



Scuola Medica Salernitana

Azienda Ospedaliera Integrata con l'Università  
SAN GIOVANNI DI DIO E RUGGI D'ARAGONA



UNIVERSITA' DEGLI STUDI DI SALERNO

Prevenzione e terapia dell'ipovisione

**Dir. Prof. Nicola Rosa**

**MISCELLANEA DI  
SEMEIOTICA STRUMENTALE**  
Nicola Rosa, Maddalena De Bernardo



*Pre-Congresso  
Corso Teorico - Pratico  
di Semeiotica Strumentale*

**Resp. Scientifico  
Amedeo Lucente**

**2 Ottobre 2015  
Grand Hotel Balestrieri**



**CALCOLO DELLA IOL:**

**CASO COMPLESSO**

# CALCOLO DEL POTERE DELLA IOL

- LUNGHEZZA ASSIALE
- RAGGIO MEDIO CORNEALE
- PROFONDITA' CAMERA ANTERIORE
- BIANCO – BIANCO
  
- FORMULE

- **Donna di 52 anni**
- **OD: Pregressa Cheratoplastica x degenerazione /distrofia corneale + IOL**
- **OS: Avcc =1/10, cataratta nucleare,  
AL: 25.17**



**K non valutabili (Pentacam, IOL master, Cheratometria manuale)**

**Medico, moglie di medico**

# PROPOSTA

- **PTK**
- **2-3 mesi dopo: Faco + IOL**

# ANAMNESI

OS: 8/10 (+2 sf = -4.5 cil a 180)

Eq Sf -0.25

## New factor to improve reliability of the clinical history method for intraocular lens power calculation after refractive surgery

Nicola Rosa, MD, Maddalena De Bernardo, MD, Maria Borrelli, MD, Michele Lanza, MD

**PURPOSE:** To determine whether the refractive error in an eye developing cataract after refractive surgery represents actual regression or is cataract related and whether the method to gather this information would allow the use of history-related formulas in intraocular lens (IOL) power calculation after refractive surgery.

**SETTING:** Second University of Naples, Naples, Italy.

**DESIGN:** Case series.

**METHODS:** The refractive effects, axial length (AL), and mean keratometry (K) values were evaluated in eyes before and 6 months after photorefractive keratotomy for myopia or for myopic or mixed astigmatism.

**RESULTS:** The study evaluated 257 eyes of 166 patients (93 women). Before surgery, there was a high correlation between refractive error and the product of AL and K ( $AL \times K$ ) ( $r^2 = 0.8213$ ). In patients with refractive results close to emmetropia, the mean  $AL \times K$  was  $1005.91 \pm 25.88$  (SD), meaning that in the range of 954 and 1058, there was a 95% possibility that the patients were almost fully corrected. The following regression formula was obtained to calculate the amount of refractive error independent of cataract onset: Refractive error =  $-0.0157 \times (AL \times K) + 16.437$ .

**CONCLUSIONS:** The regression formula determined whether the refraction depended on the onset of cataract and estimated the amount of undercorrection or overcorrection that occurred after refractive surgery, leading to improved estimation of the power of the IOL to be implanted. It may allow the use of history-related formulas in IOL power calculation for eyes that have had corneal refractive surgery.

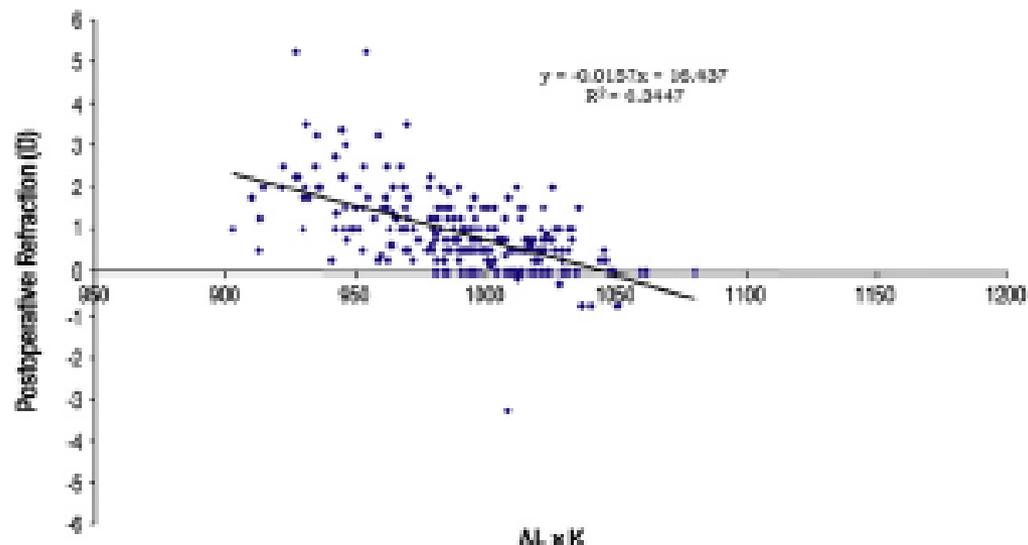
**Financial Disclosure:** No author has a financial or proprietary interest in any material or method mentioned.

*J Cataract Refract Surg* 2010; 36:2123–2128 © 2010 ASCRS and ESCRS

Corneal refractive surgery, such as photorefractive keratotomy (PRK), laser in situ keratomileusis (LASIK), and laser-assisted subepithelial keratectomy, has been widely used in recent decades. With time, it is expected that an increasing number of patients who have had this treatment will develop age-related cataract. After cataract surgery, many of these patients will expect the same excellent uncorrected visual acuity they had after refractive surgery. Unfortunately, intraocular lens (IOL) power calculation is less accurate after corneal refractive surgery. The inaccuracy stems from 3 reasons: inaccurate measurement of anterior corneal curvature by automated and manual keratometry (K)

or computerized videokeratography, inaccurate value of the keratometric index resulting from the modified relationship between the anterior and posterior corneal surface, and incorrect estimation of the effective lens position resulting from these modifications.<sup>1,2</sup>

Several methods to overcome inaccurate IOL power calculation after refractive surgery have been developed. Some are related to the history of the patient,<sup>3–14</sup> whereas others are independent.<sup>15–25</sup> Obtaining preoperative data of refractive surgery patients for history-related methods can be difficult. Moreover, if cataract begins to develop in these cases, it is difficult to determine whether the refractive change is the result of



**Figure 3.** Correlation between the postoperative refractive error and the product of the AL and the postoperative corneal power ( $AL \times K$ ) 6 months after PRK (AL = axial length; K = corneal power).

$$\text{Ref} = 0.0157 * (\text{AL} \times \text{K}) + 16.437.$$

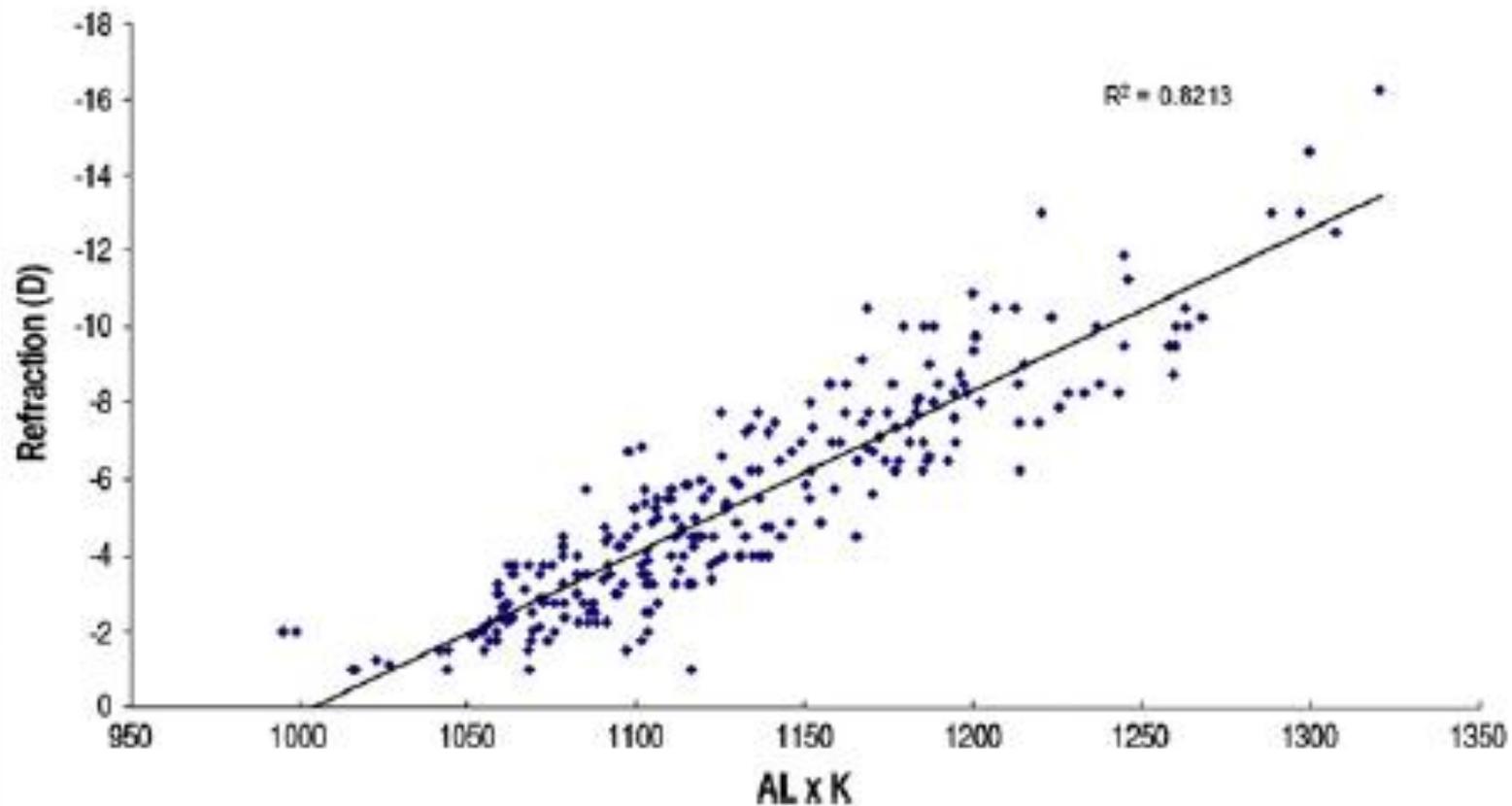


Figure 1. Correlation between the refractive error and the product of the AL and the mean K readings (AL  $\times$  K) before PRK (AL = axial length; K = corneal power).

$$\text{Ref} = -0.0424 * (\text{AL} * \text{K}) + 42.613$$

$$\text{Ref} = -0.0424 * (\text{AL} * \text{K}) + 42.613$$

$$\text{AL} = 25.17$$

$$\text{Eq Ref.} = -0.25$$

$$\begin{aligned} \text{K} &= \frac{\text{Ref} - 42.613}{-0.0424 * \text{AL}} = \frac{-0.25 - 42.613}{-0.0424 * 25.17} \\ &= \frac{-42.863}{-1.067208} = \mathbf{40.16} \end{aligned}$$

IOL

+ 20 D (118.7)

Target -0.5 D

RIFRAZIONE FINALE

8/10 Sf +1 = cil -4 a 180

Eq sf: -1



**THE ROLE OF THE ULTRASOUND IN PRACTICAL  
MANAGEMENT OF PEDIATRIC GLAUCOMA.**

*A SURVEY BASED MAINLY ON OUR OWN CLINICAL EXPERIENCE.*

BETINJANE, *Alberto Jorge*  
*University Of São Paulo, Brazil*

Figure 5 - Method (formula) to estimate the refractive error using biometric parameters (axial length and corneal curvature).

$$R = 75,70 - 0,69 K - 1,97 L$$

R: Refractive error

K: Ceratometric value (mean)

L: Axial length

\*Carani, JCE; Betinjane, AJB; Carvalho, CA. Arq. Bras. Oftalmol. 57(2):137-40, 1994

Logan NS, Davies LN, Mallen EA,  
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Optom Vis Sci 2005;82:261–6.

Stenström S. Untersuchunge über die Variation  
und Kovariation der optischen Elemente des  
menschlichen Auges. Acta Ophthalmol  
(Copenh) 1946;26(Suppl.):1–121.

**K = 38.21 D,**

AL=3.1 R

**K= 41.57 D**

R=1/3 AL

**K= 40.23 D**

**K=40.16**



SF -1

**CALCOLO DELLA IOL  
DOPO CHIRURGIA  
RIFRATTIVA:**

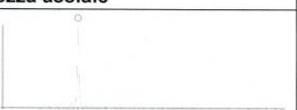
**CASO COMPLESSO**

# Calcolo IOL dopo chir refrattiva

A.O.U. San Giovanni di Dio e Ruggi d' Aragona - Salerno

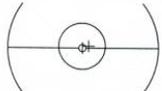
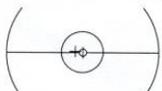
	
n: 1.3375	

Occorre verificare la plausibilità dei valori di misura , poiché potrebbero presentarsi variazioni patologiche!

<b>OD</b> destro	Valori lunghezza assiale				<b>OS</b> sinistro
					
Fachico	Fachico				
Comp. AL: 21.72 mm	(SNR= 382.1)		Comp. AL: 21.69 mm	(SNR= 138.4)	
AL	SNR	AL	SNR	AL	SNR
21.72 mm	2.7			21.70 mm	10.6
21.73 mm	9.5			21.69 mm	4.2
21.72 mm	9.9			21.65 mm	14.8
21.70 mm	6.3			21.67 mm	8.7
21.72 mm	10.6			21.70 mm	5.5
				21.71 mm	5.8
				21.73 mm	4.1

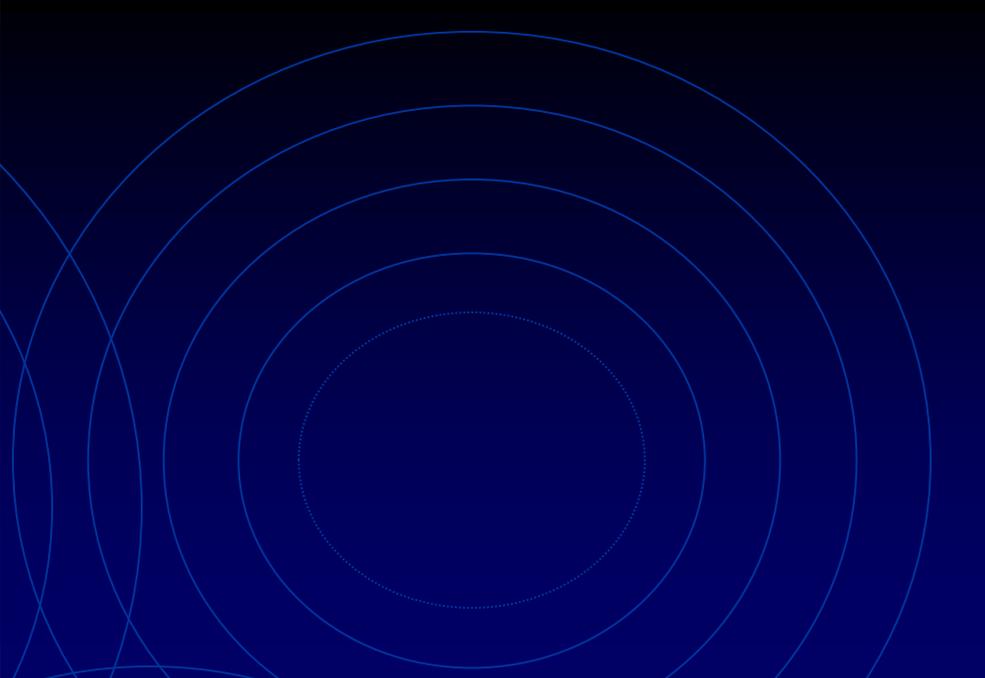
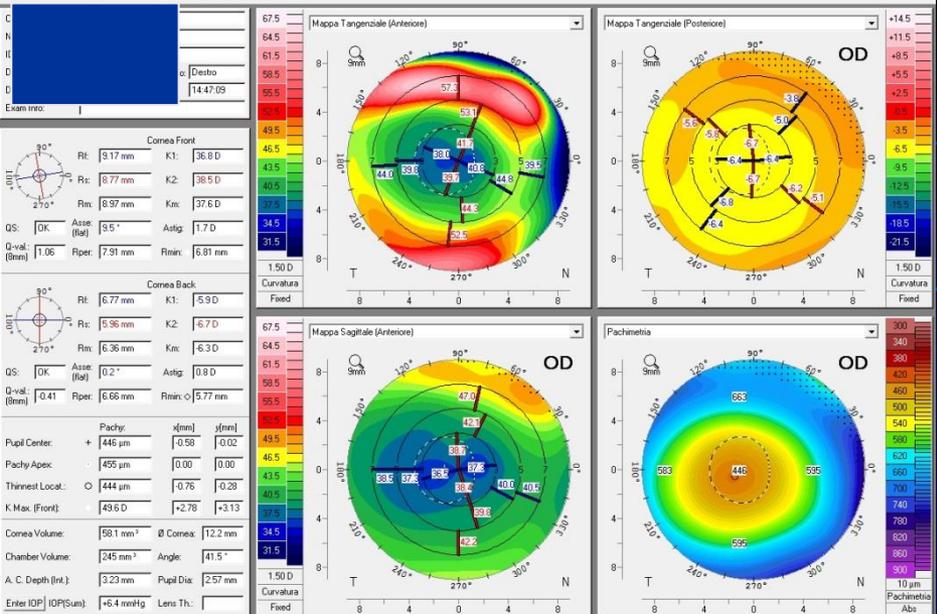
Valore Curvatura Corneale					
VM: 36.25/38.70 D	SD: 0.01 mm	VM: 37.50/40.61 D	SD: 0.01 mm		
K1: 36.25 D x 5°	9.31 mm	K1: 37.50 D x 23°	9.00 mm		
K2: 38.66 D x 95°	8.73 mm	K2: 40.66 D x 113°	8.30 mm		
ΔD: +2.41 D x 95°		ΔD: +3.16 D x 113°			
K1: 36.25 D x 5°	9.31 mm	K1: 37.46 D x 25°	9.01 mm		
K2: 38.75 D x 95°	8.71 mm	K2: 40.56 D x 115°	8.32 mm		
ΔD: +2.50 D x 95°		ΔD: +3.10 D x 115°			
K1: 36.25 D x 5°	9.31 mm	K1: 37.50 D x 26°	9.00 mm		
K2: 38.75 D x 95°	8.71 mm	K2: 40.61 D x 116°	8.31 mm		
ΔD: +2.50 D x 95°		ΔD: +3.11 D x 116°			

Valore ACD									
ACD: 3.42 mm					ACD: 3.08 mm				
3.41 mm	3.38 mm	3.39 mm	3.43 mm	3.47 mm	3.08 mm	3.08 mm	3.08 mm	3.08 mm	3.08 mm

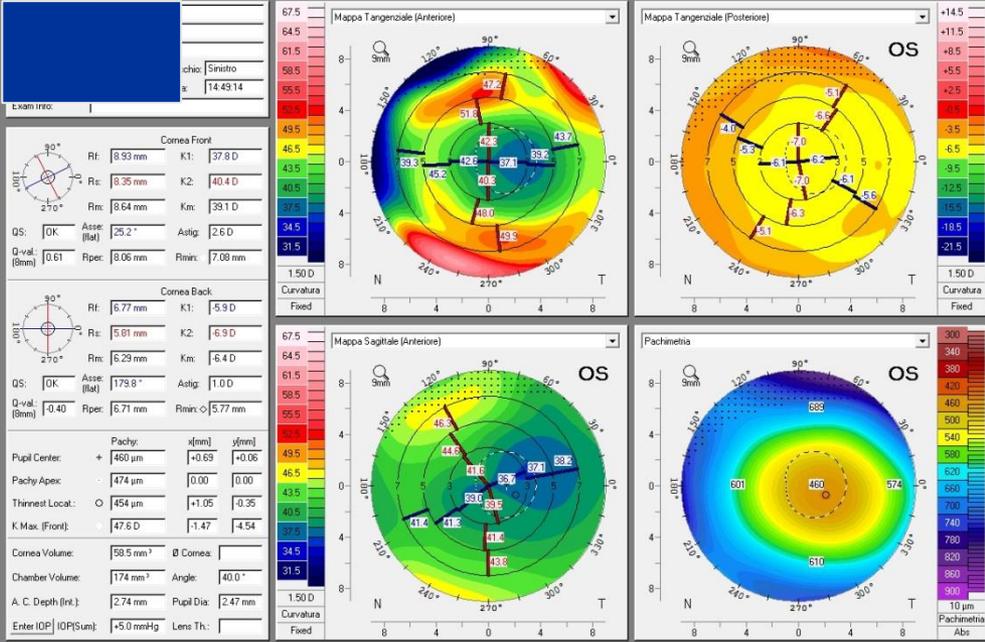
Valori Bianco - Bianco			
	WTW : 12.1 mm < Fp x:+0.5mm y:+0.2 mm	WTW : 12.3 mm < Fp x:-0.6mm y:+0.1 mm	

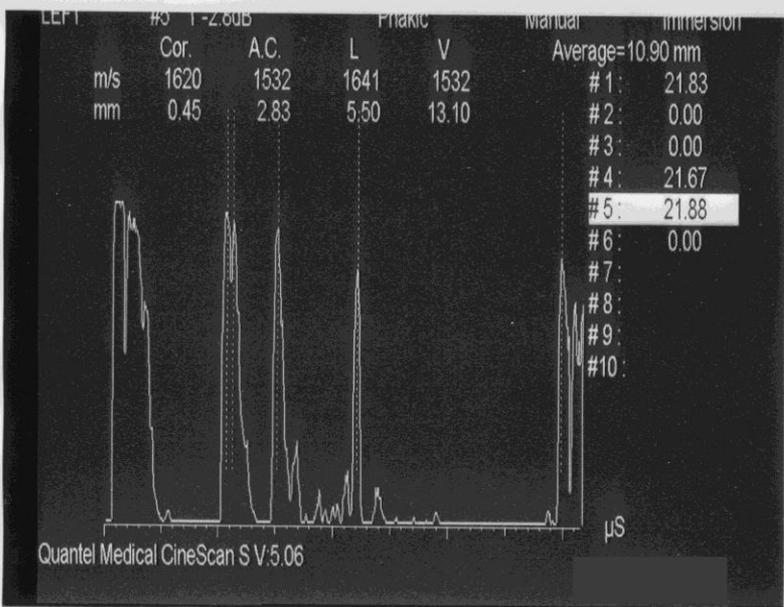
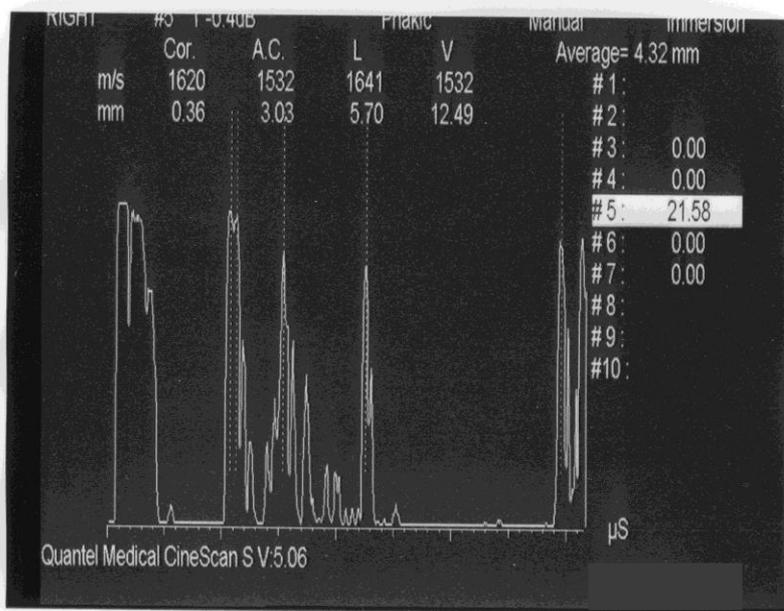
(\* = modifica manuale, ! = valore limite

# OCULUS - PENTACAM



# OCULUS - PENTACAM





- Quale formula ?
- Quale IOL?

A= 118,8

Od:

Hoffer Q: 34.9

SRK T 32.86

R factor: 31.47

ALMA 35.93

Shammas: 38.28

A= 118,8

Os:

Hoffer Q: 33.14

SRK T 31.44

R factor: 29.94

ALMA 33.89

Shammas: 36.03

# SUGGERIMENTI

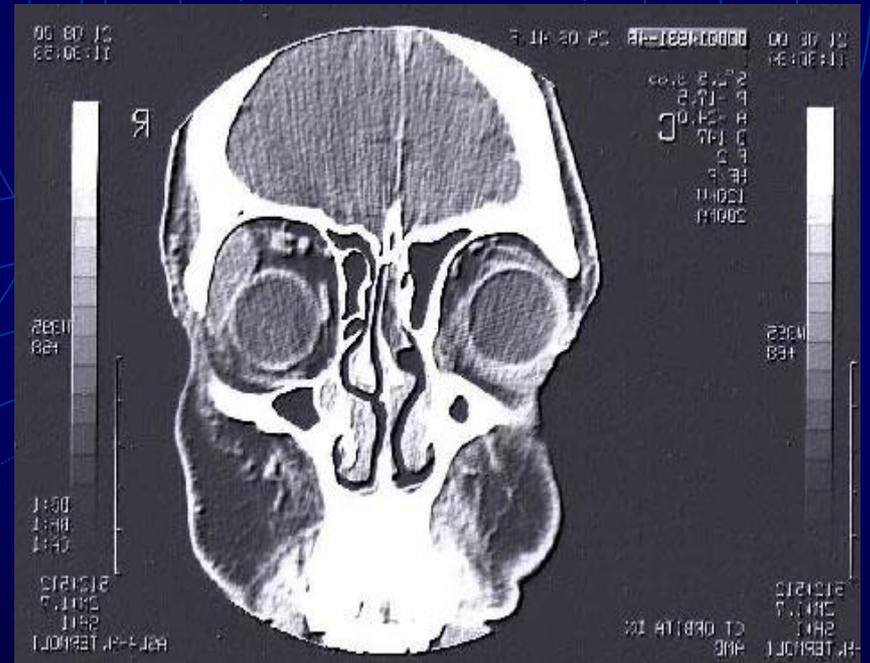
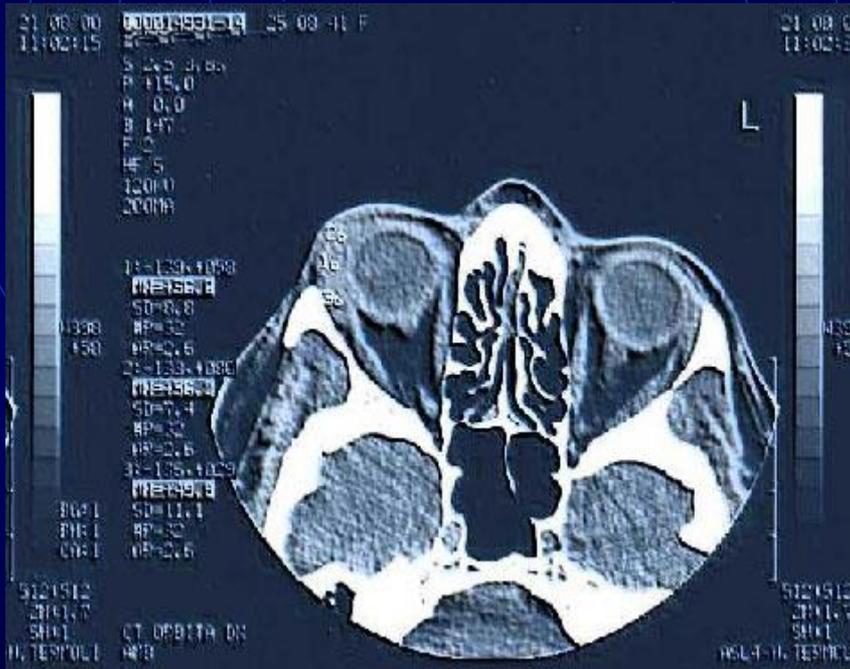
- Cartella clinica
- Pentacam
- Verysise
- Hoffer Q?
- Inviarlo al collega che lo ha operato di rifrattiva

- Donna bianca 58 anni
- OD. esoftalmo

# Anamnesi

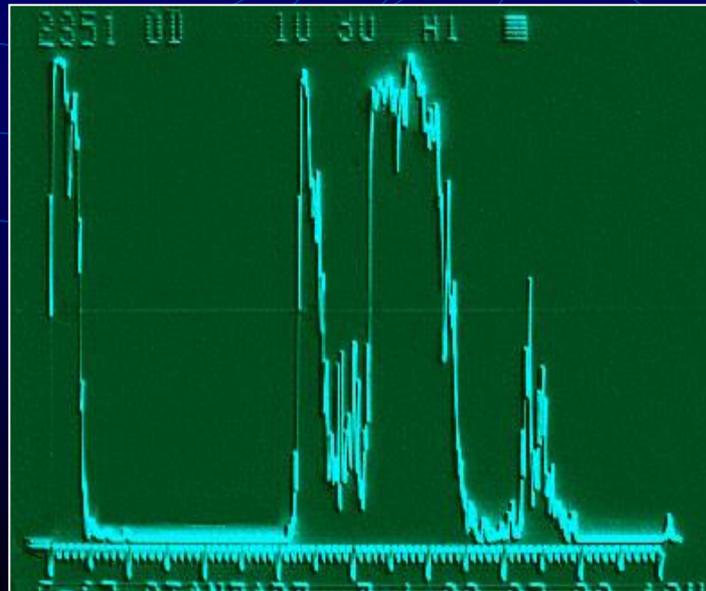
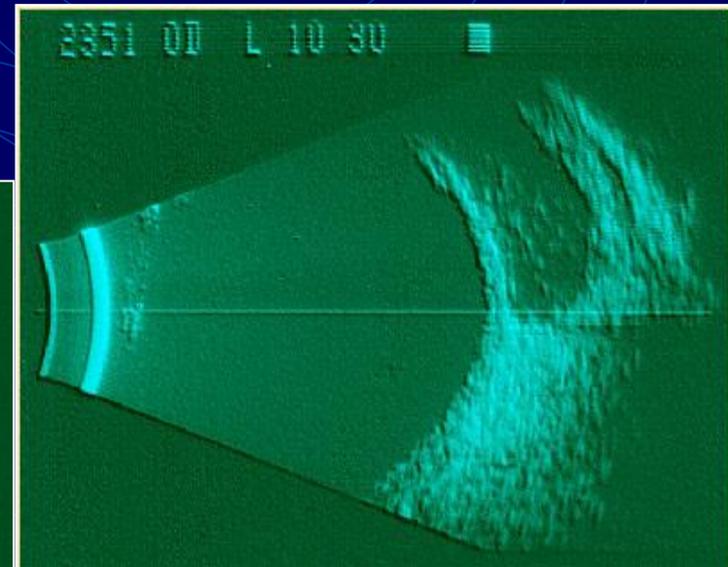
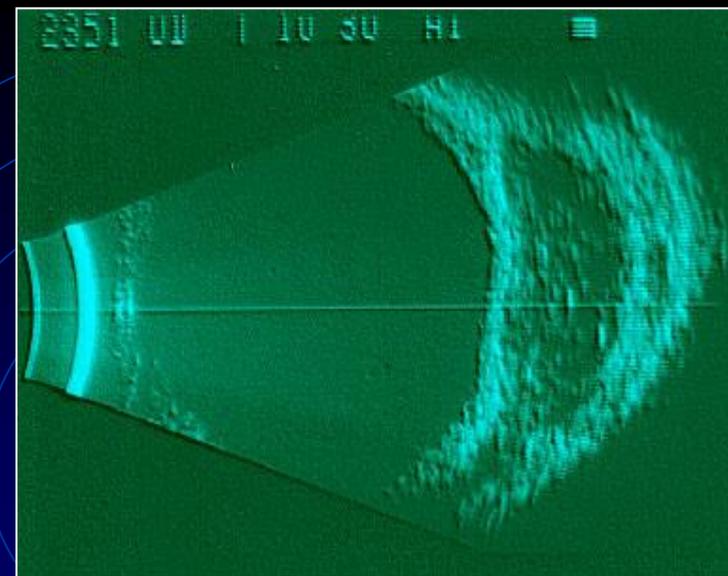
- Ovariectomia per CA ovarico  
(Maggio 1999)

# TAC



# Ecografia

- Lesione ovale, solida, ben demarcata
- Localizzata nella regione della ghiandola lacrimale
- Struttura regolare
- Riflettività medio bassa
- Media attenuazione del suono
- Assenza di vascolarizzazione



# Lesione Metastatica

- Forma a V
- Scarsamente demarcata

# Linfoma

- Struttura Regolare
- Riflettività medio bassa
- Media attenuazione
- Ben demarcata
- Non vascolarizzata
- Solida

# **CHIRURGIA**

**Orbitotomia destra**

**con escissione**

**della porzione orbitaria**

**della ghiandola lacrimale**

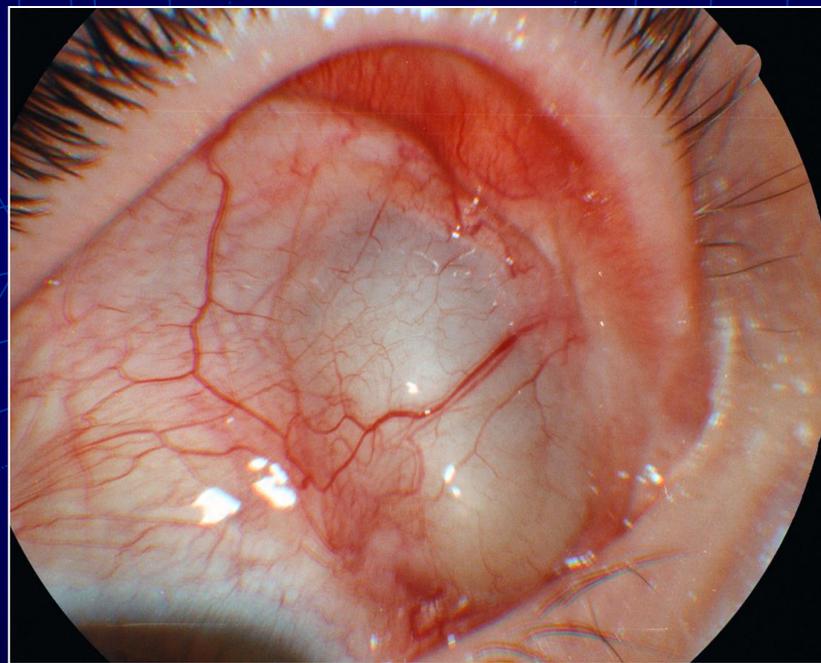
**Immuno istochimica**

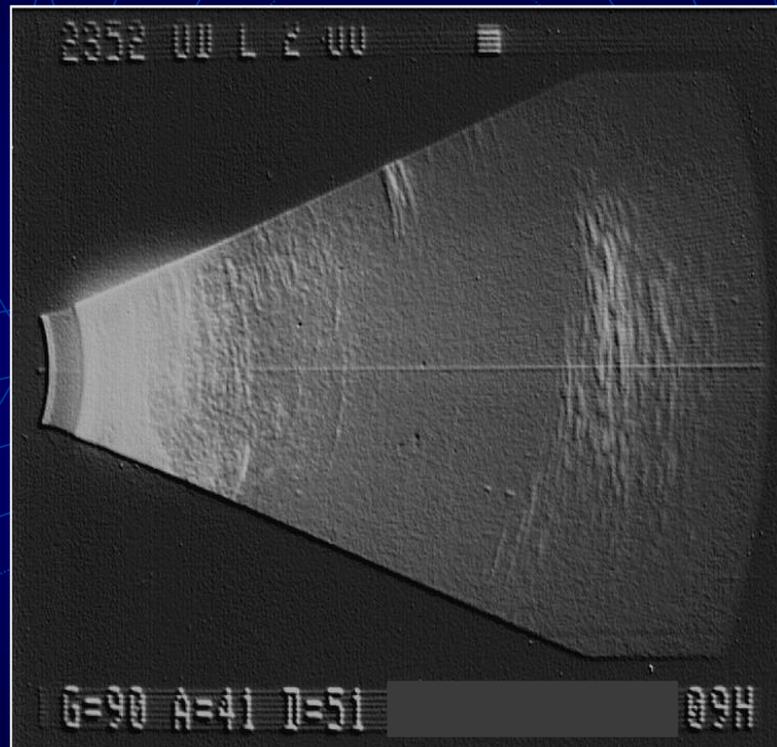
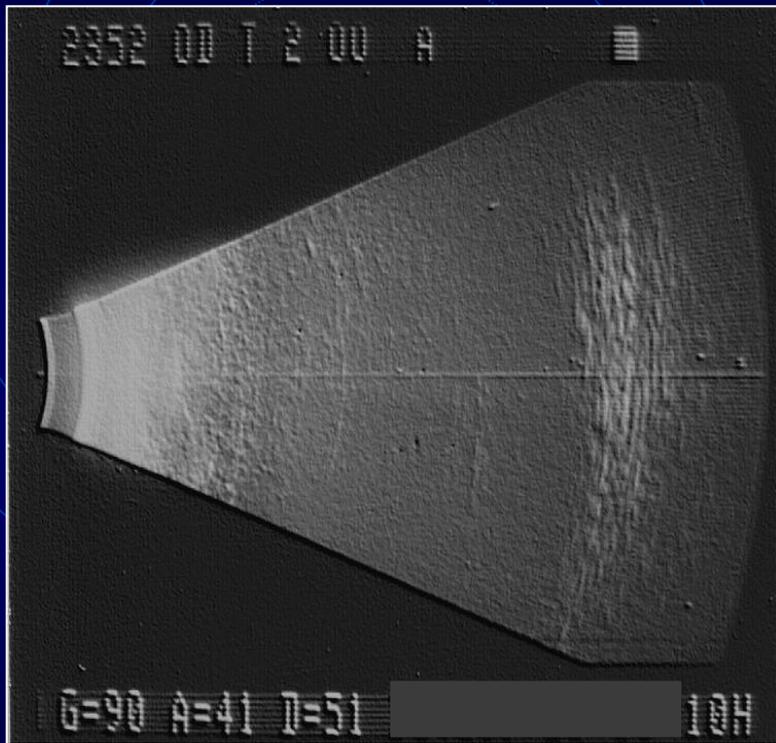
**Linfoma Non Hodgkin**

**a basso grado di malignità**

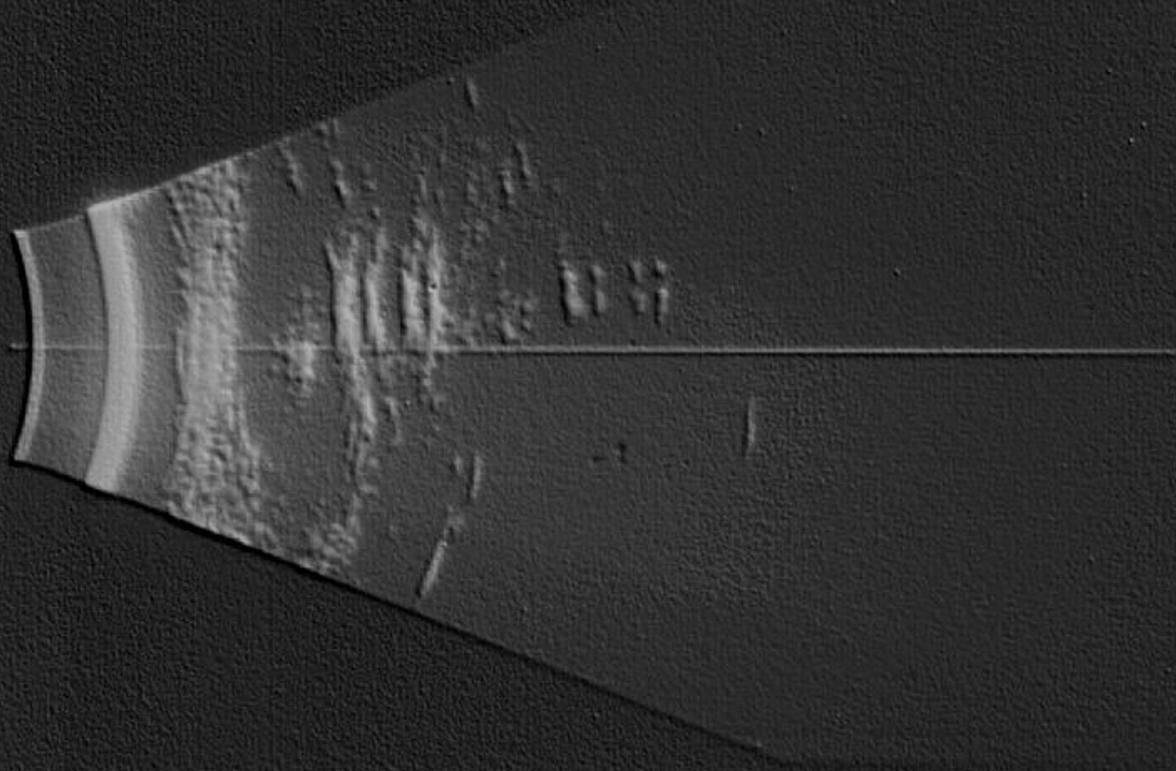
**MALT**

- Donna bianca 39 anni
- OD.: Iperemia Congiuntivale, lacrimazione, media ptosi, cataratta.
- Storia di chirurgia per distacco di retina

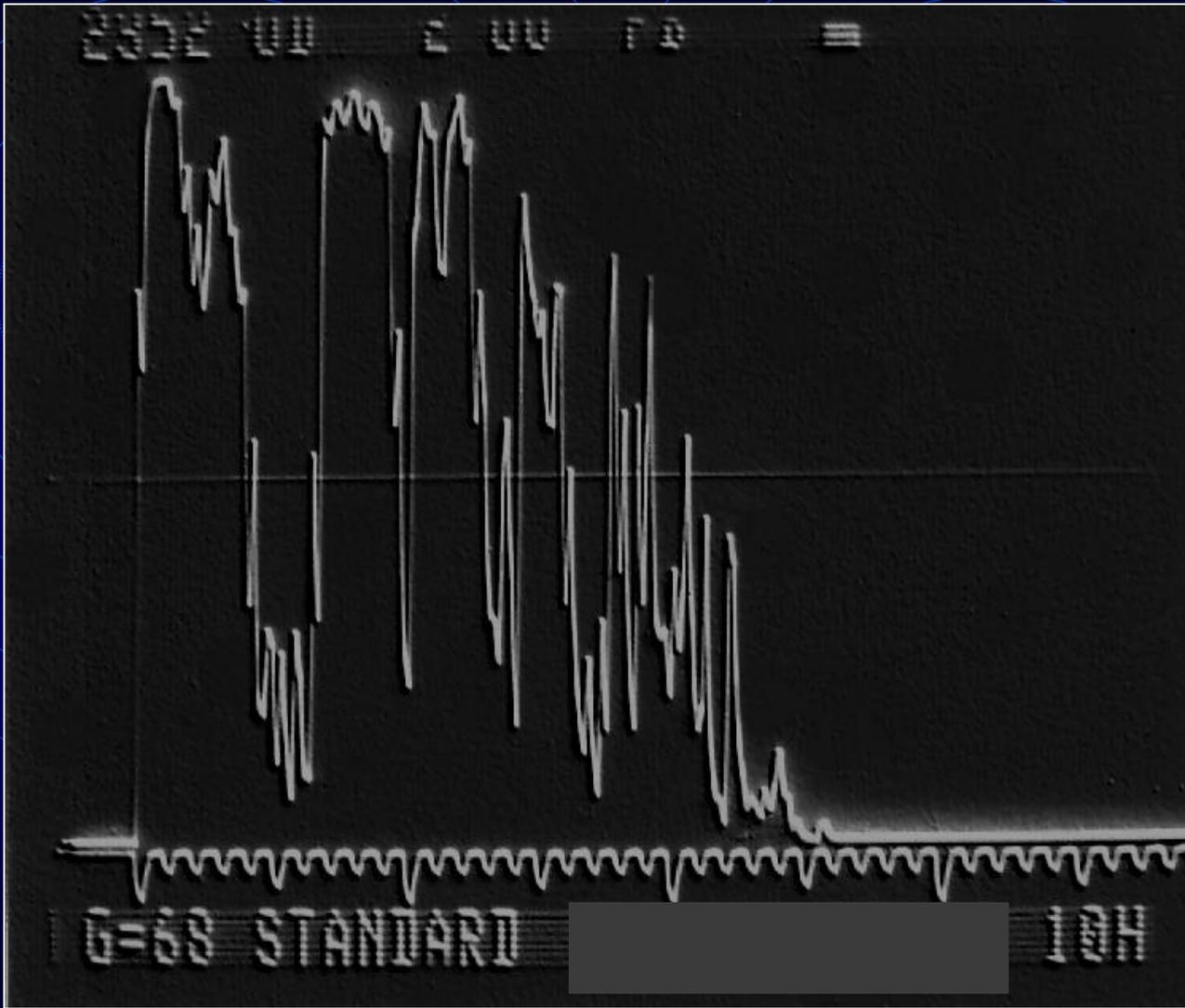




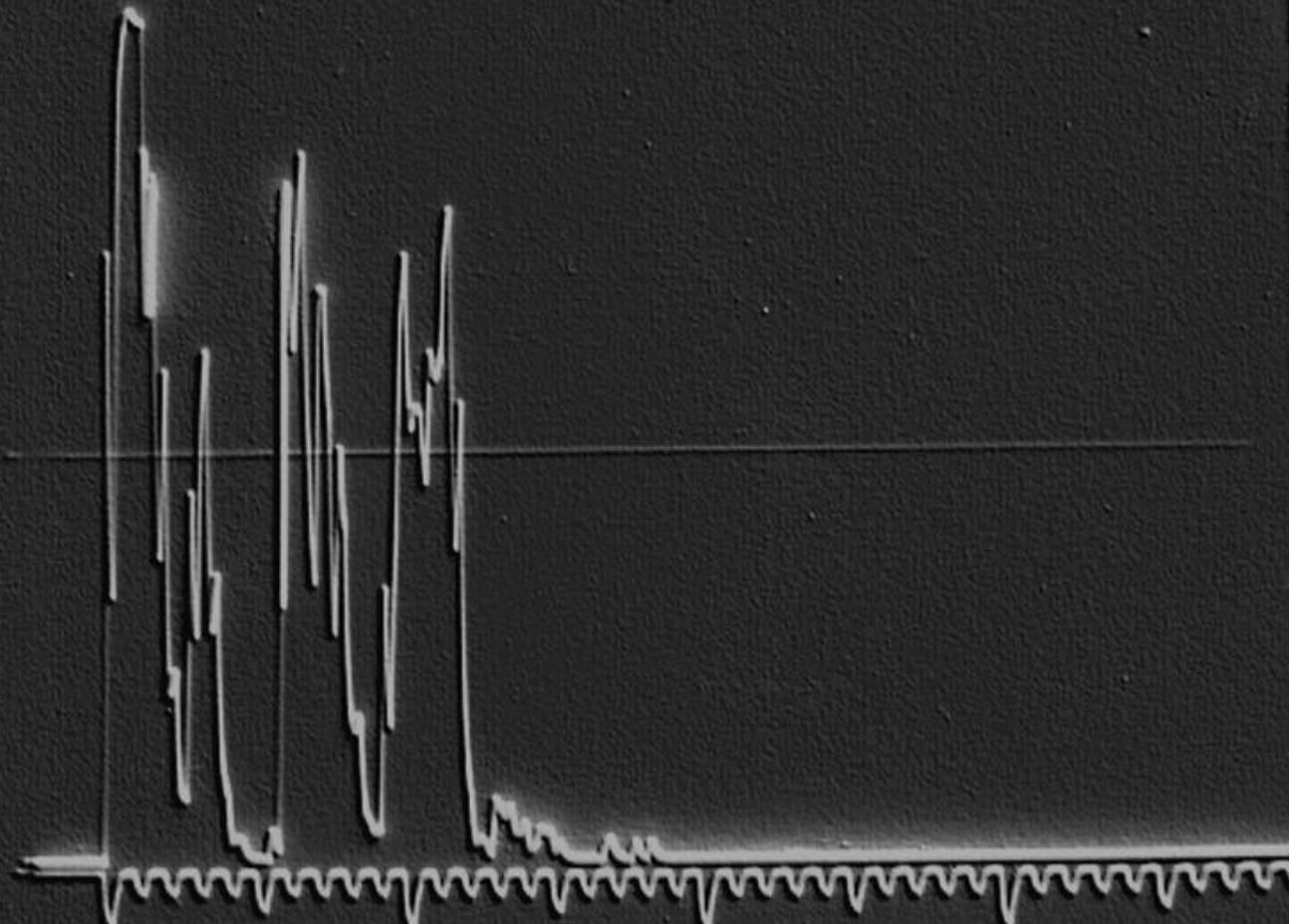
2352 00 1 2 00 P5 III



G=70 A=41 D=51 [REDACTED] 10H



2352 00 2 00 75 1 MINUS 3



DISTANCE=03.2mm [REDACTED] 04

# CHIRURGIA

- APERTURA CONGIUNTIVALE CON FUORIUSCITA DI OLIO DI SILICONE.
- VISUALIZZAZIONE DI PUNTO DI SUTURA SU ZONA DI SCLERA MALACICA.
- PLASTICA PER SCORRIMENTO CONGIUNTIVALE.



siDUO

**NAPLES** - Italy

June 8-12 - 2016

Centro Congressi Federico II  
Lungomare di Napoli

Organizer: Prof. Nicola Rosa

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