



Hospices Civils de Lyon



ECMO for beginners: How to cope with first failures and complications



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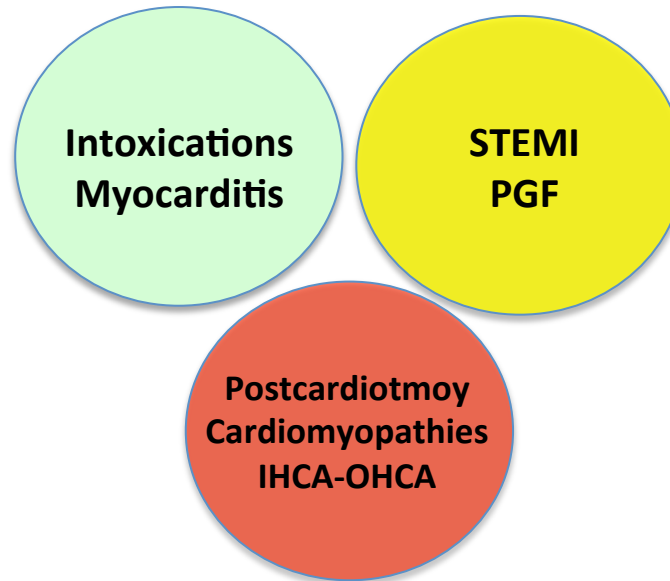


EuroELSO 2017
4-7 May 2017 - Maastricht

ECMO for beginners:

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VA ECMO is an effective therapeutic option in the setting of refractory cardiogenic shock and cardiac arrest



- easy and quick implantation
- rapid hemodynamic stabilization
- improvement of end-organ function
- reasonable solution in term of cost-effectiveness

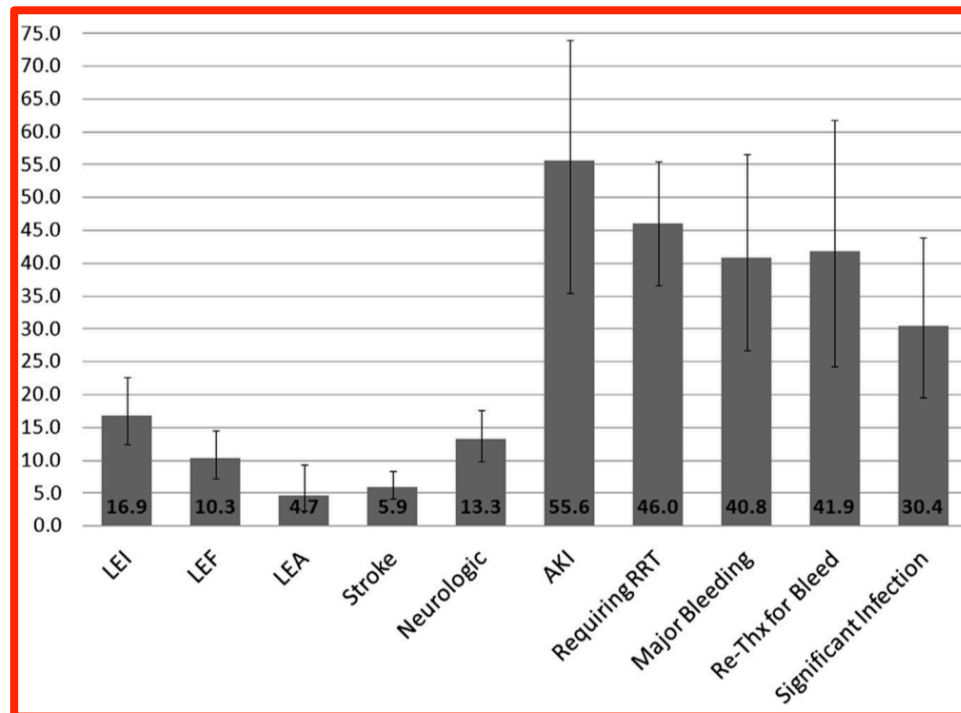
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Complications of Extracorporeal Membrane Oxygenation for Treatment of Cardiogenic Shock and Cardiac Arrest: A Meta-Analysis of 1,866 Adult Patients

Cheng et al.

Ann Thorac Surg 2014;97:610-6



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**LOWER LIMB ISCHEMIA
“anatomic complication”**

**LV DISTENSION – PULMONARY EDEMA
“pathophysiologic complication”**

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LOWER LIMB ISCHEMIA “anatomic complication”

10-20%



Vascular Complications in Patients Undergoing Femoral Cannulation for Extracorporeal Membrane Oxygenation Support

Ann Thorac Surg 2011;92:626-31

The Impact of Vascular Complications on Survival of Patients on Venoarterial Extracorporeal Membrane Oxygenation

Ann Thorac Surg 2016;101:1729-34

Lower-extremity complications with femoral extracorporeal life support

J Thorac Cardiovasc Surg 2016;151:1738-44

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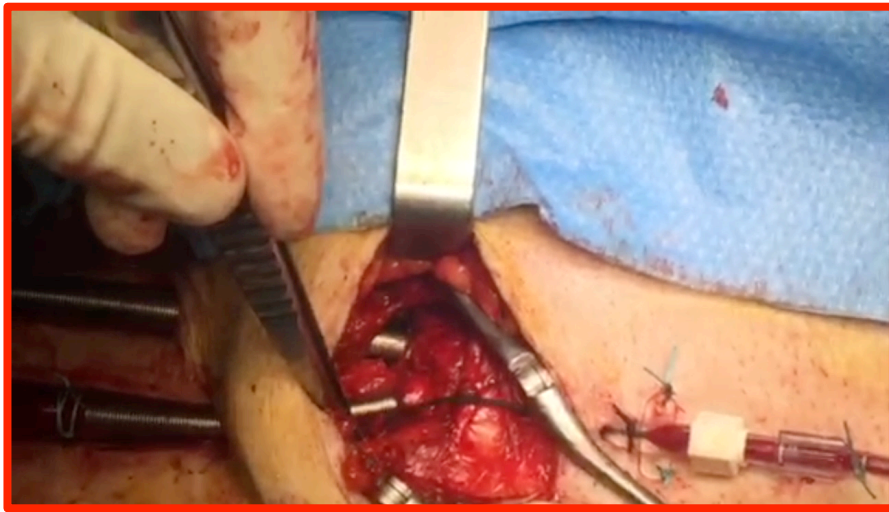
LOWER LIMB ISCHEMIA
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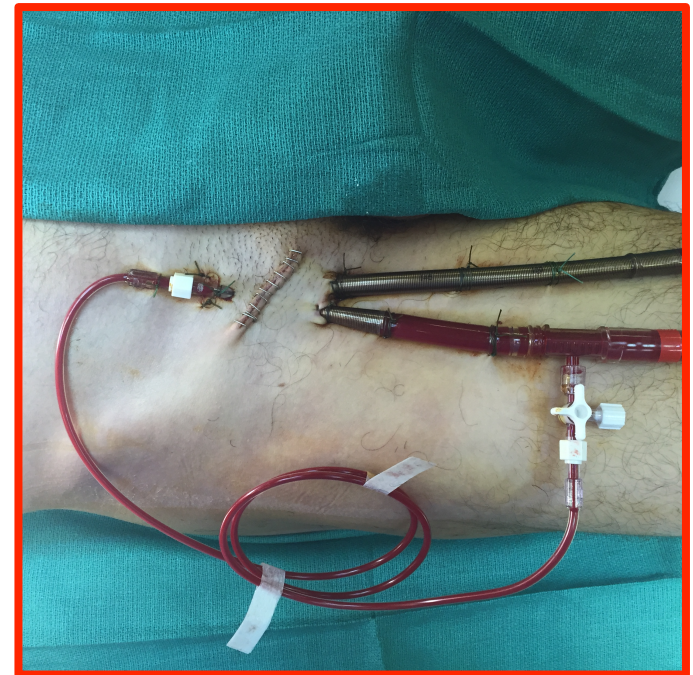
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**SYSTEMATIC DISTAL
REPERFUSION CATHETER**



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LOWER LIMB ISCHEMIA “anatomic complication”

- Expectant approach

J Vasc Surg 2010;52:850-3

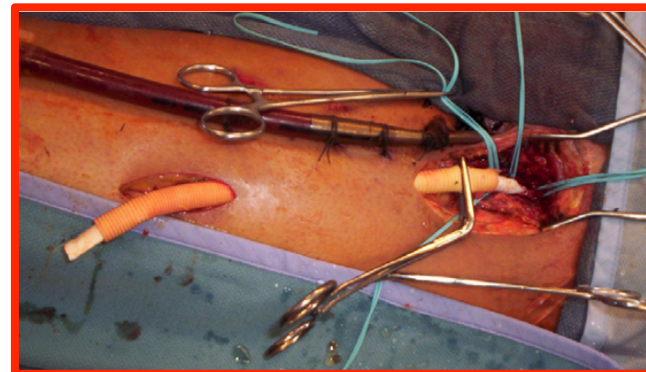
ANZ J Surg 2016;86:1002-6

- Pressure criterion

J Thorac Cardiovasc Surg 2004;128:776-7

- T graft technique

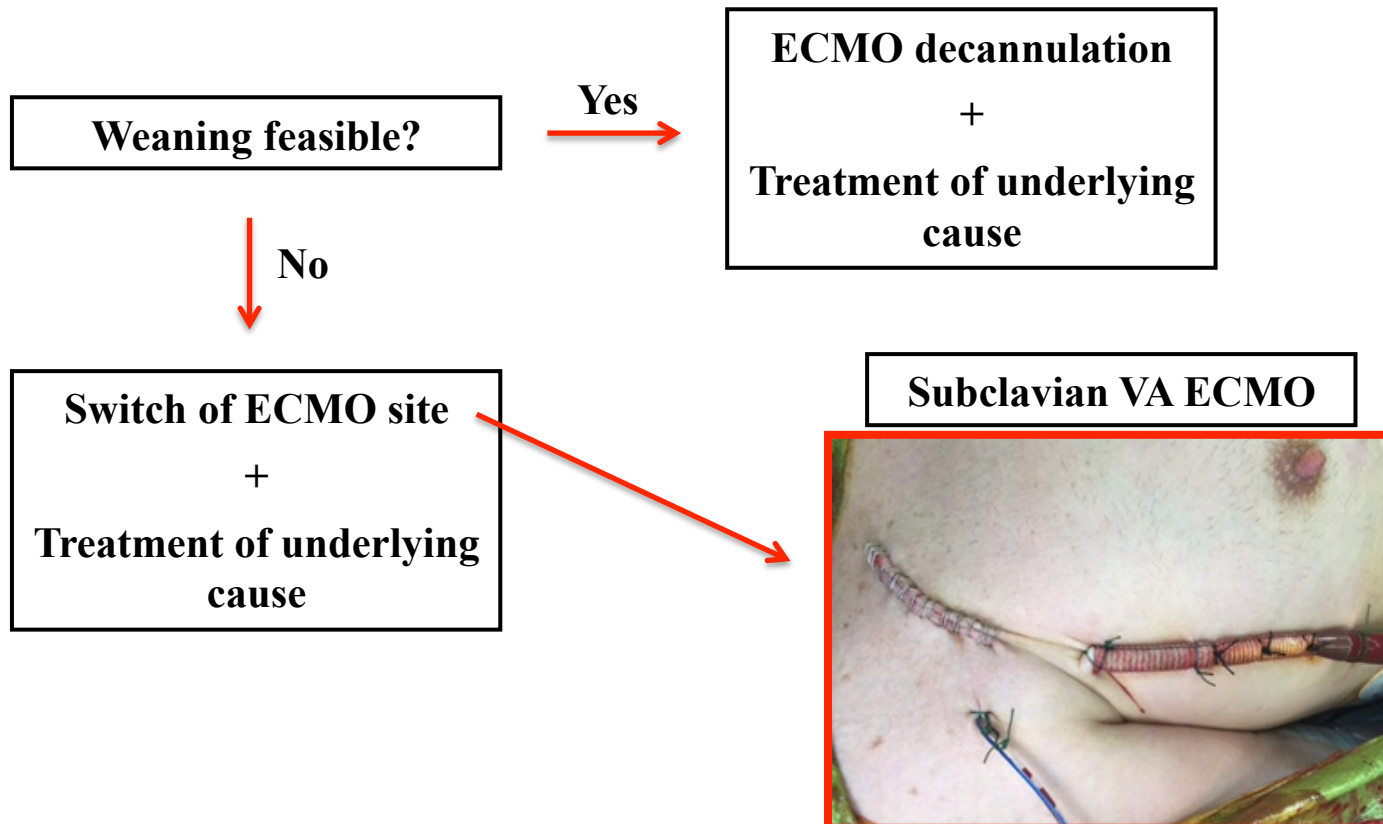
Texas Heart Inst J 2015;42:537-9



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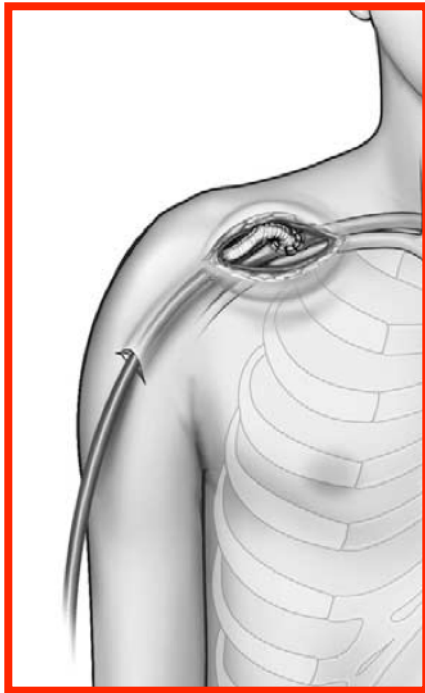
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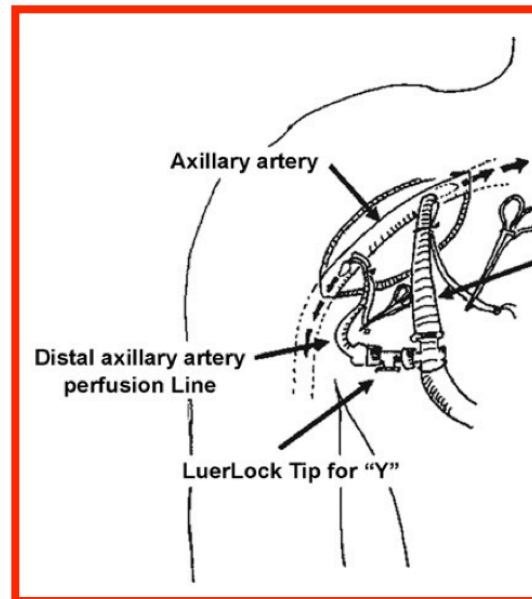
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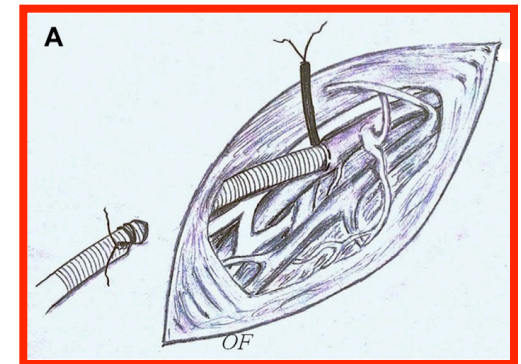
**With a Dacron
prosthesis graft**

J Thorac Cardiovasc Surg 2003;126:2097-8



**Direct with a distal
reperfusion catheter**

Eur J Cardiothorac Surg 2011;40:520-1



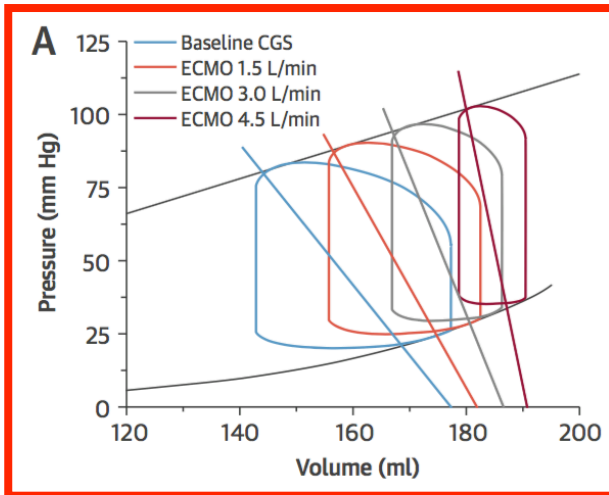
**Direct without a distal
reperfusion catheter**

J Card Surg 2014;29:268-269

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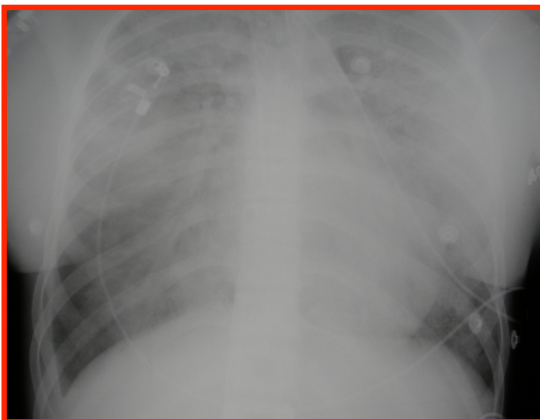
LV DISTENSION – PULMONARY EDEMA
“pathophysiologic complication”



J Am Coll Cardiol 2015;66:2663-74



LV UNLOADING



ECMO for beginners:

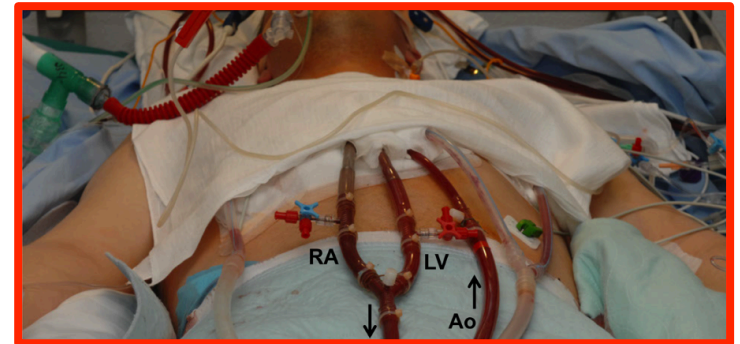
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LV UNLOADING

1) Conversion from peripheral to central VA ECMO

- the most invasive solution
- probably the most effective



2) Cannulation of the left ventricular apex

- anterolateral left minithoracotomy
- less invasive approach

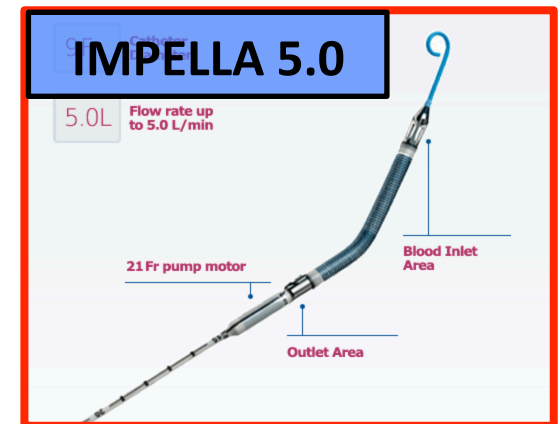
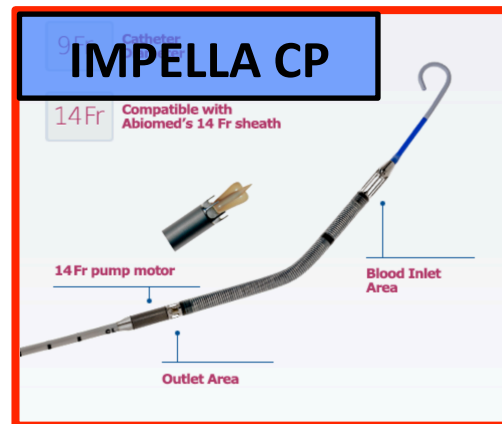
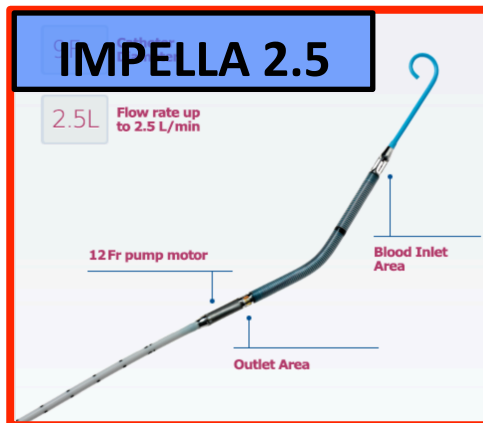
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LV UNLOADING

3) *Impella*



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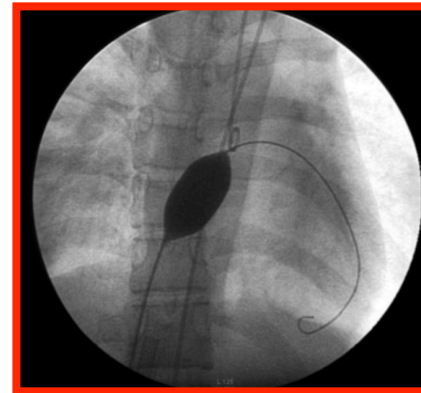
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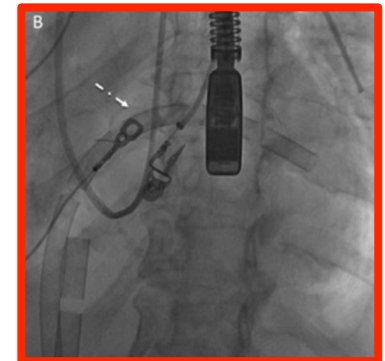
4) *Percutaneous atrial septostomy*

- iatrogenic ASD



5) *Other percutaneous techniques*

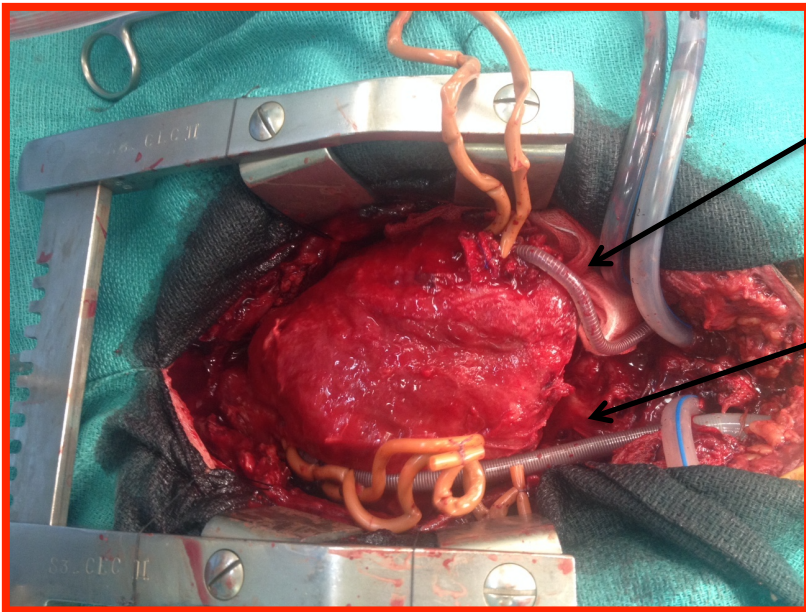
- trans-septal left atrial or ventricular cannula
- transaortic left ventricular cannula
- case reports or small case series



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LV apex cannula

Ascending aorta cannula

Venous drainage obtained with a percutaneous femoral cannula (25 or 29 Fr)