



MCS for End-stage Heart Failure

- Something we can do -

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Why Mechanical Support?

- Medical therapy
 - Preload reduction
 - Kidney injury
 - Electrolyte imbalance
 - Afterload reduction
 - Hypotension
 - Kidney injury
 - Inotropes
 - Arrhythmia
 - Hospitalization or IV infusion
- Medical therapy has limited efficacy on survival & quality of life.



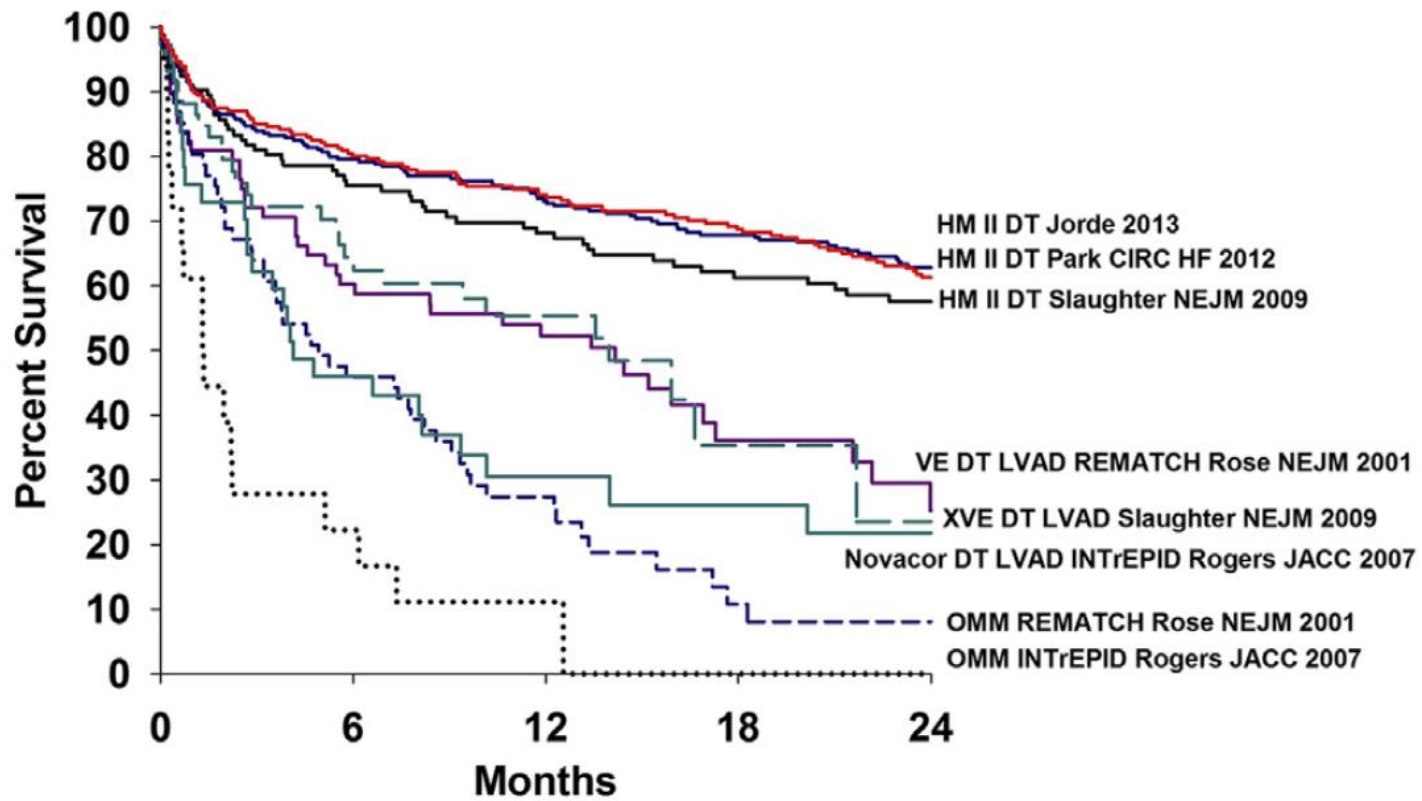


Figure 8

Current Status Destination Therapy for Advanced Heart Failure

2013 ACCF/AHA guidelines

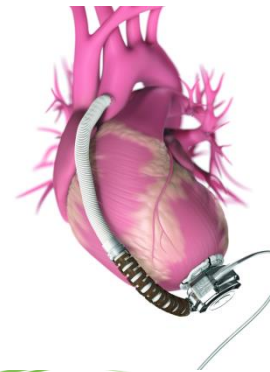
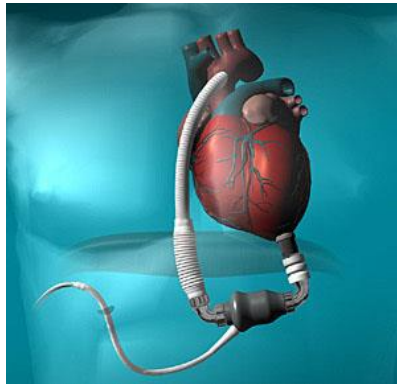
MCS

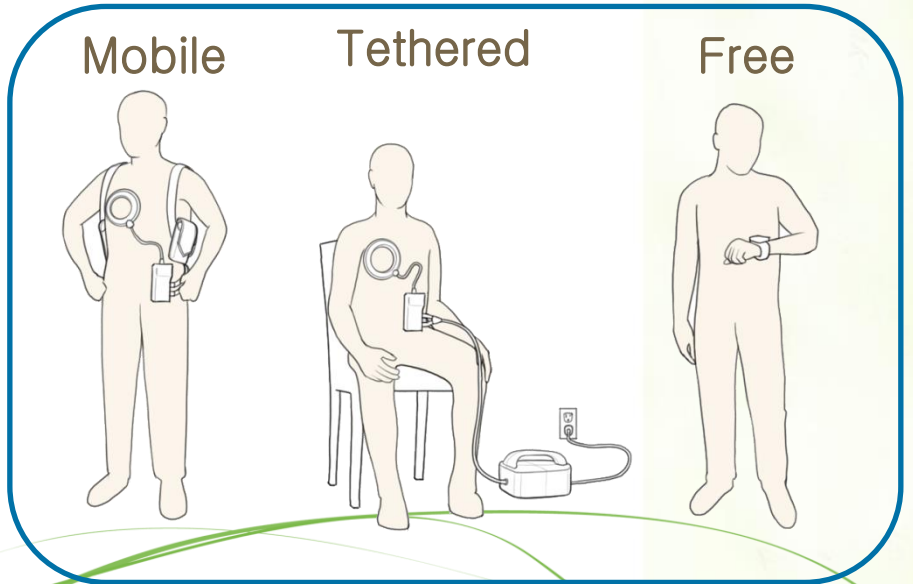
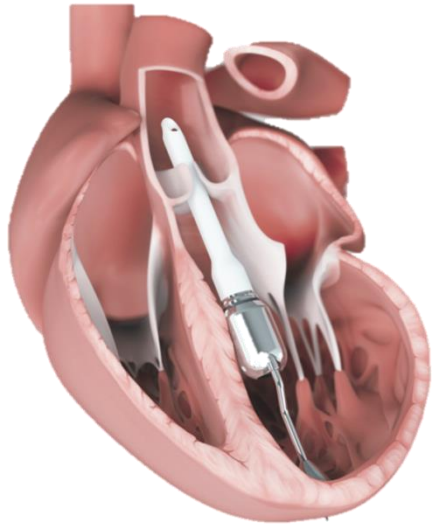
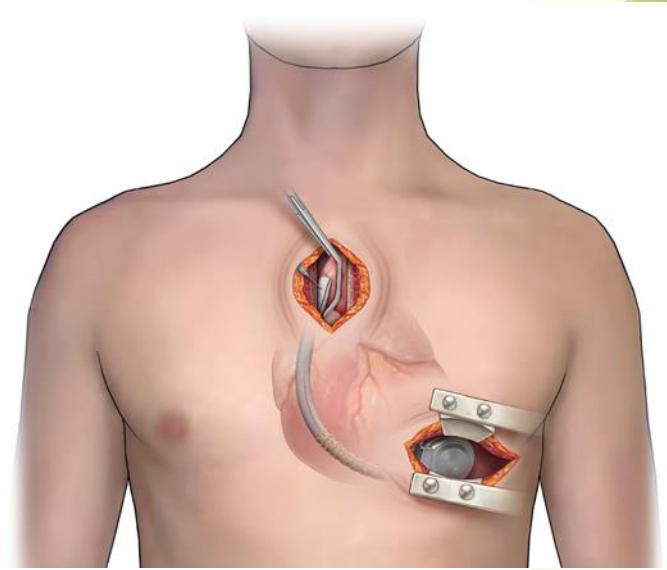
MCS is beneficial in carefully selected* patients with stage D HF in whom definitive management (eg, cardiac transplantation) is anticipated or planned

Nondurable MCS is reasonable as a “bridge to recovery” or a “bridge to decision” for carefully selected* patients with HF and acute profound disease

Durable MCS is reasonable to prolong survival for carefully selected* patients with stage D HF/EF

Ia	B
Ia	B
Ia	B

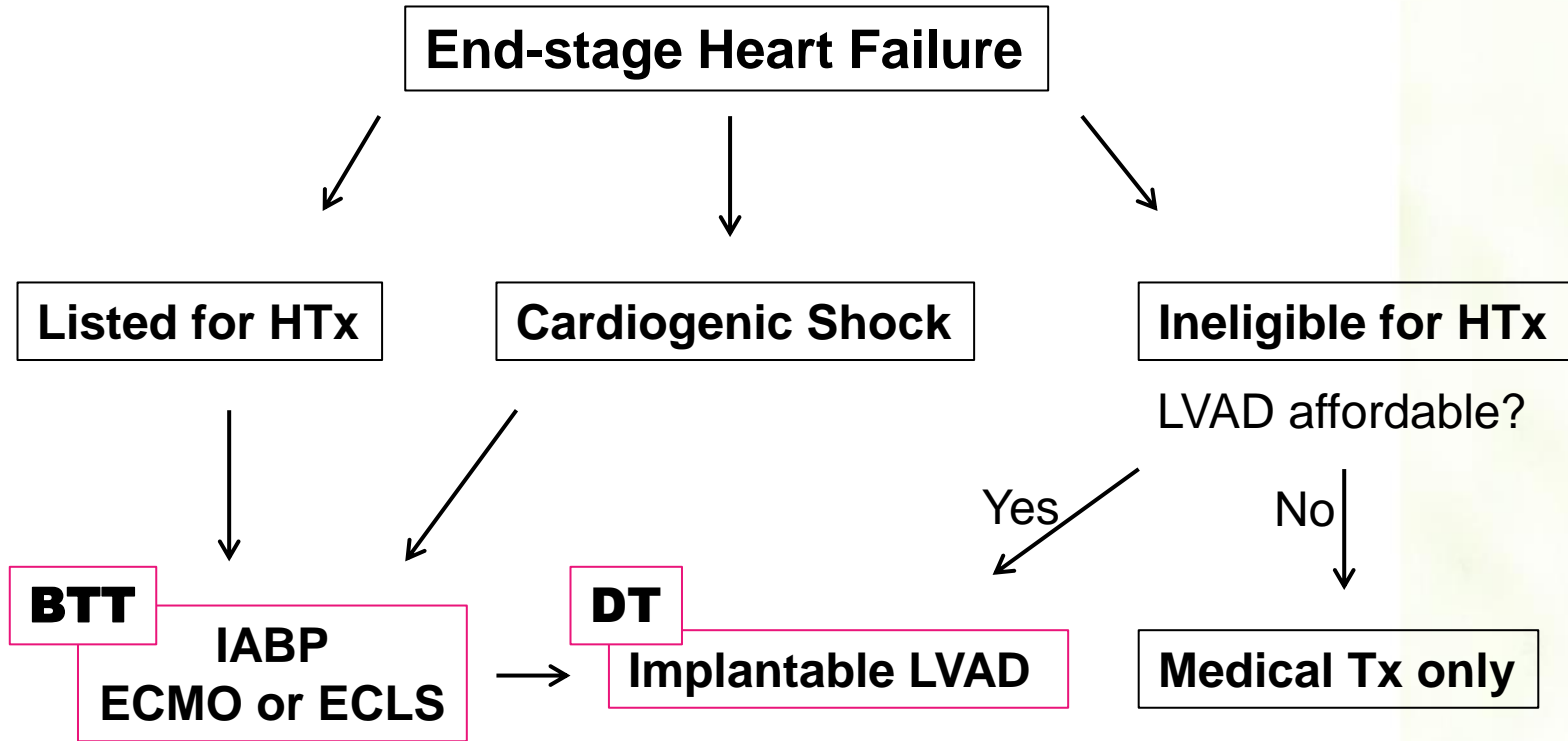




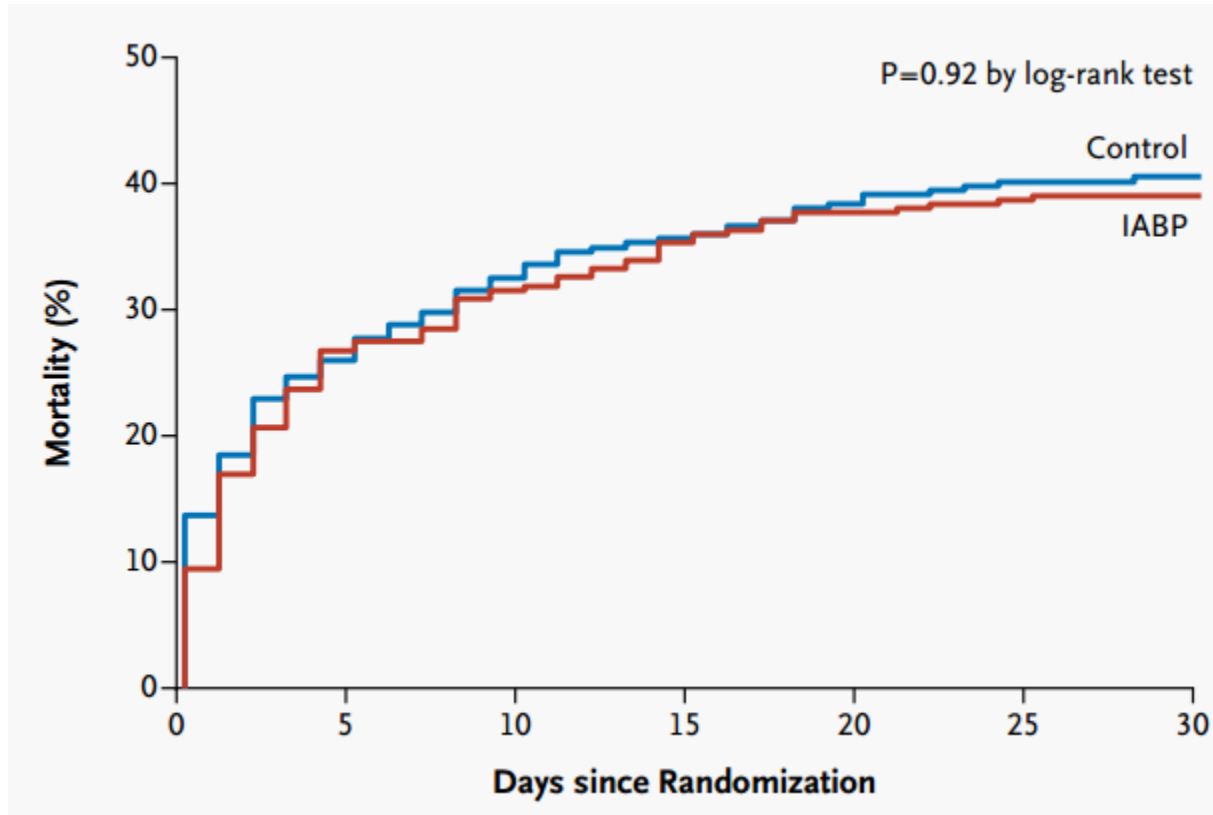
Organ Allocation

Country	Status	%	Days	VAD/ECMO (%)	HTx per million
UK	Urgent	60	14	19 (16/3)	2.1
	Non-urgent	40	293		
France	High urgency 1	39	9	27 (13/14)	6.1
	High urgency 2	8	102		
Australia	Urgent	8	15	40(40/0)	3.3
	Non-urgent	92	120		
USA	1A	64	78	40(39/1)	7.6
	1B	31	224		
SMC 2003 - 2014	응급도 0	26	9	ECMO: 30-50%	2.4 (Korea, 2014)
	응급도 1	53	41		

What we can do.



IABP



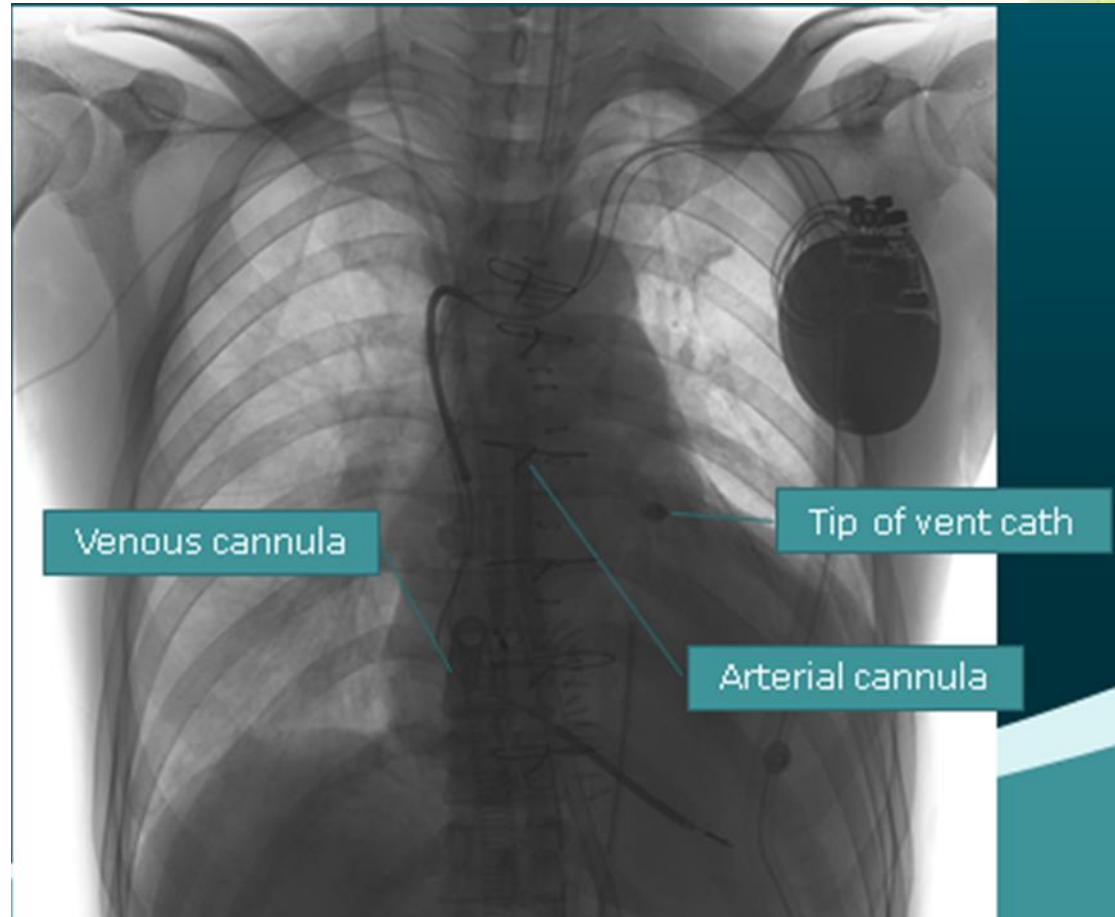
NEJM 367;14 october 4, 2012

ECMO

- **Peripheral cannulation**
 - Immobilization
 - ICU weakness
 - Infection
- **Left heart distension & pulmonary edema**
 - Very severe LV dysfunction
 - Harlequin syndrome
- **Large artificial surface area**
 - Inflammatory reaction
 - Coagulopathy

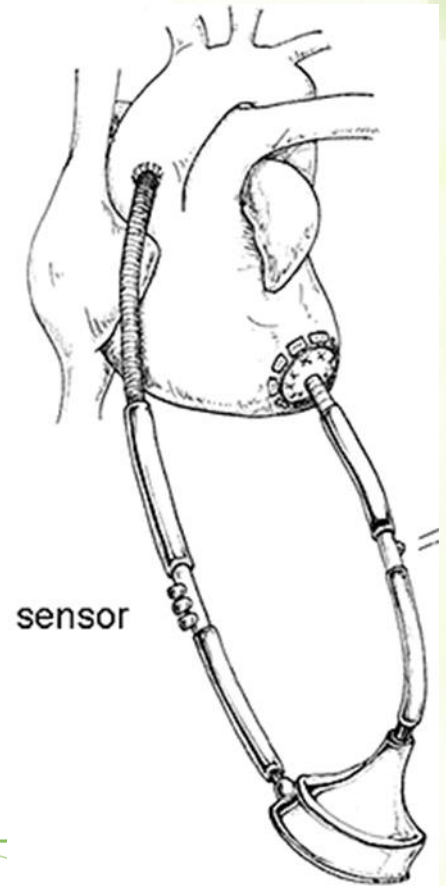
Central Cannulation

- Good mobility
- Less risk of cannula related infection
- Low pressure drop
- Simultaneous LV venting



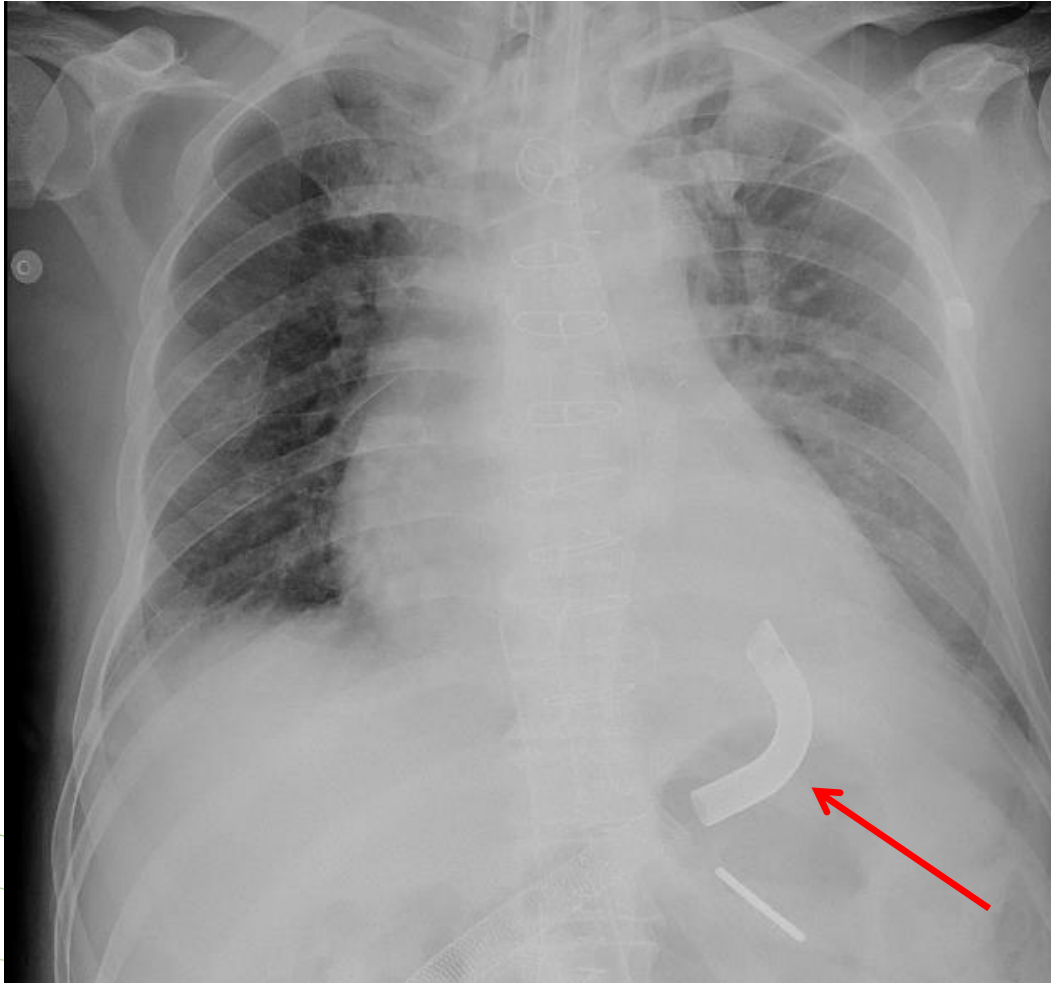
Extracorporeal Apico-Aortic LVAD

- Exactly same configuration with implantable LVAD
 - Drainage from LV apex
 - Return to ascending aorta
- Central cannulation
- No oxygenator
 - Less coagulopathy
- Less pressure drop
- Only LV support

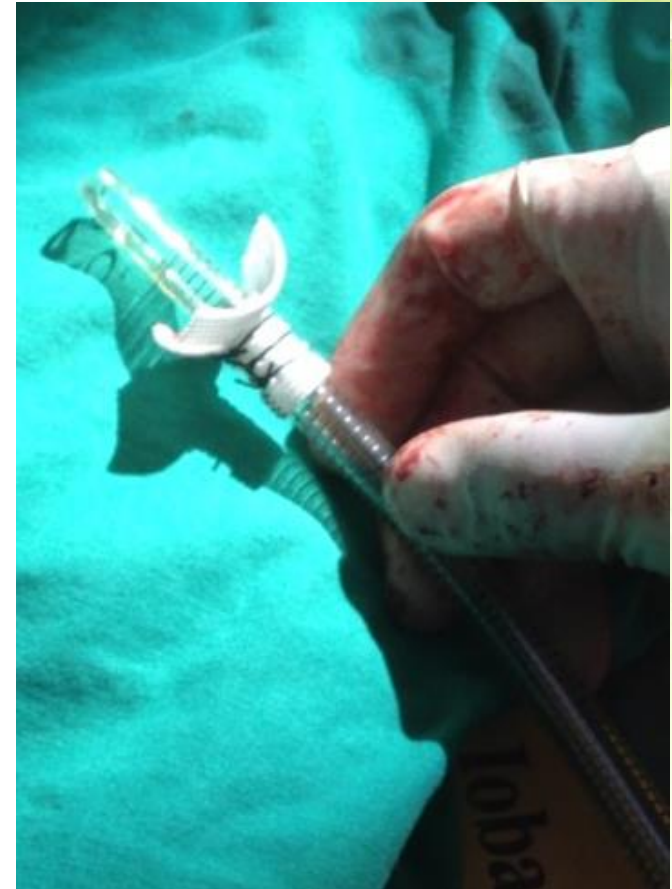


Artificial Organs 1032–
1037, November 2009

Sternotomy



Minimally invasive

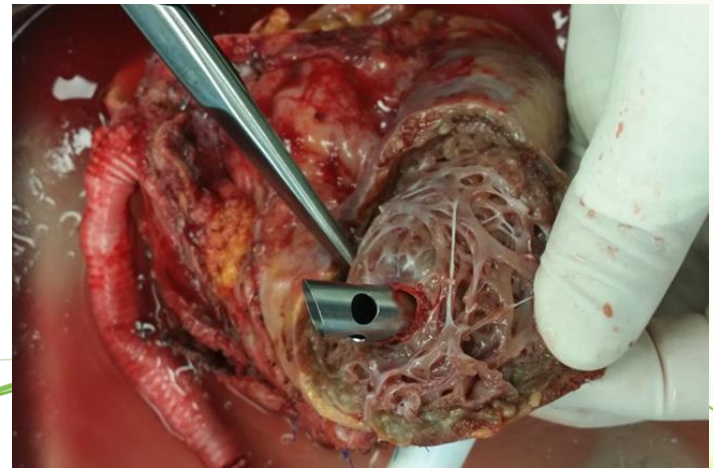
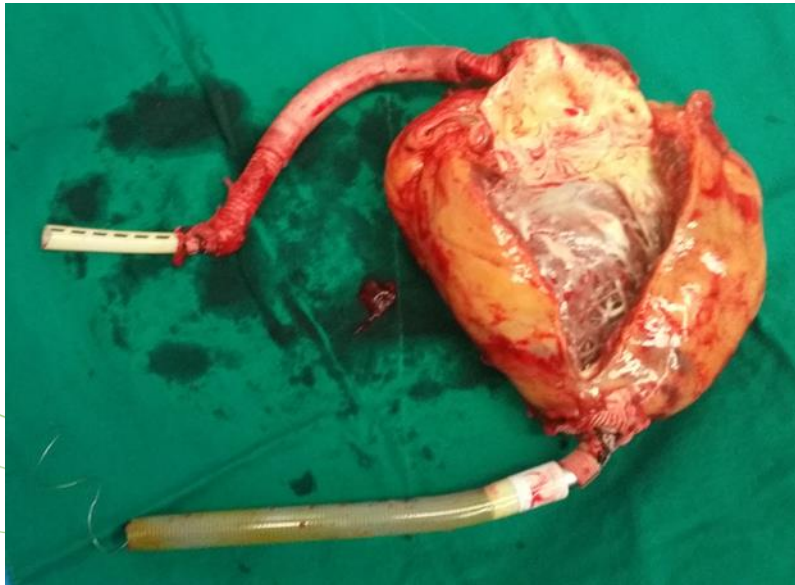


Rehab on LVAD

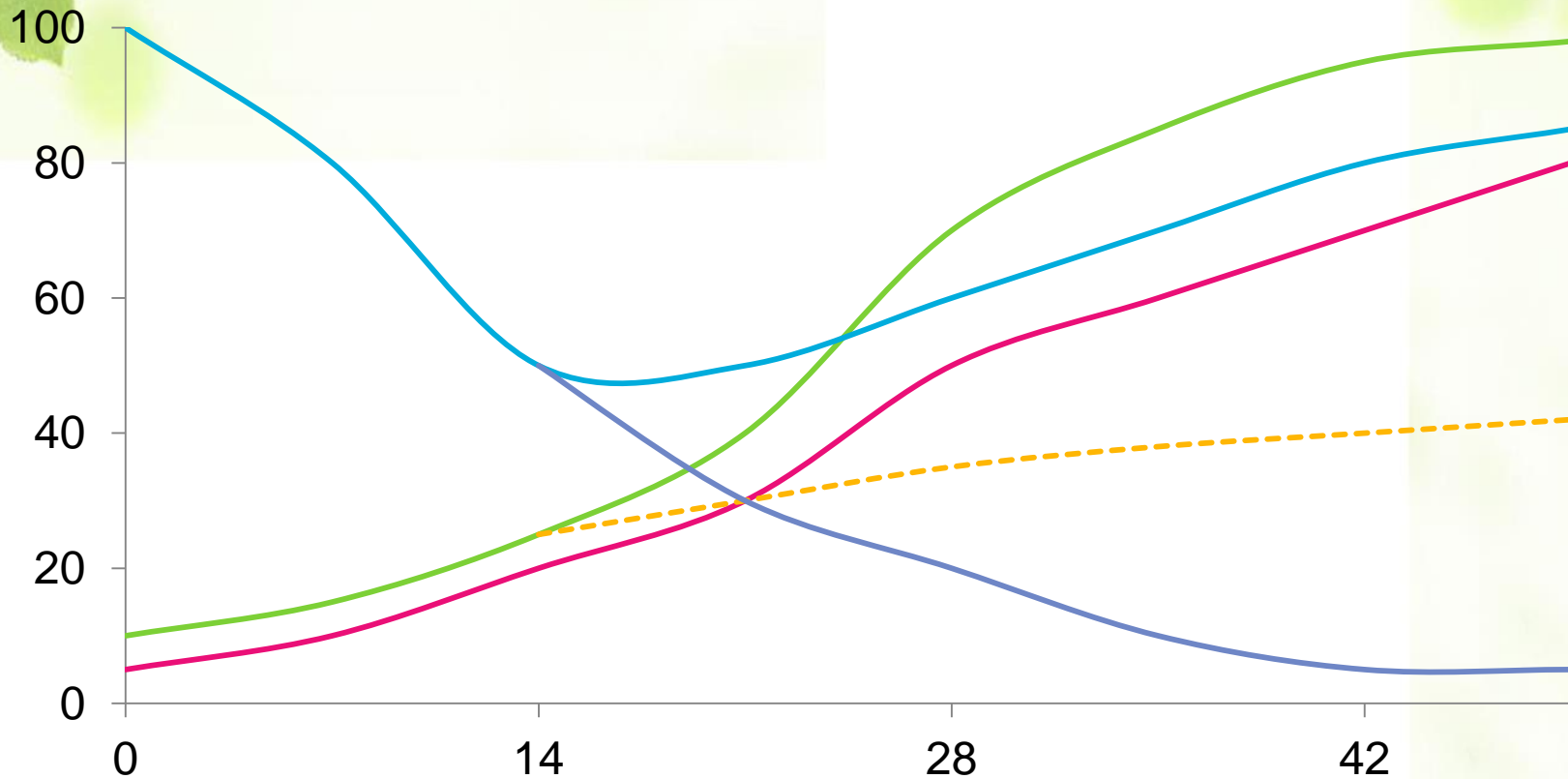


Rehab on LVAD





Schema of Outcome of MCS as BTT in Korean hospitals



- Death on ECMO
- Organ allocation (status 1)
- - - Death on EVAD
- Physical strength in EVAD switch strategy
- Physical strength in p-ECMO only strategy

Summary

- Transplant Eligible
 - p-ECMO with/without LV venting
 - EVAD or central ECMO
 - Direct: High risk for p-ECMO
 - Switch: any ECMO complication
 - Must keep infection & other organ failure free
- Transplant ineligible
 - p-ECMO for bridge to durable support or weaning
 - Implantable LVAD is still not an affordable option.

Thank you.



OH
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