Coronary Perforation of Proximal LAD after Debulking for LMCA Ostial Stenosis, Treated with PTEE-covered JoStent

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Clinical History

- **Male, 62 years old**
- **Resting chest pain for 3 months**
- **Electrocardiogram : normal**
- **Exercise EKG : positive at stage 2 by Bruce protocol**
- **Echocardiogram : normal LV function without reginal wall motion abnormality**

Baseline angiography

Tight stenosis at LMCA

How do you treat this lesion?

1. **Bypass surgery**
2. **Stenting with bare metal stent**
3. **Debulking alone**
4. **Debulking and stenting**
5. **Stenting with drug eluting stent**

AMC data

Subject

310 Patients
(M/F=209/101, Age: 56years)

- Elective Stenting in Patients with Normal LV function 258

- Follow-up angiogram at 6 month
  178/220 (86%)

AMC data

Procedural Success Rate: 99%

In-Hospital Clinical Courses

Acute closure	**0**
Subacute thrombosis	**1 (0.5%)**
Death	**0**
Q-MI	**0**
Emergent CABG	**0**

6 month Angiographic Restenosis Rate

AMC data

Unprotected Left Main Stenting

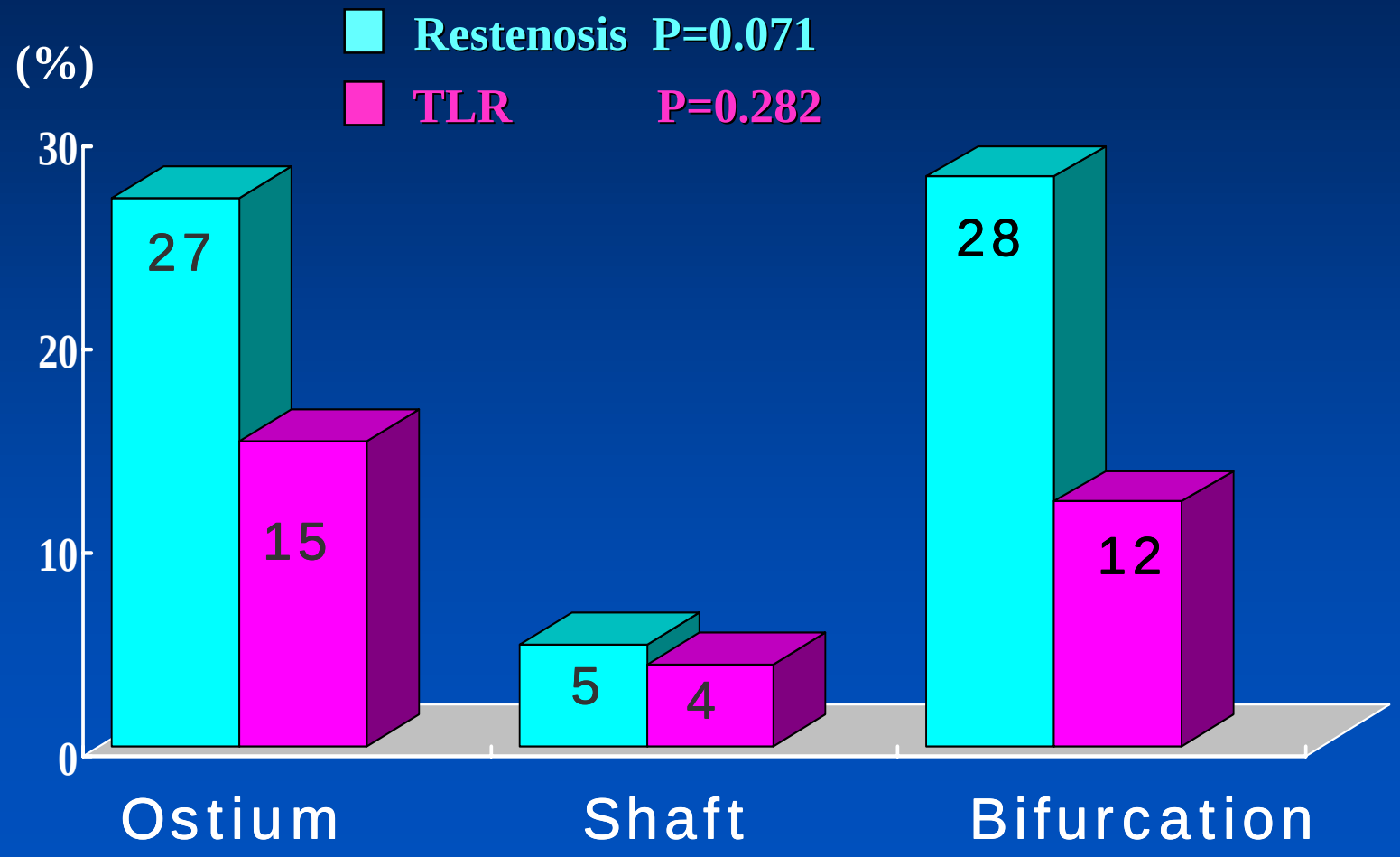
Angiographic follow-up rate:

178/220 eligible patients (86%)

42/178 (23.1%)

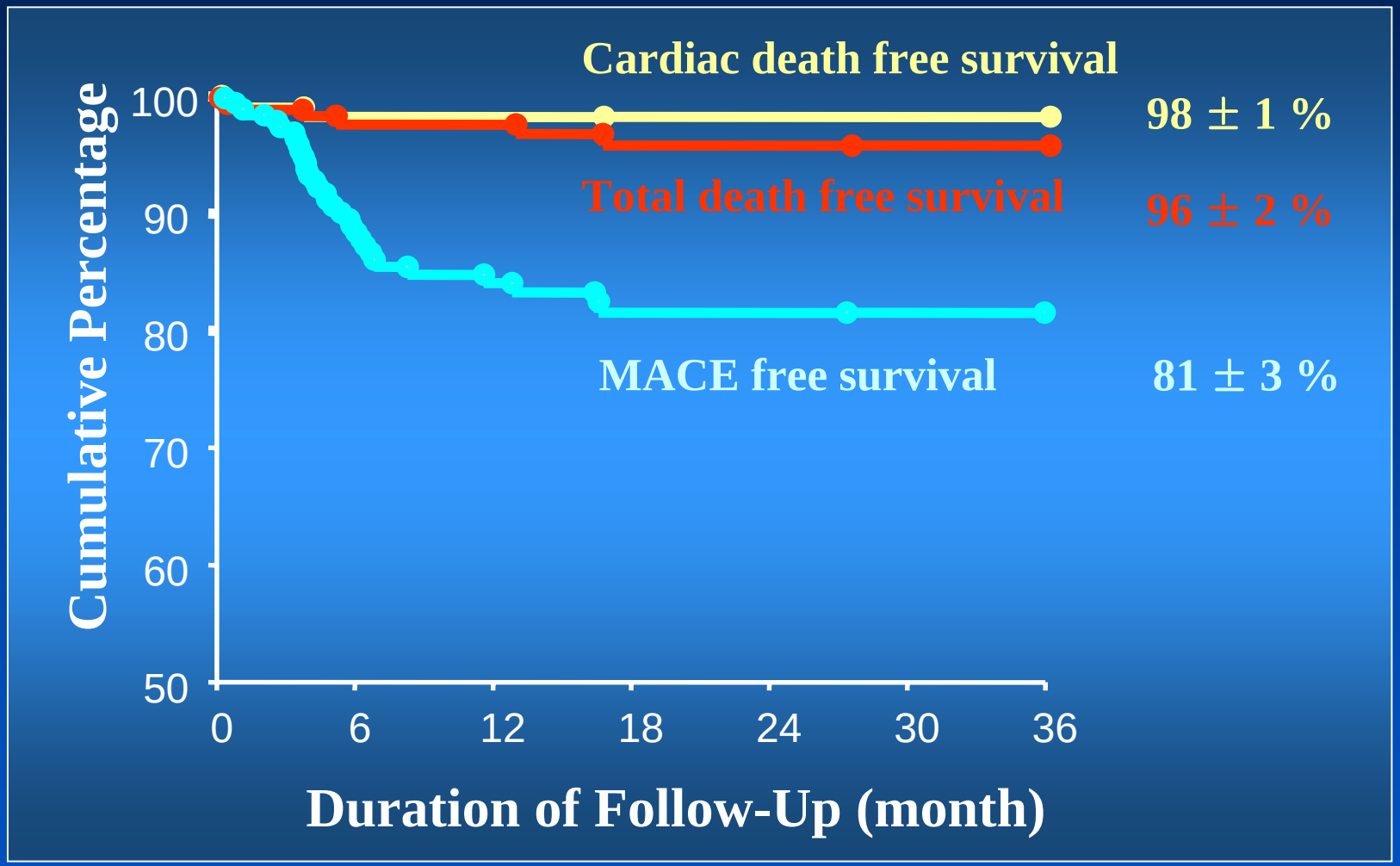
AMC data

Restenosis Rate & TLR at overall



Unprotected Left Main Stinting *AMC data*

Survival Curve

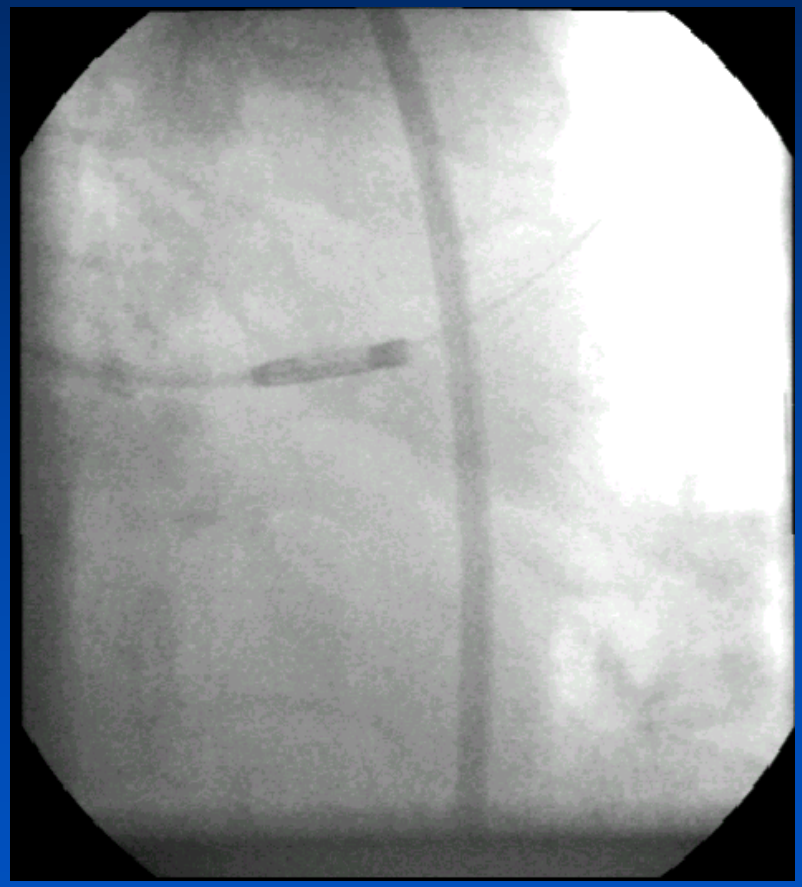


Planned Stategy

- **PCI due to patient preference**
- **Optimal debulking followed by stenting**

Debulking first...

Nine cut was done.



Coronary perforation after debulking

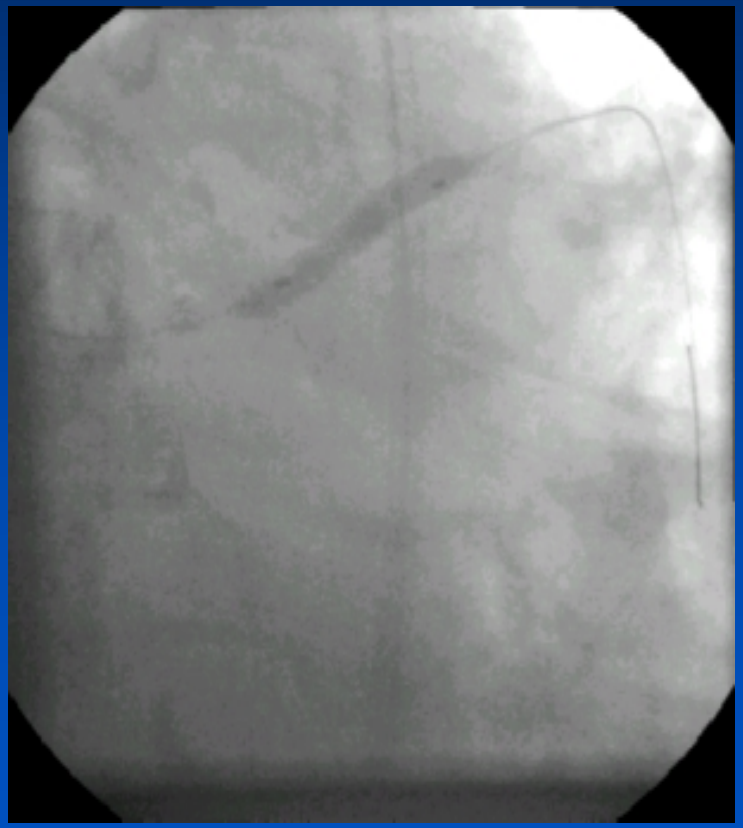
LAD perforation after DCA

How do you treat this complication ?

1. **High pressure balloon dilatation**
2. **Emergent bypass surgery in all cases**
3. **PTEE-covered stent**
4. **Coil embolization**
5. **Percardiocentesis and let it alone**

PTEE-covered stent for perforation

3.5 × 19mm PTEE-covered JoStent at LAD and
4.0 × 9mm NIR stent at LMCA ostium



Good result with successful seal of perforation

Patent stents at follow-up

Coronary Perforation

- Serious complication of coronary angioplasty, which might results in tamponade or death
- The incidence of perforation after DCA has been < 1% which is probably higher than the 0.2% of incidence after conventional balloon angioplasty.

PTEE-coated JoStent

- Constructed using a sandwich technique, whereby an ultrathin layer of expandable PTFE is placed between two stents
- 2.5–5.0-mm vessels and is available in 9-mm, 12-mm, 16-mm, 19-mm and 26-mm lengths
- Effective tool for sealing the perforation and treating the narrowed lesion

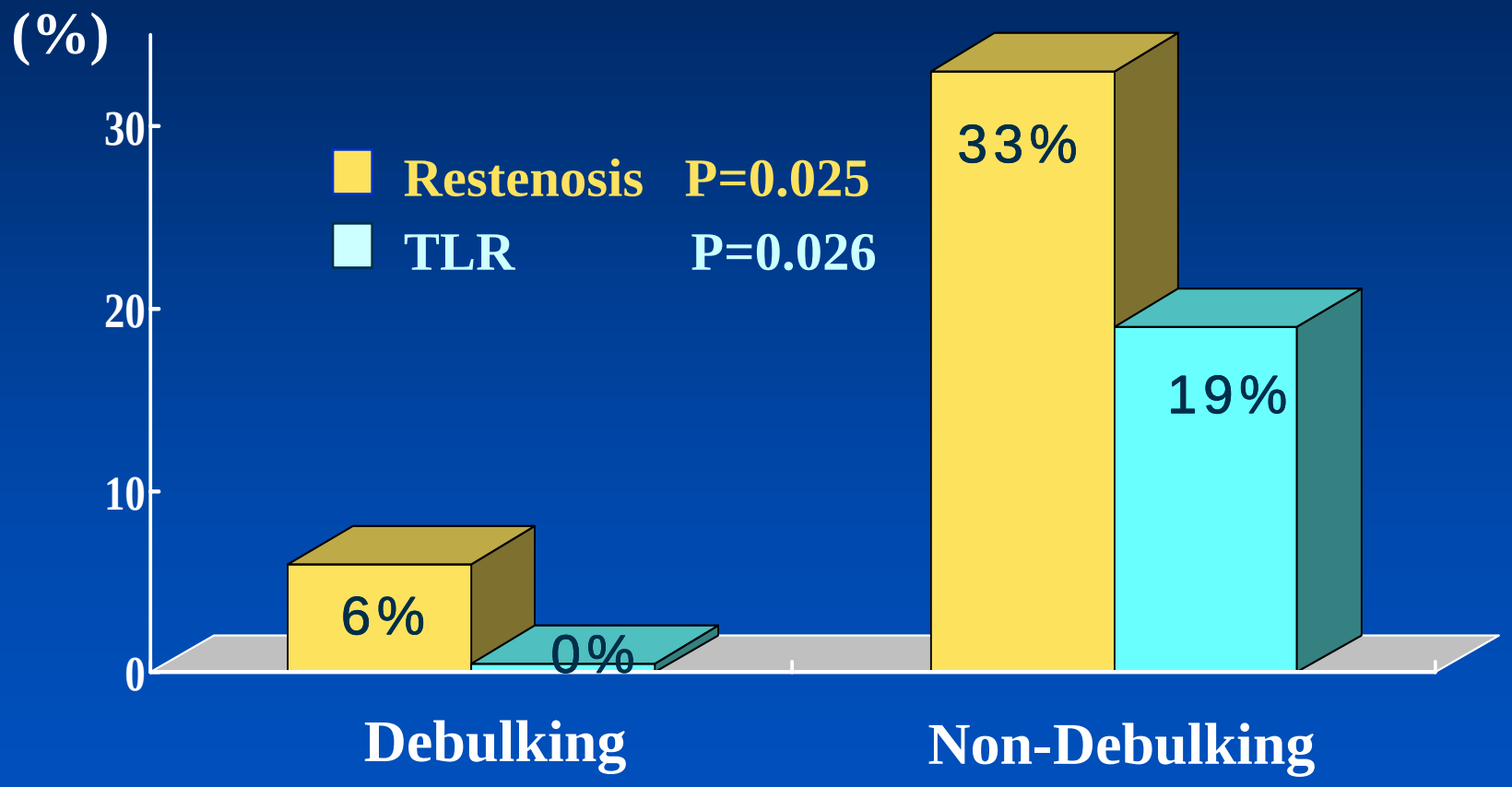
Specific lessons from this case

- ✓ Is IVUS necessary ?
- ✓ When can we use debulking ?

AMC data

Debulking at LMCA Ostial lesion

Restenosis rate and TLR



AMC data

IVUS-guided vs. Angiography-guided

	IVUS-guided	Angio-guided	P
Number of lesions	133	83	
Lesion site			
Os	72 (54)	35 (42)	
Body	24 (18)	4 (5)	
Bifurcation	37 (28)	44 (53)	
Debulking before stenting	54 (41)	17 (21)	0.002
Reference vessel DM (mm)	4.1 ± 0.7	3.8 ± 0.6	0.005
MLD (mm)			
Pre-intervention	1.3 ± 0.5	1.1 ± 0.5	0.011
Post-intervention	4.2 ± 0.6	4.0 ± 0.6	0.002
Follow-up	2.8 ± 1.1	2.6 ± 1.1	0.160
Restenosis Rate (%)	24/105 (23)	12/52 (23)	0.980

AMC data

IVUS findings of Left Main Disease

- **Soft plaque** **63 %**
- **Fibrous Calcific** **18 %**

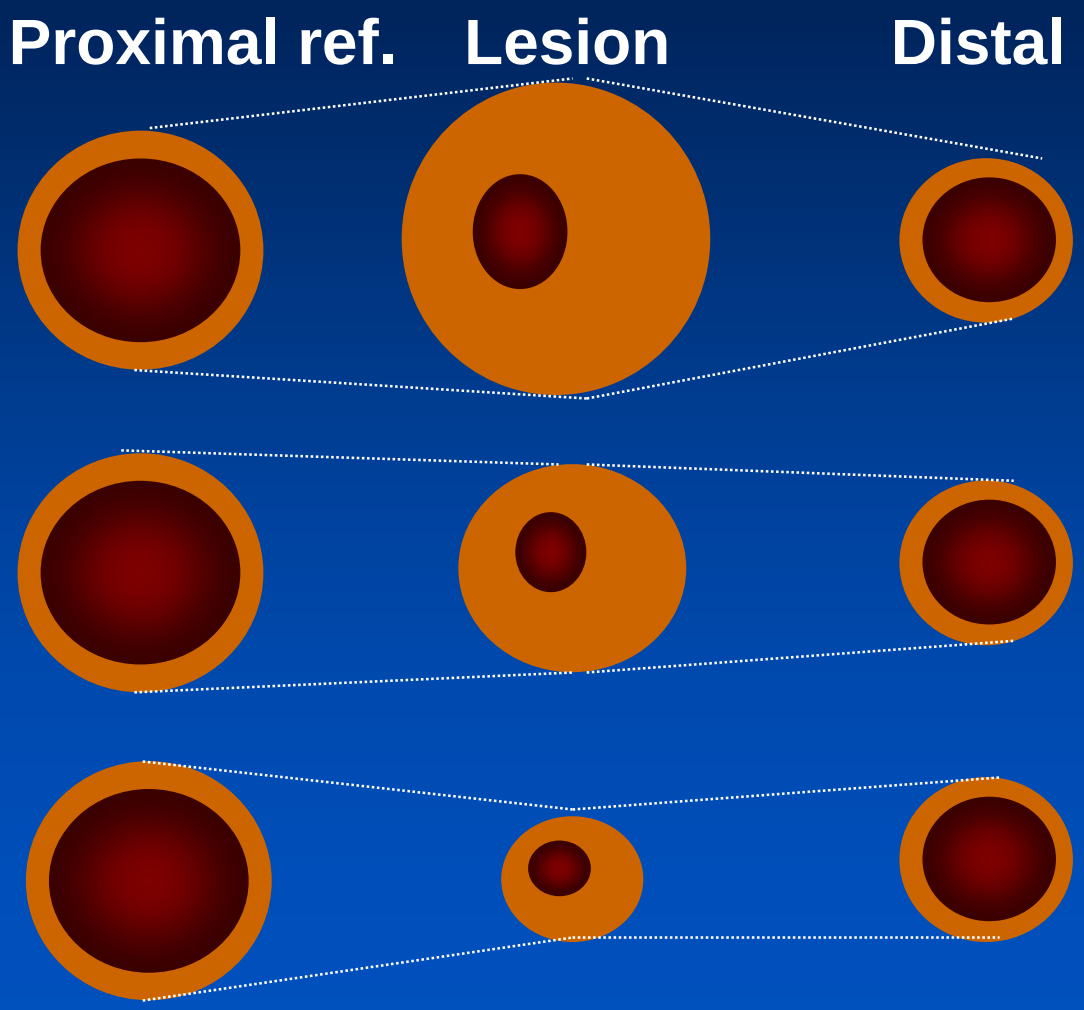
(Mean calcification : 147º)

- **Eccentricity index** **6.5±6.2**
- **Negative Remodeling in Ostial Lesions**

47/72 (65%)

(Mean NRI : 0.91 ± 0.25)

Vascular remodeling



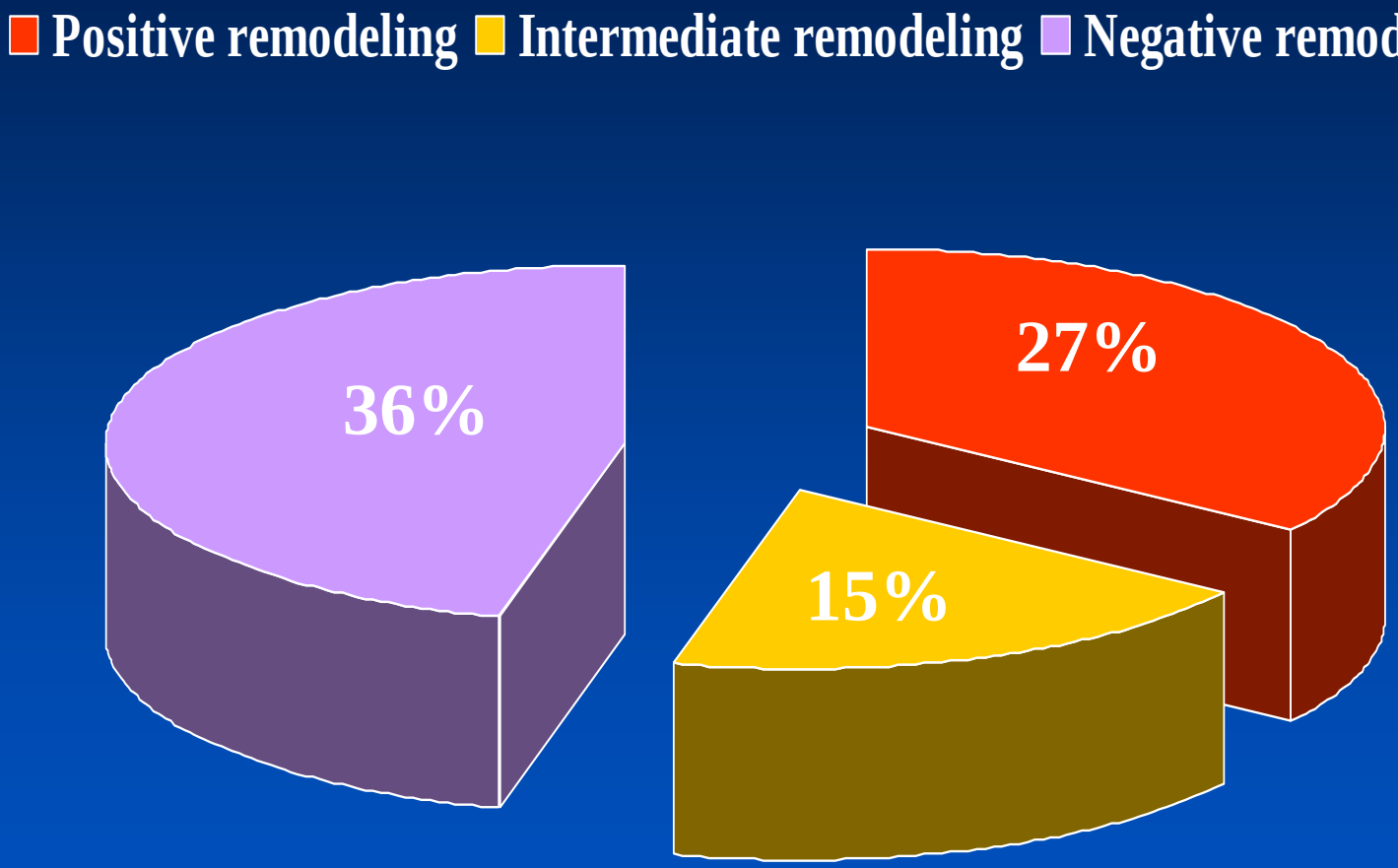
Postitive remodeling
(RI > 1.05)

Intermediate remodeling
(0.95 ≤ RI ≤ 1.05)

Negative remodeling
(RI < 0.95)

AMC data

Vascular remodeling of Ostial LAD

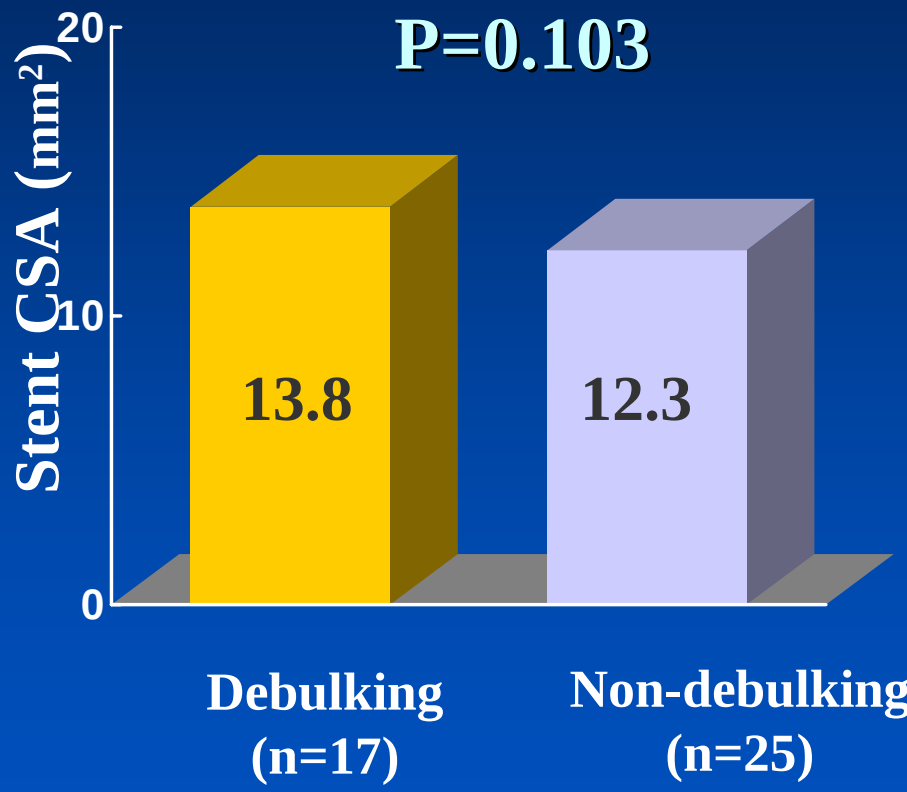


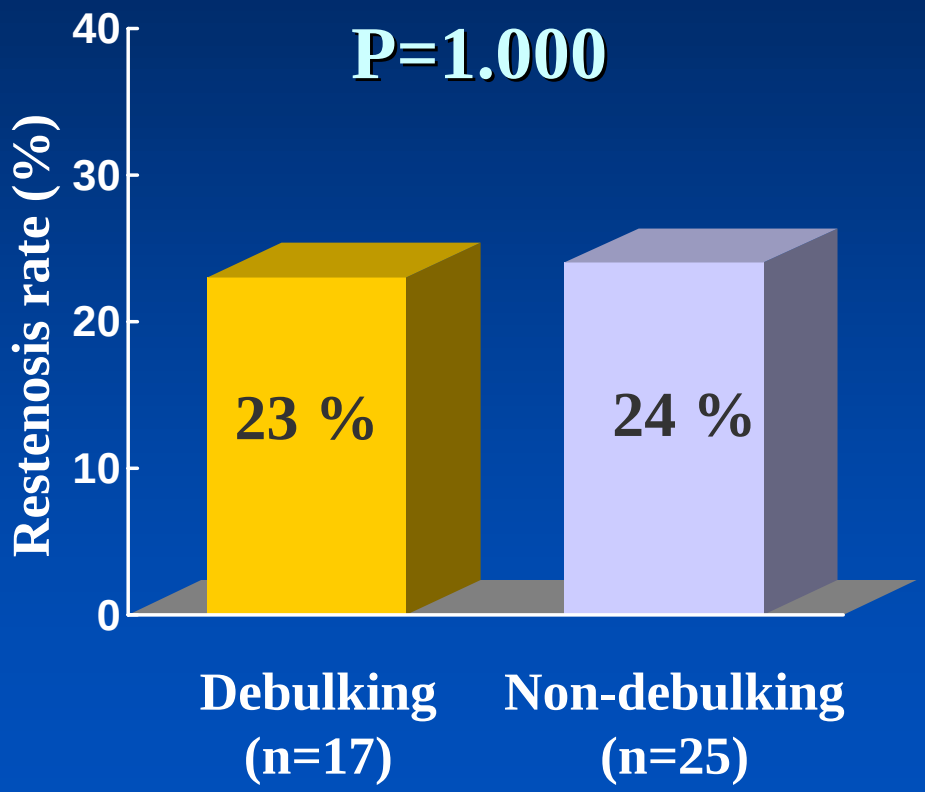
N=67

Effect of Debulking

AMC data

In Negative Vascular Remodeling

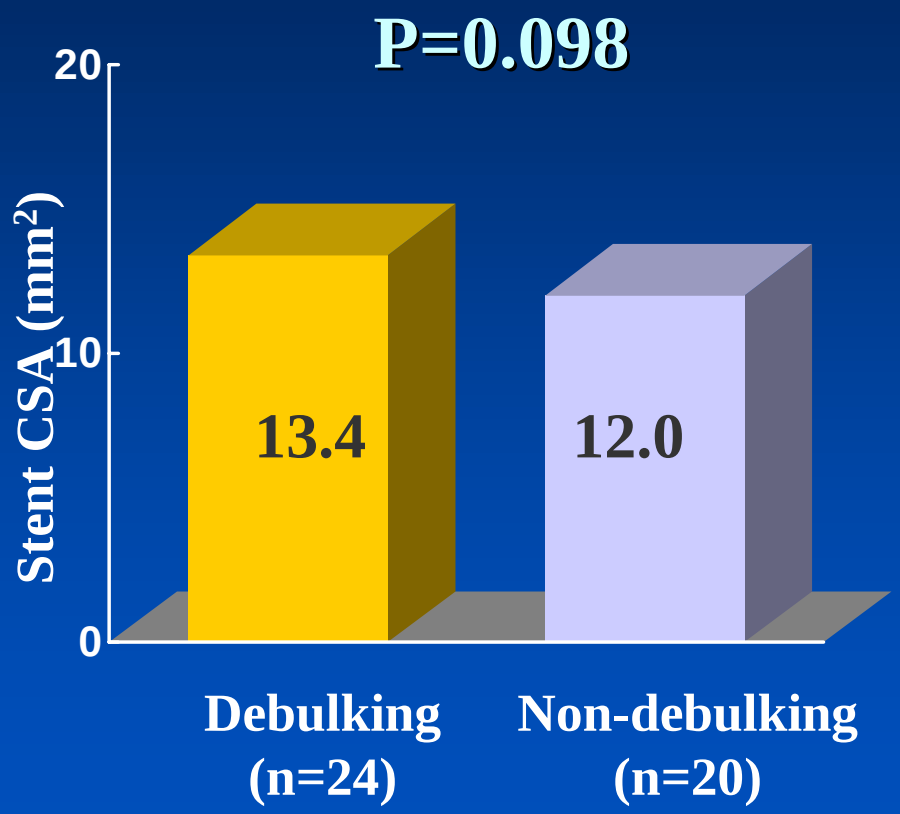


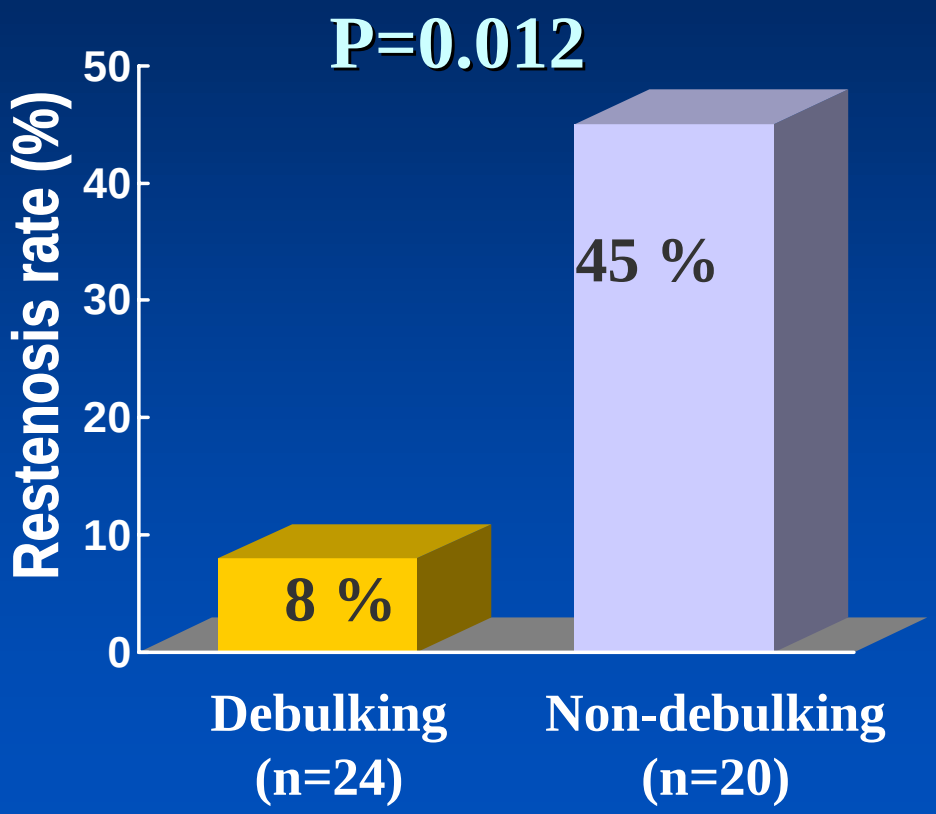


Effect of Debulking

AMC data

In Non-negative Vascular Remodeling





Unprotected Left Main Stenting

IVUS-guiding is Necessary

- Clinical outcomes may be not different
- Assess unusual lesion morphology (severe negative remodeling, calcium, thrombi, etc)
- We can change treatment strategy
- Optimized final results
- Effective and essential device during DCA

Take home message

- Coronary perforation is not an unusual complication of PCI with debulking.
- Stenting with PTEE-covered JoStent might be a good option for treatment of coronary perforation.
- IVUS may be necessary to investigate the lesion characteristic during LMCA PCI.
- Debulking before stenting might be an effective strategy in LMCA ostial stenosis with non-negative remodeling.