



# A nightmare in the left main PCI – stent fracture

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Gender: Male

Age: 61 years

Height: 186 cm

Weight: 93 kg

BMI: 26,9 kg/m<sup>2</sup>

**Risk factors:** smoking,  
dyslipidaemia

**Lifestyle:** Active life

**Psychological status:**  
Normal cognitive function

Dyspnea NYHA III

Angina CCS II class in the last two months

ECG:

sinus rhythm, PR: 0,19 sec, no Q waves, no ST/T abnormality

TTE:

LVEF 60%, mild apical hypokinesia

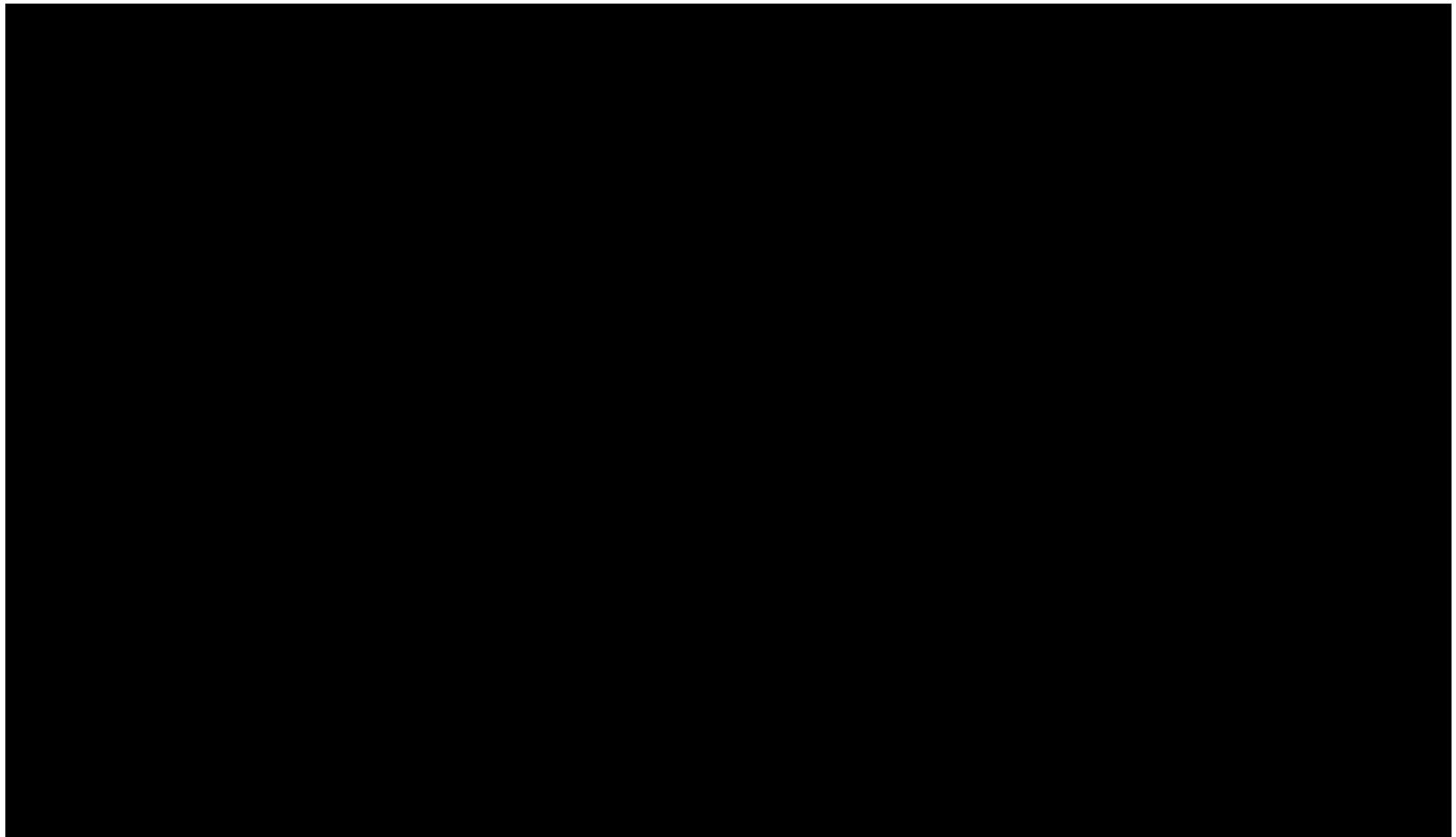
Positive Thalium scan:

Decrease of EF% by 10% during the effort, reversible ischemia in anterior wall and apex

Hb	152,4 g/dl
Creatinine	75 µmol/l
GFR	79 ml/min
Troponin I	22
CRP	1,9 mg/L
HbA1c	5,3 %

Laboratory findings

## Baseline coronary angiogram



Subocclusive lesion in the LAD ostium – angio Medina 0,1,0; borderline lesion in the distal CX- Medina1,1,0;  
Mid LAD subocclusive, and then borderline lesion, subocclusive lesion in the distal LAD; RCA difusely, non significantly ill.

Syntax Score I: 20 (low):

Syntax Score II:

PCI: 26,0; 4 yr mortality 4,9%;

CABG : 22,8; 4 yr mortality 3,8%

-distal LAD difusely ill-not suitable  
for graft



PCI of the ostium and mid LAD

**2018 ESC/EACTS Guidelines on myocardial revascularization**

Extent of CAD (anatomical and/or functional)		Class <sup>a</sup>	Level <sup>b</sup>
For prognosis	Left main disease with stenosis >50% <sup>c 68-71</sup>	I	A
	Proximal LAD stenosis >50% <sup>c 62,68,70,72</sup>	I	A
	Two- or three-vessel disease with stenosis >50% with impaired LV function (LVEF ≤35%) <sup>c 61,62,68,70,73-83</sup>	I	A
	Large area of ischaemia detected by functional testing (>10% LV) or abnormal invasive FFR <sup>d 24,59,84-90</sup>	I	B
	Single remaining patent coronary artery with stenosis >50% <sup>c</sup>	I	C
For symptoms	Haemodynamically significant coronary stenosis <sup>e</sup> in the presence of limiting angina or angina equivalent, with insufficient response to optimized medical therapy. <sup>e 24,63,91-97</sup>	I	A
<b>FAVOURS PCI</b>			
<b>Clinical characteristics</b>			
Presence of severe co-morbidity (not adequately reflected by scores)			
Advanced age/frailty/reduced life expectancy			
Restricted mobility and conditions that affect the rehabilitation process			
<b>Anatomical and technical aspects</b>			
MVD with SYNTAX score 0-22			
Anatomy likely resulting in incomplete revascularization with CABG due to poor quality or missing conduits			
Severe chest deformation or scoliosis			
Sequelae of chest radiation			
Porcelain aorta <sup>a</sup>			
IVUS should be considered to optimize treatment of unprotected left main lesions. <sup>35</sup>		IIa	B

7 F TRA

2 wires technique – LAD and CX

Provisional strategy – mid LAD- DES, ostium LAD – DES with the stent in LM (not having IVUS not knowing if the dist LM is ill)- as far as the shortest NC balloon

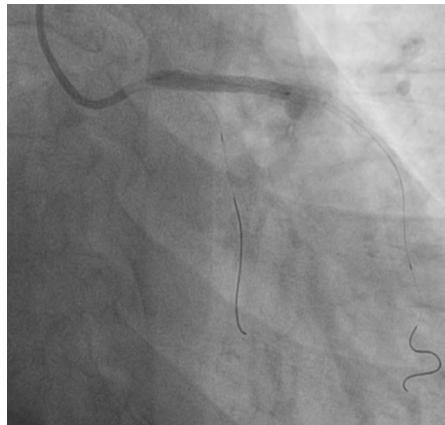
POT

Kissing balloons

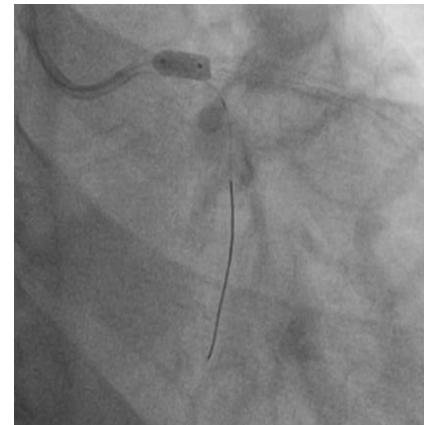
Final POT

Angiographic assesment: a) side – POT if mild carina shift

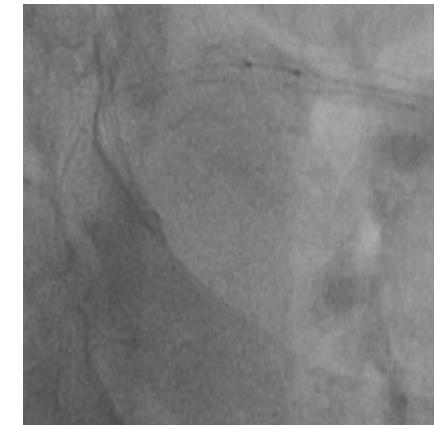
b) DES in ostium CX (TAP) if needed



After PCI mid LAD- PCI LM /LAD  
3,5x30 mm



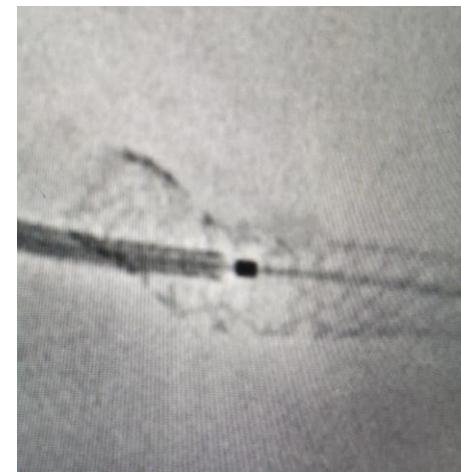
POT with NC 4,0x8 mm



After POT difficult to pull back the NC balloon, trying  
to go further in the LAD – not possible

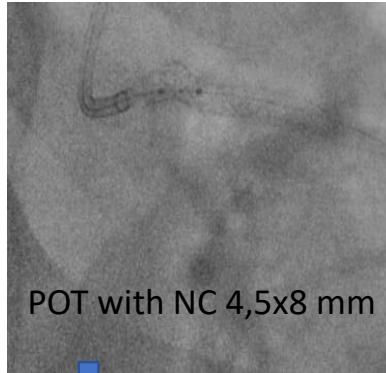
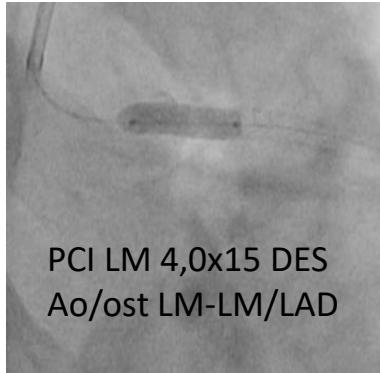


Stent boost



**What to do next??**

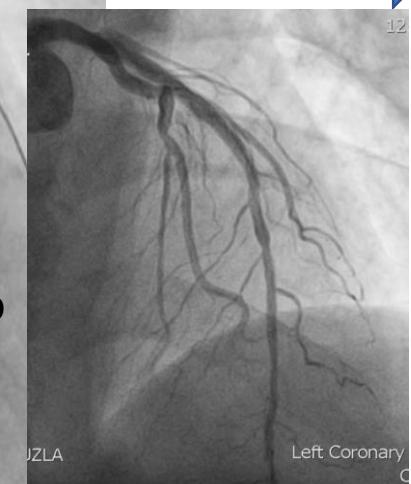
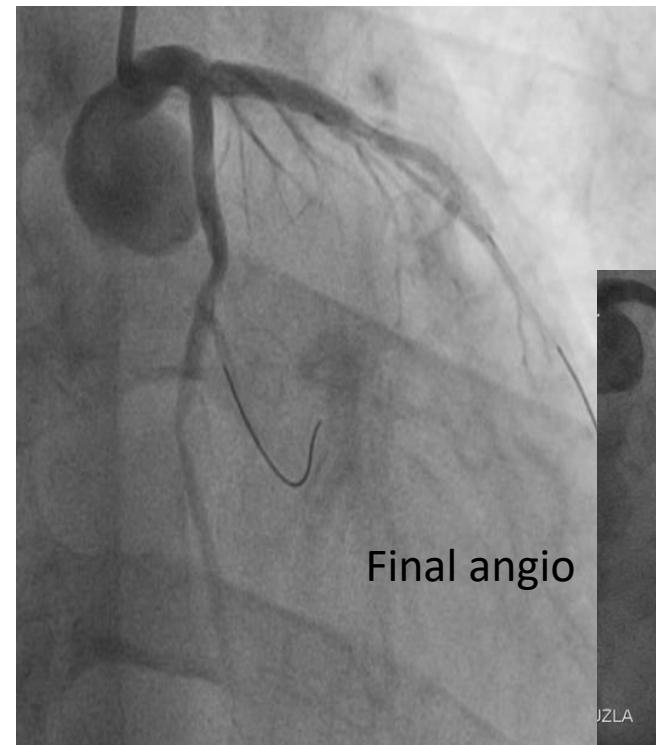
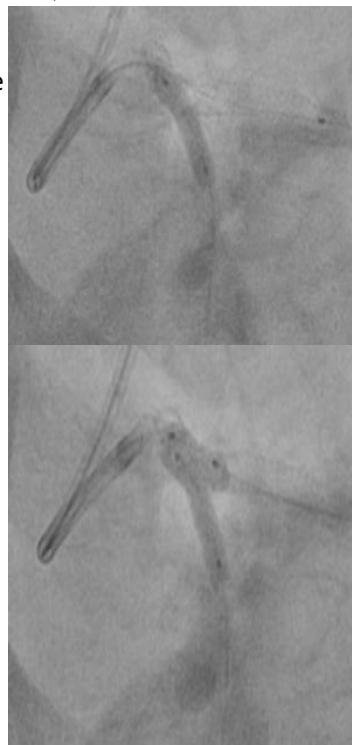
Stent fracture in the dist LM – hardly able to pull the balloon and the wire from the CX out



New guidewire in CX; dilation of the CX ostium with NC 3,0x15

Two step kissing

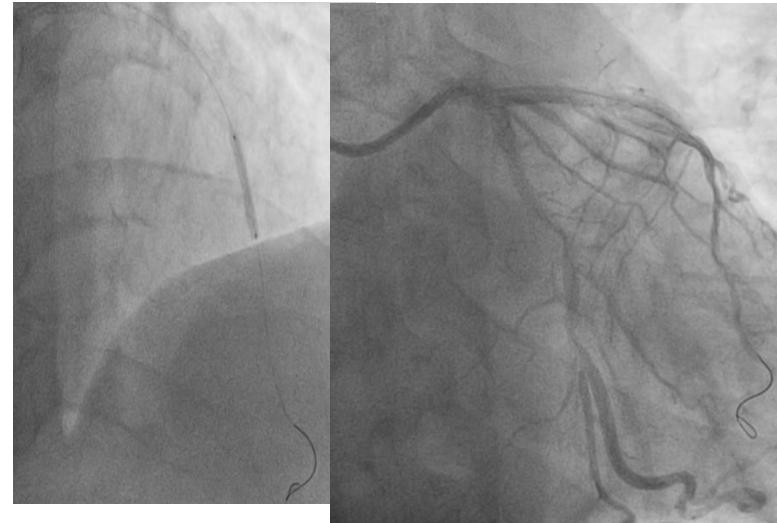
Together NC 3,0 x15 in LM/ CX;  
NC 4,0 x12 in LM/LAD



Then..  
Another complication

Patient having chest pain, haemodynamically unstable- BP 70/50 mm Hg, sinus bradycardia 40/min, pale, diaphoresis

Angio : No-reflow in mid/dist LAD where before was lesion 50% - probably dissection from multiple distal wire manipulation



After tirofiban , nitro  
and verapamil i.c,  
and still no-reflow;  
finally PCI mid/dist LAD

No-reflow

2,75x18 mm DES

Final angio

Angio after 1 year

## Why and how? Take home messages

- Stent fracture is a serious intraprocedural complication associated with the stent thrombosis, restenosis, ischaemic events and target lesion revascularisation.
- The most serious is when it happens in the left main and can cause sudden cardiac death from stent thrombosis.
- Often missed, because it is not always seen on classic angio. Enhance stent visualisation can provide a good diagnose of the fractured stent, especially in a cath lab without imaging.
- Why did it happened in our case? Mostly because of the vessel and stent geometry – wide angle, which is the most common cause. DES and longer stents are most vulnerable to fracture. Postdilatation also had a role in fracturing the stent struts.
- Multiple distal wire manipulation can cause dissection, perforation and lead to a cardiogenic shock and death.
- Always check the distal tip on the wire, even on the soft ones. Always check for stent patency after deployment.