



IX Congresso **Novas Fronteiras** **em Medicina** **Cardiovascular**

22 a 24 de Fevereiro 2019

The Village Praia
D'El Rey - Óbidos

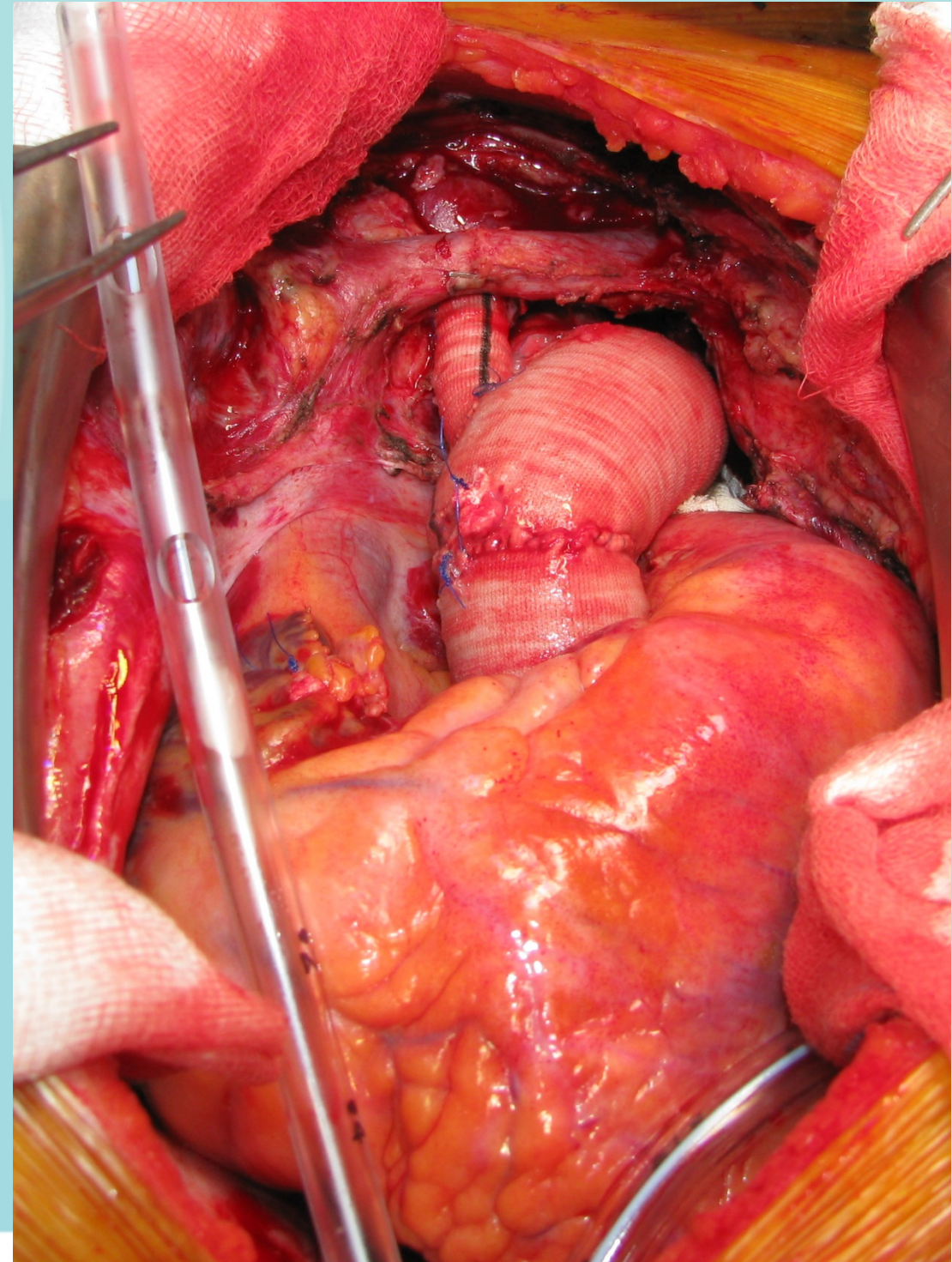
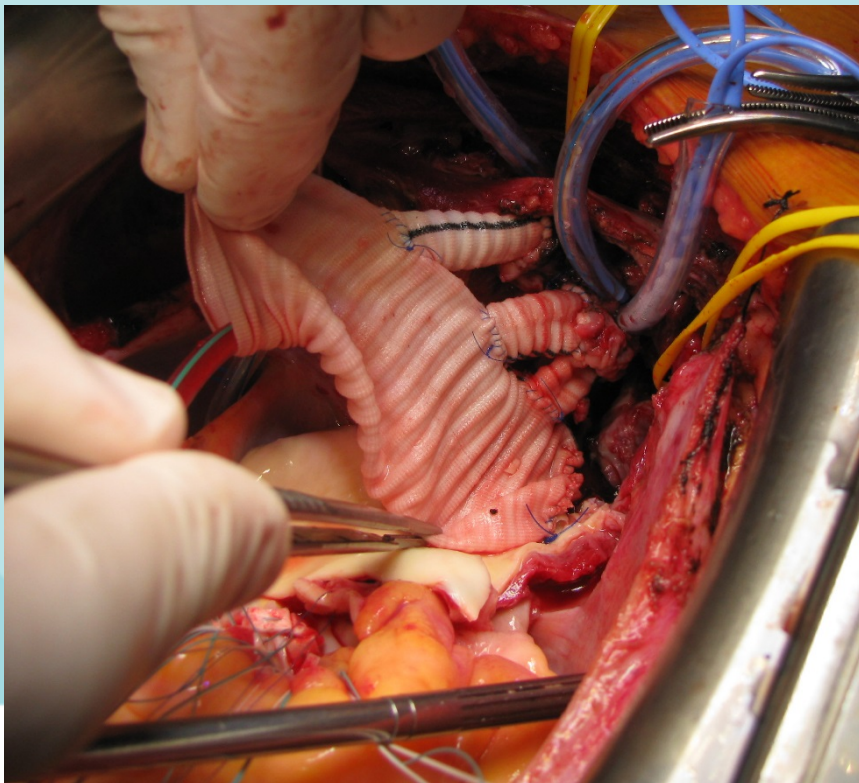
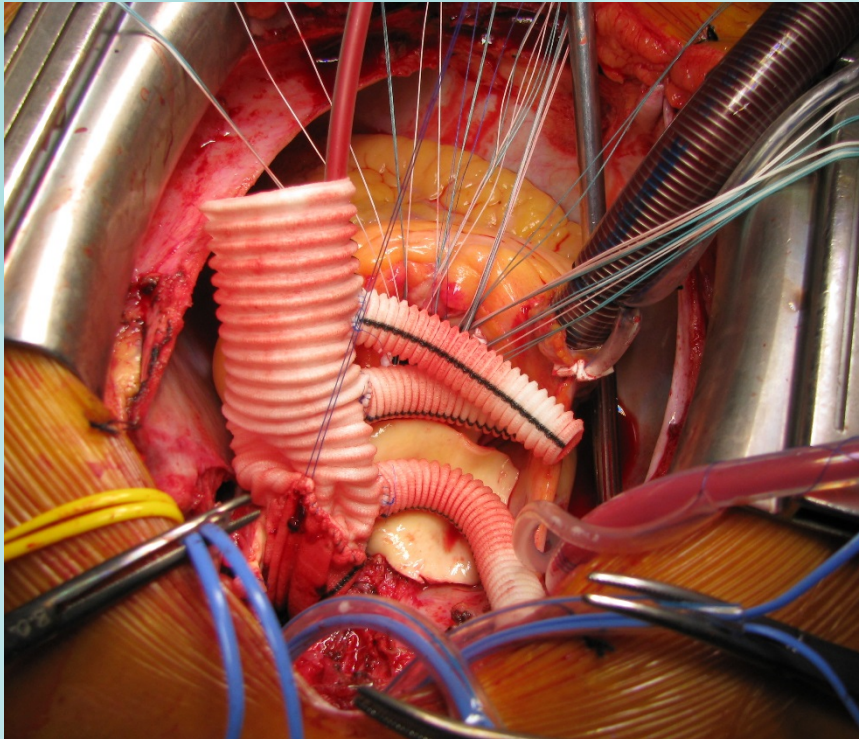
TRATAMENTO CONTEMPORÂNEO DO ARCO AÓRTICO

TECHNIQUES, TIPS, TRICKS AND RESULTS

AORTIC ARCH ANEURYSMS

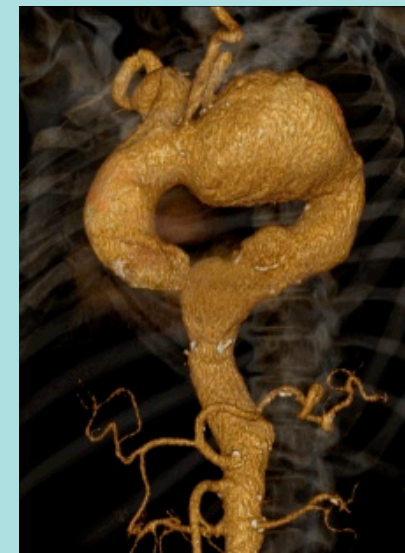


AORTIC ARCH ANEURYSMS / Cardiothoracic Surgery



AORTIC ARCH ANEURYSMS

- **Median Sternotomy.**
Isolated arch repair / Elephant trunk / Frozen elephant trunk
- **Cardiopulmonary Bypass (CPB).**
- Moderate (24 to 26 C° / deep hypothermy(15° C).
- **Circulatory arrest.**
- Antegrade cerebral perfusion.
- Staged open repair.



SURGICAL TECHNIQUE

Right Subclavian Artery cannulation/ BC trunk

Y on arterial line

Direct cannulation carotid arteries after opening arch

Antegrade Cerebral Perfusion

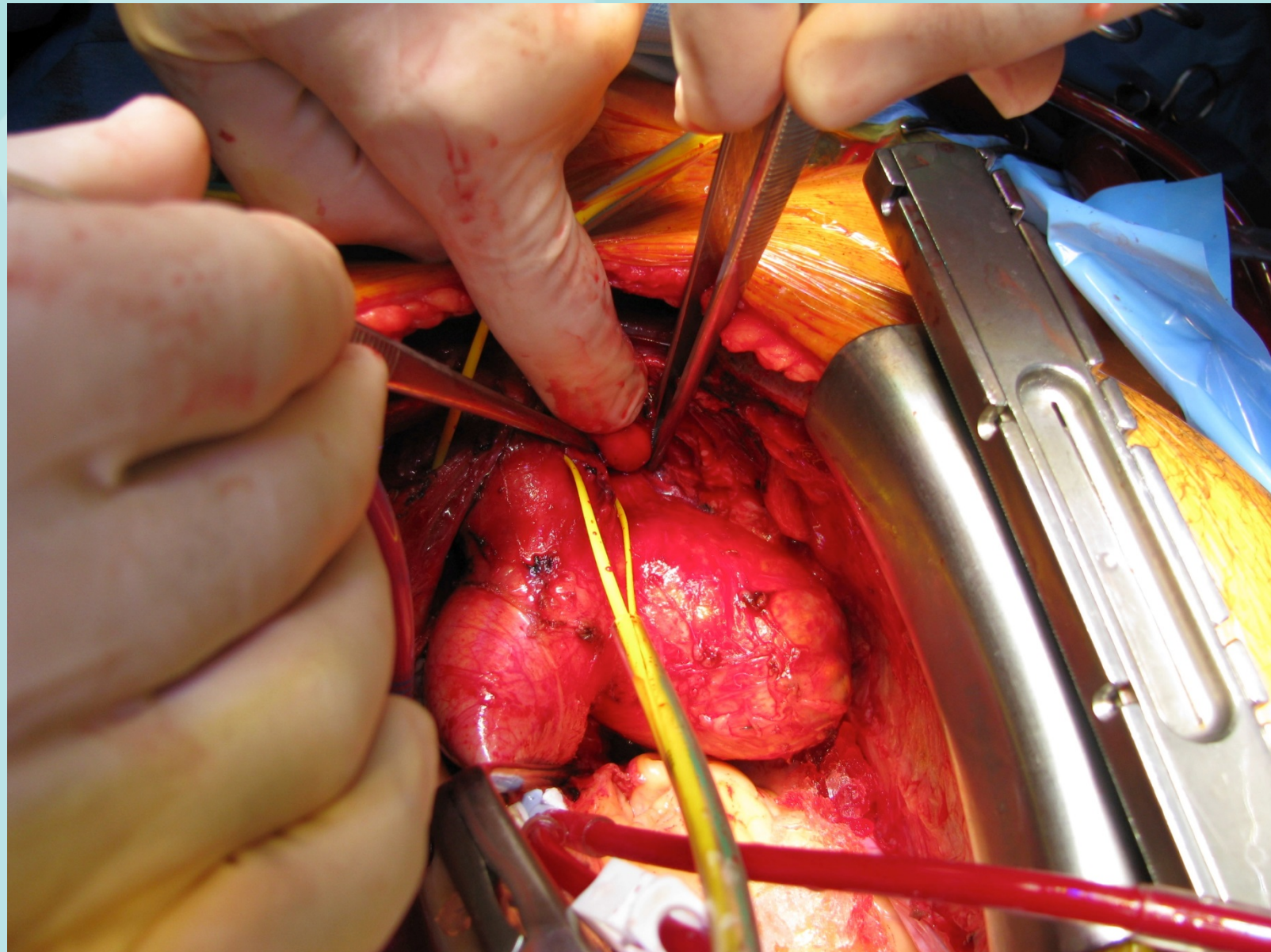
Retrograde cerebral perfusion (pressure 15 mm hg)

Hypothermia 24 C

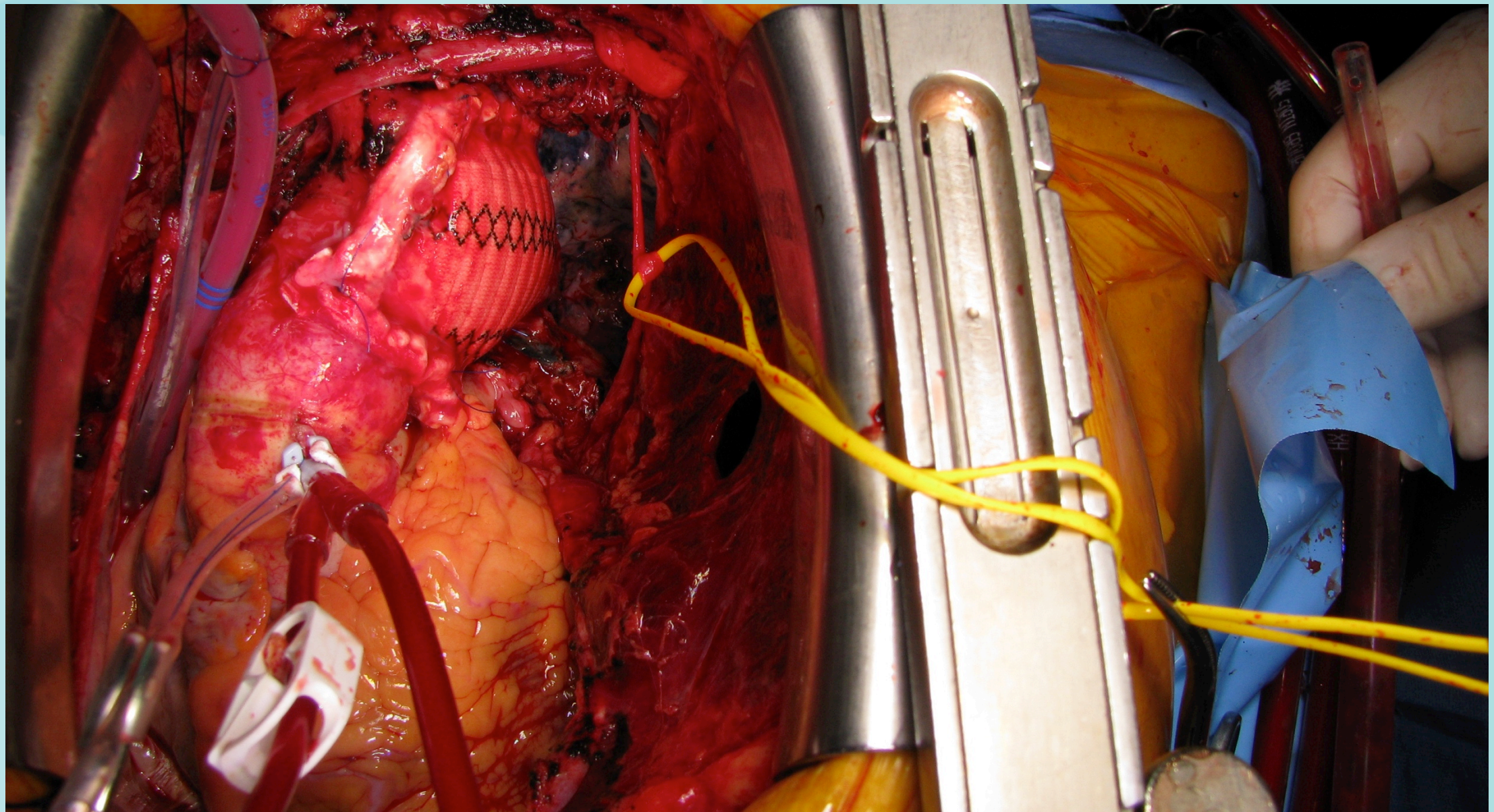
Flow 10 ml/kg/min

Deep hypothermic circulatory arrest

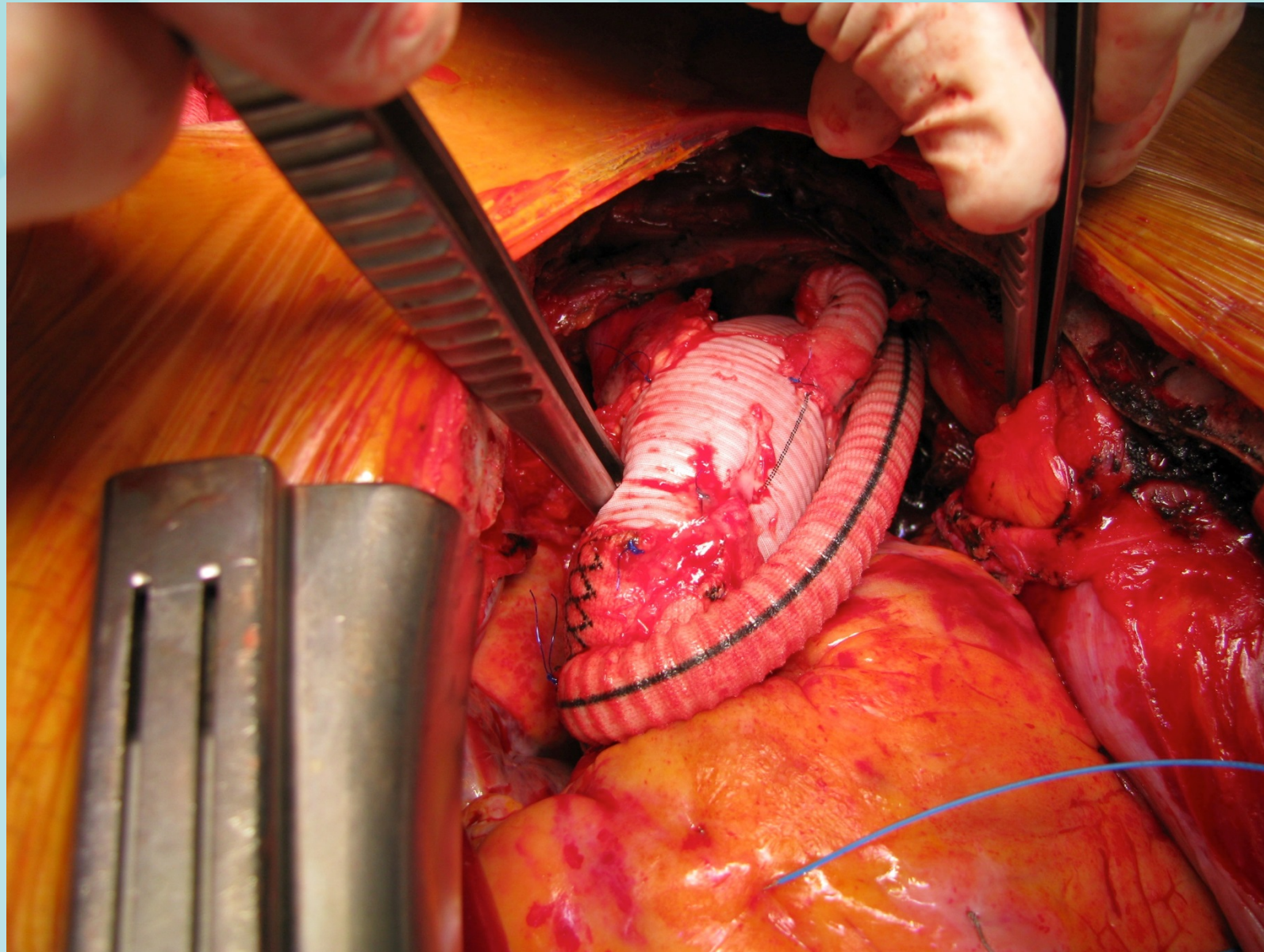
SACULAR ANEURISM



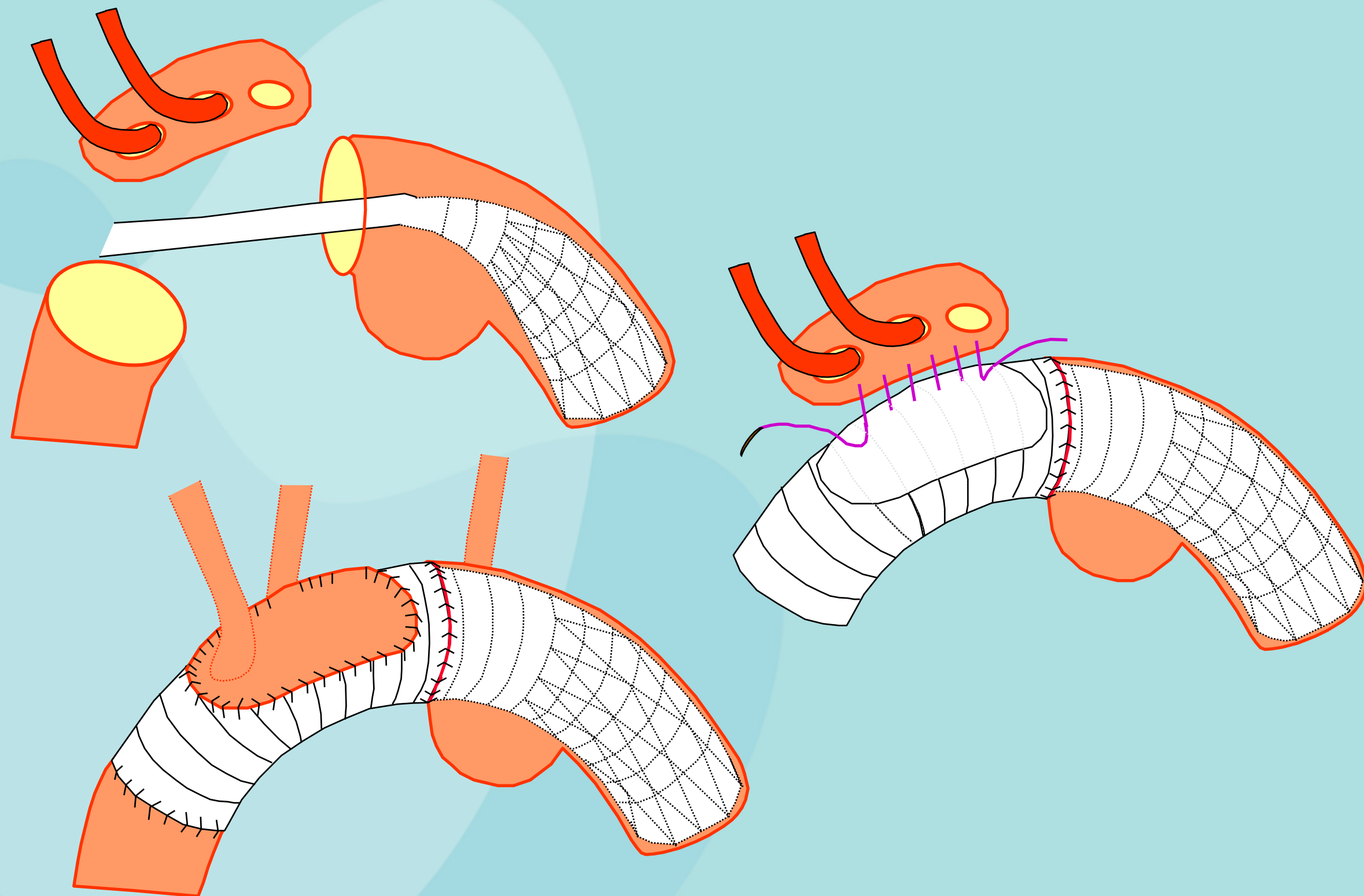
PATCH REPAIR



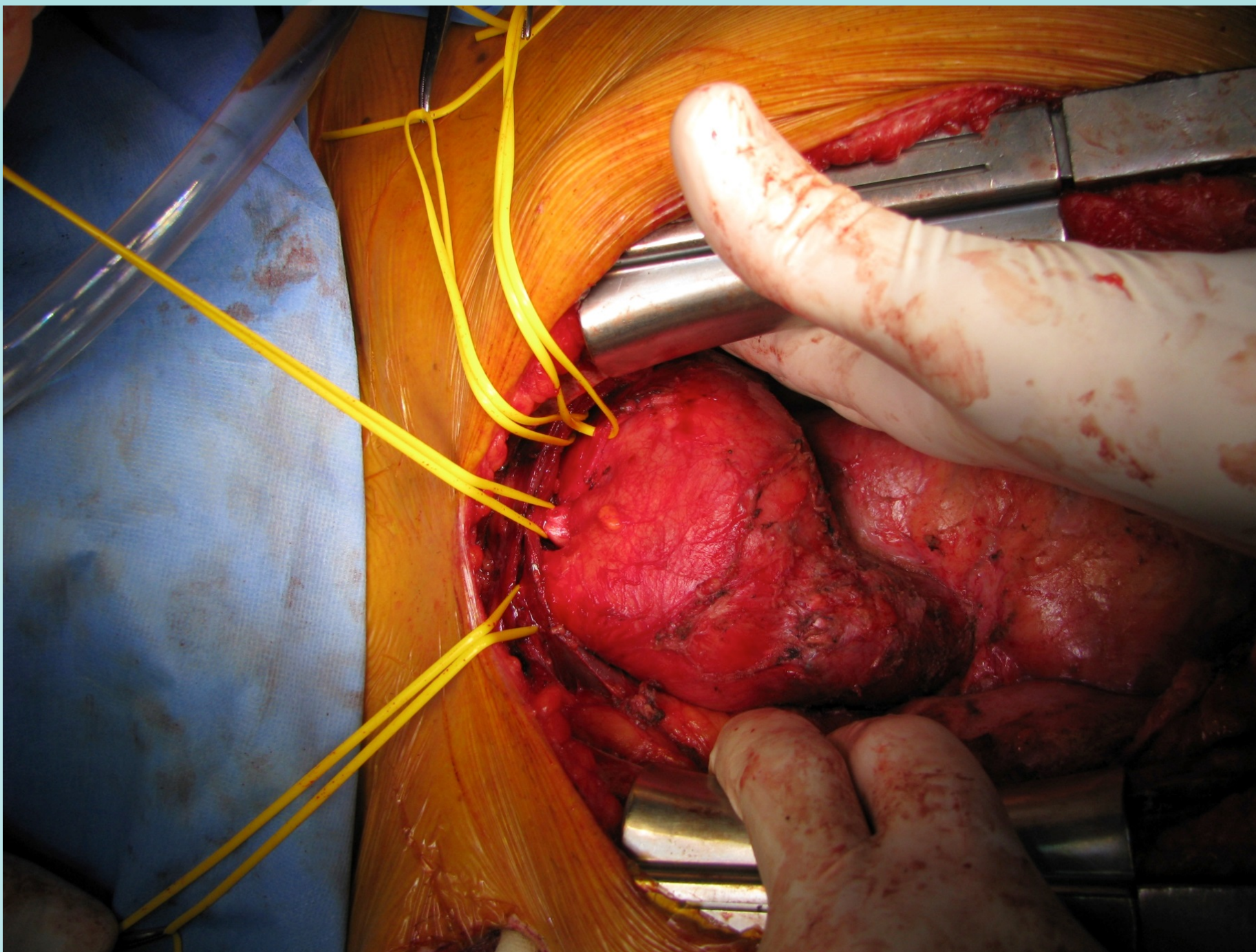
PREPARATION FOR 2ND STAGE REPAIR LANDING ZONE 1

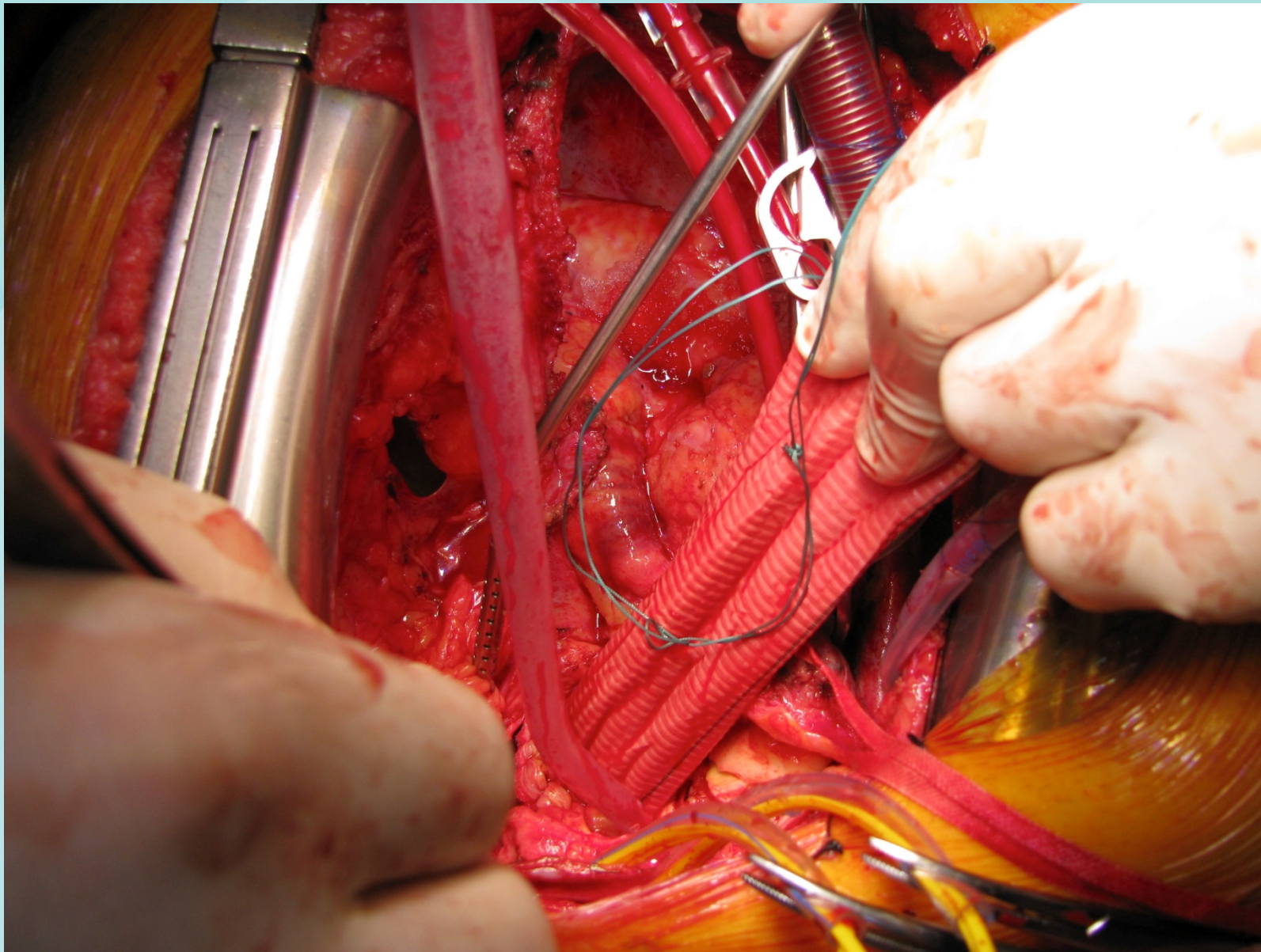


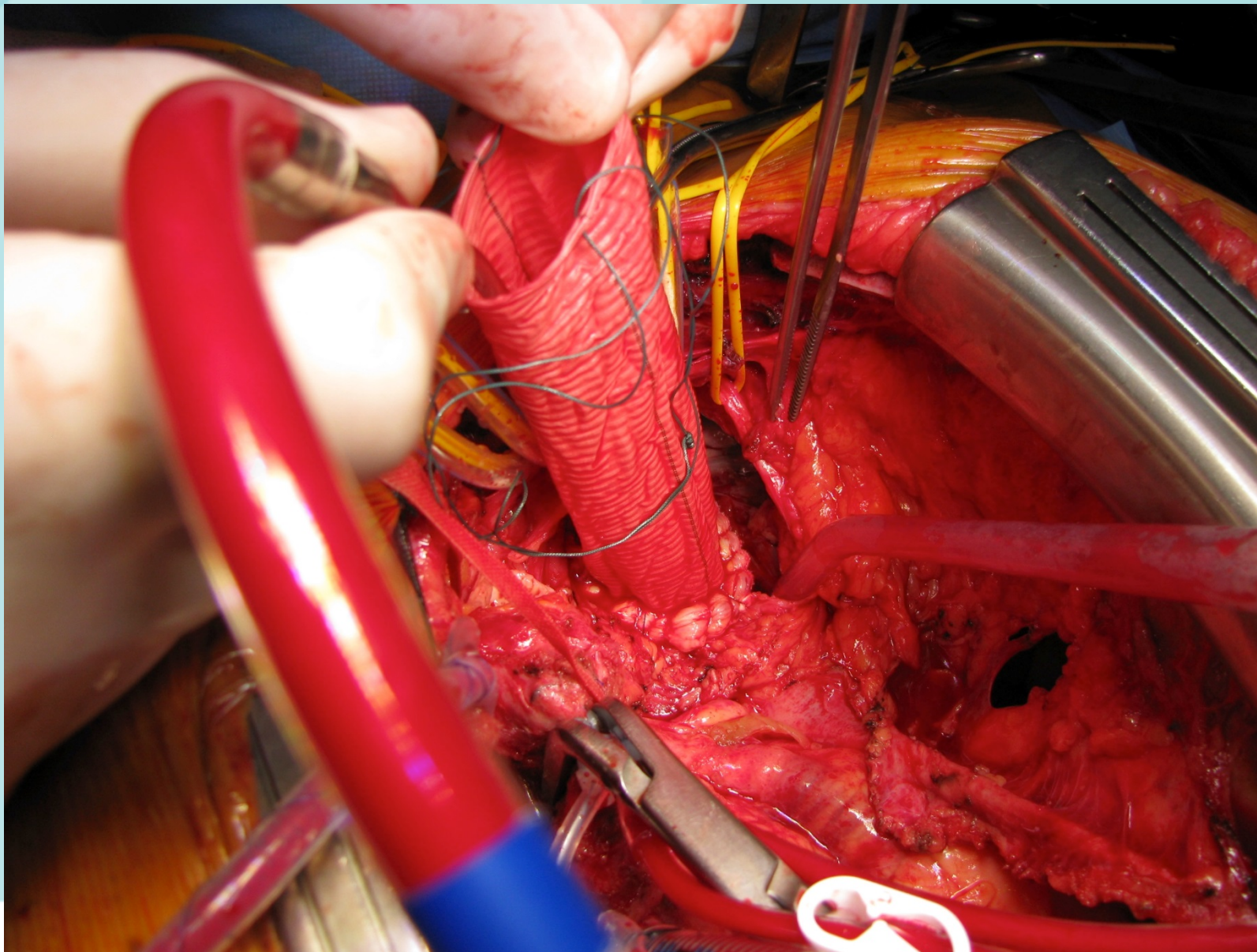
The Hybrid Approach

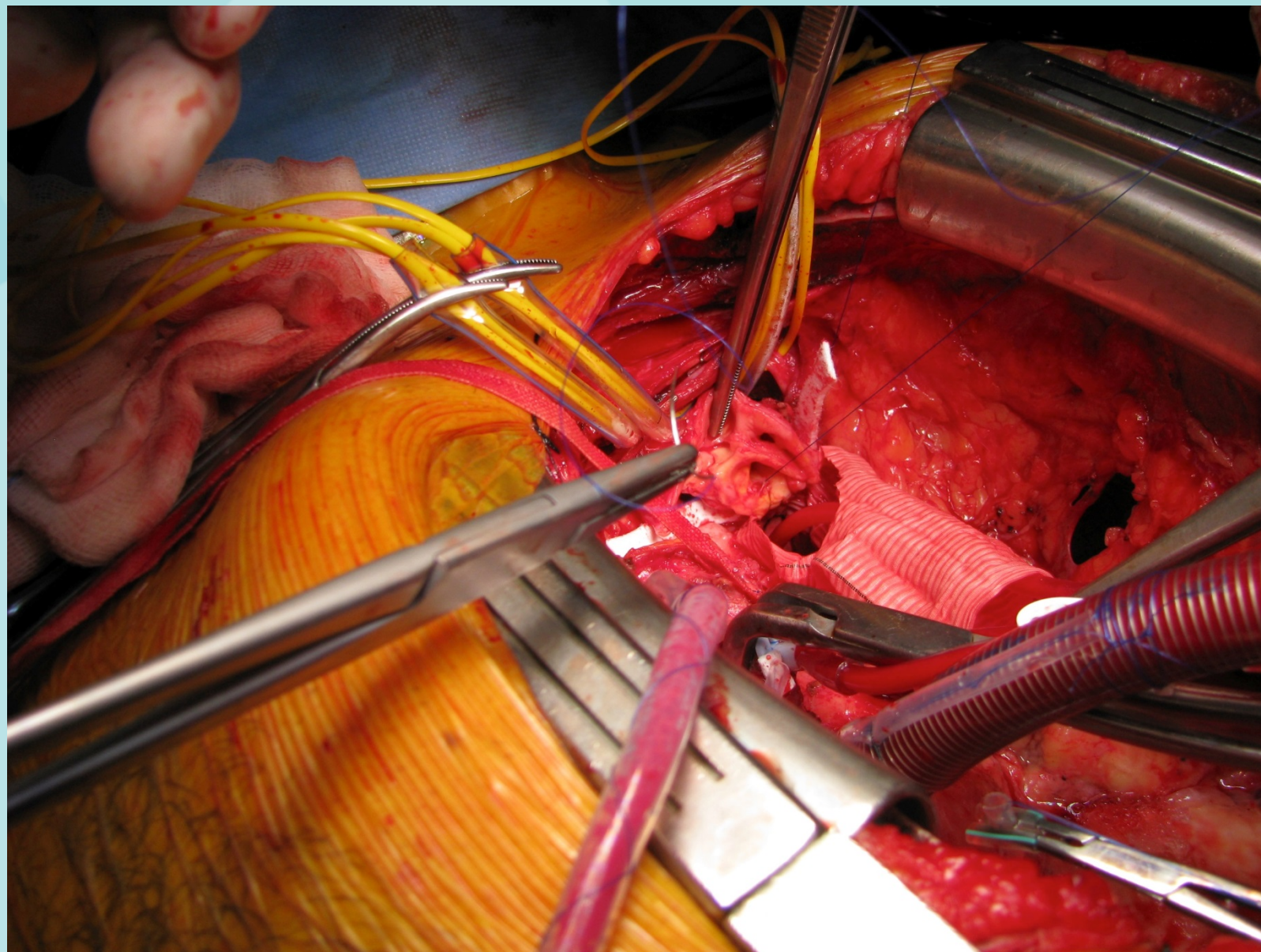


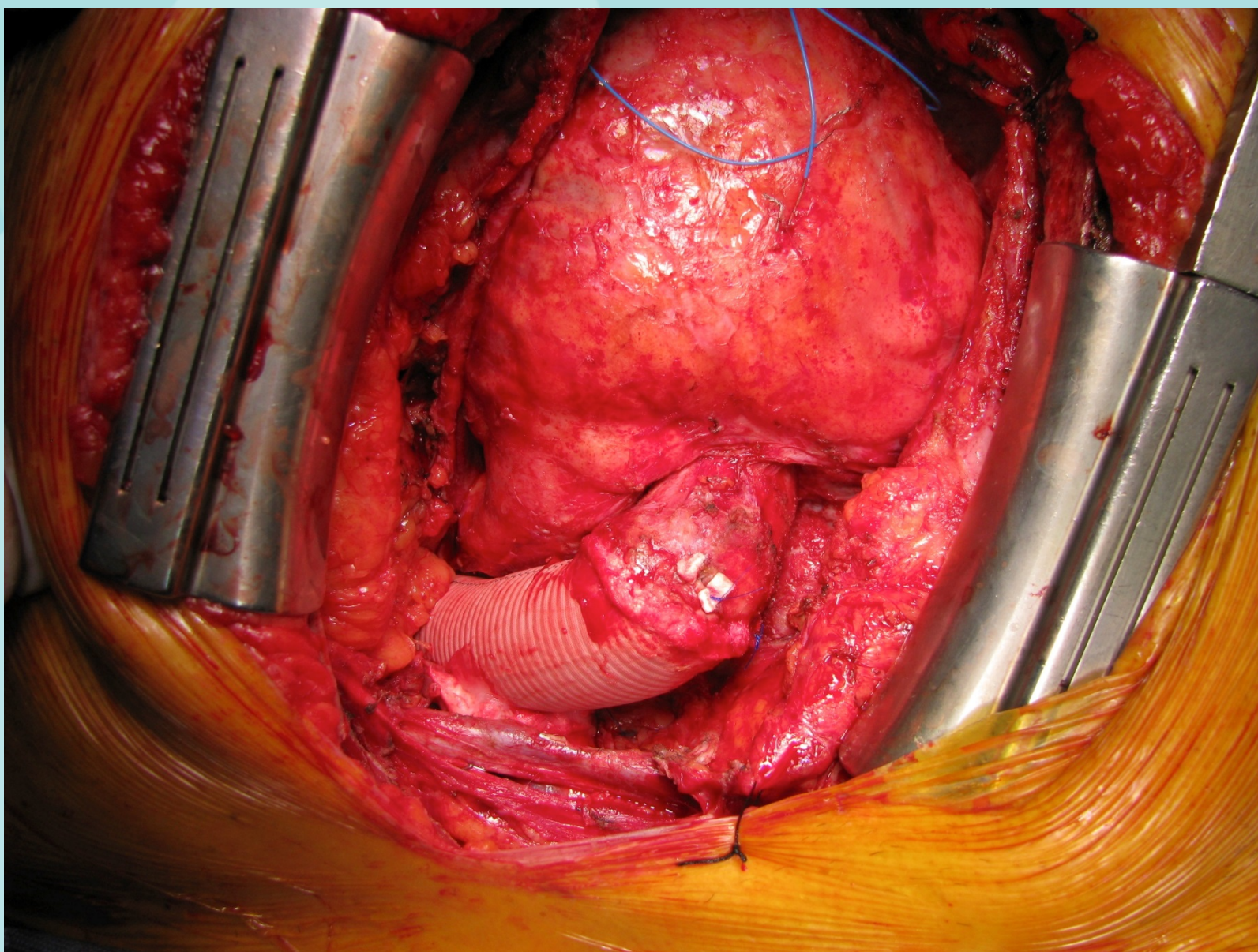












Contemporary results of open aortic arch surgery

Mathew Thomas, MBBS^a, Zhuo Li, MS^a, David J. Cook, MD^b, Kevin L. Greason, MD^a, Thoralf M. Sundt, MD^c,  

Altmetric  0

DOI: [http://dx.doi.org/10.1016/0003-4975\(94\)00812-L](http://dx.doi.org/10.1016/0003-4975(94)00812-L)

 Article Info

Abstract

References

Between January 13, 1987, and December 31, 1993a, 227 patients were treated surgically for aortic disease involving the transverse aortic arch. Forty-eight patients (21.14%) had acute aortic dissection (group A), 69 (30.40%) had chronic dissection (group B), and 110 (48.46%) had nondissecting fusiform or saccular aneurysms (group C). The replacement of the transverse arch involved 194 graft replacements, 27 elephant trunk procedures, and 6 patch graft repairs. Concomitantly, 22 patients had aortic valve resuspension, 18 patients had composite valve graft insertions, and 75 had separate aortic valve replacement. The frequency of prior cardiac operation was 20.83% (10 patients) in group A, 69.57% (48 patients) in group B, and 15.45% (17 patients) in group C. Profound hypothermic circulatory arrest was used in all patients during their transverse arch procedures. The mean circulatory arrest times (in minutes) were 29.18 ± 1.39 , 36.62 ± 1.91 , and 29.25 ± 1.46 for groups A, B, and C, respectively. Retrograde cerebral perfusion through the superior vena cava cannula was used in 111 (48.9%) patients during the circulatory arrest period. In-hospital mortality was 6.17% (14 deaths). Long-term follow-up was 100% complete. There were 20 late deaths, with a long-term mortality rate of 9.26% (20/216).

Aortic arch operation: Current treatment and results

MD [Joseph S. Coselli](#), MD [Suat Büket](#), MD [Bosco Djukanovic](#)

Department of Surgery, Baylor College of Medicine and The Methodist Hospital, Houston, Texas, USA



DOI: [http://dx.doi.org/10.1016/0003-4975\(94\)00812-L](http://dx.doi.org/10.1016/0003-4975(94)00812-L)

⊕ Article Info

Abstract

References

Between January 13, 1987, and December 31, 1993a, 227 patients were treated surgically for aortic disease involving the transverse aortic arch. Forty-eight patients (21.14%) had acute aortic dissection (group A), 69 (30.40%) had chronic dissection (group B), and 110 (48.46%) had nondissecting fusiform or saccular aneurysms (group C). The replacement of the transverse arch involved 194 graft replacements, 27 elephant trunk procedures, and 6 patch graft repairs. Concomitantly, 22 patients had aortic valve resuspension, 18 patients had composite valve graft insertions, and 75 had separate aortic valve replacement. The frequency of prior cardiac operation was 20.83% (10 patients) in group A, 69.57% (48 patients) in group B, and 15.45% (17 patients) in group C. Profound hypothermic circulatory arrest was used in all patients during their transverse arch procedures. The mean circulatory arrest times (in minutes) were 29.18 ± 1.39 , 36.62 ± 1.91 , and 29.25 ± 1.46 for groups A, B, and C, respectively. Retrograde cerebral perfusion through the superior vena cava cannula was used in 111 (48.9%) patients during the circulatory arrest period. In-hospital mortality was 6.17% (14 deaths). Long-term follow-up was 100% complete. There were 20 late deaths, with a long-term mortality rate of 9.26% (20/216).

Presented at the Thirtieth Annual Meeting of The Society of Thoracic Surgeons, New Orleans, LA, Jan 31-Feb 2, 1994.

© 1995 The Society of Thoracic Surgeons. Published by Elsevier Inc.

Surgical outcome of aortic arch aneurysms using selective cerebral perfusion

Teruhisa Kazui, MD , Nozomu Kimura, MD, Osamu Yamada, MD, Sakuzo Komatsu, MD

Second Department of Surgery, Sapporo Medical University School of Medicine, Sapporo, Japan

Accepted: July 26, 1993;



DOI: [http://dx.doi.org/10.1016/0003-4975\(94\)90201-1](http://dx.doi.org/10.1016/0003-4975(94)90201-1)

 Article Info

Abstract

References

Abstract

The surgical results observed in 80 patients with aneurysms of the aortic arch who underwent an operation between January 1986 and the end of August 1992 were analyzed by multivariate analysis to identify predictors of high operative risk. All operations were performed using a cardiopulmonary bypass technique, blood cardioplegia for myocardial protection, and selective cerebral perfusion to prevent cerebral ischemia during aortic arch repair. The overall early (30-day) mortality rate was 16.3%. A severe stroke occurred postoperatively in 1 patient (1.3%). The 5-year survival rate was $73\% \pm 5\%$, as determined by the Kaplan-Meier method. Multivariate analysis revealed that the presence of critical cardiopulmonary dysfunction preoperatively and the need for reoperation were significant independent predictors. Of the 63 (79%) patients who were free of these risks, only 3 (4.8%) died. The findings from the present study indicate that, currently, early mortality is relatively low for all patients who undergo operations for aneurysm of the aortic arch, unless they are in a critical condition preoperatively or unless they are undergoing a reoperation.

© 1994 The Society of Thoracic Surgeons. Published by Elsevier Inc. All rights reserved.

Current results of open total arch replacement versus hybrid thoracic endovascular aortic repair for aortic arch aneurysm: A meta-analysis of comparative studies

Umberto Benedetto, MD, PhD,^a Giovanni Melina, MD, PhD,^a Emiliano Angeloni, MD,^a Massimiliano Codispoti, MD, FRCS,^b and Riccardo Sinatra, MD,^a Rome, Italy, and Cambridge, UK

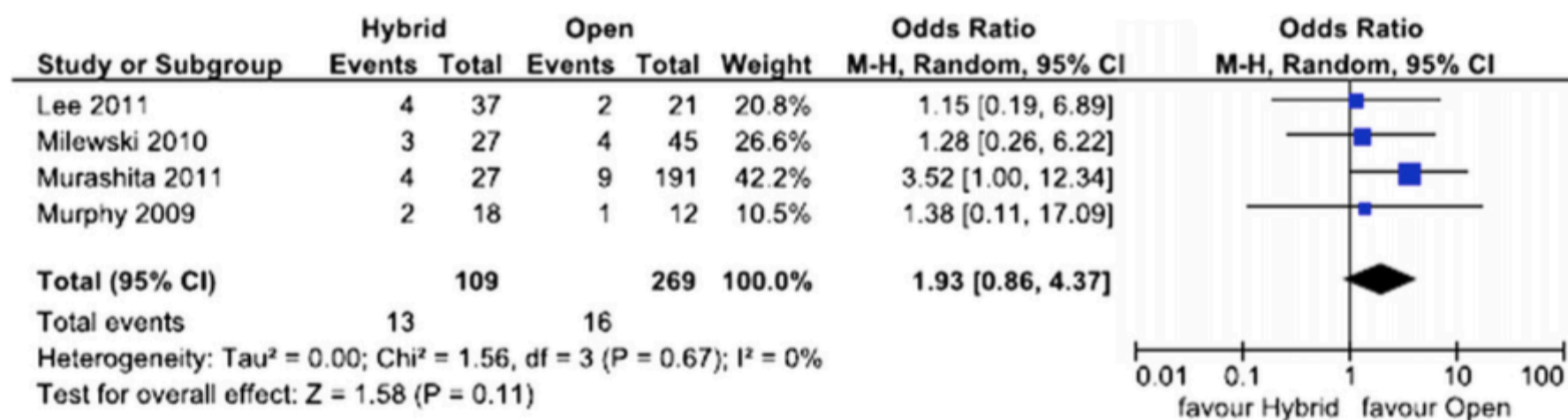


FIGURE 2. Meta-analysis for permanent neurologic deficit associated with hybrid versus open approach. The odds ratios for neurologic deficit from each included study (*squares*) and from the pooled estimate (*diamond*) are plotted, each with 95% confidence interval (*CI*; line lengths and width of diamond). *M-H*, Mantel-Haenszel test.

Current results of open total arch replacement versus hybrid thoracic endovascular aortic repair for aortic arch aneurysm: A meta-analysis of comparative studies

Umberto Benedetto, MD, PhD,^a Giovanni Melina, MD, PhD,^a Emiliano Angeloni, MD,^a Massimiliano Codispoti, MD, FRCS,^b and Riccardo Sinatra, MD,^a Rome, Italy, and Cambridge, UK

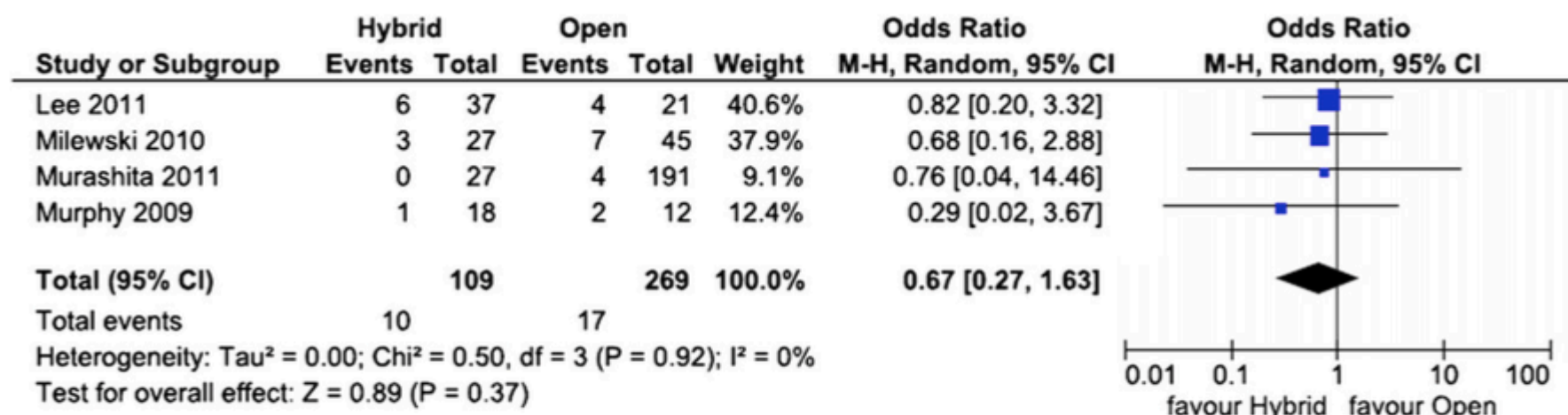


FIGURE 1. Meta-analysis for operative mortality of hybrid versus open approach. The odds ratios for death from each included study (*squares*) and from the pooled estimate (*diamond*) are plotted, each with 95% confidence interval (*CI*; line lengths and width of diamond). *M-H*, Mantel-Haenszel test.

AORTIC ARCH SURGERY

January 2012 to 31st October 2018

62 patients

75% men

Ages 29-77 years (67,9)

Urgent -- 17

Thoraco abdominal aneurism repair 1

AORTIC ARCH SURGERY

Replacement of aortic arch + Asc. Aorta-----	9
+cabgx1 -----	1
+cabgx3 +mitral valve repair -----	1
Replacement ao. Arch (trifurcated) + Asc. Aorta-----	4
+Elephant trunk-----	6
+Frozen elephant trunk (Evita) -----	12
Bentall surgery + Aortic Arch replacement-----	7
Aortic arch replacement+ Ao Valve and asc. Ao repl.-----	5
Patch repair sacular Aneurism-----	2

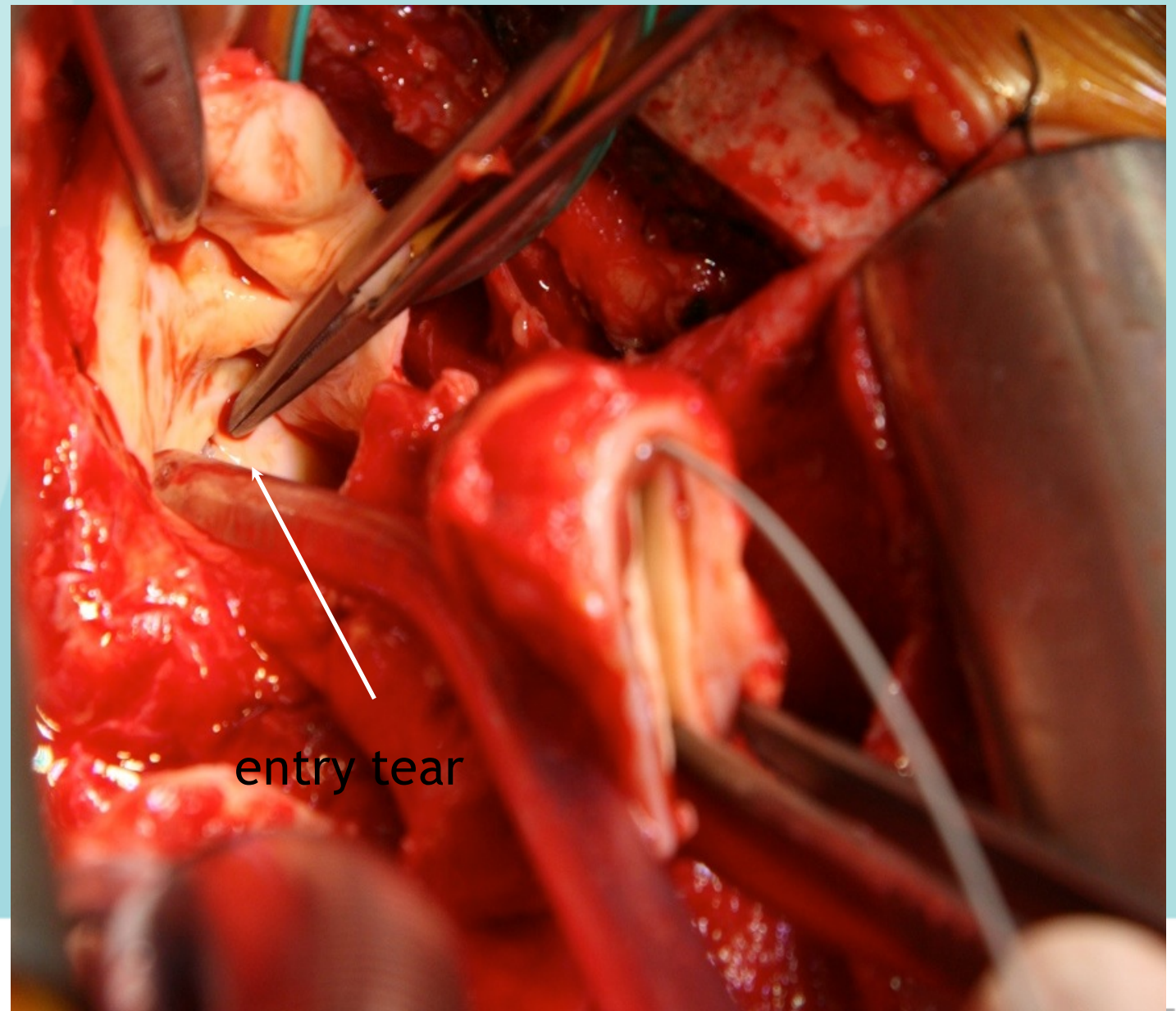
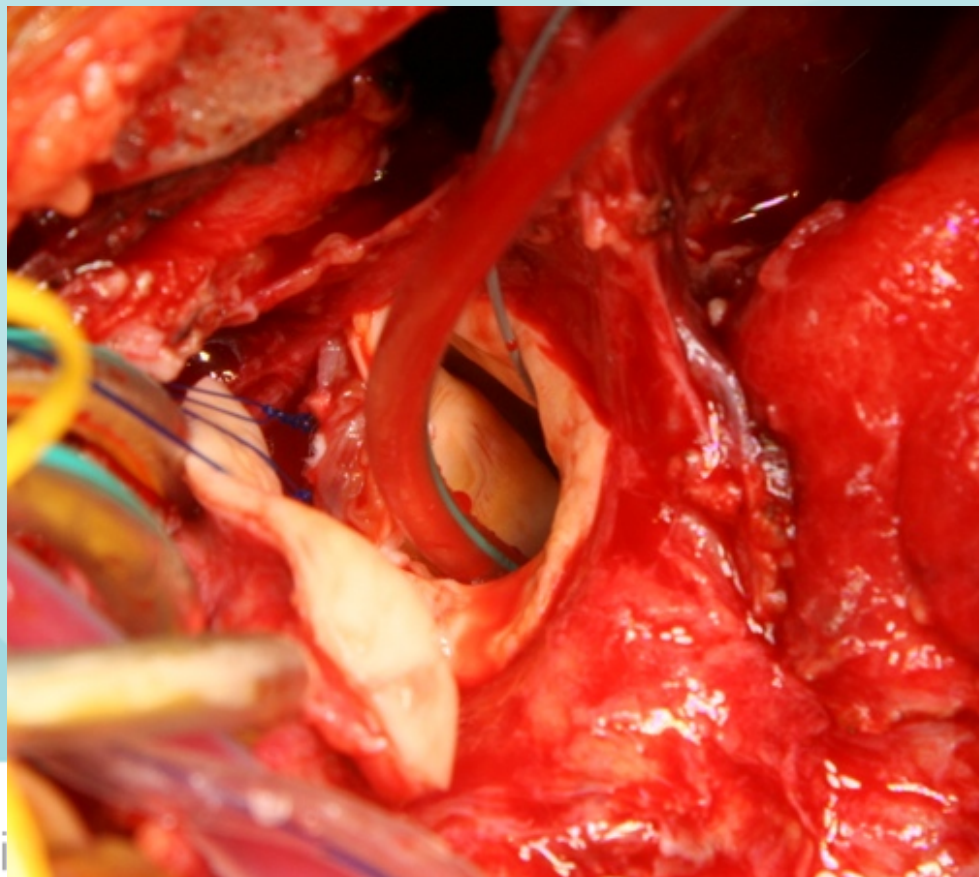
Mortality - 3 patients - (5%)
< 65 years -- 0

SUBSTITUIÇÃO ARCO AO E FROZEN ELEPHANT TRUNK - CASOS CLÍNICOS-



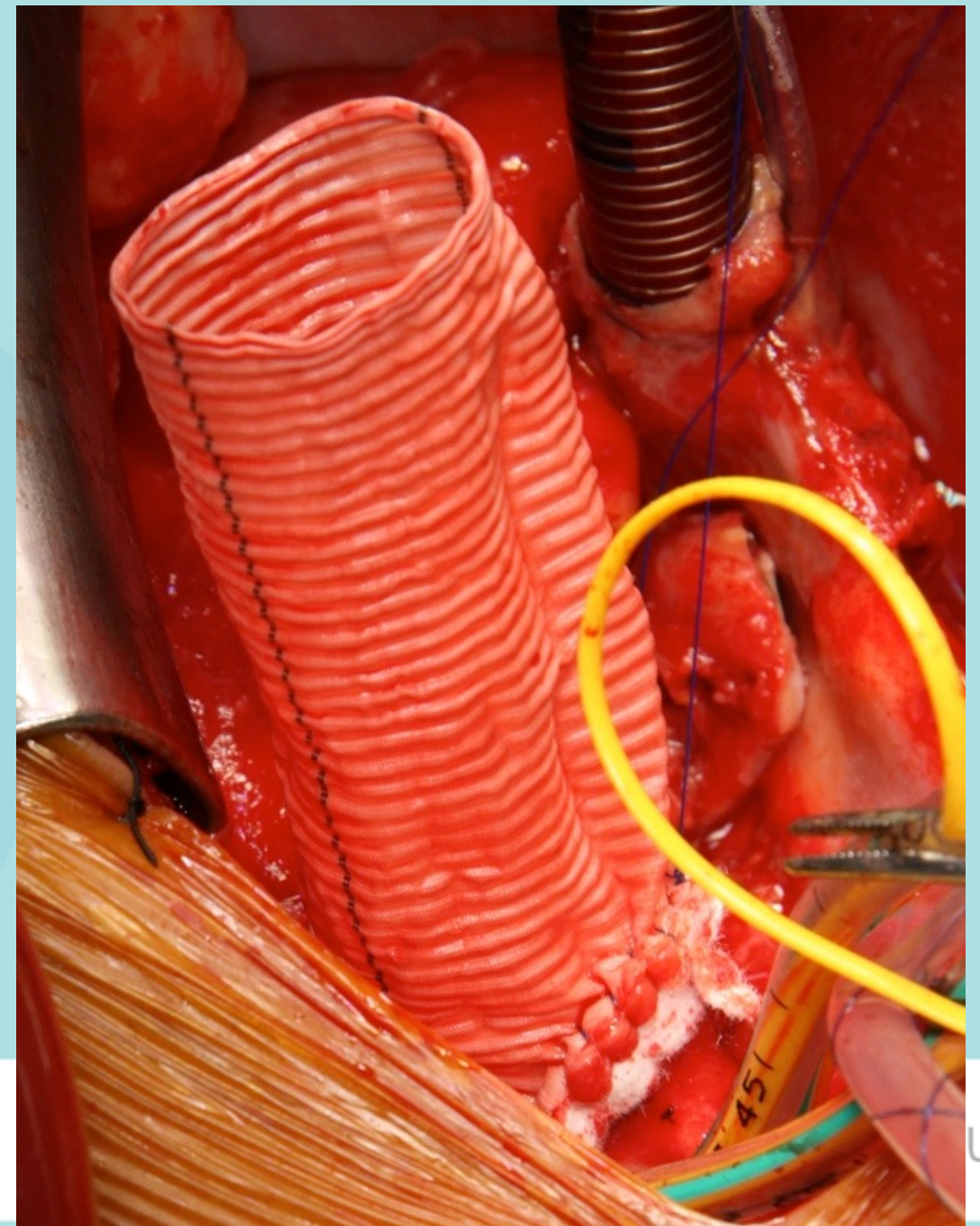
CIRURGIA

- ❖ Preparação da aorta distal- isthmus.
- ❖ Encerramento do falso Lumen.



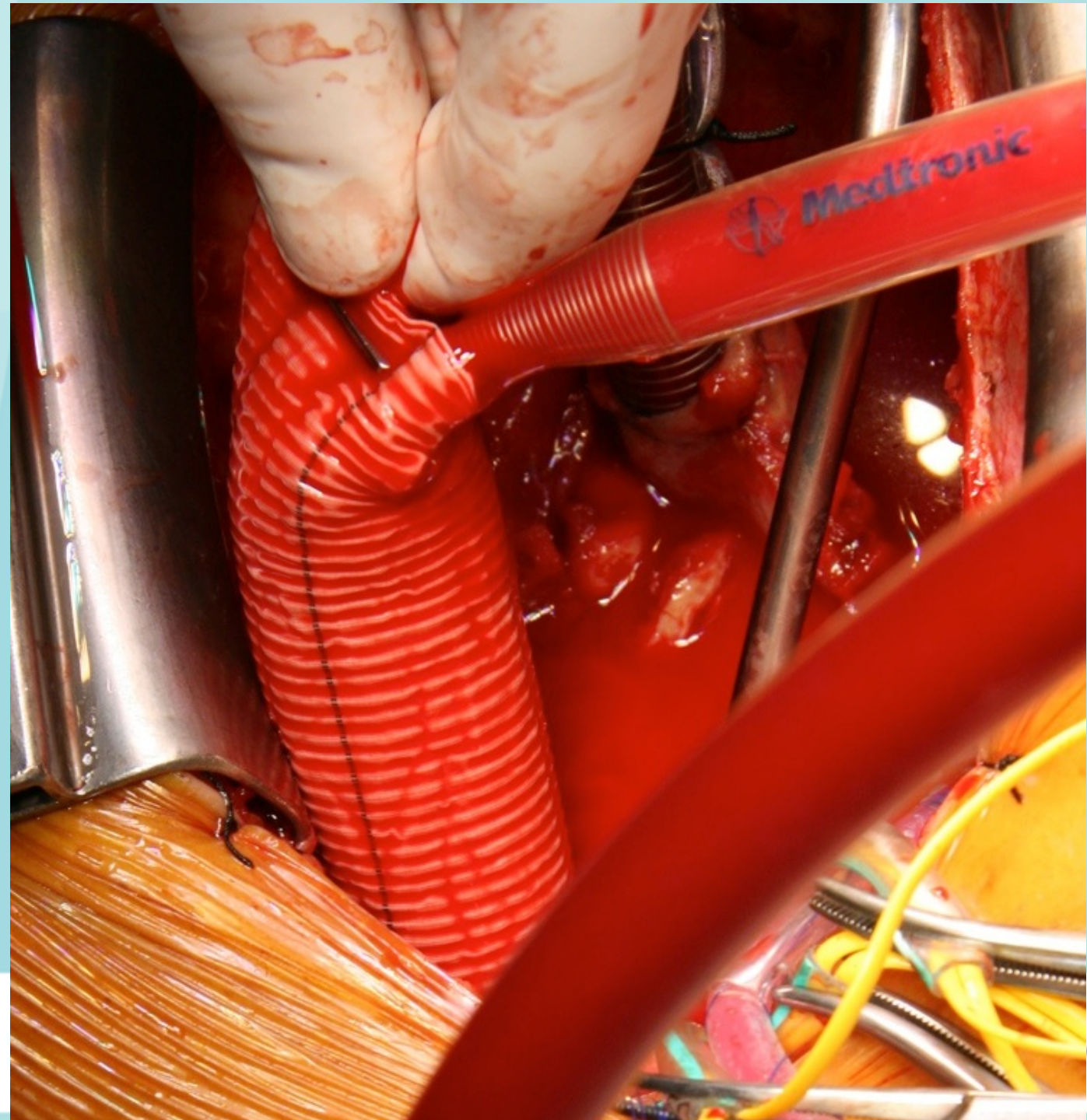
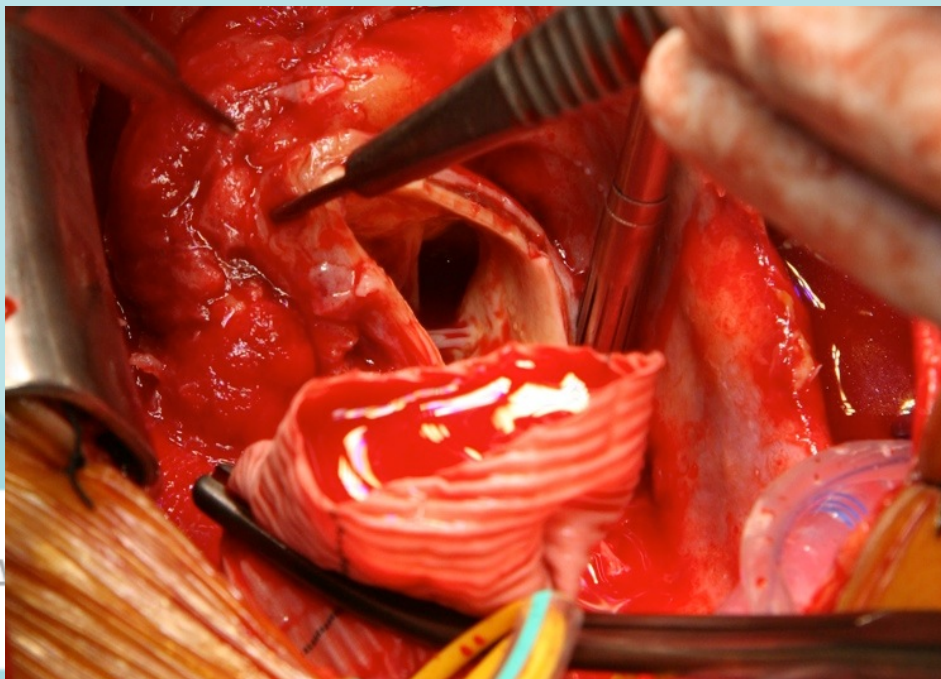
Surgery

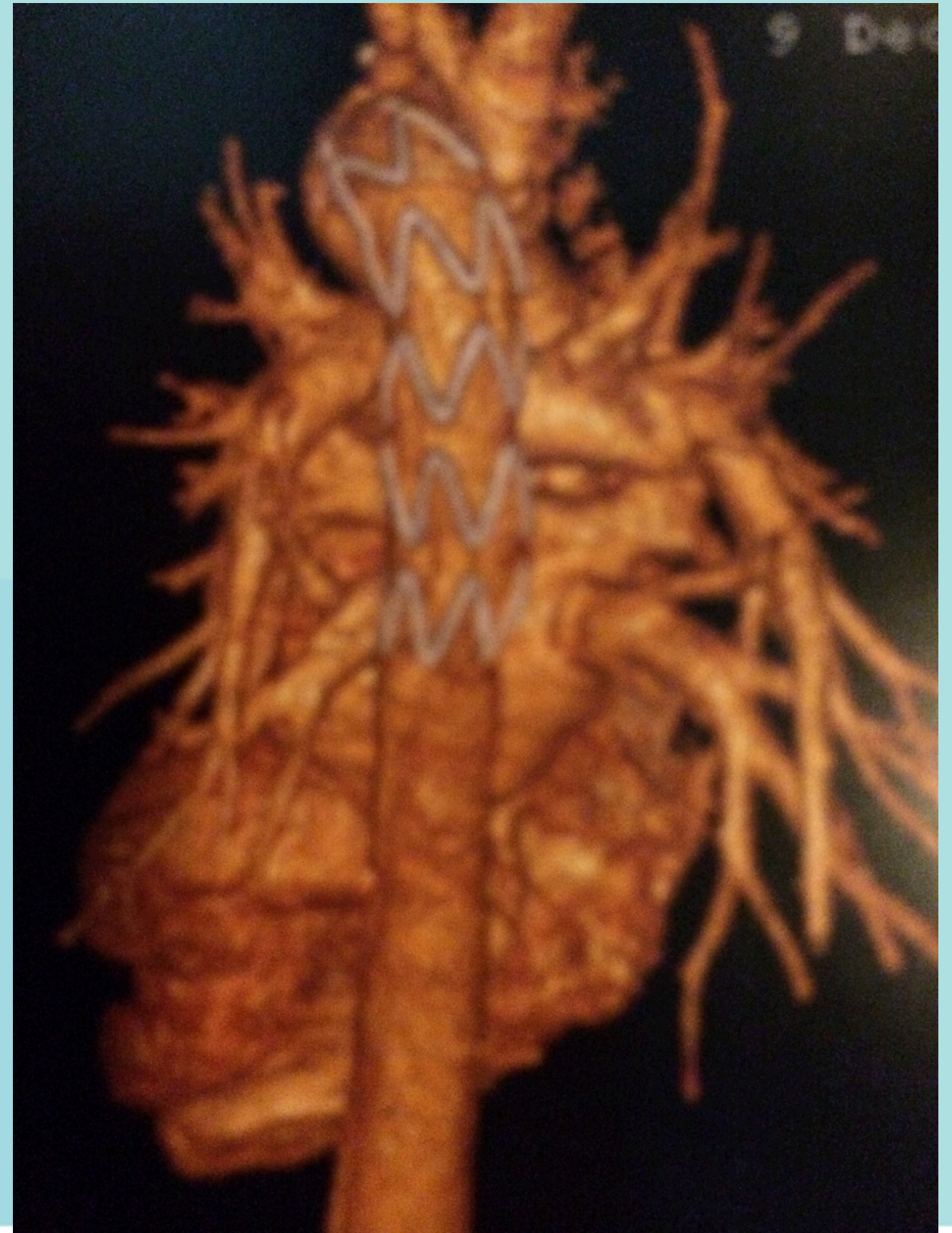
- ❖ Aplicação da Evita
- ❖ Anastomose distal



Surgery

- ❖ Reimplantação do arco aórtico
- ❖ Clampagem da protese tubular - *reaquecimento*
- ❖ anastomose proximal
 - ❖ Off-bypass





AFAG, ♂, 70 anos

- ❖ Hipertensão arterial
- ❖ Estenose aórtica grave
- ❖ Aneurisma do arco aórtico

Julho 2013

Cirurgia:

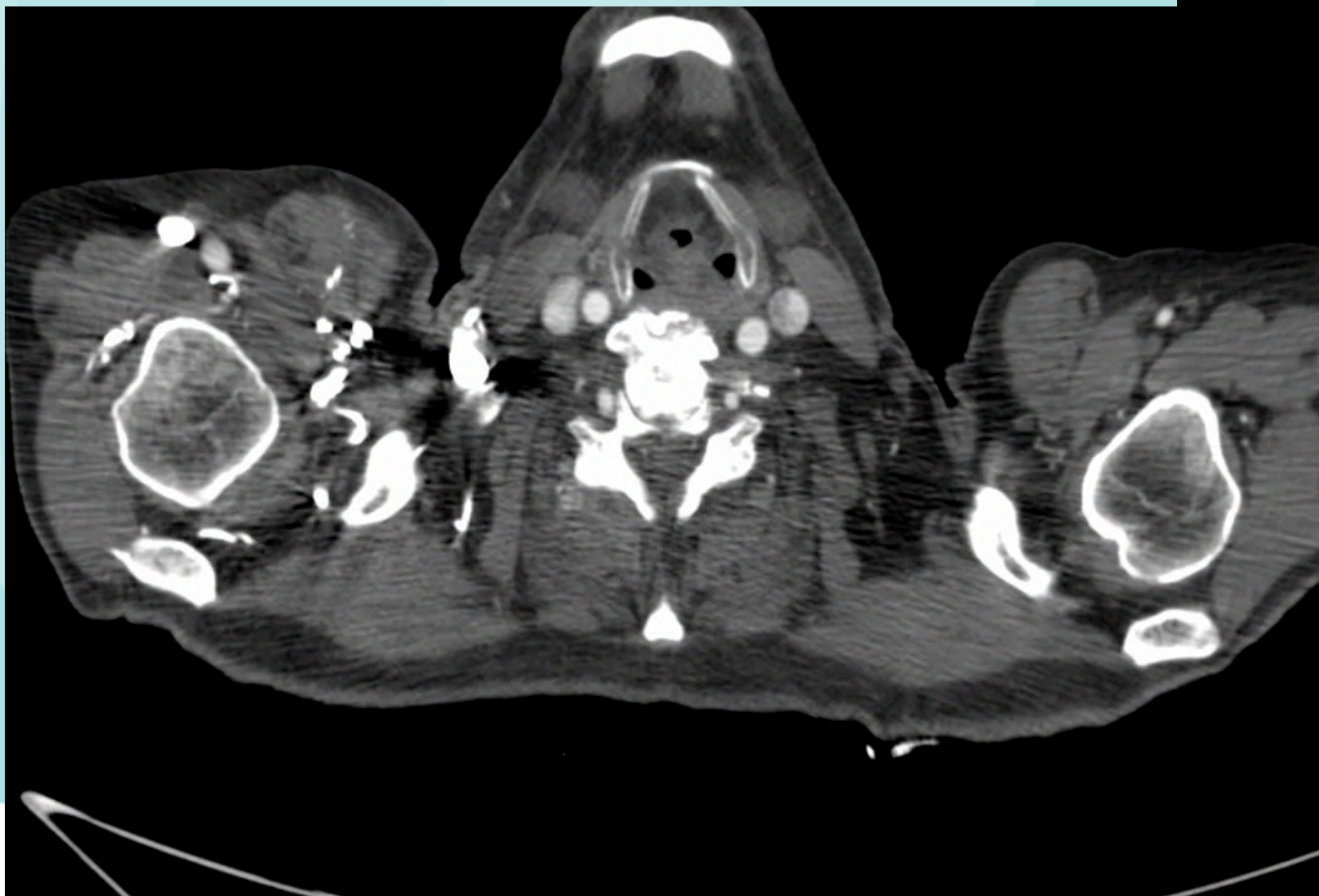
OPERAÇÃO DE BENTALL

SUBSTITUIÇÃO TOTAL DO ARCO E “FROZEN ELEPHANT TRUNK” (E-VITA, JOTEC®)

AFAG, ♂, 70 anos

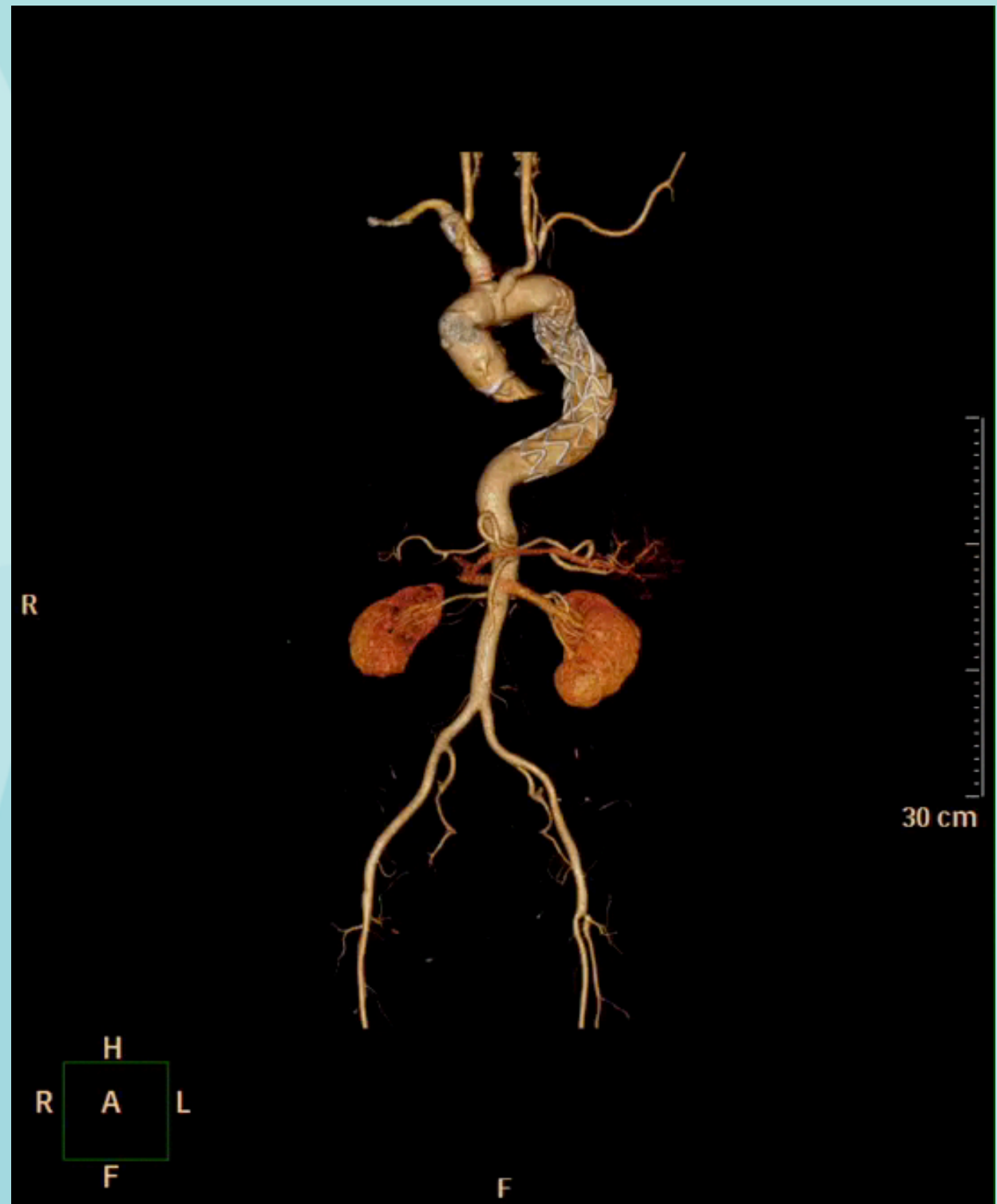
18.07.2013 - AngioTC
controle:

incomplete exclusion of thoracic
aortic aneurism



AFAG, ♂, 70 anos

Control CT after EVAR



CONCLUSIONS

There is still room for the open arch repair if made on a center with experience and low mortality

The elephant trunk open repair can be a first stage for later open repair of thoracic or thoracoabdominal aneurism

The frozen elephant trunk (hybrid-Evita open) is a definitive surgery or a first stage for endovascular treatment later

CONCLUSIONS

The treatment of aortic arch aneurisms should be conducted in specialized centers where open and hybrid/endovascular approaches are available

Each patient should be discussed by a multidisciplinary aortic (heart and vessels) team

MRS, ♂, 65 anos

- ❖ Hipertensão arterial, dislipidémia, tabagismo não activo.
- ❖ Cirurgia a aneurisma cerebral em 1998.

INSUFICIÊNCIA AÓRTICA
GRAVE

ANEURISMA DA AO
ASCENDENTE E ARCO

Cirurgia:

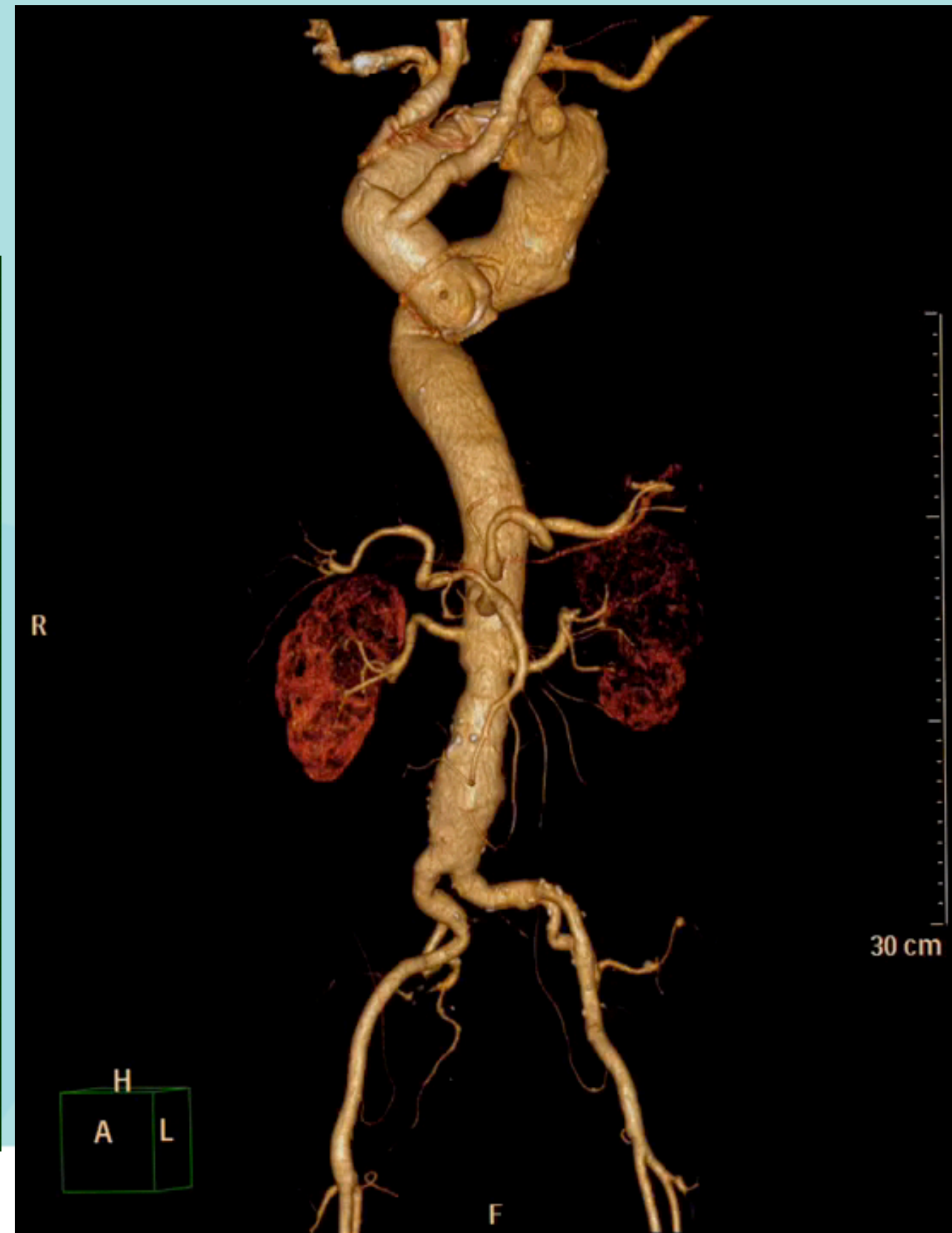
Remodelação da junção sinotubular +
substituição da aorta ascendente e arco com
reimplantação da subclavia esquerda

MRS, ♂, 65 anos

18.07.2013 - AngioTC
controle:

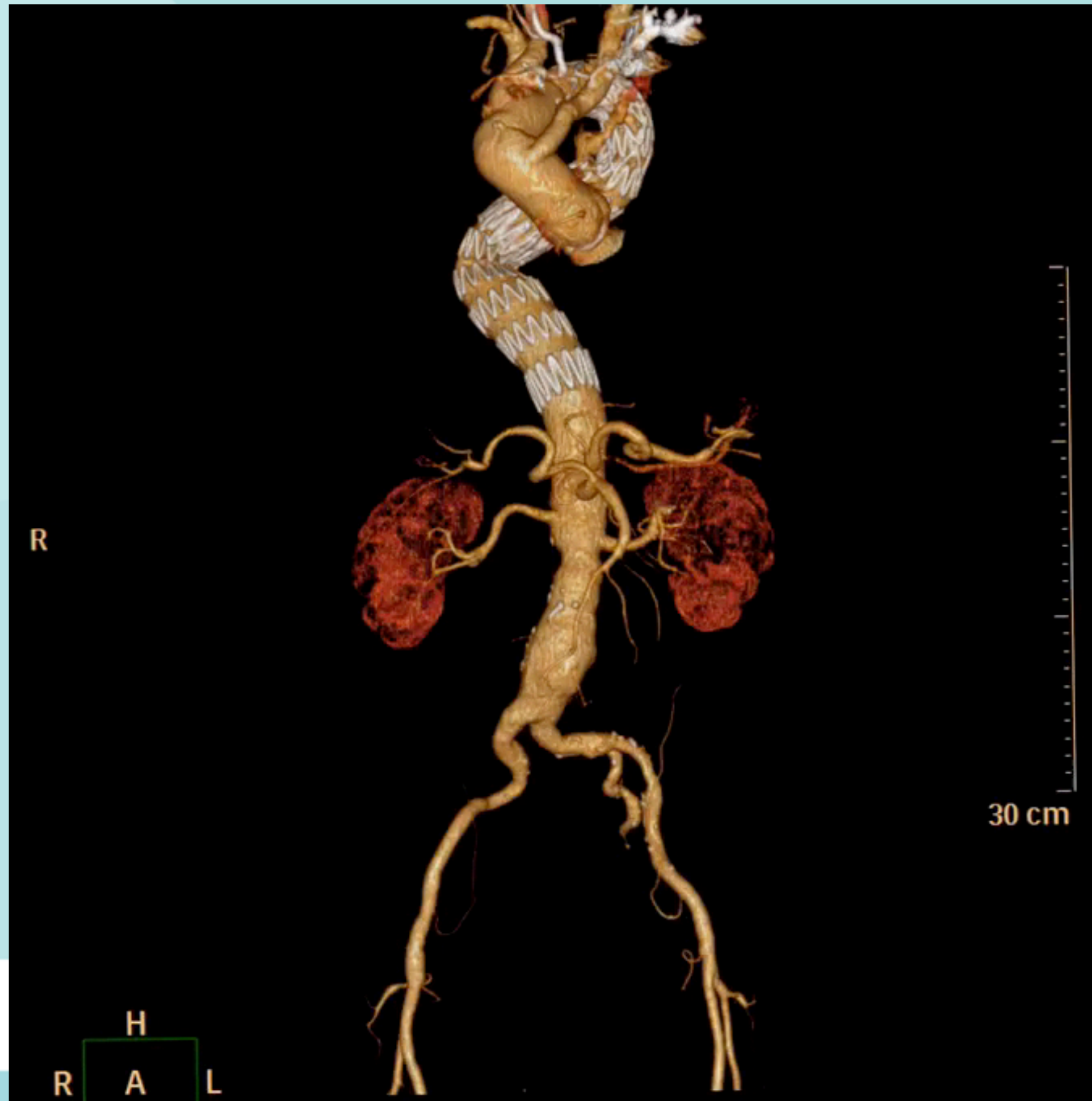


Cirurgia Aberta do Arco Aórtico



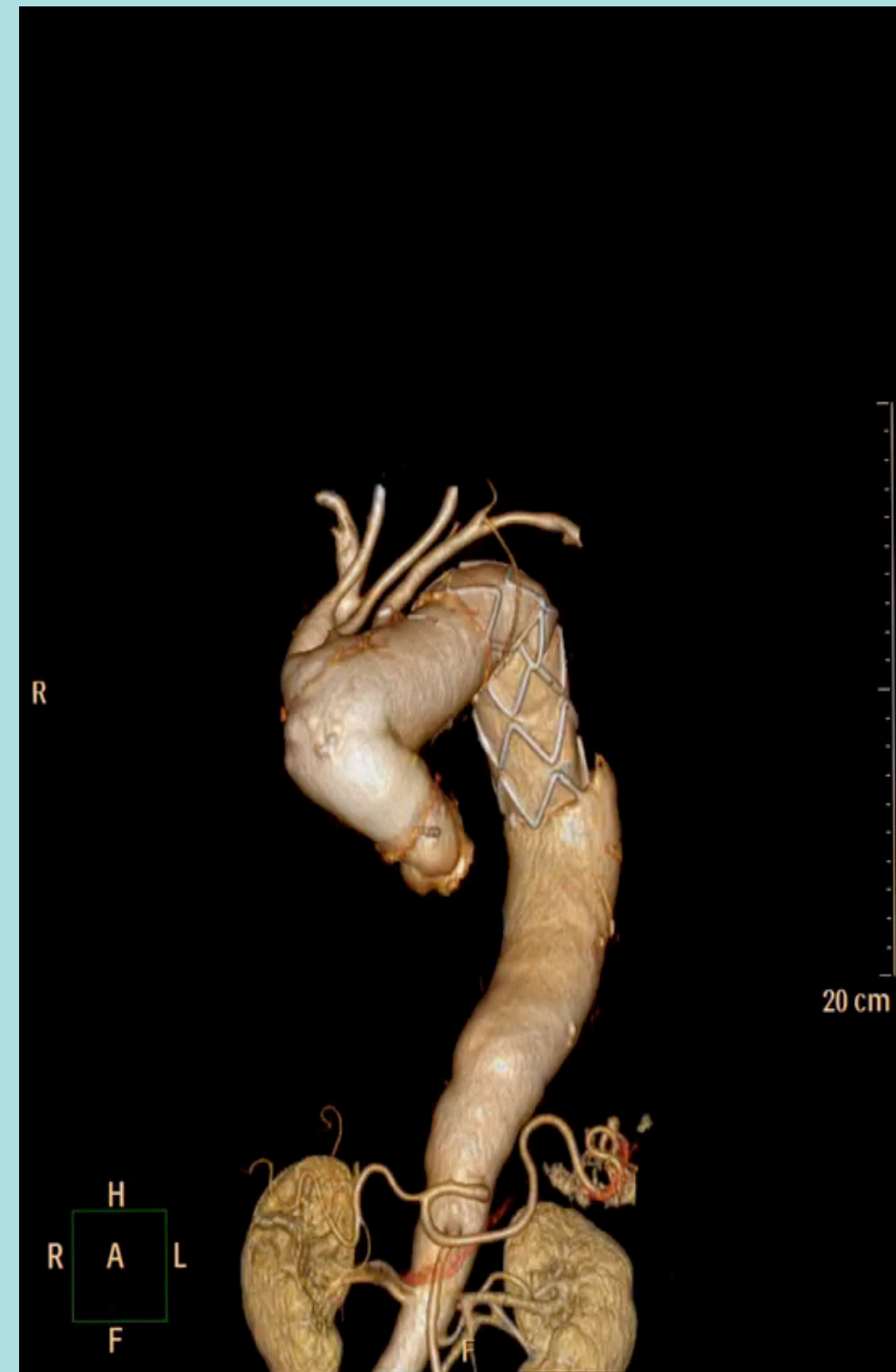
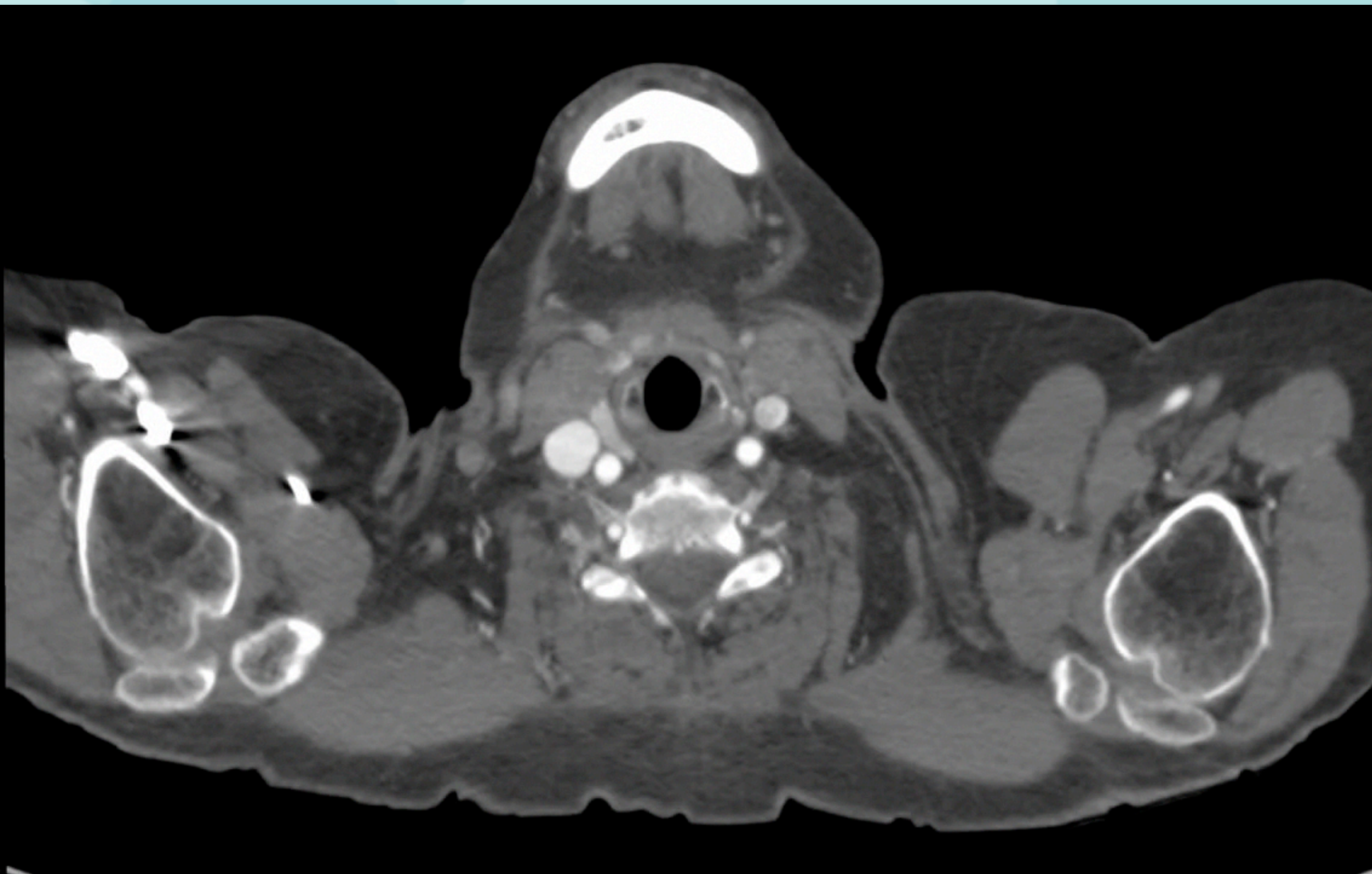
MRS, ♂, 65 anos

27.10.2014 -
AngioTC
controle:



MFD, ♀, 69 anos

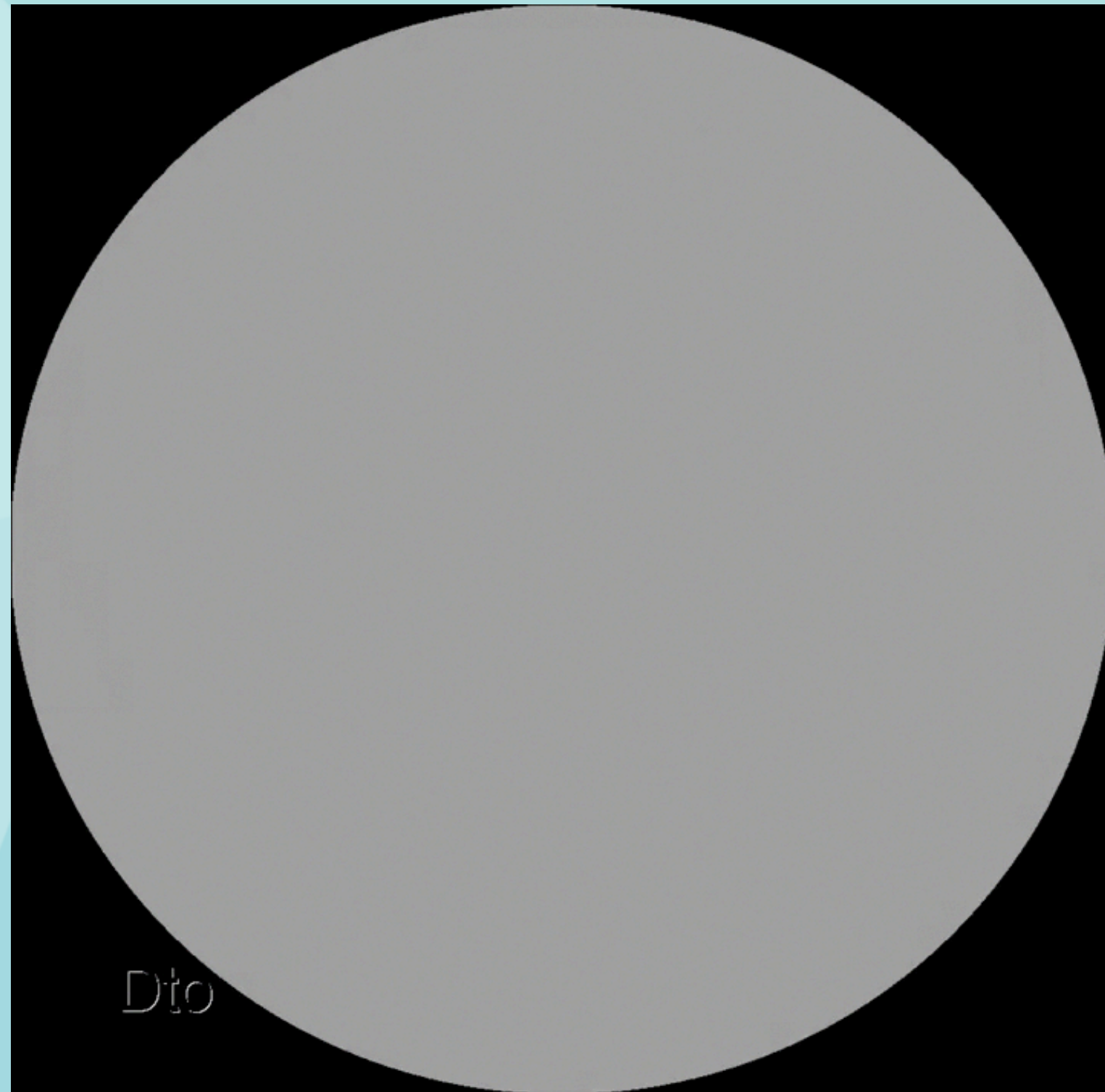
18.07.2013 - AngioTC
controle:



30.5.2014

TEVAR

- ❖ Anestesia geral.
- ❖ Abordagem femoral bilateral e umeral bilateral.
- ❖ FG “trough and trough” (umeral D-femoral D).
- ❖ Colocação de endoprótese torácica.



MFD, ♀, 69 anos

9.2.2015 -
AngioTC
controle:

