



**Cardiac, Thoracic, Transplantation
and Vascular Surgery**

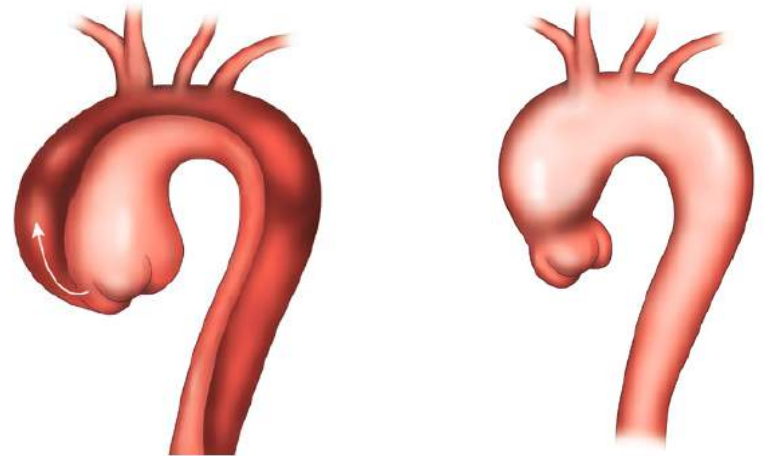
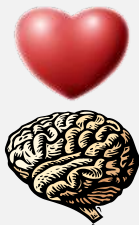
Tips and tricks for open surgical arch repair.

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Surgery
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Peri-operative management of Aortic arch surgery !

Ischaemia/ Malperfusion:

- Myocardial
- Cerebral: stroke
- Visceral



Intra-operative Bleeding

Myocardial failure (?Long X-clamp time)

Multi-organ failure

Aortic Surgery!!

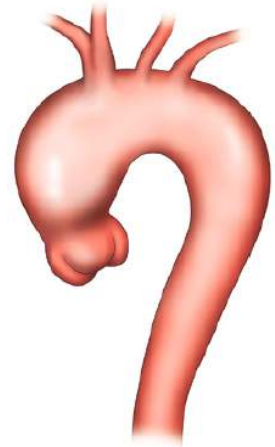
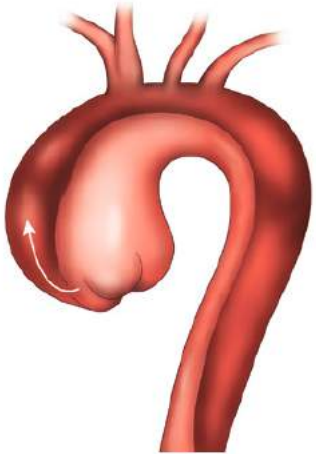


Tips & tricks

Standardize as much as possible!



Tips & tricks in Aortic arch surgery !

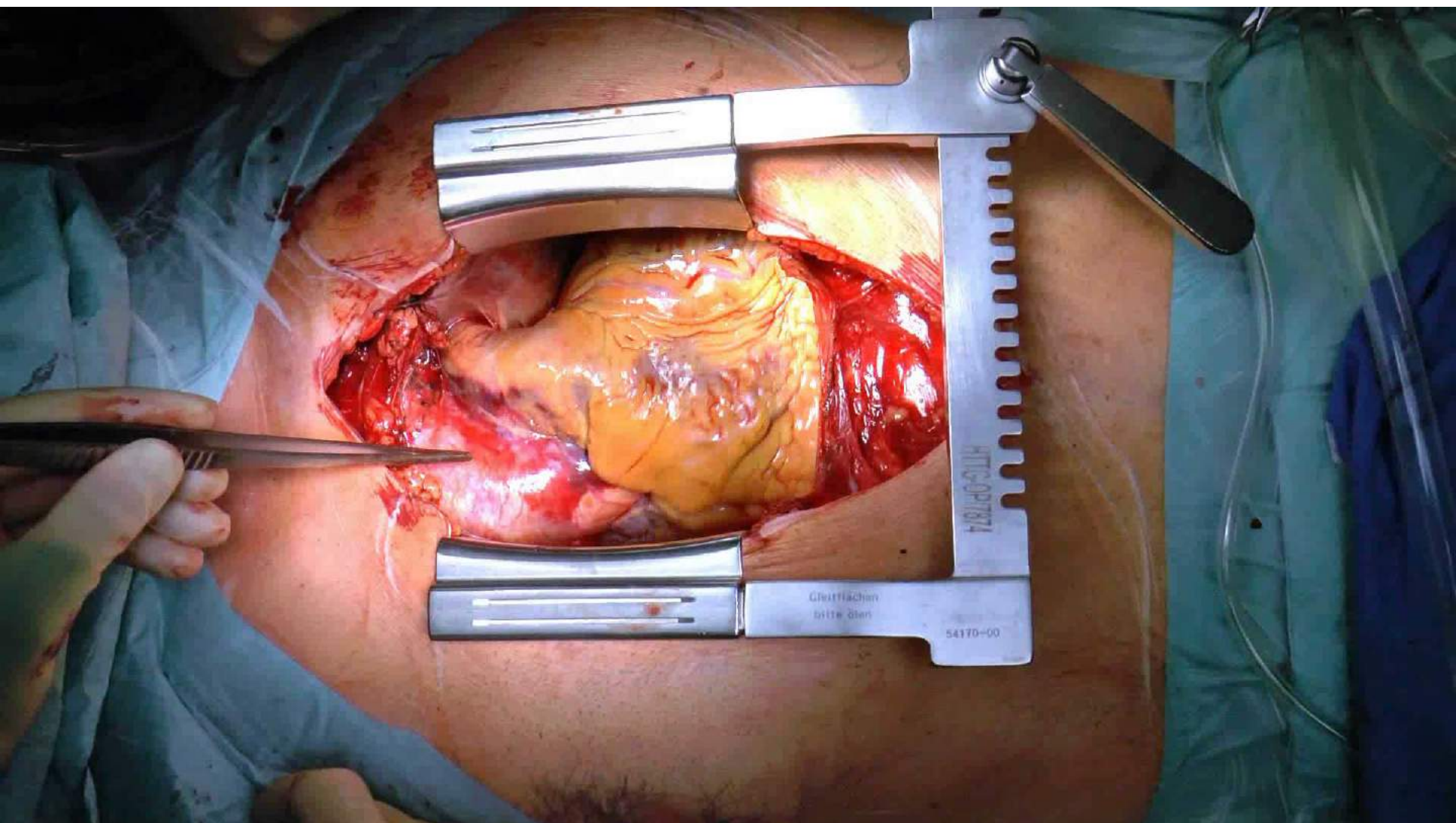


Tips & tricks: arterial cannulation

Stable Patients:

Direct arterial cannulation of the true lumen in the ascending/aortic arch

Seldinger Technique , under TEE control (Aortic Dissection)



Reduction of Myokardial Ischaemia



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ORIGINAL ARTICLE

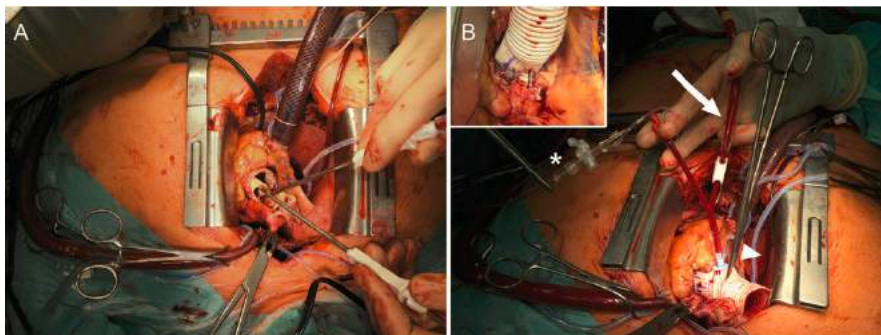
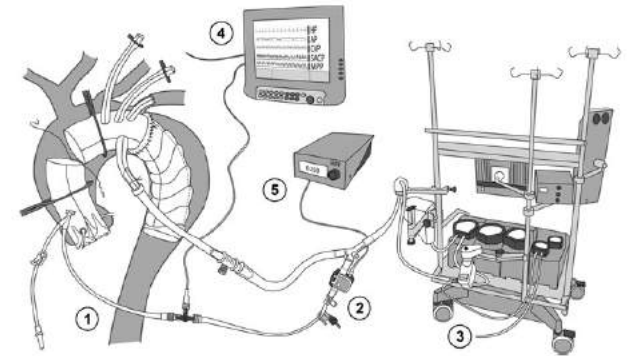
Do not leave the heart arrested. Non-cardioplegic continuous myocardial perfusion during complex aortic arch repair improves cardiac outcome[†]

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

Clinic for Cardio-Thoracic, Transplantation and Vascular Surgery, Hannover Medical School, Hannover, Germany

10/2010 – 10/2014, 144 patients

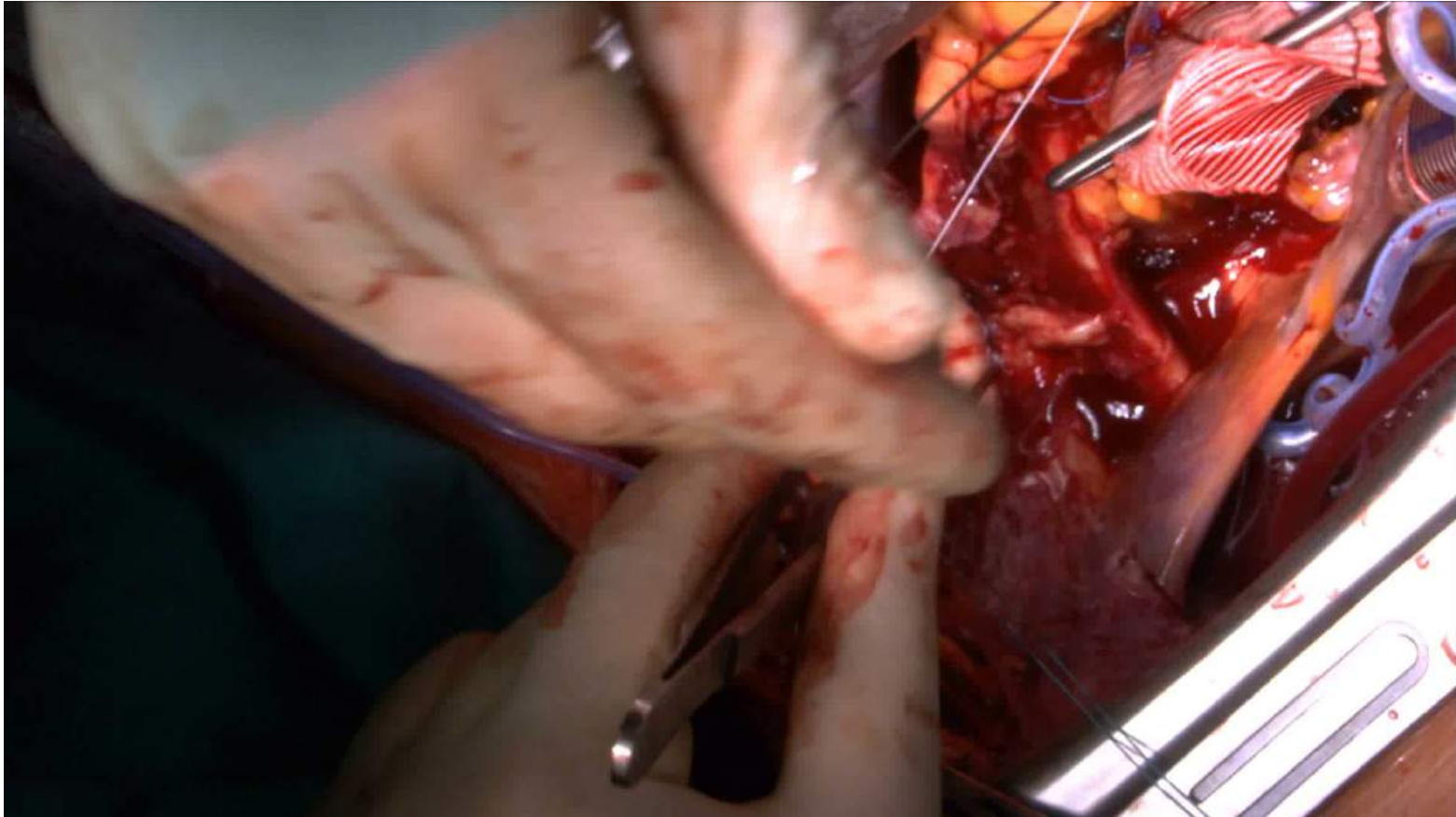
AORTIC SURGERY



	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

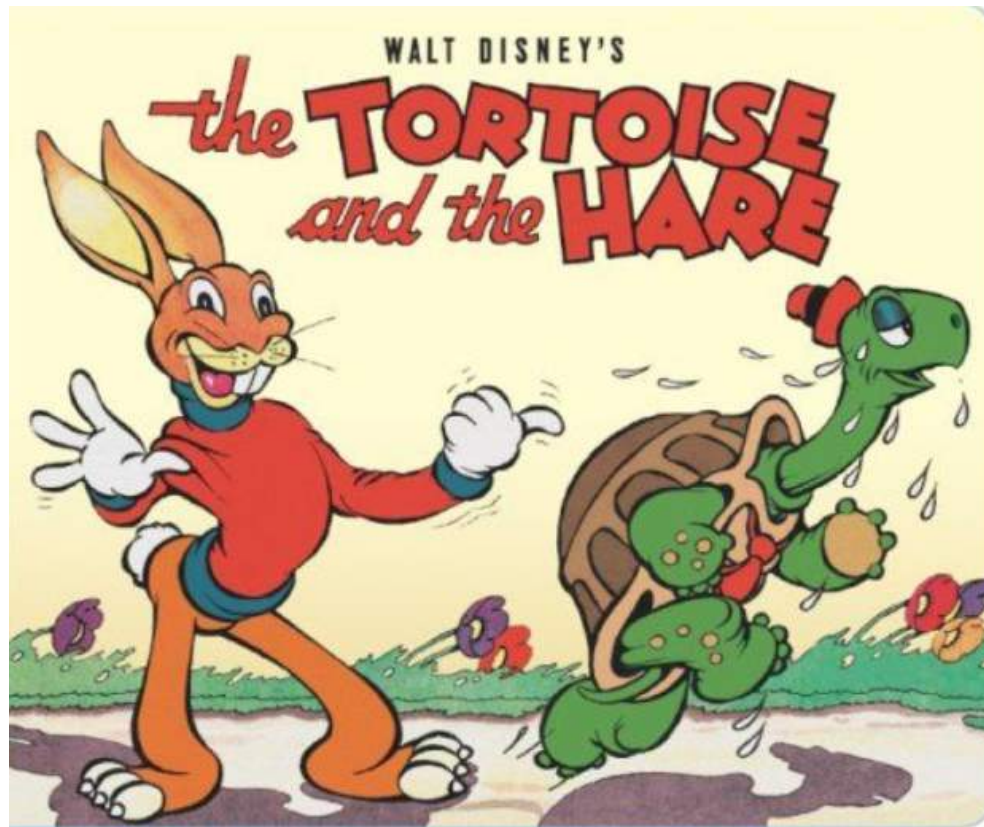
Martens, A., et al., Eur J Cardiothorac Surg, 2015. Epub ahead of print.

Put stay sutures in descending aorta to pull it up!



Take time to do the anatomoses.

Do NOT leave Hemostasis for later, If necessary use Teflon!



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Tips & tricks

Special Situations:

Arterial cannulation: Direct cannulation of the true lumen in the ascending/ aortic arch

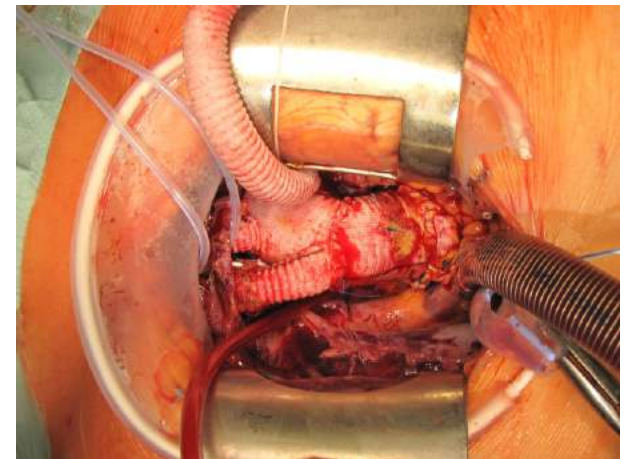
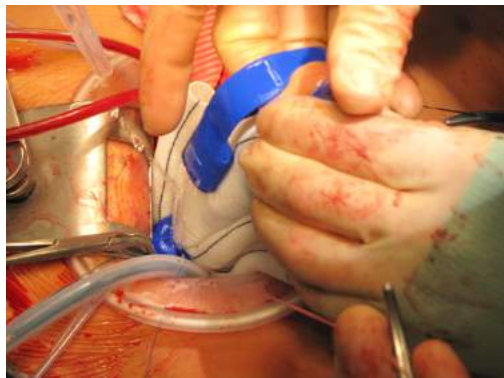
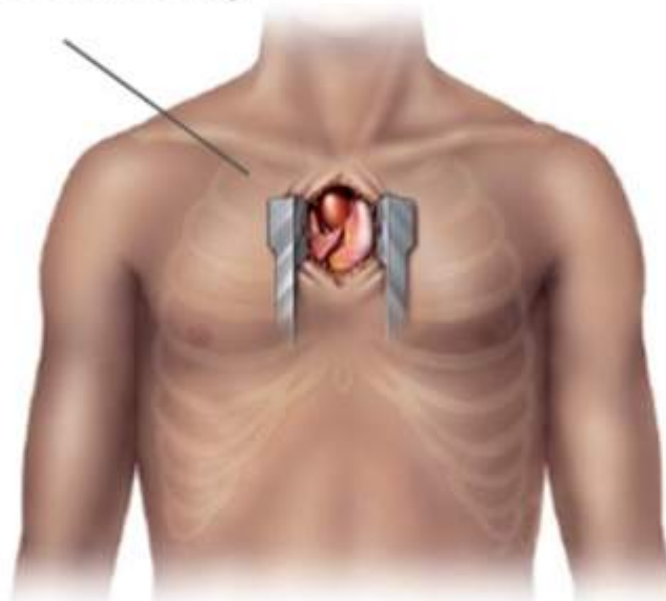
Femoral artery

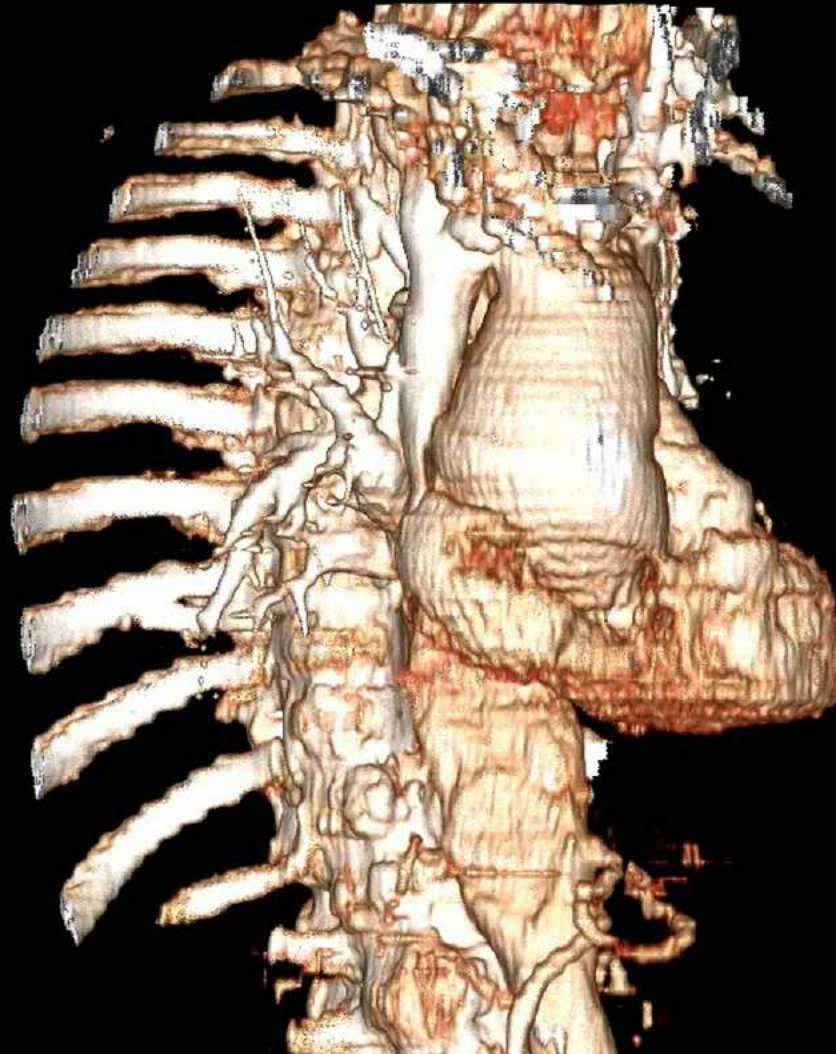
Carotid artery

Complex aneurysms



Mini-Sternotomy





Tips & tricks: Cerebral Protection

Reduction of stroke



When the going gets tough, the tough go colder!

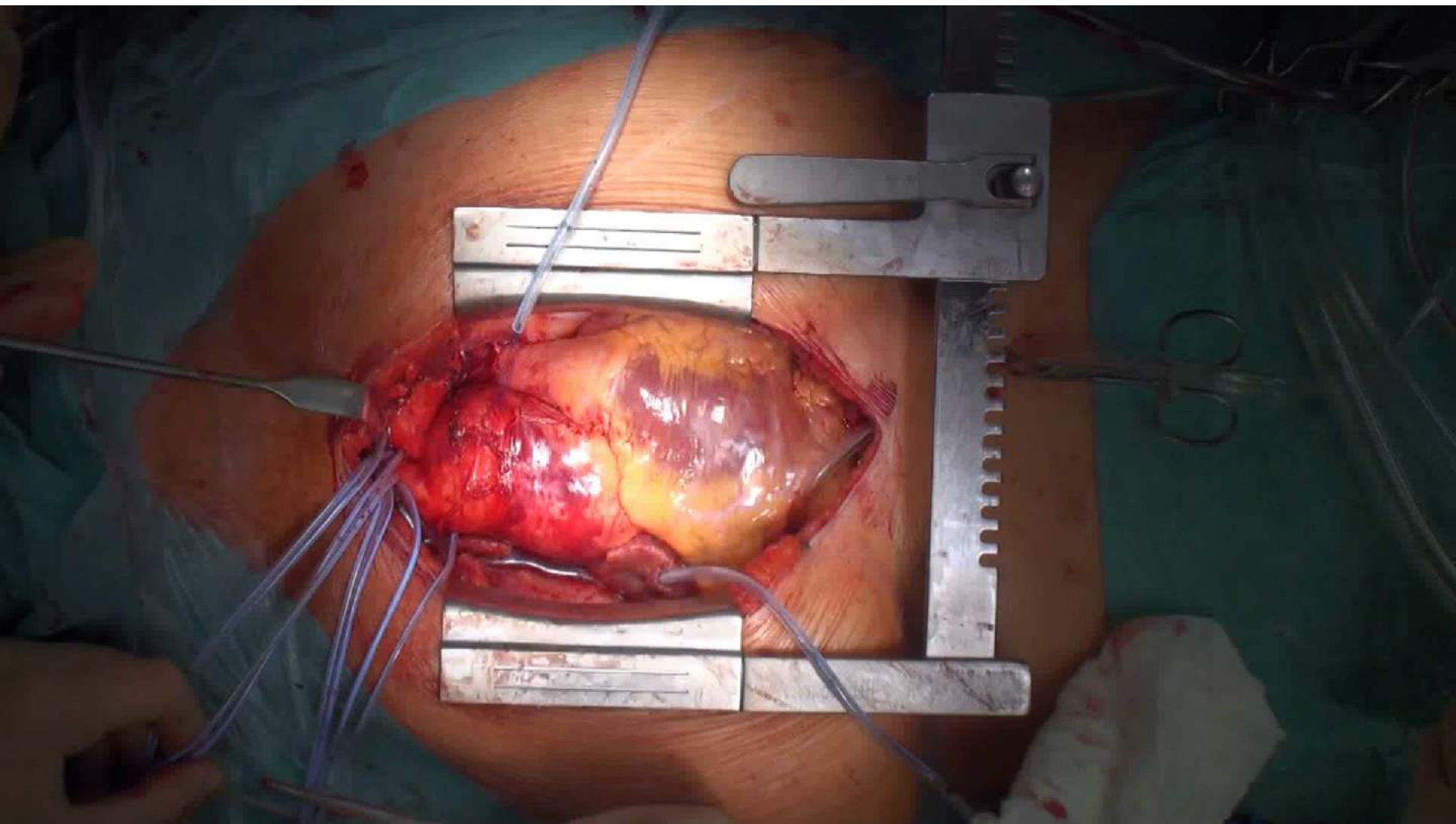
Giraldi LN, J Thorac Cardiovasc Surg. 2017 May;153(5):1019-1020.




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

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.



Welcome to
The Future



The wheel is
come full circle.
William Shakespeare



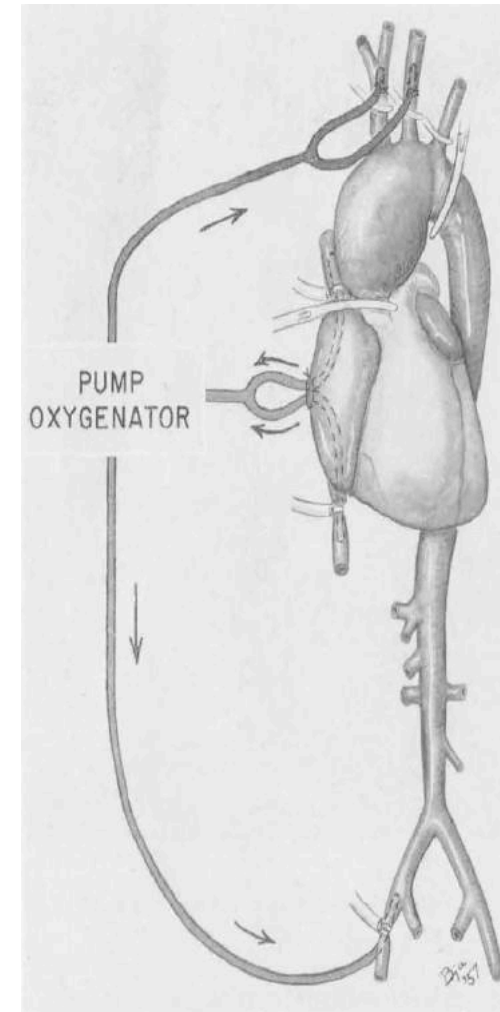
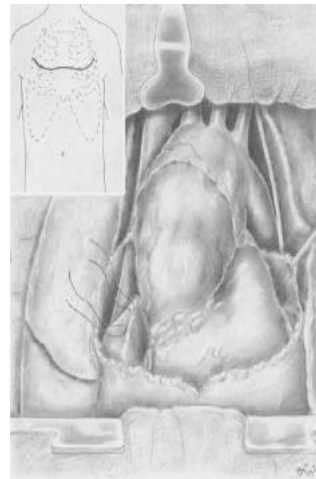
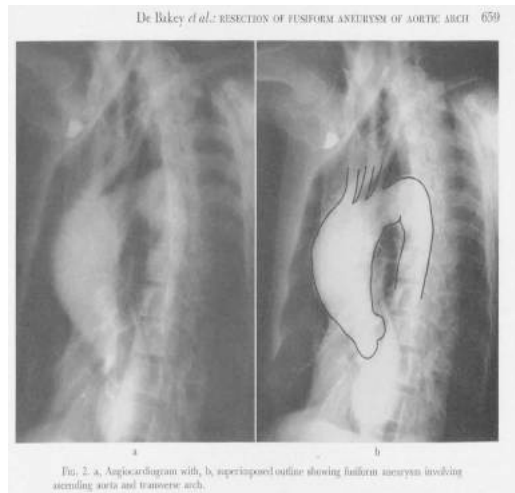
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SUCCESSFUL RESECTION OF FUSIFORM ANEURYSM OF AORTIC ARCH WITH REPLACEMENT BY HOMOGRAFT

MICHAEL E. DE BAKEY, M.D., F.A.C.S., E. STANLEY CRAWFORD, M.D.,
DENTON A. COOLEY, M.D., F.A.C.S., and GEORGE C. MORRIS, JR., M.D.,

SURGERY DECEMBER 1957
Gynecology & Obstetrics VOLUME 100
NUMBER 4





Borst HG, Schaudig A, Rudolph W.

Arteriovenous fistula of the aortic arch: during deep hypothermia and circulatory arrest.

J Thorac Cardiovasc Surg. 1964; 48:443-7



Griepp RB, Stinson EB, Hollingsworth JF, Buehler D

J Thorac Cardiovasc Surg. 1975 Dec;70(6):1051-63.

Prosthetic replacement of the aortic arch.



Bachet J, Guilmet D, Goudot B, Dreyfus GD, Delentdecker P, Brodaty D, Dubois C

Antegrade cerebral perfusion with cold blood: a 13-year experience.

Ann Thorac Surg. 1999 Jun;67(6):1874-8; discussion 1891-4.



Cardio-Thoracic,
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Peri-operative Concept

- Core temperature $<24^{\circ}$ C
- Minimize Ischaemia:
- Cerebral ischaemia:
 - antegrade cerebral perfusion
 - “Supra-Aortic branches first” .
- Myocardial ischaemia time: ‘Beating Heart’ arch Surgery
- Lower Body ischaemia:
 - ‘lower Body Perfusion’
- CSF Drainage
- CO2 Sufflation



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Thank you!

