

Valve Selection: tailoring valve and patient.

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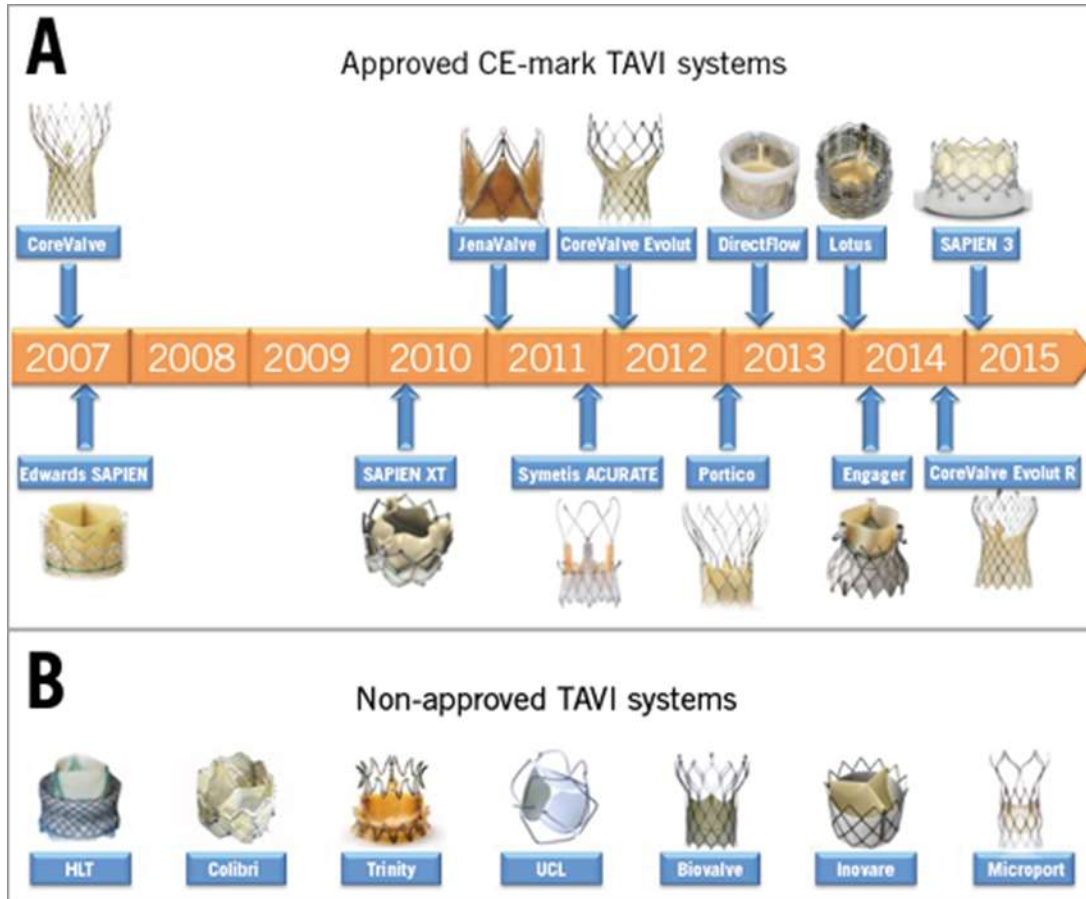
TCTAP April 2017, Seoul Korea.



Valve types implanted in Australia

Valve type	Edwards SAPIEN THV ¹	Edwards SAPIEN-XT ²	Medtronic CoreValve ³	Medtronic CoreValve Evolut ⁴	St. Jude Portico ⁵	Symetis Acurate ⁶	Boston Scientific Lotus Valve ⁷	Edwards CENTERA ⁴	Edwards SAPIEN 3 ⁵
									
Size (mm)	23, 26	23, 26, 29	26, 29, 31	23	23, 25, 27, 29	23, 25, 27	23	23, 26	20, 23, 26, 29
Height (mm)	14.5, 16.1	14.1, 17.2, 19.1	55, 53, 52	45	47			17.5, 20	20
Leaflet	Bovine	Bovine	Porcine	Porcine	Bovine	Porcine	Bovine	Bovine	Bovine
Stent	Stainless steel	Cobalt chromium	Nickel-titanium alloy	Nickel-titanium alloy	Nickel-titanium alloy	Nickel-titanium alloy	Nickel-titanium alloy	Nickel-titanium alloy	Cobalt chromium
Sealing cuff		PET	Porcine	Porcine	Porcine	PET	Polyurethane	PET	PET
Delivery	RetroFlex3 22–24Fr (TF)	NovaFlex+ 18Fr (TF)	AccuTrack 18Fr (TF)	AccuTrack 18Fr (TF)	18Fr	28Fr (TA)	18Fr		Commander 14Fr (TA)
Expansion	Balloon-expandable	Balloon-expandable	Self-expandable	Self-expandable	Self-expandable	Self-expan	Mechanical Yes	Self-expandable Yes	Balloon-expandable No
Reposition	No	No	Partial	Yes	Yes	Yes	Yes	Yes	No
Retrievable	No	No	Partial	Yes	Yes	No	No		No
Resheathable	No	No	Partial	Yes	Yes	Yes	No		Yes
RVP	Yes	Yes	No	No	No	No	No	No	No
Approval (size or approach)	CE Mark 2007 (TF) 2008 (TA) FDA	CE Mark 2010 (23, 26) 2012 (29)	CE Mark 2007	CE Mark 2012	CE Mark 2012 (23)	CE Mark 2011 (TA)			

Valve types in Europe



Piazza et al EuroIntervention 2016;12:Y37-Y41
TAVI device selection: time for a patient-specific approach

A strategy for tailoring valve and patients

Key factors to consider

Annulus characteristics

- Size: Evolut R has greatest range

	S3	Evolut R	Lotus	Portico	Symtentis
Perimeter (mm)	65-92.6	56.5-94.2	62.8-84.8	60-85	66-85
Area (mm ²)	338-680	255-706	314-573	277-573	346-573

- Bicuspid versus tricuspid valve
 - Consider sealing skirt and repositionability
- Heavy calcification incl. AO-Mitral curtain with risk annular rupture
 - Consider self expanding

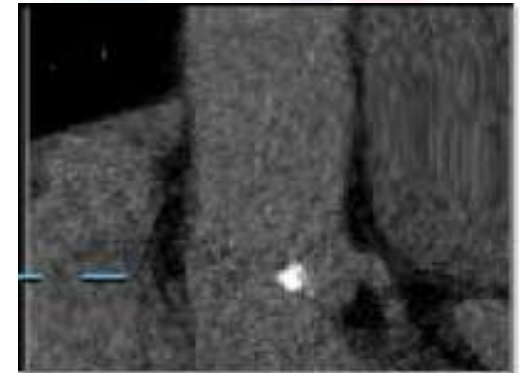


A strategy for tailoring valve and patients

Key factors to consider

Coronary heights

- annular plane to lower margin coronary artery
 - sinus of valsalva area
 - sinus height
 - presence of bulky calcium apposing the ostium
- Consider fully retrievable and repositionable device
 - Consider partially retrievable and repositionable device



A strategy for tailoring valve and patients

Key factors to consider

Sub valvular characteristics

- sigmoid septum / septal bulge
- Consider mechanically expanding fully retrievable and repositionable
- Consider self expanding partially retrievable and repositionable



A strategy for tailoring valve and patients

Key factors to consider

Aortic Root Angulation

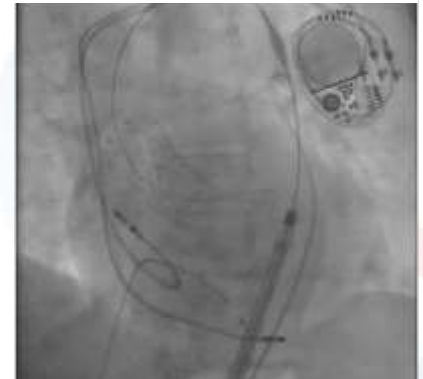
- horizontal aorta
 - consider balloon expandable or mechanically expandable and repositionable device
- issues of co-axiality
 - Consider balloon expandable or top down deploying valve

Pacemaker

- for avoidance consider balloon expandable to expedite discharge

LV Function

- poor LV Function consider mechanically expandable
- no pacing no PVL

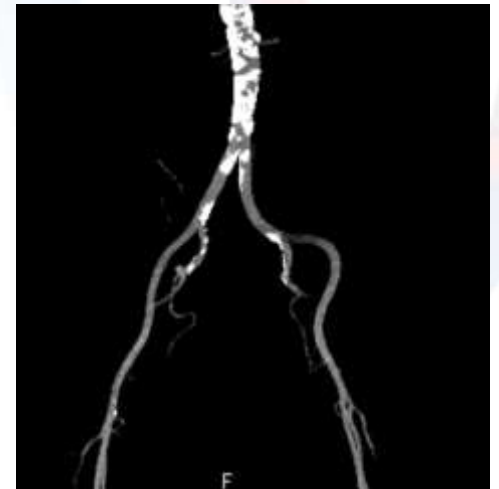


A strategy for tailoring valve and patients

Key factors to consider

Iliofemoral access

- What is the minimum femoral size
- Sizing ≤ 6 mm to 5.5 mm
 - will require next generation device 14 Fr sheath
 - Edwards Sapien S3 or Medtronic Evolut R
- Sizing 5.0-5.5mm will require 14 Fr in line sheath
 - Medtronic Evolut R



Case of multiple technical challenges

73 yo female class III dyspnoea

- Respiratory disease – severe COPD
- Renal disease – CKD3
- GI/haematological/bleeding – no
- Other – T2DM GORD STS 4.8%

Issues :

- Small femoral
- Low coronary height
- Small annulus



Annulus ✖

Compass: 50.0 mm

ID	Name	Value	Type
1	Area	284.6 mm ²	Polygon
1	Perimeter	61.6 mm	Polygon

MLD Right Iliac (MPR) ✖

Diameter: 5.8 mm

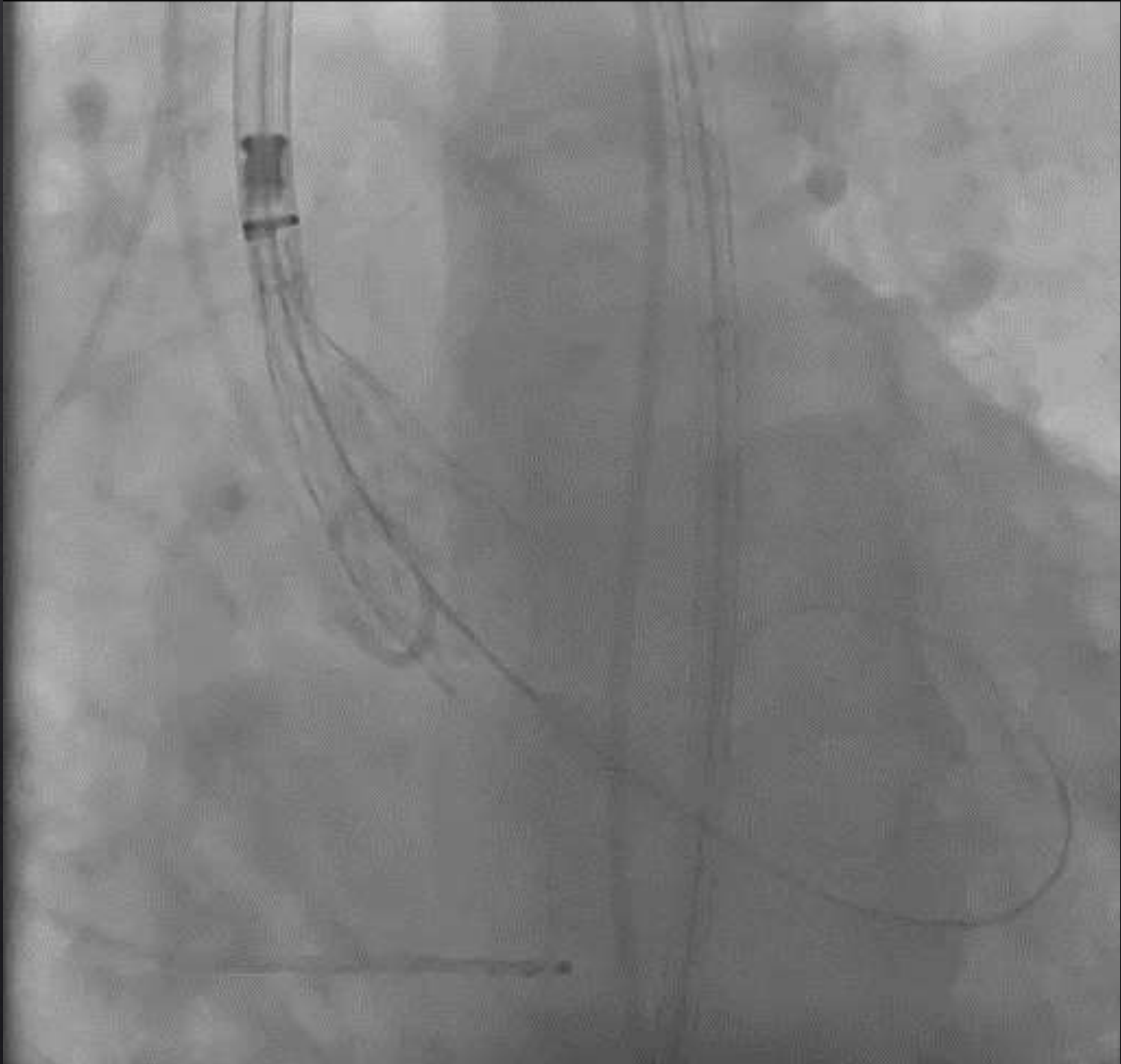


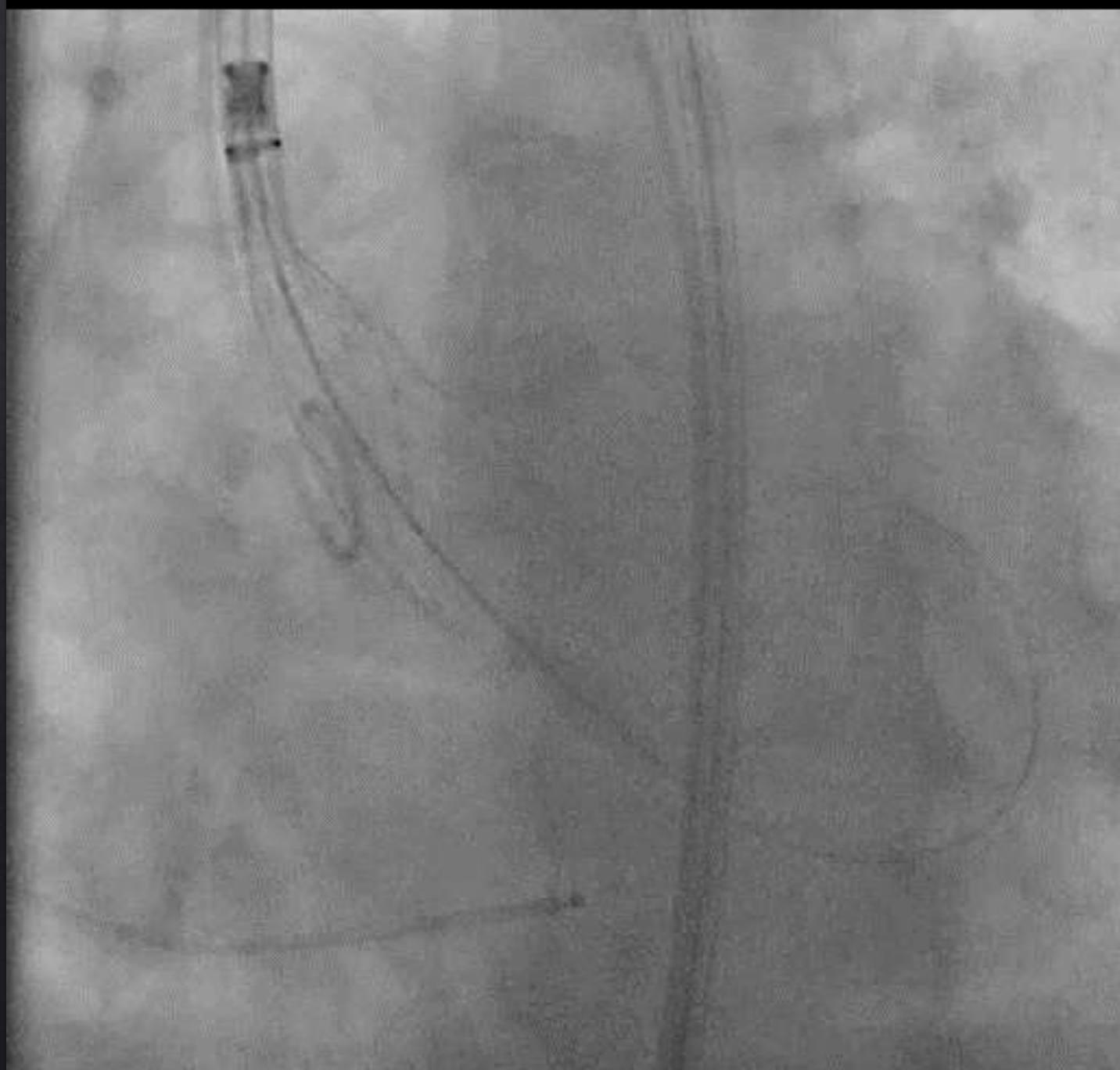
Annulus to LC ostium ✖

LVOT -200ms
12/02/2016
10:41 AM

Center: 306
Width: 1298

ID	Name	Value	Type
1	Annulus to Left Coronary Ostium Length	9.5 mm	Vessel Length





Case of already having pacemaker

87 yo female

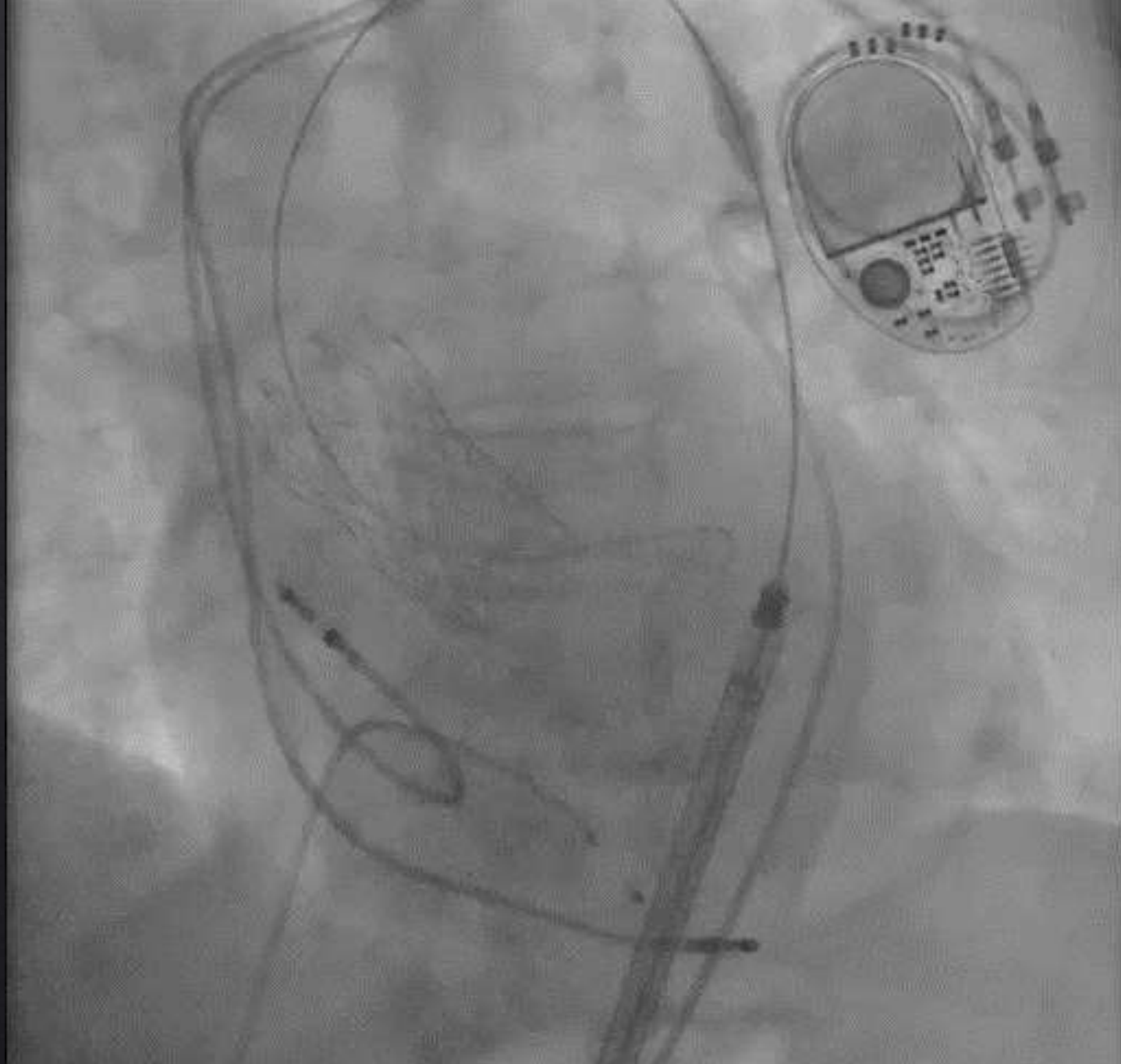
- Severe aortic stenosis
 - NYHA class dyspnoea
 - EF 78%
- Permanent pacemaker insertion
 - Complete heart block
- Hyperimmunoglobulin M syndrome
- Previous BCC resection STS 5.1%

Issues:

Already has PPM





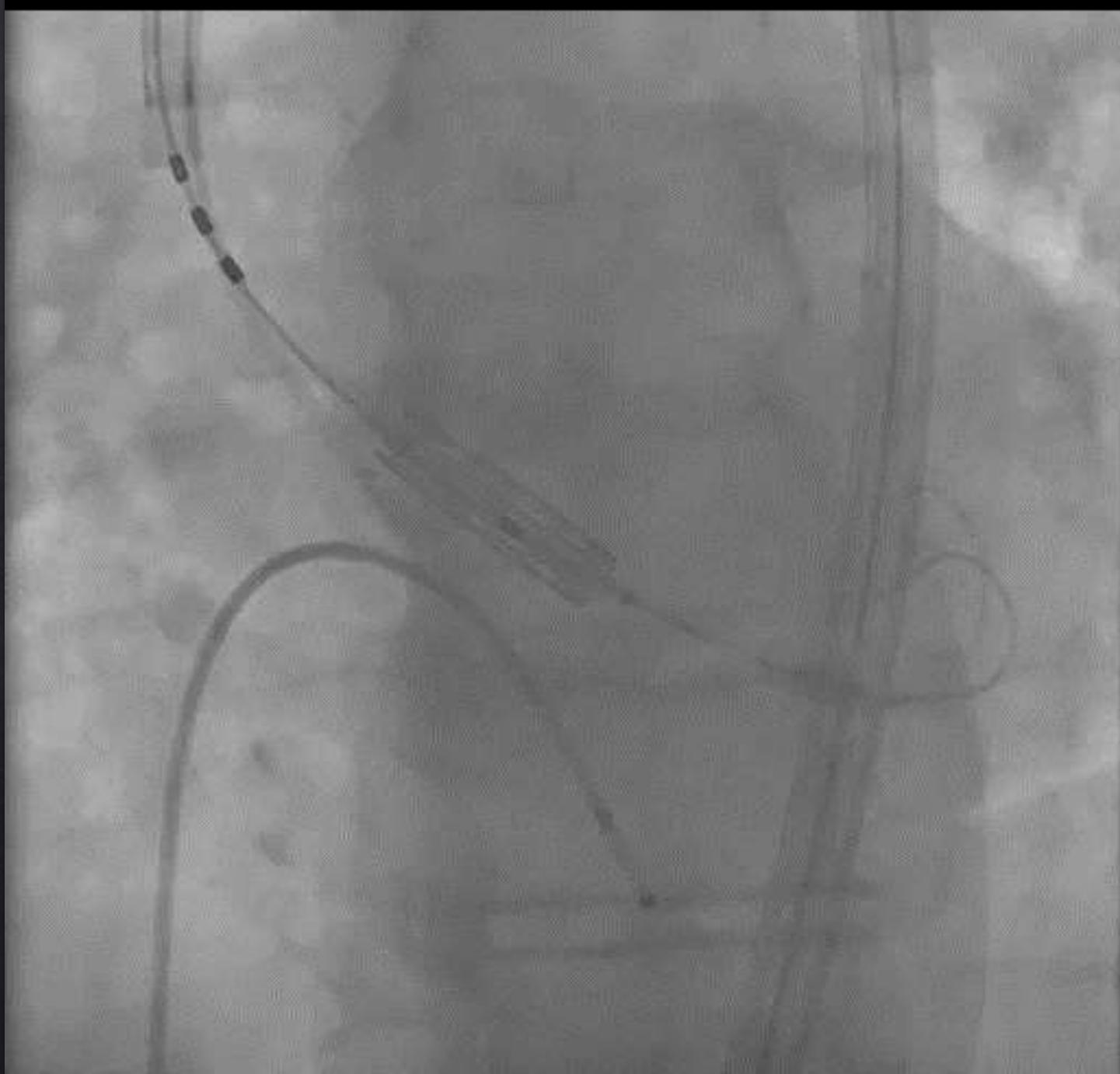


Case of early discharge

- 84 yo male STS 2.6%
- Valvular heart disease – Isolated Severe AS
- Cerebrovascular disease – 50-69% bilateral, Mild memory concerns
- Renal disease – CKD IIIa, GFR 55
- GI/haematological/bleeding – Barrett's/GORD, Diverticuli
- Other – Peripheral neuropathy and spinal stenosis limiting mobility.

Issue: 3M style day 1 post TAVI discharge
No TOE , sedation, no IDC , no PPM







Case of sigmoid septum

- 80 yo female AS class III dyspnoea.
- Respiratory disease – pulmonary fibrosis COPD
- Renal disease – CKD stage III eGFR 33
- Other – HTN, DM on insulin, morbid obesity, gout.
- STS 5.3%

Issue: septal bulge LVH



25/10/2016 09:25:17

TIS0.6 MI 1.3

217139

X5-1/TPCH

FR 65Hz
12cm

M3

2D
60%
C 50
P Low
HGen



P

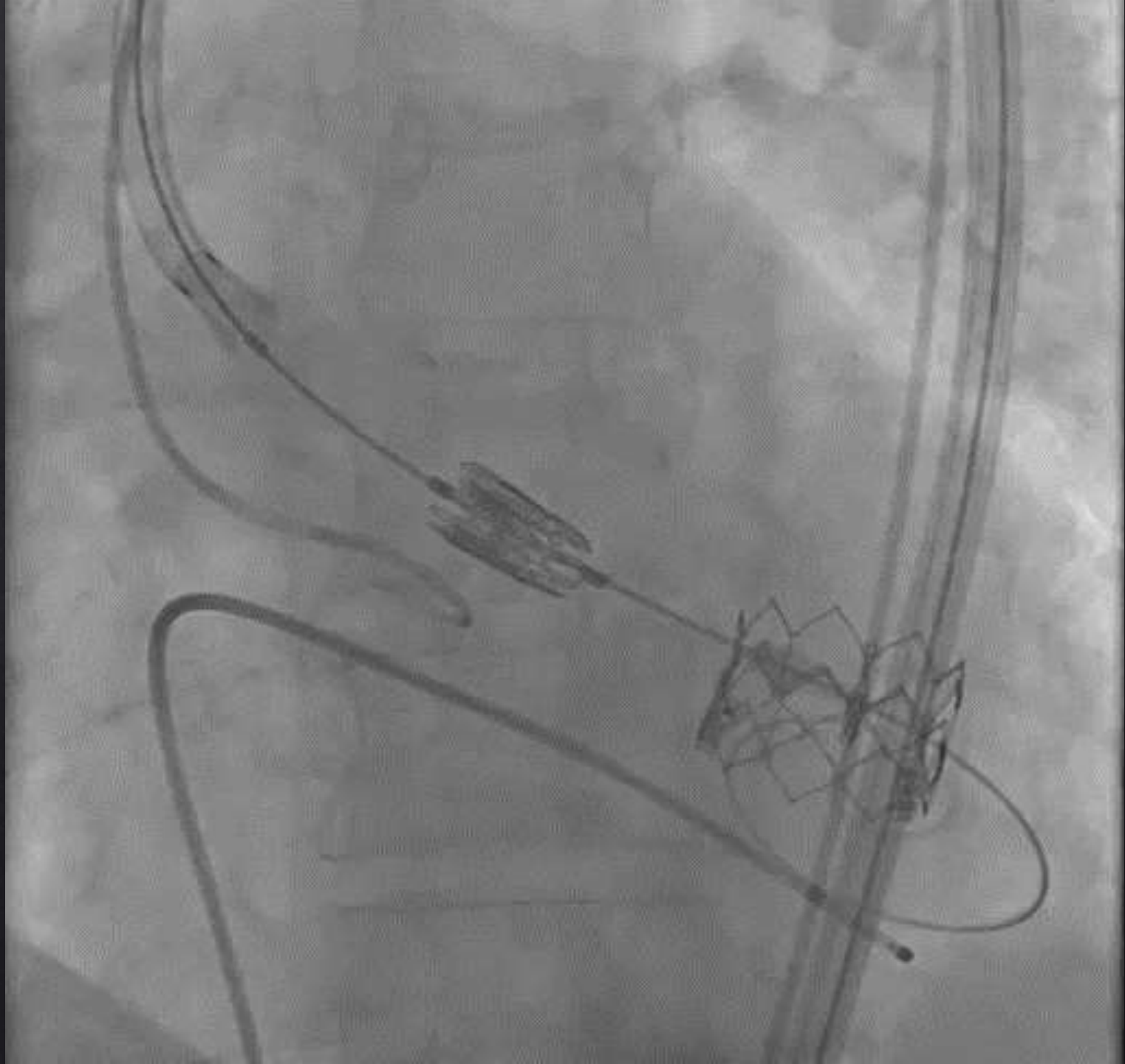


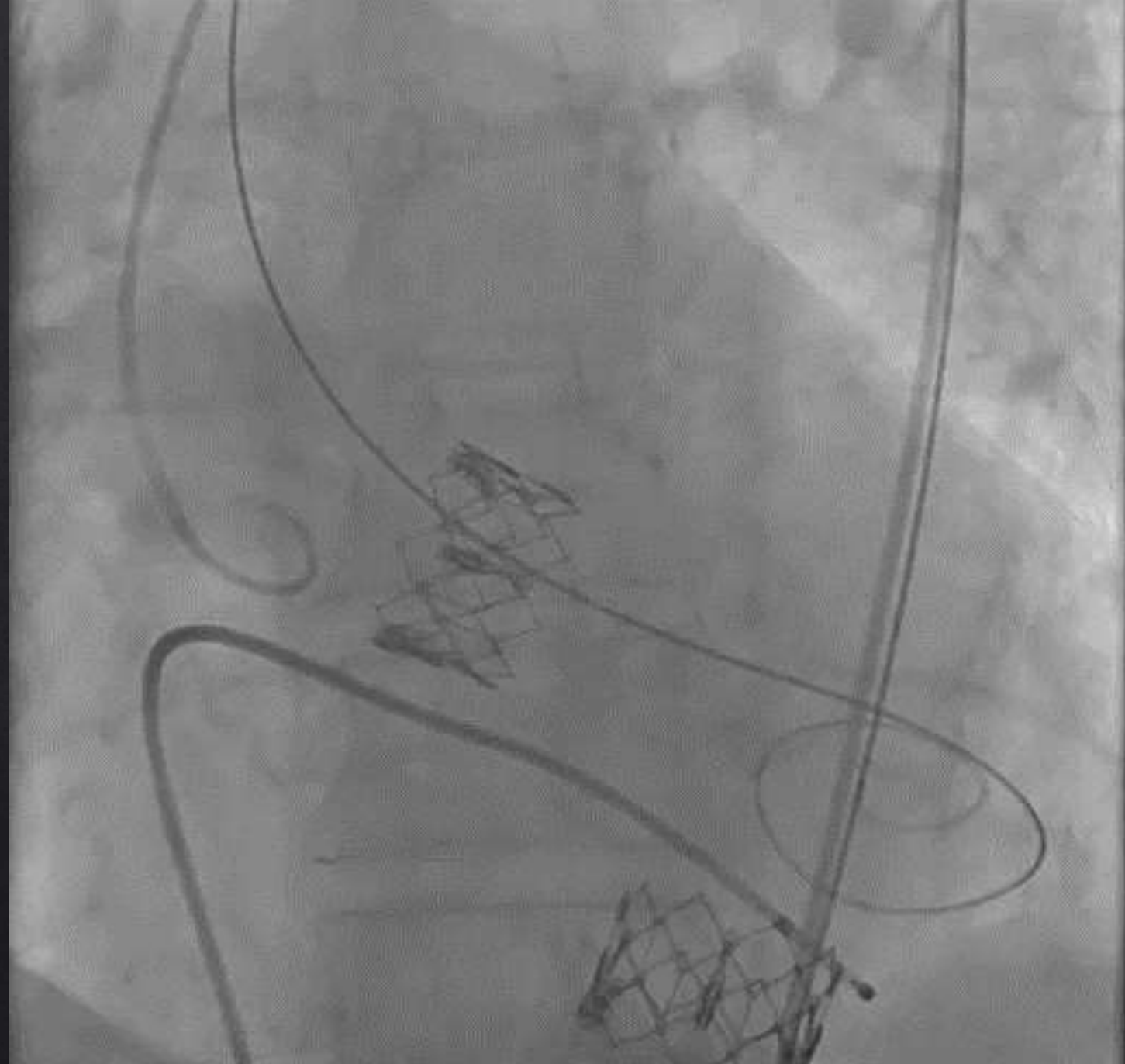
JPEG

89 bpm









Case of heavy calcification

83 yo female NYHA III, progressive dyspnoea

- Cerebrovascular disease – CVA '95, mild Right sided weakness
- Respiratory disease – Recent LRTI, slow RUL likely adenocarcinoma monitored,
- Renal disease – CKD IIIb/IV, GFR 32
- GI/haematological/bleeding – Hodgkin's Lymphoma '55
- Other – Afib
- STS 5.1%

Issue: Calcification



07/03/2017

15:48:15

TIS0.8 MI 1.3

342325

S5-1/TPCH

FR 52Hz
14cm

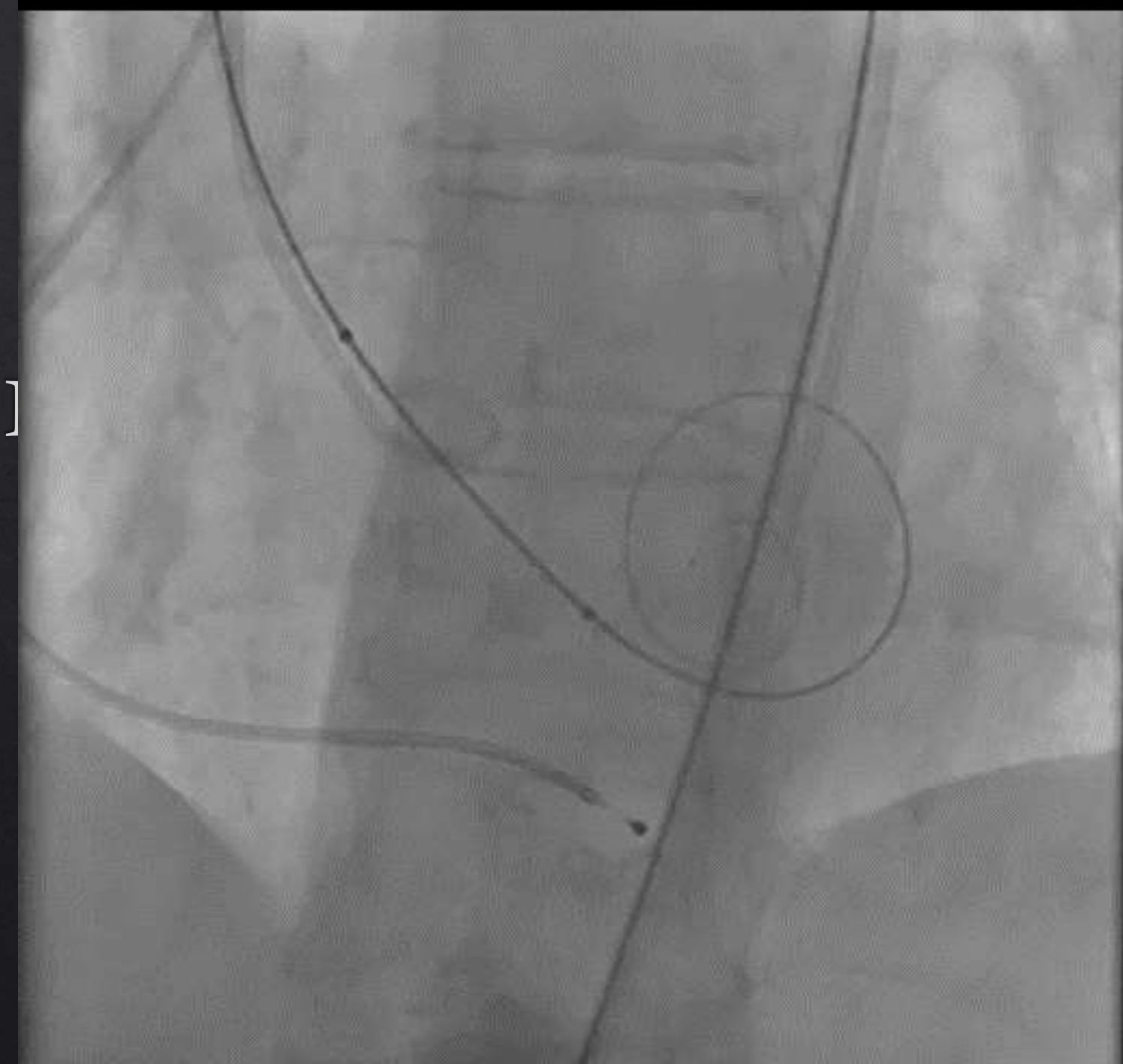
2D
59%
C 50
P Low
HPen

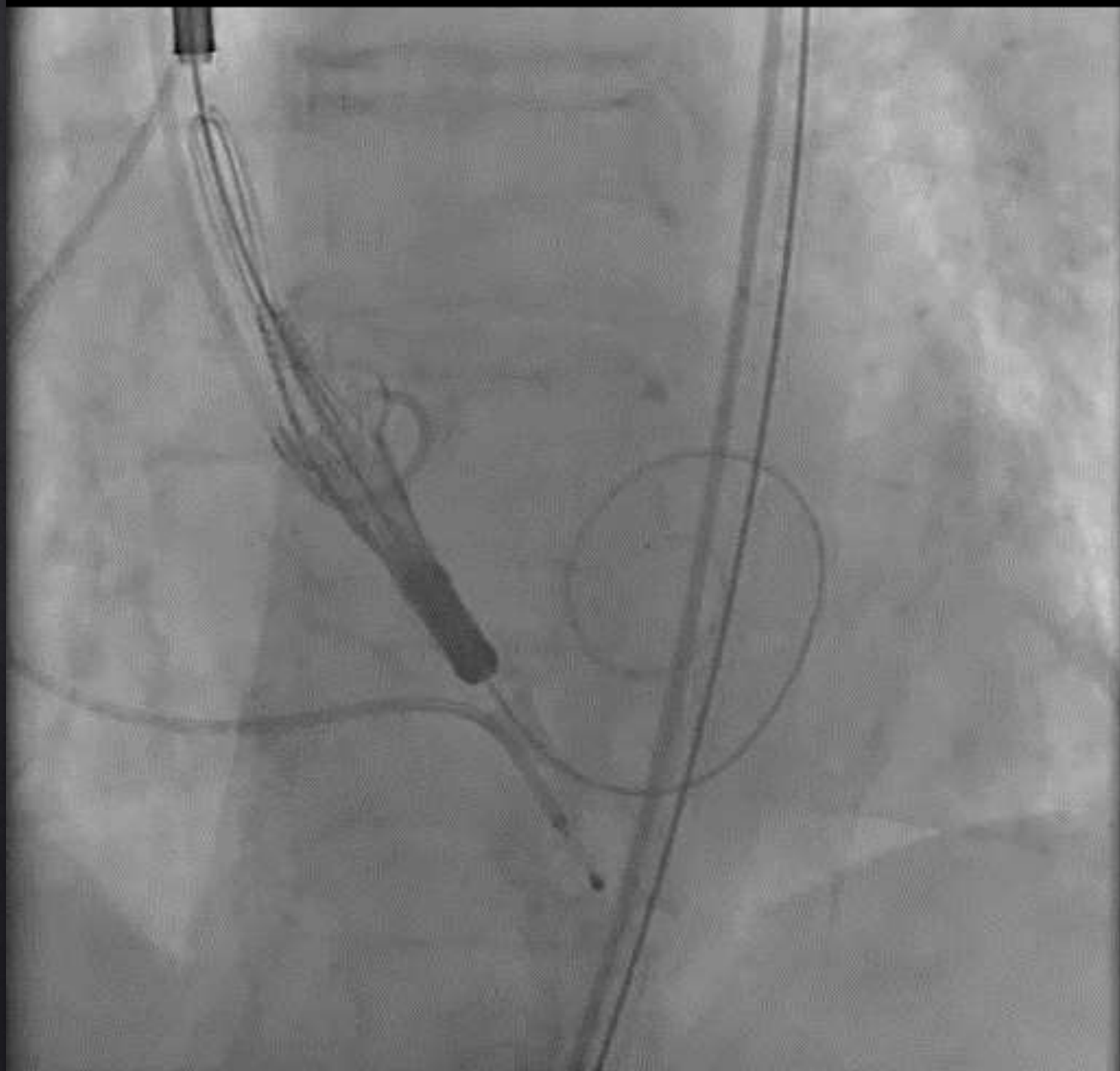
M3

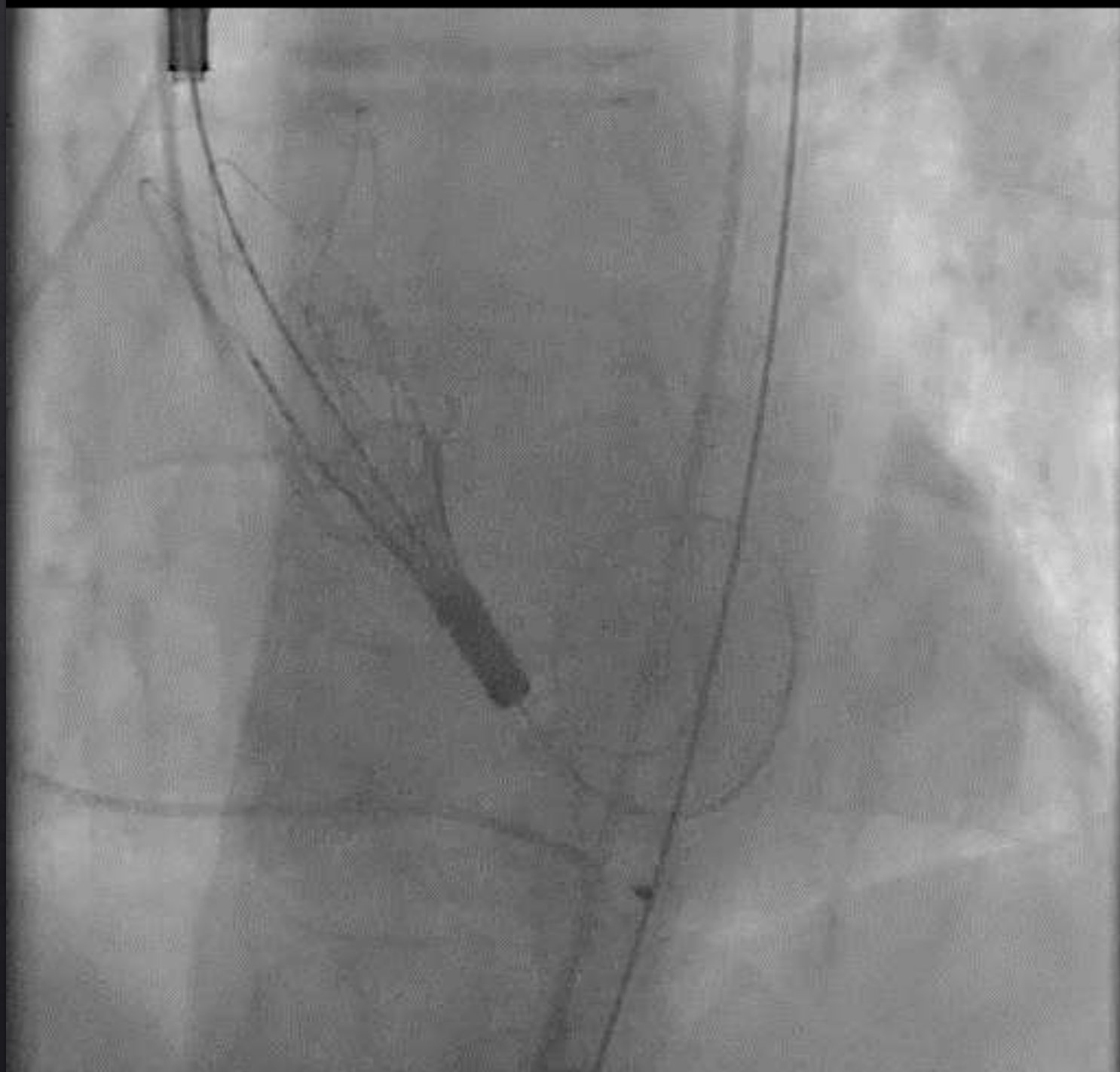


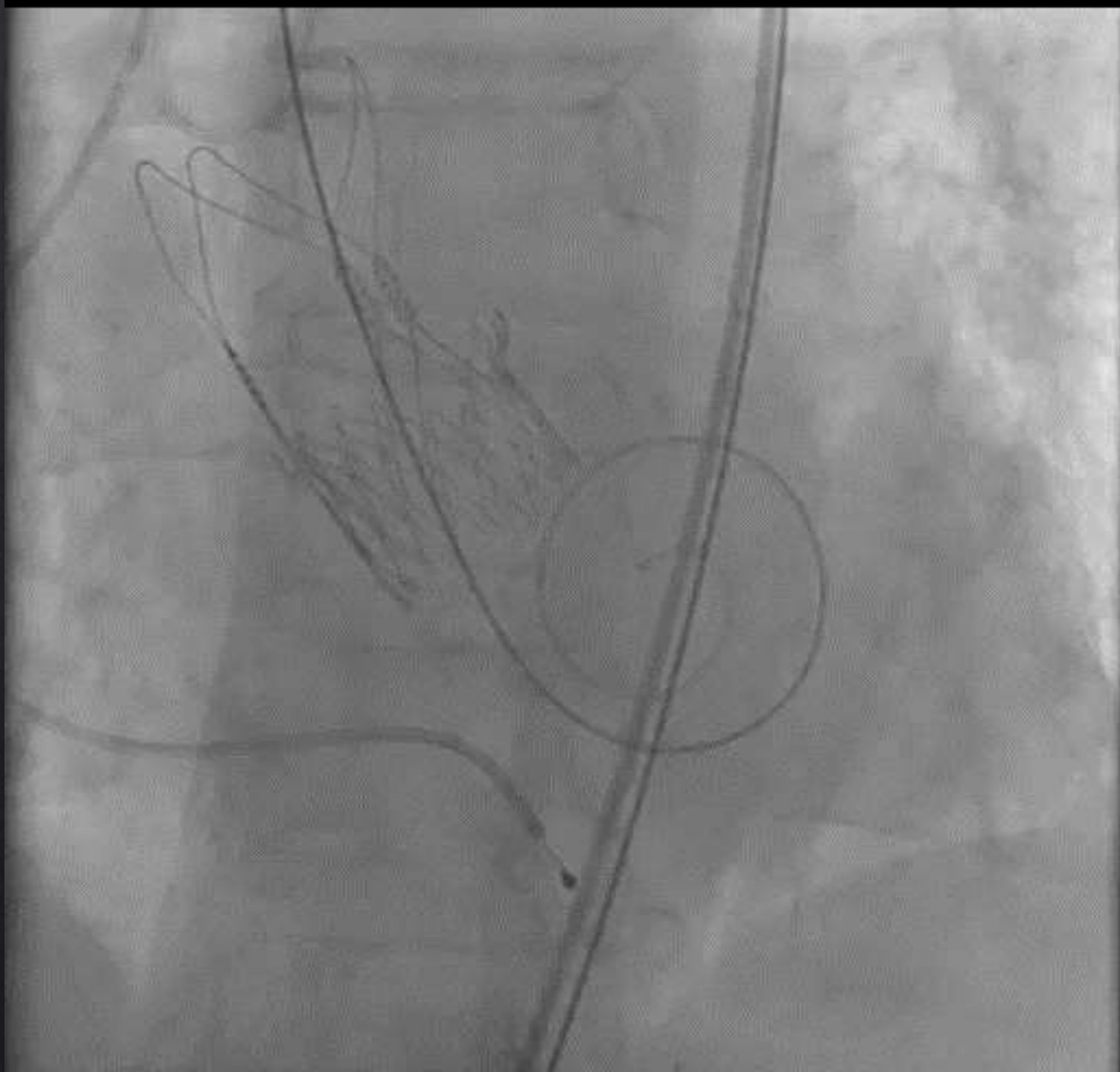
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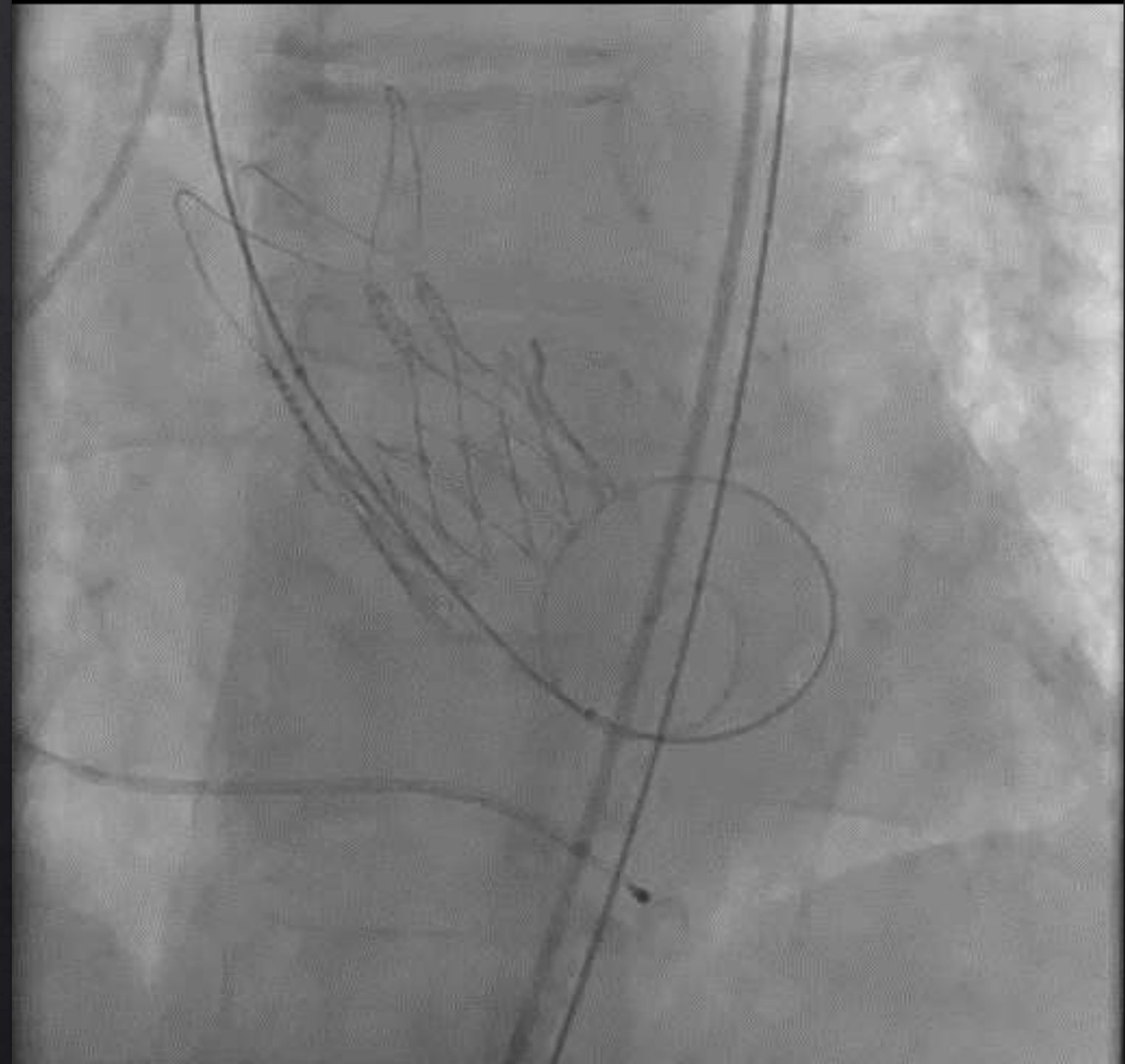
93 bpm











Case of very low coronary heights

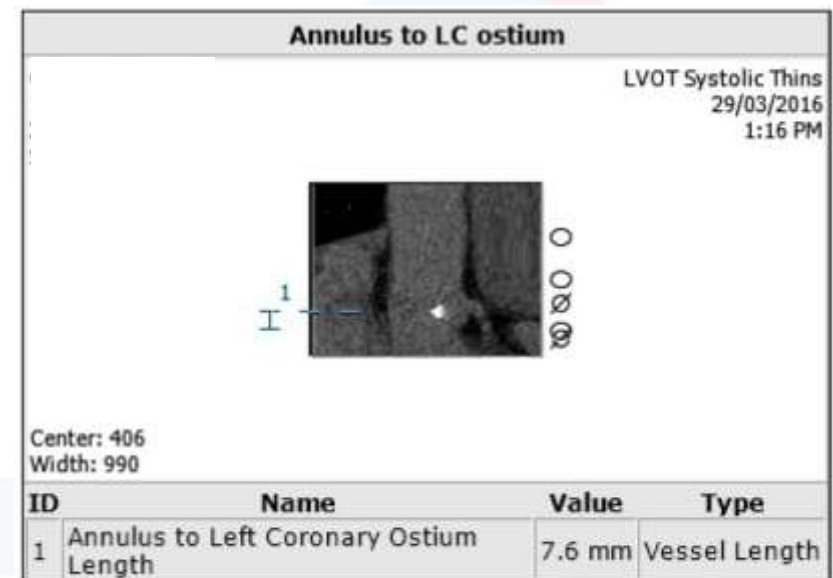
72 yo male, NYHA III, progressive dyspnoea

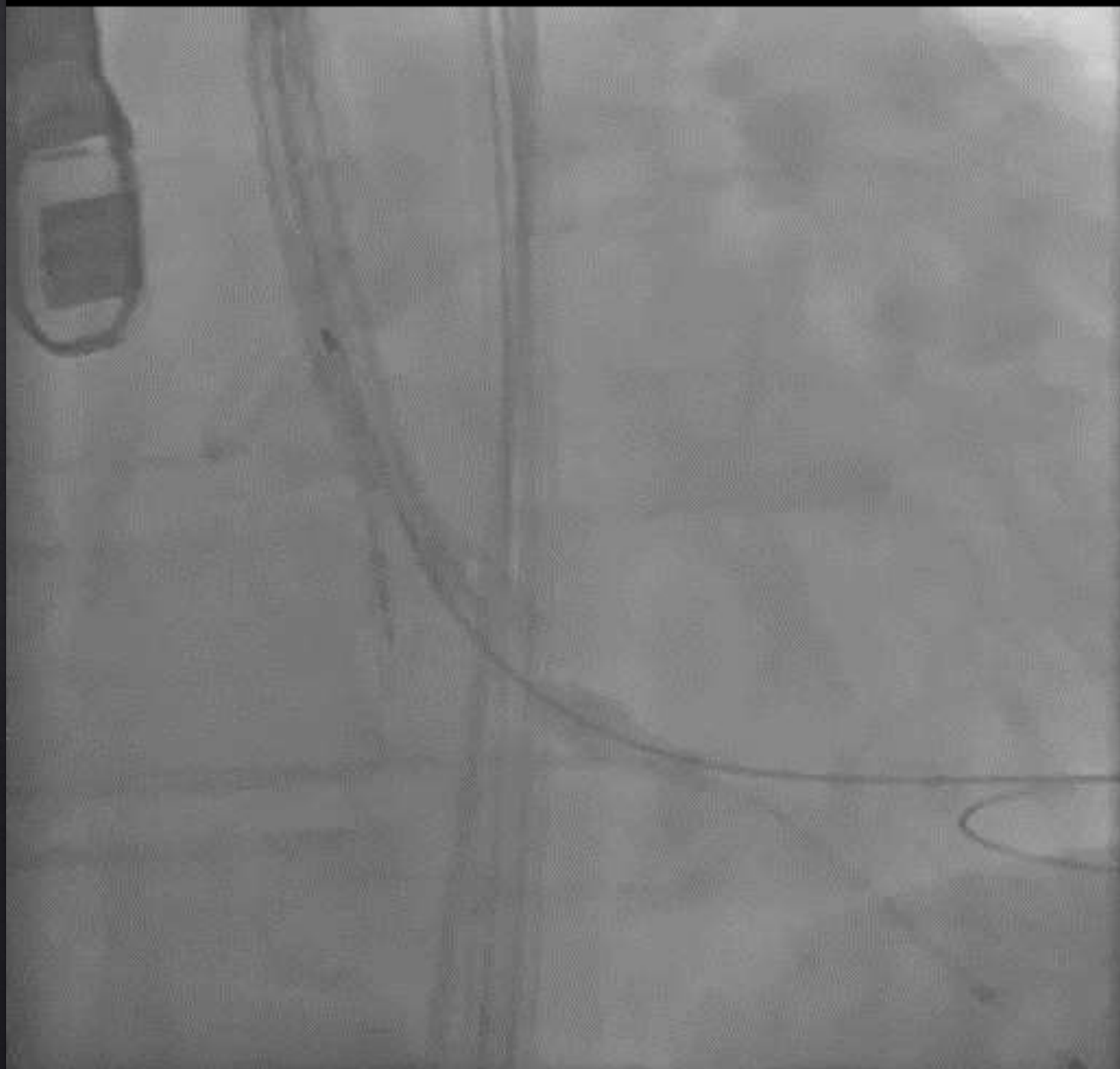
STS 4.4%

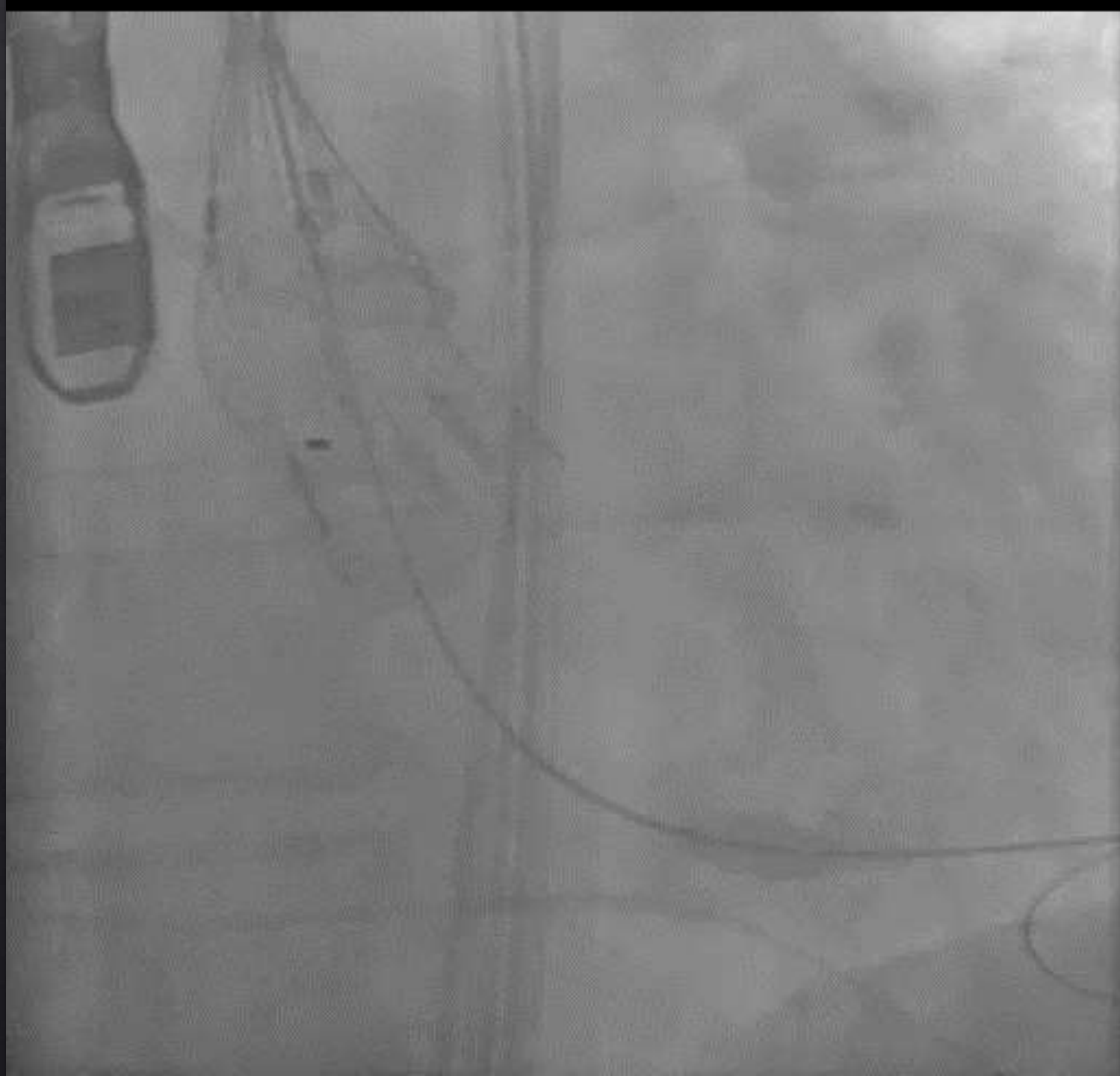
- Coronary artery disease- PCI LAD 2003
- Respiratory disease – COPD, OSA
- GI/haematological/bleeding – 2013- possibly SI (Heyde's)
- Other – Breast ca 2006, T2DM on insulin, Dyslipidaemia, asthma, bronchiectasis, OSA

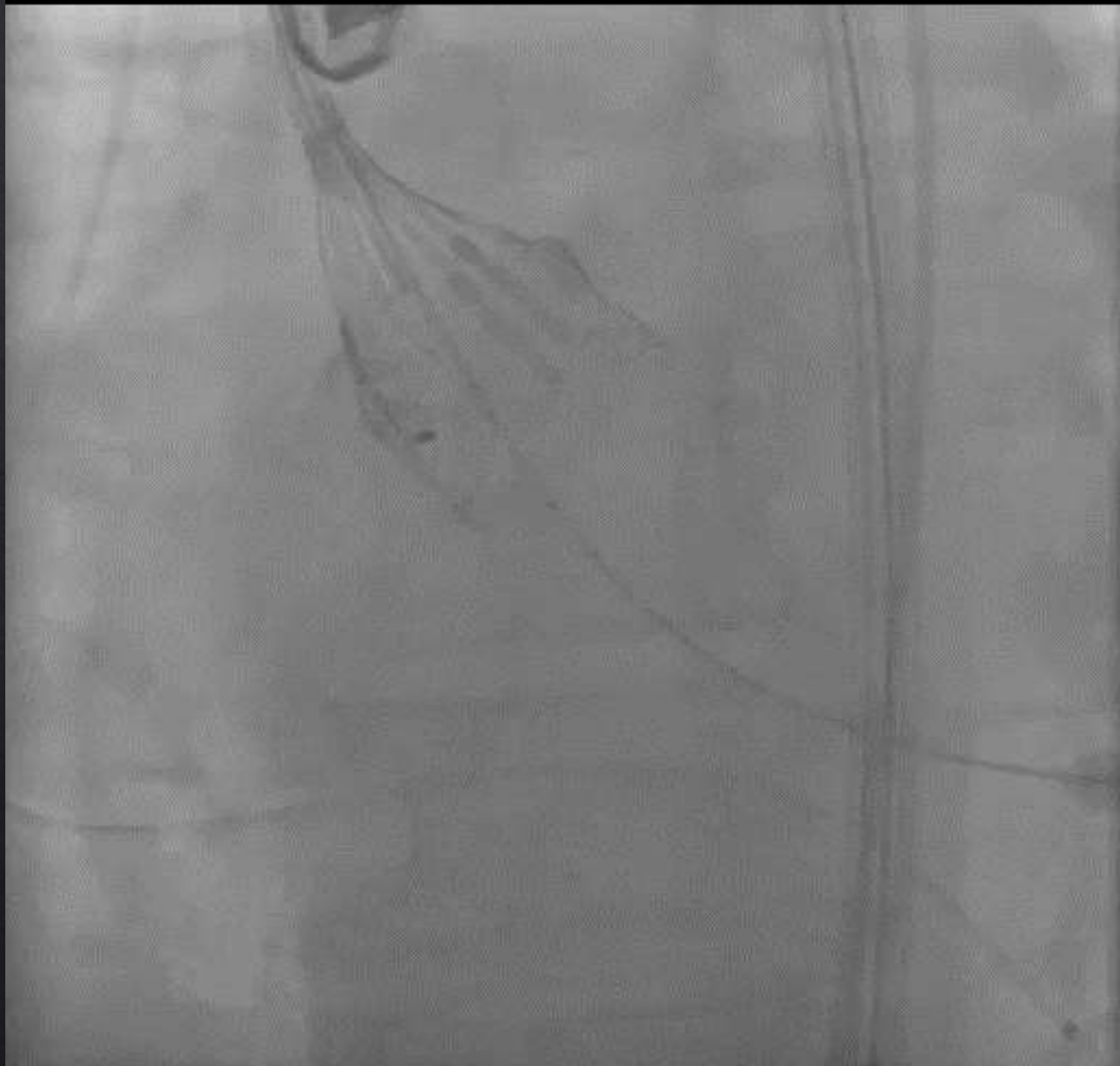
Issue:

Very low coronary height









Conclusion

- tailored selection of valve to optimise outcomes
- based on patient related factors
- lesion related factors
- technical considerations
- benefit to familiarity with several devices

