

TCTAP(Seoul) 2018 HKSTENT Session

A Complicated Structural/TAVI case Let it bleed!

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Cardiovascular Intervention Complication Forum (CICF 2018)

Patient's background:

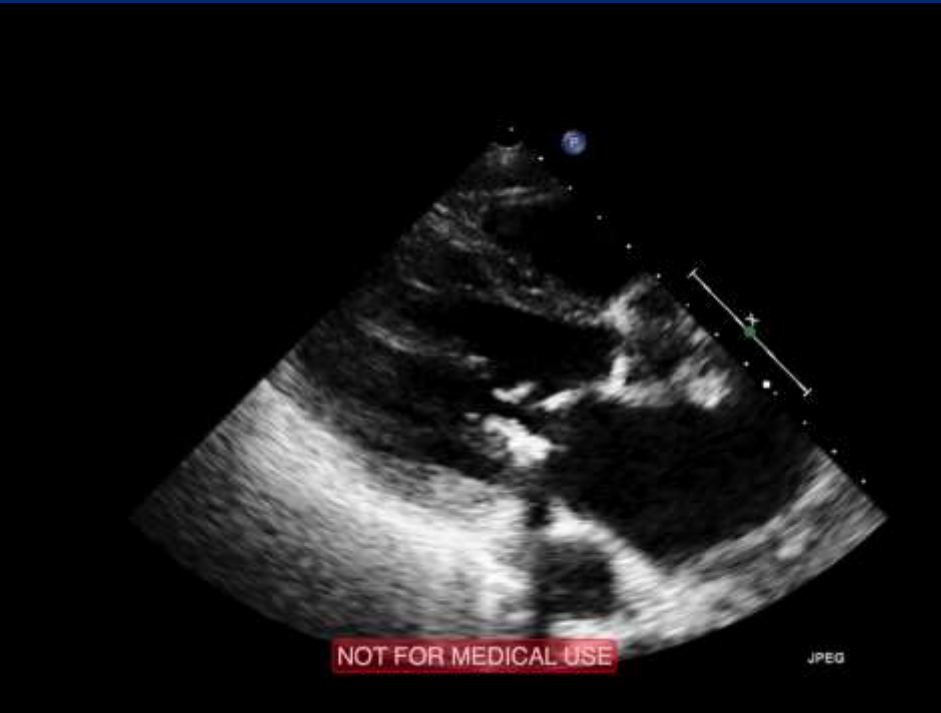
- Ms. Law
- 78 y.o. Asian Female
- ADLI

- Past Medical History:
 - > paroxysmal AF
 - > Hyperlipidemia

- Developed **increasing shortness of breath, dizziness, syncope**
- **NYHA Class II-III**
- Echocardiogram performed by private cardiologist revealing **severe Aortic Stenosis**



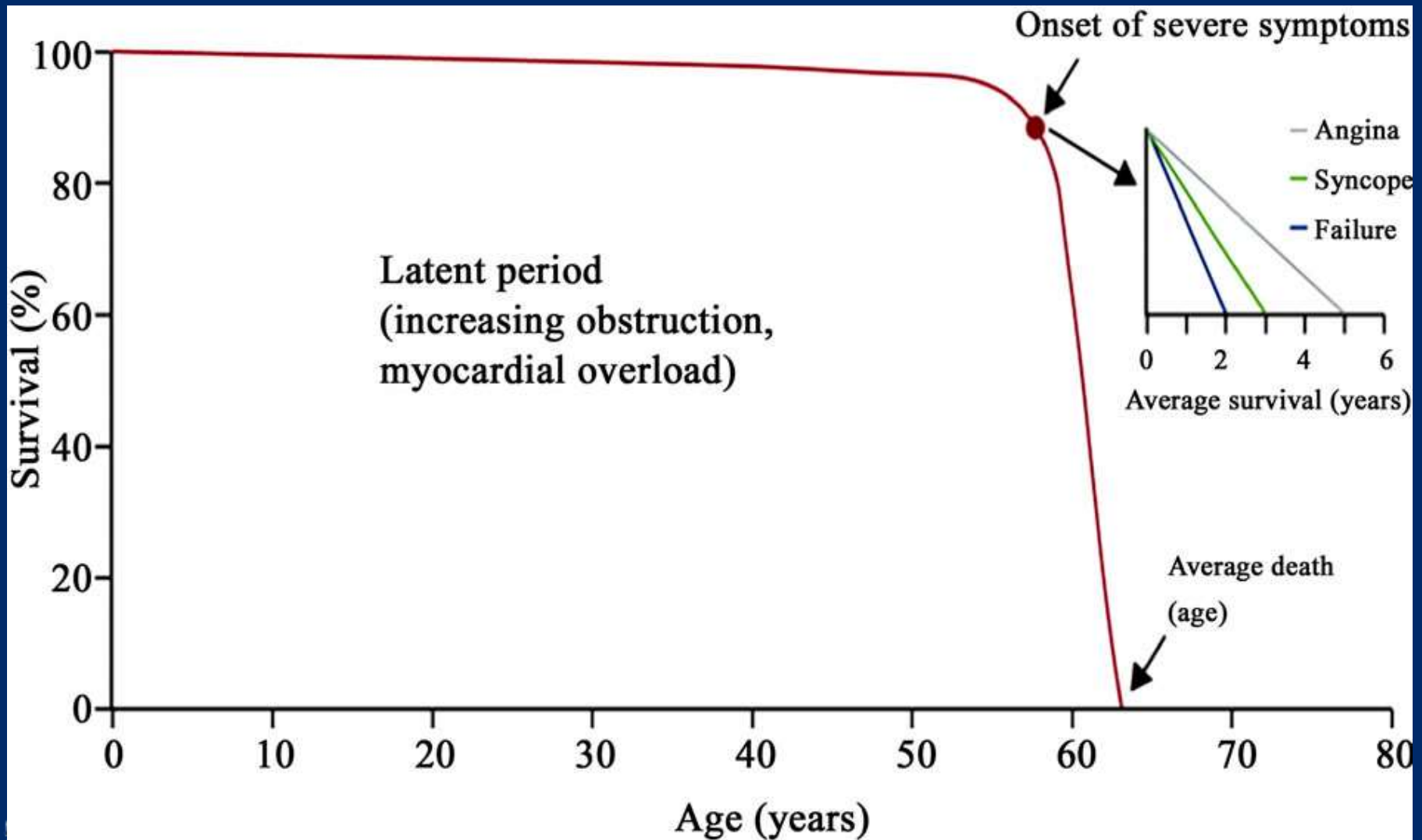
Echocardiogram:



AVA by VTI: 0.62cm^2



Natural Course of severe AS:



HEART Team Discussion

- Intermediate-high risk group
- Both Surgical AVR and TAVI could be offered
- Patient refused Surgical AVR; opted for TAVI



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2017 AHA/ACC Focused Update on VHD

Recommendations for Choice of Intervention		
COR	LOE	Recommendations
I	C	For patients in whom TAVR or high-risk surgical AVR is being considered, a heart valve team consisting of an integrated, multidisciplinary group of healthcare professionals with expertise in VHD, cardiac imaging, interventional cardiology, cardiac anesthesia, and cardiac surgery should collaborate to provide optimal patient care.
I	B-NR	Surgical AR is recommended for symptomatic patients with severe AS (Stage D) and asymptomatic patients with severe AS (Stage C) who meet an indication for AVR when surgical risk is low or intermediate
I	A	Surgical AVR or TAVR is recommended for symptomatic patients with severe AS (Stage D) and <u>high risk for surgical AVR</u> , depending on patient-specific procedural risks, values, and preferences (49-51).
See Online Data Supplement 9 (Updated From 2014 VHD Guideline)		
I	A	TAVR is recommended for symptomatic patients with severe AS (Stage D) and a <u>prohibitive risk for surgical AVR</u> who have a predicted post-TAVR survival greater than 12 months (58-61).
See Online Data Supplements 5 and 9 (Updated From 2014 VHD Guideline)		
IIa	B-R	TAVR is a reasonable alternative to surgical AVR for symptomatic patients with severe AS (Stage D) and an <u>intermediate surgical risk</u> , depending on patient-specific procedural risks, values, and preferences (62-65).
See Online Data Supplements 5 and 9 (Updated From 2014 VHD Guideline)		
IIb	C	Percutaneous aortic balloon dilation may be considered as a bridge to surgical AVR or TAVR for symptomatic patients with severe AS.
III: No Benefit	B	TAVR is not recommended in patients in whom existing comorbidities would preclude the expected benefit from correction of AS (61).



2017 AHA/ACC Focused Update on VHD

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Operation on 29/9/2017

- Cardiac Catheterization Laboratory
- Procedure under **Local Anaes./Monitored Anaes. Care (LA/MAC)**
- CTS standby



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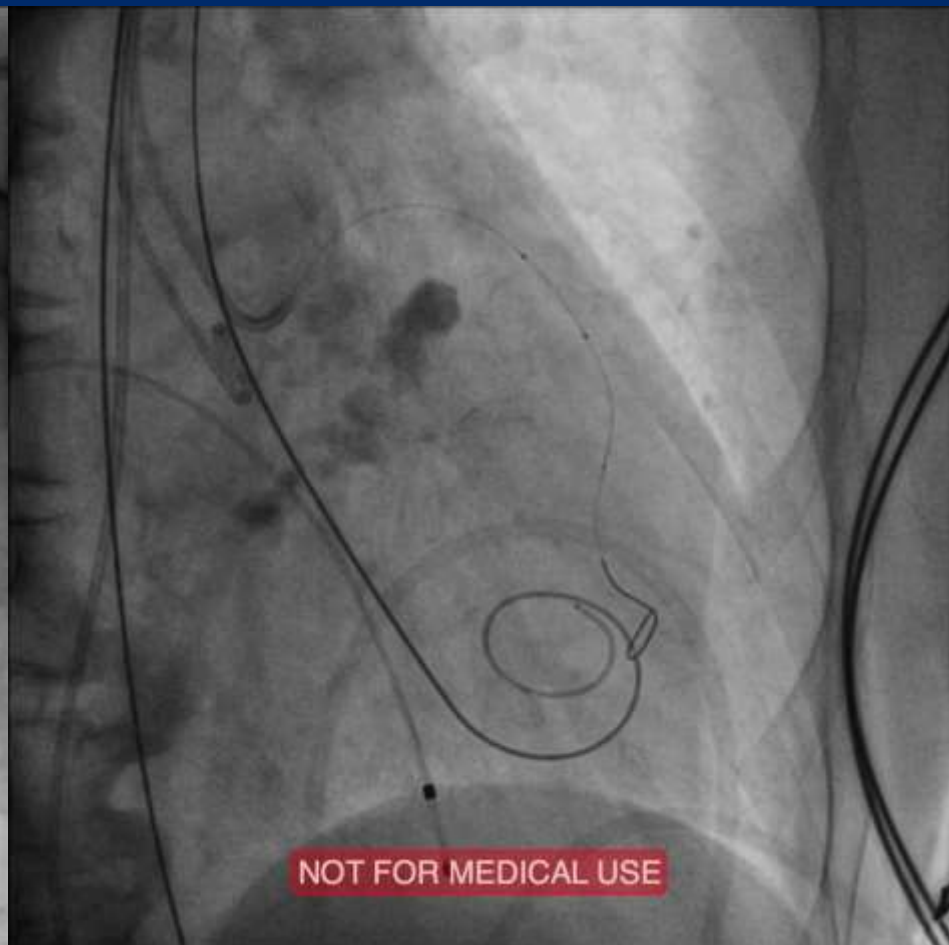
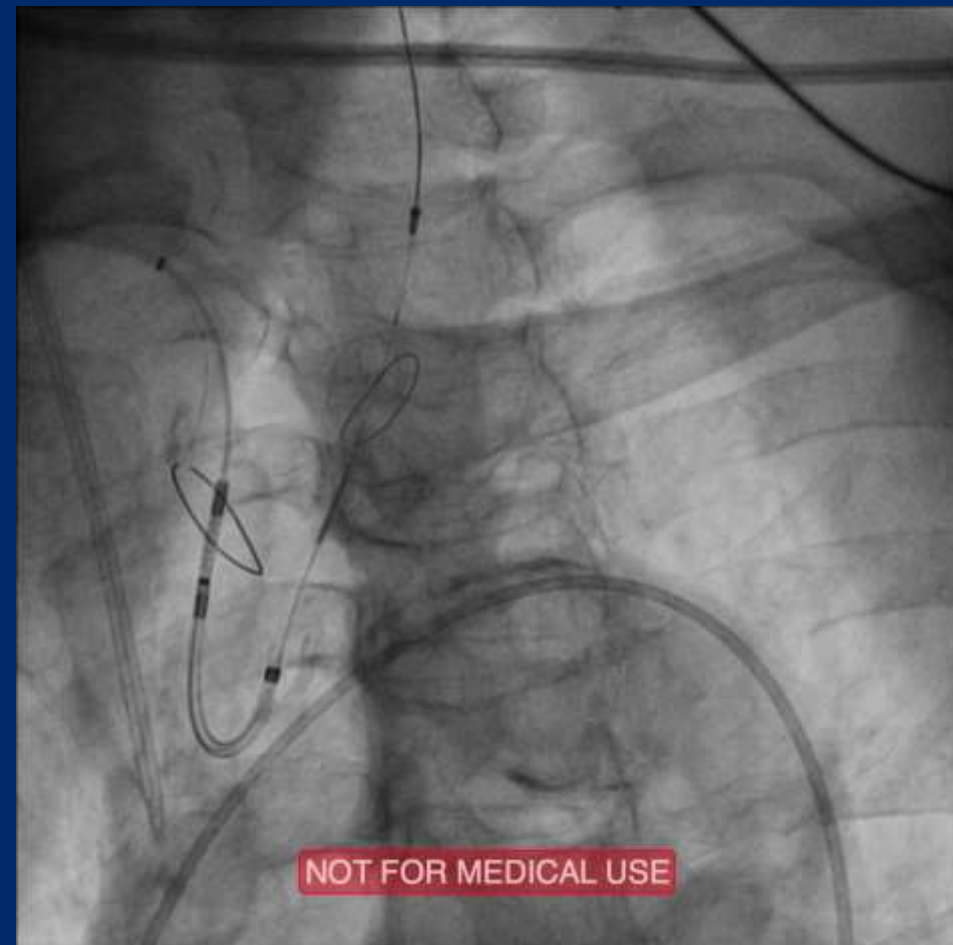
Pre-op Coronary angiogram:

- Minor CAD
- Low lying Left Main



Claret Device Deployment

Wiring and Protection of LM



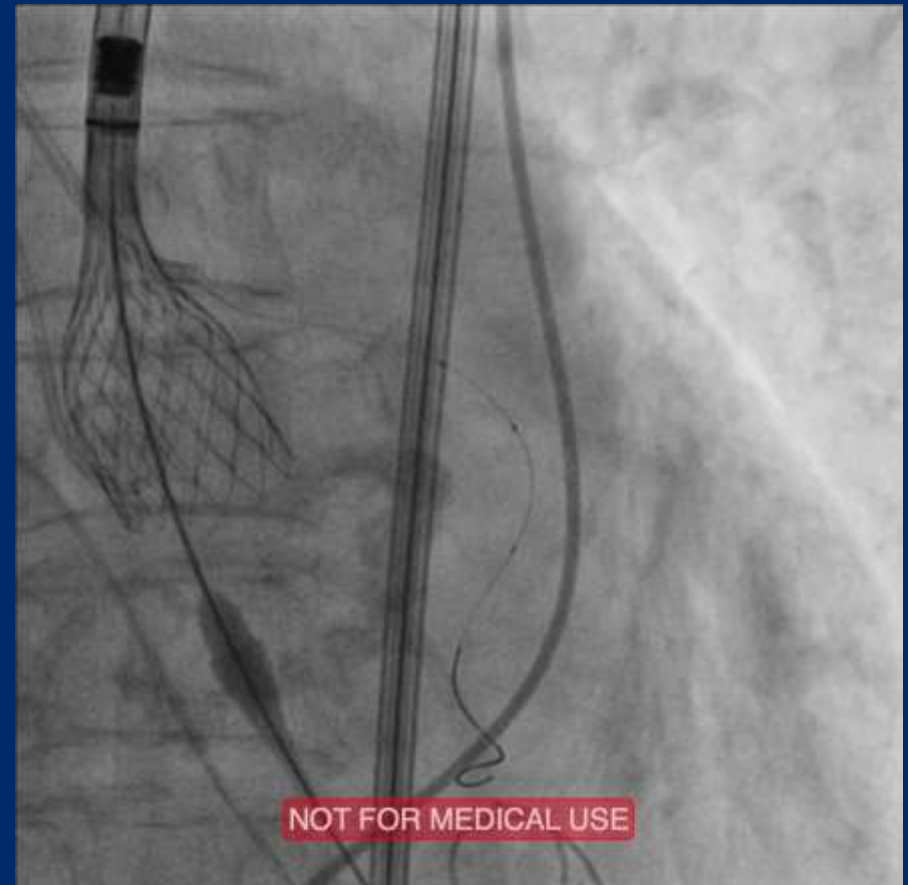
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TAVI Deployment



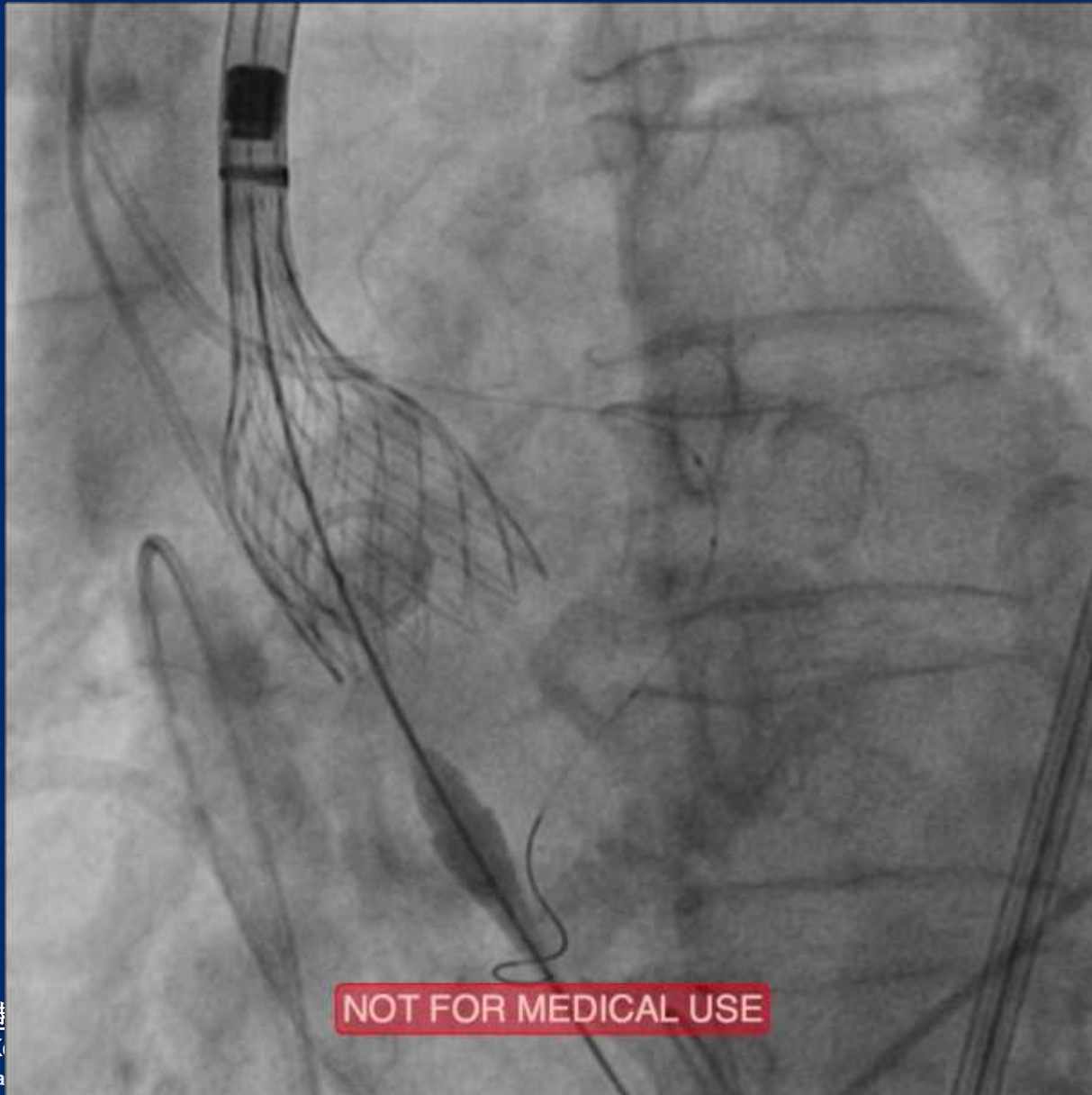
Hypotension



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Pericardiocentesis with pigtail inserted

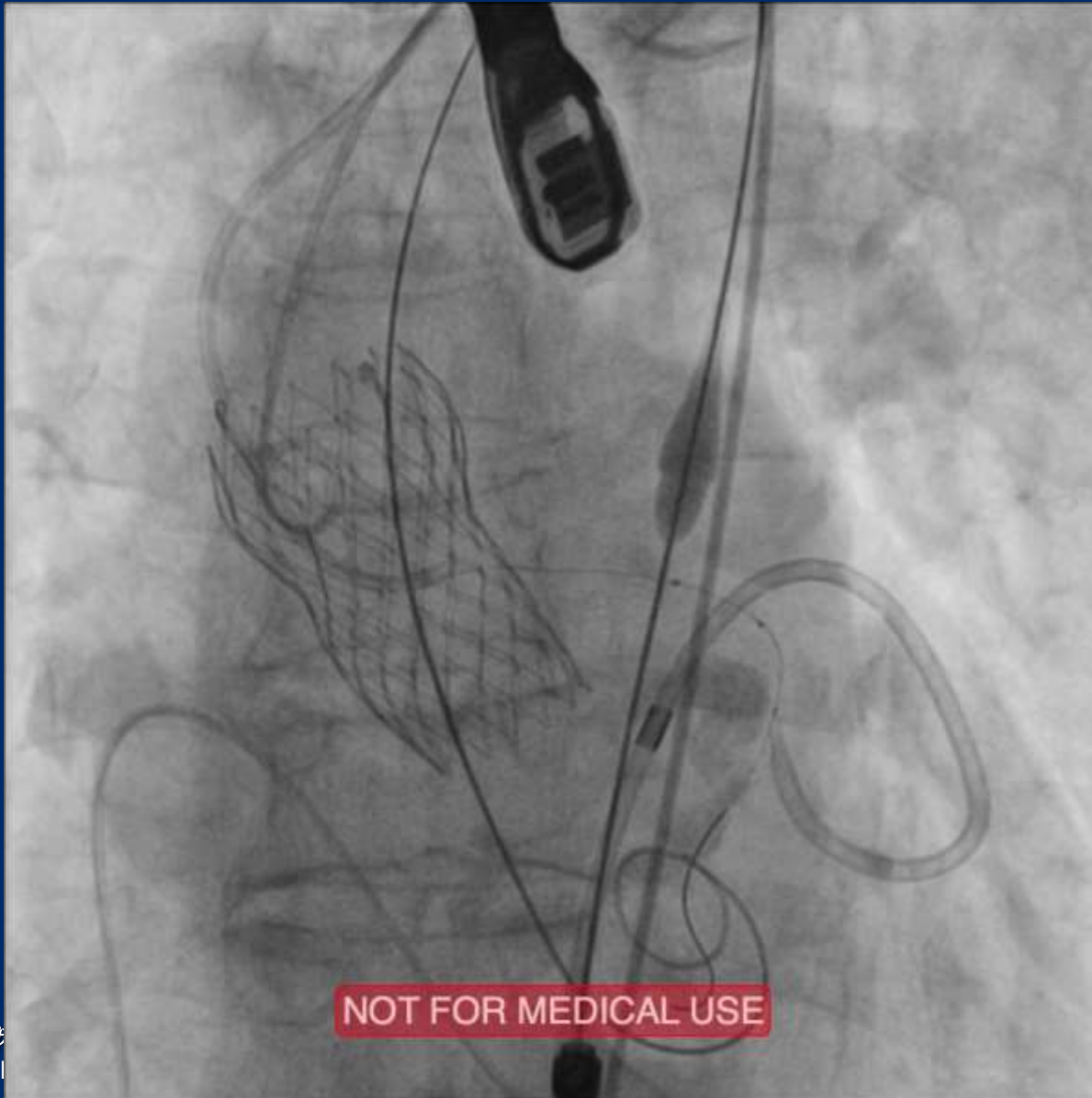


NOT FOR MEDICAL USE



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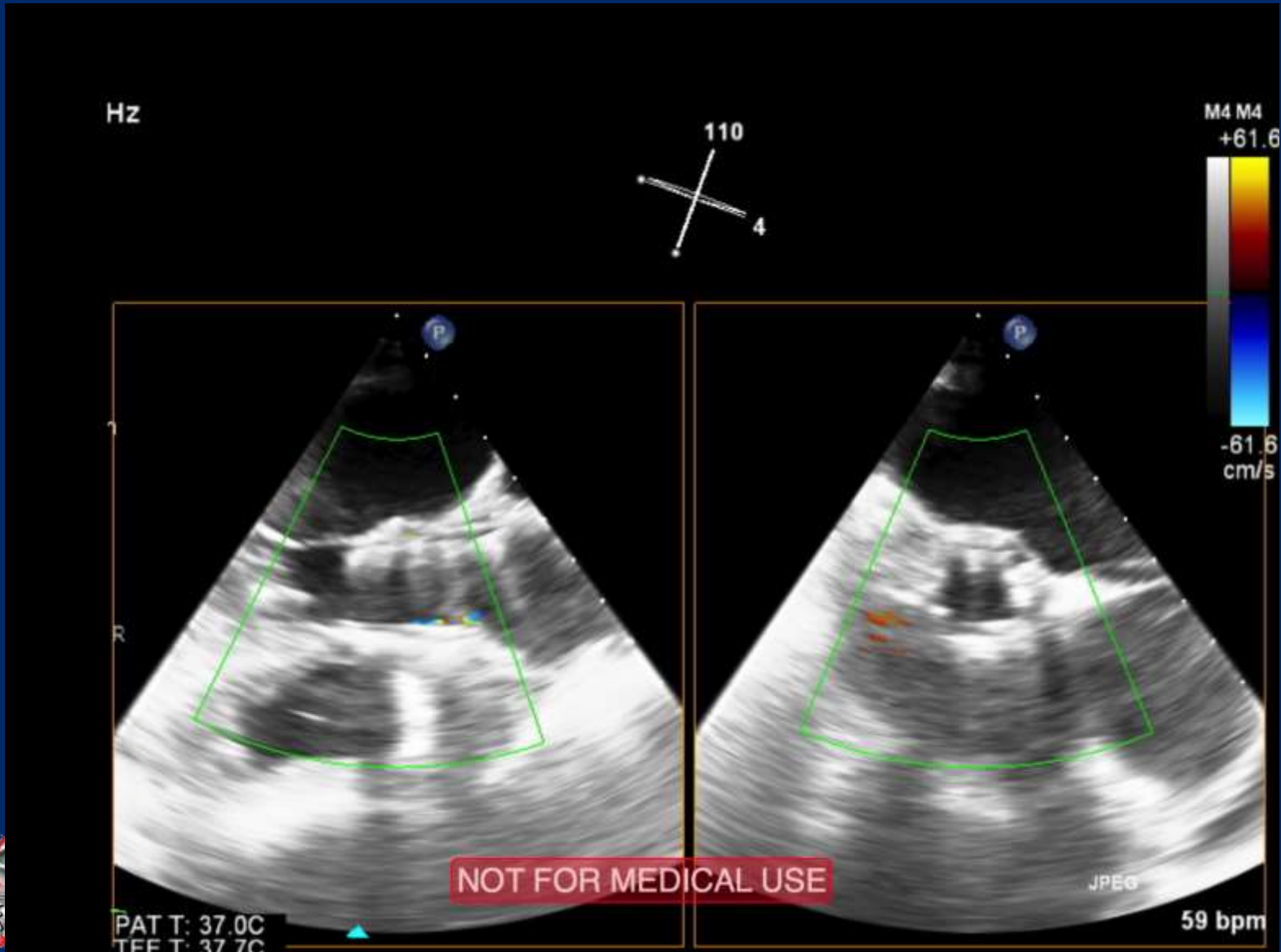
Confirmation of TAVI position



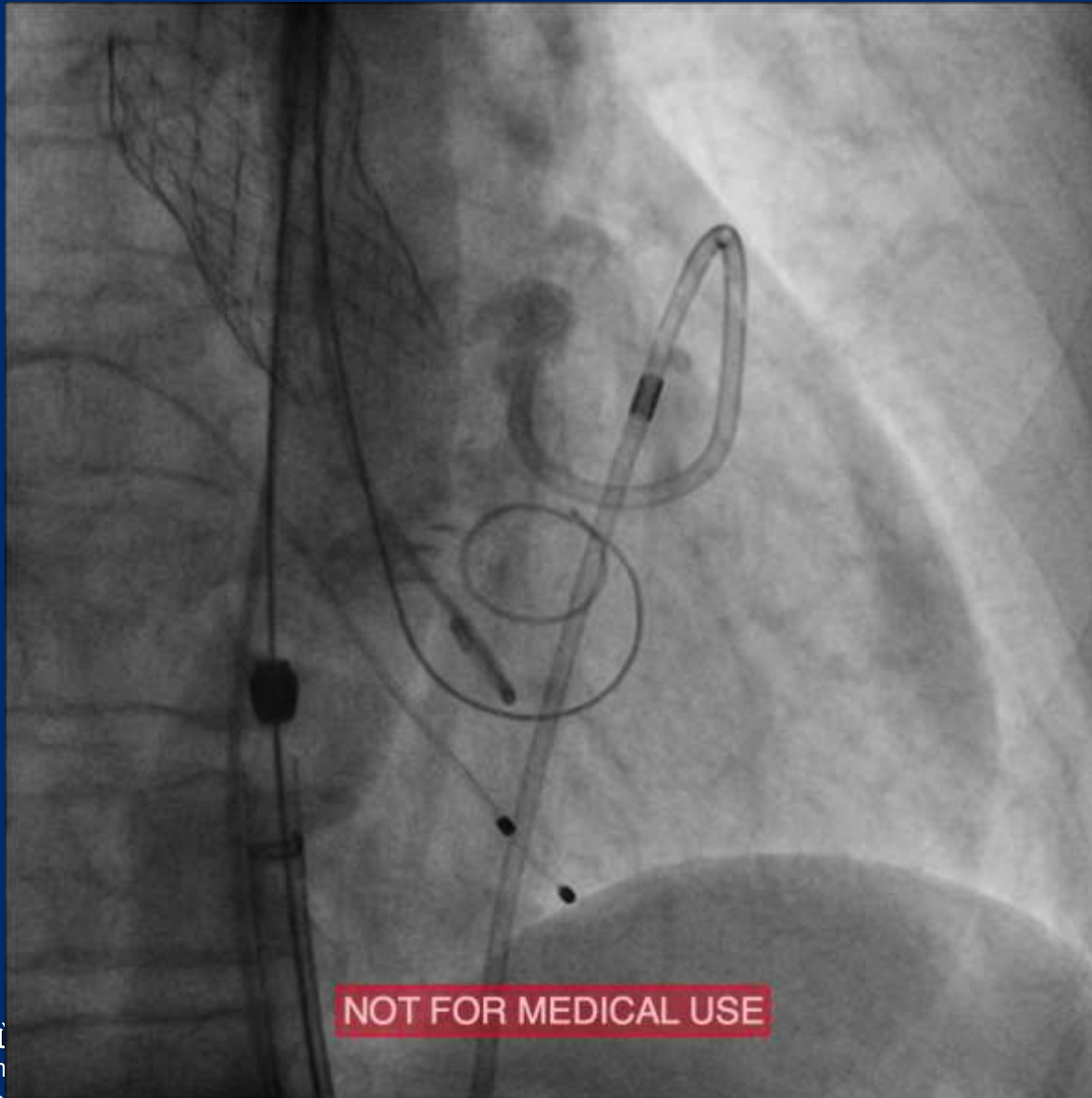
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Confirmation of TAVI position



LV gram to locate leakage site



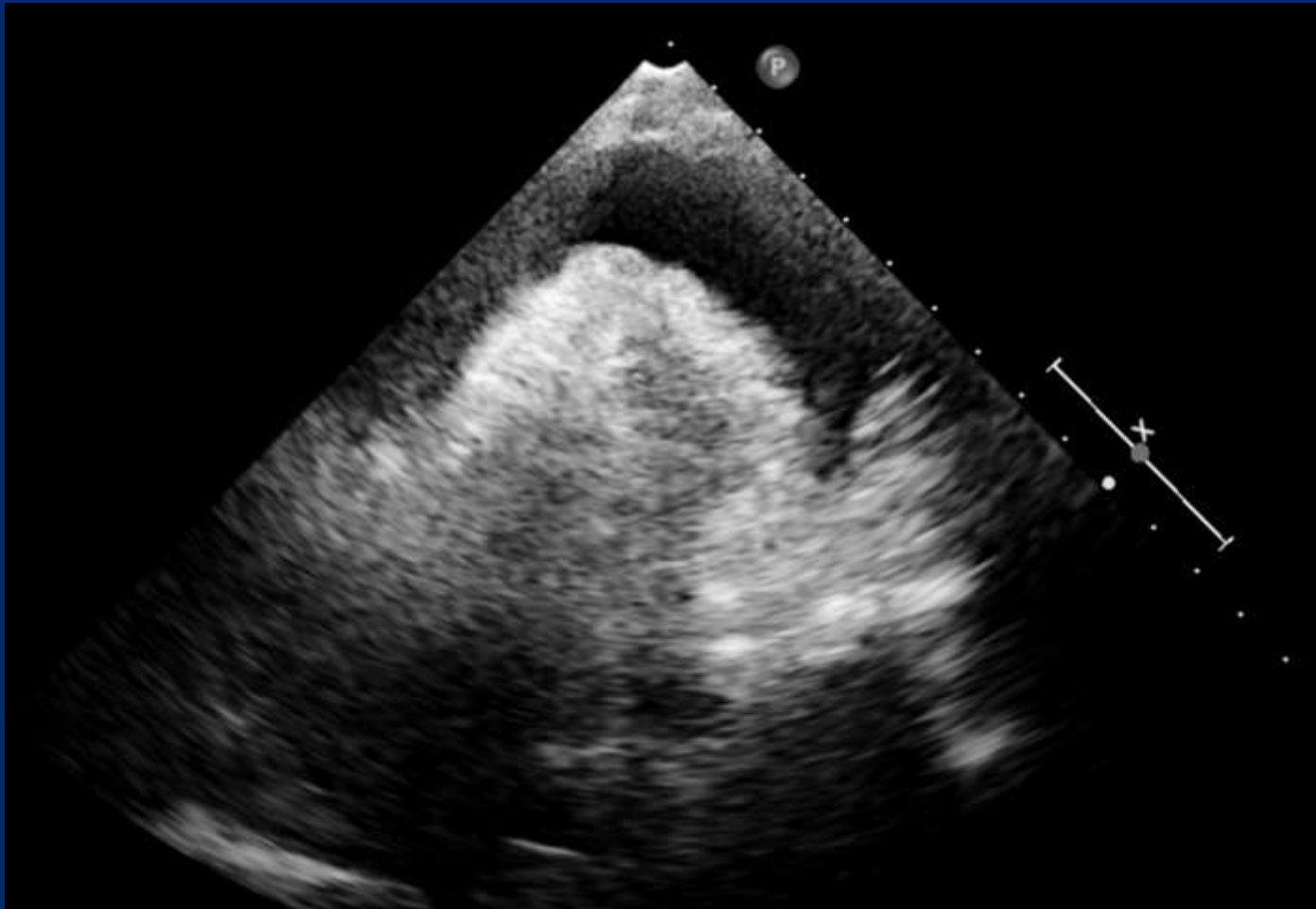
NOT FOR MEDICAL USE



End of story?



Soon after the final angiogram...



Arterial systolic BP: ~30mmHg



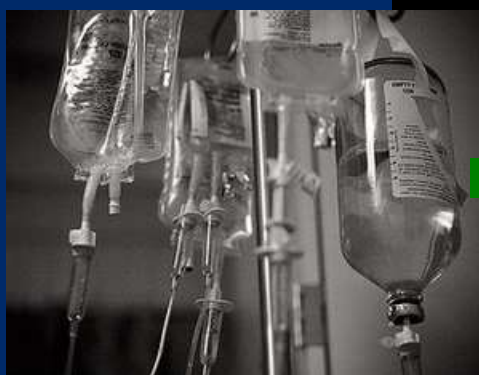
Autologous Transfusion



6 units



>3L

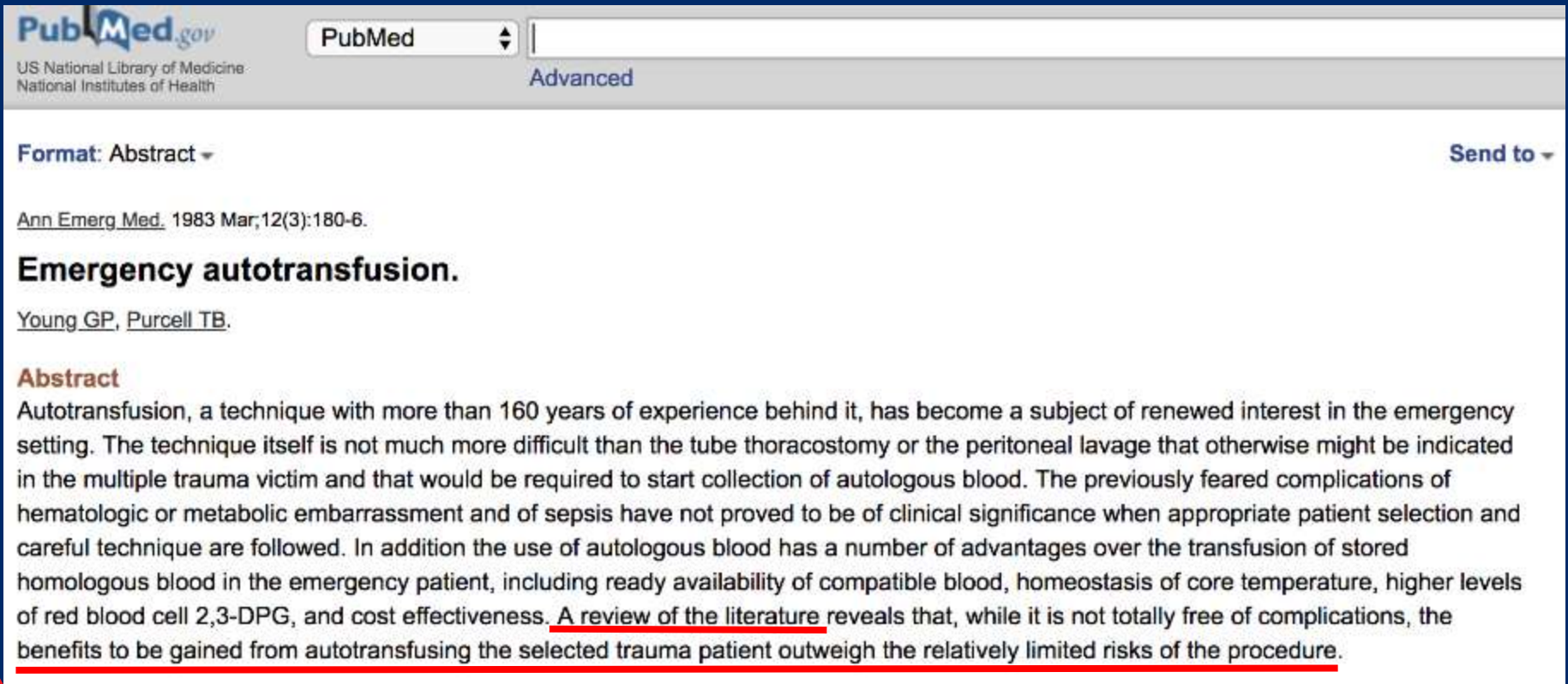


IVF



Autologous Transfusion

- First documented in 1818, salvaging vaginal blood from Post-partum haemorrhage



The image shows a screenshot of a PubMed search result. At the top left is the PubMed logo and the text 'US National Library of Medicine National Institutes of Health'. To the right is a search bar with 'PubMed' and a dropdown arrow, and a search button labeled 'Advanced'. Below the search bar, there are two dropdown menus: 'Format: Abstract' and 'Send to'. The main text of the search result is as follows:

Ann Emerg Med. 1983 Mar;12(3):180-6.

Emergency autotransfusion.

Young GP, Purcell TB.

Abstract

Autotransfusion, a technique with more than 160 years of experience behind it, has become a subject of renewed interest in the emergency setting. The technique itself is not much more difficult than the tube thoracostomy or the peritoneal lavage that otherwise might be indicated in the multiple trauma victim and that would be required to start collection of autologous blood. The previously feared complications of hematologic or metabolic embarrassment and of sepsis have not proved to be of clinical significance when appropriate patient selection and careful technique are followed. In addition the use of autologous blood has a number of advantages over the transfusion of stored homologous blood in the emergency patient, including ready availability of compatible blood, homeostasis of core temperature, higher levels of red blood cell 2,3-DPG, and cost effectiveness. A review of the literature reveals that, while it is not totally free of complications, the benefits to be gained from autotransfusing the selected trauma patient outweigh the relatively limited risks of the procedure.

Autologous Transfusion

PubMed.gov

PubMed

US National Library of Medicine
National Institutes of Health

Advanced

Format: Abstract ▾

Send to ▾

J Trauma Acute Care Surg. 2015 Apr;78(4):729-34. doi: 10.1097/TA.0000000000000599.

Early autologous fresh whole blood transfusion leads to less allogeneic transfusions and is safe.

Rhee P¹, Inaba K, Pandit V, Khalil M, Siboni S, Vercruyssen G, Kulvatunyou N, Tang A, Asif A, O'Keeffe T, Joseph B.

⊕ Author information

Abstract

BACKGROUND: The practice of transfusing ones' own shed whole blood has obvious benefits such as reducing the need for allogeneic transfusions and decreasing the need for other fluids that are typically used for resuscitation in trauma. It is not widely adopted in the trauma setting because of the concern of worsening coagulopathy and the inflammatory process. The aim of this study was to assess outcomes in trauma patients receiving whole blood autotransfusion (AT) from hemothorax.

CONCLUSION: The autologous transfusion of the patient's shed blood collected through chest tubes for hemothorax was found to be safe without complications in this study. It also reduced the need for allogeneic transfusions and decreased hospital costs. This study demonstrates safety data that would help in designing larger prospective multicenter studies to determine whether this practice is truly safe and effective.



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Autologous Transfusion

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US National Library of Medicine
National Institutes of Health

PubMed

Advanced

Format: Abstract ▾

Send to ▾

Semin Thromb Hemost. 2016 Mar;42(2):166-71. doi: 10.1055/s-0035-1569067. Epub 2016 Feb 2.

Safety of Salvaged Blood and Risk of Coagulopathy in Cardiac Surgery.

Paparella D¹, Whitlock R².

⊕ Author information

Abstract

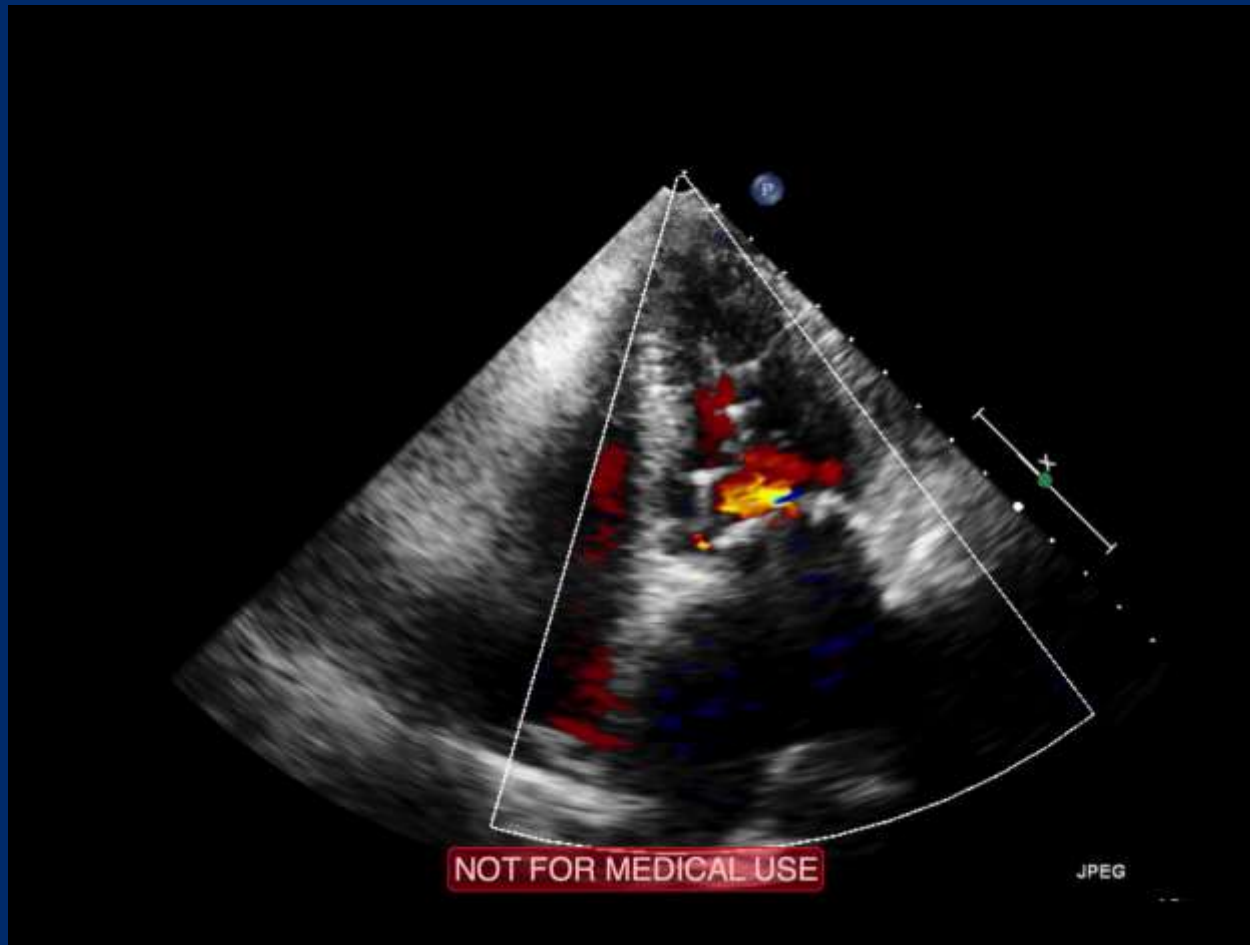
Cardiac surgery patients are prone to anemia from several mechanisms: intraoperative blood loss, preexisting anemia, and hemodilution. Patients are very frequently transfused with allogeneic red blood cells (RBC), which in itself is associated with harm. The use of RBC salvage technology has been advocated to salvage blood lost in the operative field and to reduce the need of homologous blood transfusion. Direct cardiomy suction from the surgical field and unprocessed blood retransfusion is a common practice during cardiopulmonary bypass, but which is associated with a powerful activation of the coagulation and inflammatory systems: thrombin generation, excessive fibrinolysis, and release of proinflammatory cytokines. Compared with direct cardiomy suction, the use of RBC salvage technology is able to reduce the amount of microparticles and activated proteins of autologous blood before retransfusion. However, when compared with no retransfusion of blood from the operative field, processed blood also triggers coagulopathy and inflammation. Clinical studies are discordant regarding the benefit of RBC salvage use during and after cardiac operations. Meta-analysis suggests reduced need of homologous blood transfusion, but no effects on mortality and morbidity.

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After Autologous transfusion



Arterial systolic BP: ~50mmHg

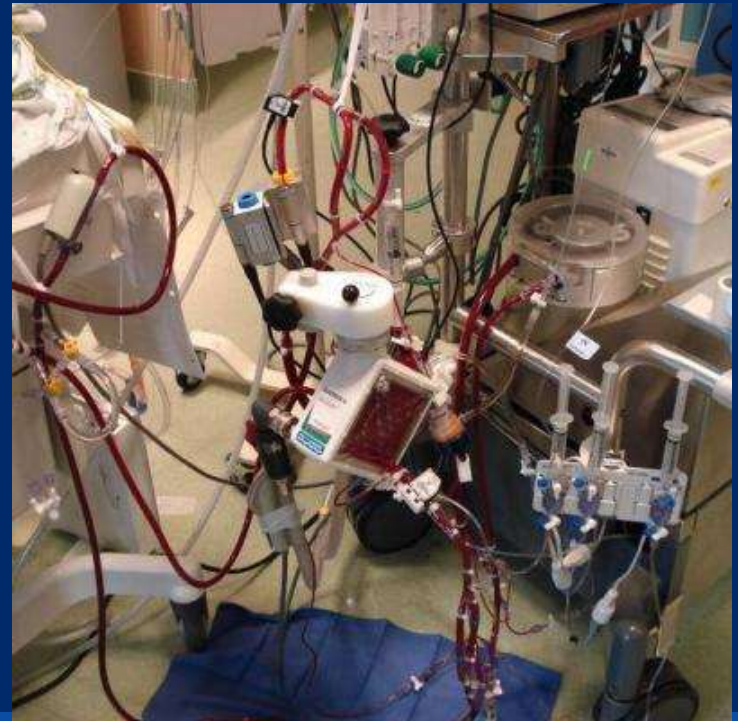


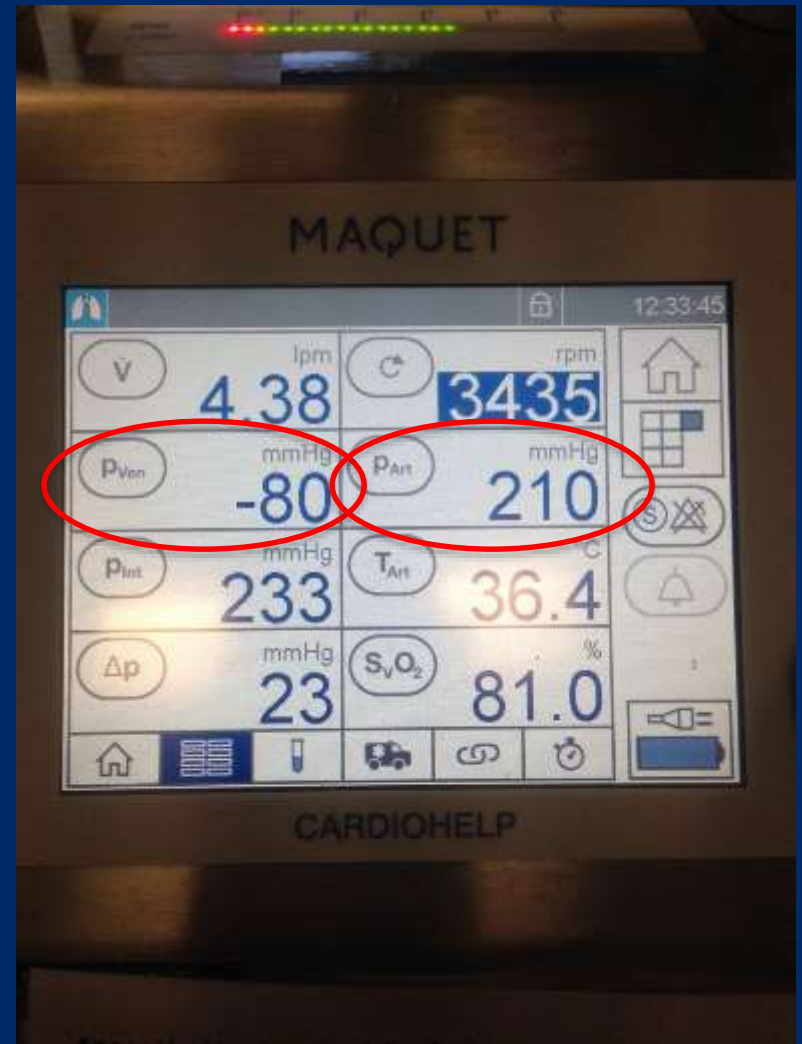
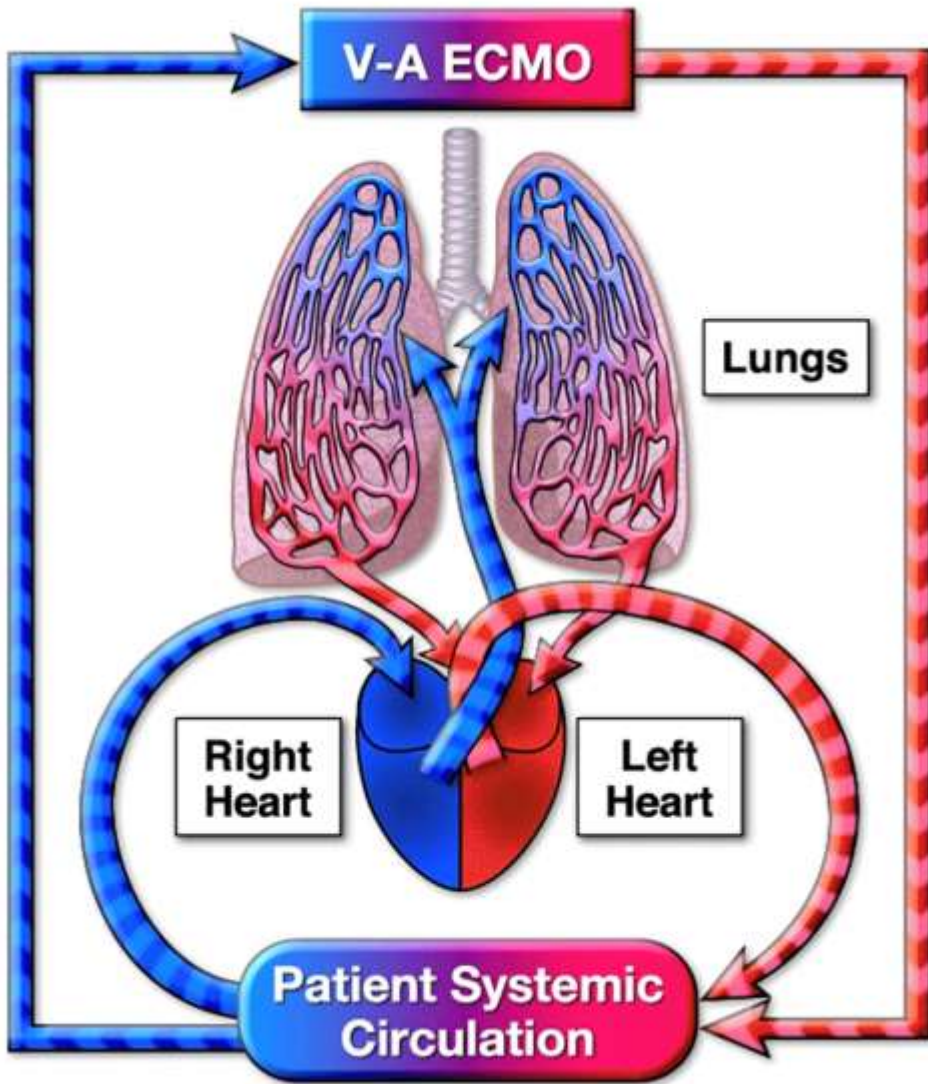
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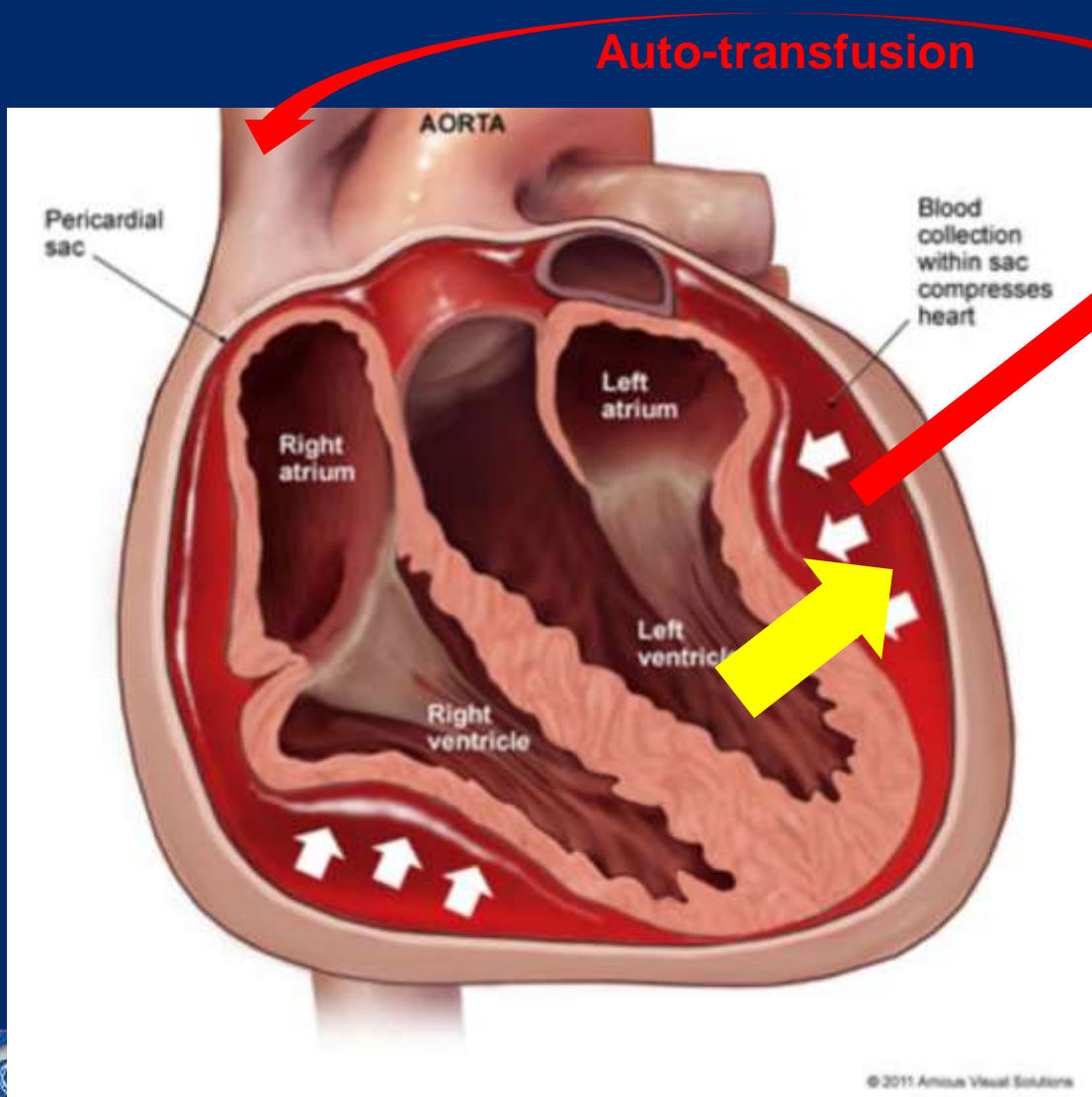
VA ECMO setup

- VA ECMO was set up
- Initial ECMO flow 3L/min
- Dropped to **0.29L/min** within minutes





Pigtail Drainage



Decrease Intra-arterial volume

Decrease ECMO flow

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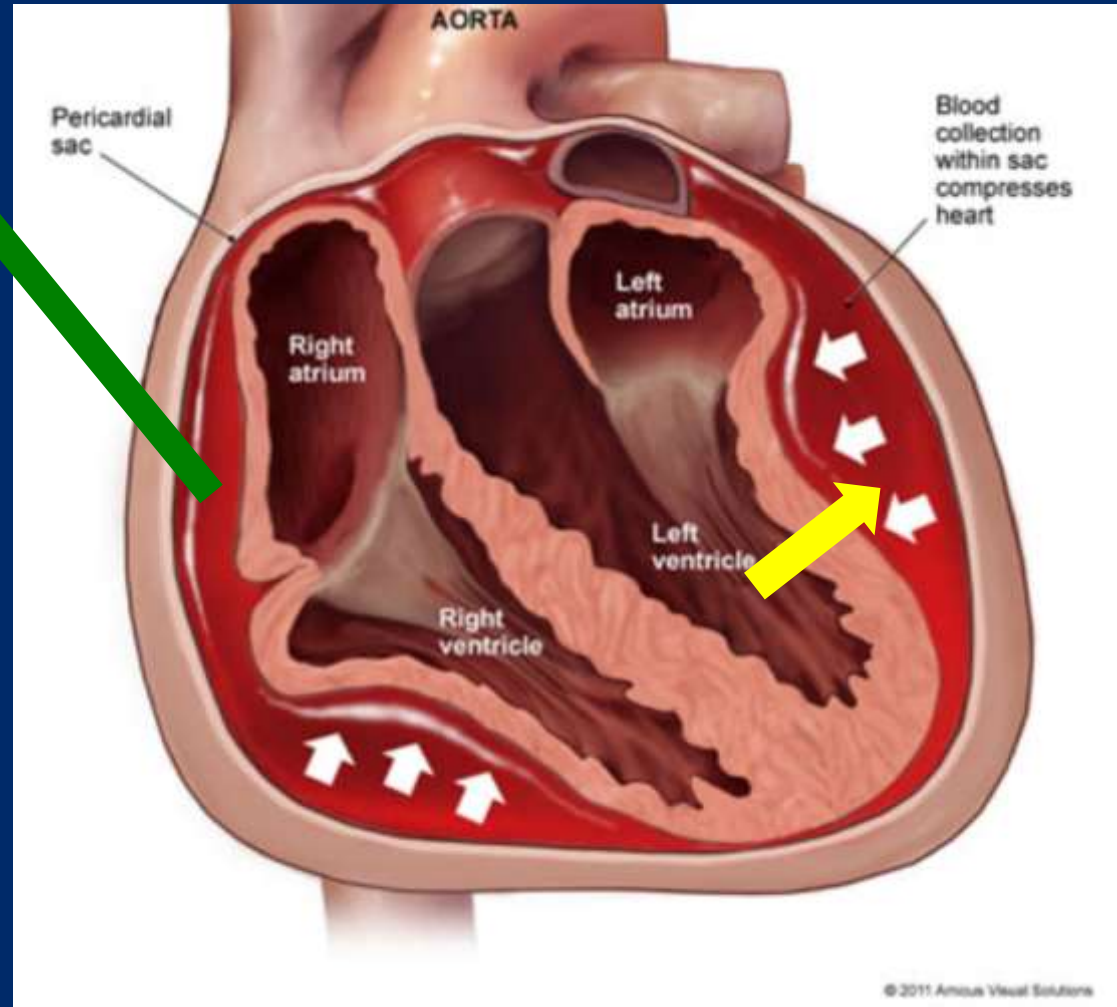
Photo source: <https://medical4free.com/2017/01/24/cardiac-tamponade/>

Pigtail Clamped

Decrease Right
heart/Intra-venous
volume



Decrease ECMO flow



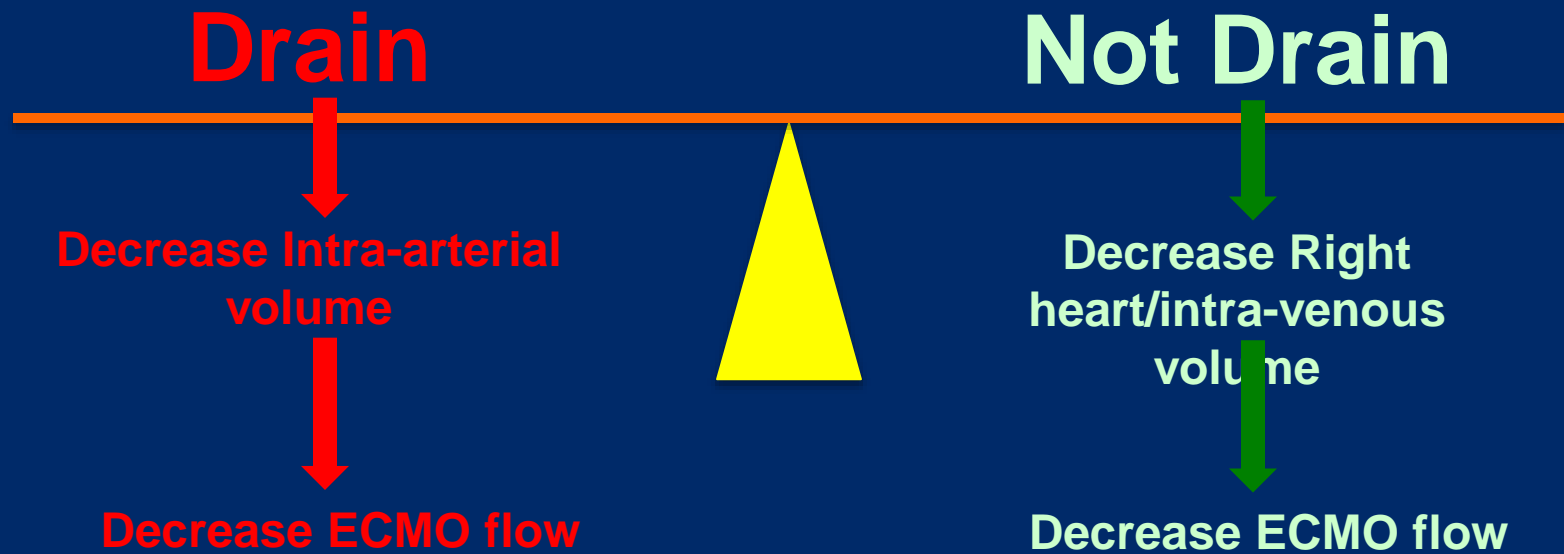
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Photo source: <https://medical4free.com/2017/01/24/cardiac-tamponade/>

To Drain or Not-to-Drain



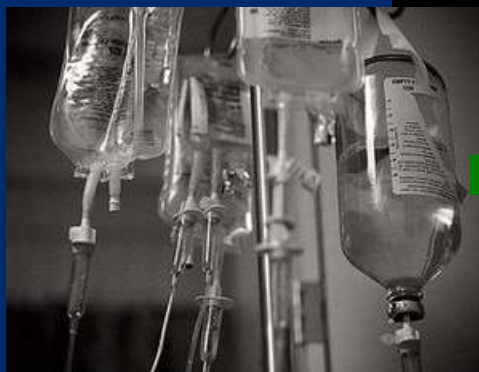
Autologous Transfusion



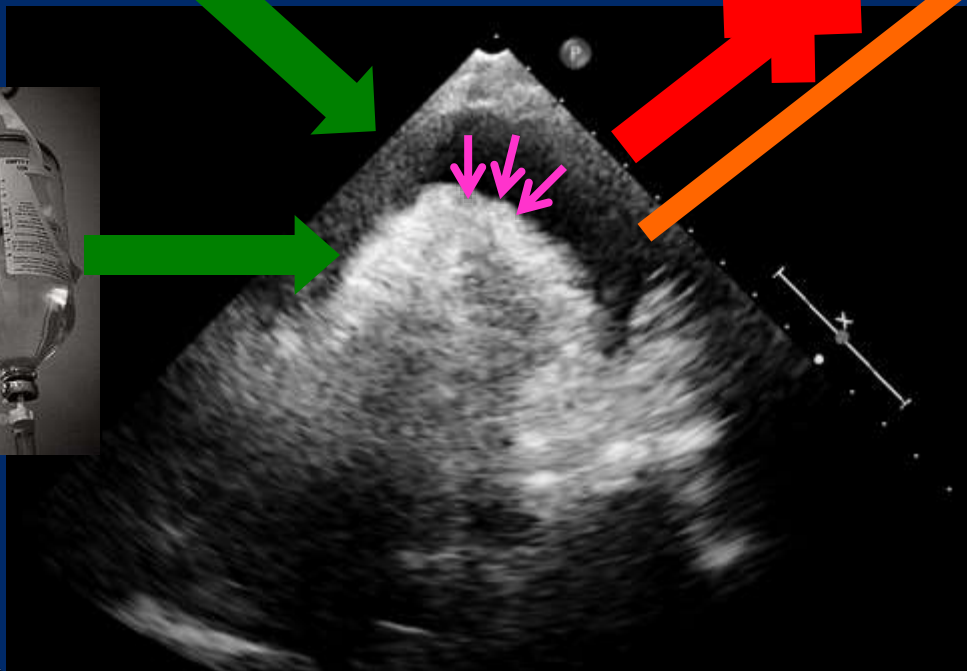
6 units



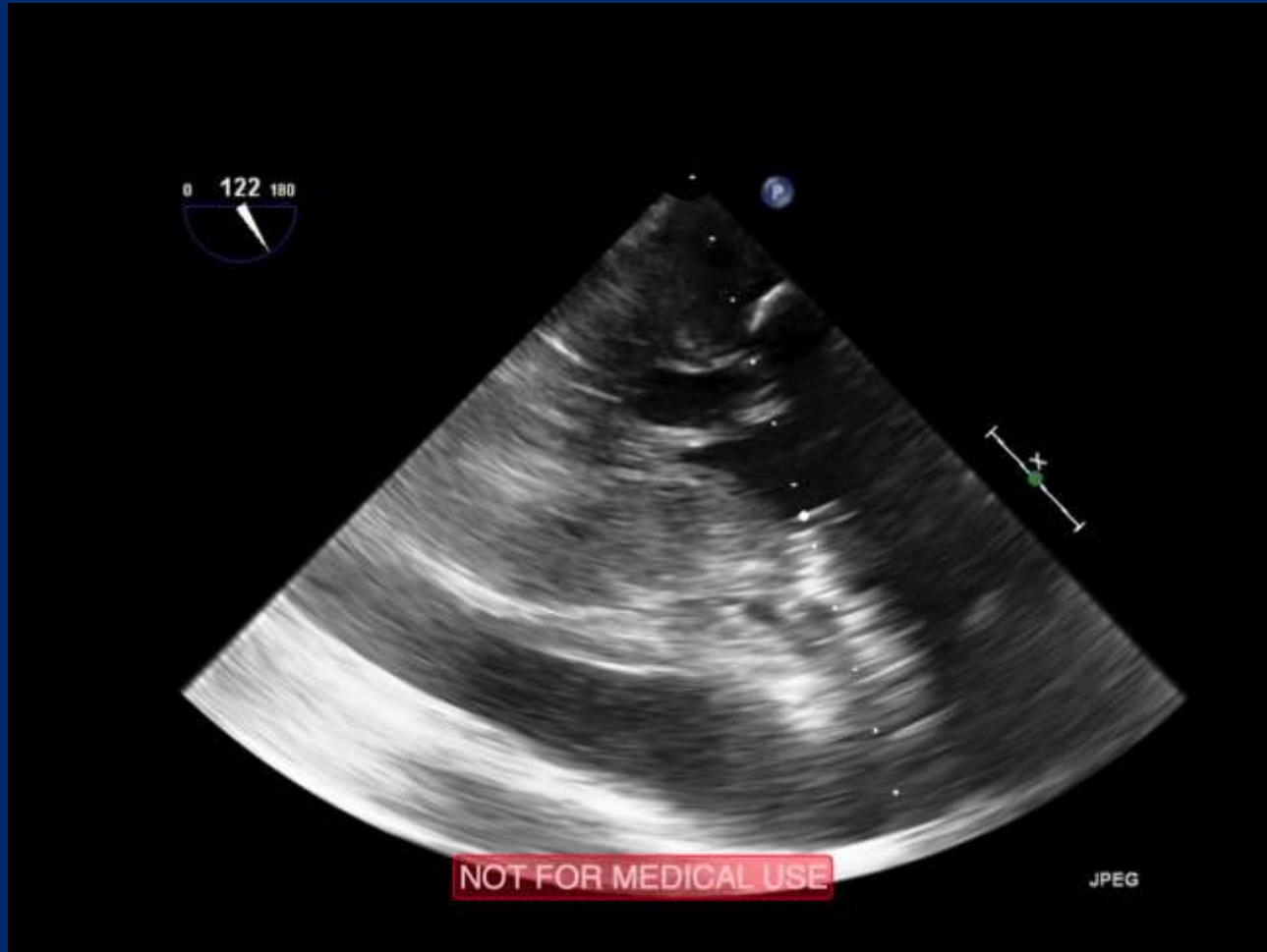
>3L



IVF



Pigtail clamped



ECMO Flow gradually improved back to 3.5L/min



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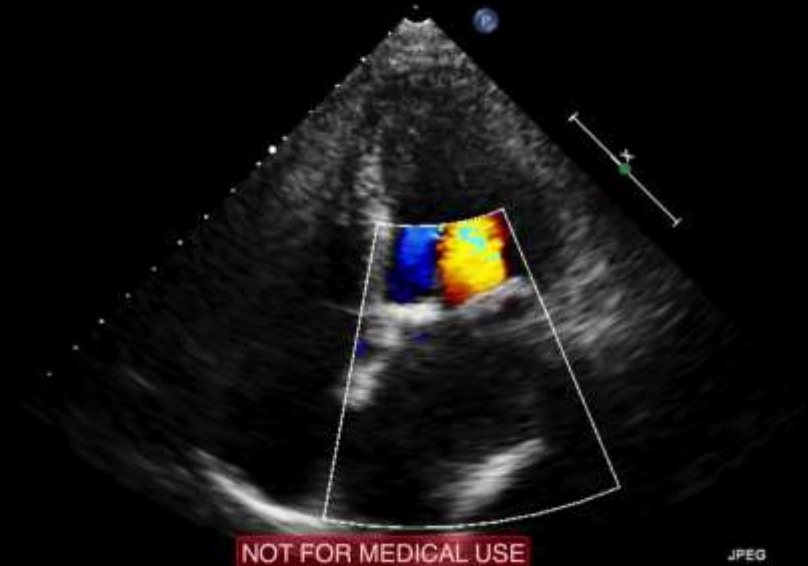
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Proceeded to surgery

- 1.5cm LV apex laceration seen
- Defect repaired with suture and bioglue
- Haemodynamically stable intraoperatively



Echocardiogram (1 month post-op)



Echocardiogram (1 month post-op)



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Post-op

- Prolonged course of intensive rehab
- Finally discharged home 2 months post-operatively
- Able to **walk with stick without assistant** on discharge
- **Lives alone with independent ADL**



Take Home Messages

- TAVI and various structural heart interventions carry rare but **potential serious/life-threatening complications**
- Even **higher degree of alertness** is needed for **minimalistic TAVI/Structural interventions**
- **Autotransfusion is safe** and should be considered, especially in emergency situations.
- Knowledge on **physiology and troubleshooting** of VA ECMO is important
- **Controlled tamponade** can potentially be life saving in desperate situation.



Thank You!



eutics

Special Thanks to:

- Dr KT Chan
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- Dr KC Chan
- Dr NH Luk
- Dr Chui SF
- Dr CY Wong
- QEH Cardiac Team