

DRUG ELUTING STENTS IN ACUTE MYOCARDIAL INFARCTION

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Drug Eluting Stents in AMI

- ✧ Restenosis rates and late loss may be lower for bare metal stents in infarct-related arteries
- ✧ DES may be less effective in heavily thrombus laden arteries, thereby increasing SAT and restenosis rates

Balloon Angioplasty vs Stenting Trials in AMI: 30-Day Outcomes

Trial	N	Success	SAT/Occl	Death	Re MI	TVR	MACE
STENTIM-2							
PTCA	110	82.7%	5%	0	3.6%	5.4%	9%
Wiktor Stent	101	86%	3%	1%	4.0%	5.0%	10%
MI < 12 h							
STENT-PAMI							
PTCA	448	92.7%	1.1%	1.8%	1.1%	3.8%	5.8%
P-S Stent	452	89.4%	0.9%	3.5%	0.4%	1.3%	4.6%
MI < 12 h							
CADILLAC							
PTCA	1046	95.4%	1.3%	1.8%	0.8%	4.5%	6.5%
ML Stent	1036	95.7%	0.5%	2.4%	0.9%	2.4%	5.0%
MI < 12 h							

Balloon Angioplasty vs Stenting Trials in AMI: *Long-Term Outcomes*

Trial	TVR	Restenosis	MACE	EFS
STENTIM-2				
PTCA	26%	40%	-	73%
Stent	17%	25%	-	81%
F/U 6-mth				
STENT-PAMI				
PTCA	17%	33.5%	20.1%	79%
Stent	7.7%	20.3%	12.6%	88%
F/U 6-mth				
CADILLAC				
PTCA	14.7%	40.8%	18.2%	-
Stent	6.7%	22.2%	10.8%	-
F/U 6-mth				

Bare Metal Stent Use in Acute Myocardial Infarction

Incidence of 30-day stent thrombosis 1-3%

Incidence of TVR at 6 months 5-17%

Incidence of Restenosis 6-12 months 20-25%



Multiple Vessel Stenting in Pts with Multivessel Disease and Acute Myocardial Infarction MAHI Experience – 1998-2002

820 consecutive pts with Bare Metal Stents

1-Year Outcomes	Total N (%)	SVD N = 314 (38.3%)	MVD N = 506 (61.7%)	p-value
Reinfarction (%)	35 (4.5%)	1.6%	5.9%	0.003
TVR (%)	121 (15.7%)	9.6%	18.0%	< 0.001
CABG (%)	59 (7.6%)	2.6%	10.0%	< 0.001
SAT (%)	0 (0%)	0%	0%	ns
Death (%)	69 (8.9%)	3.2%	12.0%	< 0.001
MACE (%)	200 (25.9%)	13.0%	31.0%	< 0.001

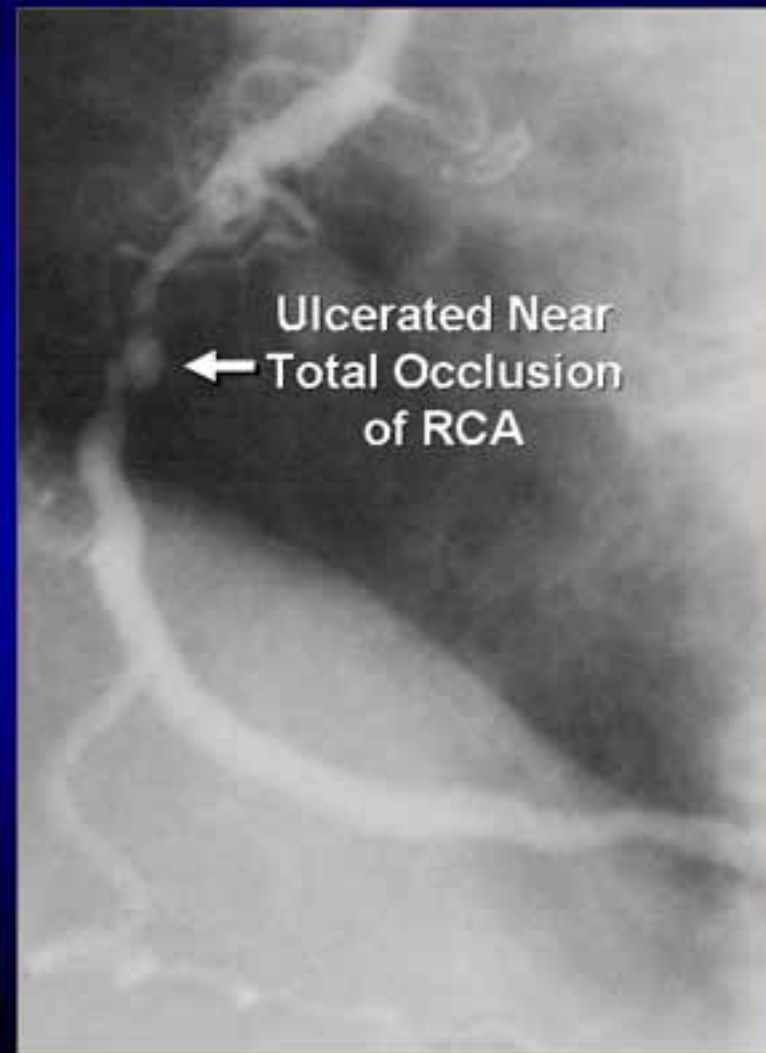
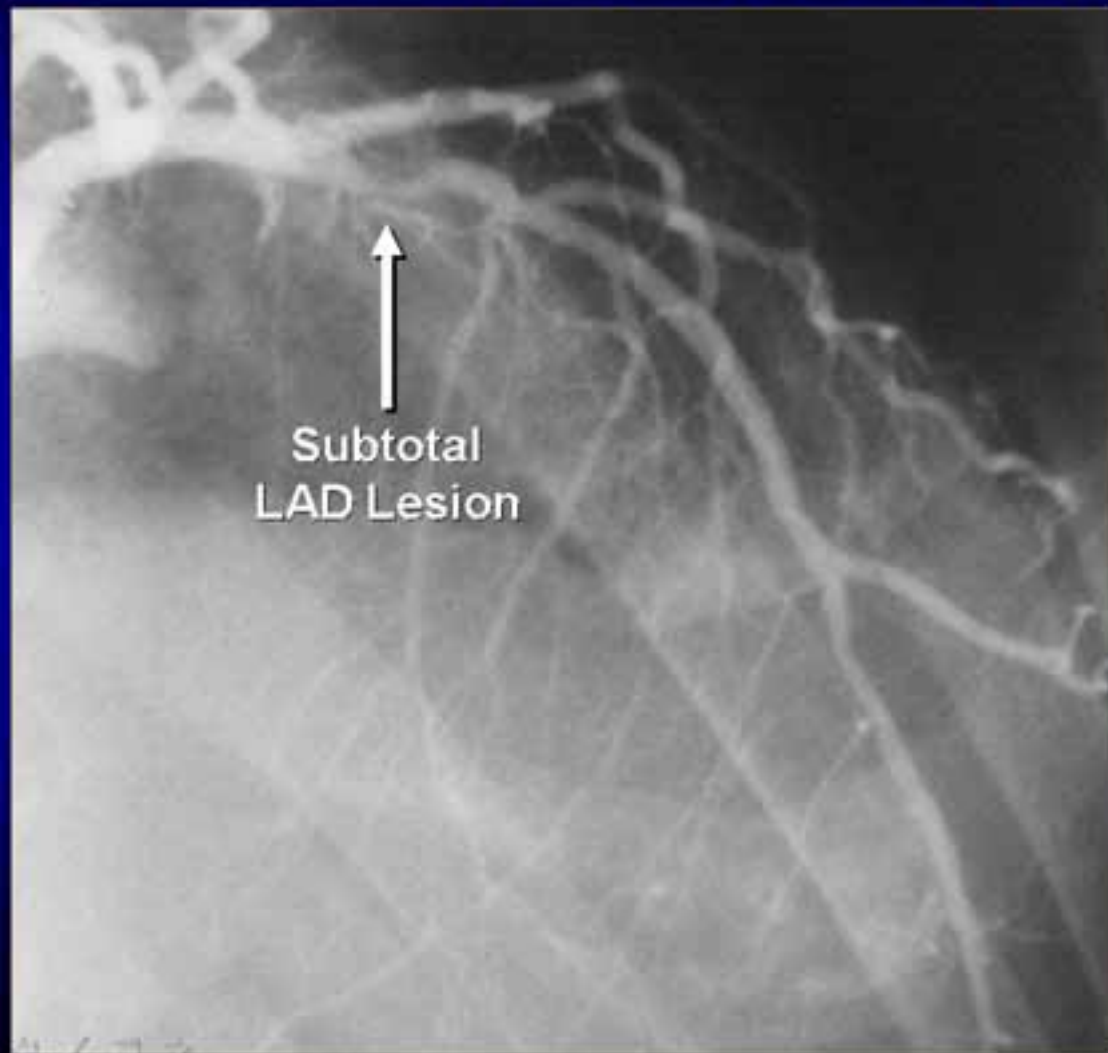


C.B. 61-Year-Old Male, 12-14-2002
Acute Anteroseptal Infarction. LVEF 25-30%



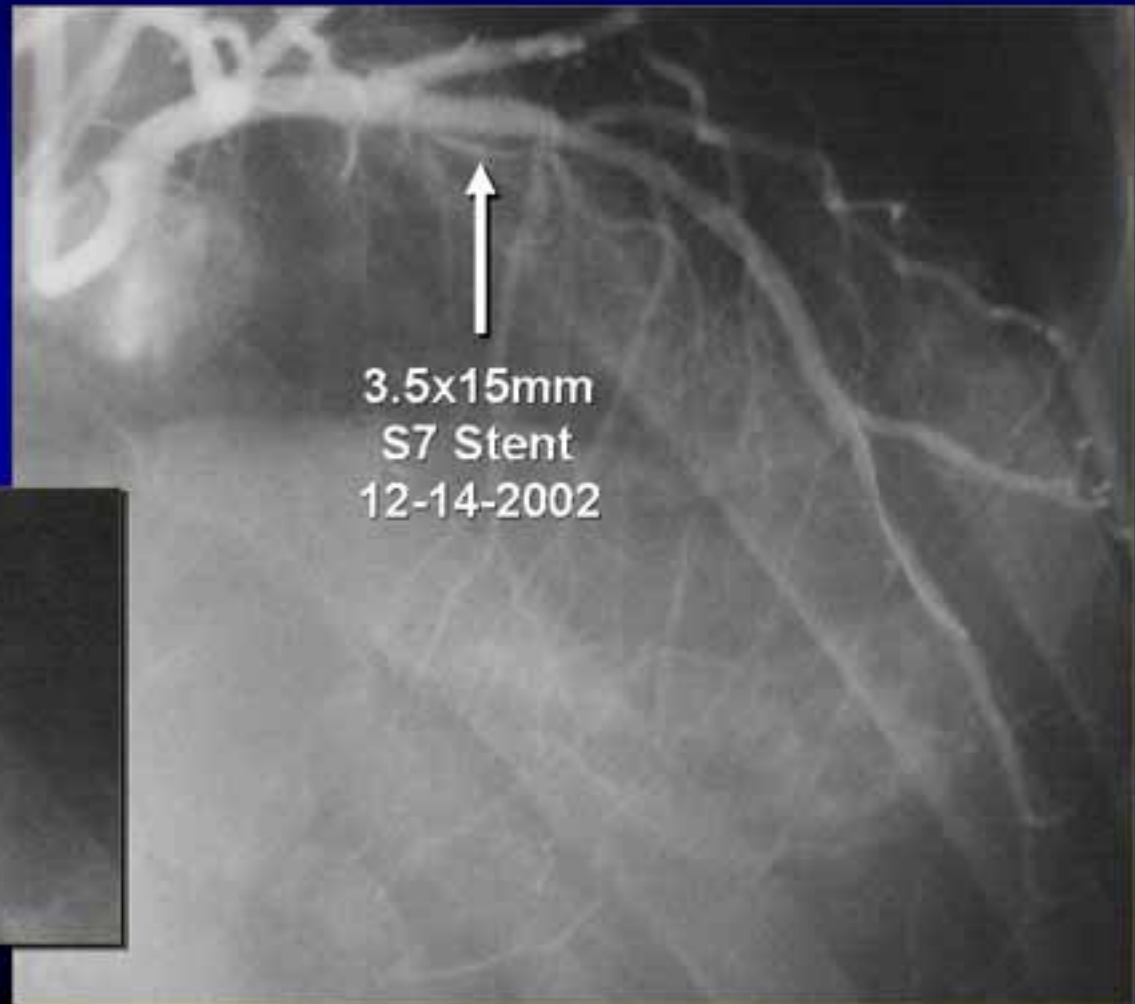


C.B. 61-Year-Old Male 12-14-2002 Acute Anteroseptal Infarction



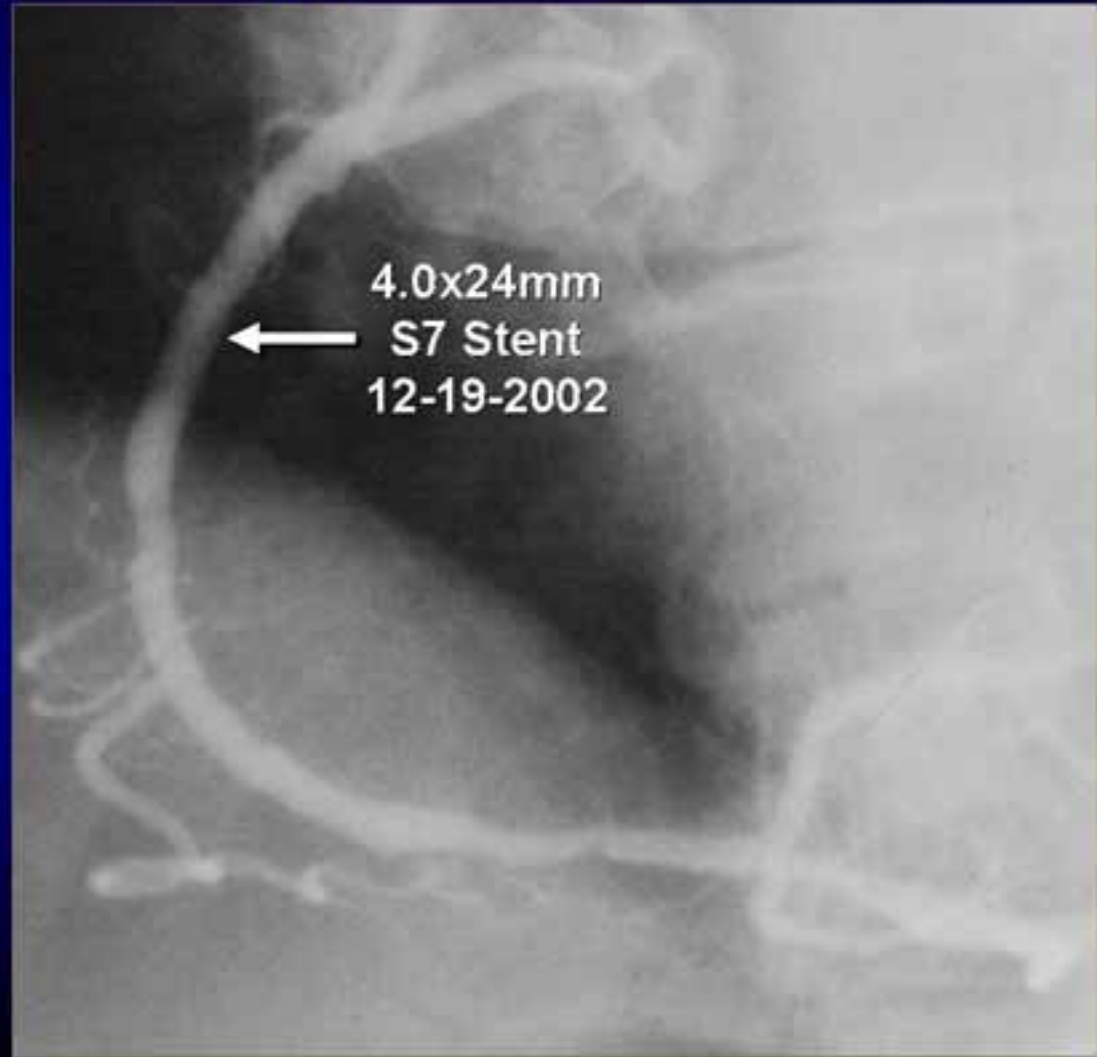
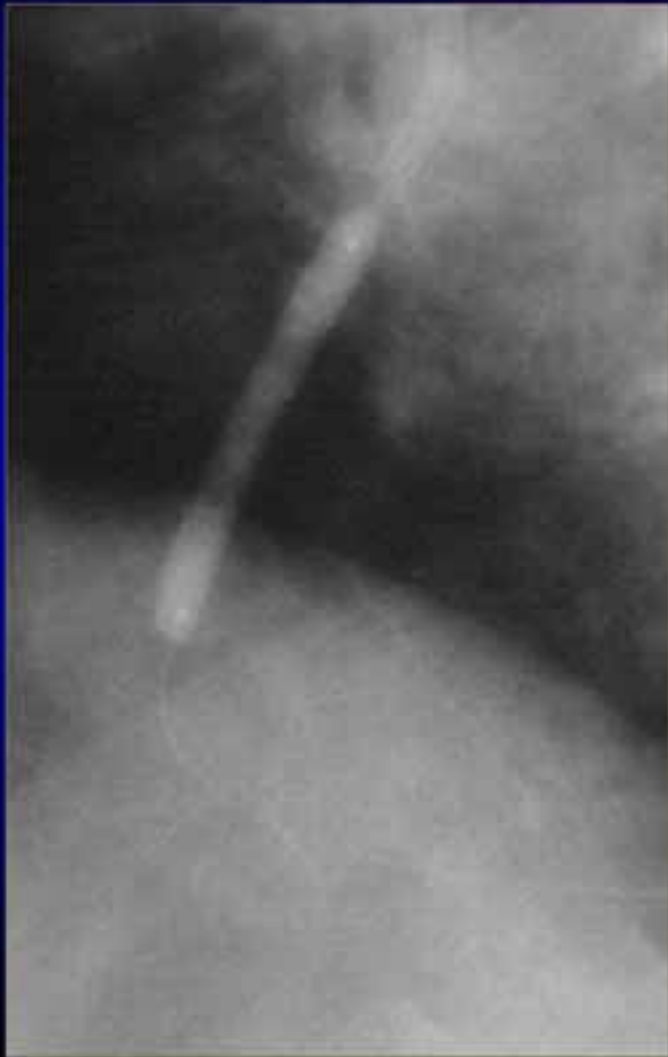


C.B. 61-Year-Old Male, 12-14-2002
Acute Anteroseptal Infarction





C.B. 61-Year-Old Male, 12-19-2002
Acute Anteroseptal Infarction





Multiple Vessel Stenting in Pts with Multivessel Disease and Acute Myocardial Infarction MAHI Experience – 1998-2002

**841 consecutive pts with Bare Metal Stents
Multiple Vessel Disease**

1-Year Outcomes	Stenting of IRA Only N = 354	Staged MV Stenting N = 152	p-value
Reinfarction (%)	2.8	13.0	< 0.0001
TVR (%)	15.0	25.0	0.007
CABG (%)	12.0	6.6	0.08
SAT (%)	0	0	1.00
Death (%)	12.0	11.0	0.82
MACE (%)	28.0	40.0	0.006



Multiple Vessel Stenting in Pts with Multivessel Disease and Acute Myocardial Infarction MAHI Experience – 1998-2002

841 consecutive pts with Bare Metal Stents

Conclusions

- ✧ In multiple vessel disease, multiple vessel stenting within 30 days of acute MI results in
 - Higher reinfarction rate
 - Higher TVR rate
 - Increased MACE
 - No decrease in mortality
- ✧ Therefore reasonable to stent IRA alone and follow patients for evidence of recurrent ischemia



Drug Eluting Stents in AMI

**Treating acute MI patients with
multiple vessel disease in the era of
drug eluting stents**



Drug Eluting Stents in AMI

Mid America Heart Institute Experience

260 pts, ≤ 12 hrs STEMI

144 pts CYPHER™, 116 TAXUS™ Stents

Demographics	No.	Percent
Age, yrs	60.1 \pm 12.5	
Male	183	70.4
Age \geq 70 yrs	57	21.9
Diabetes	51	19.6
Prior CABG	11	4.2
Prior PCI	43	16.5
Cerebrovascular Disease	14	5.4
Creatinine $>$ 1.5	17	6.5
Prior AMI	45	17.3



Drug Eluting Stents in AMI

Mid America Heart Institute Experience

260 pts, ≤ 12 hrs STEMI

No.

Percent

MVD

170

65.4

SVD

90

34.6

Thrombus

166

63.8

Lesion 100%

137

52.7

Lesion Length (mm)

18.6 ± 7.8

(8-60mm)

Stent Length (mm)

31.9 ± 16.9

(8-132mm)

Stents/patient

1.6 ± 0.8

MLD post stent (mm)

3.2 ± 0.3



Drug Eluting Stents in AMI

Mid America Heart Institute Experience

260 pts, \leq 12 hrs STEMI

No.

Percent

TIMI-3 Flow post stent

228

87.7

MBG 2/3 post stent

177

79.1

Slow flow

27

10.4

No reflow

7

2.7

Branch occlusion

8

3.1

Distal embolization

13

5.0

Edge dissection

6

2.5

Guide induced dissection

1

0.4

No reflow, slow flow, distal emboli

47

18.1



Drug Eluting Stents in AMI

Mid America Heart Institute Experience

260 consecutive pts with Drug Eluting Stents

30-Day Outcome	Total N (%)	SVD N = 90 (34.6%)	MVD N = 170 (65.4%)	p-value
Re-MI	5 (1.9%)	0%	2.9%	0.167
TVR	6 (2.3%)	0%	3.5%	0.096
CABG	3 (1.2%)	0%	1.8%	0.554
Death	11 (4.2%)	2.2%	5.3%	0.339
SAT	5 (1.9%)	0%	2.9%	0.167
MACE	17 (6.5%)	2.2%	8.8%	0.041



Drug Eluting Stents in AMI

Mid America Heart Institute Experience

260 consecutive pts with Drug Eluting Stents

9-Month Outcomes	Total N (%)	SVD N = 90 (34.6%)	MVD N = 170 (65.4%)	p-value
Reinfarction (%)	5 (1.9%)	0	2.9	0.167
TVR (%)	11 (4.2%)	3.3	4.7	0.753
CABG (%)	5 (1.9%)	0	2.9	0.167
Death (%)	14 (5.4%)	2.2	7.1	0.148
SAT (%)	5 (1.9%)	0	2.9	0.167
MACE (%)	25 (9.6%)	5.6	11.8	0.106

Drug Eluting Stents in AMI

Comparison of PASSION and TYPHOON Trials

12-Month F/U	DES	BMS	p-value
Death/MI (%)			
PASSION	4.8	6.5	0.39
TYPHOON	3.3	3.6	NS
TLR (%)			
PASSION	6.2	7.4	0.23
TYPHOON	3.7	12.6	< 0.0001
MACE (%)			
PASSION	8.7	12.6	0.12
TYPHOON	5.9	14.6	< 0.001

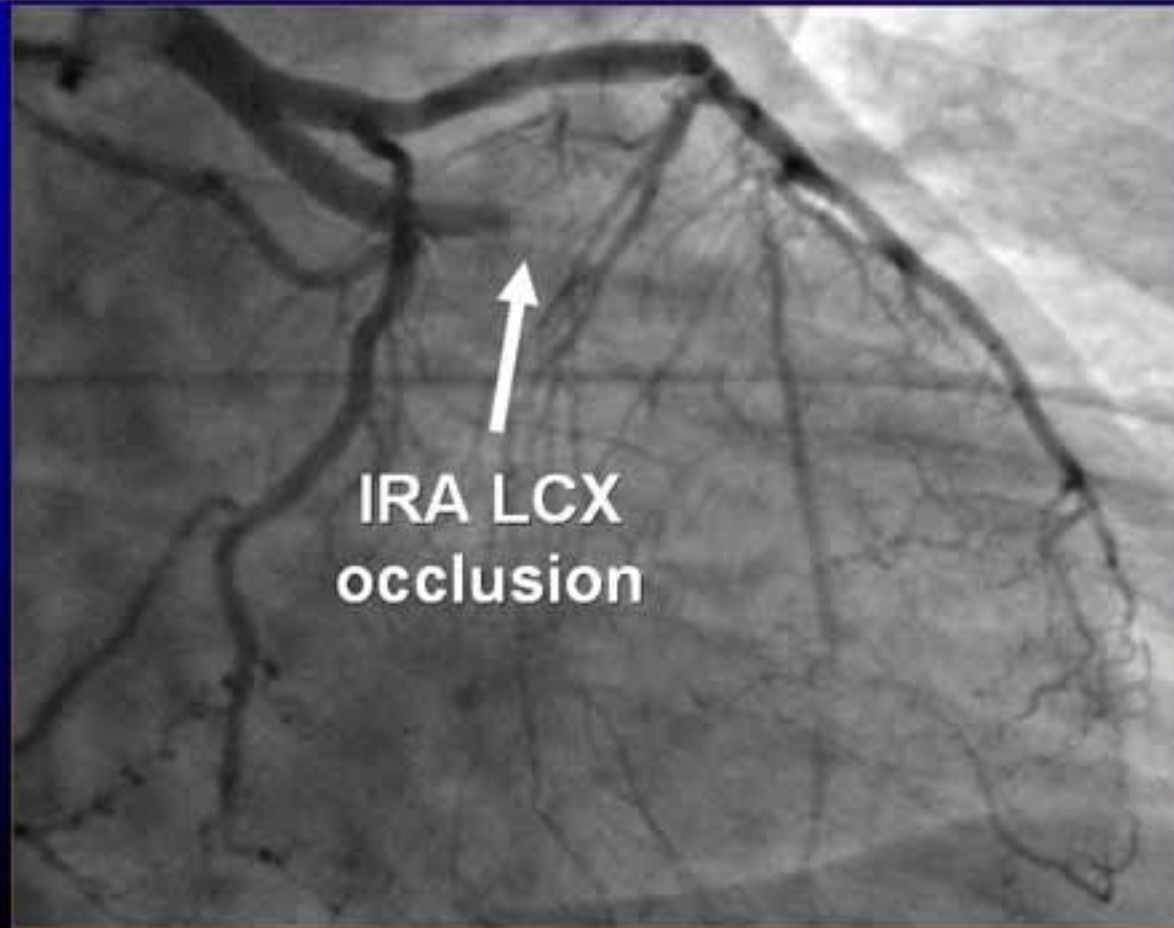
M.T. Dirksen, i2 Summit 2006; C. Spaulding, i2 Summit 2006

Drug Eluting Stents in AMI: SAT Rates at 30 Days

Registries:	Total Patients	SAT Rate
RECIPE	216	1.4%
Hartford, CT	210	0
Research Registry	186	0
Beth Israel Deaconess	456	0.87%
Stent Registry	137	0
T-Search Registry	97	4.1%
e-Cypher Registry	171	4.7%
Mid America Heart Institute	260	1.9%
Randomized Trials:		
PASSION	309	0.97%
TYPHOON	355	3.10%
Lee	231	1.3%
Total	2628	1.7%

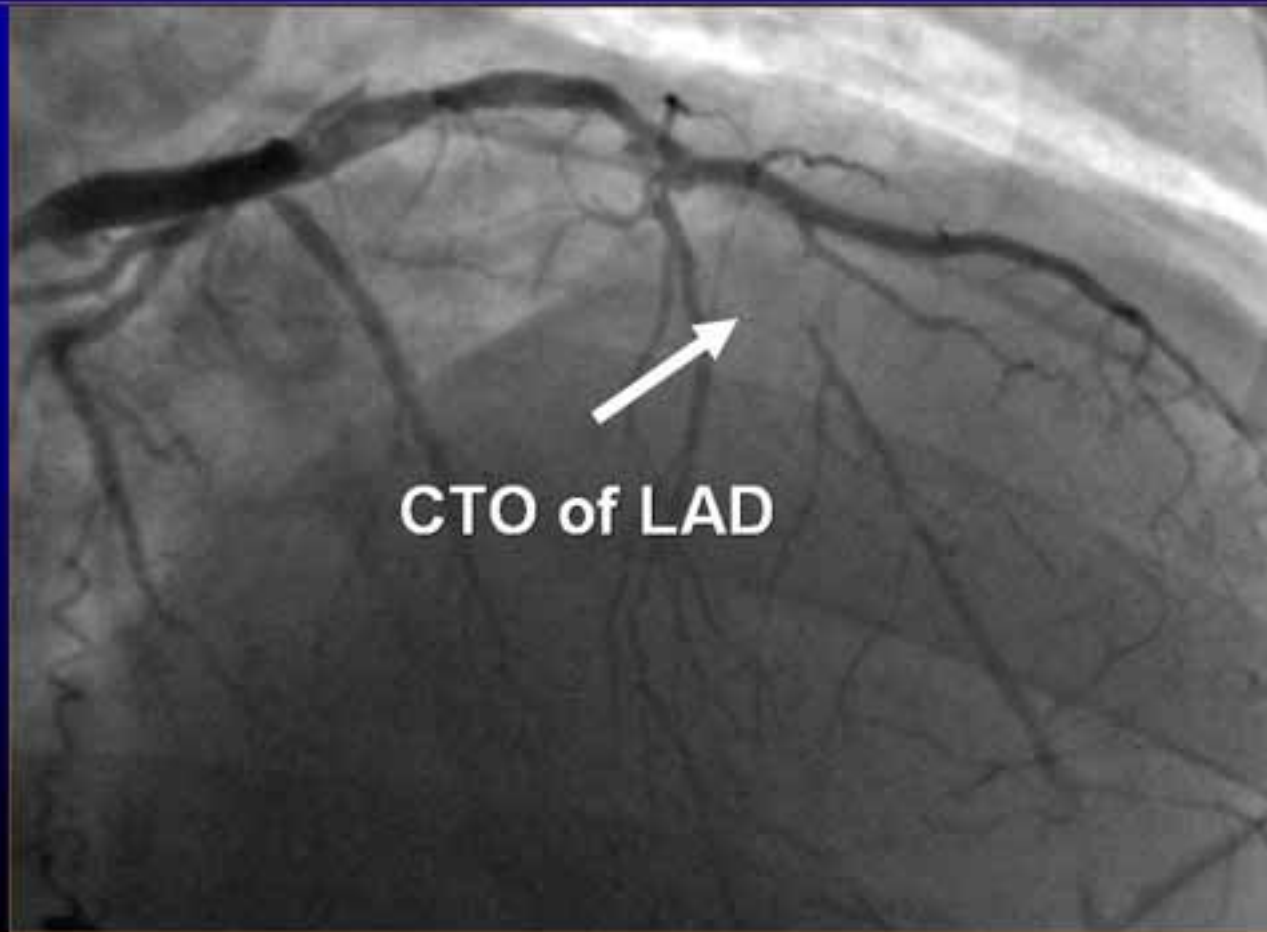


48-Year-Old Male Acute Inferior Infarct





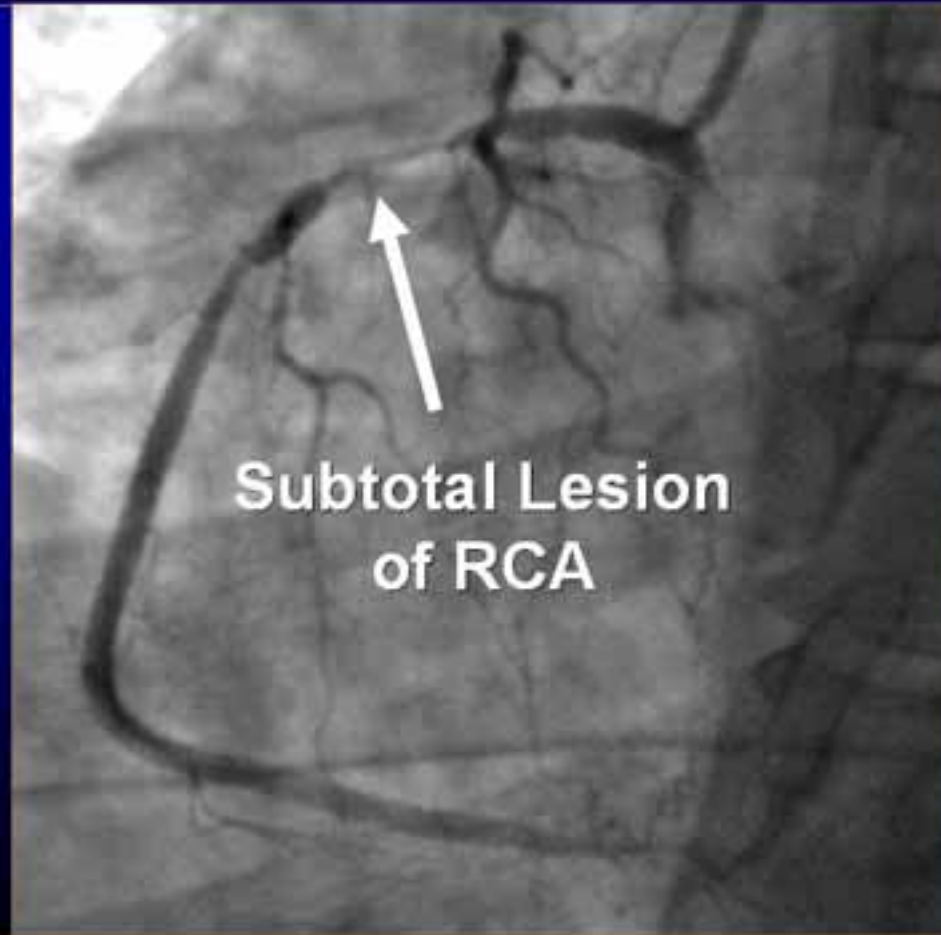
48-Year-Old Male Acute Inferior Infarct



CTO of LAD

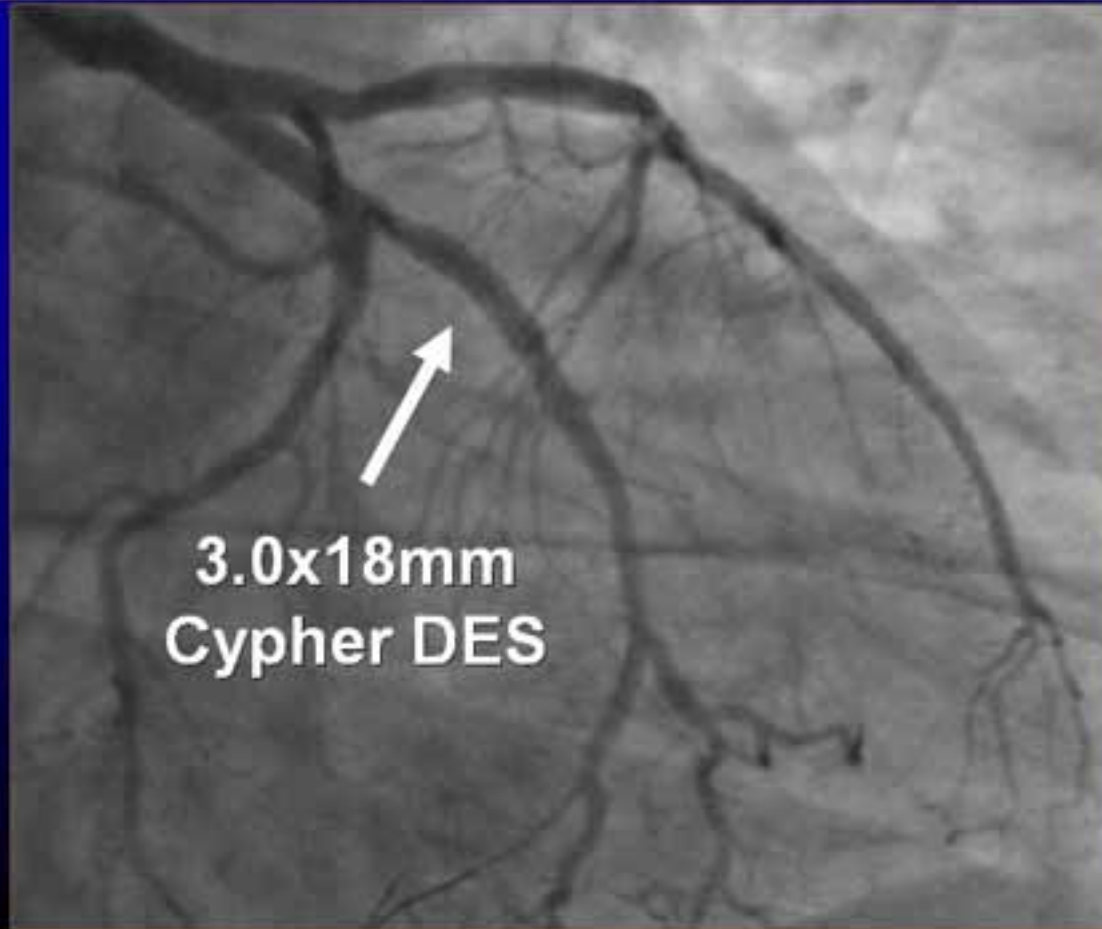


48-Year-Old Male Acute Inferior Infarct



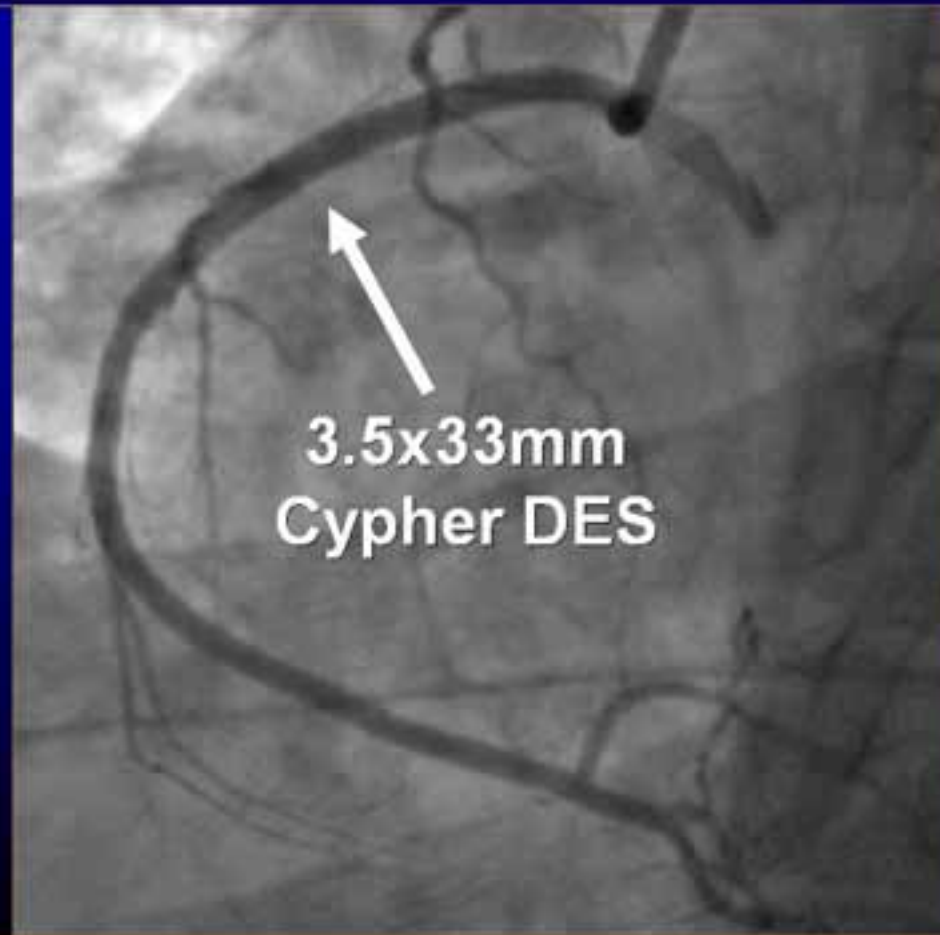


**48-Year-Old Male – Acute Inferior Infarct
10-13-04: Stenting of LCX at Index Procedure**



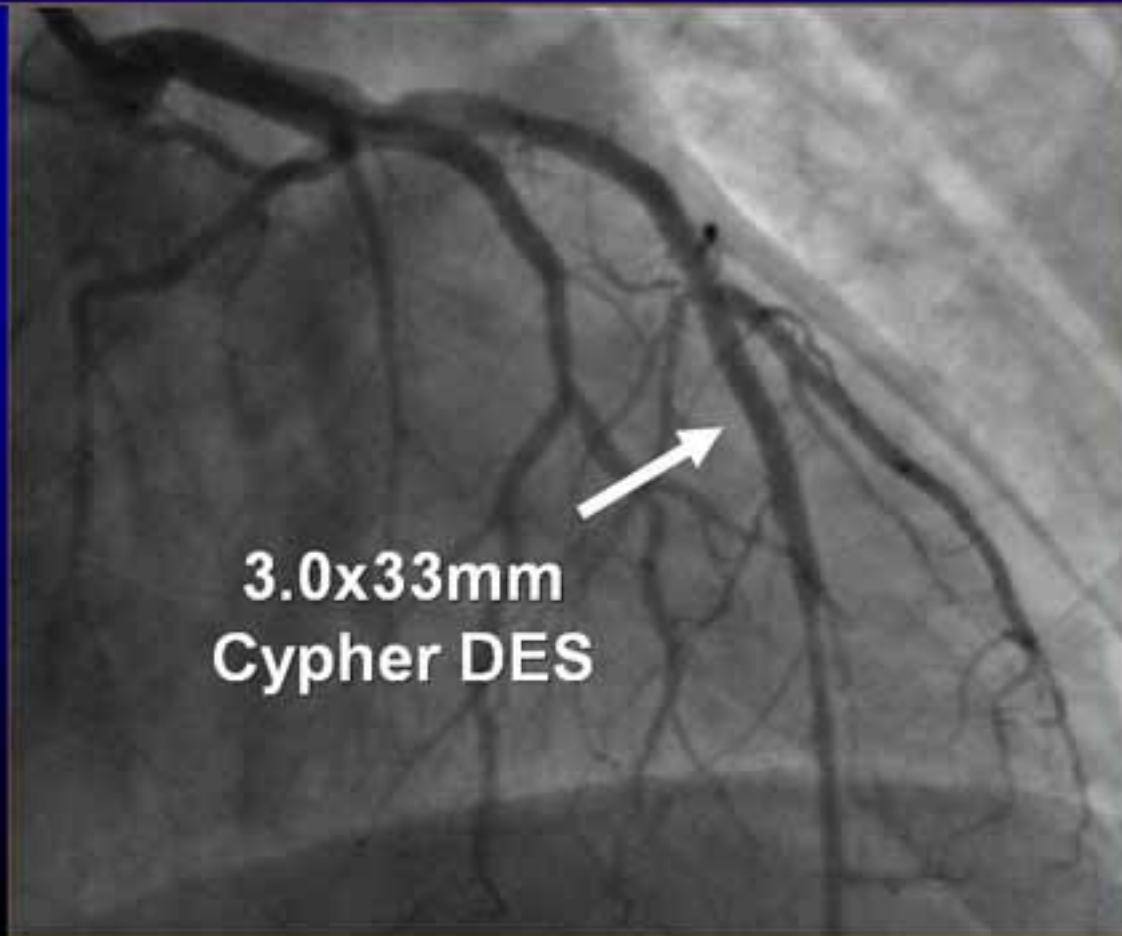


**48-Year-Old Male – Acute Inferior Infarct
10-18-04: Stenting of RCA as Staged Procedure**





48-Year-Old Male – Acute Inferior Infarct
10-18-04: Stenting of LAD as Staged Procedure





Multiple Vessel Stenting in Pts with Multivessel Disease and Acute Myocardial Infarction MAHI Experience – Drug Eluting Stents

Multiple Vessel Disease

30-Day Outcomes	Stenting of IRA Only N = 111	Staged MV Stenting N = 48	p-value
Reinfarction (%)	2.7	4.2	0.638
TVR (%)	3.6	4.2	1.000
CABG (%)	2.7	0	0.554
SAT (%)	3.6	2.1	1.000
Death (%)	4.5	4.2	1.000
MACE (%)	11.7	10.4	1.000



Multiple Vessel Stenting in Pts with Multivessel Disease and Acute Myocardial Infarction MAHI Experience – Drug Eluting Stents

Multiple Vessel Disease

9-Month Outcomes	Stenting of IRA Only N = 111	Staged MV Stenting N = 48	p-value
Reinfarction (%)	2.7	4.2	0.638
TVR (%)	4.5	6.3	0.699
CABG (%)	4.5	0	0.323
SAT (%)	3.6	2.1	1.000
Death (%)	6.3	6.3	1.000
MACE (%)	14.4	14.6	1.000



Drug Eluting Stents in AMI

Conclusions

- ✧ **May be increased SAT rate with DES
(keep it simple – single stent, if possible)**
- ✧ **Significant decrease in TVR and TVF at 6-12 months**
- ✧ **Significant decrease in TVR and MACE in MV Stenting. Therefore, justified to undertake MV Stenting during the index hospital stay**