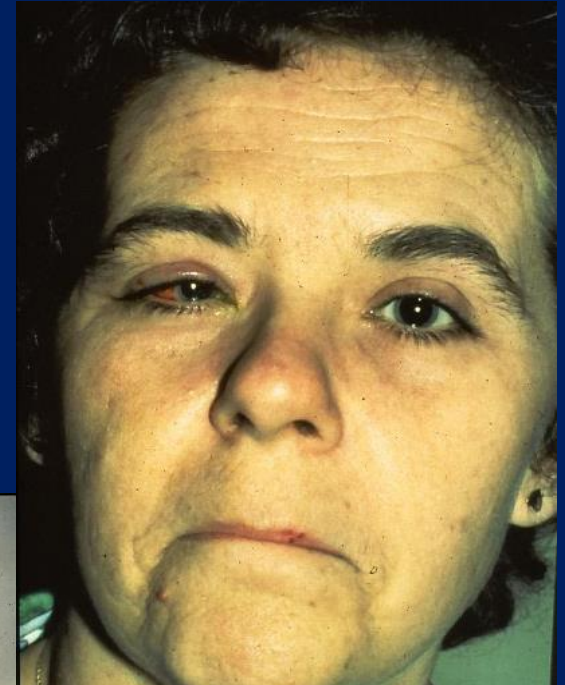
- Infezioni
- Patologie delle Superficie oculare
- Disordini Immunologici



- Storia Clinica
- Patologie Associate (Oculari ed Extraoculari)
- **Caratteristiche della Lesione (Localizzazione, Morfologia, Num)**

# Patologie Associate

- Alterazioni dell'Innervazione oculare
- Trichiasi, Entropion, Lagoftalmo
- Disfunzioni Lacrimali
- Patologie Sistemiche



# Diagnosi Differenziale

## Caratteristiche delle Lesioni

### Localizzazione!!!

Periferia



Imm. Mech.



Centro



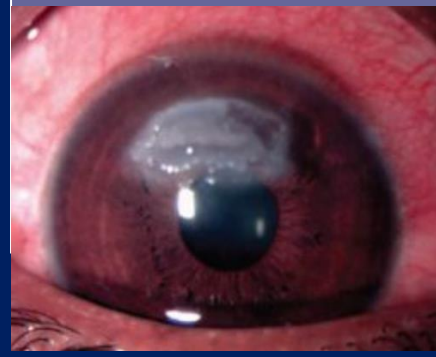
Infezione



Sup. 1/3



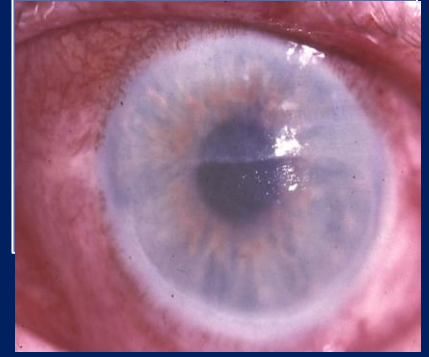
Palpebra  
superiore



Inf.1/3

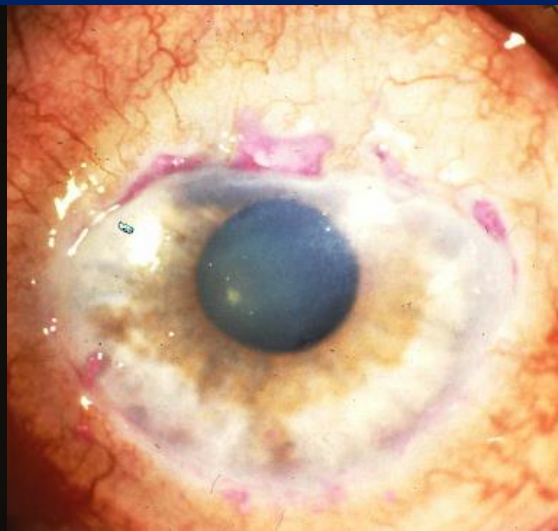
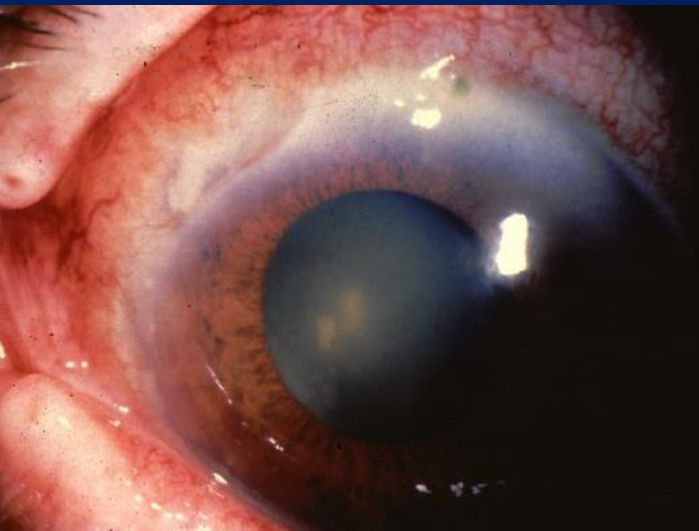


Esposizione  
Trichiasi



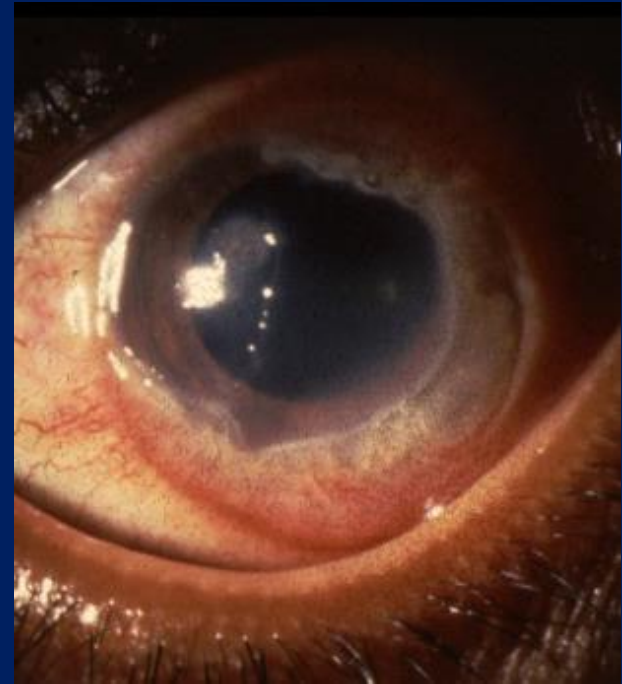
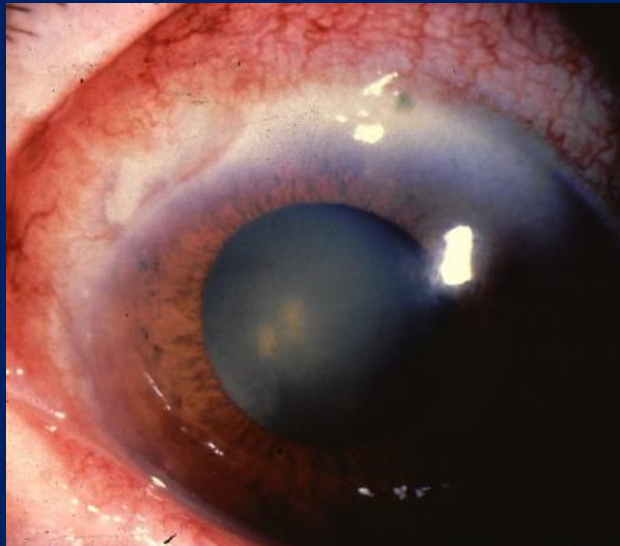
# DIAGNOSI DIFFERENZIALE

Localizzazione!!!



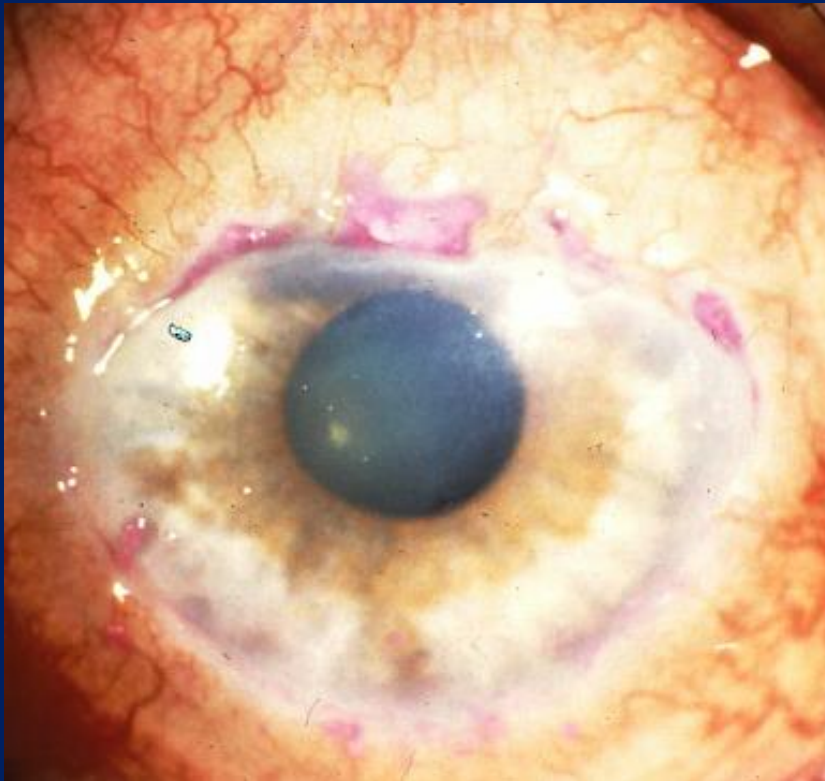
# ULCERA PERIFERICA DI MOOREN

- Uni- o Bilaterale
- Autoimmune
- Pregresso Trauma
- Sierologia Negativa (R.A. -)



# ULCERA PERIFERICA in A.R.

## Ulcera Periferica



Meccanismo Autoimmune

Complesso Ag-Ab



Attivazione Complemento

# Infiltrati/Ulcere periferiche (Blefarite)

**Blefarite**

*Prolifera* **Staphylococcus Species**

**ImmunoComplessi (Endotossina- Antigene)**

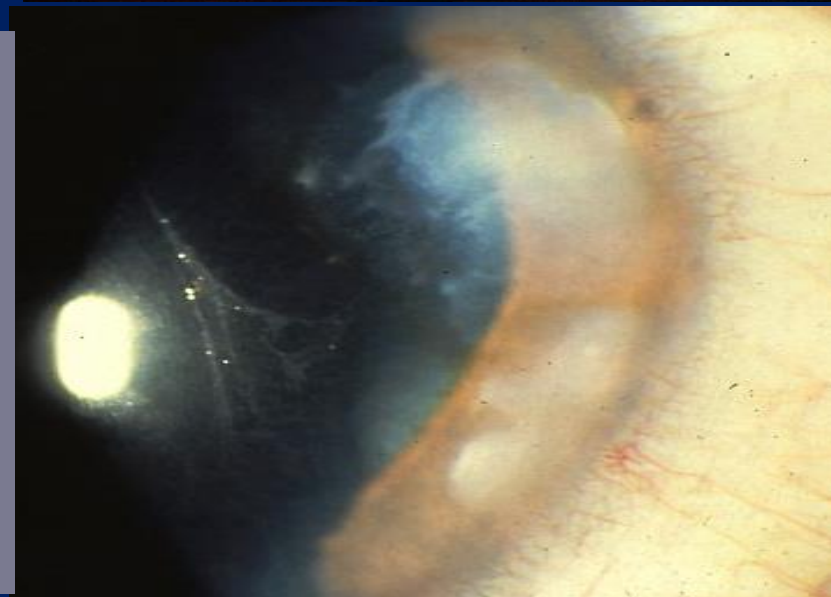


**Terapia :**

**STEROIDI:** Bloccano la Formazione di Immunocompl.

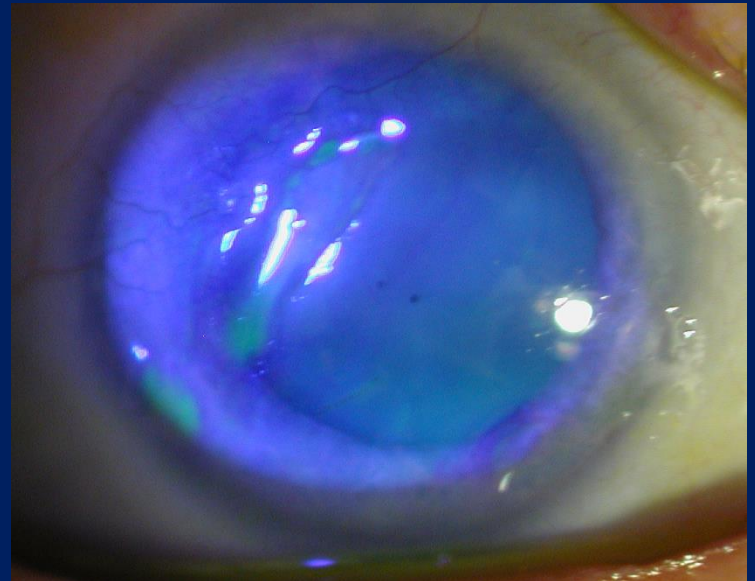
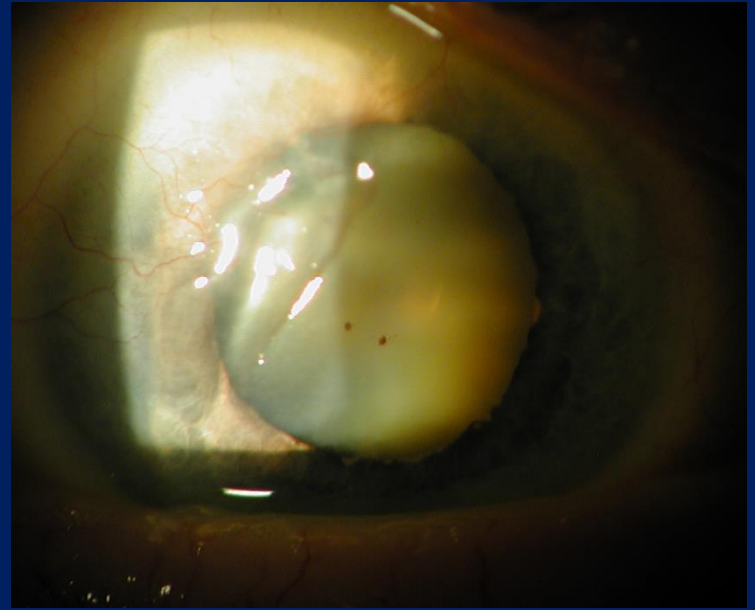
**TETRACICLINE:** Trattano la causa (Blefarite )!!!

***Altri Antibiotici non utili!***





# Acne Rosacea



# Degenerazione di Terrien



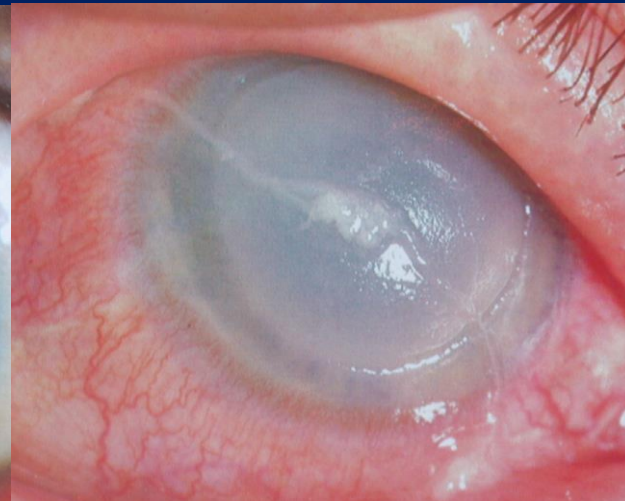
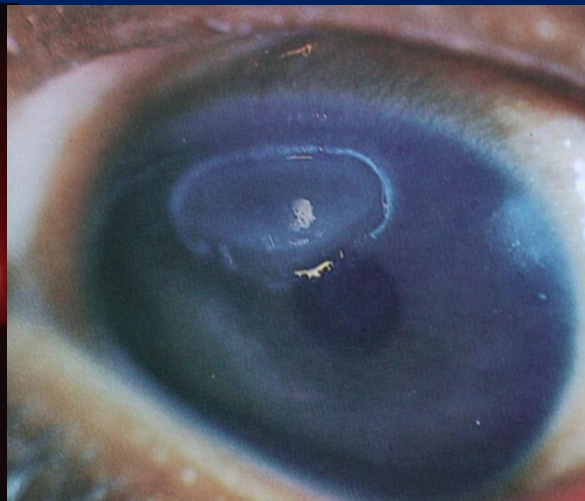
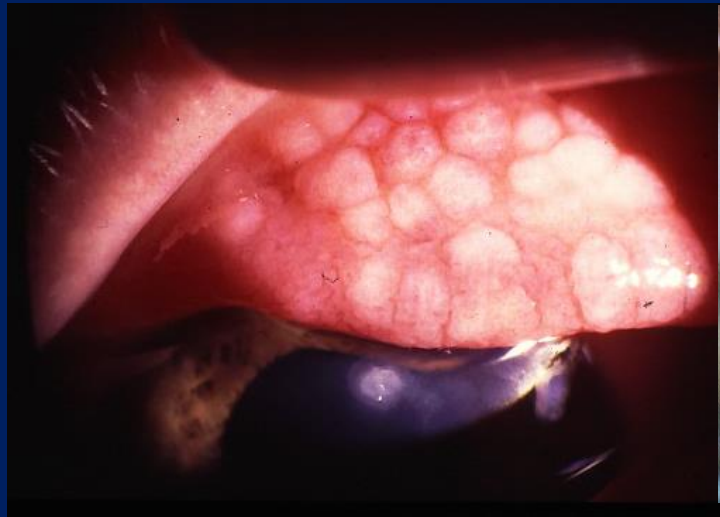
- Assottigliamento periferico
- Neovasi
- Lipidi
- Astigmatismo



# DIAGNOSI DIFFERENZIALE

LOCALIZZAZIONE!!!

1/3 SUPERIORE



Steroidi

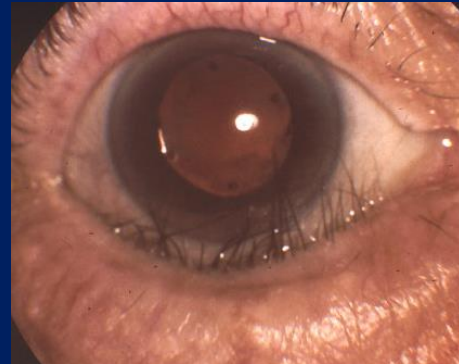
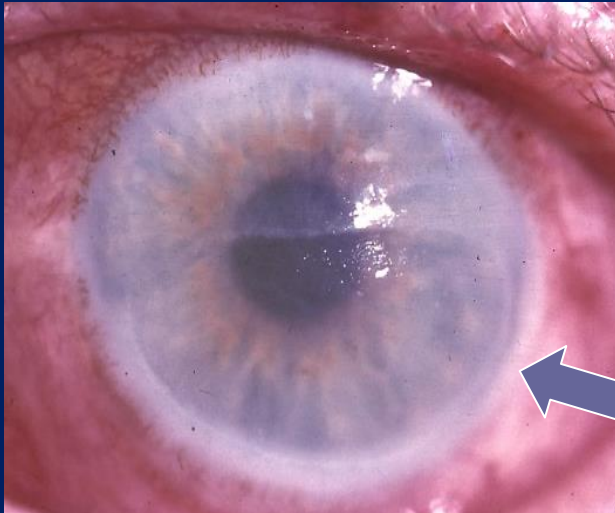
# DIAGNOSI DIFFERENZIALE

LOCALIZZAZIONE!!!

1/3 Inferiore



Esposizione/Trichiasi



- Alterazioni Innervazione oculare
- Trichiasi, Lagofalmo
- Disfunzione Apparato Lacrimale



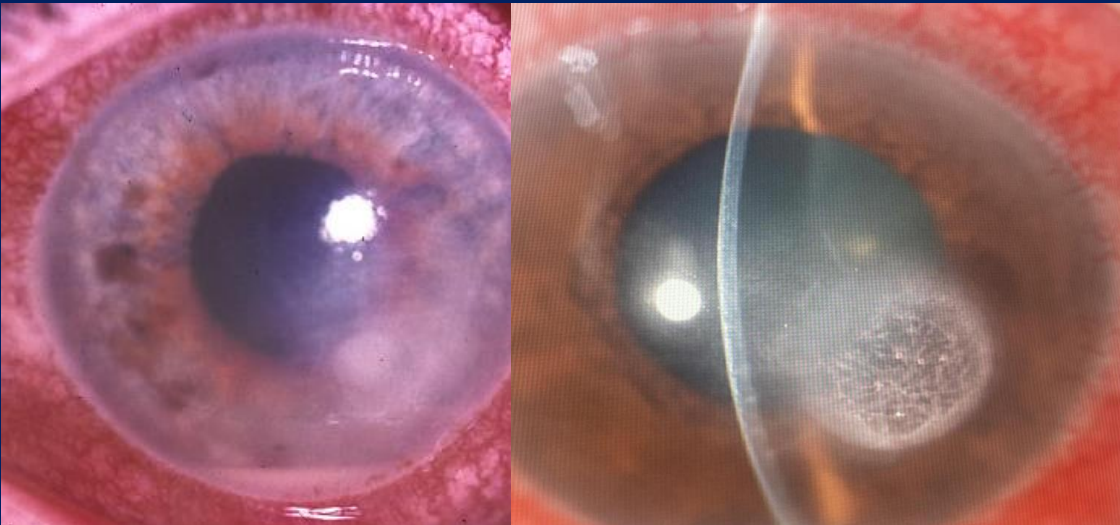
# DIAGNOSI DIFFERENZIALE

LOCALIZZAZIONE!!!

Centrale (Non-Periferica)



Infezione



## Caratteristiche cliniche

- Infiammazione
- No Periferia
- Infiltrato Stromale
- (Ipopion)

# DIAGNOSI DIFFERENZIALE

Centrale (Non-Periferica)

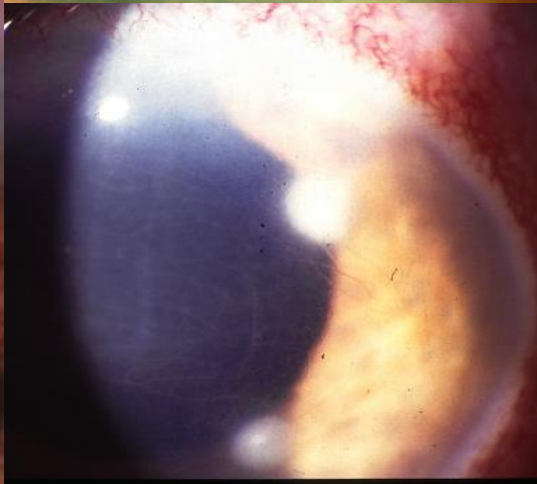
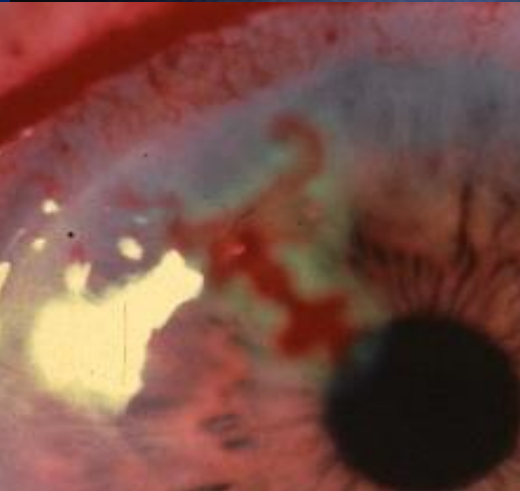


**Infezione**



**Morfologia**

- Cristallina
- Arborescente
- Dendritica
- Siti Multipli

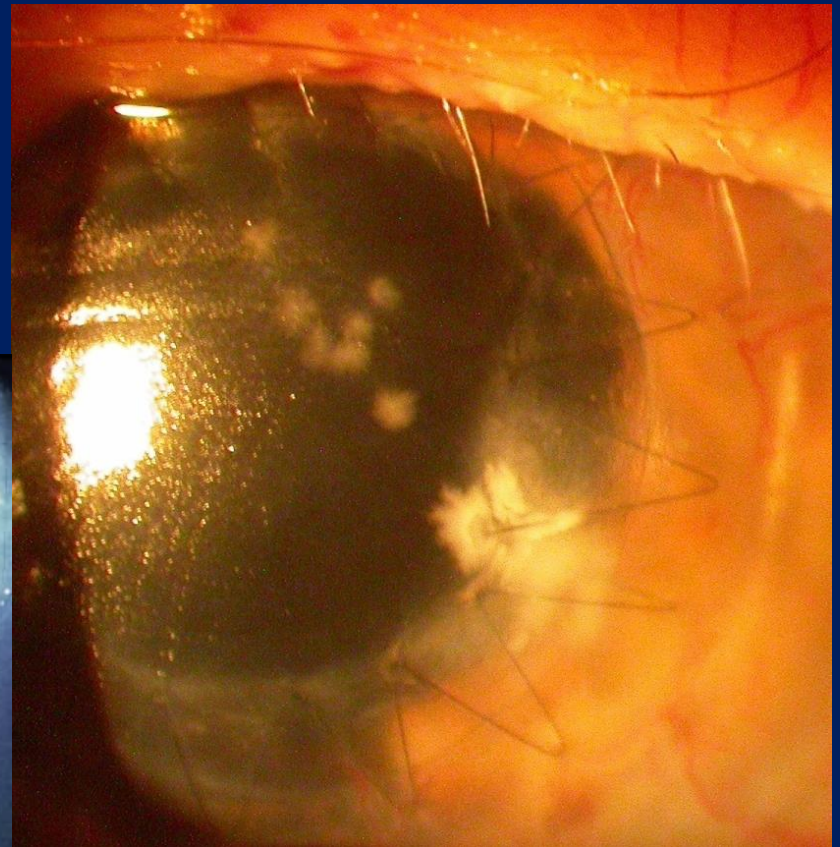
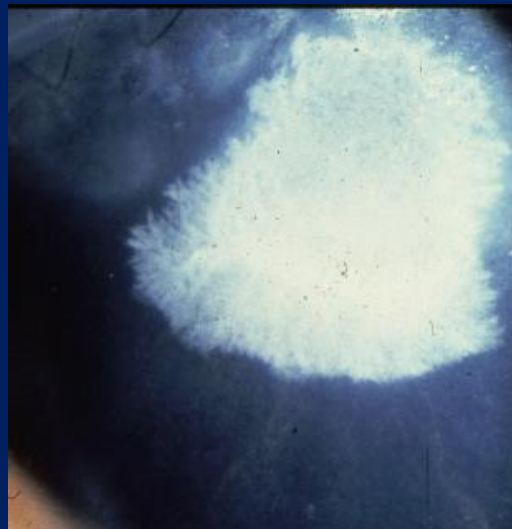


# Infezione Cristallina

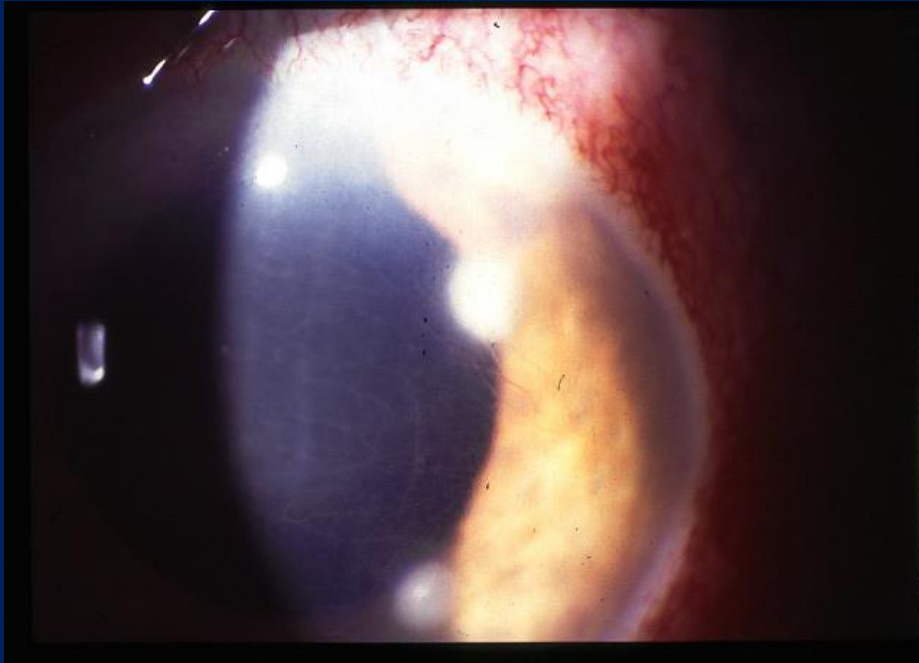
**Mirganismi responsabili:**

**Batteri a bassa virulenza, Funghi (*Streptococcus*, *Candida*, etc.)**

- Steroidi
- Immunità +/-
- Post-PK
- Resistenza AB



# Lesioni Multiple



## *Aspergillus fumigatus* Lesioni Satellite!!!

Caratteristiche cliniche

- Infiammazione
- **No** Ulcera periferica
- Infiltrato stromale
- (Ipopion)



## Saltzmann Degeneration

- Lesioni Multiple
- Fibro-Epiteliali
- No infiammazione
- Rimozione Meccanica



# Lesione Arborescente

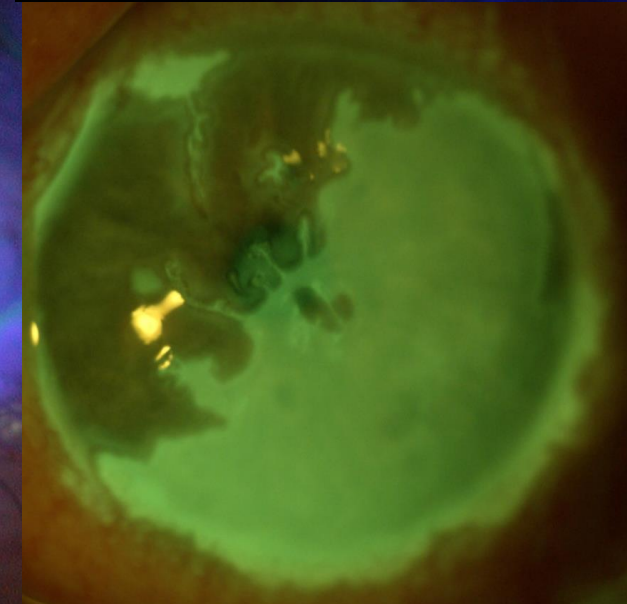
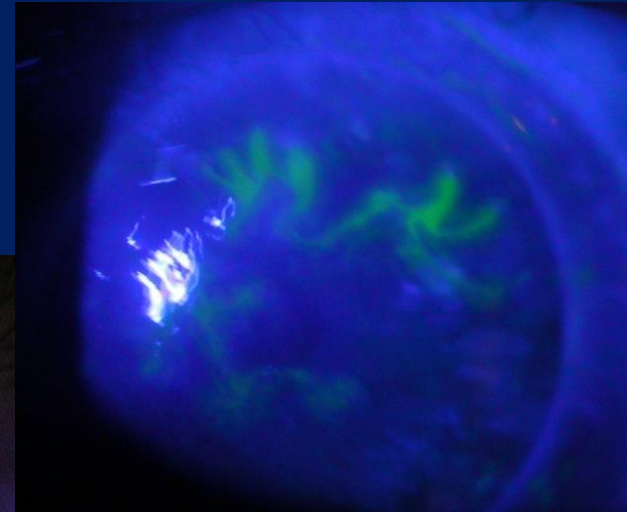
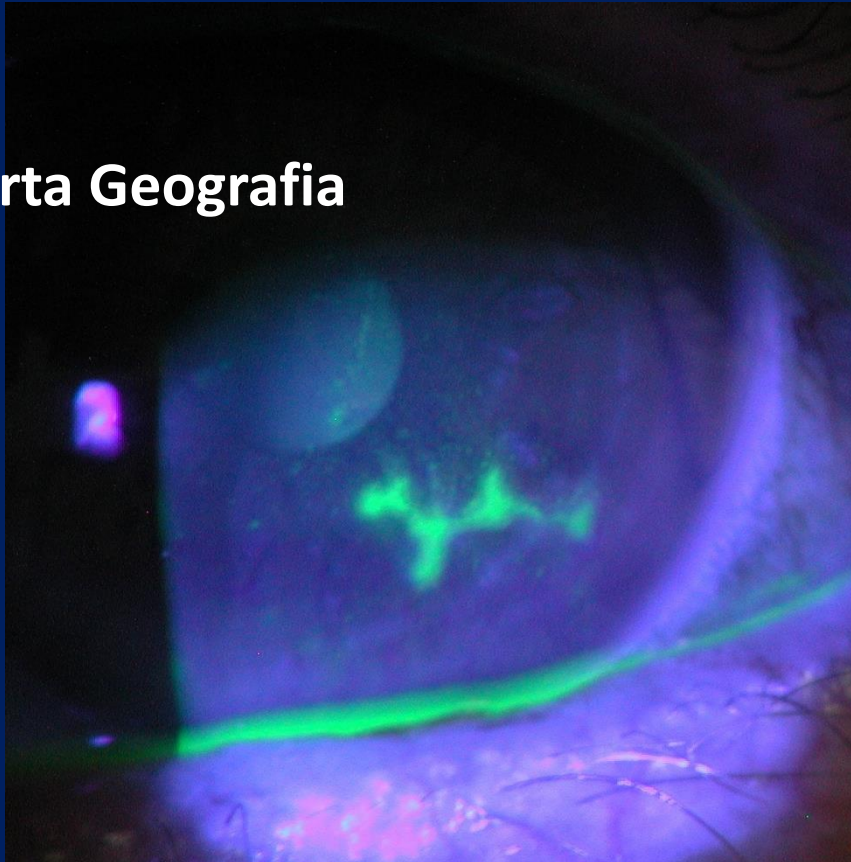
- Arborescente ±
- Singola
- NO vasi nel contesto -
- Non-Periferia
- Infiammazione ±



# Lesione Dendritica

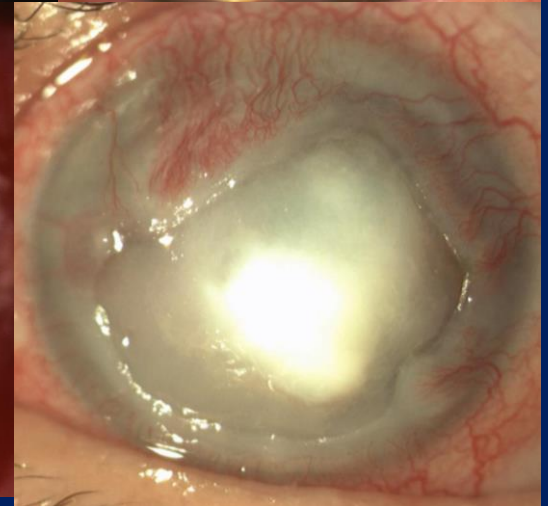
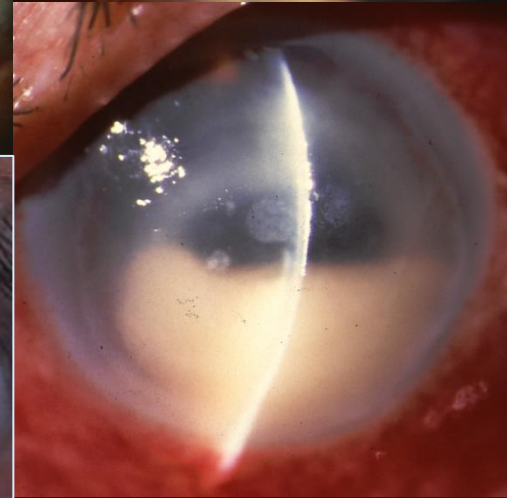
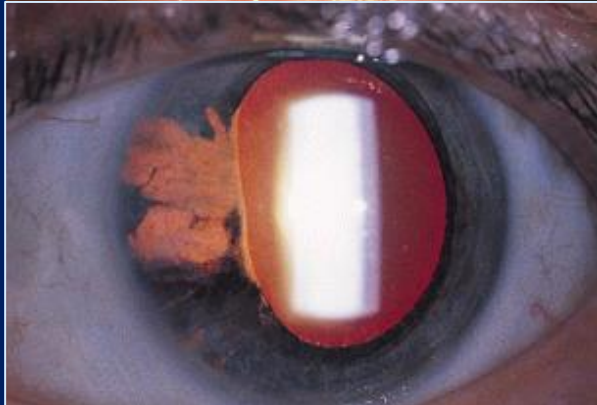
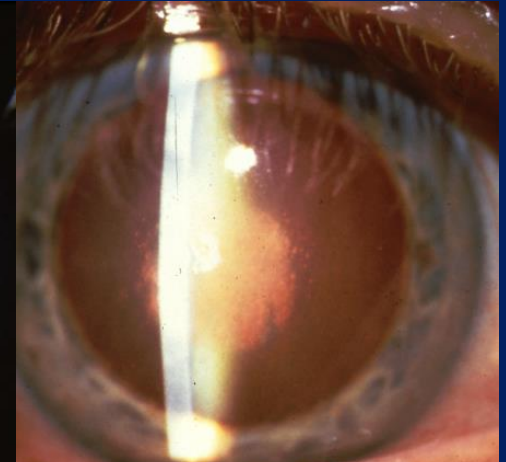
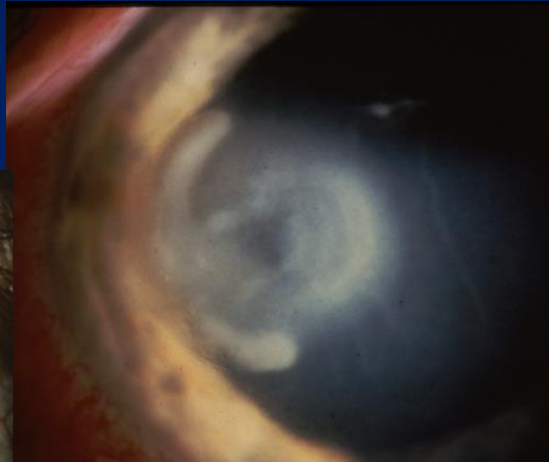
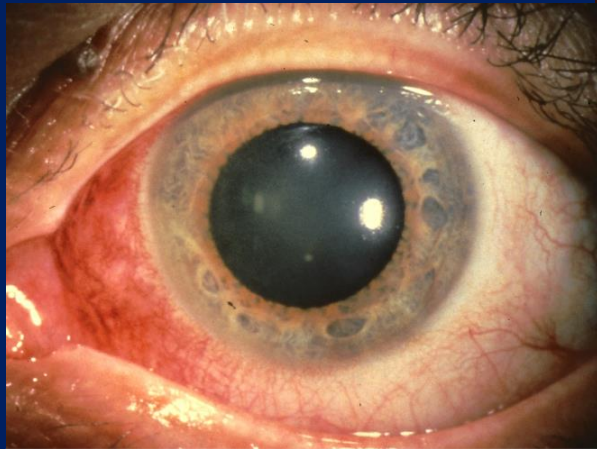
## Ulcera Dendritica

- HSV Virus +++
- Dendrite
- Ulcera a Carta Geografia



# HSV = può mimare qualunque cosa!!!

- Cheratite Interstiziale
- Scleriti/Episcleriti
- Endotelite
- Cheratouveite

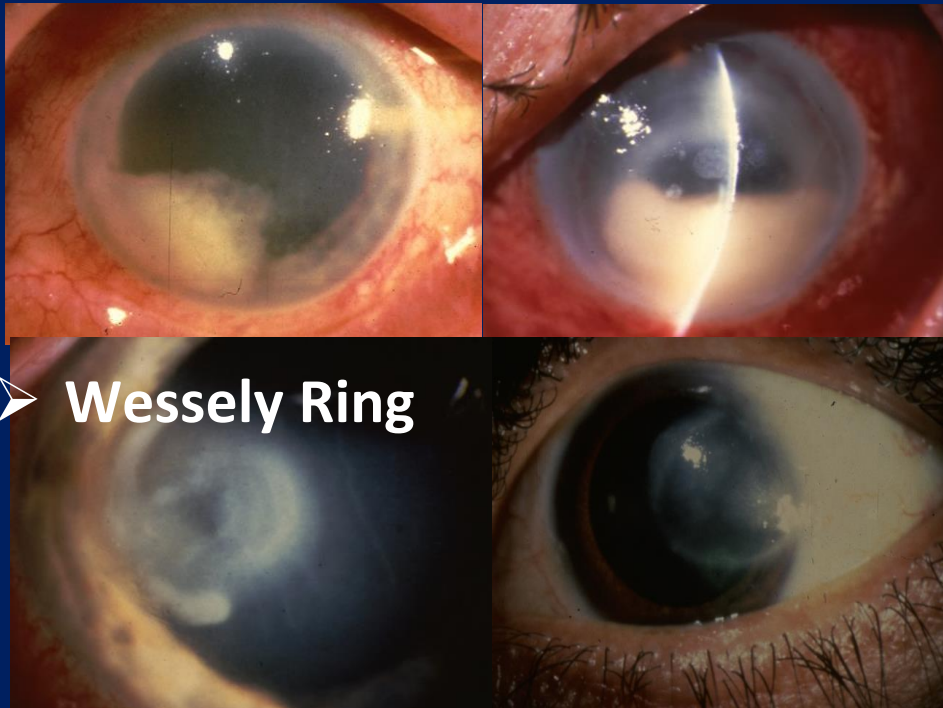


# HSV & CORNEA

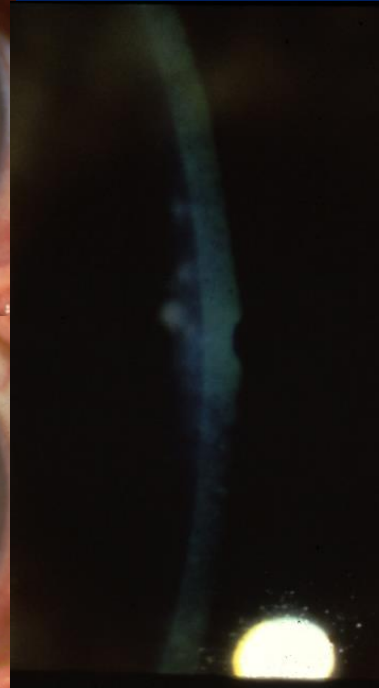
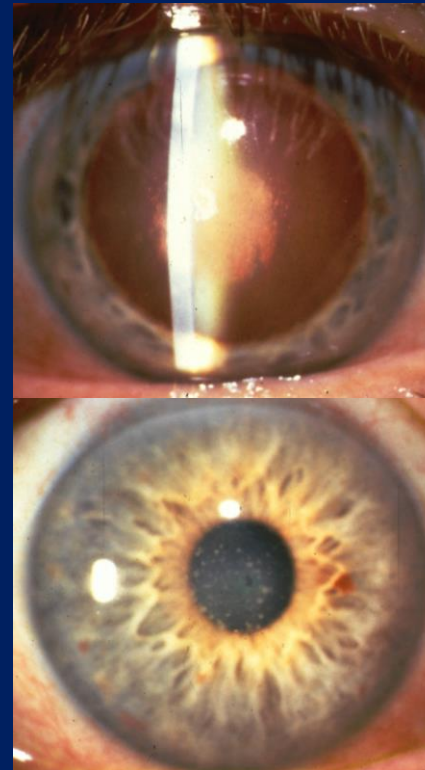
- **Azione diretta** → Ulcera Dendritica
- **Ulcera Metaerpetica**

- **Reazione tipo III (Ab-Ag) e IV (T-Cell)**

**Cheratitis stromale**



**Edema Disciforme**



# Terapia

## ANTIVIRALE

- Terapia Topica **Aciclovir /Ganciclovir**
- Terapia sistemica ( Interessamento profondo )

## ANTIINFIAMMATORIA

**Steroidi** topici (IOP!!!)

**Steroidi** sistemici

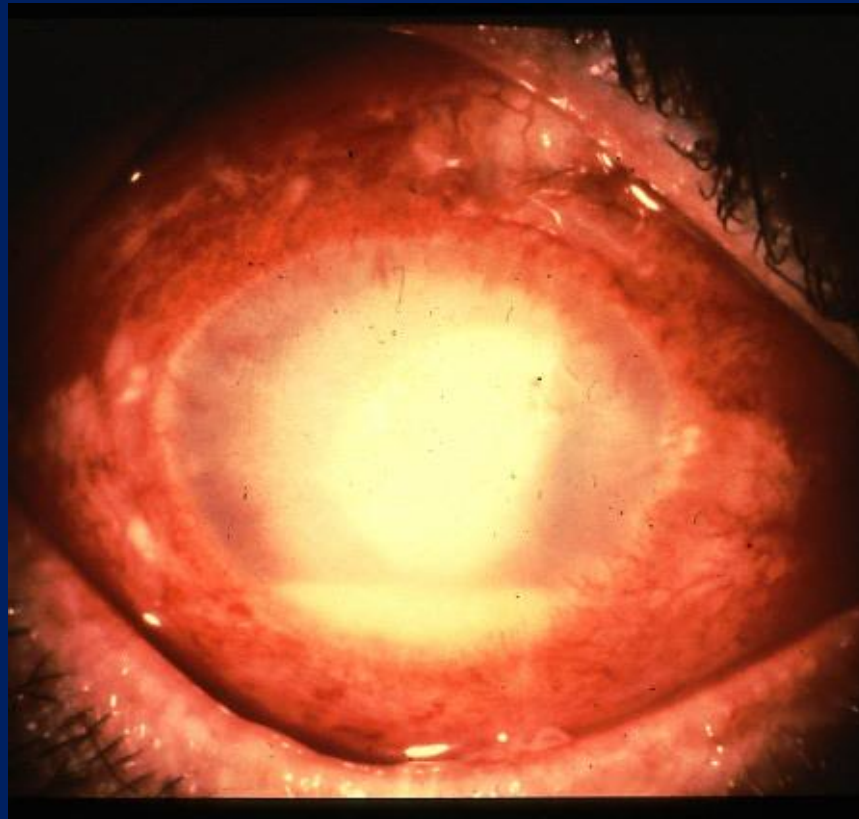
- (Copertura Antivirale)

## Profilassi Recidive

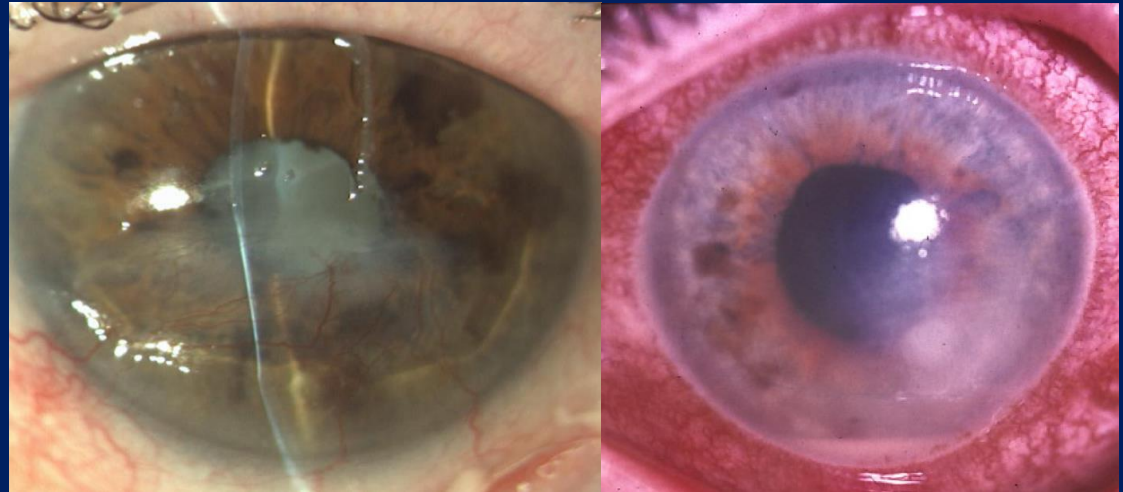
Terapia sistemica: Aciclovir 400 mg. bid p.o.

Terapia Topica Aciclovir      qd ?!

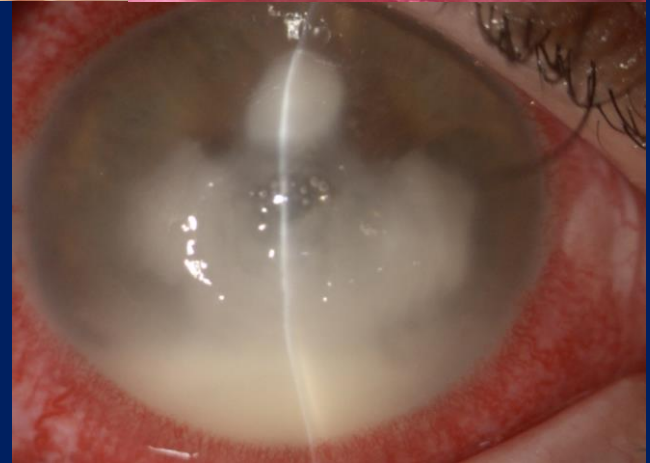
# INFEZIONE CORNEALE



# APPROCCIO SISTEMATICO ALL'INFEZIONE CORNEALE



- ❖ Stabilire la Diagnosi
- ❖ Identificare il patogeno
- ❖ Selezionare il trattamento



# APPROCCIO SISTEMATICO

- Tampone/ Scraping Corneale, Colture

- Terapia Antibiotica ad ampio spettro

- *Aminoglicosidi (vs gyrase inhibitors)*
- *Cefalosporine (ceftazidime vs cephazoline)*
- *Vancomicina (Meth. Res. Staphylococcus)*
- *Anfotericina B*

- Valutazione Clinica, Modulazione della Terapia

- Biopsia Corneale

- Chirurgia

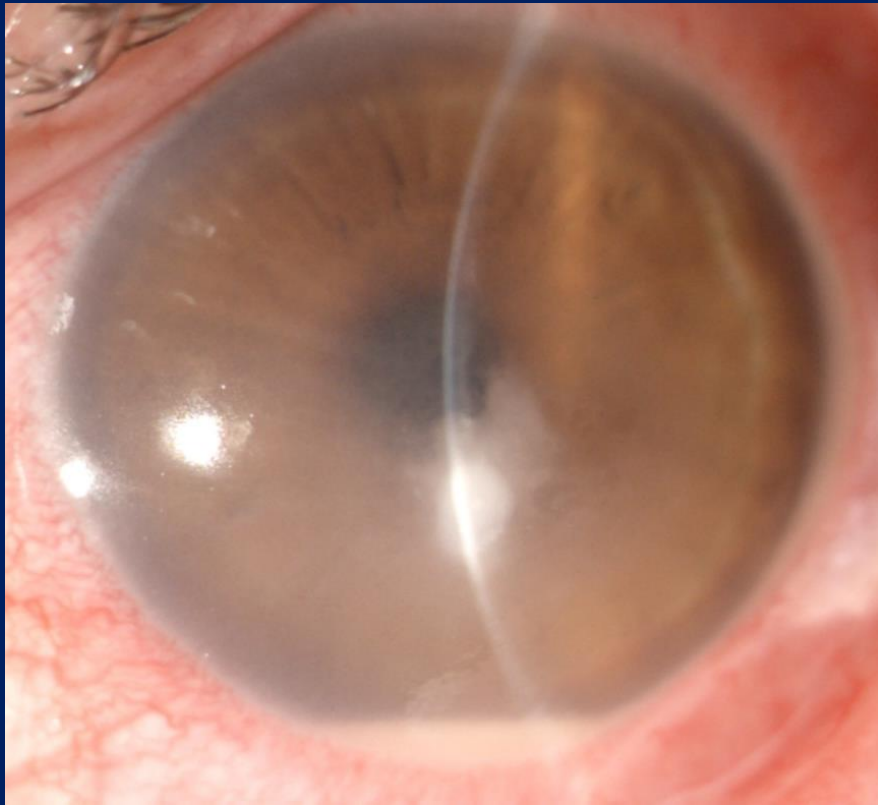
(Cheratoplastica a caldo, Ricoprimento congiuntivale)



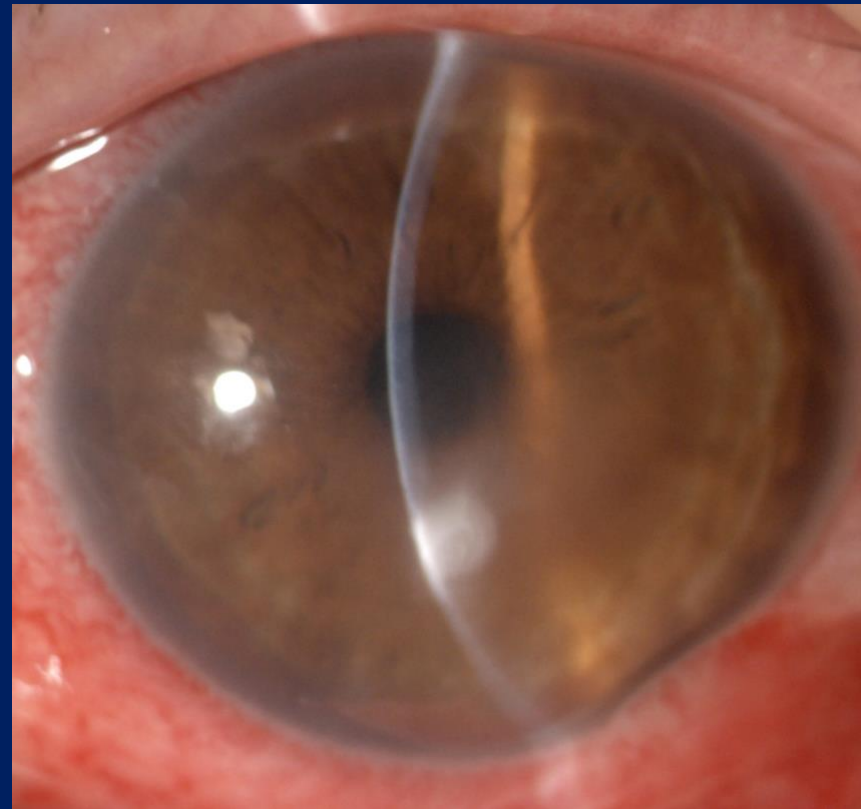
# VALUTAZIONE CLINICA

## Miglioramento

IPOPION ↓↓↓



**Giorno 0**

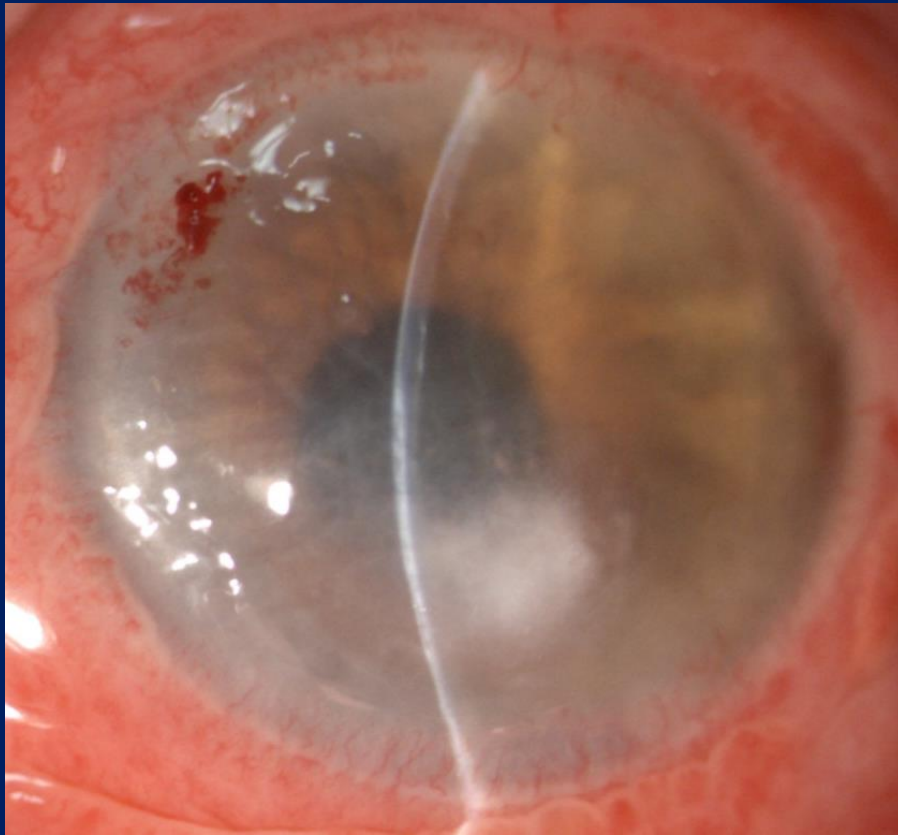


**Giorno 3**

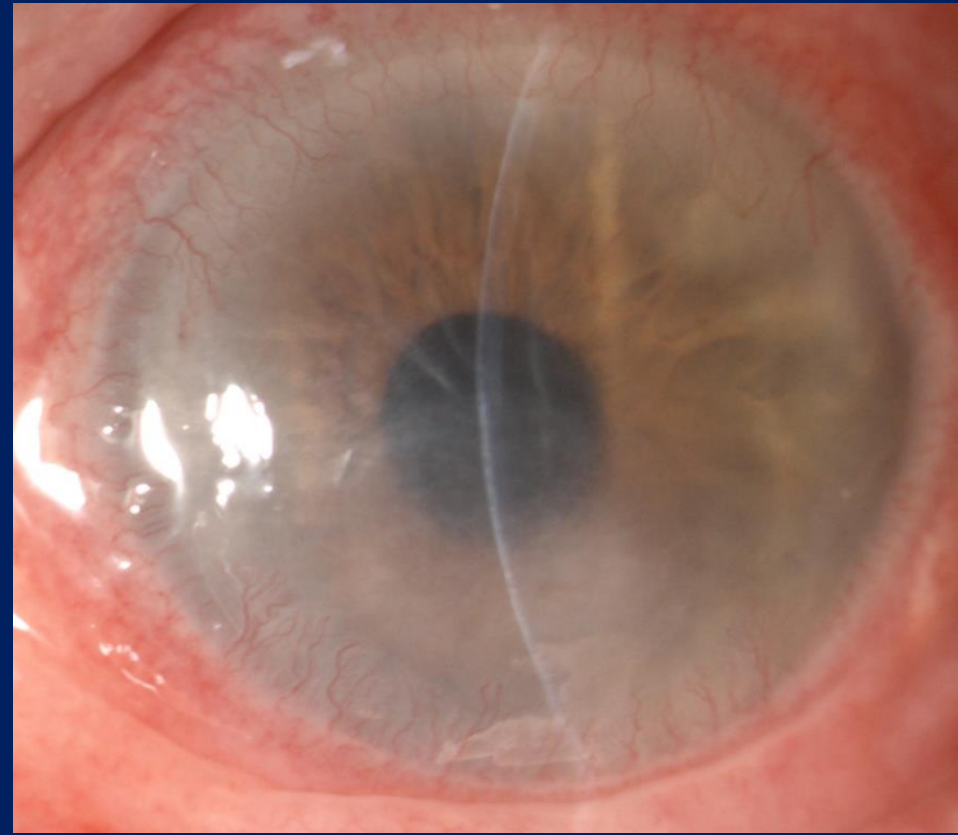
# VALUTAZIONE CLINICA

## Miglioramento

INFILTRATO ↓↓↓



Giorno 0

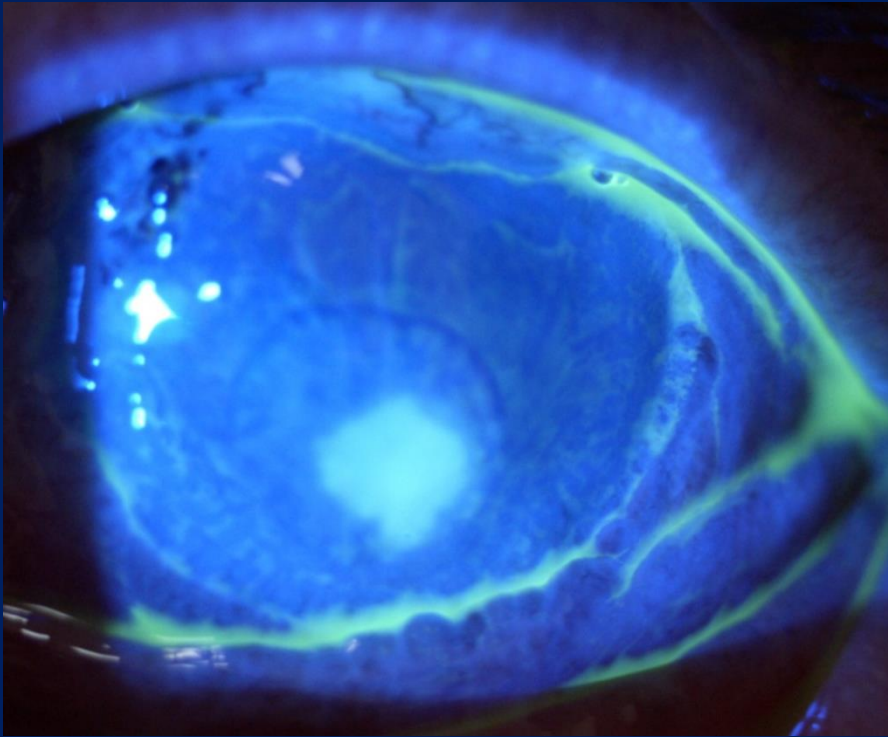


Giorno 7

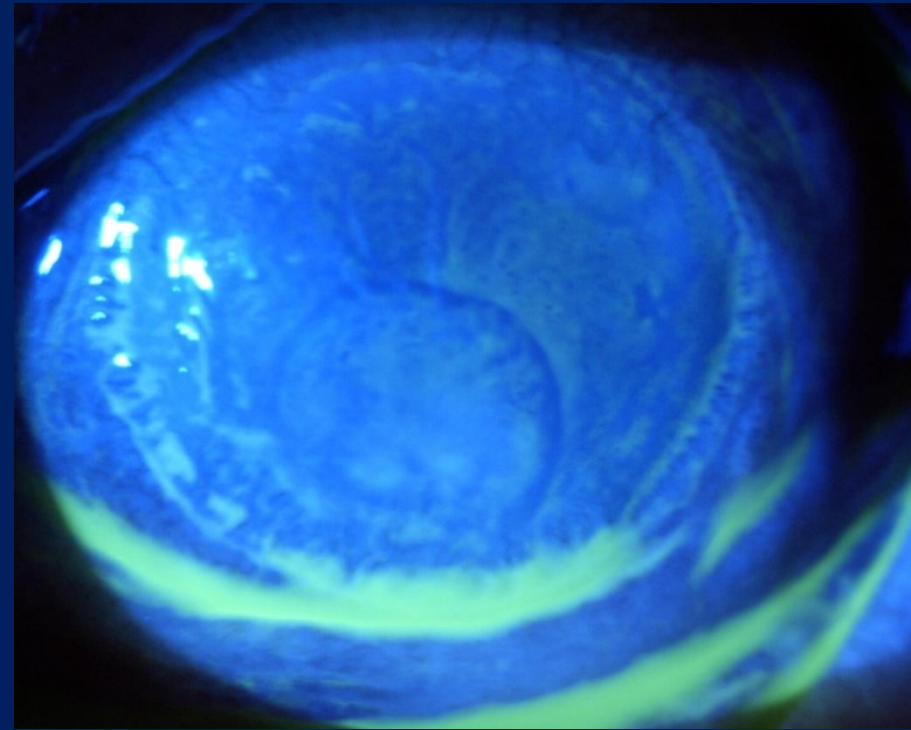
# VALUTAZIONE CLINICA

## Miglioramento

EPITELIO ↑↑↑



Giorno 3

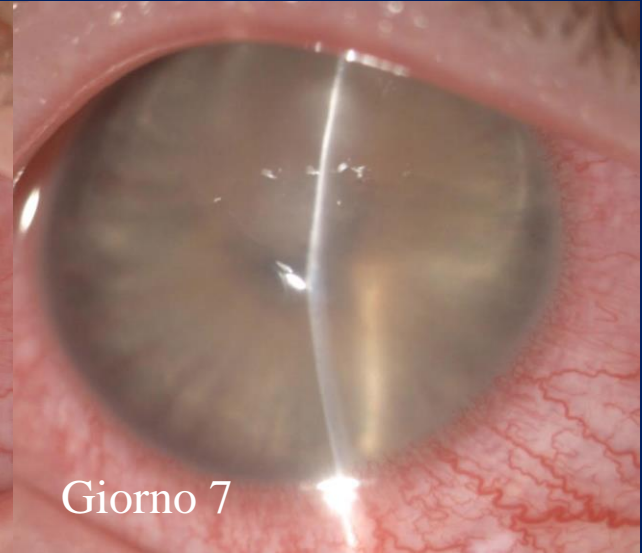
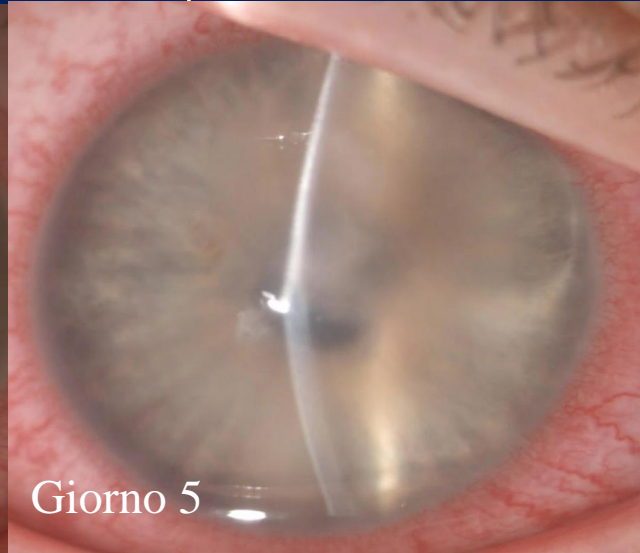
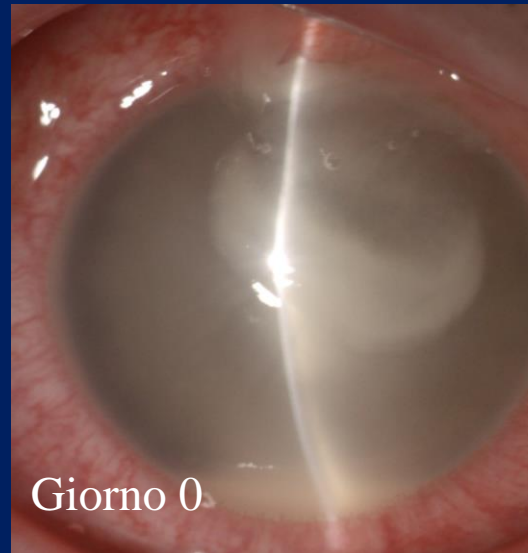


Giorno 7

# Caso clinico 1

17 aa, M

Portatore lenti a Contatto, Piscina



Tampone +  
Terapia ad Ampio Spettro

Valutazione  
progressione Clinica

(Tampone pos Pseudomonas)

MICROBIOLOGIA	
CULTURALE TAMPONE CONGIUNTIVAL Dx	
<i>Semina su Piastre di Coltura</i>	
CULTURALE TAMPONE CONGIUNTIVAL	
	Positivo
	<i>Pseudomonas aeruginosa</i>
Antibiogramma	
	<b><i>Pseudomonas aeruginosa</i></b>
Amikacina	S 16
Amox.K. Clav	R >:4
Ampicillina	R >:8
Aztreonam	I 4
Cefepime	I 8
Cefotaxime	R >:16
Ceftazidime	I 4
Cefuroxime	R >:8
Ciprofloxacina	I <:0.25
Cloramfenicolo	R >:8
Colistina	S <:2
Ertapenem	R 1
Fosfomicina	R <:32
Imipenem	R >:8
Levofloxacina	I 1
Meropenem	I 8
Pip/Tazo	I <:4
Piperacillina	I <:4
Tetracicline	R >:8
Tobramicina	S <:2
Trimet/Sulfa	R >:4/16
Trimetoprim	R >:4



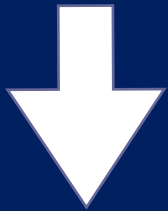
# VALUTAZIONE CLINICA



- Biopsia Corneale
- Chirurgia (Cheratoplastica a caldo, Ricoprimento congiuntivale)

# CHIRURGIA Quando??

- Infezione Severa e progressiva
- No risposta terapia medica
- Perforazione



Rimuovere il focolaio di infezione  
Ridurre rischio di diffusione intraoculare  
Prevenire perforazione/ estensione sclerale

Minimum/ maximum trattamento medico 15-50 gg

**Fungal Keratitis ( Fusarium, Aspergillus, Candida) 38%-75%**

**Bacterial keratitis ( Pseudomonas )**

**Acanthamoeba keratitis**

**Viral keratitis**



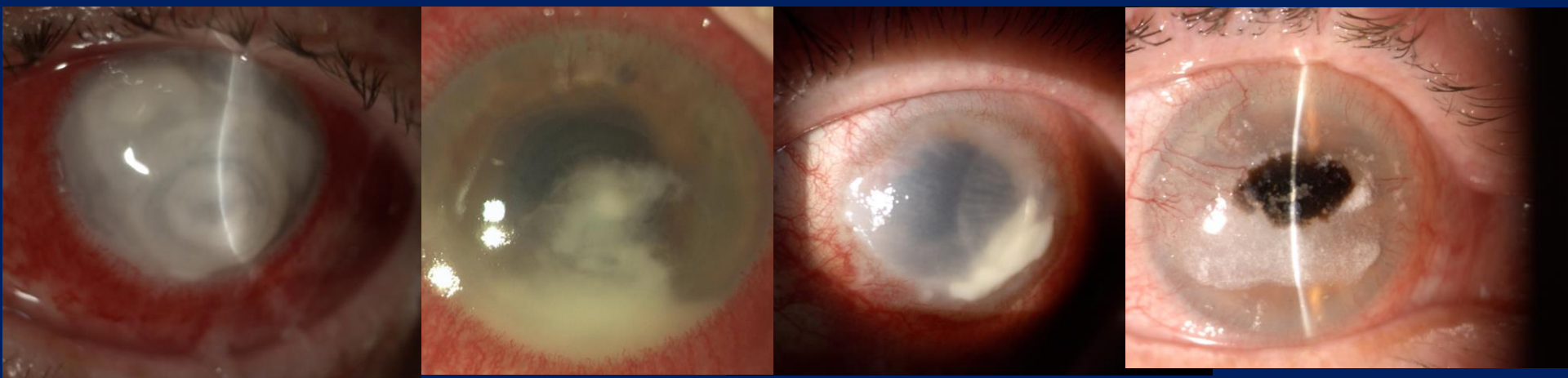
[Clinical outcome after air-assisted manual deep anterior lamellar keratoplasty for fungal keratitis poorly responsive to medical treatment.](#)

Uchio E, Saeki Y, Tsukahara-Kawamura T, Kadonosono K, Ozaki H.

Clin Ophthalmol. 2019 Sep 26;13:1913-1919. doi: 10.2147/OPHTH.S211099. eCollection 2019

# VALUTAZIONE PRE-CHIRURGIA

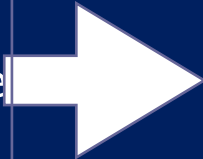
- Larghezza e profondità dell'infiltrato corneale
- Presenza di coinvolgimento limbare
- Perforazione
- Endoftalmite Associata





# Quale Chirurgia???

Perforazione  
Diffusione intraoculare  
Lesione profonda?

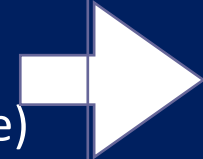


**PK**

No perforazione  
No diffusione intraoculare

( NB Hypopion senza perforazione → No infezione intraoculare)

Lesione Profonda? ( Rischio perforazione → Diffusione intraoculare)



**DALK**

## **PRO**

- Minore rischio endoftalmite secondaria
- Minore rischio rigetto

## **CONTRO**

- No Completa eradicazione
- Recidiva

# Outcomes of Therapeutic Deep Lamellar Keratoplasty and Penetrating Keratoplasty for Advanced Infectious Keratitis

## *A Comparative Study*

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Arundhati Anshu, FRCSED,<sup>1,2</sup> Anand Parthasarathy, MD,<sup>1</sup> Jodhbir S. Mehta, FRCSED,<sup>1,2</sup>  
Hla Myint Htoon, PhD,<sup>2</sup> Donald T. H. Tan, FRCSED, FRCOphth<sup>1,2,3</sup>

Ophthalmology Volume 116, Number 4, April 2009

**T Dalk recurrence** (15.4%, **no endophthalmitis**) , All manual dissection technique

T Dalk ( bubble) greater improvement of VA (p 0.07)

**T PK recurrence** ( 12% ; **half several endophthalmitis**, fungal infection)

Graft survival 1Y ( DALK/ PK : 90%- 78.4%)

PK ( 37% graft failure)

**PK/ Dalk: similar graft survival, without an increased risk of disease recurrence**

# LA NOSTRA ESPERIENZA

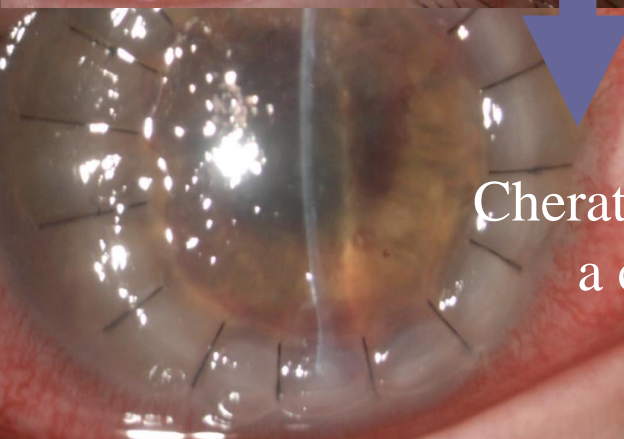
## INFEZIONE CORNEALE

### TERAPIA MEDICA

### TWO-STEP SURGICAL APPROACH



No risposta



2° Step  
Cheratoplastica

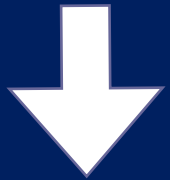
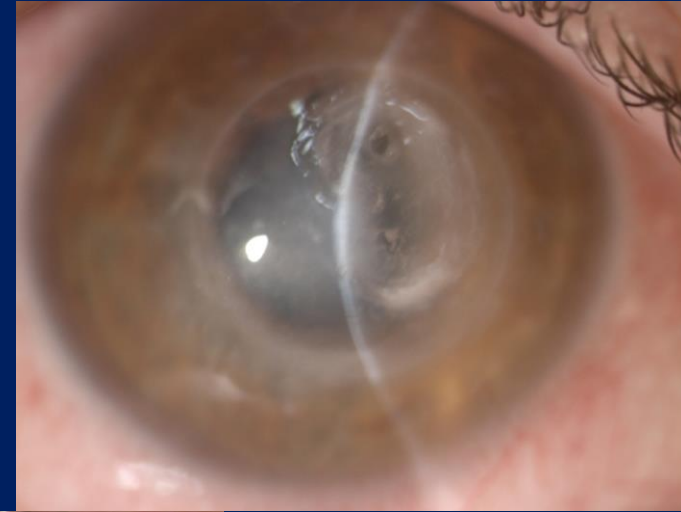
# Caso Clinico 2

50 aa , M

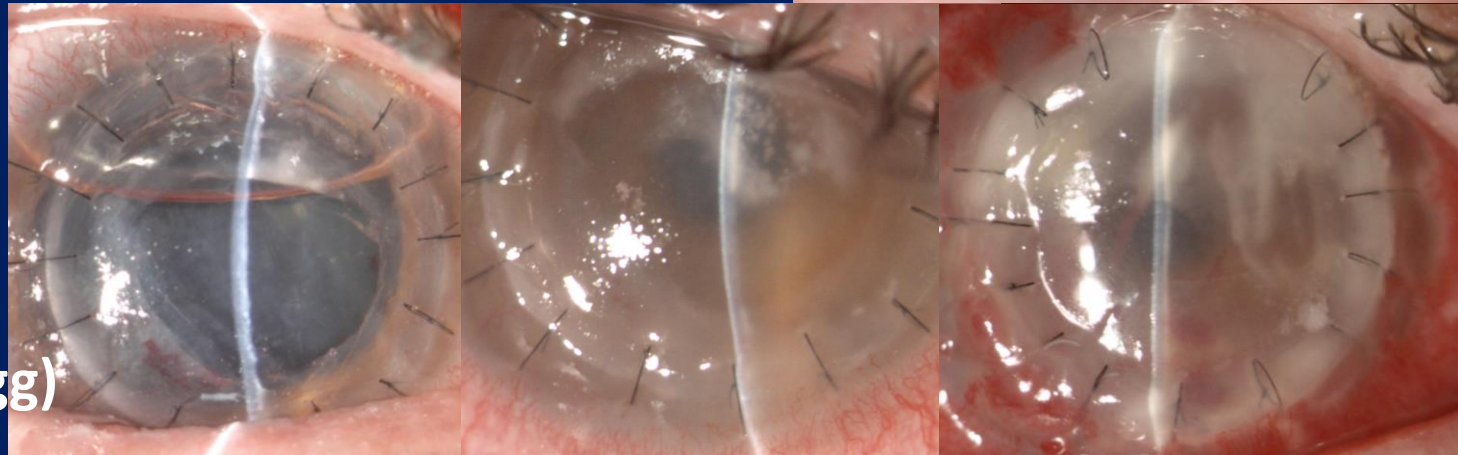
No CL /No Trauma

Pregressa PK ( 6 mm)

No Risposta terapia ad ampio spettro  
( Antibiotica/Antifunginea)



**2 DALK**  
(Intervallo: 15 gg)

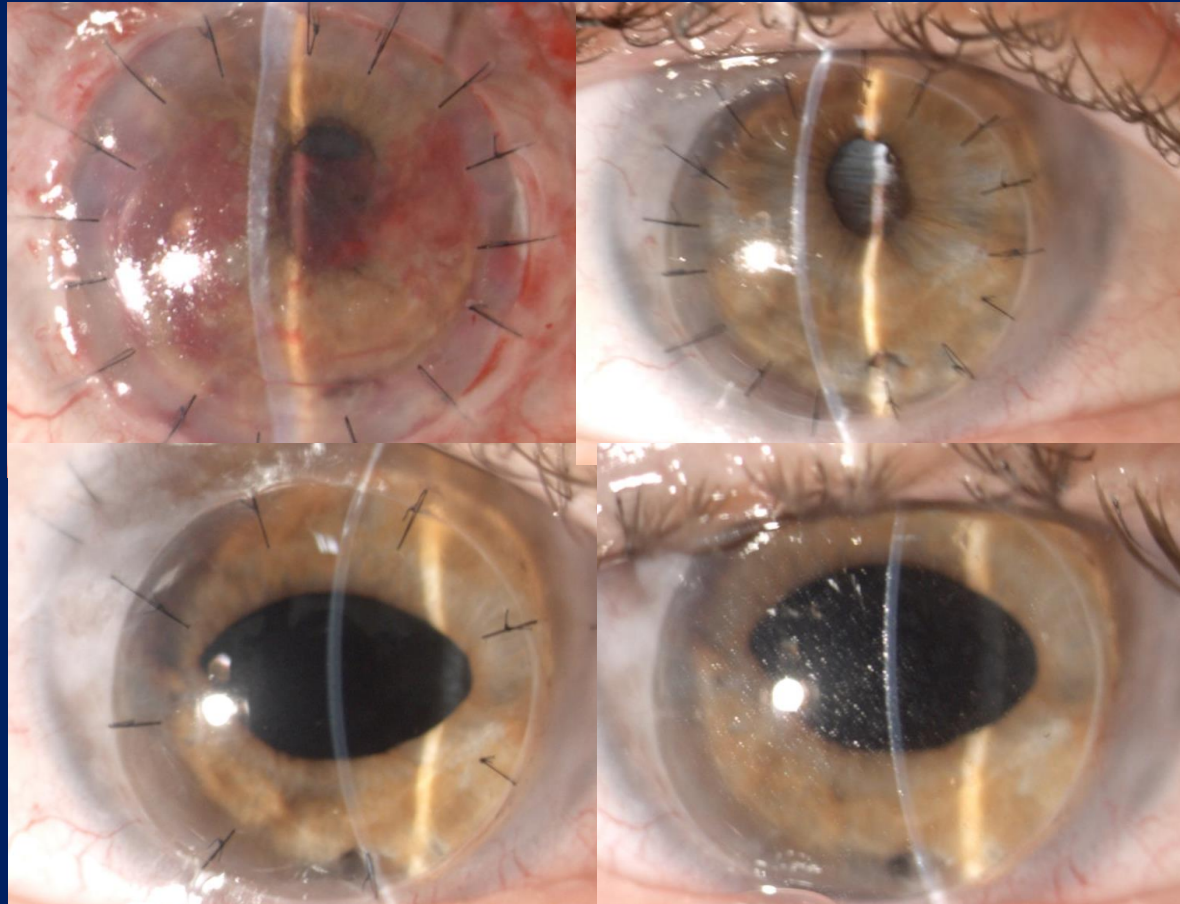


# Caso clinico 2

**PK a Caldo**

**2 Anni Dopo**

**BCVA 20/30**



# Caso Clinico 3

52 aa, M

No CL /No Trauma

**Infezione Corneale severa**

**VA = HM**

**B-scan = Normale**



**Tampone + Colture**

**+**

**Terapia**

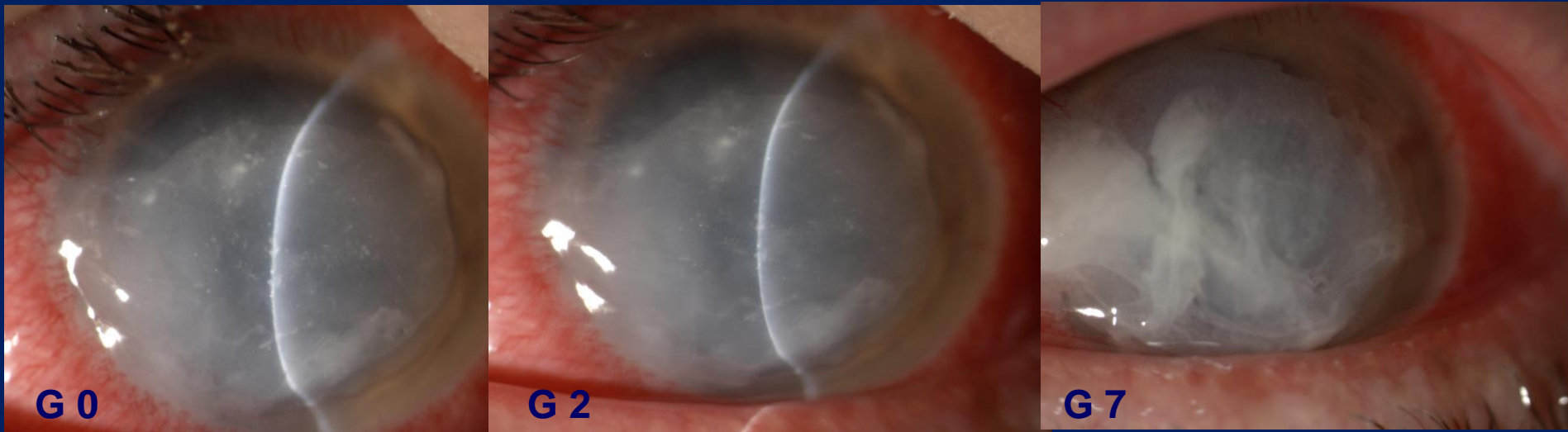
Locale, ogni ora

AMIKACIN	50 mg/ml
VANCOMYCIN	50 mg/ml
AMPHOTERICIN B	50 mg/ml
CEFTAZIDIME	50 mg/ml

# Caso Clinico 3

NO Risposta a terapia conservativa!

Colture Negative!



No perforazione  
No diffusione intraoculare  
Lesione estesa

Cambio Approccio!!  
Cambio Terapia!!

# STEP 1

## Ricoprimento congiuntivale



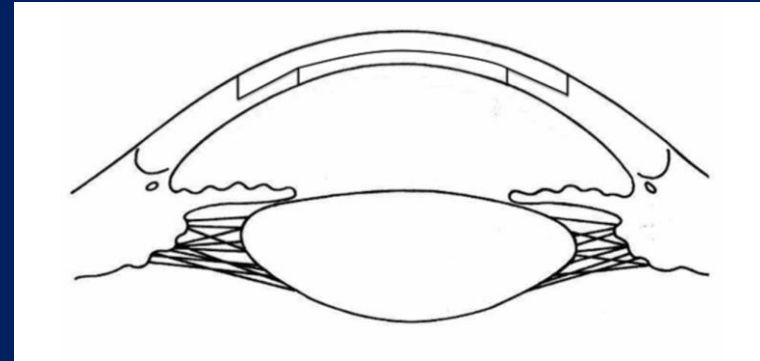
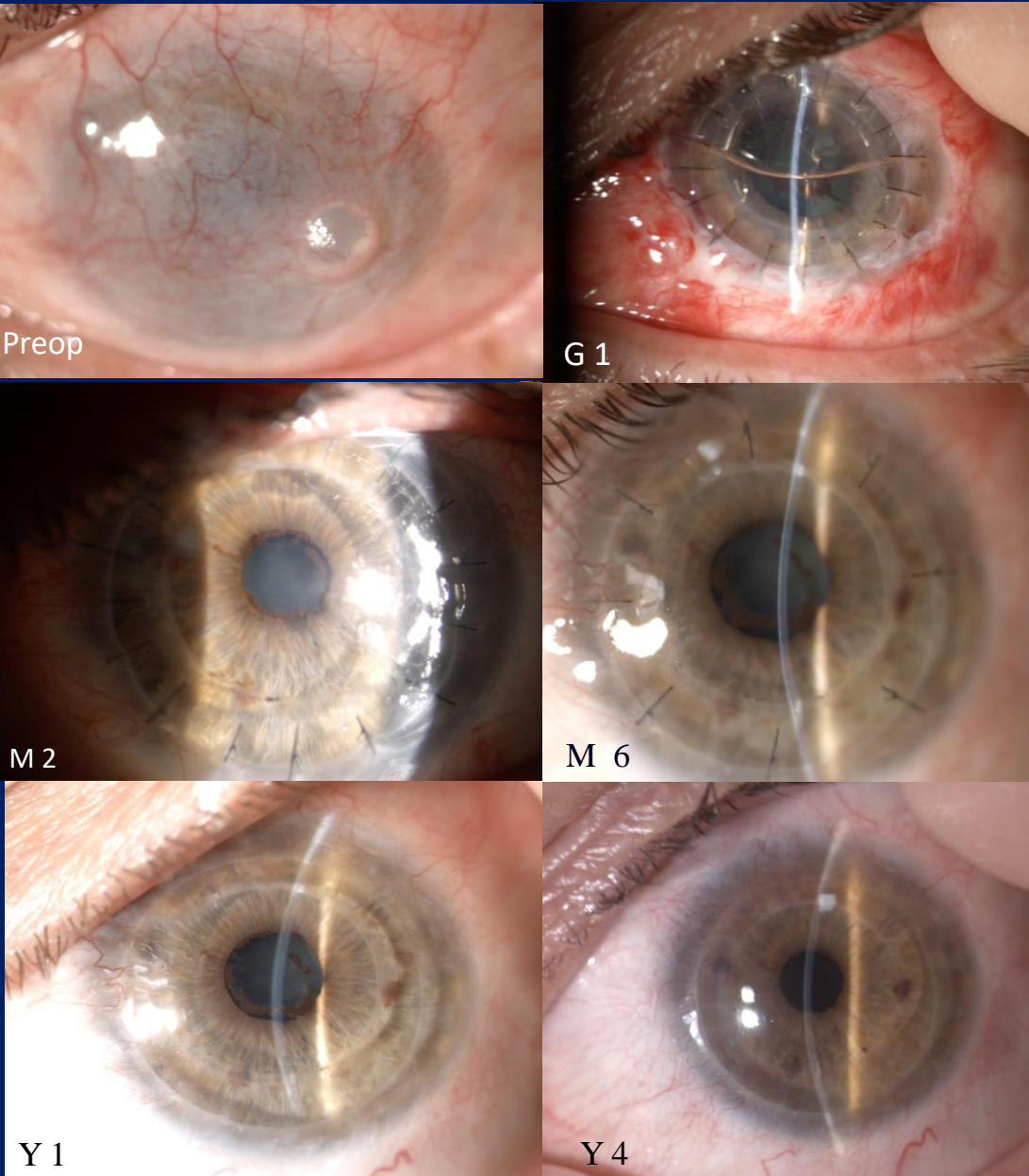
Ricoprimento congiuntivale Gundersen + terapia topica antibiotica nelle settimane successive

2 m dopo : risoluzione clinica infezione/inflammazione



# STEP 2

## Cheratoplastica a fungo



Ricoprimento congiuntale

+

Cheratoplastica a Fungo

- **Controllo Infezione**
- **Riabilitazione visiva**
- **Riduzione rischio Immunologico**