Le corde artificiali. La Guerra dei 30 anni.

VII CONGRESSO NAZIONALE
ECOCARDIOCHIRURGIA
2014

Claudio Zussa

www.zussa.it
www.prolassomitrale.it

DICHIARAZIONE: non esistono conflitti di interesse o affiliazioni con alcuna Compagnia produttrice dei materiali descritti nella presentazione.

L'uso delle corde artificiali ha cambiato la riparabilità della mitrale?
Una tecnica che si sta "silenziosamente" allargando sempre più.

Trent'anni fa nessuno avrebbe potuto proporre alcuna nuova tecnica in alternativa a quelle standardizzate dalla

Scuola Francese

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The Journal of THORACIC AND CARDIOVASCULAR SURGERY

J THORAC CARDIOVASC SURG 86:323-337, 1983

Honored Guest's Address

Cardiac valve surgery—the "French correction"

Alain Carpentier, M.D., *Paris, France*

Mr. President, I would like to begin by expressing my gratitude to the Association for the priviledge of presenting the Honored Guest Lecture at the Sixty-third Annual Meeting of The American Association for Thoracic Surgery. What surprises me the most in this meeting is my presence on this podium, since this honor is usually reserved for more senior and preeminent figures in thoracic surgery. I suppose that you wanted to distinguish a team rather than a man, so that I would like to share this honor with my co-workers who are present in this room: Drs. Deloche, Fabiani, Chauvaud, Relland, Lessana, Lapeyre, Mrs. Chauveau, Mrs. Menissier, Mrs. Veneziani, and with my wife, Sophie, who has participated in my laboratory work throughout the years. I also would like to pay special tribute to my respected teacher, Professor Charles Dubost, and to mention my two colleagues, Professors Blondeau and Claude d'Allaines, who are unfortunately not with us today.

Members of the Association, in the past 14 years, I have attended the annual meeting of your Association 14 times with the priviledge of having presented a paper 10 times. All through these years, wearing a pink identification badge, I observed with great admiration and respect the famous people wearing a white printed badge and seated in a carefully delineated area of reserved seats! Permit me to tell you how proud I am to enter your prestigious circle.

Guests, you are seated outside this circle, but only temporarily! I address you specifically, since you represent the future of thoracic surgery and the future of this august Association.

Members and guests, cardiac surgery has achieved remarkable progress in the past 10 years. Safer techniques of anesthesia and postoperative care, improved extracorporeal circulation and myocardial protection, and sophisticated surgical techniques are new tools which have been instrumental in reducing hospital mortality and increasing the efficiency of our operations. New surgical tools impose new surgical goals. Its not enough to save patients' lives; we must also take into consideration the quality of life given to the patient and the socioeconomic impact of our surgical actions. There already have been some trends in this direction, such as operating for congenital malformations at an earlier stage and the development of reconstructive operations to replace palliative techniques. Reconstructive valve surgery can very well be considered another example of this *nouvelle chirurgie* which justifies making it the subject of today's lecture.

Since everything we do in life has some visible or obscure relationship to the environment in which it

From Hôpital Broussais, Paris, France.

Read at the Sixty-third Annual Meeting of The American Association for Thoracic Surgery, Atlanta, Ga., April 25-27, 1983

Address for reprints: Dept. of Cardiovascular Surgery, Hôpital Broussais, 96 Rue Didot, 75674, Paris Cedex 14, France.

La Guerra dei 30 anni

1 Fase boemo-palatina (1618-1625)

2 Fase danese (1625-1629)

3 Fase svedese (1629-1635)

4 Fase francese o franco-svedese (1635-1648)

5 Fase italo-francese (1983-2013)

Problemi tecnici ancora irrisolti 30 anni fa:

- ✓ I risultati a lungo termine del tradizionale accorciamento delle corde erano discutibili
- ✓ Coinvolgimento delle corde del LAM: se > 25%
  → Sostituzione Valvolare (Carpentier)
- ✓ La trasposizione anteriore di corde posteriori era difficile da riprodurre e con risultati incostanti

↓

Necessità di un approccio differente:

UN SOSTITUTO CORDALE AFFIDABILE

- Spesso pazienti giovani < 60 anni
- Liberi da comorbidità
- Lunga spettanza di vita

→ Ricostruzione fisiologica

✓ RISTABILIRE UNA CORRETTA APPOSIZIONE DEI LEMBI

✓ RISTABILIRE LA FISIOLOGICA TENSIONE DELL'APPARATO SOTTOVALVOLARE

✓ MANTENERE CARATTERISTICHE DI FLUSSO FISIOLOGICHE

✓ EVITARE MATERIALI PROTESICI (ANULOPLASTICA CON PERICARDIO AUTOLOGO)

✓ OTTENERE RISULTATI STABILI A LUNGHI FOLLOW-UP

POLITETRAFLUOROETILENE-espanso ⟶ e-PTFE

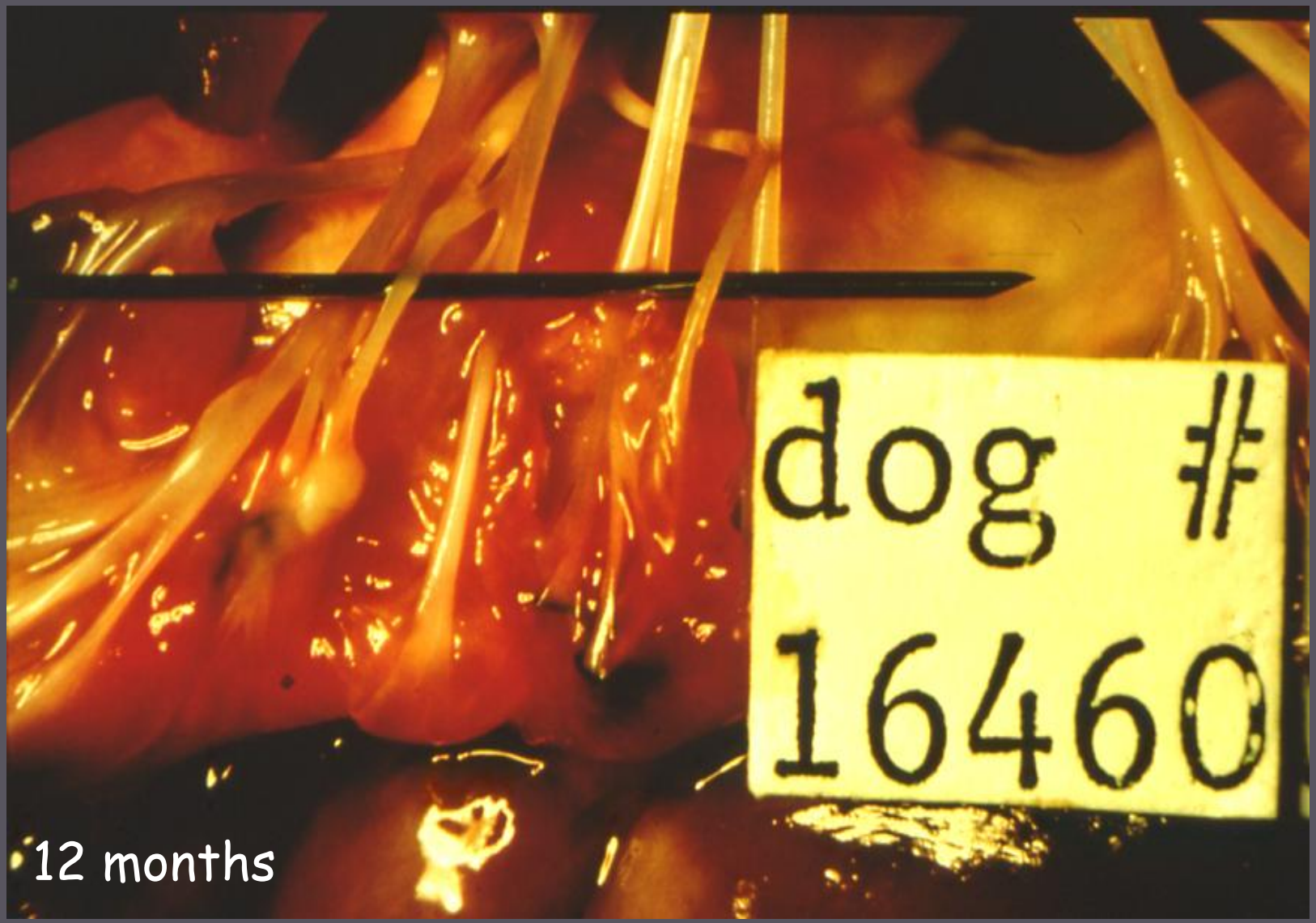
Struttura: nodi and fibrille

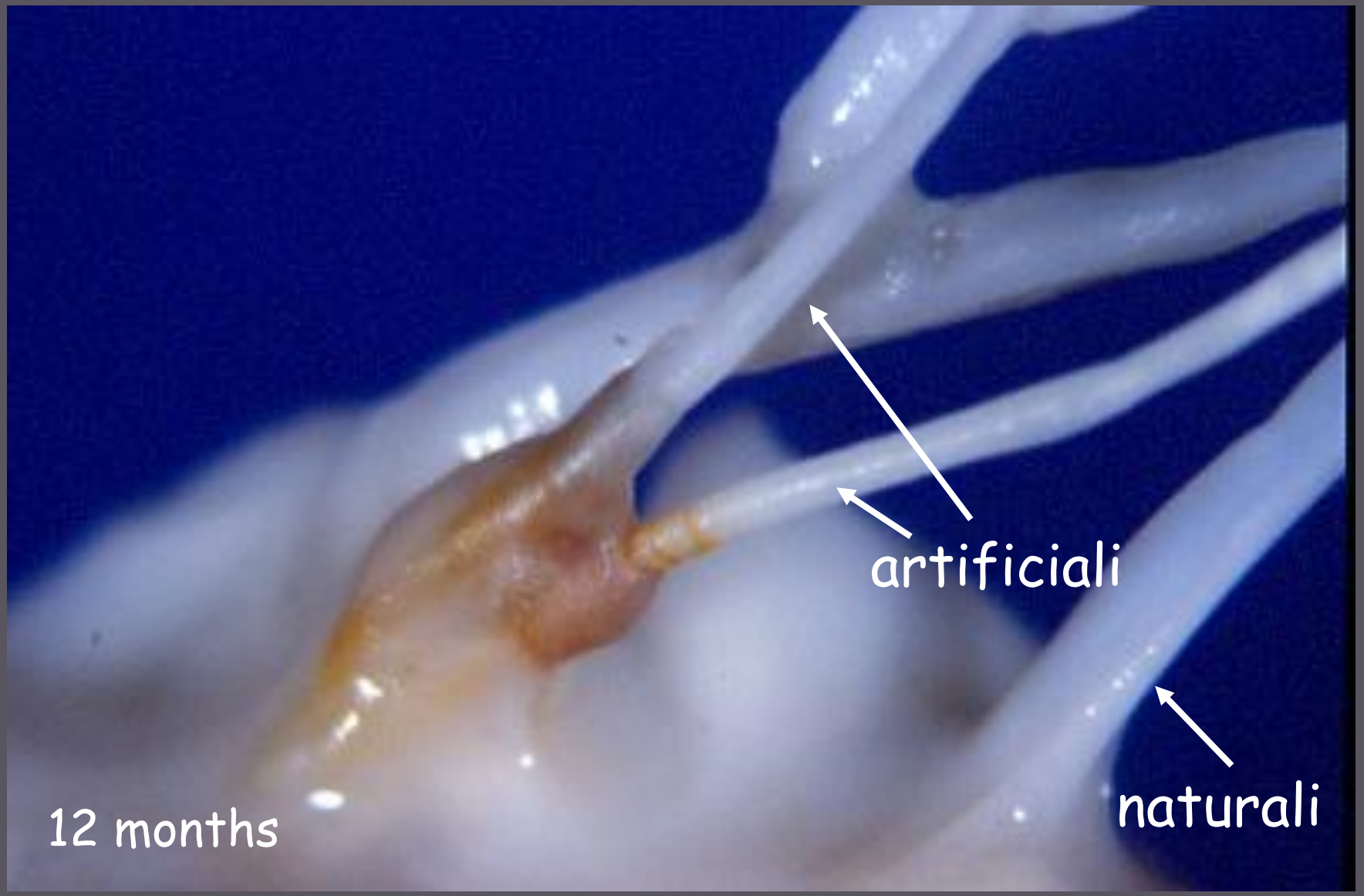
- microporoso
- vuoto >50% del volume
- infiltrabile dai fibroblasti?

GORE-TEX®
CV-5

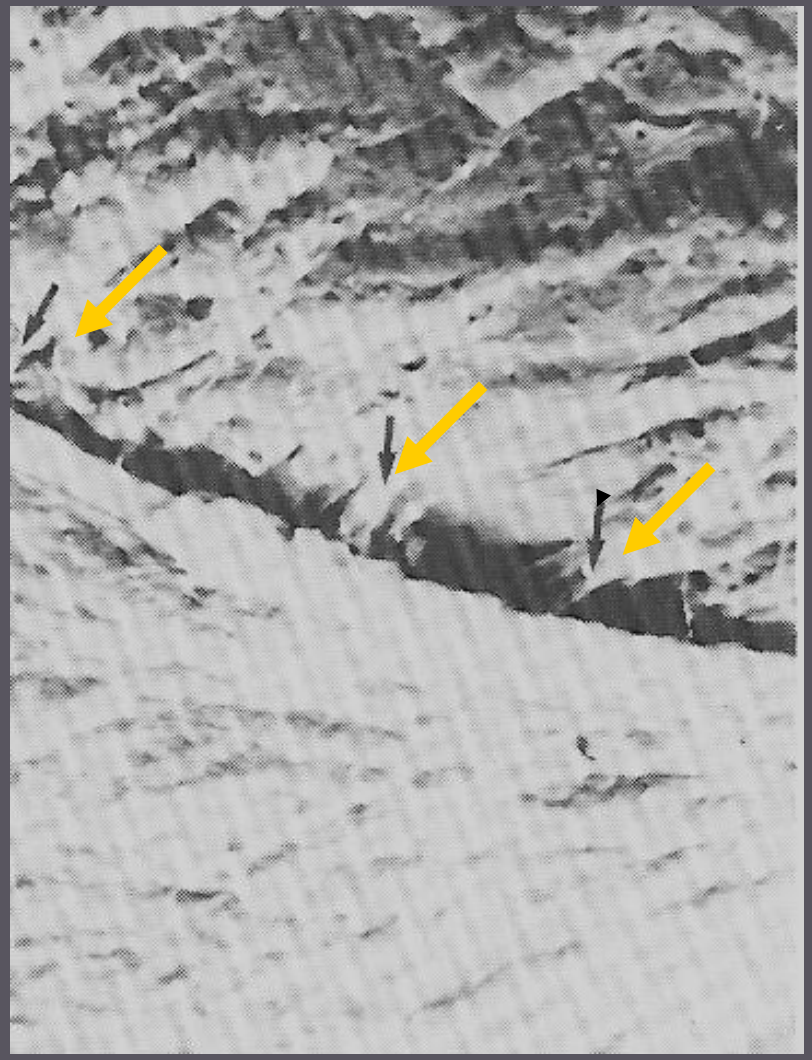
A. Einstein College of Medicine, Bronx, NY, 1985


Ms Jenny

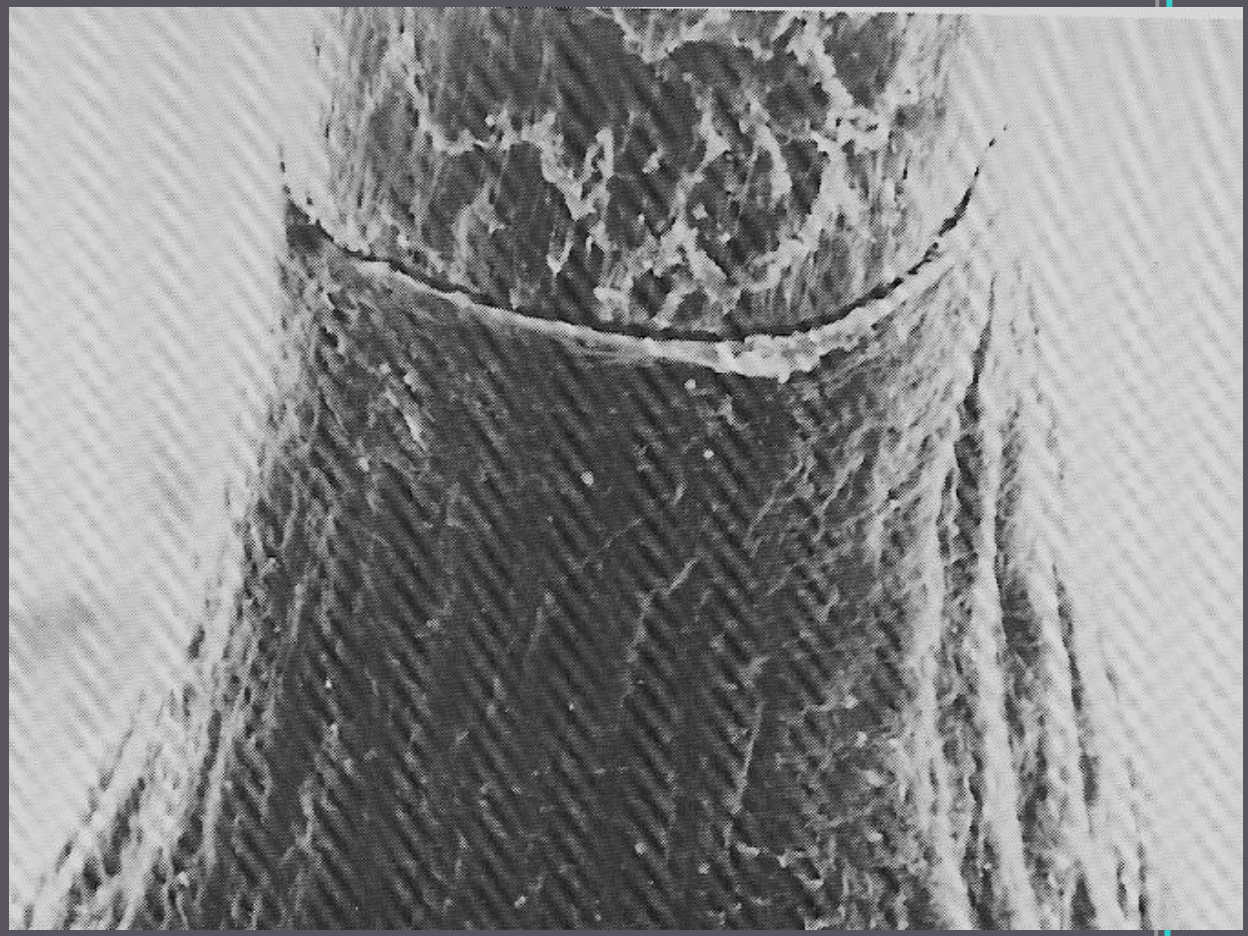

dog #
16460
12 months

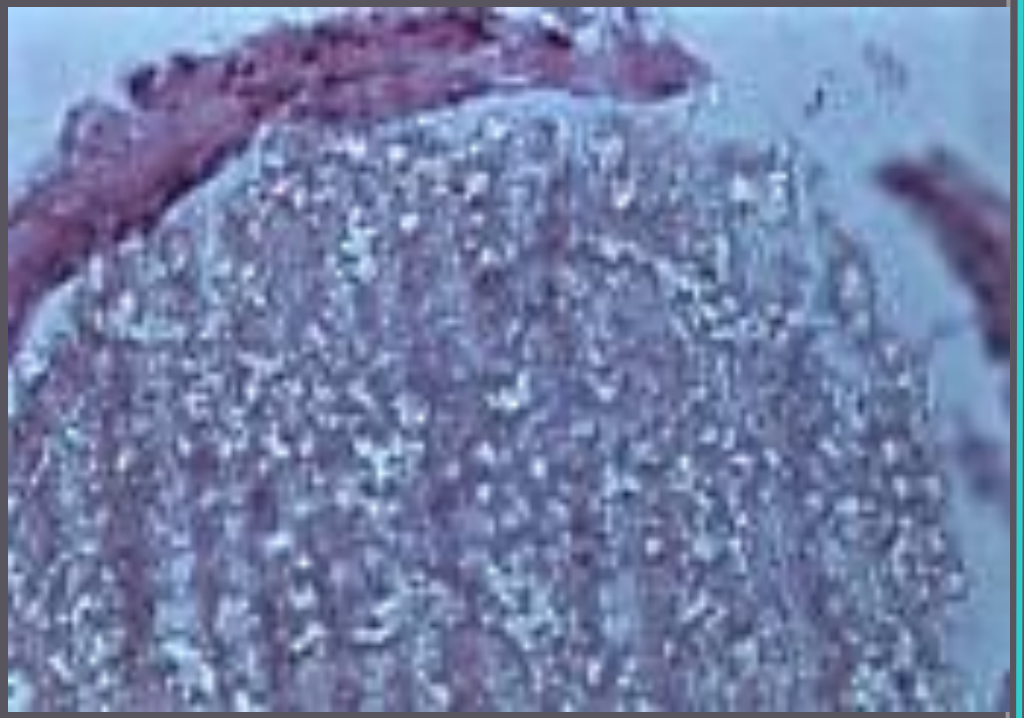

artificiali
naturali
12 months

Infiltrazione dei fibroblasti



Rivestimento di tessuto fibroso





- biocompatibile
- inerte
- resistente agli enzimi dell'ospite
- caratteristiche fisiche ≅ corde naturali

Ann Thorac Surg. 1990 Sep;50(3):367-73. Related Articles, Links

Artificial mitral valve chordae: experimental and clinical experience.

Zussa C, Frater RW, Polesel E, Galloni M, Valfre C.

Division of Cardiac Surgery, Regional Hospital, Treviso, Italy.

Circulation. 1990 Nov;82(5 Suppl):IV125-30. Related Articles, Links

Chordal replacement in mitral valve repair.

Frater RW, Vetter HO, Zussa C, Dahm M.

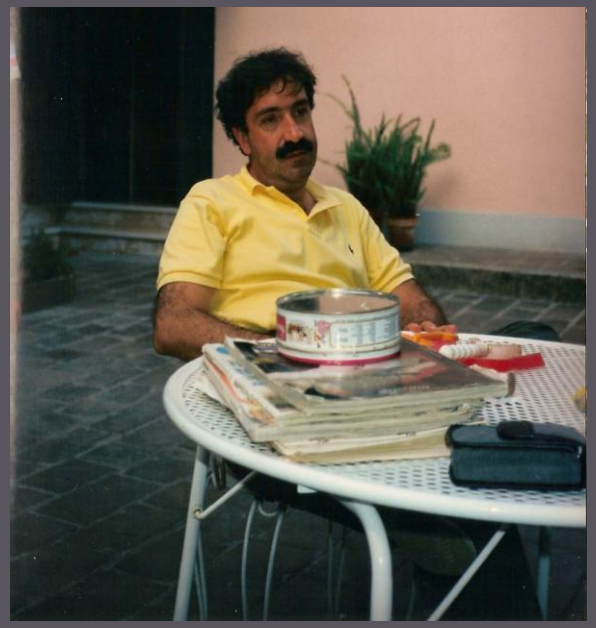
Division of Cardiothoracic Surgery, Albert Einstein College of Medicine, Yeshiva University, Bronx, NY.

NONOSTANTE I PROMETTENTI RISULTATI SPERIMENTALI E DELL'INIZIALE ESPERIENZA CLINICA ABBIAMO CAPITO CHE SAREBBE STATO DURISSIMO PROPORSI COME ALTERNATIVA O ALMENO COMPLEMENTO DELLA

"FRENCH CORRECTION"

SAREBBE STATA UNA GUERRA LUNGA…E BISOGNAVA…MOLTIPLICARE GLI SFORZI

…ma mia moglie non ha capito!!!



Nonostante la stanchezza ho proseguito l'esperienza clinica nei casi di eziologia:

- ✓ Degenerativa: mixoide, deficienza fibroelastica
- ✓ Infettiva
- ✓ Reumatica

Eziologia:

- ✓ Degenerativa: mixoide, deficienza fibroelastica
- ✓ Infettiva
- ✓ Reumatica

FIBROELASTIC DYSPLASIA OF THE MITRAL VALVE. AN ANATOMICAL AND CLINICAL ENTITY.

787

A.Carpentier, F.Lacour-Gayet, J.P.Camilleri, Ch.Dubost. Laboratoire d'Etude des Greffes et Prothèses Cardiaques, CNRS et Université de Paris

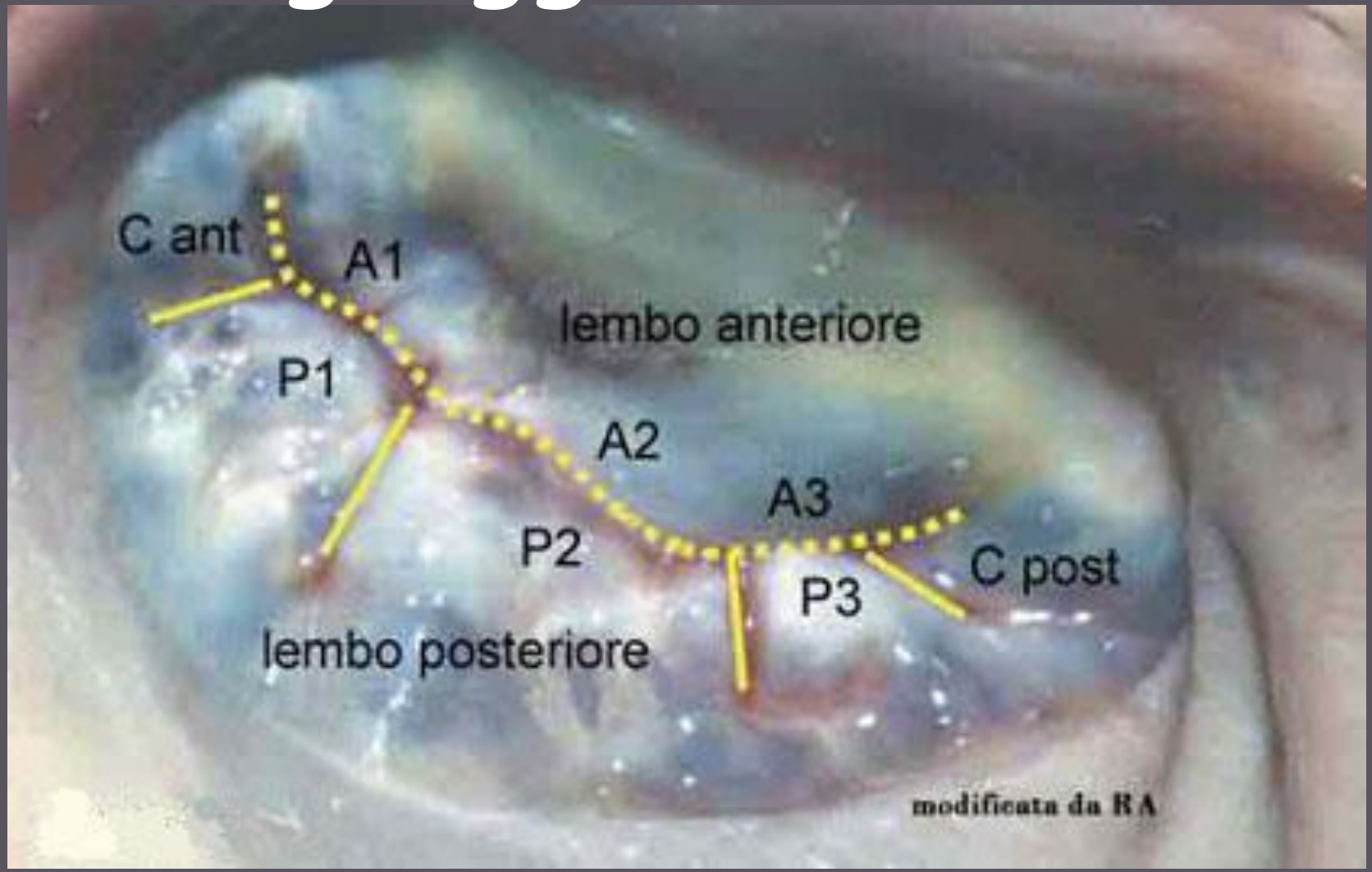
In 1975, we proposed to introduce a distinction between the billowing mitral valve (BMV) (Barlow Syndrom) and the fibroelastic dysplasia of the mitral valve (FED) based on the valve morphology: thickened and yellowish leaflet tissue in BMV vs thin and translucid leaflet tissue in FED, excess tissue in BMV vs no excess tissue in FED, thickened and irregular chordae in BMV vs thin and regular chordae in FED.

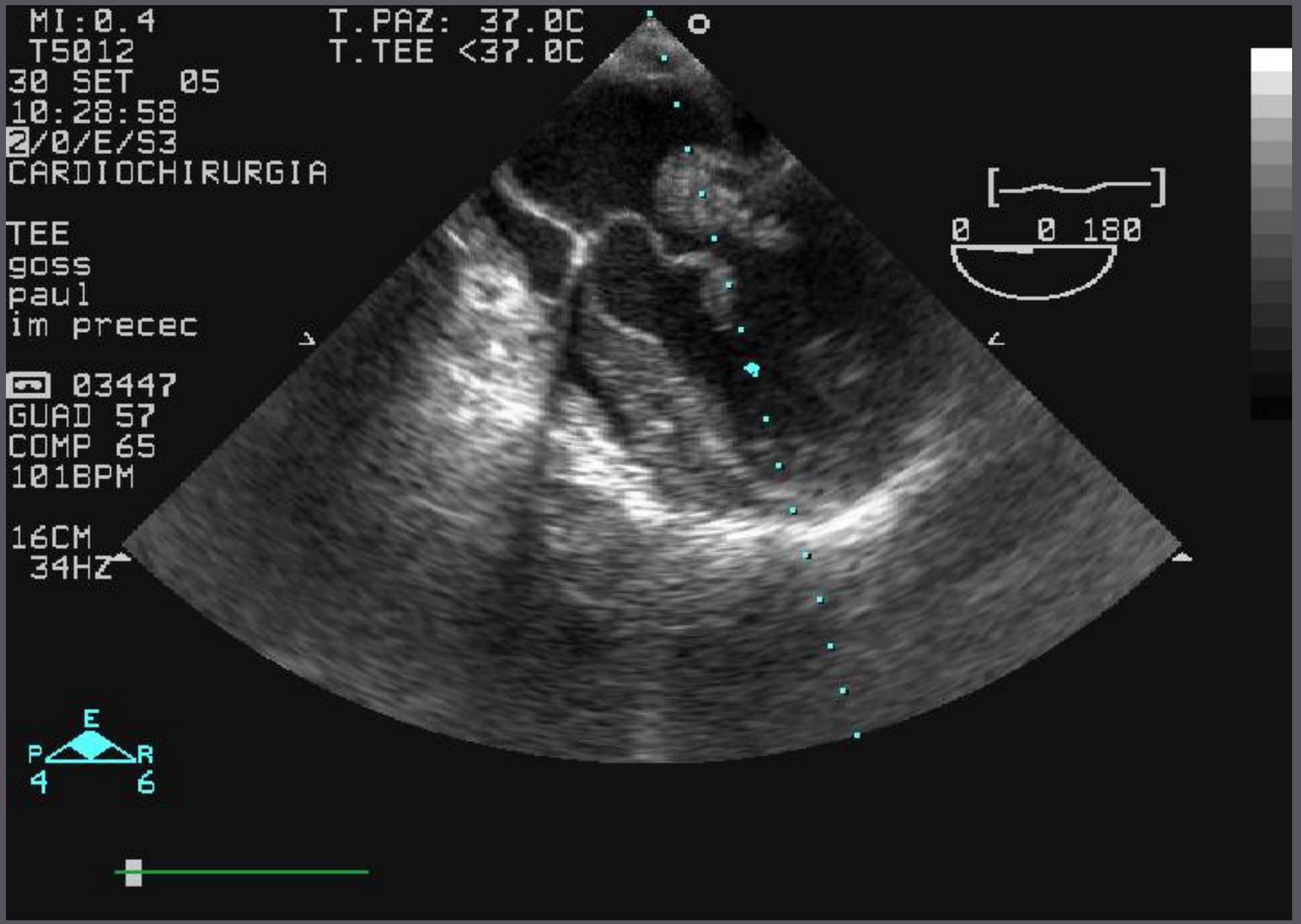
Circulation 1982

Mixoide Barlow

Deficienza Fibroelastica

Linguaggio Condiviso

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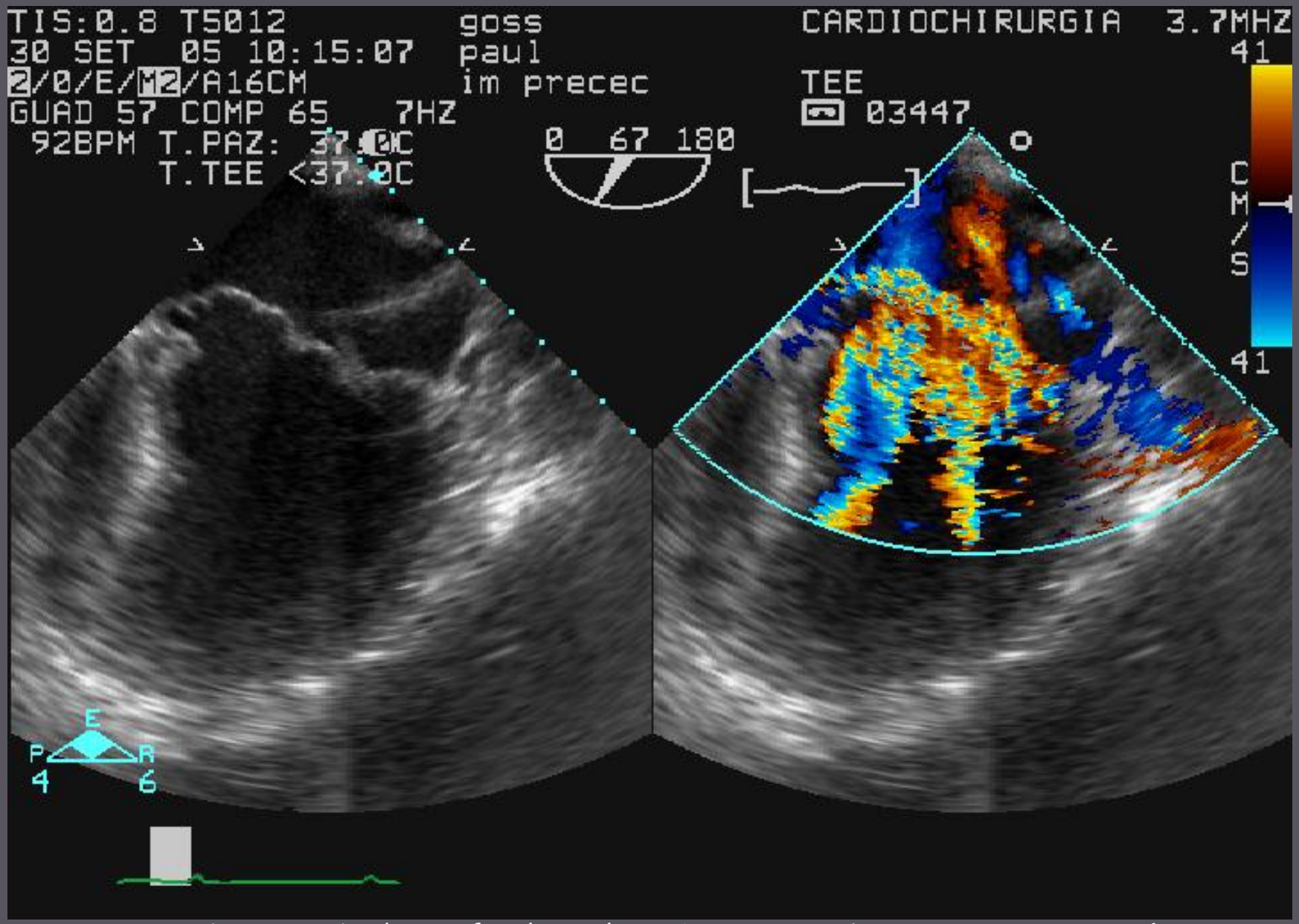
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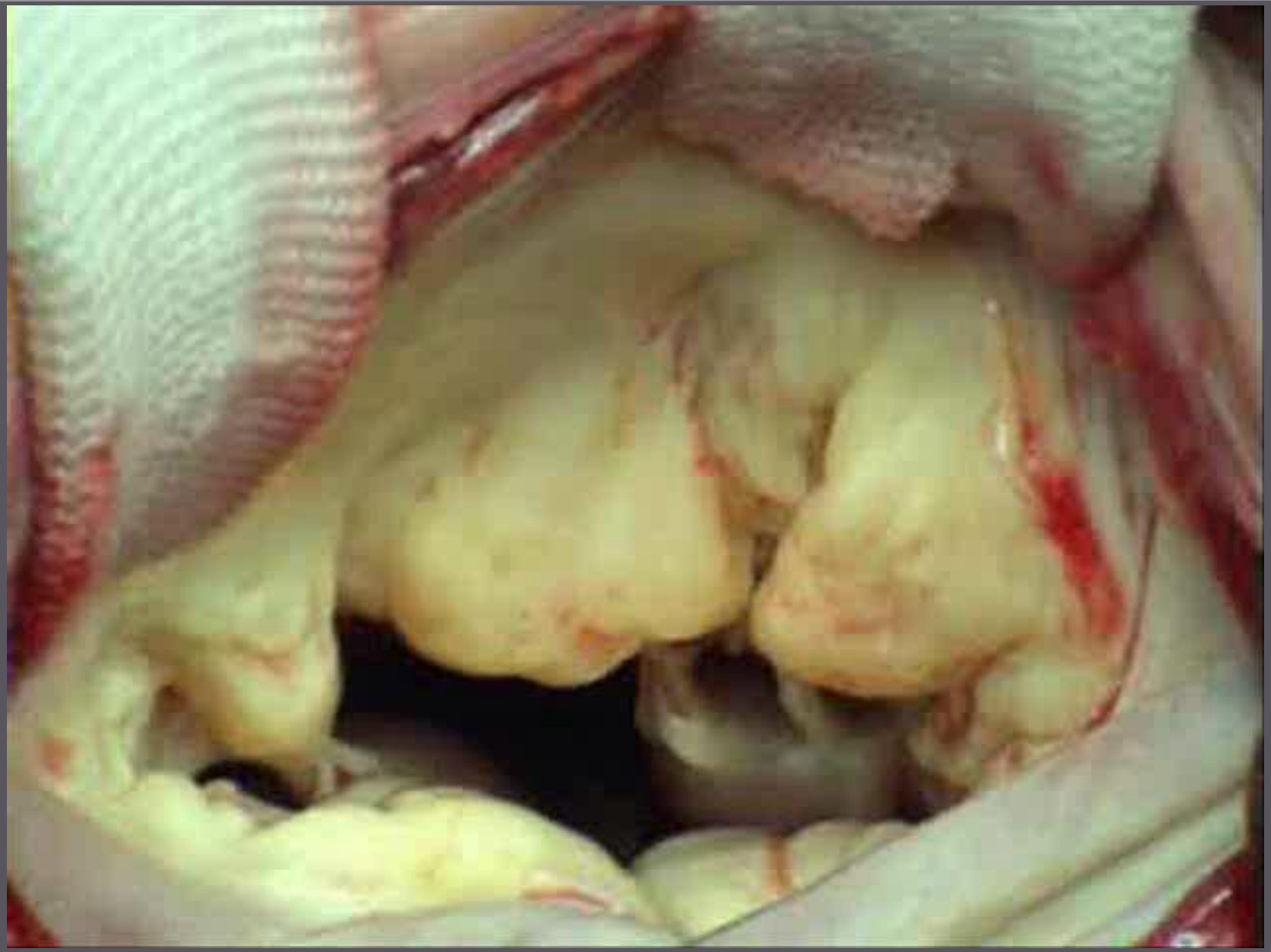

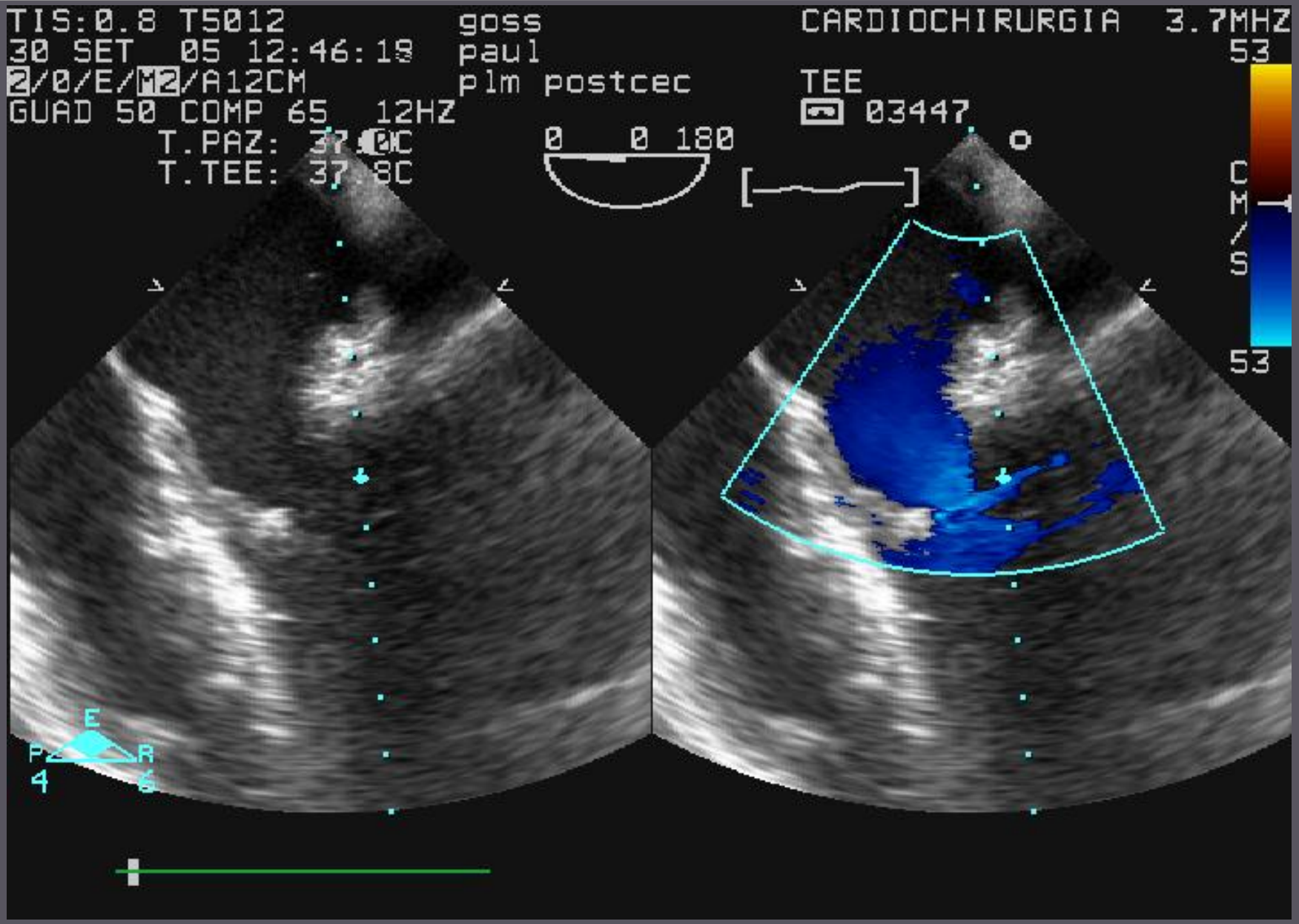
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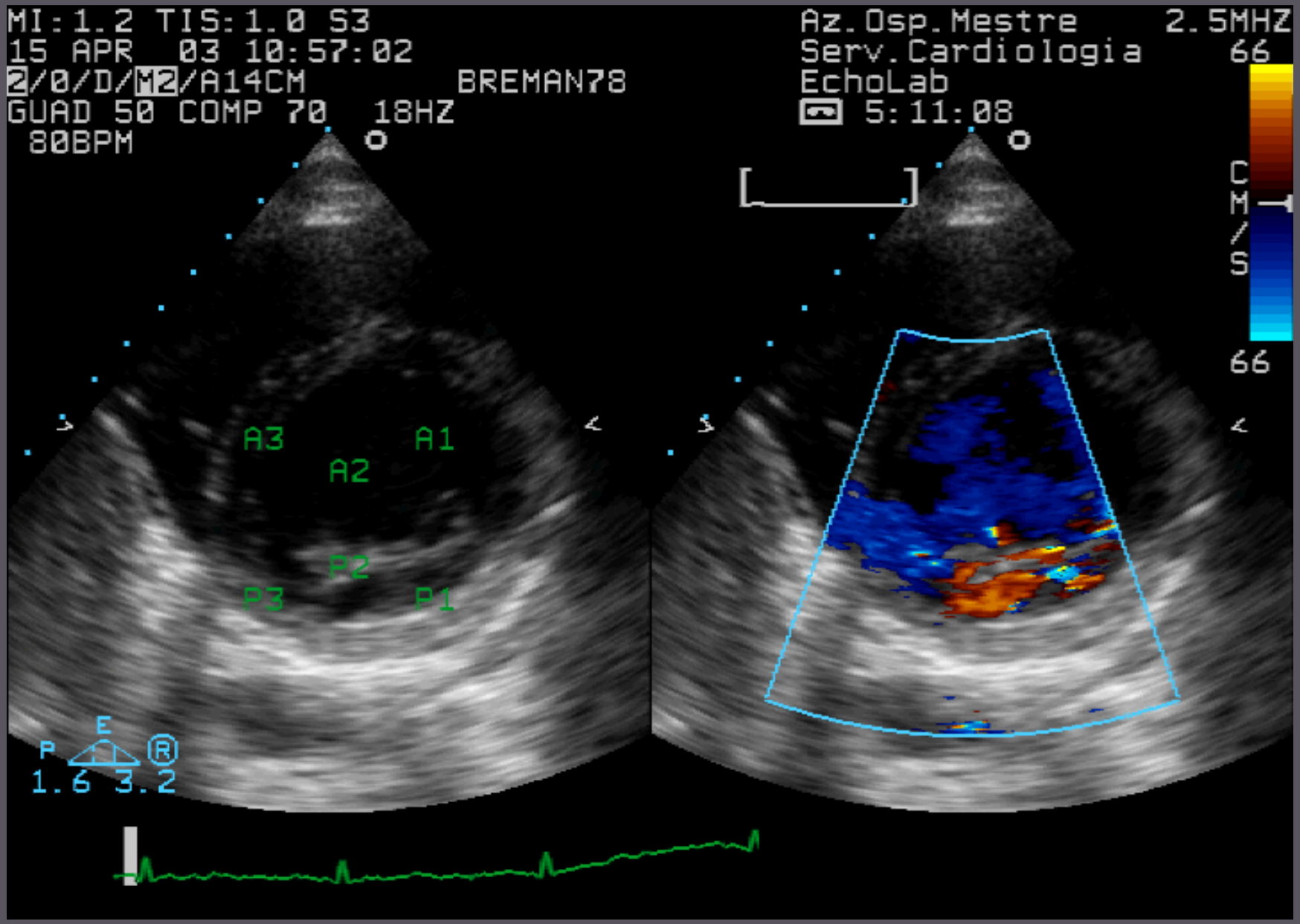
Eziologia:

- ✓ Degenerativa: mixoide, deficienza fibroelastica
- ✓ Infettiva
- ✓ Reumatica

- Maschio, 24 anni
- Anamnesi positiva per tossicodipendenza e.v.
- Sepsi, probabilmente legata ad implantologia dentaria
- Terapia antibiotica empirica (batteriologia negativa)
- Risposta clinica positiva
- Cinque episodi embolici in una settimana (reni, milza, arti inferiori)
- Trasferimento, coltura positiva per stafilococco, terapia antibiotica mirata
- Risposta clinica positiva, stabilità emodinamica
- Ma…ECO 2-D….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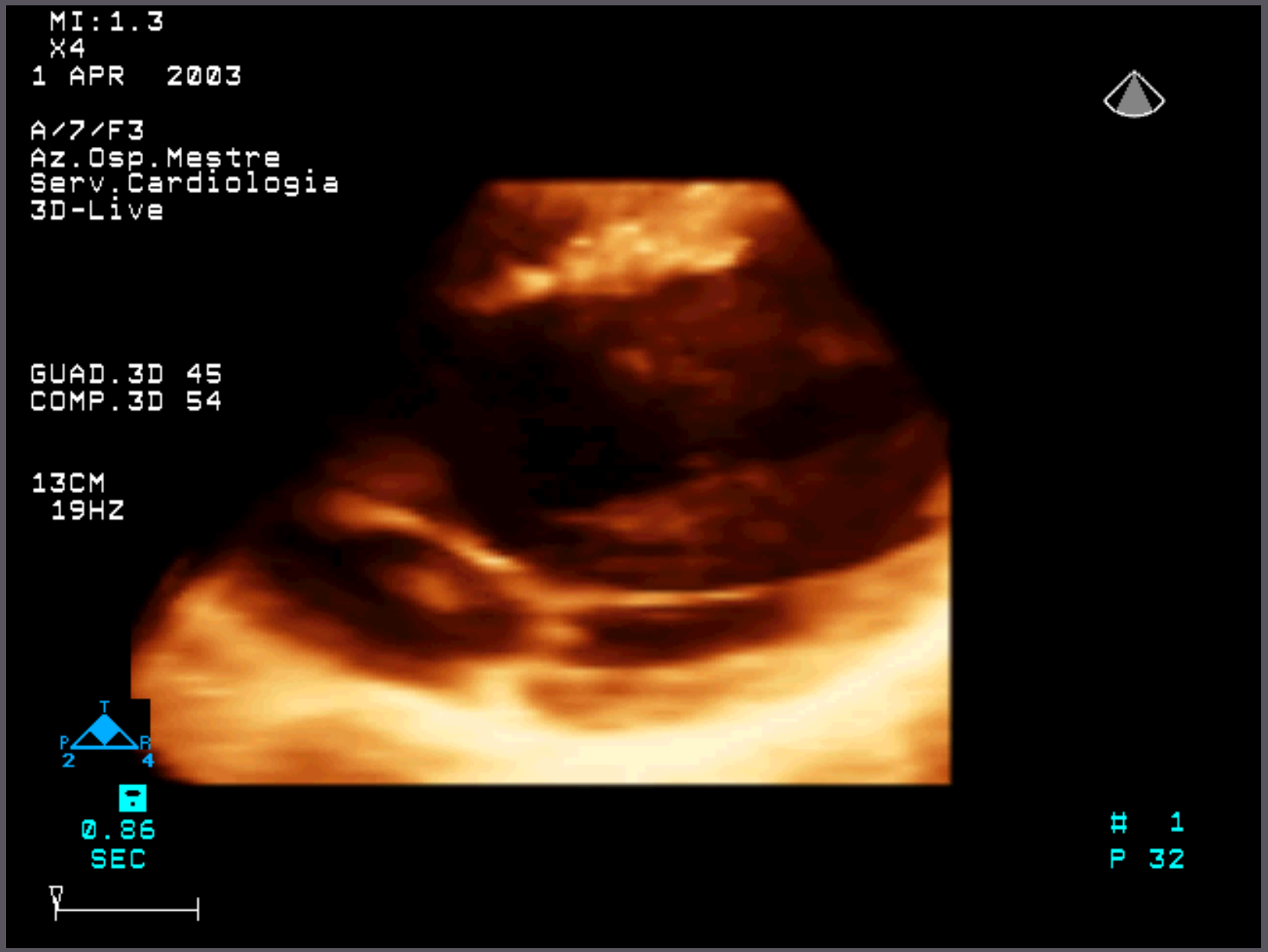
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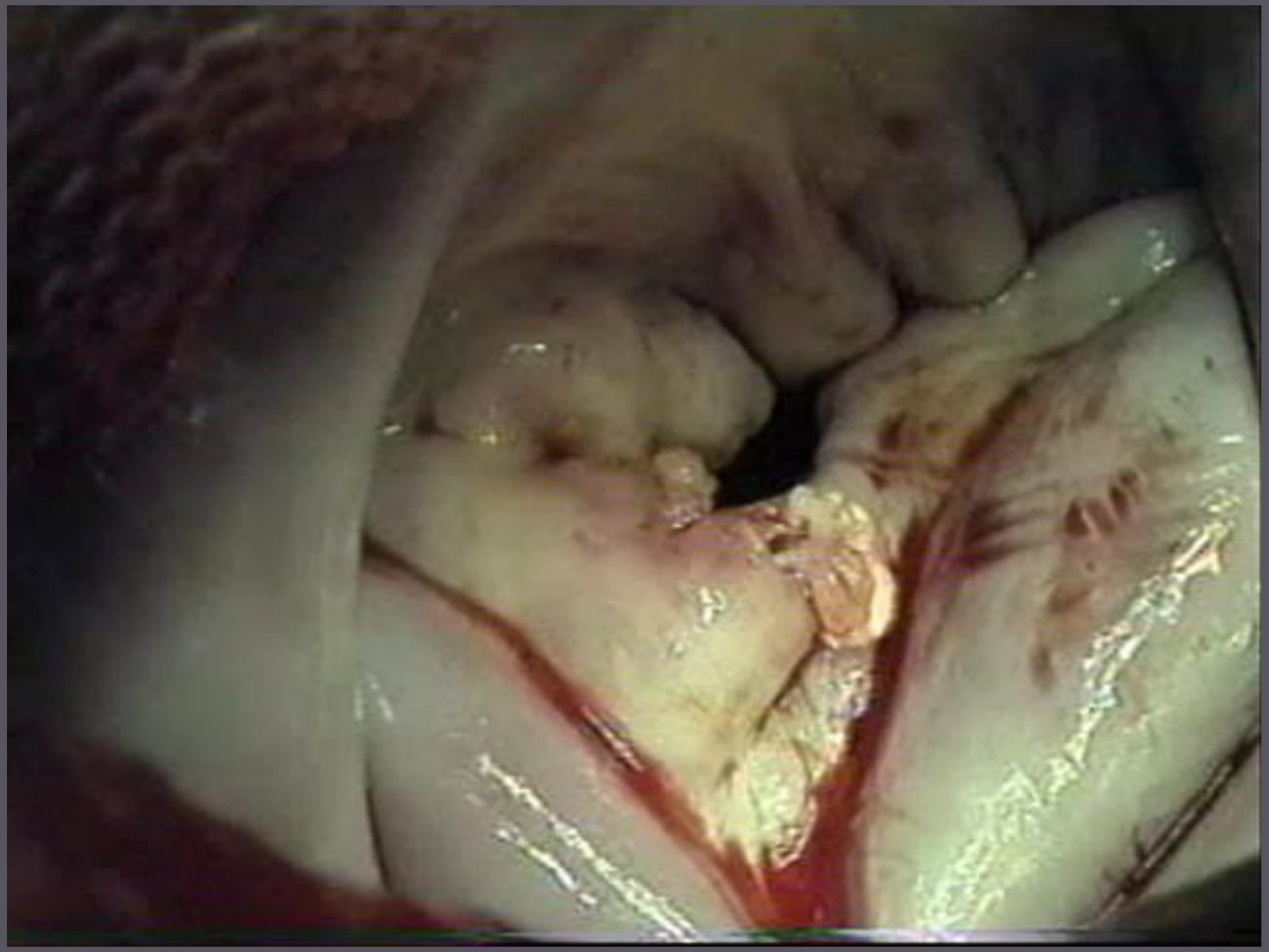

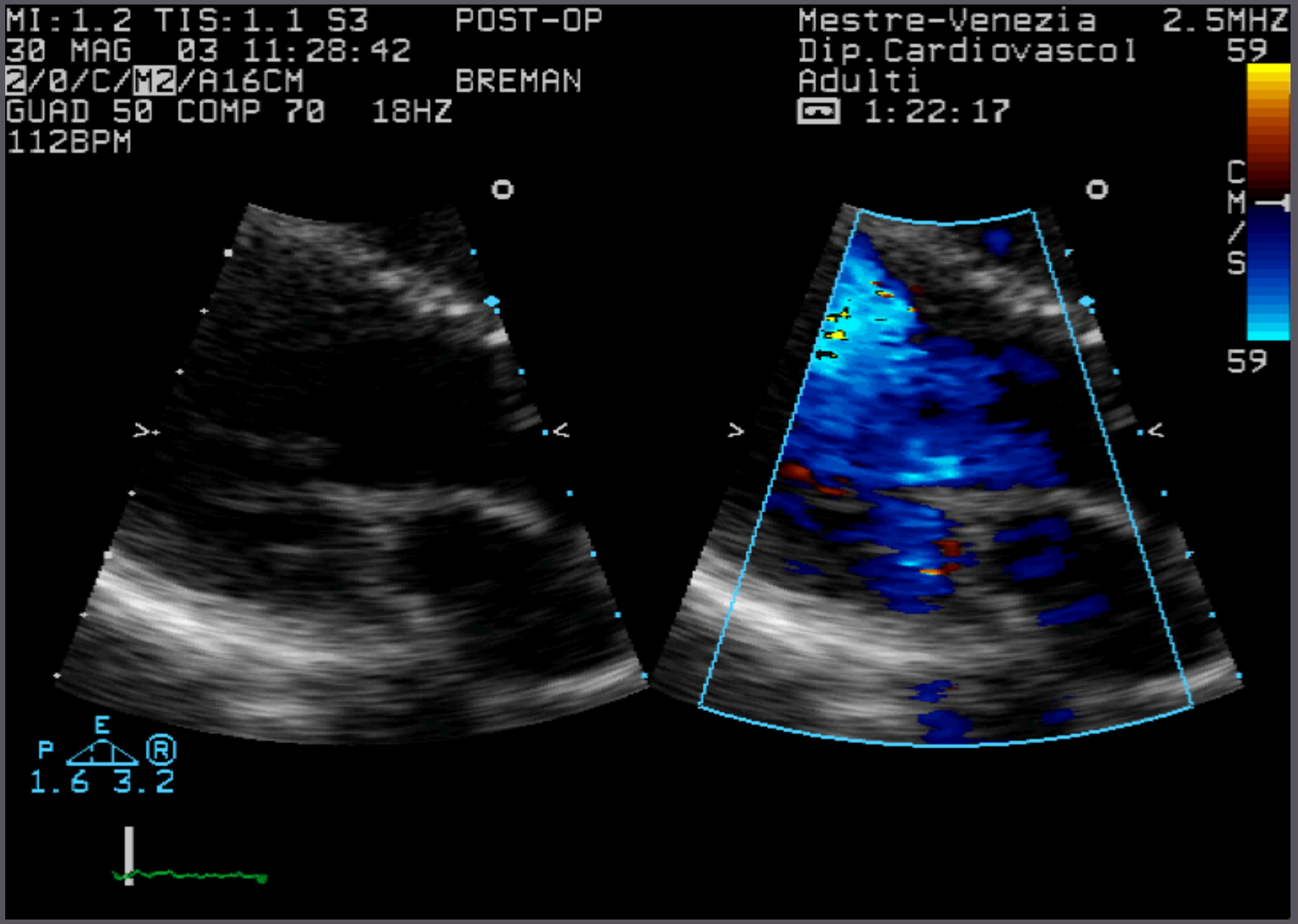
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Novembre 1986 - Dicembre 2013

PAZIENTI #	1127
M/F	750/377
età media (range)	59.9 (11-84)

Ospedale Treviso	11/1986-06/1996
Ospedale Venezia	07/1996-06/2006
Salus Hospital Reggio Emilia	07/2006-12/2013

EZIOLOGIA

	degenerativa	1032	91.6%
	infettiva	33	3.0%
	reumatica	29	2.5%
	ischemica	27	2.4%
	congenita	6	0.5%
NYHA	I - II	801	71.1%
	III - IV	326	28.9% *
RITMO	FA/SIN	232/895	20.6% **

Ultimi 5 anni: *= 9.4% **= 10.2%

PROCEDURA ASSOCIATA

	# pazienti
- Anuloplastica	
pericardio autologo	1072
anello protesico artificiale	38
sutura	9
niente	8

RISULTATI PRECOCI

	#		%
Mortalità	7		0.62
bassa gittata		2	0.2
ipts polmonare		1	0.1
insufficienza respiratoria		2	0.2
aritmie		1	0.1
CID cirrosi		1	0.1
Eventi valve-related	6		0.5
TIA		5	0.4
IMA		1	0.1

INTENTION to TREAT

RICOSTRUZIONE con CORDE ARTIFICIALI vs SOSTITUZIONE VALVOLARE in caso di INSUFFICIENZA MITRALICA DEGENERATIVA

11/1986 – 06/1996	68,5 %
07/1996 – 06/2006	89,8 %
07/2006 – 12/2013	98,8 %

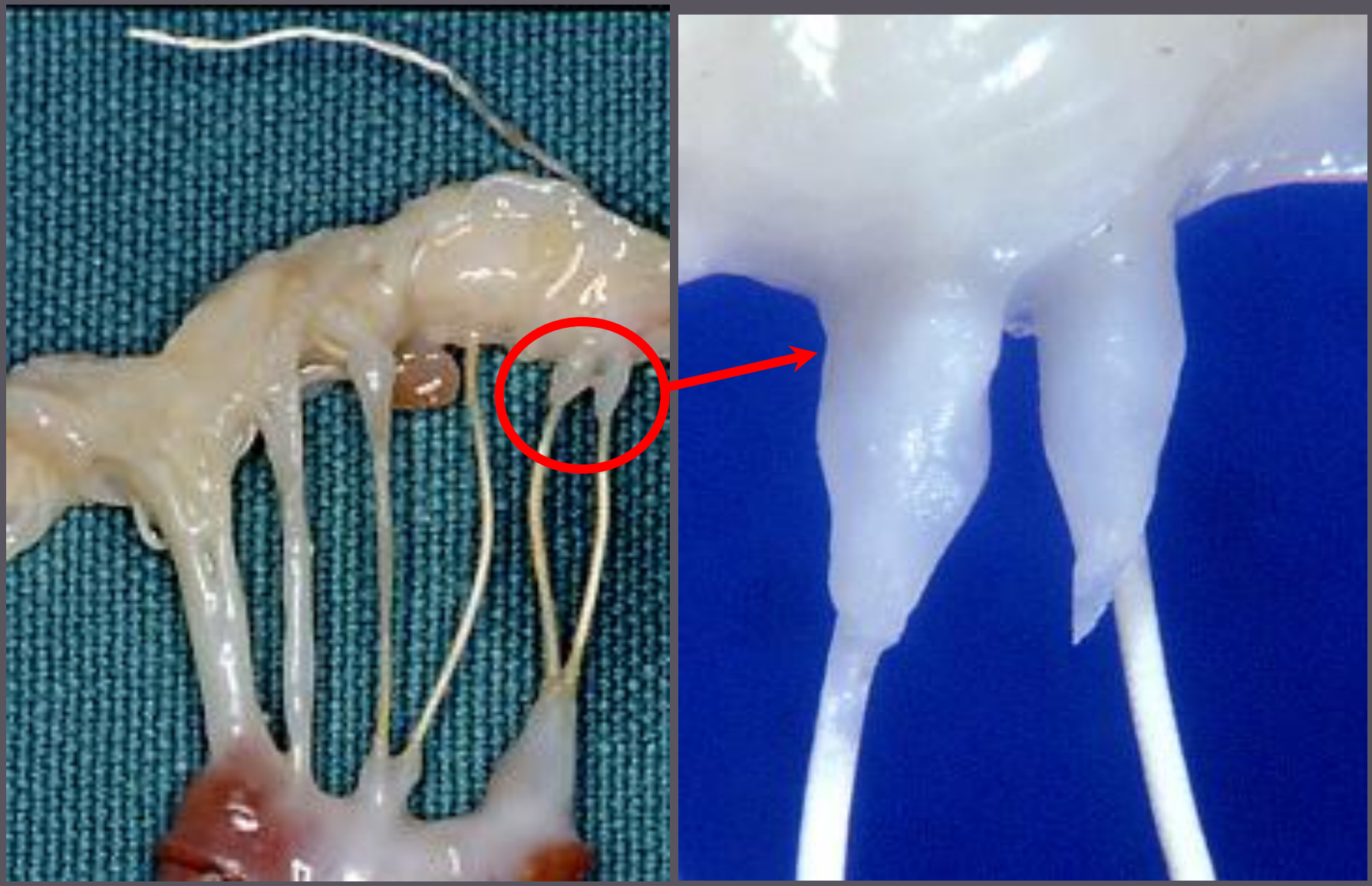
RISULTATI A LUNGO TERMINE

Follow-up			
medio/range	13.6	0.3-27	anni
pt-year	10113		
Reinterventi	30	0.29%	pt/yr
progressione patologia	19*	0.18%	pt/yr
dilatazione anulare	6	0.06%	pt/yr
errore tecnico	2	0.02%	pt/yr
allungamento musc.pap.	2	0.02%	pt/yr
rottura corda nat. accorc.	1	0.01%	pt/yr
- SVM	22**		
- Re-ricostruzione	8		

* 13 reumatica/28 operate ** 1 morte per dissezione aortica rotta in addome

Eziologia:

- ✓ Degenerativa: mixoide, deficienza fibroelastica
- ✓ Infettiva
- ✓ Reumatica



- Maschio, 42 anni
- Chirurgo
- Insufficienza mitralica severa bilembo
- Operato nel 2003 in altro centro: double-orifice and anello protesico
- Precocemente recidiva di insufficienza moderata
- Il fratello è stato successivamente operato nel nostro centro con successo per la stessa patologia con corde artificiali
- Progressivo incremento dell'insufficienza associato ad aritmie sopraventricolari
- Redo in 2007……

- Dubbio: re-ricostruzione o sostituzione valvolare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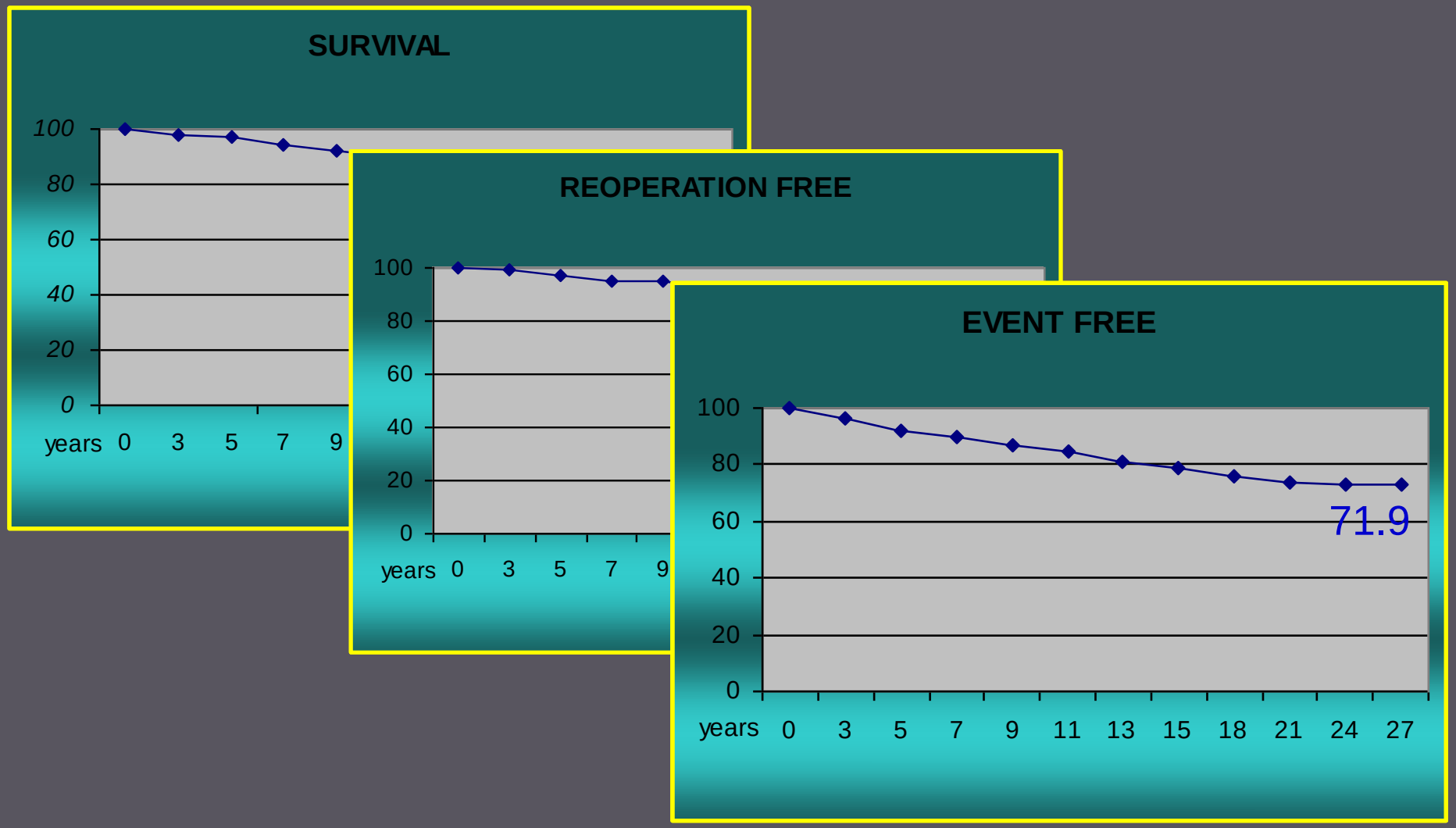
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years 0 3 5 7 9
EVENT FREE
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years 0 3 5 7 9 11 13 15 18 21 24 27
71.9

Valve repair with Carpentier techniques. The second decade.

J Thorac Cardiovasc Surg 1990; 99:990-1001

Deloche A,…, Perrier P,…, Carpentier A

Toward a new paradigm for the reconstruction of posterior leaflet prolapse: midterm results of the "respect rather than resect" approach.

Ann Thorac Surg 2008; 86:718-725

Perrier P,…, Dieleger A

- L'utilizzo di Corde Artificiali è sicuro, affidabile e riproducibile.
- Non sosotituisce tutte le tecniche tradizionali, ma permette di aumentare la percentuale di valvole ricostruite con *risultati fisiologici*.
- Ottimi risultati a distanza in termini di sopravvivenza e libertà da eventi anche in caso di patologia bileaflet, ma non nell'eziologia reumatica.

LA SFIDA E' FINITA:

DOPO 30 ANNI, LE CORDE ARTIFICIALI SONO DIFFUSAMENTE UTILIZZATE…IN EUROPA, USA, GIAPPONE… ed anche in Francia

RBS NATIONS

February 3rd, 2013

Italy vs France 23-18