

First Valve-in-Valve for Failed Apico-aortic Valve Conduit

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Centre for
Heart Valve Innovation
St. Paul's Hospital, Vancouver



HEART CENTRE
AT ST. PAUL'S HOSPITAL

Disclosure Statement of Financial Interest

Consultant:

- Edwards Lifesciences**
- JC Medical Inc.**

History

- **56 yrs M**
- **Failed kidney transplants x 2 - Peritoneal dialysis**
- **Type A dissection in 2006 - Bentall procedure with 27mm Freestyle bioprosthetic aortic valve**
- **Inf. STEMI and heart failure in 2011, found to have severe AS.**
- **Too high risk for conventional redo AVR and not suitable for TAVI due to completely calcified aortic root (potential risk for aortic root rupture)**
- **Emergent surgery- LV apex to descending aorta conduit. A 23 mm CE bioprosthesis was placed at the inflow to the conduit in 2011**
- **Endovascular repair of aortic aneurysm, 2013**

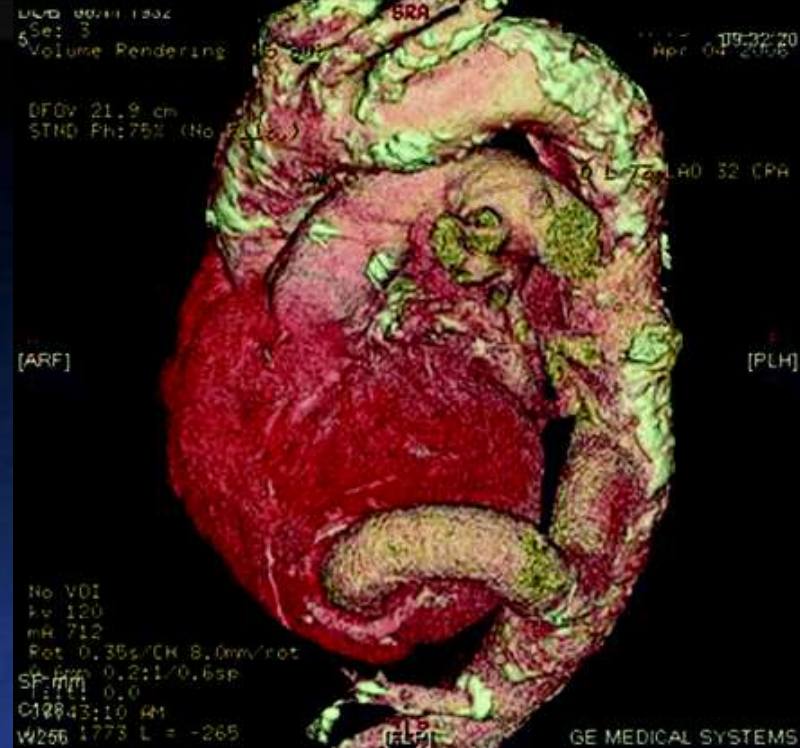
History

- **NYHA class III**
- **Maximized medical treatment**
- **Severe regurgitation of the aortic freestyle prosthesis following BAV**
- **Unreliable assessment of conduit valve stenosis by Echo**
- **Invasive hemodynamics confirmed that the conduit valve is significantly stenotic with a mean gradient of 30 mmHg.**

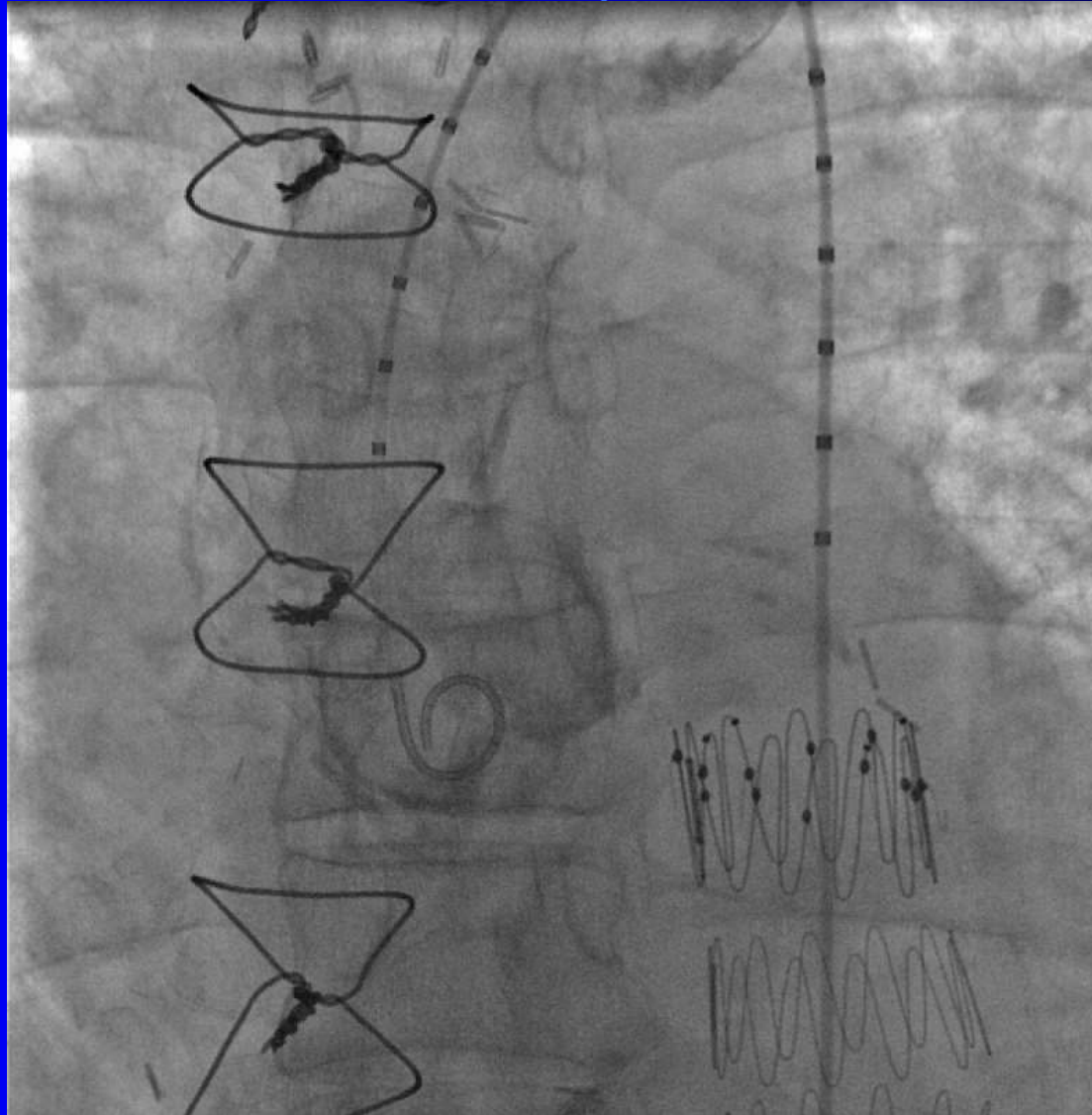
Apico-aortic conduit

Left Ventricle
Connector

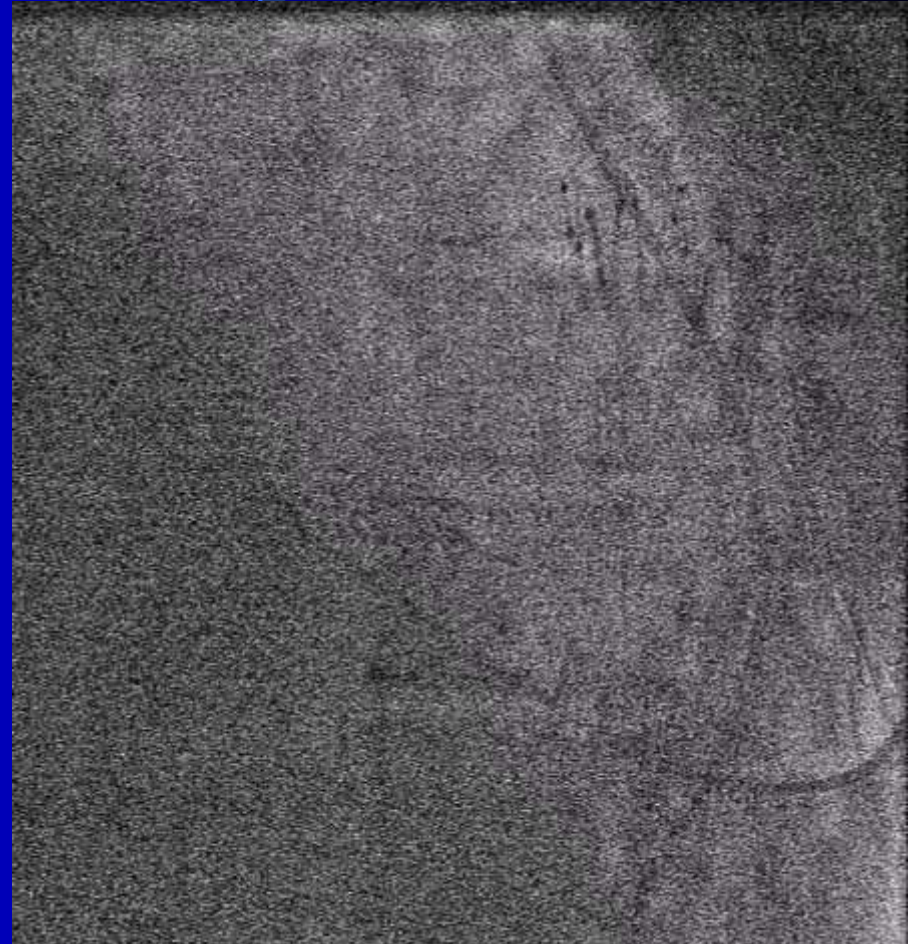
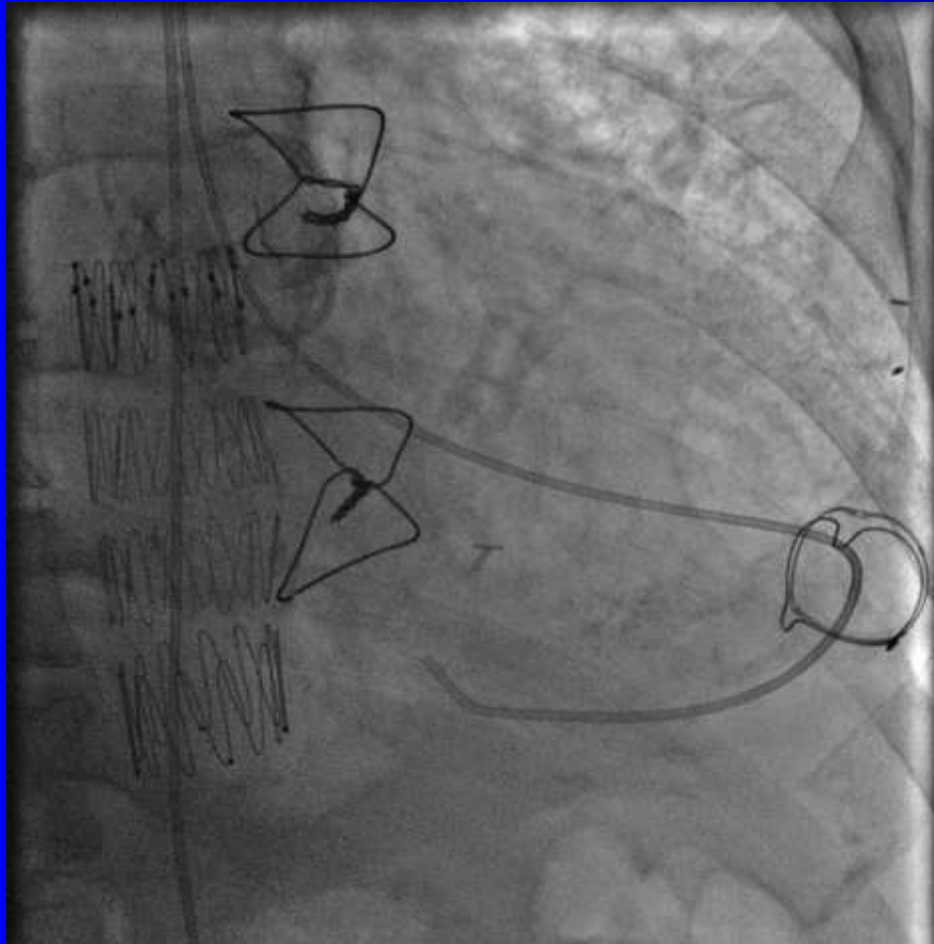
Prosthetic
Valve



Significant AI of Freestyle Valve



Invasive Hemodynamic Measurements



Therapeutic Option

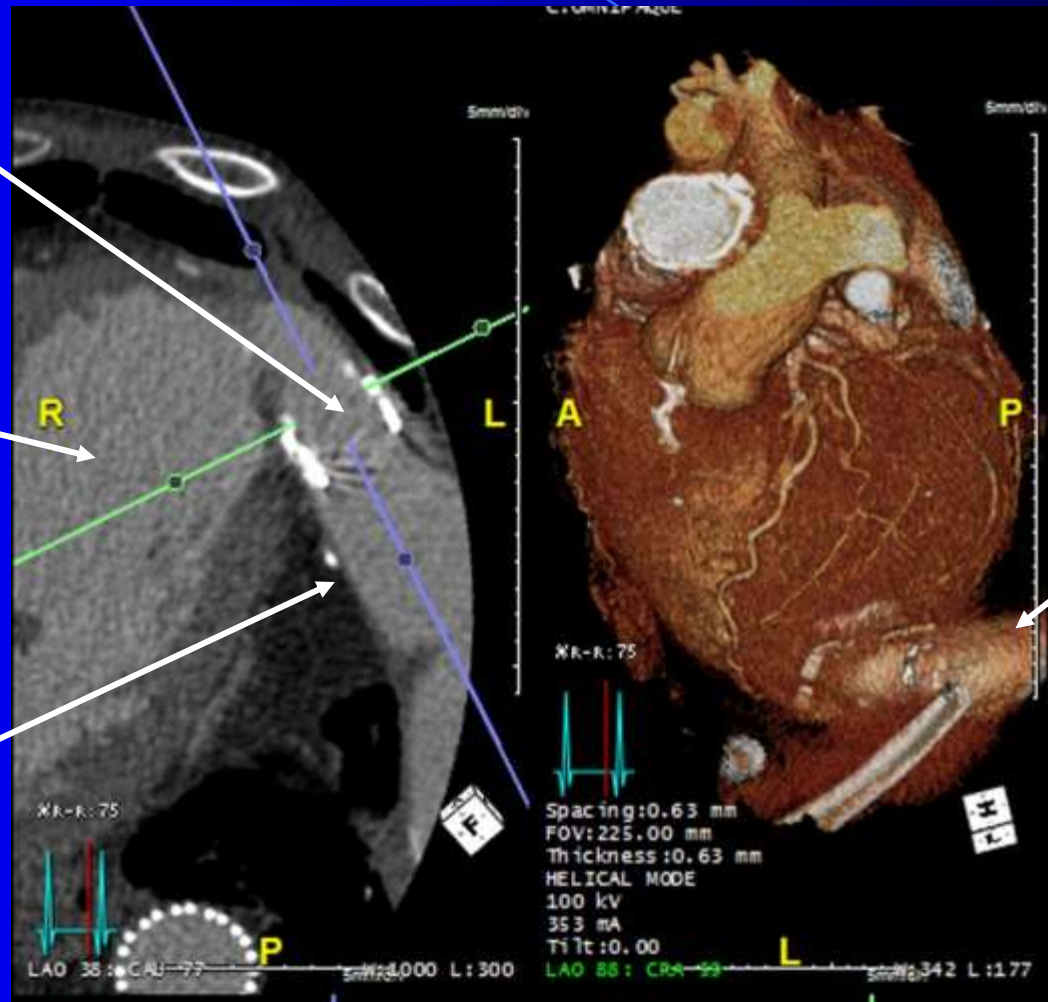
- **Re-do surgery - extremely high risk**
- **TAVI for the failed freestyle valve at native aortic valve position**
- **Valve-in-valve implantation for failed apico-aortic conduit valve**

Planning

CT Assessment of the Conduit

Edwards
23mm
Bioprothesi
s

Left
Ventricle



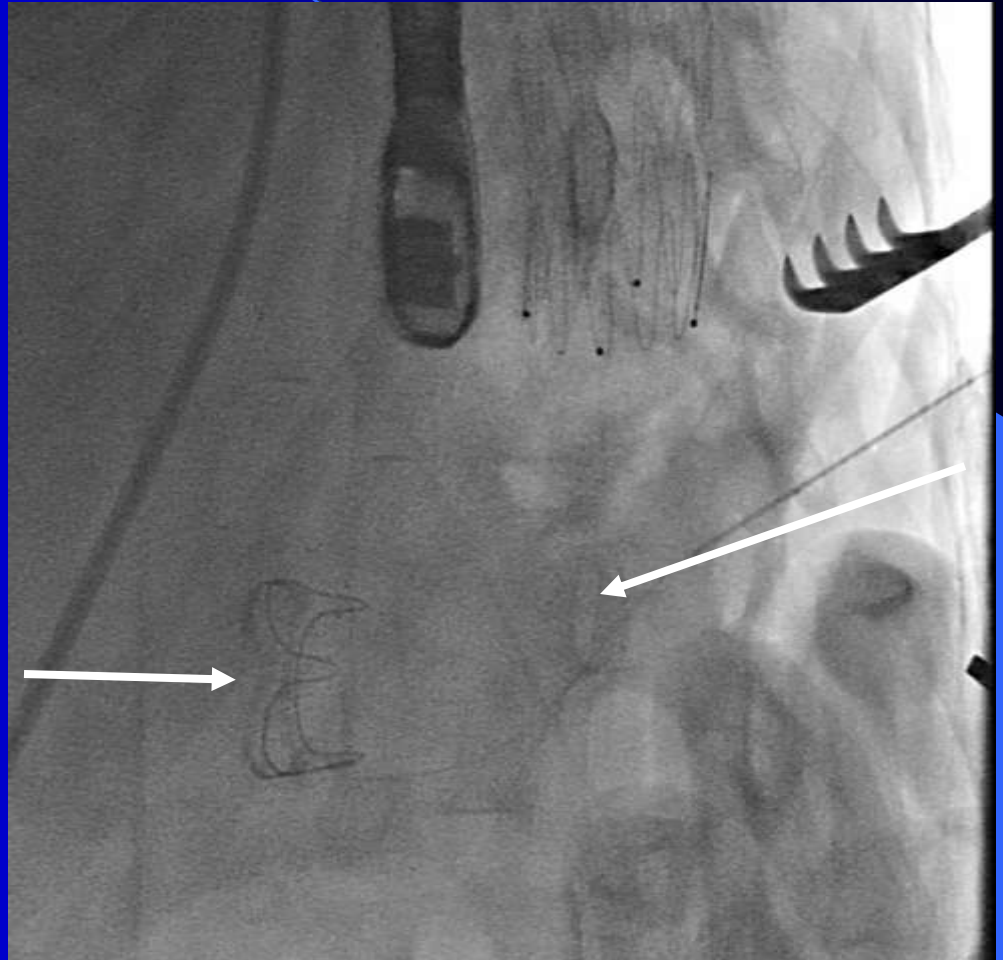
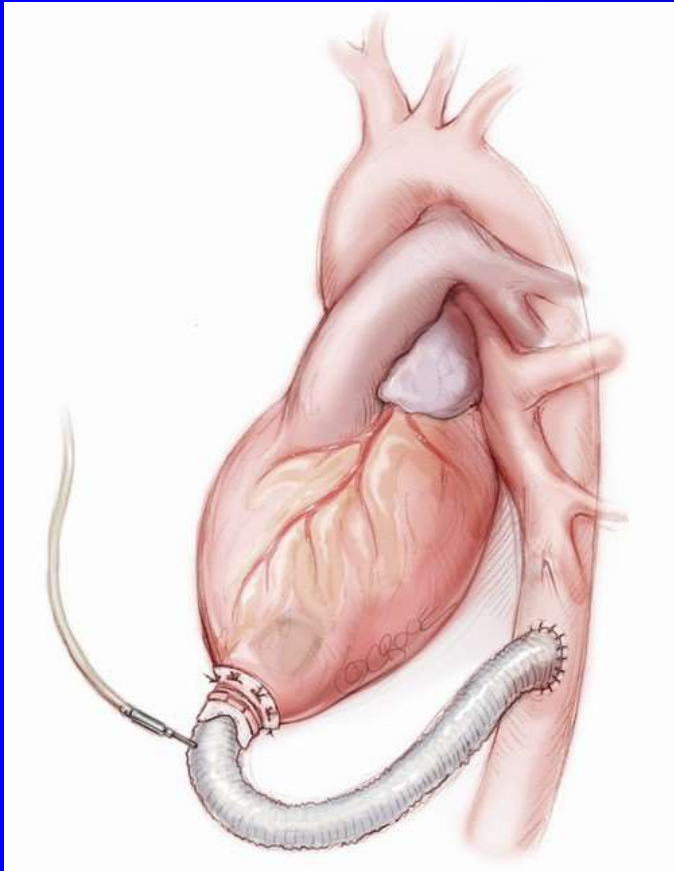
Apico-aortic
conduit

Apico- aortic
conduit

Trans-conduit Transcatheter Procedure

- **Right lateral position**
- **Performed under general anesthesia**
- **TEE monitoring**
- **Trans-femoral temporary pacing wire in RV**
- **Access through 10th intercostal space - left posterior approach**

Initial Puncture of Aortic Conduit



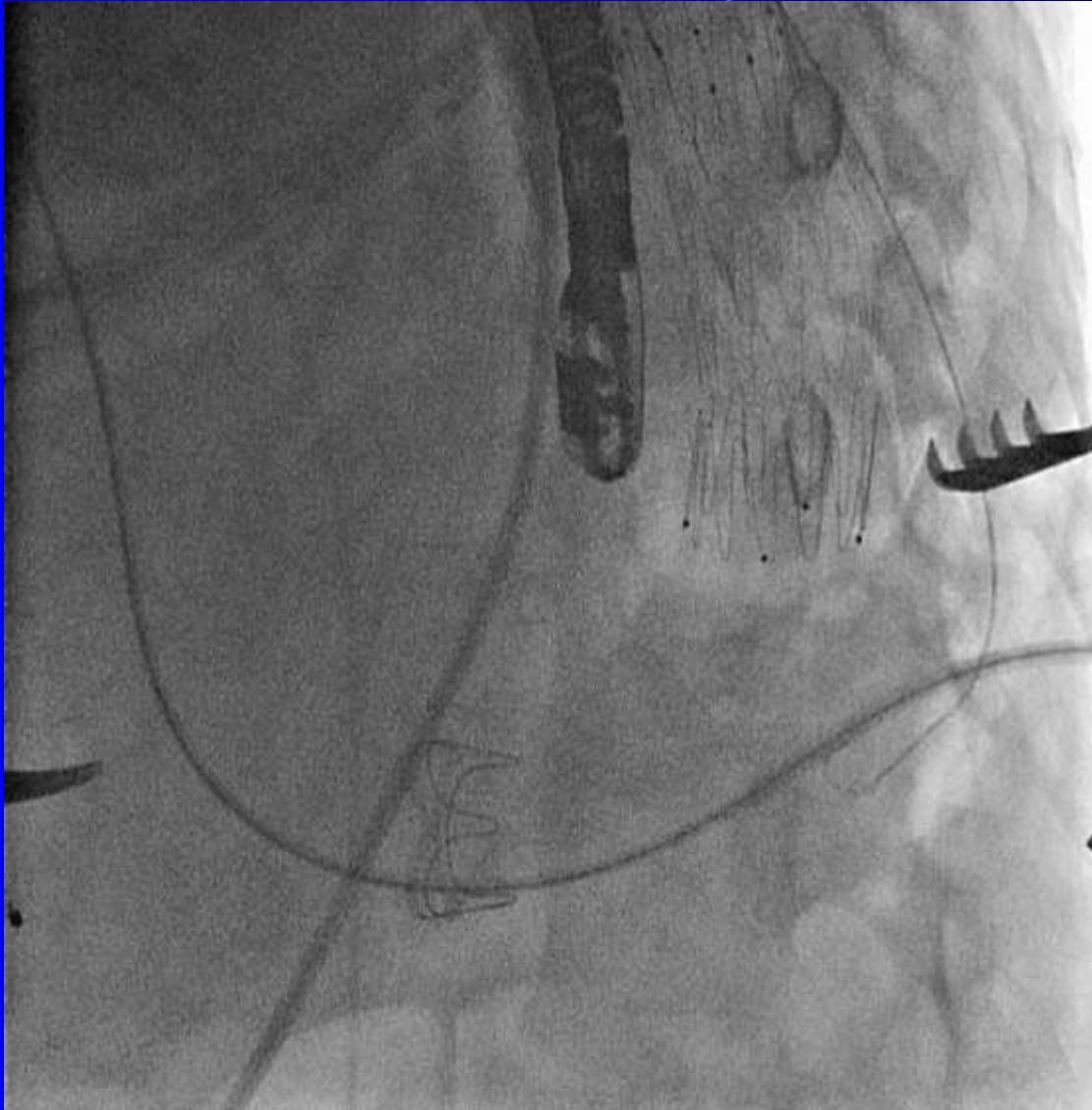
Crossing Stenotic Bioprosthetic Valve



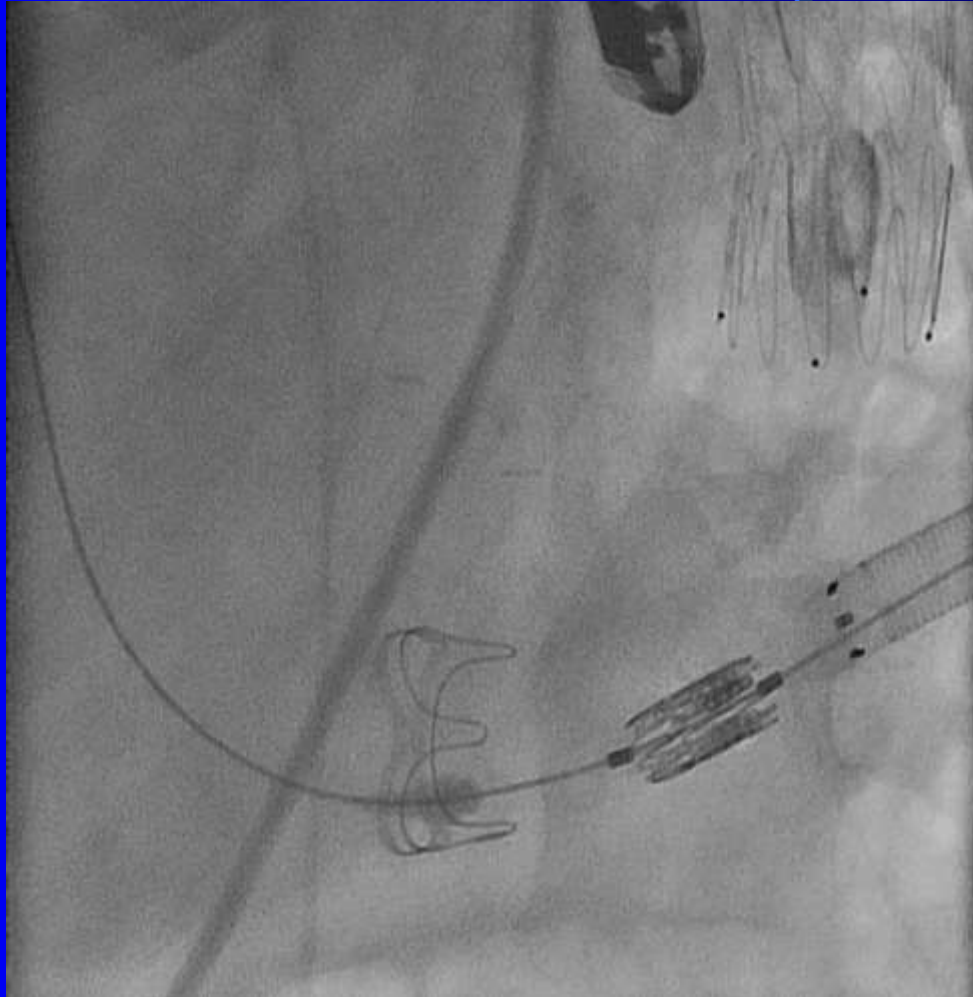
Systemic flow from conduit into descending aorta



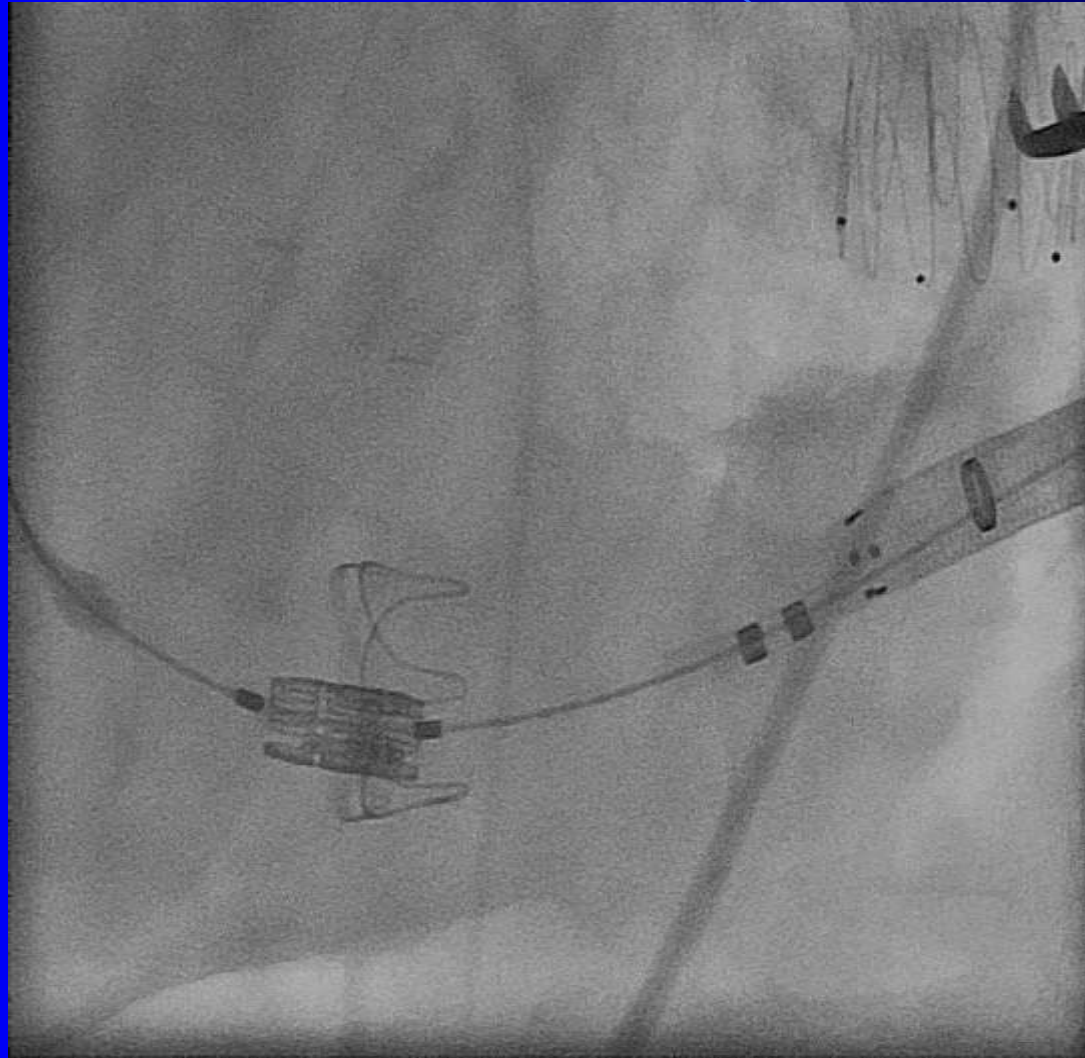
Stiff wire creating a loop back to the conduit



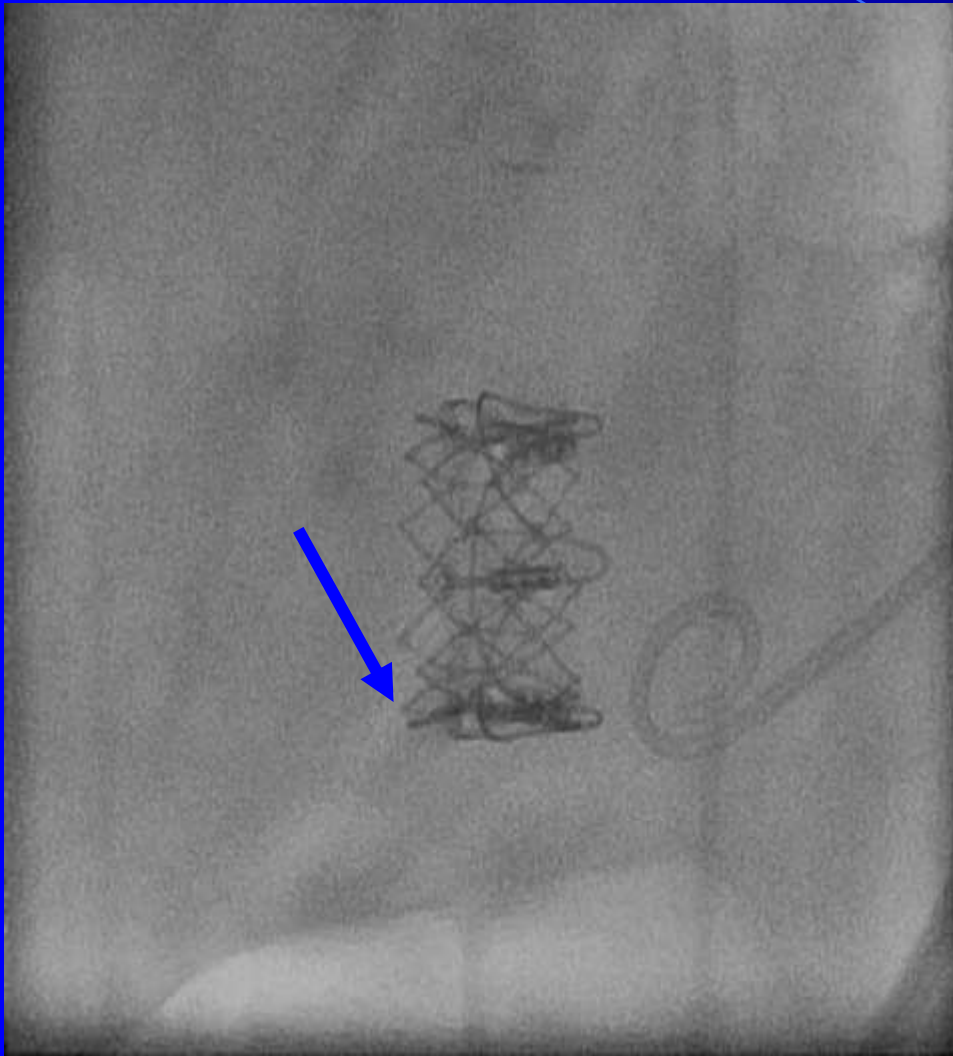
23mm Edwards Sapien XT valve



Valve-in-Valve Deployment

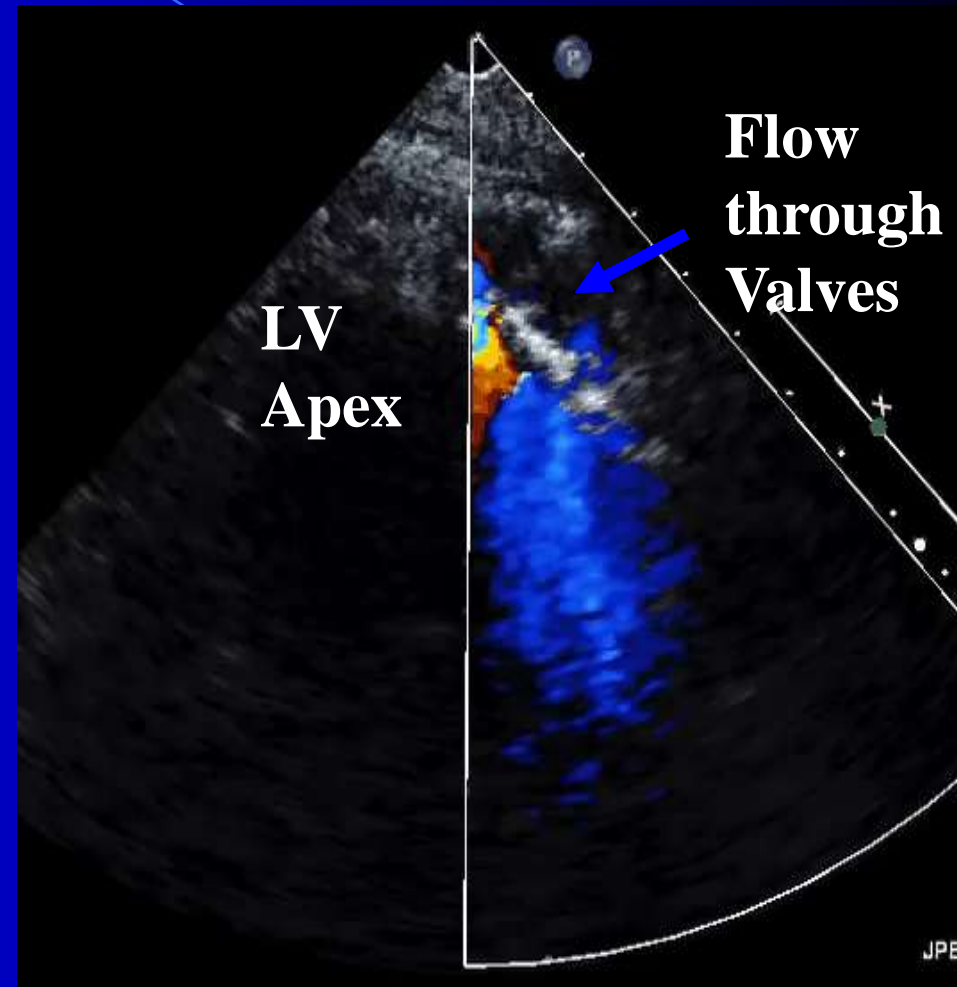
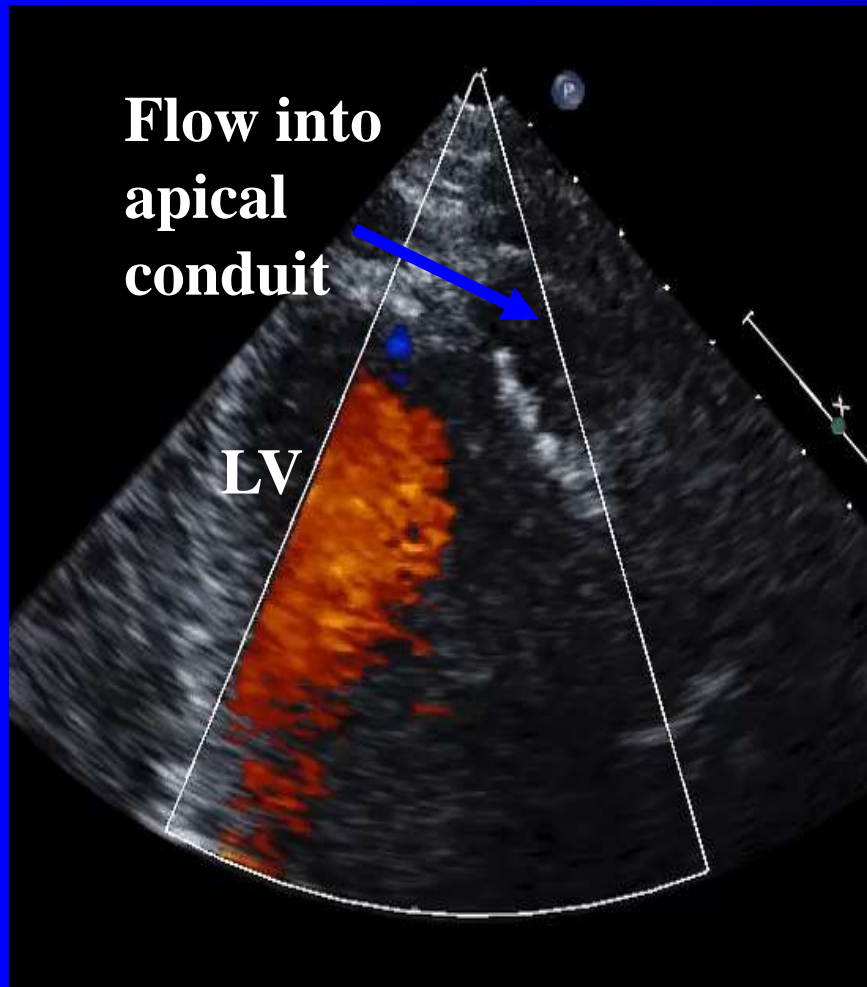


Post-deployment Angiogram



**Pull back
mean gradient
= 12 mmHG**

Post Procedural Echocardiogram



Clinical Course

- **Discharged home on day 4 after uncomplicated hospital course**
- **Follow-up – NYHA class I, asymptomatic**

THANKS!



St. Paul's Hospital, Vancouver