

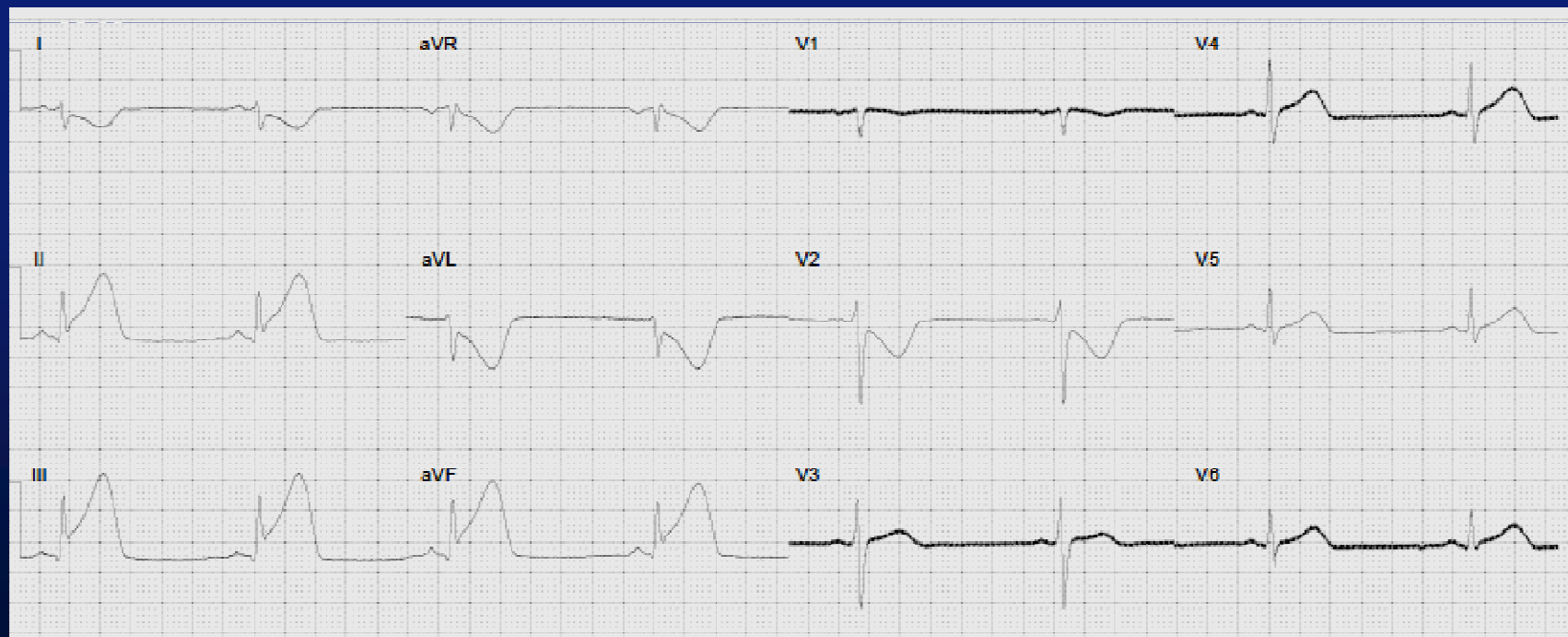
# Acute Coronary Syndromes

Case presentation

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Thoraxcenter,  
Erasmus MC, Rotterdam,  
The Netherlands.

## Case

- Female 57 years old
- 2 hours of chest pain
- Prehospital triage: ECG: inferior AMI
- O<sub>2</sub>, Nitrates sl, Heparin 5000 IU, ASA, Prasugrel

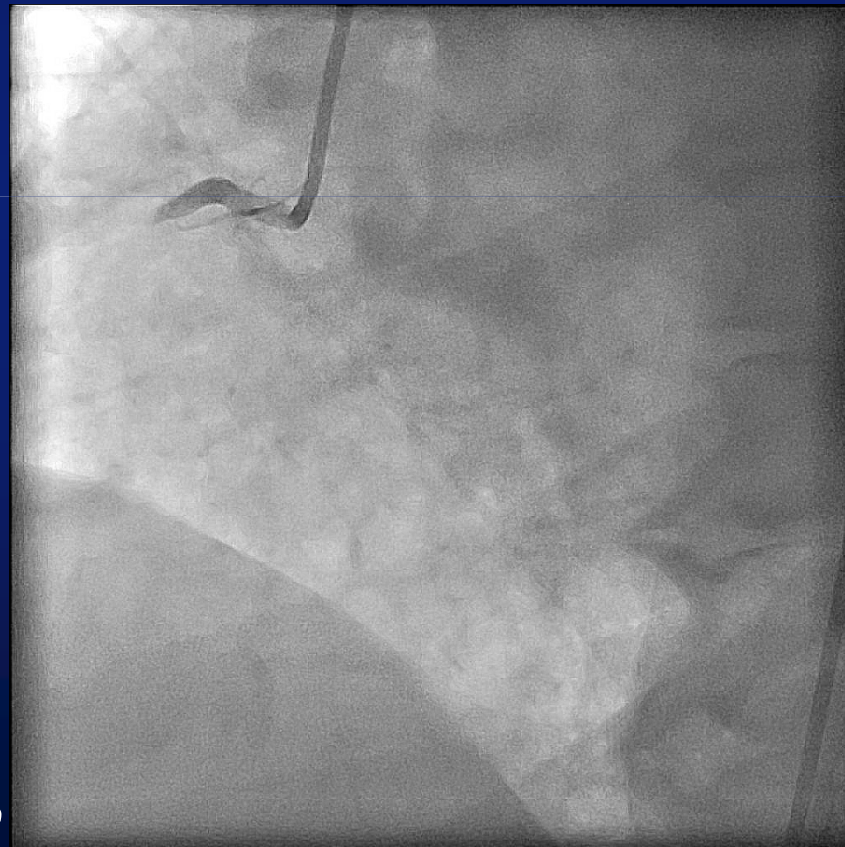


# Case

CAG:

- LAD, CX non-significant coronary artery disease
- RCA:

***Chest pain: 10:00***  
***Local hospital: 10:26***  
***ErasmusMC: 11:30***  
***Cathlab: 11:50***  
***Puncture: 11:55***



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Pre

**Will ASA 325 mg iv + prasugrel 60 mg orally  
(86 min before procedure) result in accurate  
platelet inhibition ?**

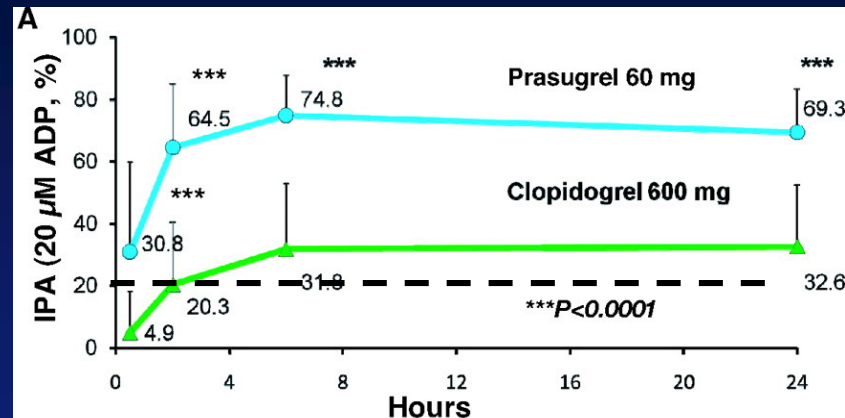
1) Yes

2) No

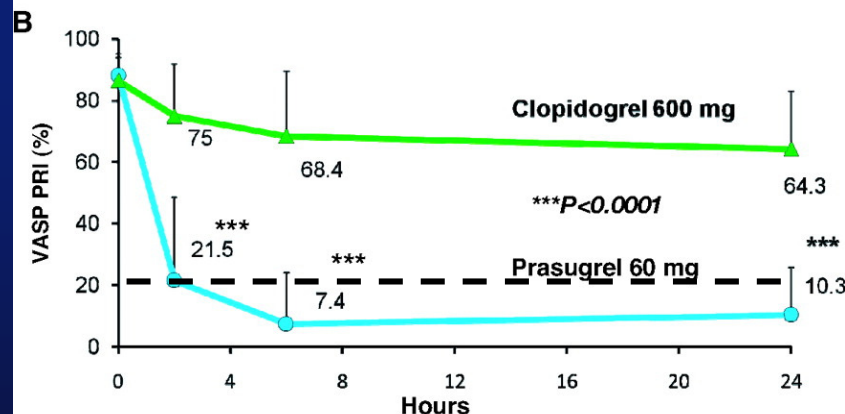


Figure 3. LD-phase platelet function measures.

Wiviott S D et al. Circulation  
2007;116:2923-2932



	0.5 H	2 H	6H	18 - 24H
Prasugrel	N = 70	N = 74	N = 72	N = 39
Clopidogrel	N = 73	N = 78	N = 77	N = 46
LSM	26.0	44.8	43.2	36.4
Difference (95% CI)	(18.9 - 33.2)	(38.4 - 51.2)	(38.0 - 48.4)	(29.0 - 43.8)



	Baseline	2 H	6H	18 - 24H
Prasugrel	N = 89	N = 93	N = 68	N = 48
Clopidogrel	N = 89	N = 88	N = 68	N = 54
LSM		54.3	60.5	56.2
Difference (95% CI)		(47.4 - 61.2)	(54.0 - 67.1)	(49.2 - 63.2)

	ADP <20%		MPA to 20
	Pra	Clo	
At 0.5 h	42.9	87.7	50
At 2 h	2.7	55.1	8.1
At 6 h	0	27.3	

**Elective PCI**

## Verify now testing in Rotterdam

- Biological effectiveness of Prasugrel has only been tested in stable PCI patients
- AMI patients have reduced circulation and different intestinal absorption.
- Single-center, observational study performed in Rotterdam. (PI: Tuncay Yetging)
- 47 Patients: Mean time for Prasugrel ingestion to first blood from sheath: 103 +- 129 min.
- Mean PRU was 244 +- 114 (<230: effective)
- 17 patients (36%) insufficient platelet inhibition

# Case



*Pre*

*Thrombectomy 1*

*Thrombectomy 2*

*Post*

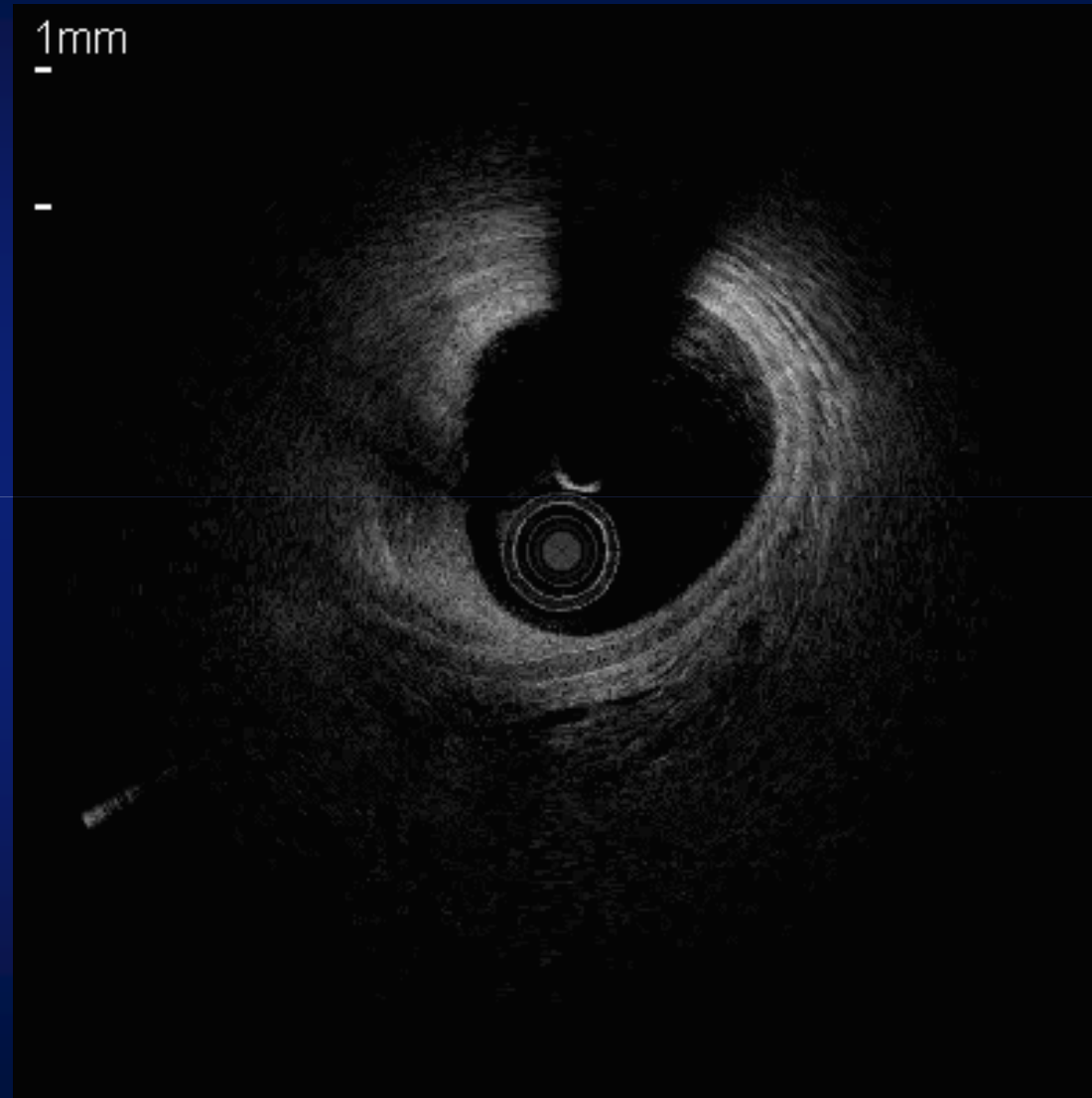
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## Question 3

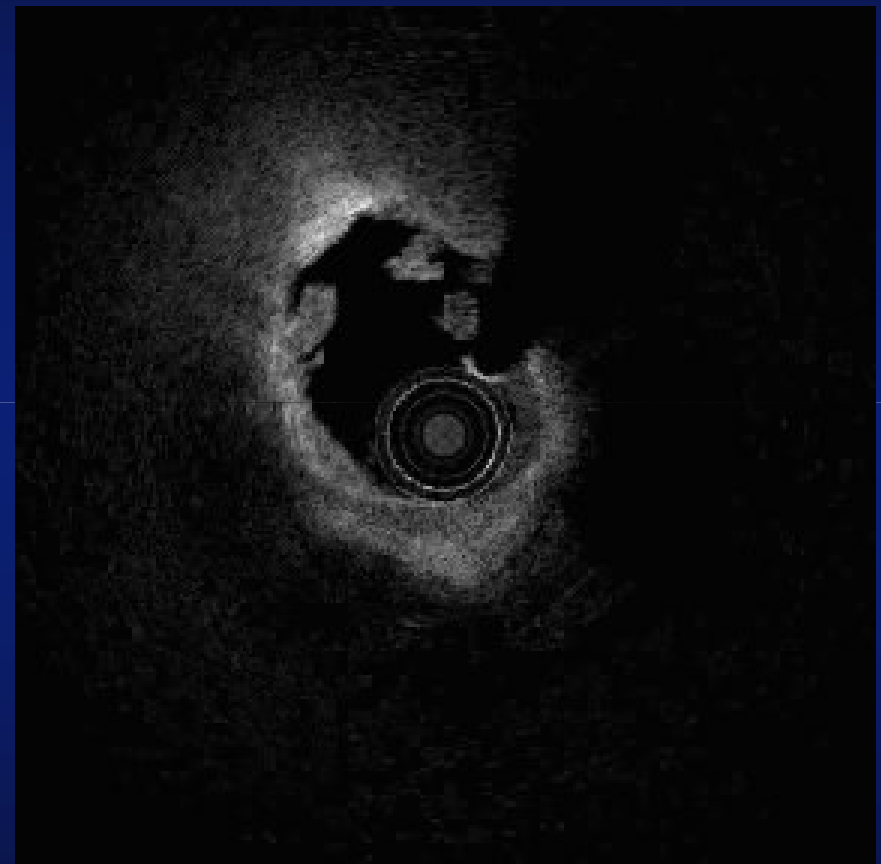
Does thrombectomy remove the majority of the thrombus load?

- A = Yes
- B = No

# OCT post Thrombectomy



# OCT post Thrombectomy





# OCT post Thrombectomy

Journal of the American College of Cardiology  
© 2007 by the American College of Cardiology Foundation  
Published by Elsevier Inc.

Vol. 50, No. 10, 2007  
ISSN 0735-1097/07/\$32.00  
doi:10.1016/j.jacc.2007.04.082

## CLINICAL RESEARCH

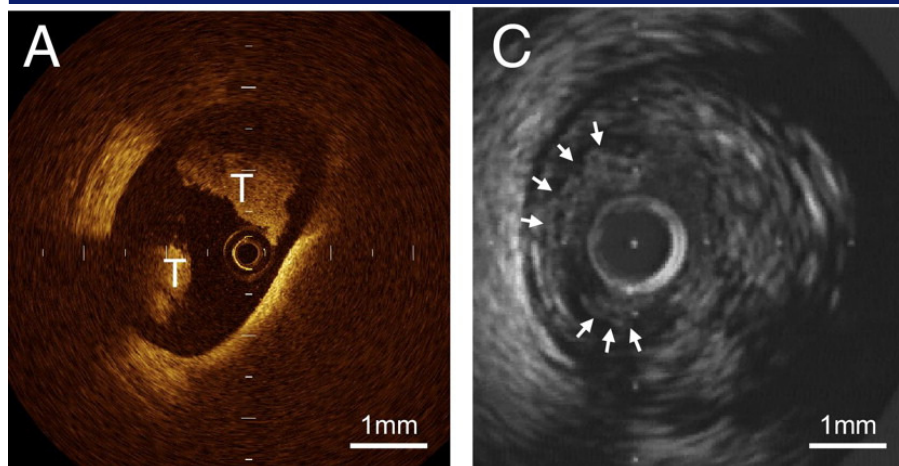
## Atheroma Morphology

### Assessment of Culprit Lesion Morphology in Acute Myocardial Infarction

Ability of Optical Coherence Tomography Compared  
With Intravascular Ultrasound and Coronary Angioscopy

Takashi Kubo, MD, PhD, Toshio Imanishi, MD, PhD, Shigeho Takarada, MD, PhD,  
Akio Kuroi, MD, Satoshi Ueno, MD, Takashi Yamano, MD, Takashi Tanimoto, MD,  
Yoshiki Matsuo, MD, PhD, Takashi Masho, MD, Hironori Kitabata, MD, Kazushi Tsuda, MD, PhD,  
Yoshiaki Tomobuchi, MD, PhD, Takashi Akasaka, MD, PhD

Wakayama, Japan



**Table 2** OCT, CAS, and IVUS  
Findings for Corresponding Images

Finding	OCT (n = 30)	CAS (n = 30)	IVUS (n = 30)	p Value
Fibrous cap disruption	22 (73)*†	14 (47)	12 (40)	0.021
Fibrous cap erosion	7 (23)*†	1 (3)	0 (0)	0.003
Thrombus	30 (100)‡	30 (100)‡	10 (33)	<0.001

Values are given as n (%). \*p < 0.05, optical coherence tomography (OCT) versus coronary angioscopy (CAS); †p < 0.01, OCT versus intravascular ultrasound (IVUS); ‡p < 0.01, CAS versus IVUS.

## Question 4

Suggested RCA treatment

A = Medical treatment

B = Balloon + Stent

C = Direct stenting



## Question 5

Suggested stent for RCA

A = BMS

B = DES

C = Self expanding Nitinol stent

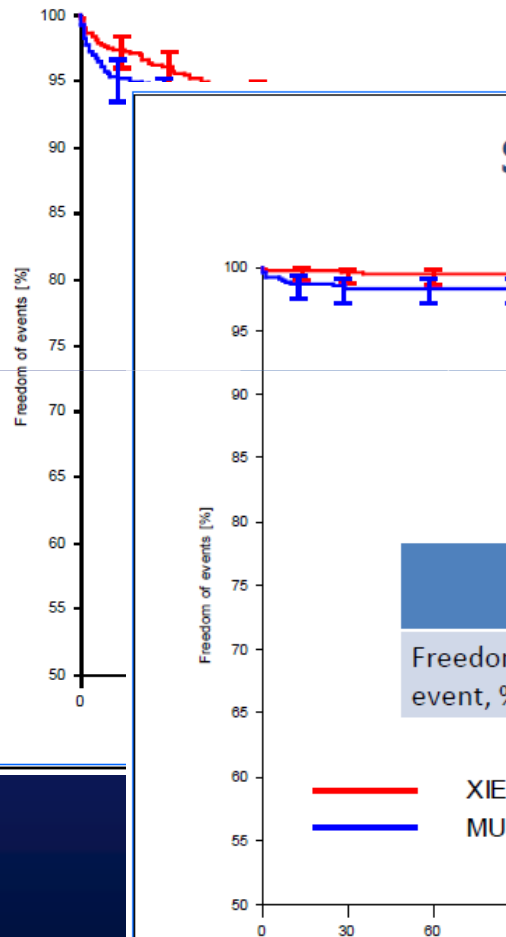
D = Bioresorbable scaffold

# BMS vs DES

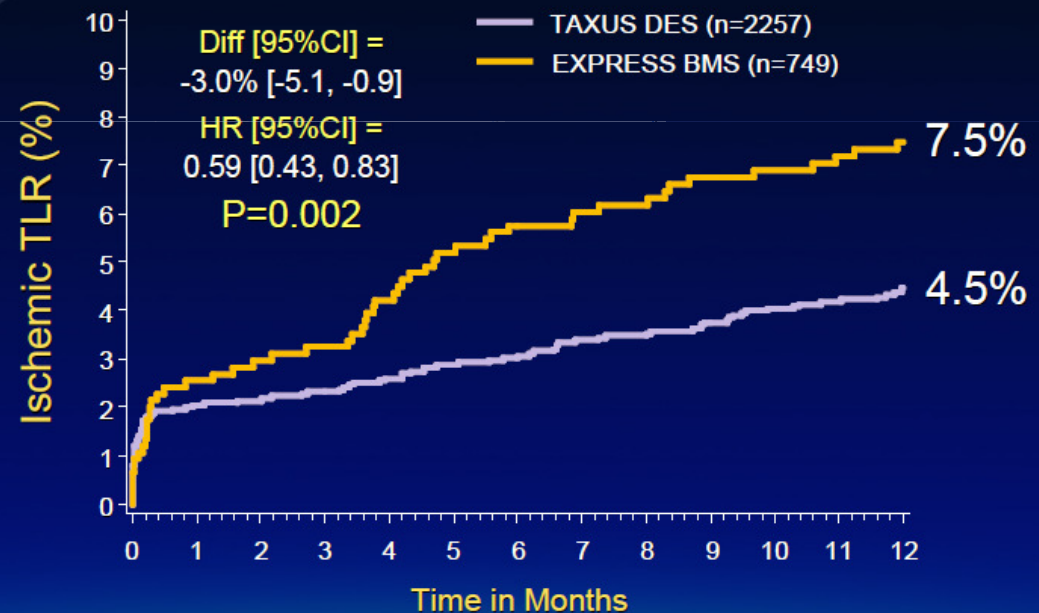
EXAMINATION trial

## Primary Endpoint:

Composite of all-cause death, any MI or any revascularization



## Primary Efficacy Endpoint: Ischemic TLR



Number at risk

TAXUS DES	2257	2132	2098	2069	1868
EXPRESS BMS	749	697	675	658	603

# DES vs BMS in STEMI

*1. Comparison of drug-eluting stents with bare metal stents in patients with ST-segment elevation myocardial infarction*

*Bindu Kalesan, Peter Jüni*

*Eur Heart J (2012) 33(8): 977-987*

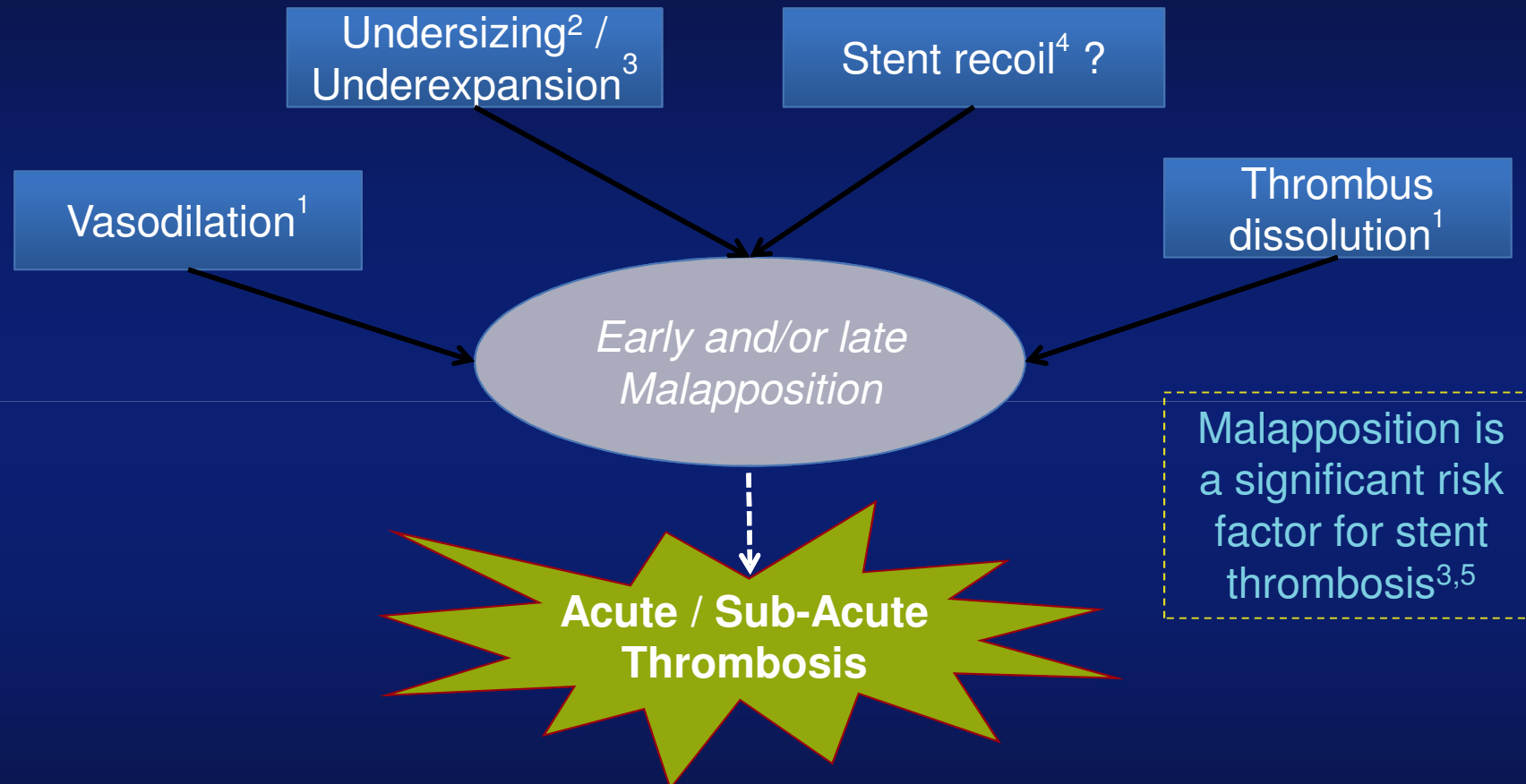
*2. Drug-eluting vs bare-metal stents in primary angioplasty: a pooled patient-level meta-analysis of randomized trials.*

*De Luca G, .., Stone GW*

*Arch Intern Med. 2012 Apr 23;172(8):611-21*

- **No difference in survival,**
- **Less TVR,**
- **No difference in stent thrombosis**
- **Still risk of stent thrombosis increased vs elective patients**

# Current issues in PCI for ACS



1. C. Spaulding, "Clinical Application of a Novel Self-expanding Coronary Stent in AMI" European Cardiology 2009;5(2):71-73
2. Van Werkum J.W. "Predictors of Coronary Stent Thrombosis" JACC 2009 53:16:399-409
3. Stéphane Cook and Stephan Windecker, Circulation 2009;119:657-659
4. Stéphane Cook, Circulation 2007;115:2426-2434
5. Renu Virmani, MD, of CVPPath Institute (Gaithersburg, MD) in a telephone interview with TCTMD
6. Stéphane Cook, Stephan Windecker, Eur Heart J (2012) 33(11): 1334-1343

# APPOSITION II

Erasmus MC

*Erasmus*

- **DESIGN:** International, prospective, randomized, two-arm multi-center trial
- **OBJECTIVE:** To compare the STENTYS® Stent with balloon-expandable stents in AMI
- **ENDPOINTS:**
  - Stent strut apposition and expansion at 3 days (measured by OCT)
  - MACE @30 days and 6 months

*Independent monitoring: Genae  
Core Lab: Cardialysis*

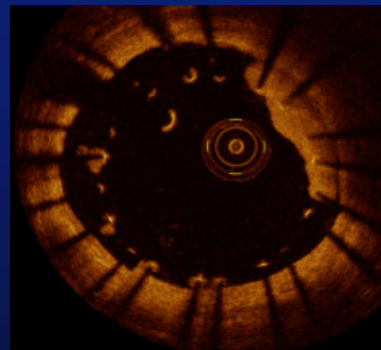
80 STEMI patients enrolled between 12/09 and 06/10 in 9 European sites

STENTYS® stent

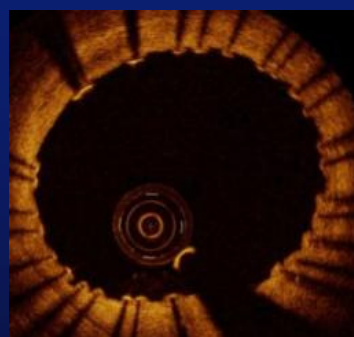
VISION / Driver

Invasive follow-up at 3 days (QCA, OCT)

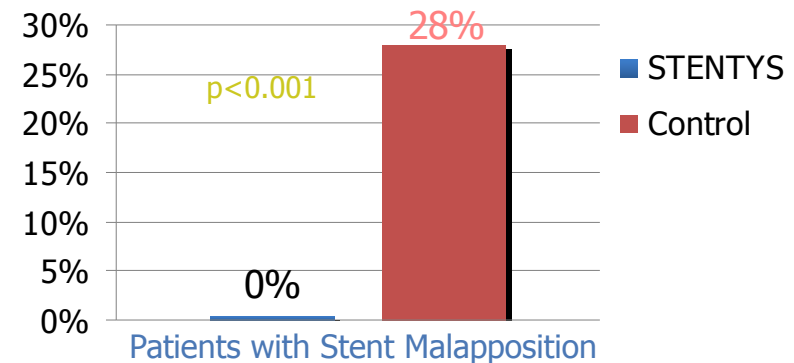
Clinical follow-up at 30 days and 6 months



Balloon-expandable Stent - Day 3



STENTYS® Stent – Day 3



# Case



*Stent, DES 3.0 x 28*



*Final*

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## Question 6

What is the optimal duration of dual antiplatelet treatment of successful primary PCI in single vessel disease

- 1 = 1 month
- 2 = 3 months
- 3 = 12 months
- 4 = 24 months



# DAPT post PCI

Erasmus MC



European Heart Journal (2010) 31, 2501–2555  
doi:10.1093/eurheartj/ehq277

ESC/EACTS GUIDELINES



## Guidelines on myocardial revascularization

**The Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)**

Developed with the special contribution of the European Association for Percutaneous Cardiovascular Interventions (EAPCI)<sup>‡</sup>

### **(b) Recommended duration of dual antiplatelet therapy**

*After percutaneous coronary intervention*

- 1 month after BMS implantation in stable angina;<sup>55,60,94</sup>
- 6–12 months after DES implantation in all patients;<sup>60,94</sup>
- 1 year in all patients after ACS, irrespective of revascularization strategy.



# DAPT post PCI

Erasmus MC

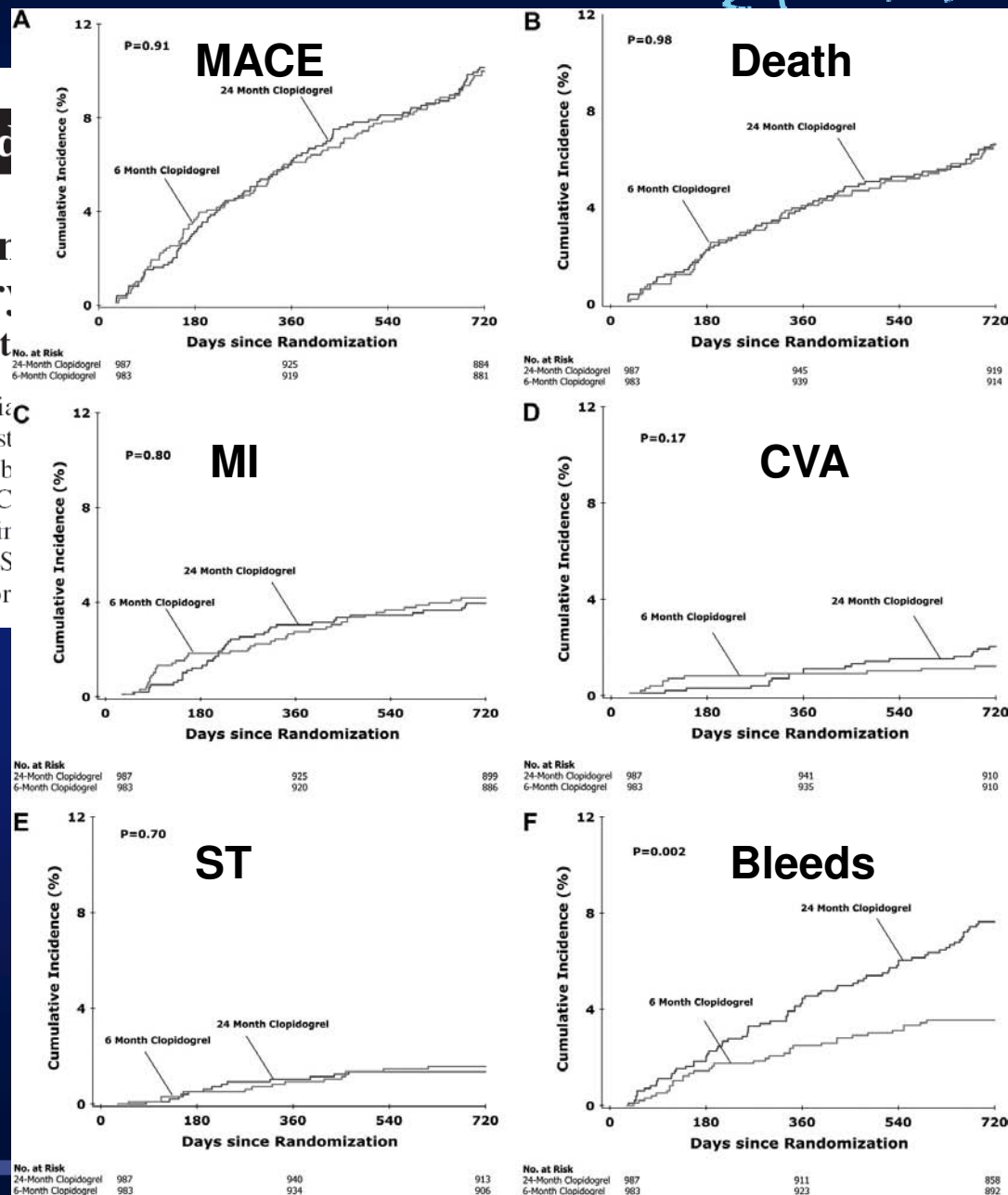
*Erasmus*

## Interventional Card

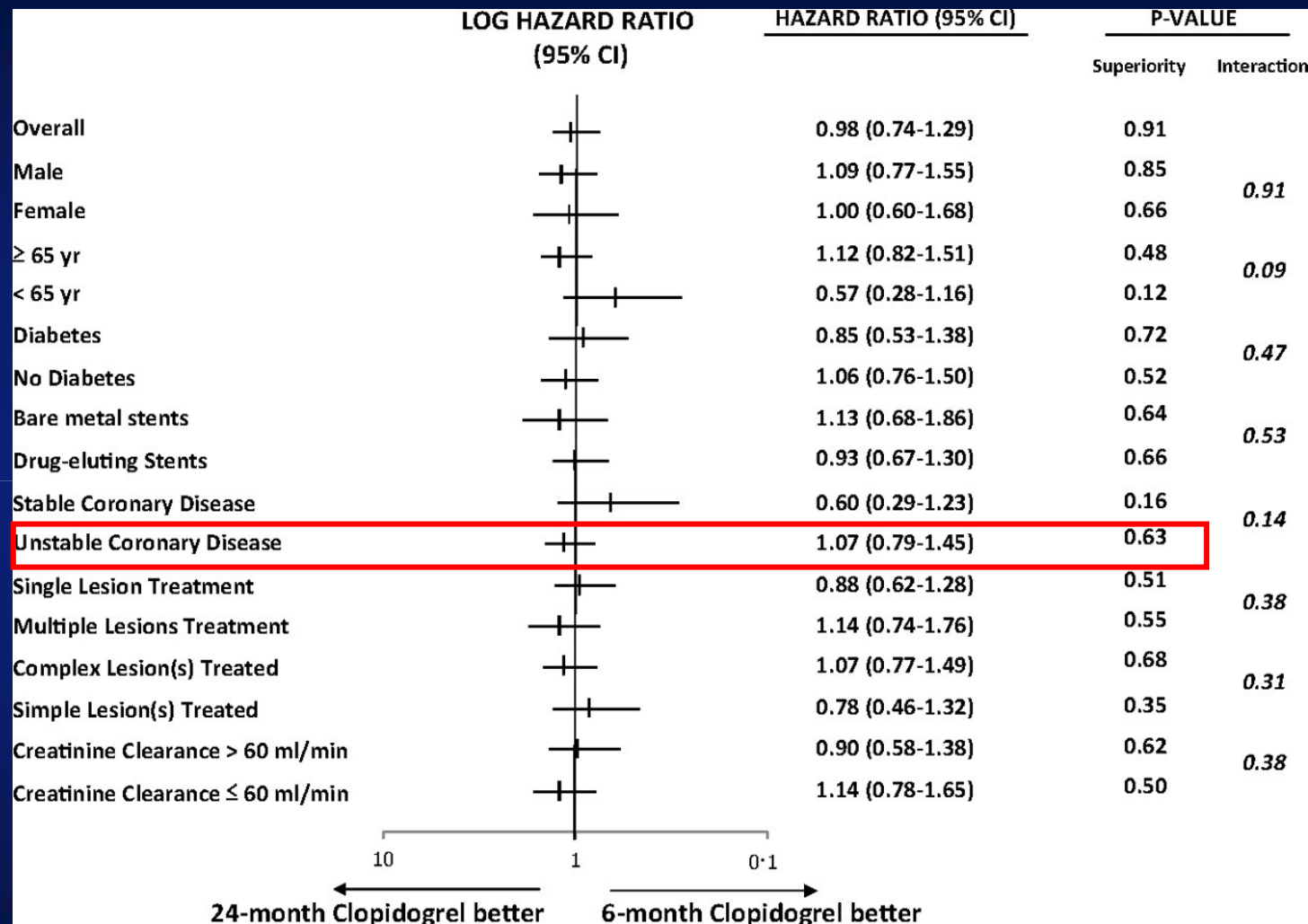
### Short- Versus Long-Term Duration Therapy After Coronary A Randomized Multicent

Marco Valgimigli, MD, PhD; Gianluca Campo, MD; Monica  
Gianfranco Percoco, MD; Carlo Tumscitz, MD; Fausto Cast  
Matteo Tebaldi, MD; Giuseppe Fucà, MD; Moh'd Kubb  
Monica Minarelli, MD; Antonella Scalone, MD; Caterina C  
Marco Borghesi, MD; Jlenia Marchesini, MD; Giovanni Parrir  
for the Prolonging Dual Antiplatelet Treatment After Grading S  
(PRODIGY) Investigator

**6 vs 24 months of DAPT**  
**32% STEMI, 23% Non-STEMI**  
**25% BMS,**  
**25% EES,**  
**25% PES**  
**25% ZES**



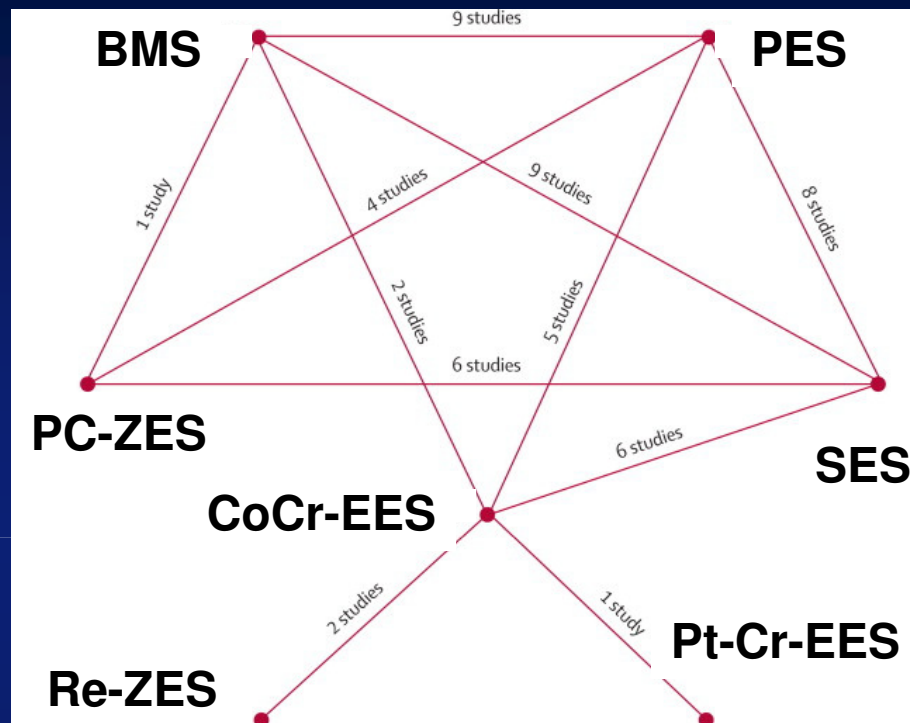
# DAPT post PCI



**6 vs 24 months of DAPT**  
**32% STEMI, 23% Non-STEMI**

Valgimigli M et al. Circulation  
2012;125:2015-2026

# DAPT post PCI

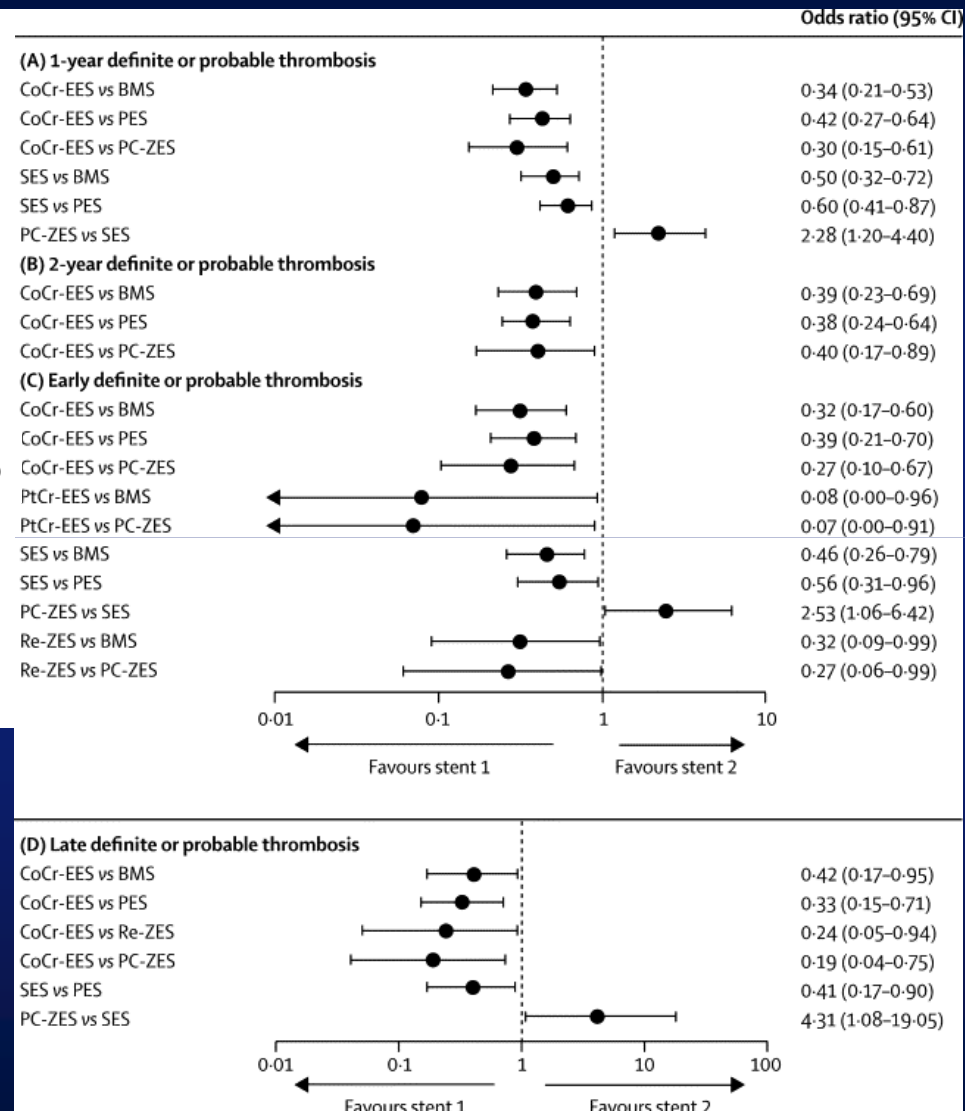


**49 trials including 50 844 patients**

*Stent thrombosis with drug-eluting and bare-metal stents: evidence from a comprehensive network meta-analysis.*

Palmerini T, Stone GW.

Lancet. 2012 Apr 14;379(9824):1393-402.

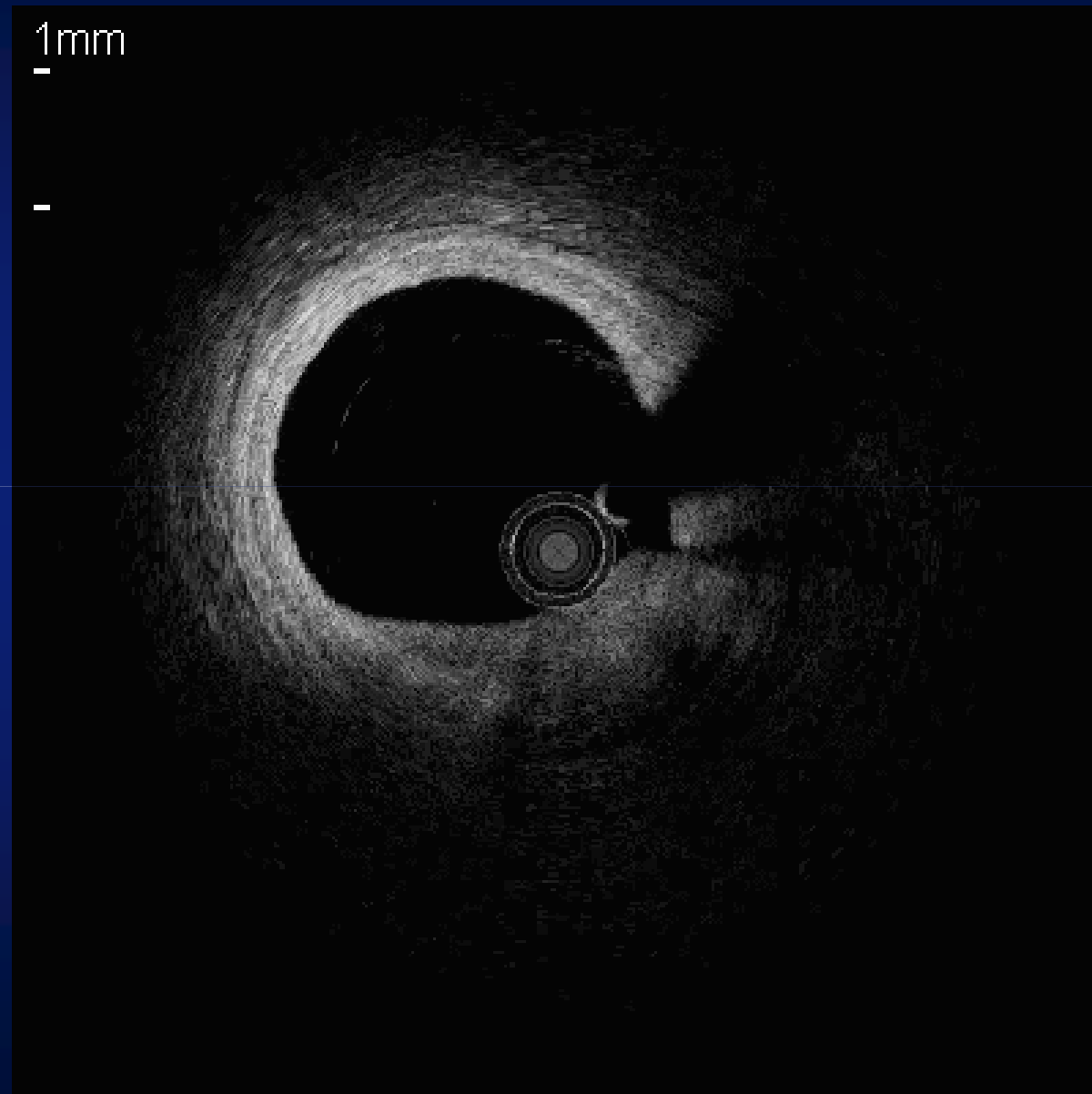


## Question 6

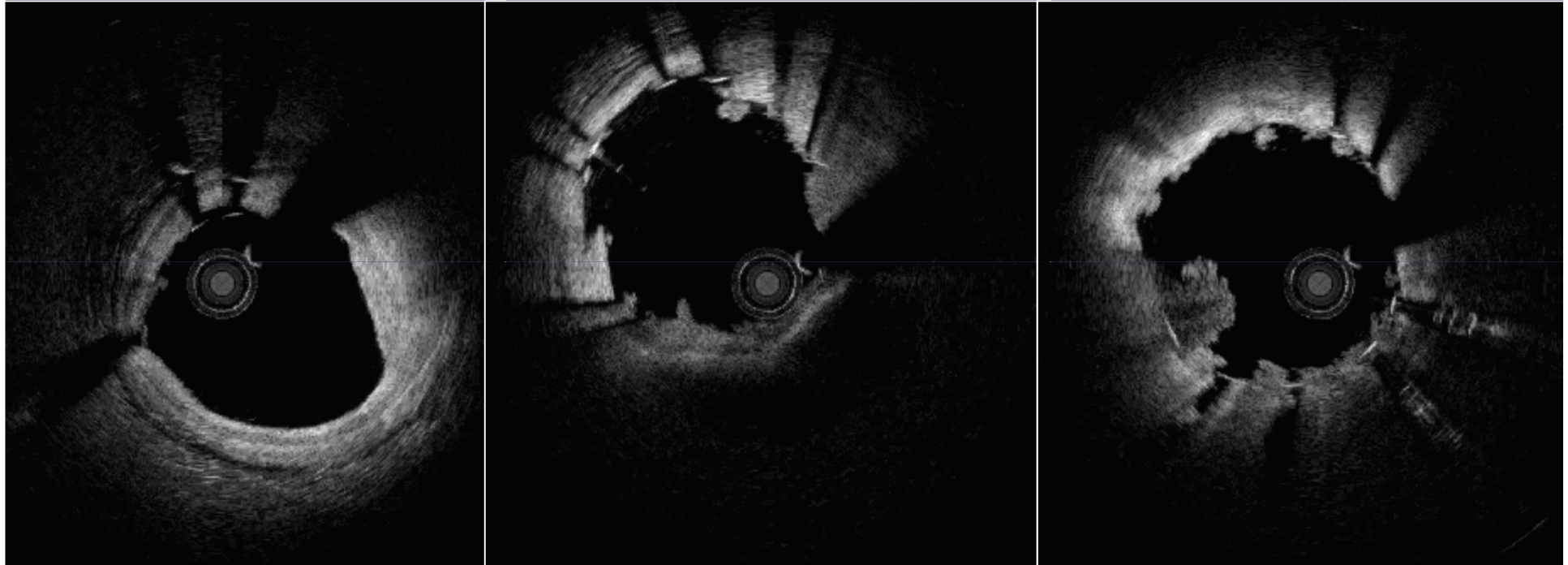
What is the optimal duration of dual antiplatelet treatment of successful primary PCI in single vessel disease

- 1 = 1 month
- 2 = 3 months
- 3 = 12 months
- 4 = 24 months

# OCT post implantation



# OCT post implantation



# Case FU

- Cholecystitis, treated conservative, elective surgery proposed.

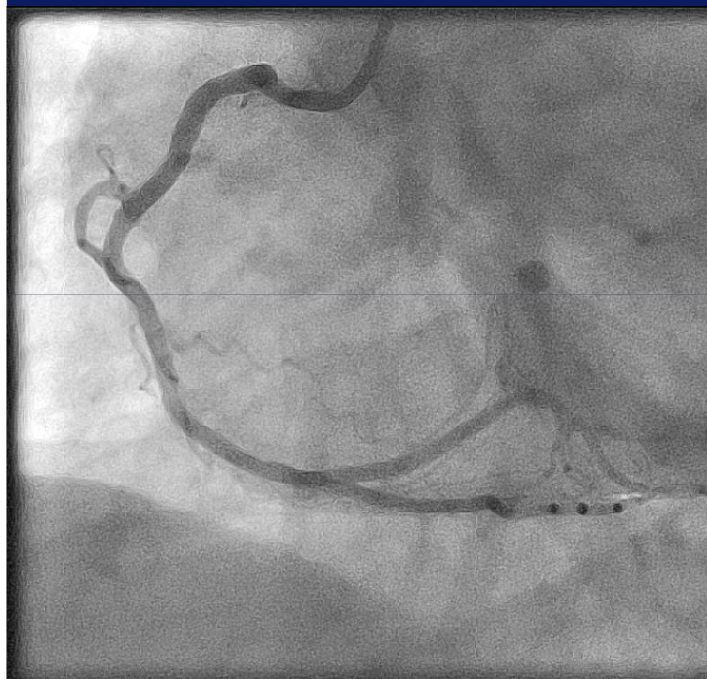
## Question 7

What is your advise for her surgery after initial PCI with DES stent?

- 1 = 1 month
- 2 = 3 months
- 3 = 12 months



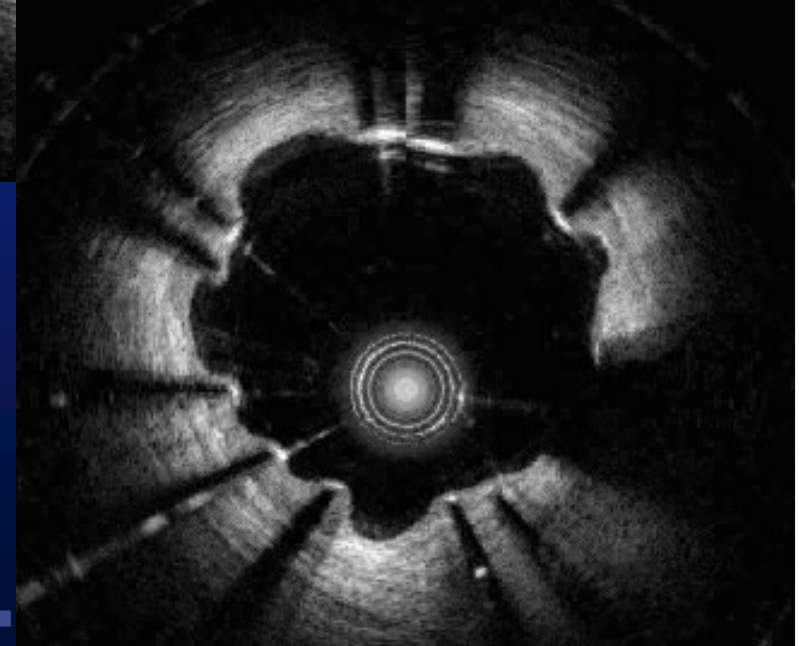
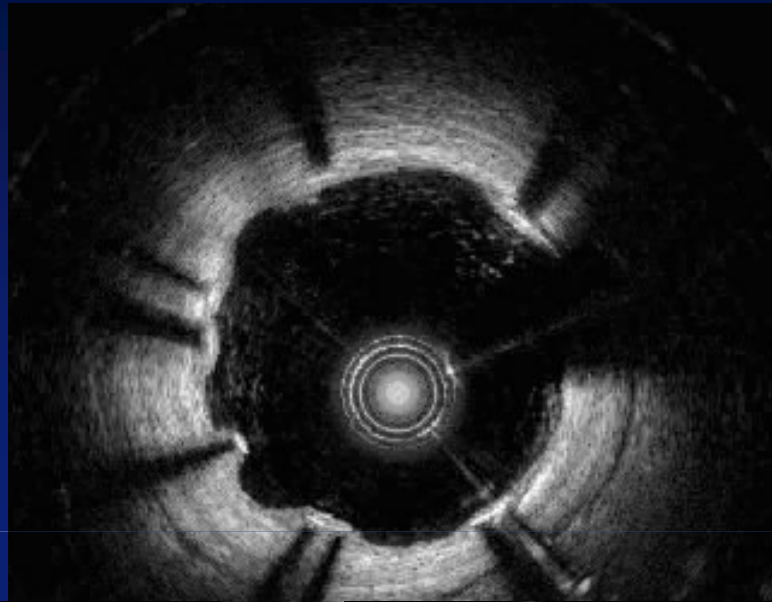
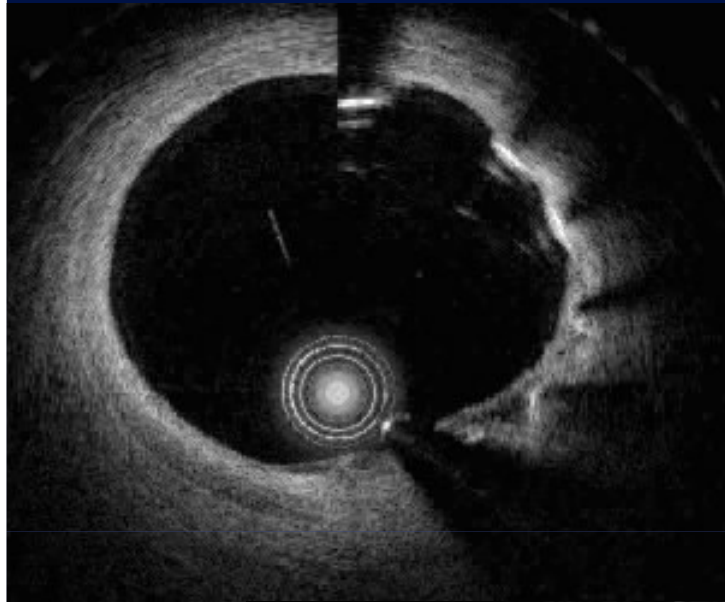
# OCT FU of TROFI study (6 mnd)



*6 Months FU*



# OCT FU of TROFI study (6 mnd)



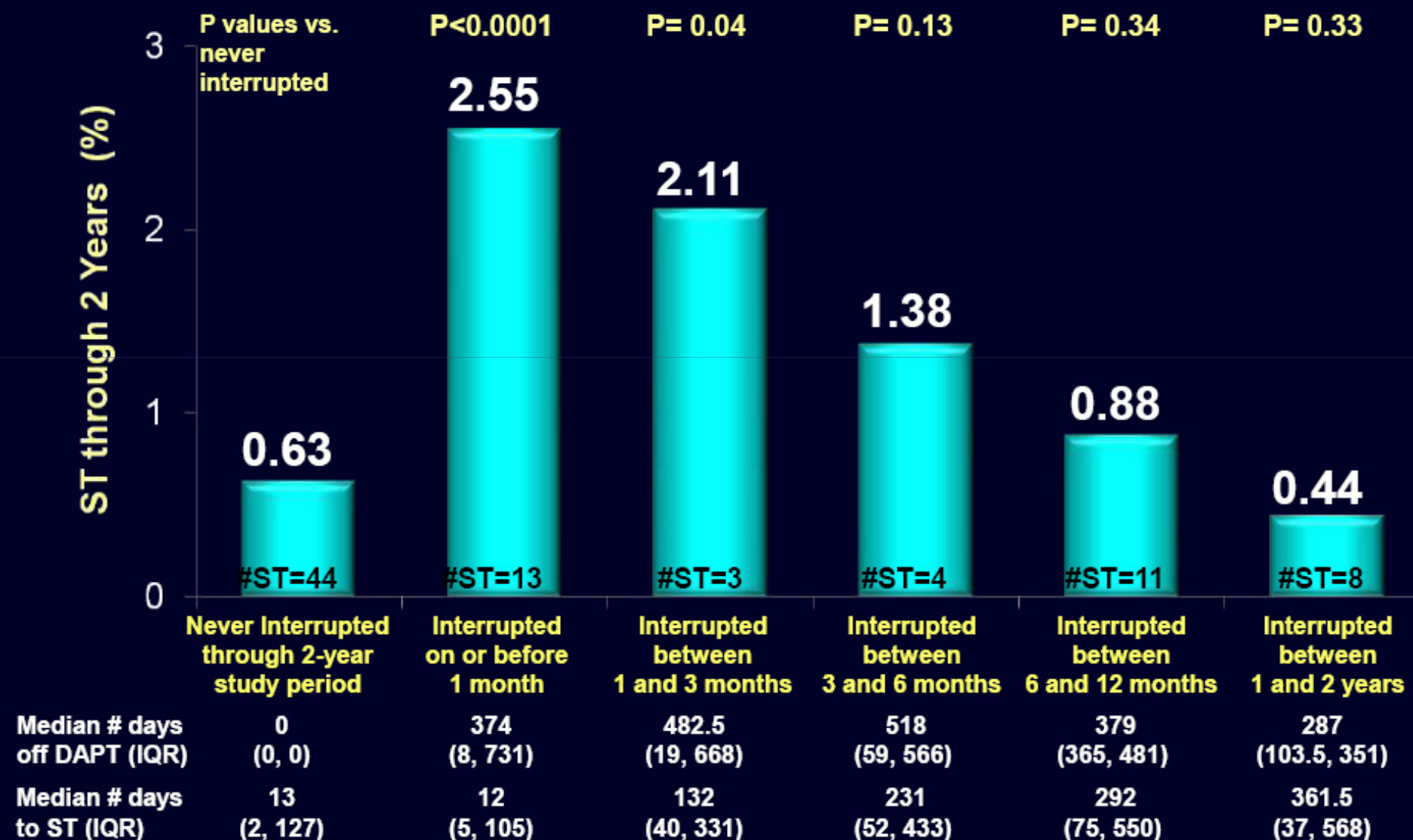
## Question 8

What is your advise for her surgery with the knowledge of her invasive imaging a 6 mth FU

- 1 = Dual antiplatelet therapy can be stopped and surgery performed after 7 days
- 2 = Continue DAPT till 12 months
- 3 = Continue DAPT till 24 months

# Timing of First DAPT Interruption and Stent Thrombosis Through 2 Years

Stone G. Presented at TCT 2011

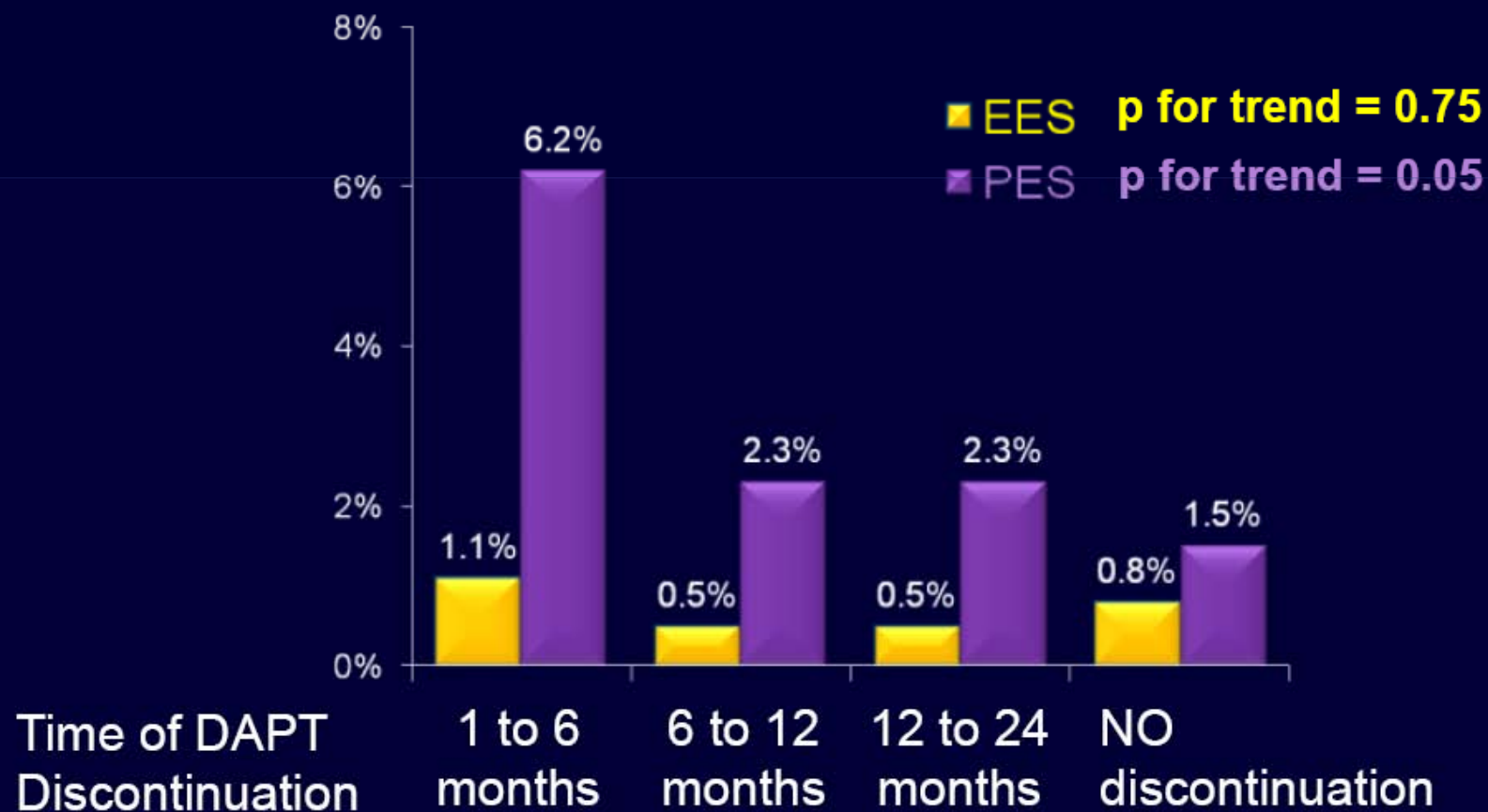


Rates are KM estimates. Note: DAPT may have been interrupted before or after a ST event

# Impact of DAPT Discontinuation on Definite or Probable Stent Thrombosis with Everolimus- and Paclitaxel-Eluting Stents Through 2 Years

Kedhi E. presented at ACC 2012

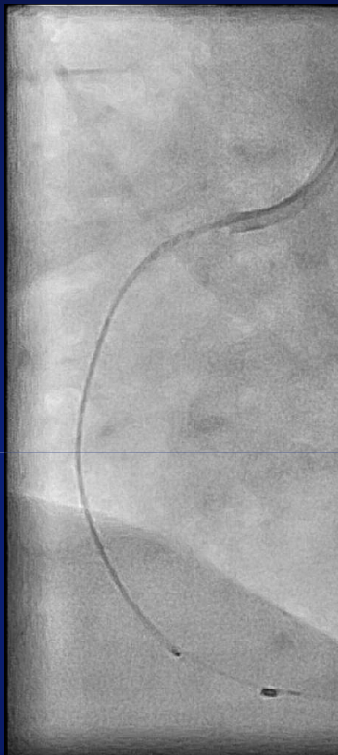
***A Pooled Analysis of SPIRIT II, III, IV, and COMPARE Trials***





## Summary

- Newer ADPreceptor blockers are more effective but still too slow in pPCI setting
- After thrombectomy significant amount of thrombotic material is remaining and continued medical therapy is essential to prevent (sub)acute occlusion
- In STEMI DES is preferred over BMS
- EES is superior to BMS for stent thrombosis
- DAPT therapy may be shortened if adequate apposition is achieved



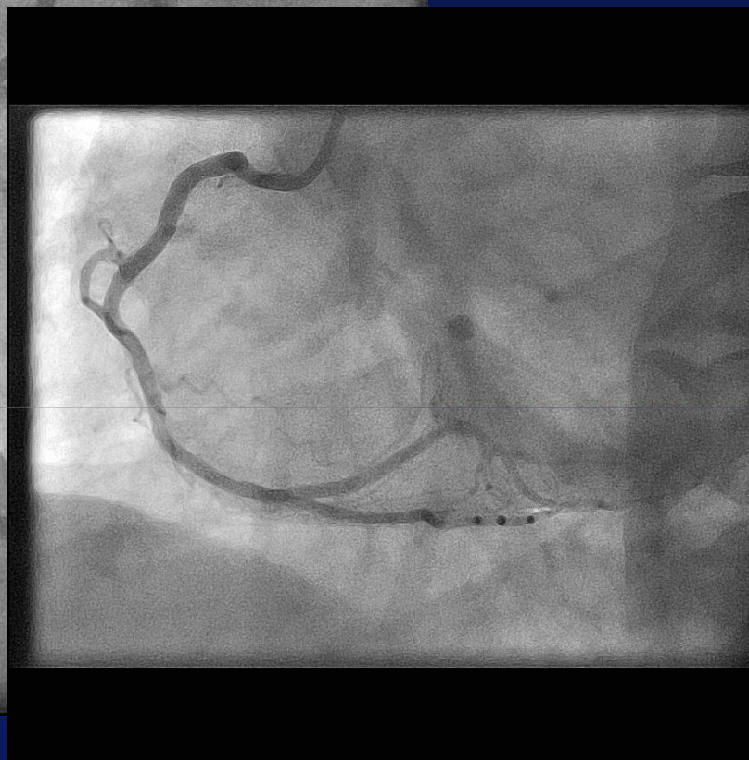
*OCT*



*Stent*



*Final*



*FU*

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