

Transcatheter Aortic Valve Implantation Using Venus-A Bioprostheses: Early Experience in Fuwai Hospital

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FuWai Hospital**

Fuwai Hospital TAVI program

- * **The program started in 2010**
 - cardiac surgery more than 10000 cases,**
 - SAVR 1500 cases**
 - coronary interventions more than 10000 cases**
- * **Heart team organized**
 - interventionist 4**
 - cardiac surgeon 2**
 - anesthesia specialists 2**
 - imaging experts (bedside) 2**

Heart Team



Fuwai Hospital TAVI Program

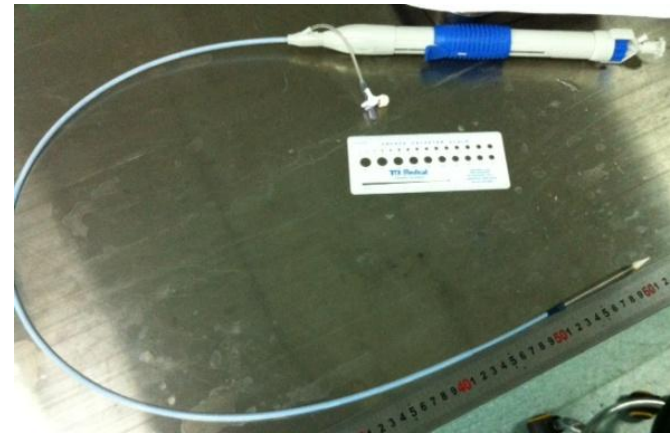
- * **Three AS patients were treated with coreValve in 2010, one of them died due to LM acute closure.**
- * **Venus-A prosthesis (Venus MedTech Hangzhou Inc.) started in Sept. 2012 (National 12th five-year support project)**

Venus *A-Valve*[®] System



A self-expanding multi-level support frame with a tri-leaflet porcine pericardial tissue valve

An 18-20 French Retrievable delivery system



2-piece disposable loading system with a crimper for easy loading

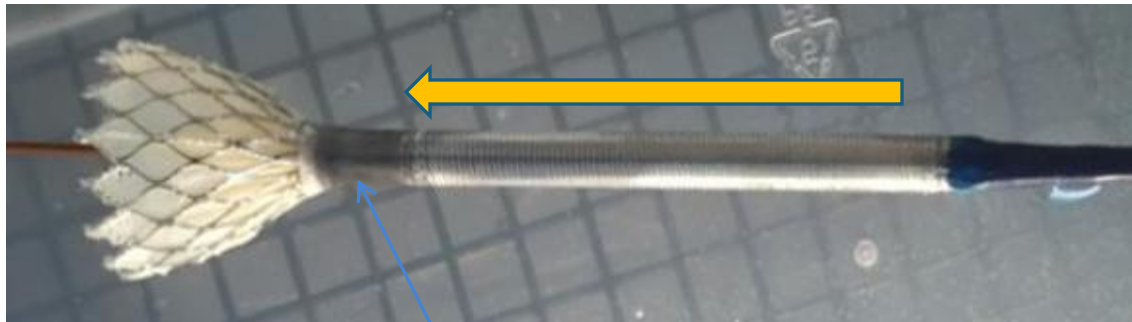


VENUS MEDTECH

Venus Retrievable Delivery Catheter

(Sizes: 18Fr and 20Fr)

Retrievable at 37C up to
2/3 of device is deployed



Super elastic reinforced end to allow flaring
and recovery after device retrieval



VENUS MEDTECH

IZQM, 388

P-02864-16-1-1-IZQM-388

A

7/4/2012

1:05 PM

Run 18 - Frame 1 / 82

Unknown

87.7kV, 411mAs, 753mA, 574ms

Zoom 100%



AO 26.8°

Craniol 29.2°

L 128

W 256

Study Design

AS: inoperable or high risk



**Assessment: Transfemoral or
Direct Aortic approach**



YES

NO

**TAVI
(n=80)**

not in study



**Primary endpoint: All-Cause and
cardiac Mortality at 1 year**

Study Proceeding

1 WSE
2 SSM

3 SAM
4 ZHJ
5 YY

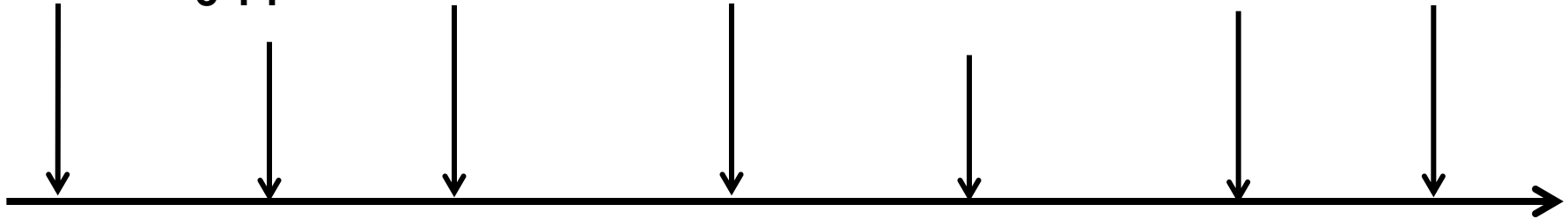
6 ZWC
7 KCH

8 ZHX

9 SQH
10 DBZ

11 YJF
12 ZZJ

13 ZY
14 FJS
15 CCE



01

02

03

04

05

06

07

Baseline Characteristics of the Patients

Characteristic	TAVI n=15
Age, yr	78 ± 6
Male sex	7 (46.7%)
STS Score	12.1 ± 5%
NYHA class	
II	4 (26.7%)
III or IV	11 (73.3%)
Coronary artery disease	4 (26.7%)
Previous myocardial infarction	3 (20%)
Previous CABG	2 (13.3%)
Previous PCI	3 (20%)
COPD	3 (20%)
Creatinine > 2mg/dl	1 (6.7%)
Extensively calcified aorta	1 (6.7%)
Atrial fibrillation	3 (20.0%)
Peripheral vascular disease	4 (26.7%)

Baseline Echocardiographic Findings

Characteristic	TAVI n=15
Aortic valve area, cm²	0.55 ± 0.16
Mean aortic valve gradient , mmHg	58.7 ± 10.6
Peak aortic jet velocity	5.0 ± 0.5
Annulus size, mm	24.9 ± 2.5
Mean LVEF, %	51 ± 11
Aortic regurgitation	
0	2 (13.3%)
1	8 (53.3%)
2	5 (33.3%)
3	0
Moderate mitral regurgitation	5 (20%)

Procedural Outcomes

Outcome	TAVI
	n=15
Procedural success	14 (93.3%)
Approach	
transfemoral	11 (73.3%)
direct aortic	4 (26.7)
Anesthesia	Local
Operation site	Hybrid operating room
Valve in Valve	1 (6.7%)
Bioprostheses	
26mm	8 (53.3%)
29mm	7 (46.7%)
Post dilation	5 (33.3%)

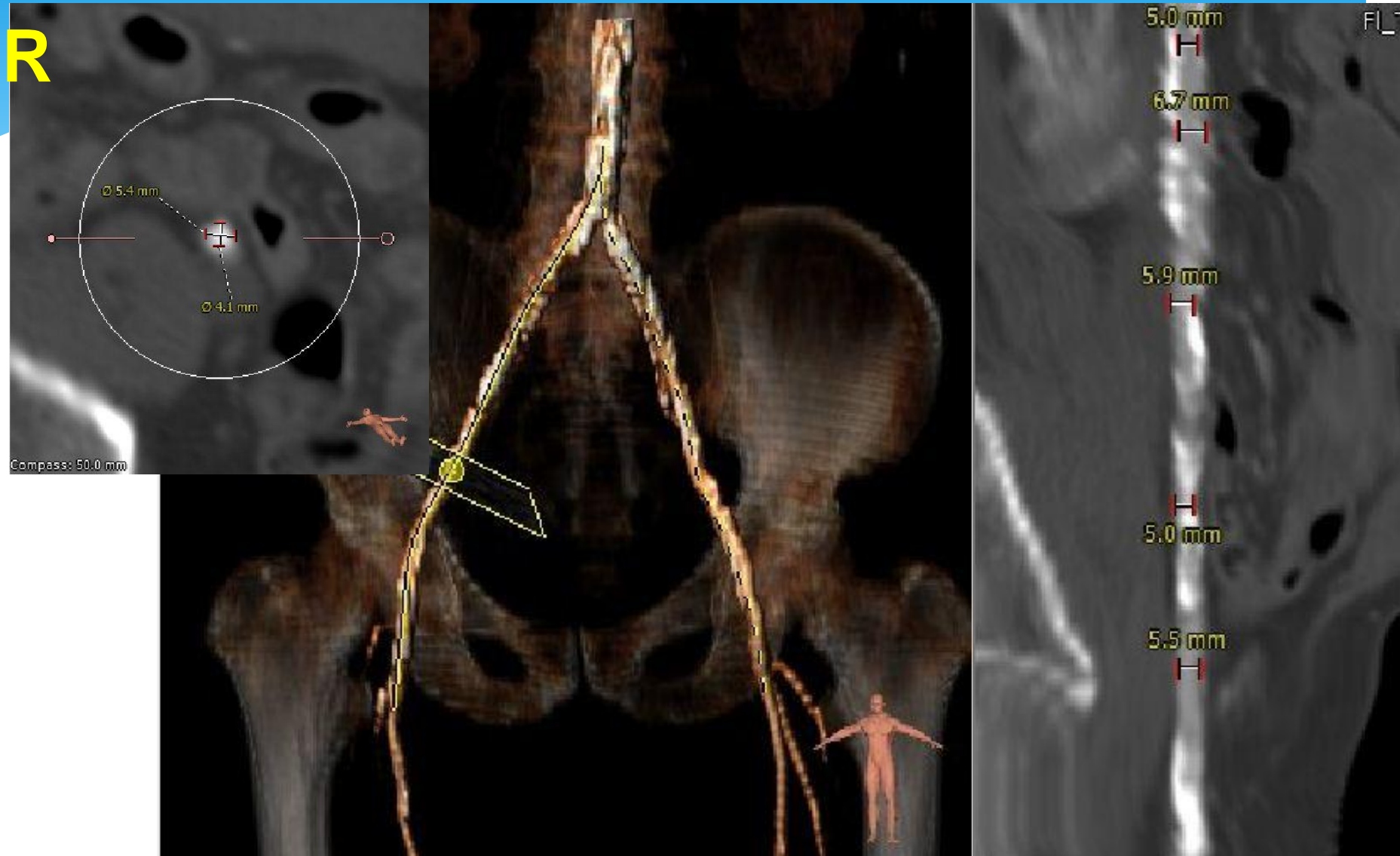
Clinical Outcomes at 30-day and 6-month

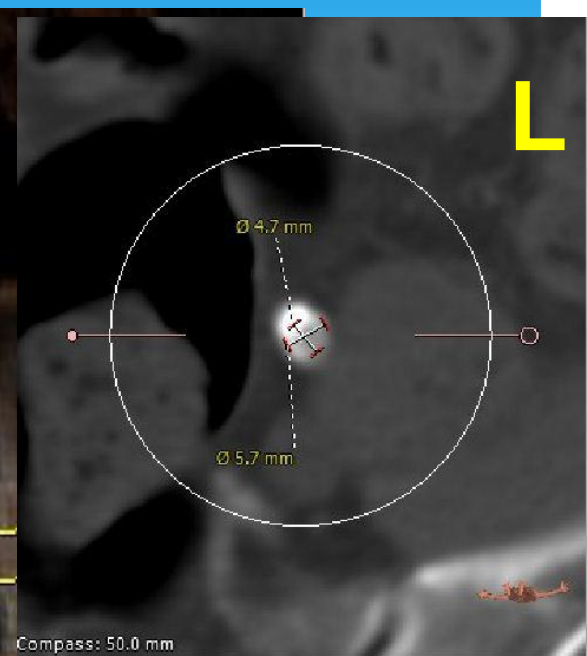
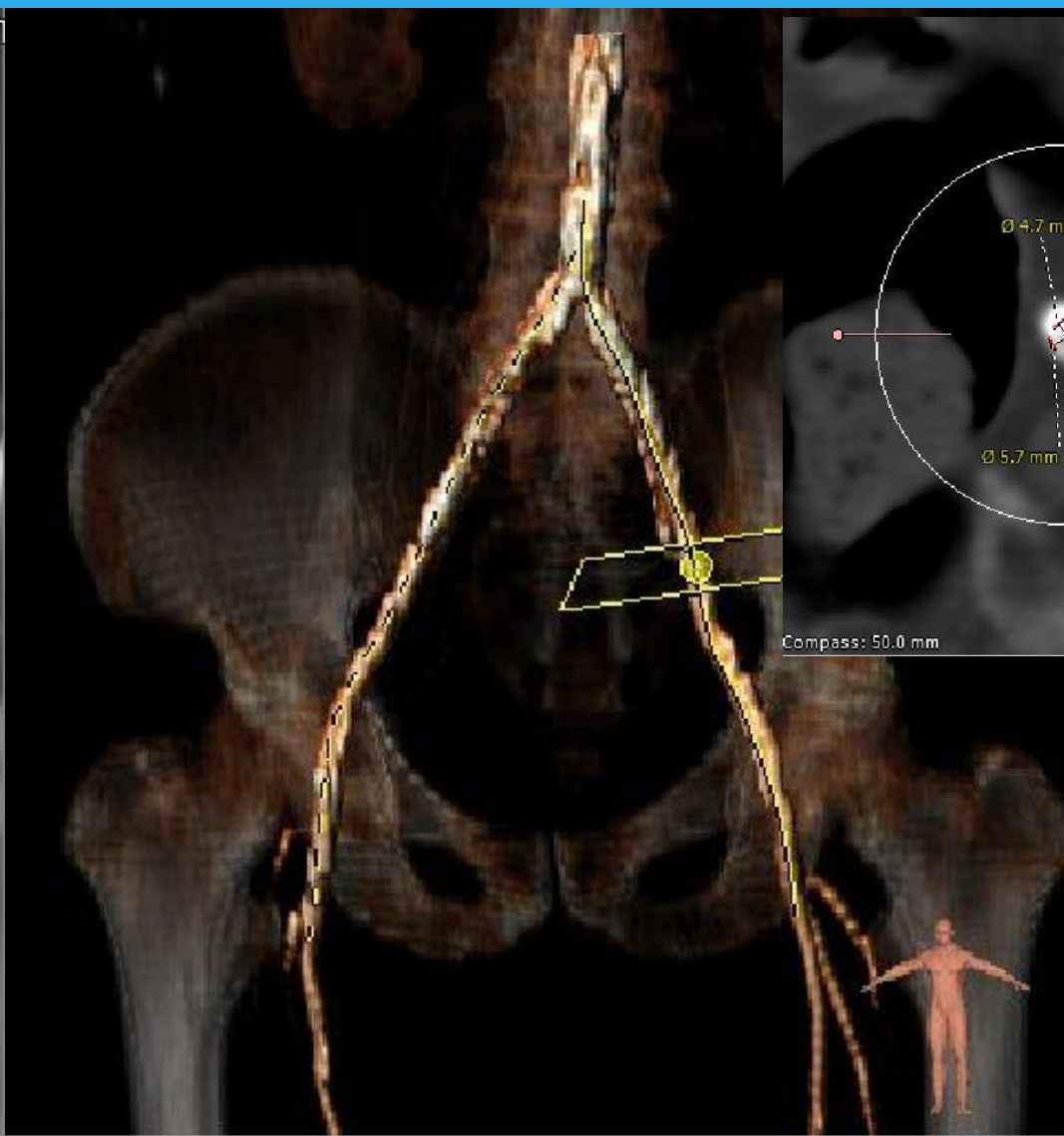
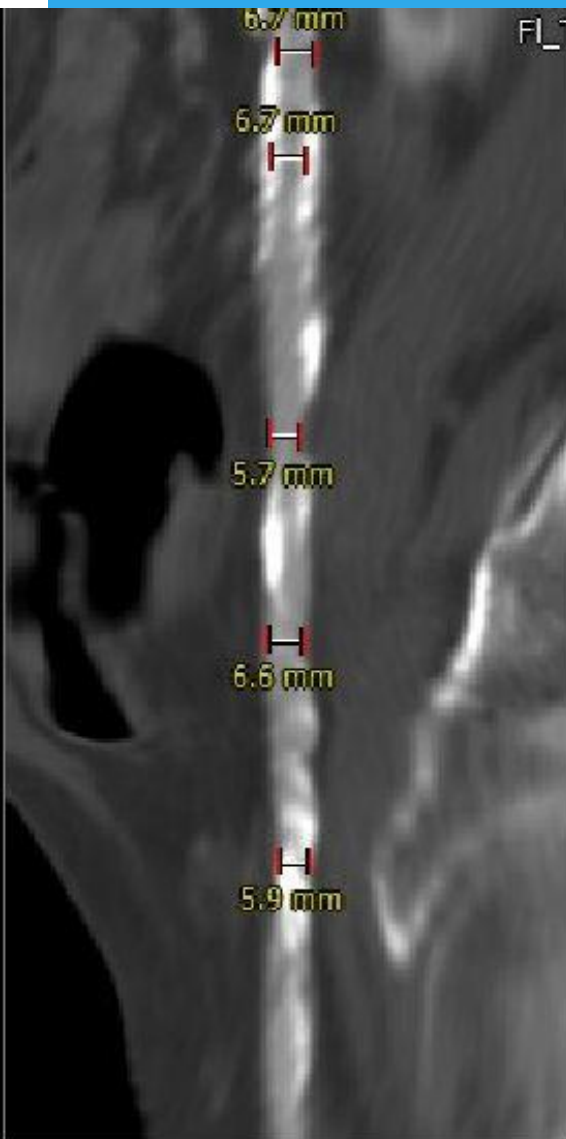
Outcome	30-Day n = 15	6-month (new) n=15
Procedural success	15 (93.3%)	
Conversion to open surgery	1 (6.7%)	0
Major vascular complication	1 (6.7%)	0
Major bleeding	1 (6.7%)	0
New pacemaker	5 (33.3%)	0
Coronary obstruction	0	0
Stroke or TIA	0	0
Temporade	0	0
Acute kidney injury	0	0
Valve thrombosis	0	0
Valve migration	1 (6.7%)	0
Paravalvular regurgitation		
0	10 (66.7%)	12 (80%)
1	5 (33.3%)	3 (20%)
2	0	0
3	0	0
Repeat hospitalization	0	1 (6.7%)

TAVI Case 1: Transaortic Approach

- * **Male, 82yrs**
- * **Dyspnea during exercise for 5 years, exacerbated for 1 year**
- * **Comorbidities: hypertension; diabetes; COPD; CKD; lacunar infarction; permanent pacemaker implantation 2 months ago because of III° AVB**
- * **Doppler echocardiography showed severe aortic stenosis: mean aortic valve gradient 51mmHg; LVEF 55%**
- * **STS Score: 19.0%**

CT Scan suggested heavily calcified, sub-6mm iliofemoral dimensions Bilaterally

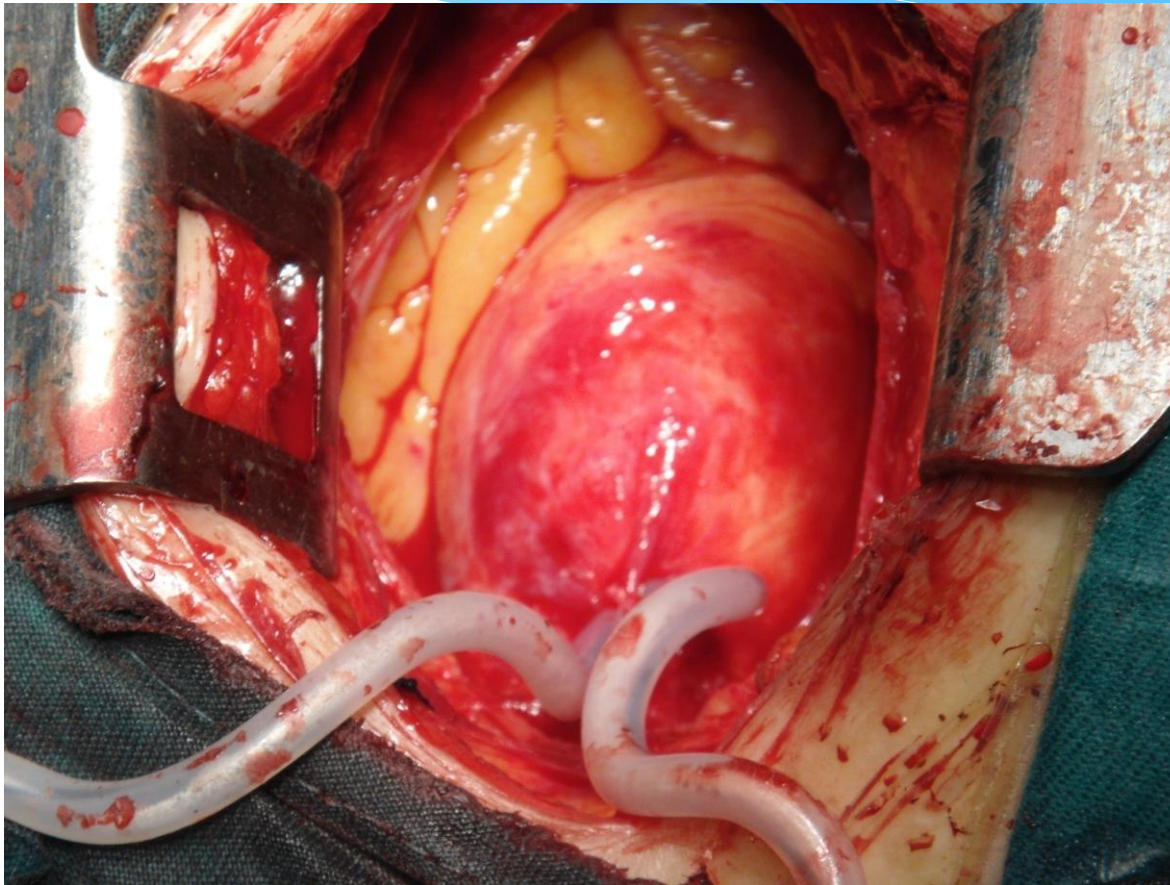




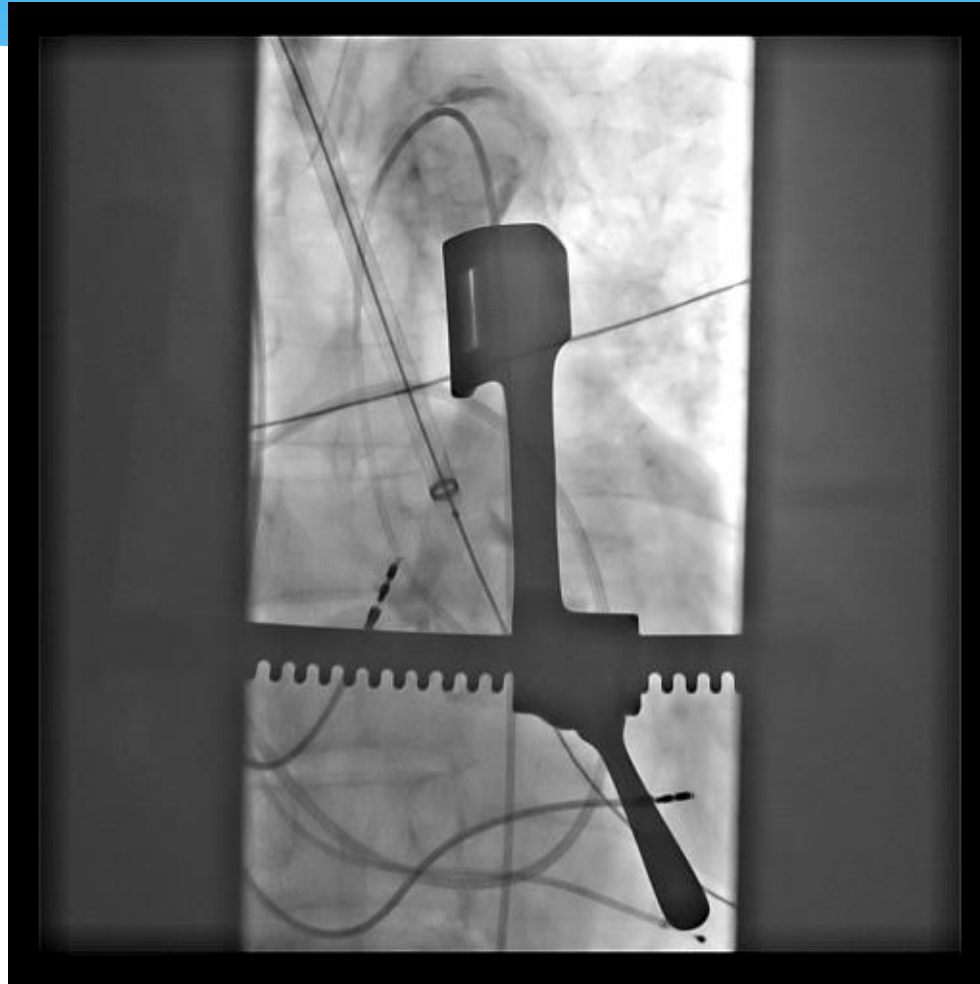
Aortic CT Scan



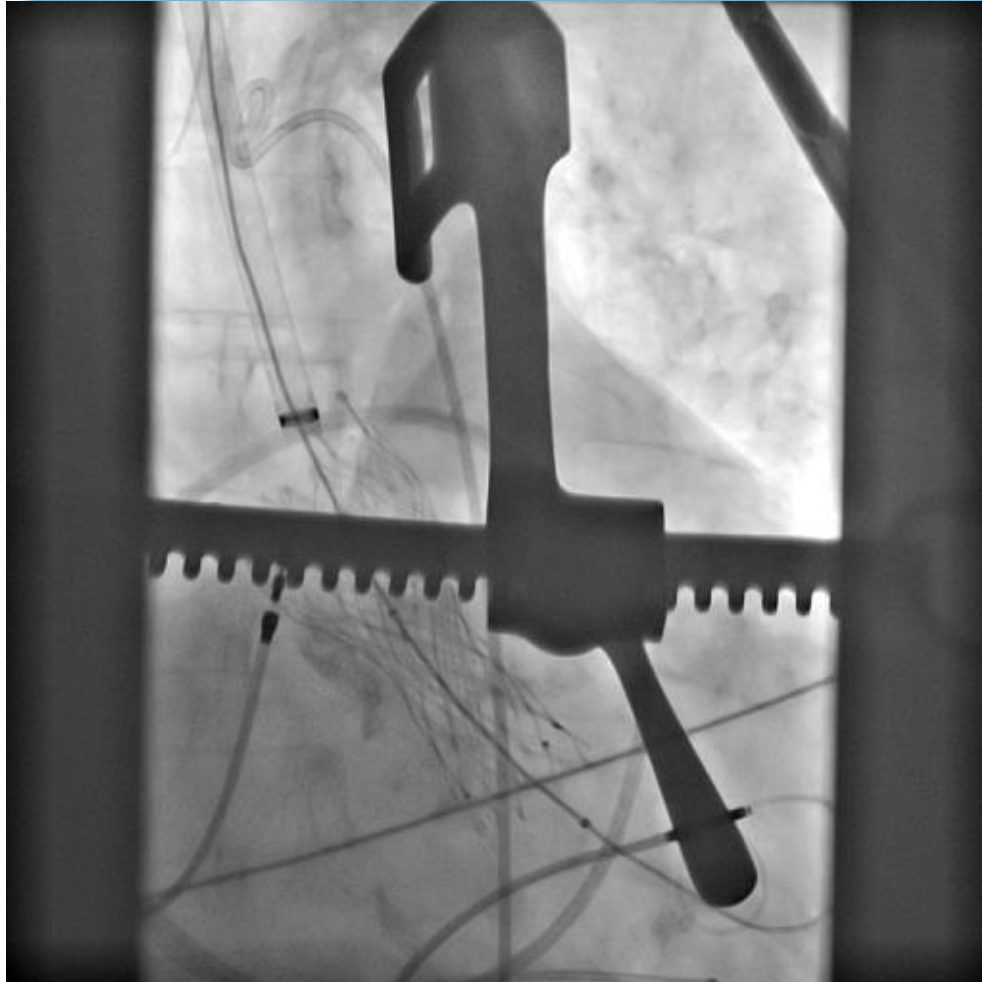
Exposure of the Ascending Aortic



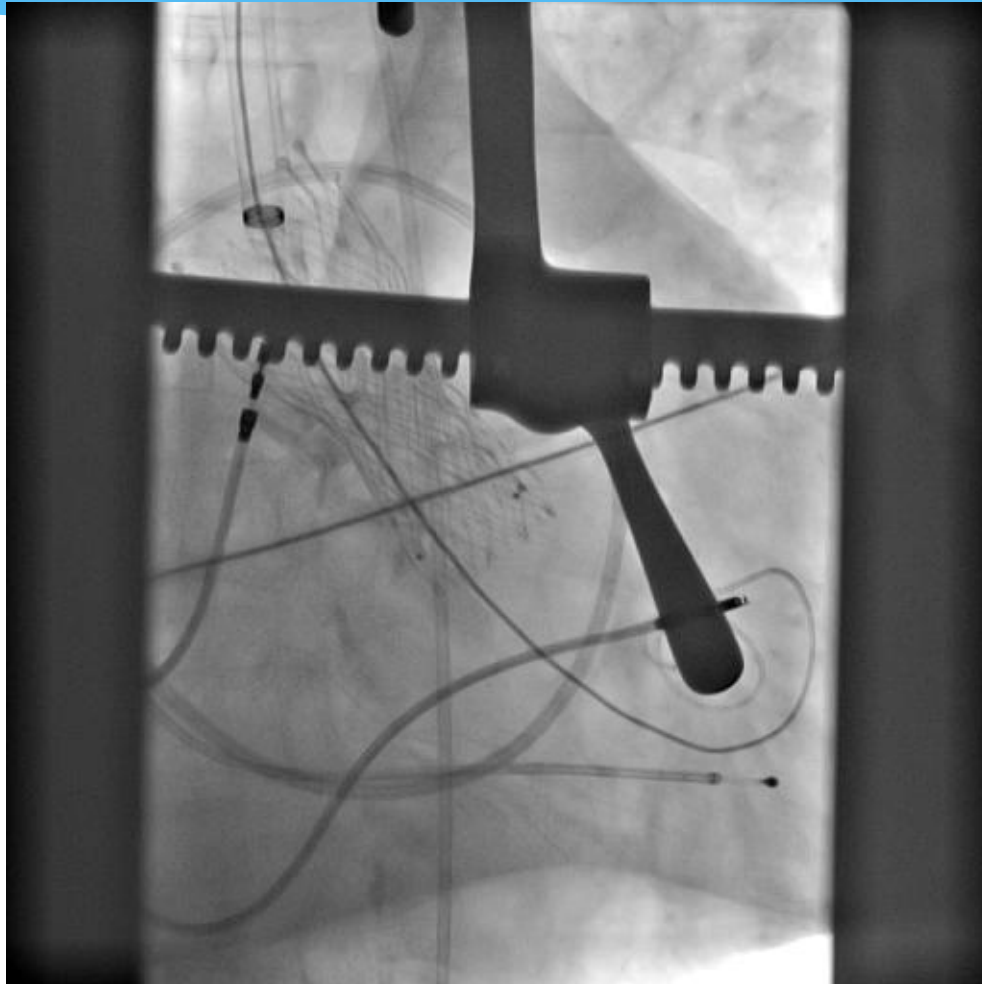
Balloon Aortic Valvuloplasty Using NuMED 23mm × 40mm



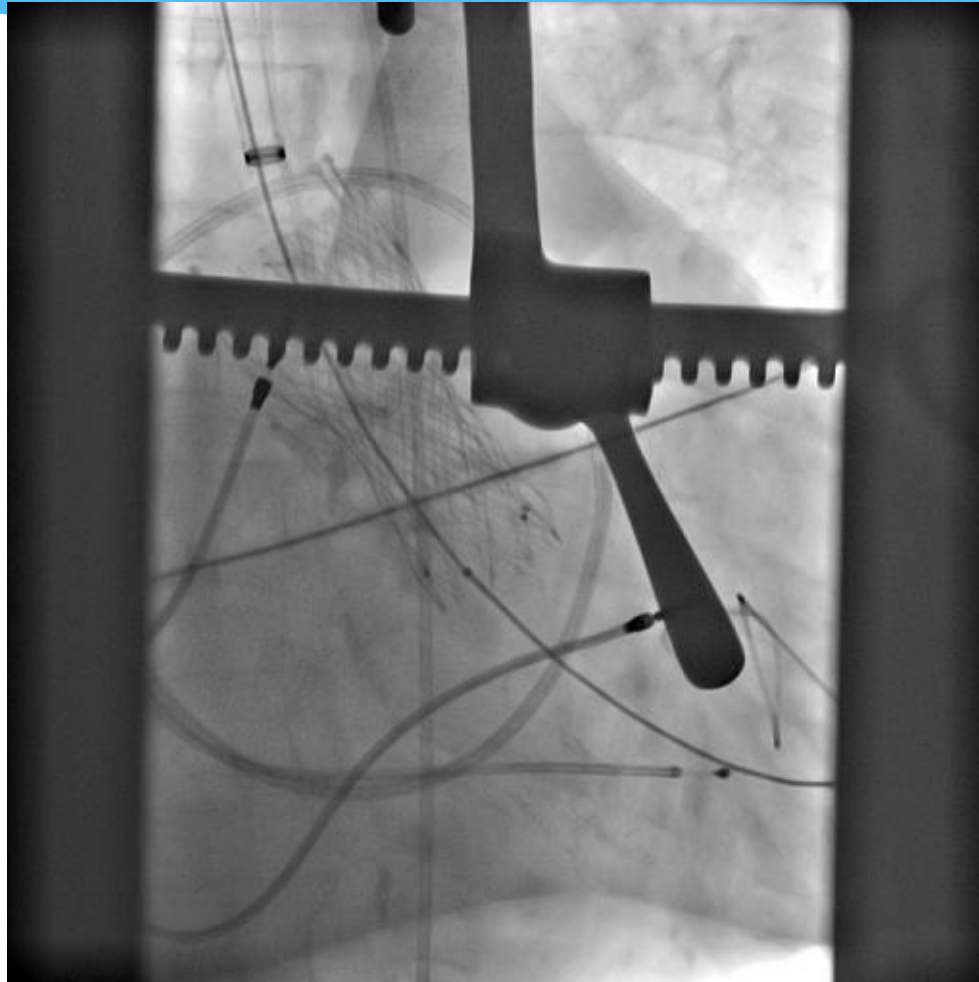
Deployment of 29mm VENUS-A Bioprosthesis, and Postdilation with 25mm NuMED



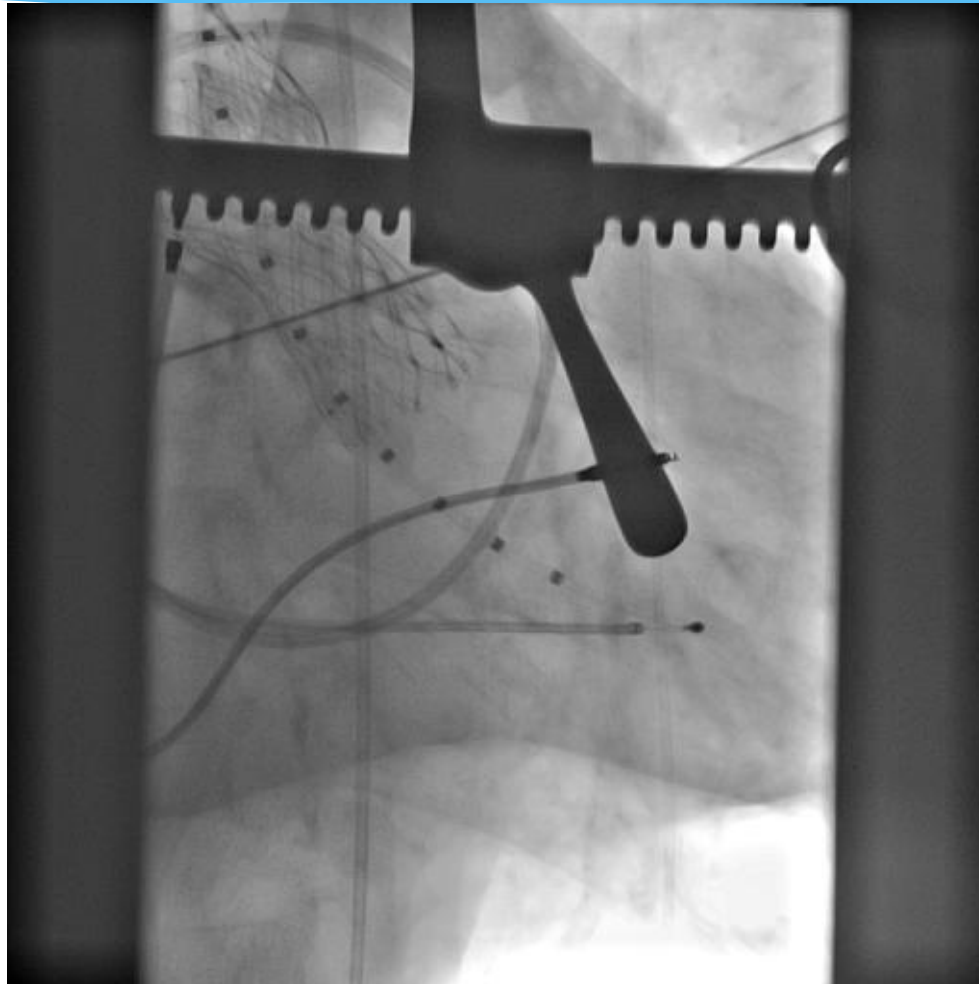
Moderate AR after first postdilatation



Second Postdilation with 28mm NuMED



Final Result

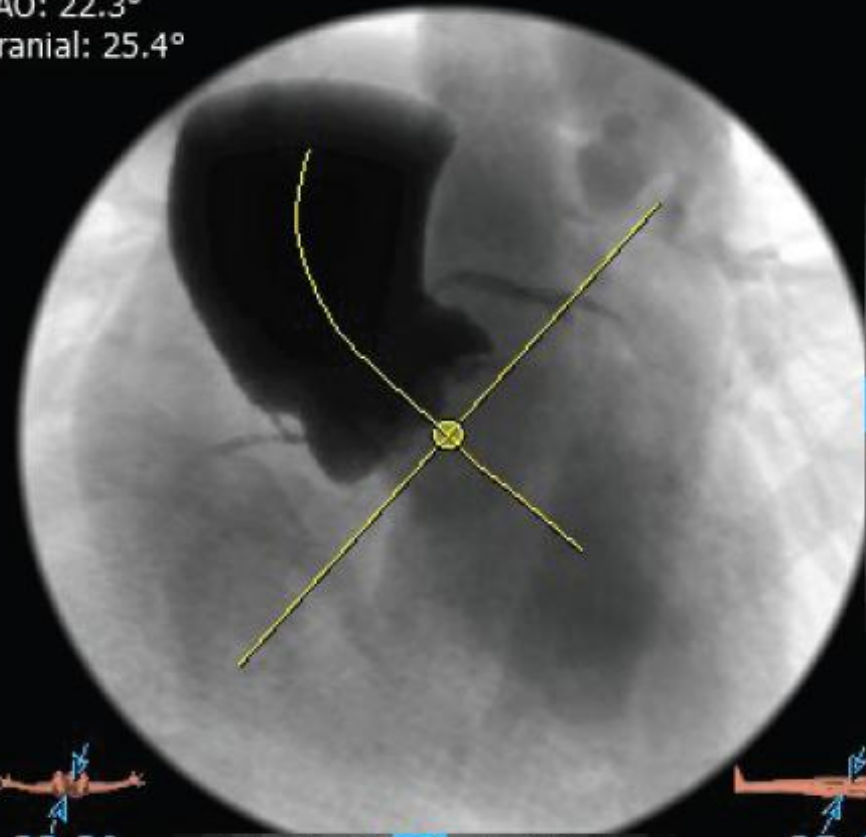


TAVI case 2: Valve-Valve

- * **Male, 67 yrs**
- * **Intermittent chest tightness and dyspnea for one year, exacerbated for two months**
- * **Prior aortic valve replacement with 21mm Carpentier Edwards bioprosthesis 10 years ago**
- * **Doppler echocardiography showed severe bioprosthesis stenosis: MAG 57mmHg; LVEF 64%**



LAO: 22.3°
Cranial: 25.4°



80 60 40 20 0 20 40

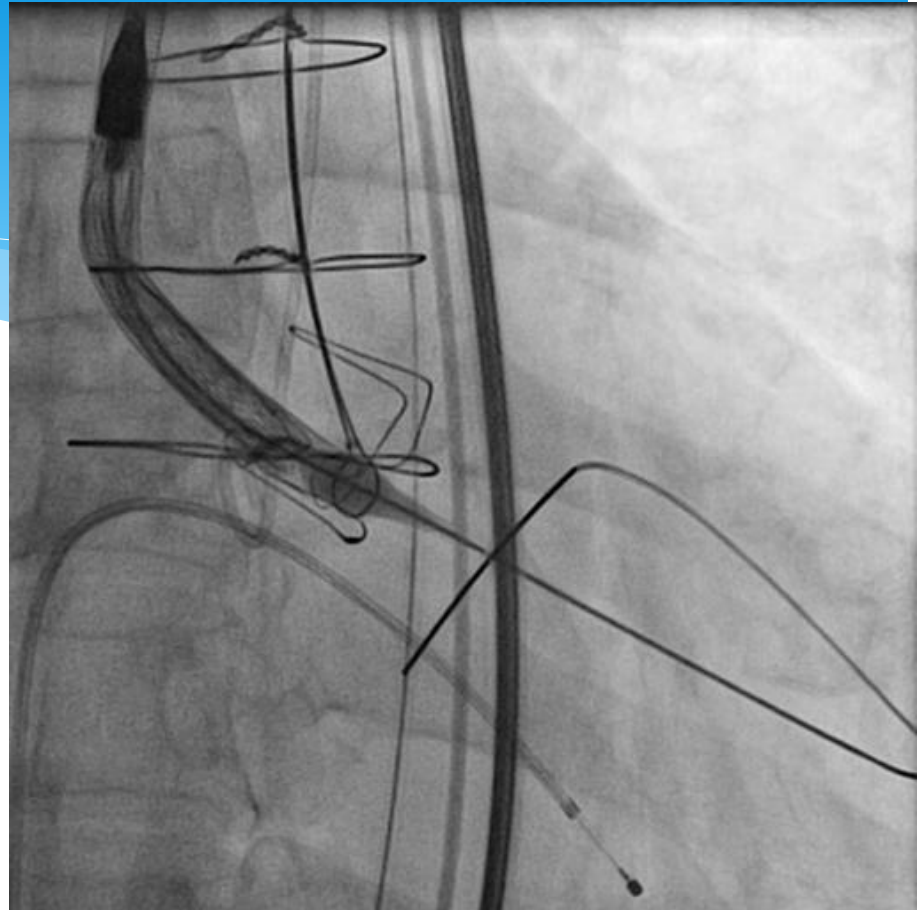
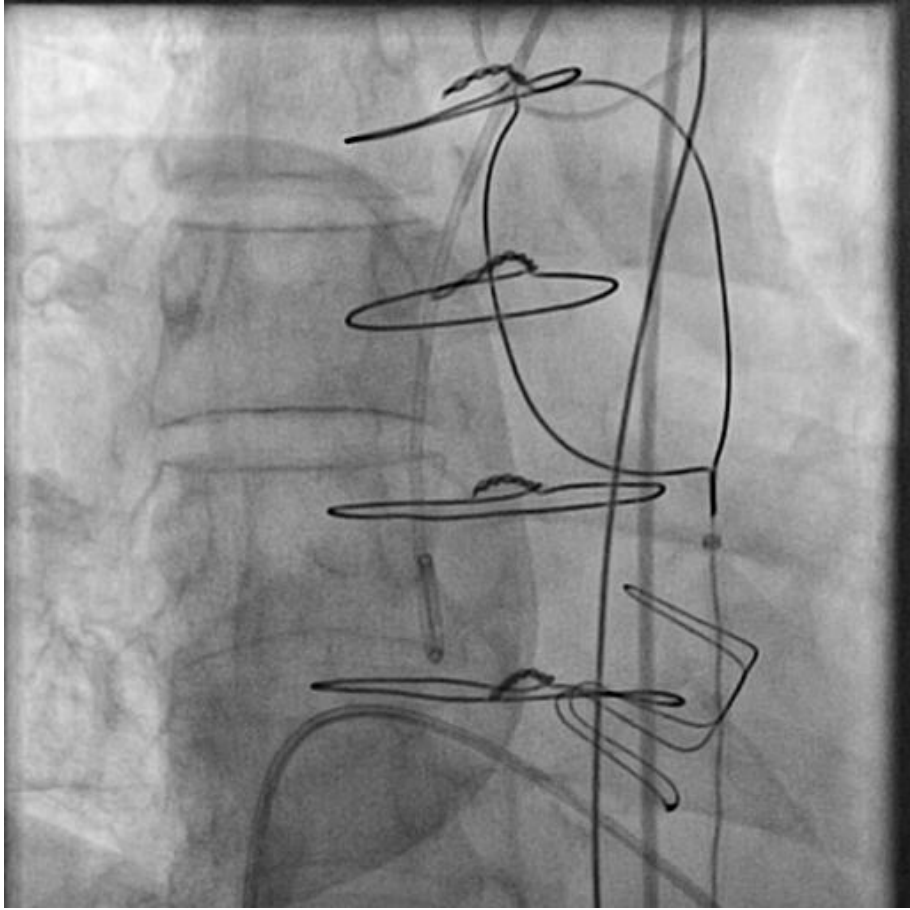


22.3°

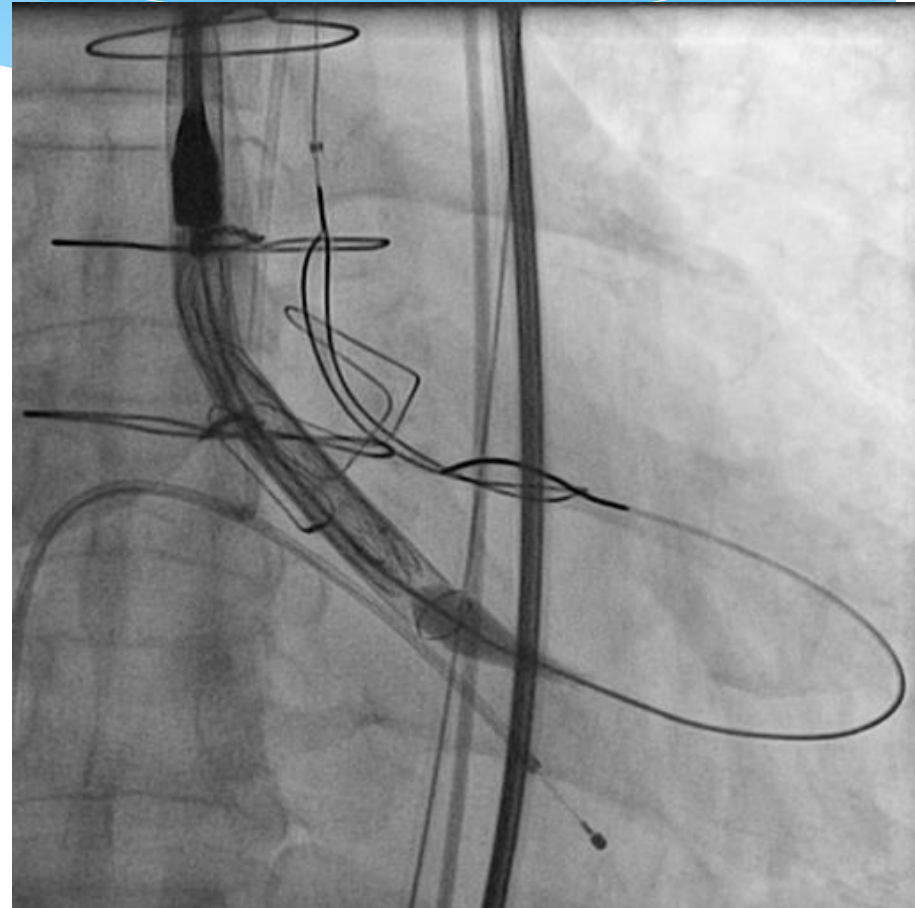
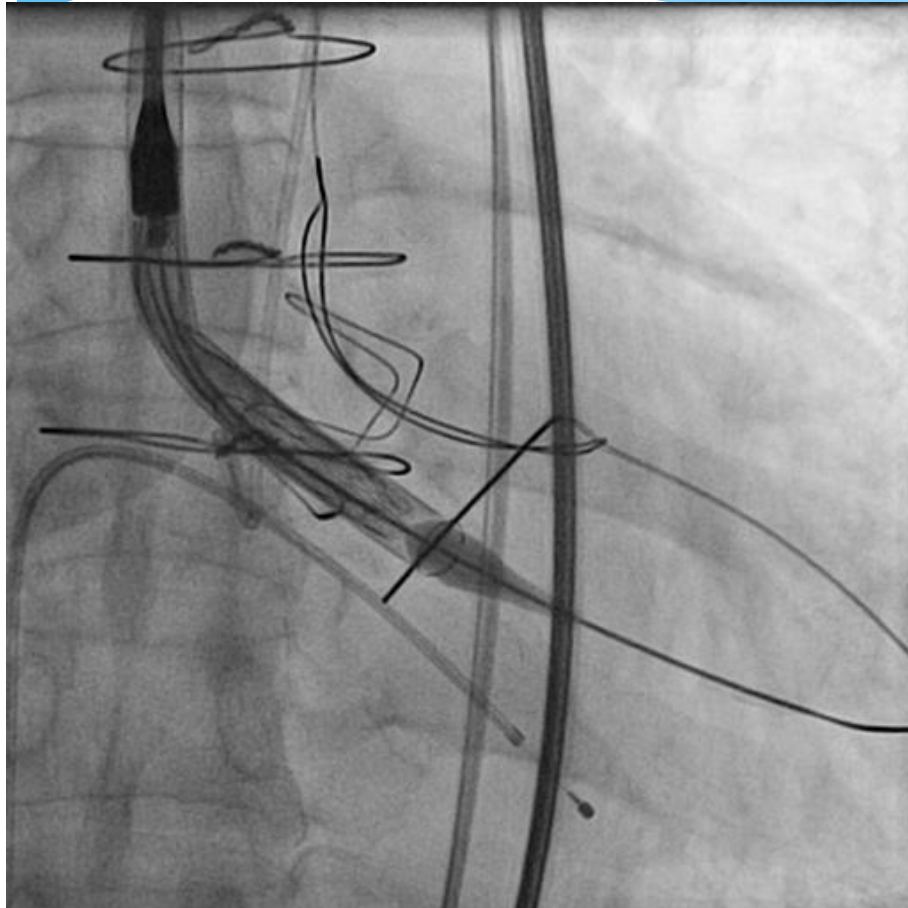
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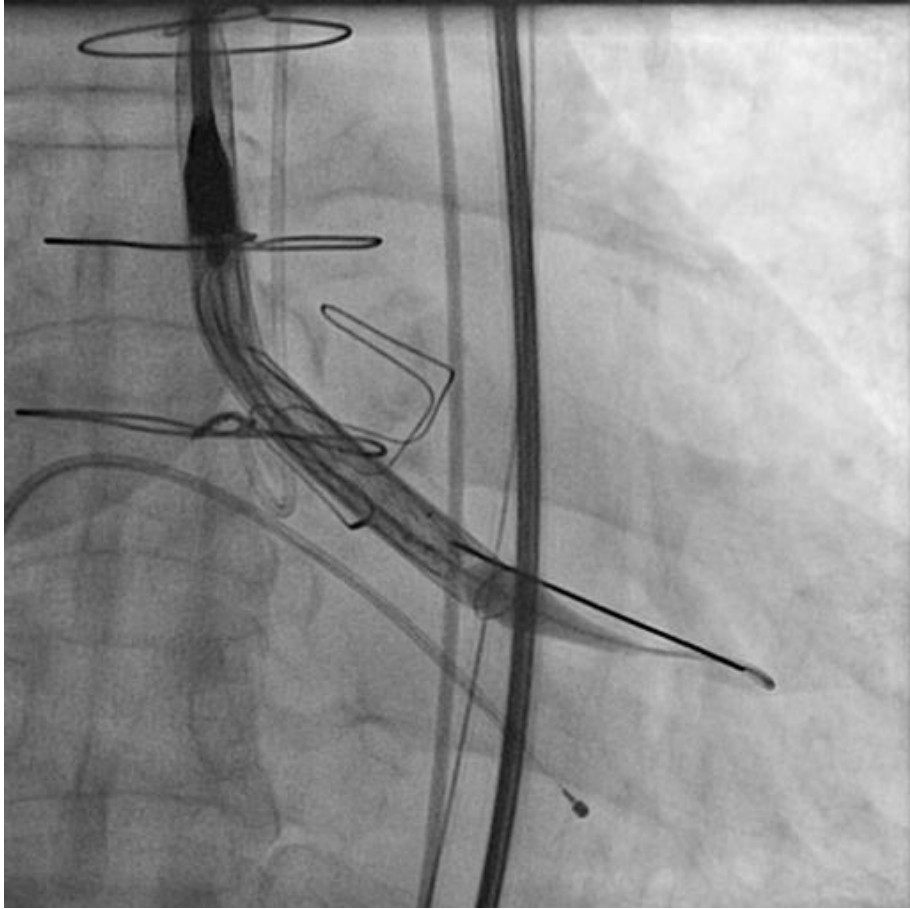


25.4°

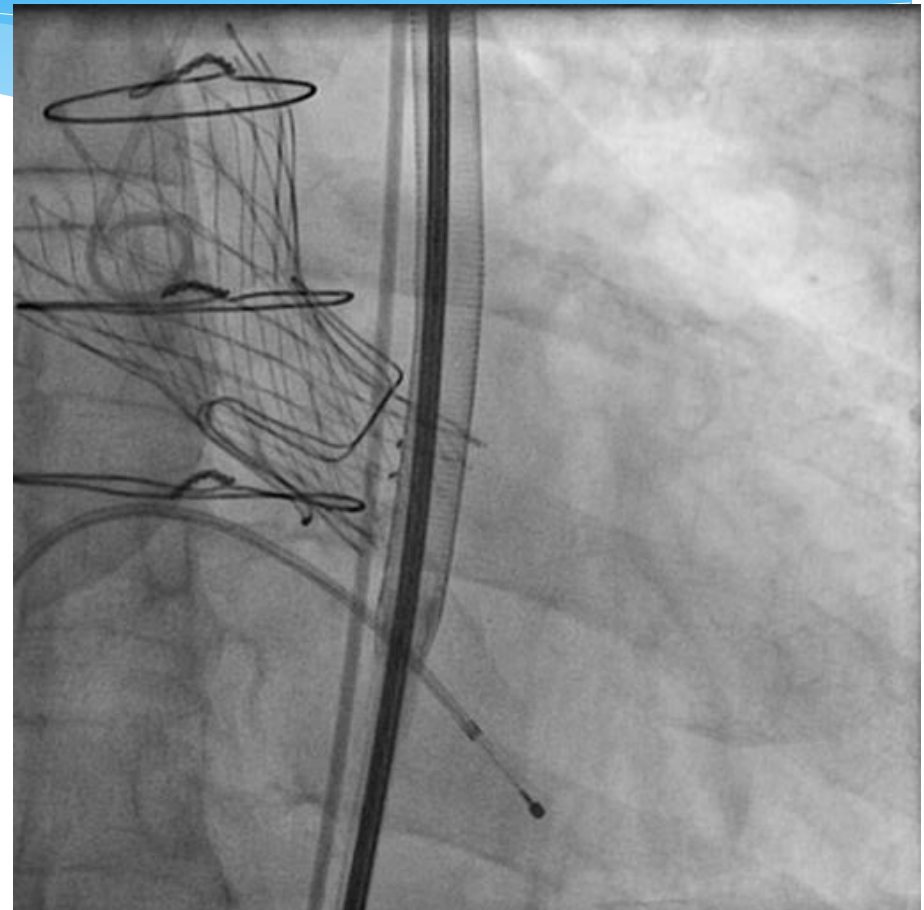
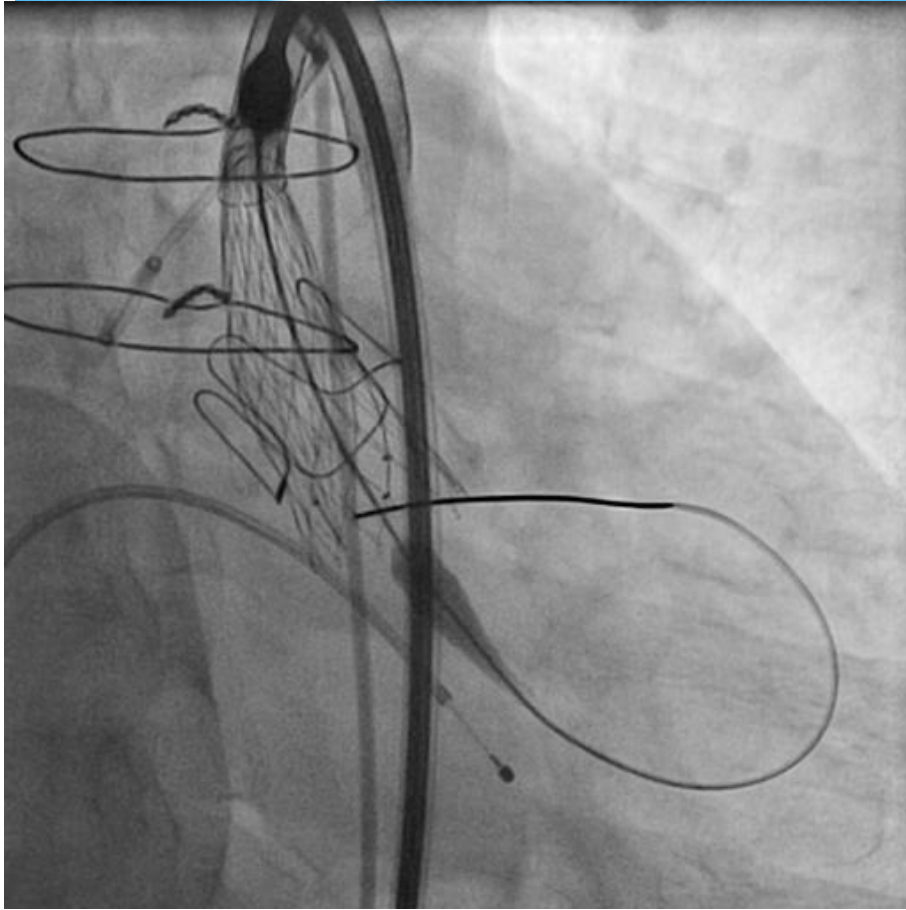


Positioning and Deployment





Final Result



Vascular Complication

- * **One patients had femoral rupture after procedure, and bleeding stopped by balloon compression**

Paravalvular Regurgitation

- * **Only 1 patient had 3+ PR after procedure, and decreased to 2+ with post-dilation. At 30-day follow-up, PR decreased to 1+**
- * **Other patients with procedural success had no or mild PR after procedure**

Permanent Pacemaker Implantation in 5 patients

- * Three for III^o atrioventricular block
- * Two for complete left bundle branch block

Circulation
JOURNAL OF THE AMERICAN HEART ASSOCIATION



Left Bundle-Branch Block Induced by Transcatheter Aortic Valve Implantation Increases Risk of Death

Patrick Houthuizen, Leen A.F.M. Van Garsse, Thomas T. Poels, Peter de Jaegere, Robert M.A. van der Boon, Ben M. Swinkels, Jurriën M. ten Berg, Frank van der Kley, Martin J. Schalij, Jan Baan, Jr, Ricardo Cocchieri, Guus R.G. Brueren, Albert H.M. van Straten, Peter den Heijer, Mohamed Bentala, Vincent van Ommen, Jolanda Kluin, Pieter R. Stella, Martin H. Prins, Jos G. Maessen and Frits W. Prinzen

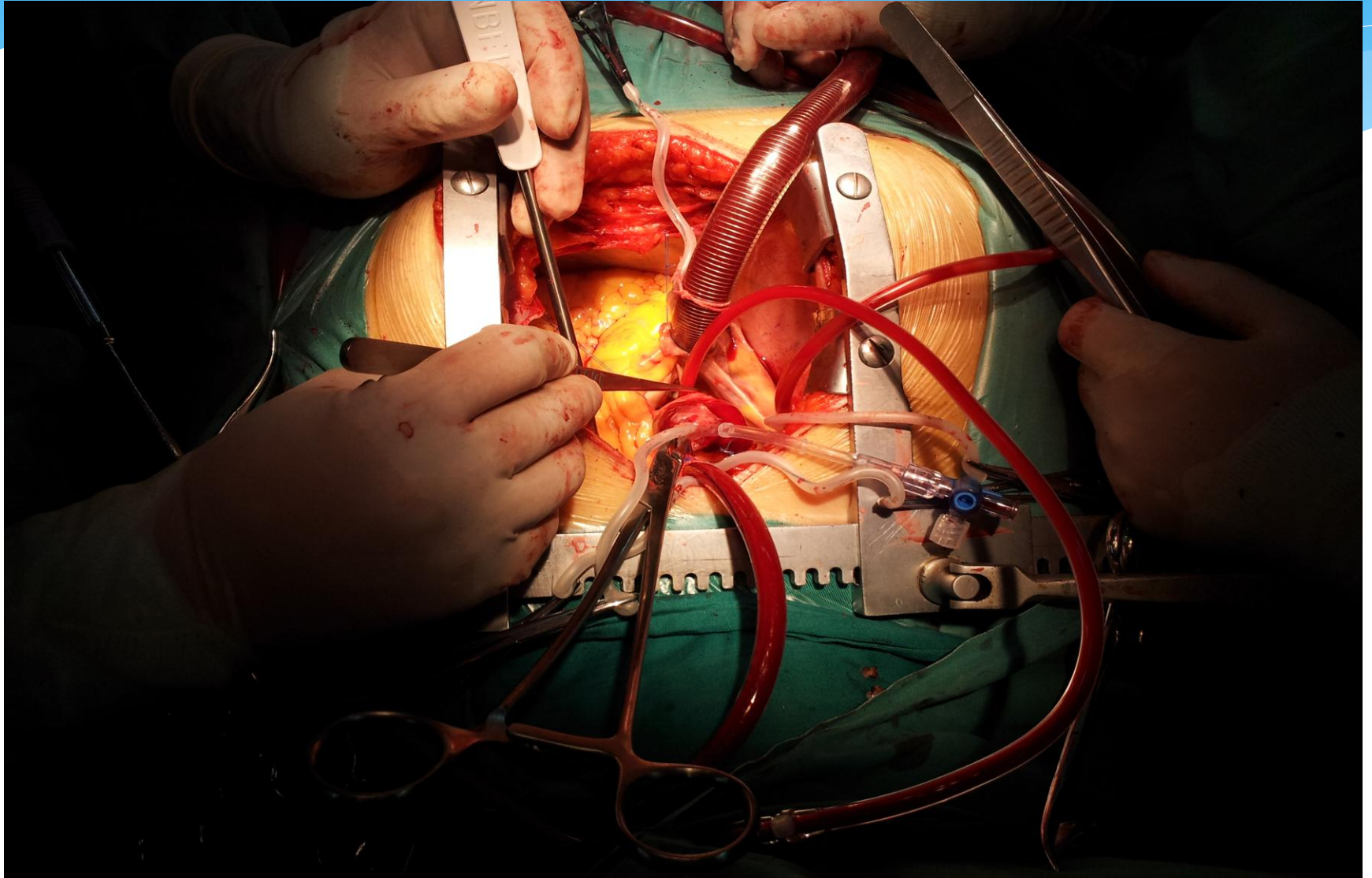
TAVI-induced LBBB is an independent predictor of mortality

Circulation. 2012;126:720-728

Repeat Hospitalization

- * **Only 1 patient hospitalized again due to noncardiac cause (upper respiratory infections)**

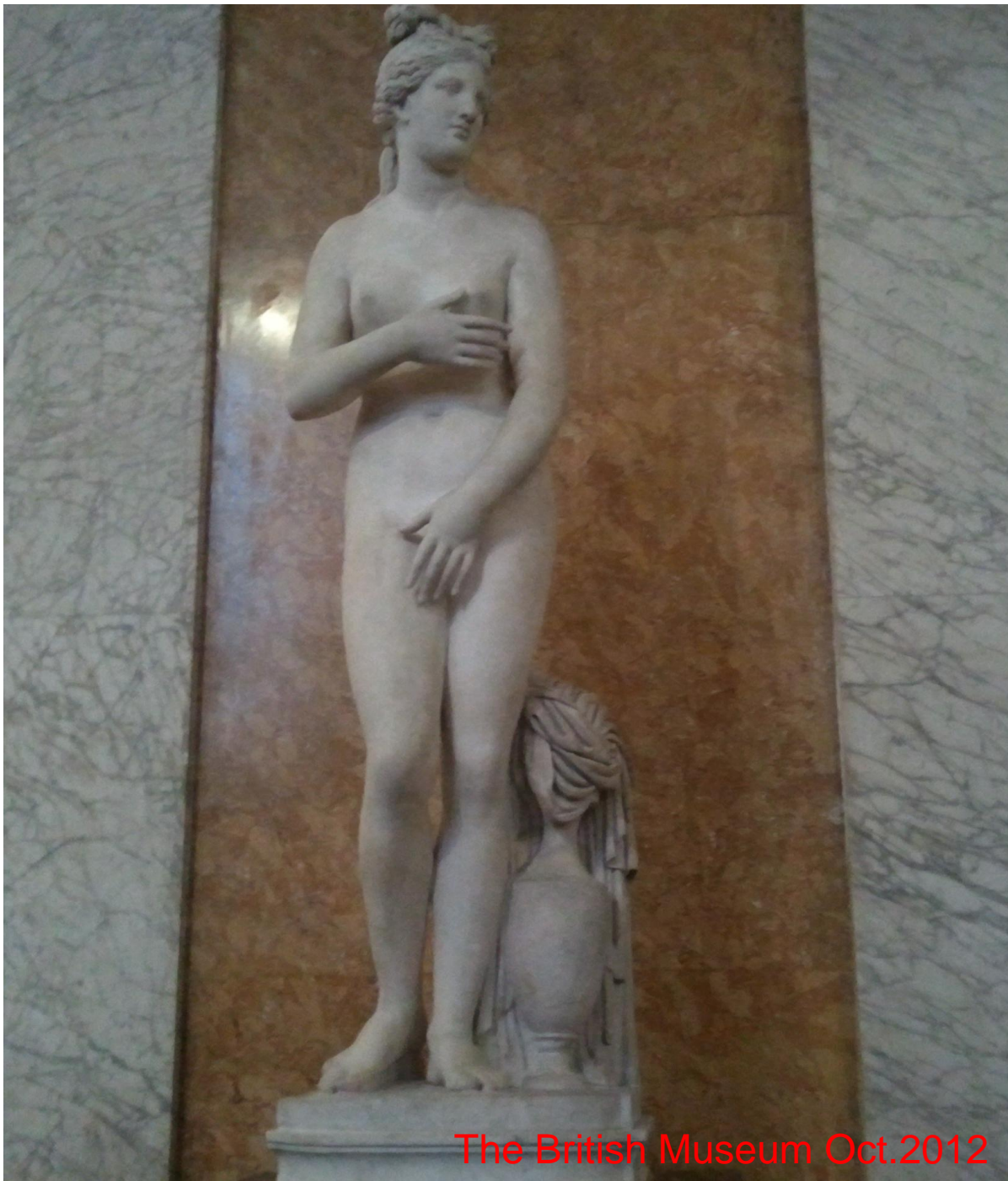
Conversion to Surgery





Our Early Experience

- * Heart Team should include cardiac surgeon (standby), cardiologist (patient selection and post procedure care), interventionist, specialist in echo and CT**
- * Planning before procedure is very important**
- * Hybrid room is essential**



Hopefully
Venus- A
prosthesis
will
be
beautiful
as
Venus



Thank you for attention !