MHH

Cardiac, Thoracic, Transplantation
and Vascular Surgery

How to do it: Aortic Arch Replacement with Frozen Elephant Trunk Graft

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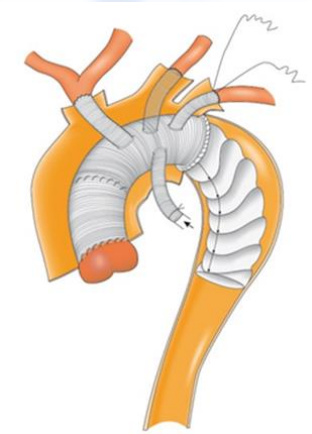

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Hilton Cartagena
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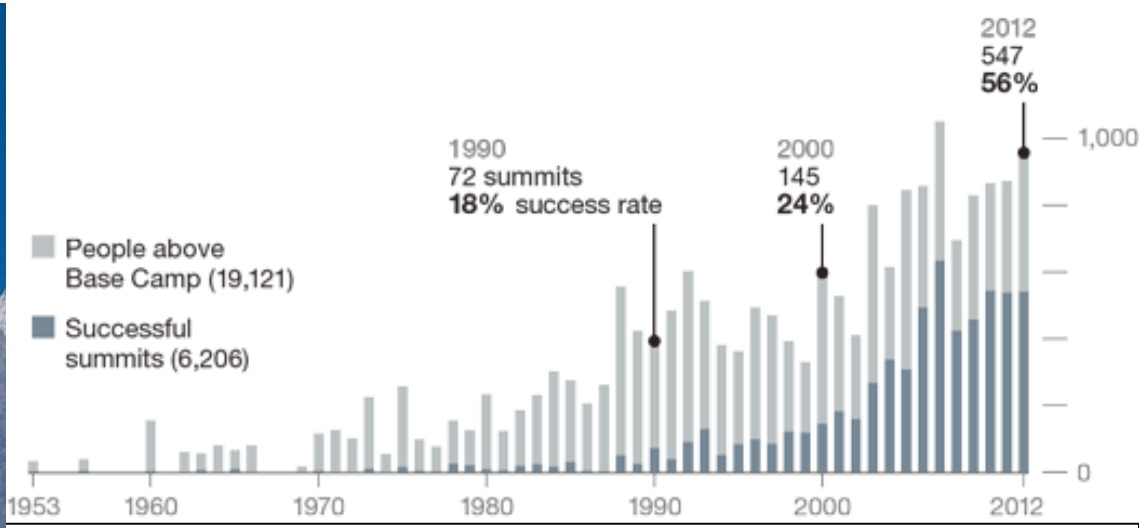
Disclosures

Consultant

Terumo Aortic

Consultant work not relevant for this presentation.

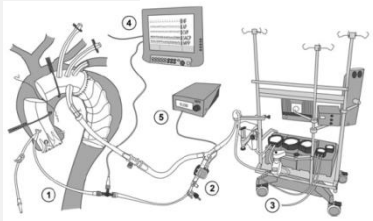

No climbers above
Base Camp
2012
10 deaths
1% death rate
10%
0
1953
1960
1970
1980
1990
2000
2012


2012
547
56%
1990
72 summits
18% success rate
2000
145
24%
1,000
0
People above
Base Camp (19,121)
Successful
summits (6,206)
1953
1960
1970
1980
1990
2000
2012

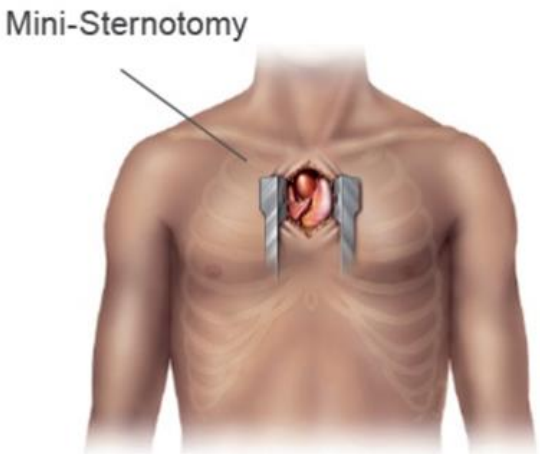
Aortic Arch replacement with FET

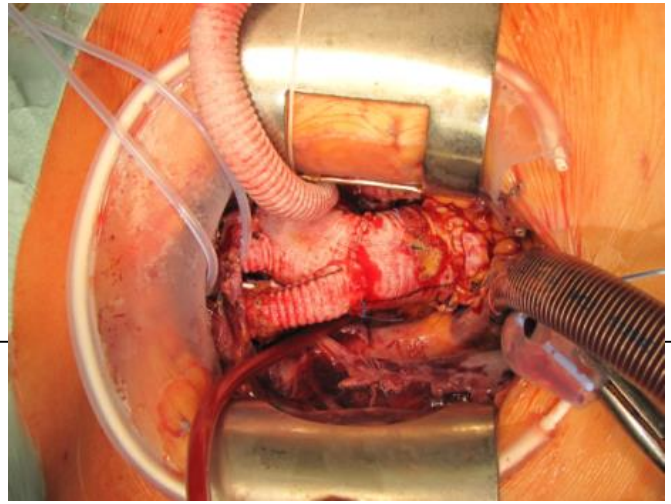
Modern Total Arch Replacement Technique:

1. Reduction of Invasiveness/ Trauma:
   -Reduction/ absence of Circulatory arrest: arch debranching first
   -Cardiac/ organ Ischaemia: “**Beating heart**” arch surgery



2. Reduction of surgical trauma through minimally access (Upper hemi-sternotomy access)





Minimize Cerebral Trauma:

Minimize Cerebral ischaemia time: “Supra-aortic branches first“.

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Branch-first aortic arch replacement with no circulatory arrest or deep hypothermia.
Matalanis G, Koirala RS, Shi WY, Hayward PA, McCall PR.
J Thorac Cardiovasc Surg. 2011 Oct;142(4):809-15

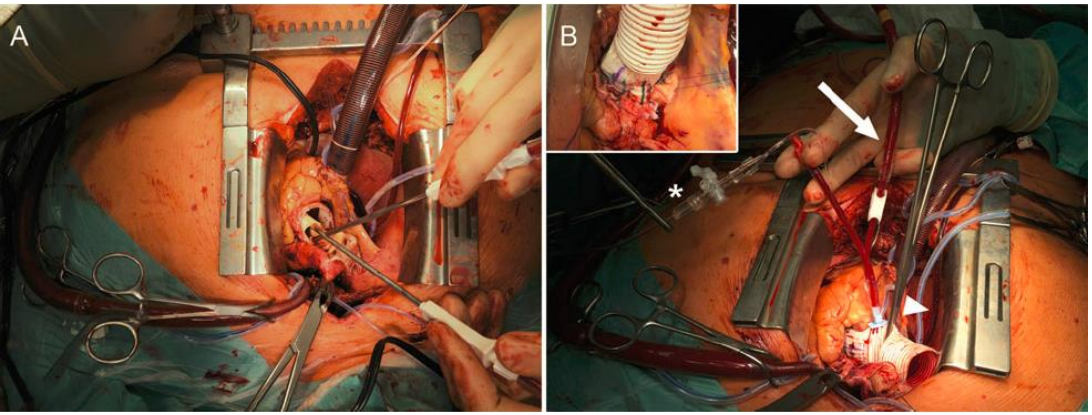
Do not leave the heart arrested. Non-cardioplegic continuous myocardial perfusion during complex aortic arch repair improves cardiac outcome†

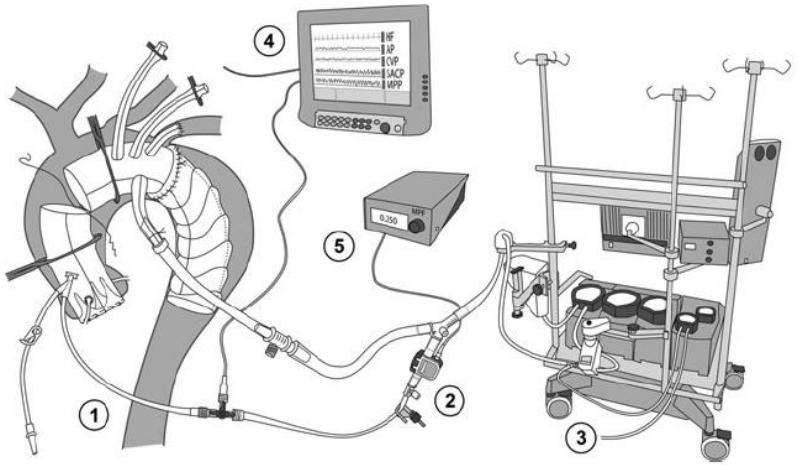
ORIGINAL ARTICLE

European Journal of Cardio-Thoracic Surgery (2015) 1–9

Andreas Martens*, Nurbol Koigeldiyev, Erik Beckmann, Felix Fleissner, Tim Kaufeld, Heike Krueger, Detlev Stanelle, Jakob Puntigam, Axel Haverich and Malakh Shrestha

10/2010 – 10/2014, 144 patients





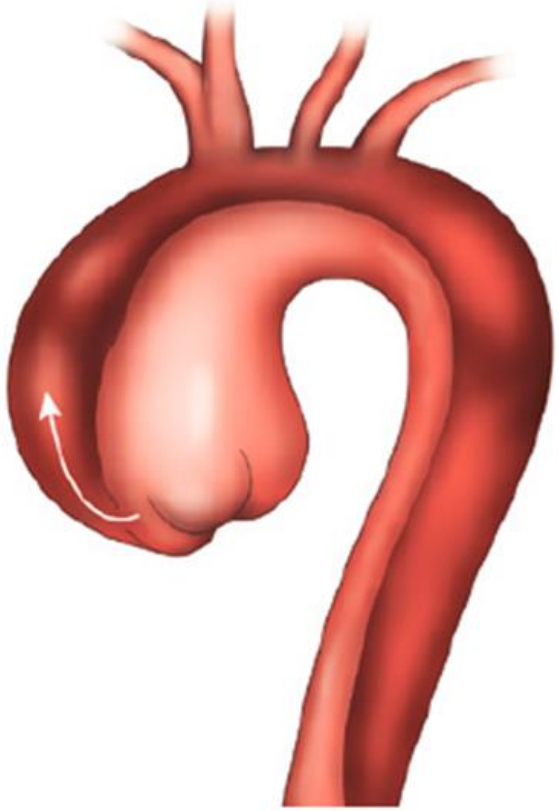
	CMP	CA	*P*-value
Total operation time (min)	363 ± 61	395 ± 87	0.0016
Cardiopulmonary bypass time (min)	242 ± 50	264 ± 68	0.046
Cardiac ischaemia time (min)	49 ± 32	149 ± 56	<0.0001
Visceral ischaemia time (min)	55 ± 20	54 ± 31	0.847
Minimal oesophageal temperature (°C)	25 ± 1	25 ± 2	0.491
Selective antegrade cerebral perfusion time (min)	101 ± 29	101 ± 43	0.967

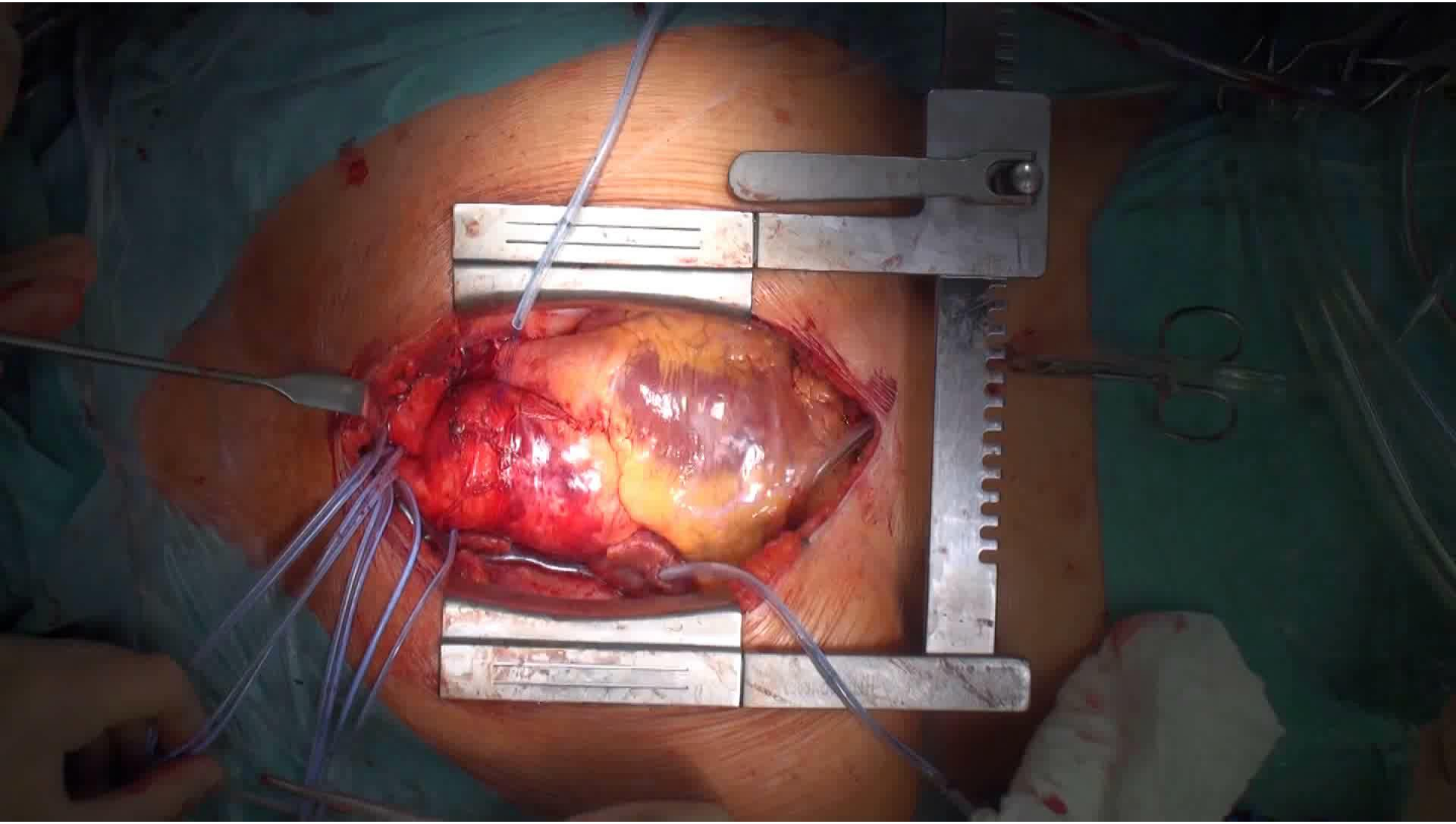
	CMP	CA	*P*-value
30-day mortality (*n*, %)	2 (6%)	23 (21%)	0.040
New onset PND (*n*, %)	3 (8%)	11 (10%)	1.000
SCI (*n*, %)	2 (6%)	5 (5%)	0.670
Recurrent nerve palsy (*n*, %)	5 (14%)	14 (13%)	1.000
Myocardial infarction (MI) (*n*, %)	0 (0%)	3 (3%)	0.573
Low cardiac output (*n*, %)	1 (3%)	24 (22%)	0.0052

Put Stay sutures to pull up the descending aorta

Indications: FET

- Aneurysms of the aortic arch and the descending aorta
- Dissections (Chronic, Acute)



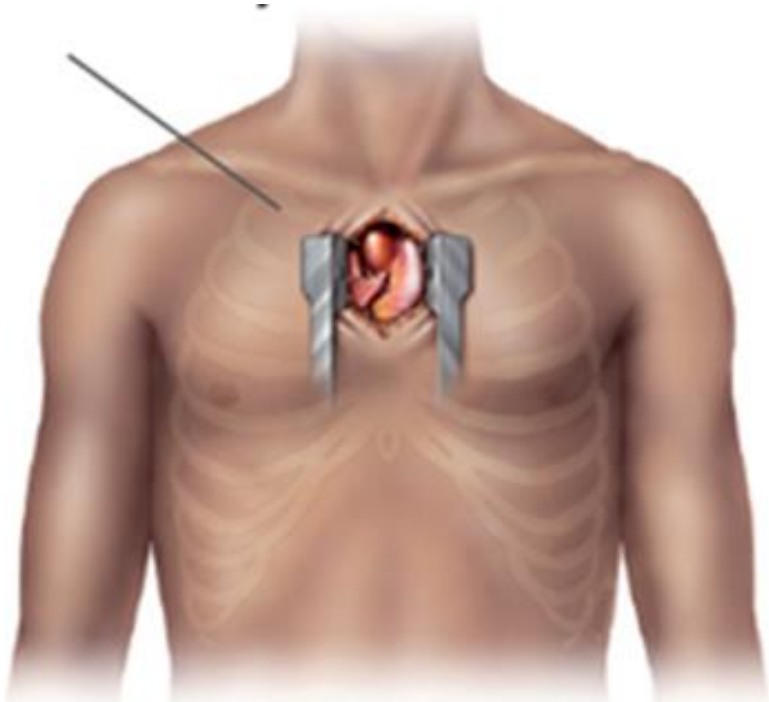


Hemi-sternotomy for Total Aortic Arch Replacement

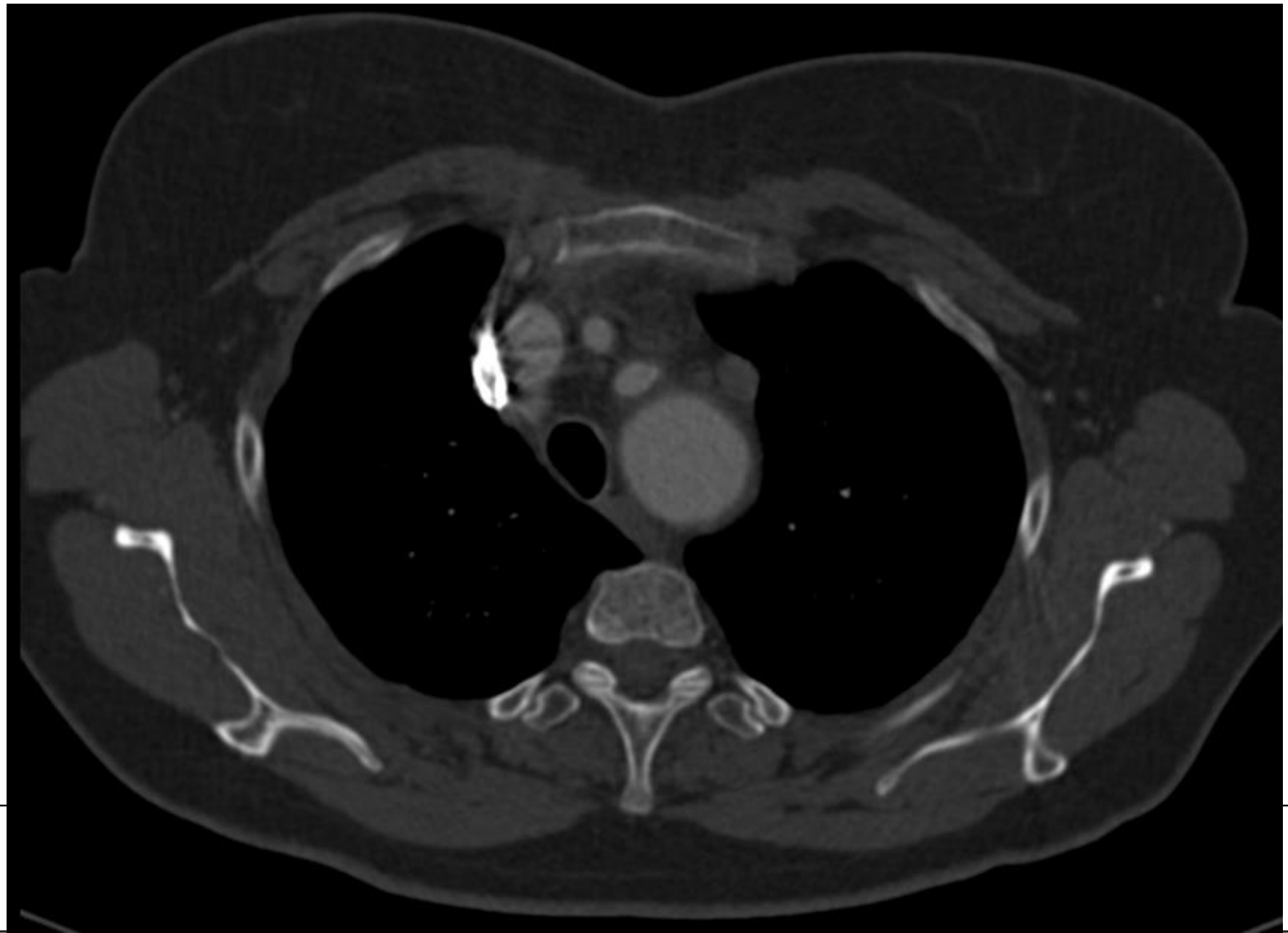
Upper Hemisternotomy (up to the 3rd intercostal space).

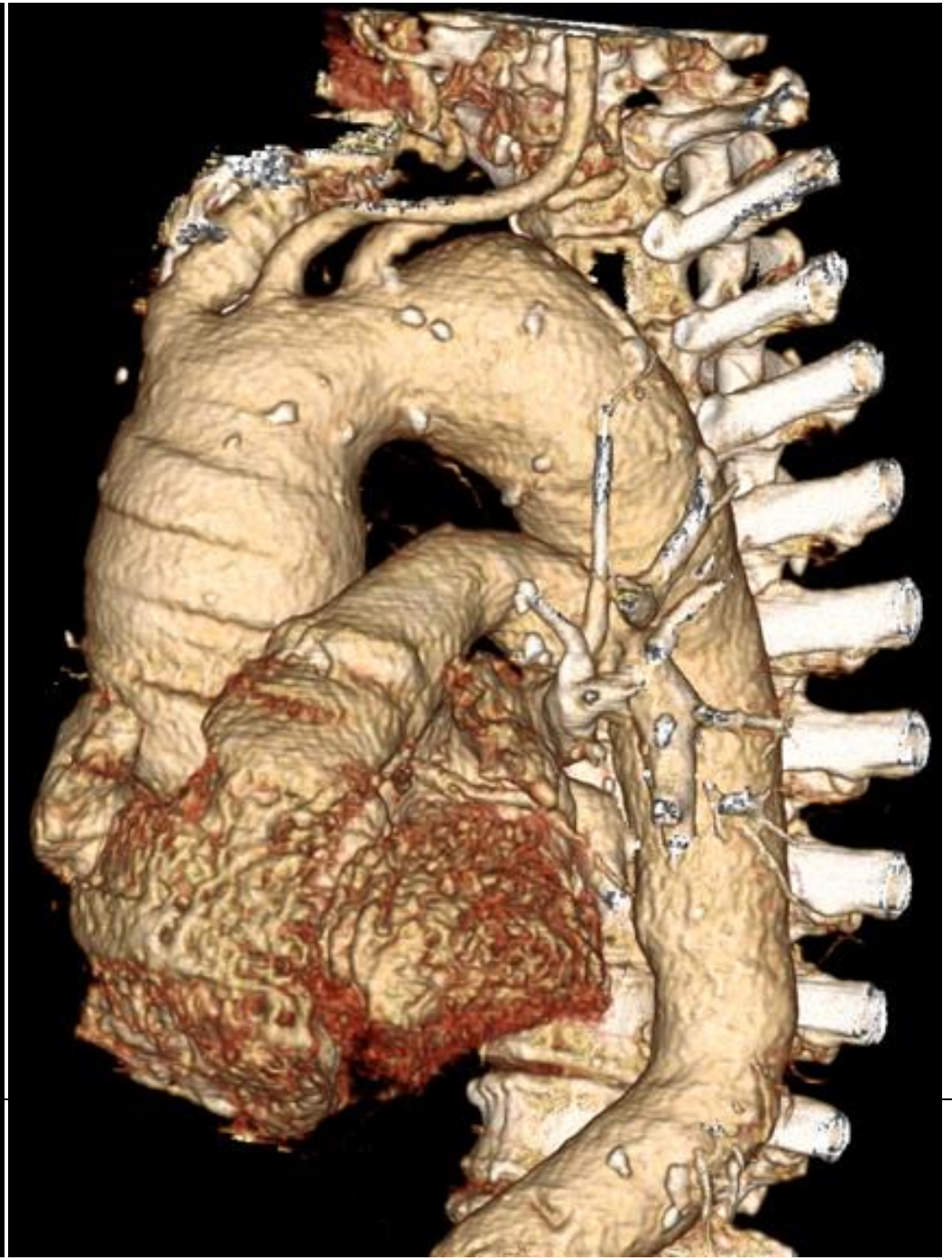
The ascending aorta and either the right femoral vein or the right atrium is cannulated and the patient is put on ECC.

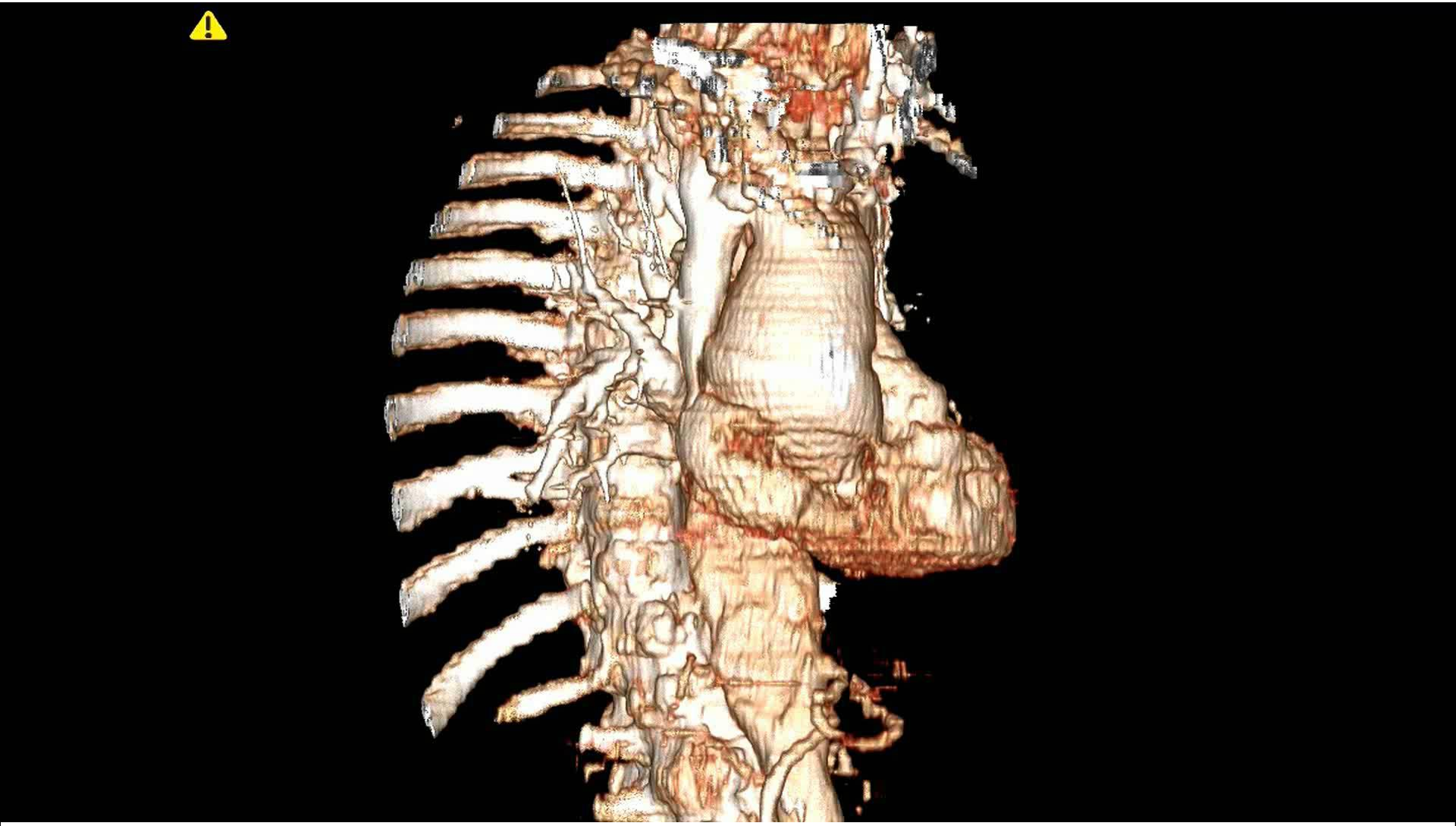
Operative field



Practical Tip: Study the Pre-op CT Scan carefully!!!



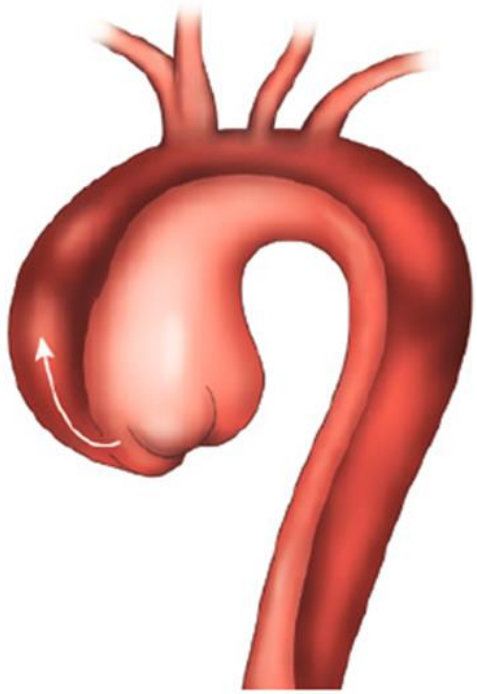




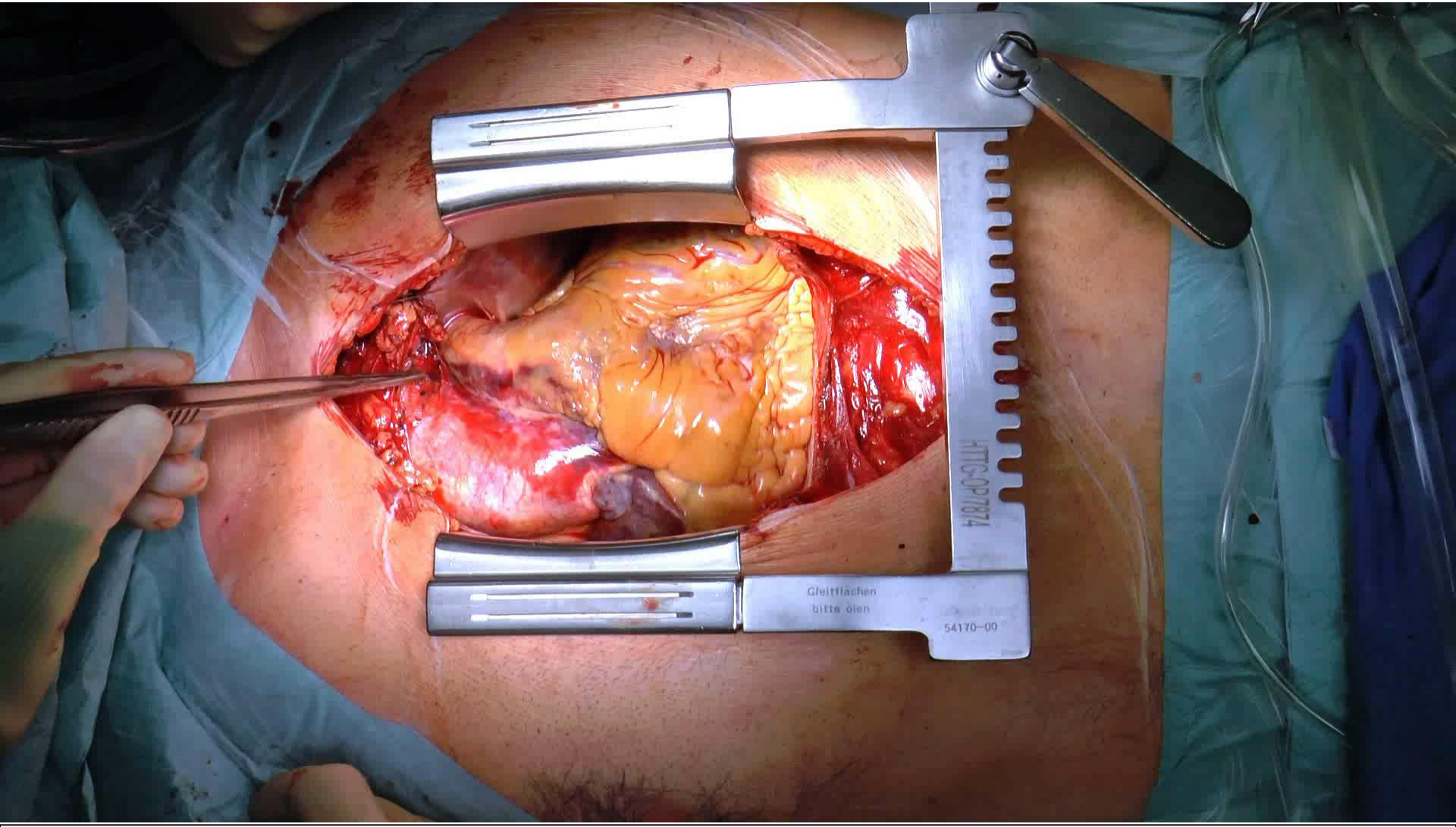
Indications for FET in Acute aortic dissection (DeBakey type I)

Tear/ rupture of the distal aortic arch/ proximal descending aorta

Pt.s with lower body malperfusion: expands the true lumen in the proximal part of the descending aorta and also to close some of the multiple re-entries at this level.



In Young & clinically stable Patients (Life expectancy > 15 Years):
To prevent future events (mainly aneurysm formation in the chronically dissected descending aorta).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