MEET 2015
MULTIDISCIPLINARY EUROPEAN ENDOVASCULAR THERAPY

Clampless sutureless anastomosis technique

Zoran Rancic, MD, PhD
on behalf of Vascular Specialists @ UHZ

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Descending Aorta
Clampless sutureless anastomosis technique

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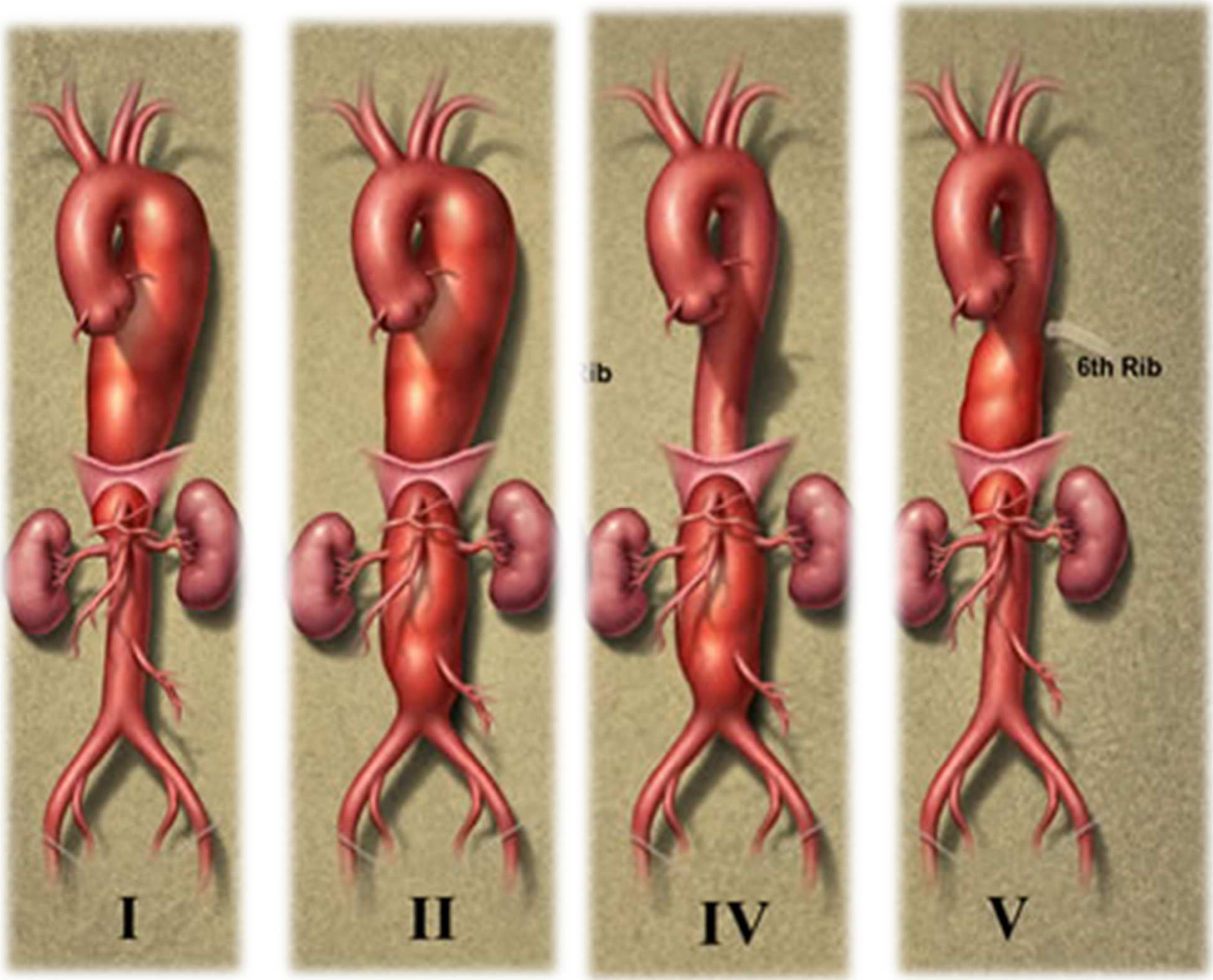
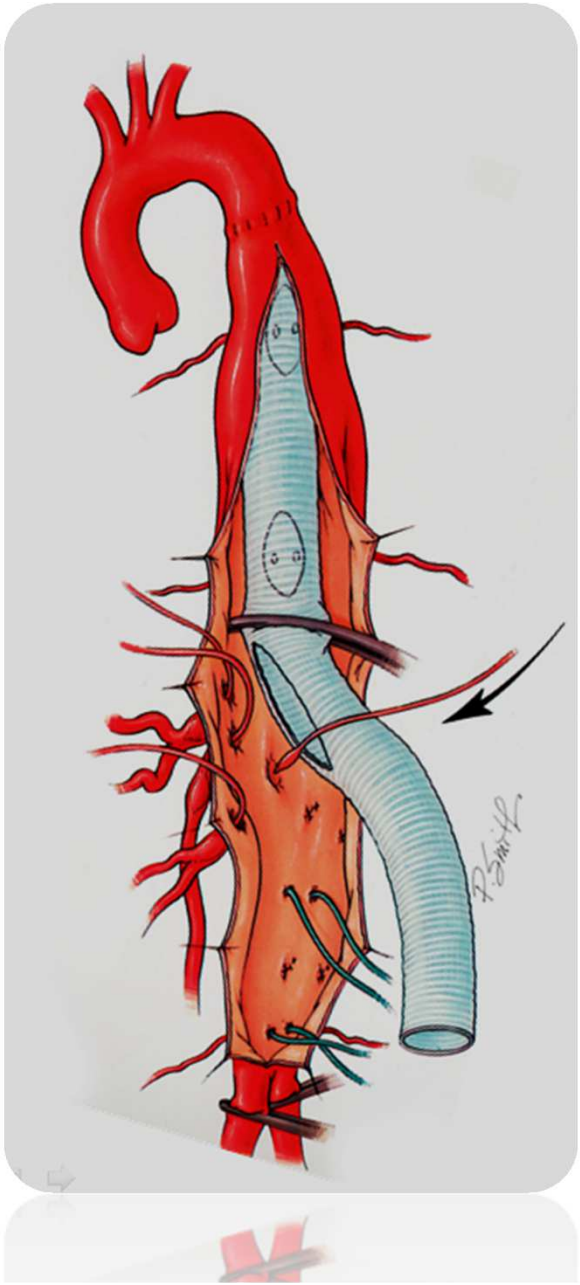

I
II
IV
V
6th Rib


GOLD
999,9
Standard


COS

TAAA



The outcome in the United States after thoracoabdominal aortic aneurysm repair, renal artey bypass , and mesenteric revascularization

Derrow AE. J Vasc Surg 2001

30-d Mortality	Complications
20%	62%

+

Bad outcome: 40%

TAAA - COS

Maximally invasive

Good results only in few centers

- High volume
  - Limited ressources
  - Highly selected patients

In 1o-20 years experienced “old fashioned” surgeons extinct

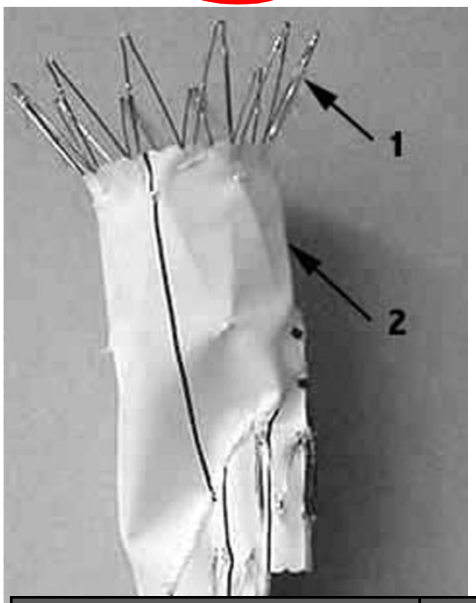
Multi-Branched Stent-Graft for Type III Thoracoabdominal Aortic Aneurysm

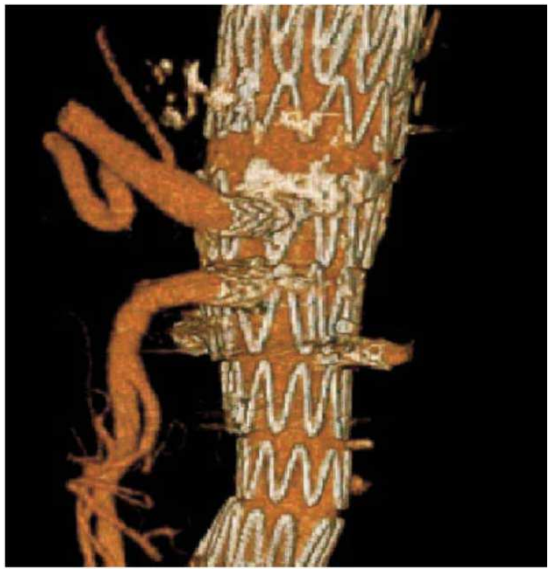
Branched SG

Timothy A.M. Chuter, MD, Roy L. Gordon, MD, Linda M. Reilly, MD, Laura K. Pak, MD, and Louis M. Messina, MD

Index terms: Aneurysm, aortic • Aneurysm, thoracoabdominal • Aorta, grafts and prostheses • Endovascular stent-grafts

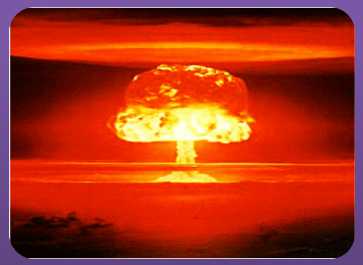
J Vasc Interv Radiol 2001; 12:391–392





Author	Year	Journal	Study	N=	Mean Age (years)	Previous aortic surgery (%)	Mortality: 30 days (%)	Hemo-dialysis permanent (%)	Paraplegia Permanent (%)
Amiot fenestrated	2010	EJVES	24 French Services	134	73	NA	2	1	0.75
O'Neil fenestrated juxtarenal	2010	EJVES	1 Center	119	75	NA	0.8	3.36	0 (NA)
Haulon Branched TAAA	2010	EJVES	1 Center	33	70	30.3	9	10	3

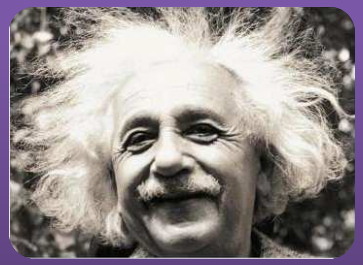
Complete EVAR



Prohibitive X-ray exposition

- Patient & physician

High costs



Good results only in few centers

- High volume
  - Limited ressources
  - Highly selected patients

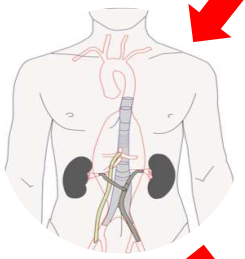
Hybride Procedure (1998)

Repair of type IV thoracoabdominal aneurysm with a combined endovascular and surgical approach

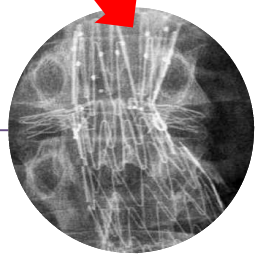
William J. Quiñones-Baldrich, MD, Thomas F. Panetta, MD, Candace L. Vescera, RN, and Vikram S. Kashyap, MD, *Los Angeles, Calif*

We report an unusual case of type IV thoracoabdominal aneurysm (TAA) with superior mesenteric artery (SMA), celiac artery, and bilateral renal artery aneurysms in a patient who underwent an earlier repair of two infrarenal abdominal aortic aneurysm (AAA) ruptures. Because of the presence of the visceral artery aneurysms and the earlier operation through the retroperitoneum, standard surgical treatment via a retroperitoneal approach with an inclusion grafting technique was considered difficult. A combined surgical approach achieving retrograde perfusion of all four visceral vessels and endovascular grafting allowing exclusion of the TAA was accomplished. Complete exclusion of the aneurysm and normal perfusion of the patient's viscera was documented by means of follow-up examinations at 3 and 6 months. The repair of a type IV TAA with a combined endovascular and surgical approach (CESA) allowed us to manage both the aortic and visceral aneurysms without thoracotomy or re-do retroperitoneal exposure and minimized visceral ischemia time. If the durability of this approach is confirmed, it may represent an attractive alternative in patients with aneurysmal involvement of the visceral segment of the aorta. (J Vasc Surg 1999;30:555-60.)

COS



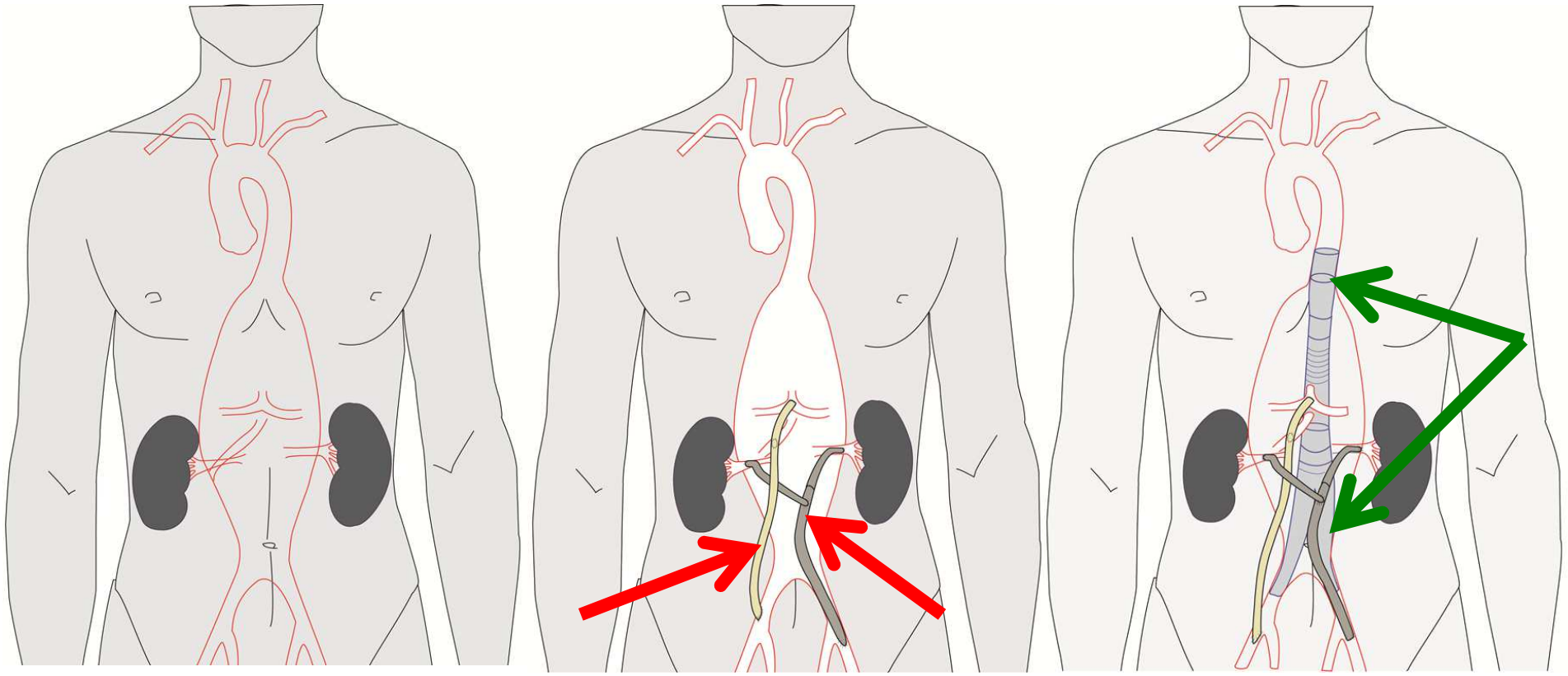
HYBRID



CEVAR

Invasiveness

HYBRID (TAAA)



Debranching **Stentgraft**

General Challenges of „Debranching“

Multiple anastomosis (up to 15, mean 6 to 8)

- Ischemia-reperfusion of all abdominal organs

Long lasting interventions

- Homeostasis generally disturbed
- Temperature often below 34 to 35° C
- Coagulation often disturbed
- Fluid balance mostly highly positive
- …

Polymorbid patients

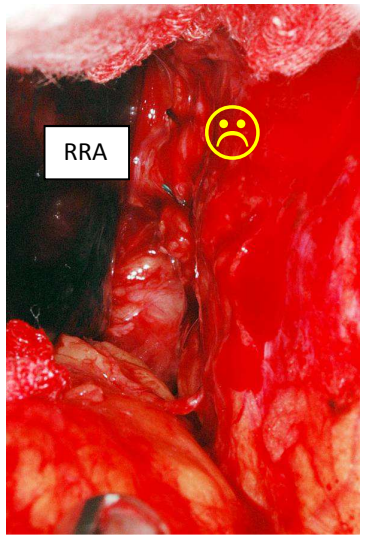
- Negative selection, since regarded less invasive

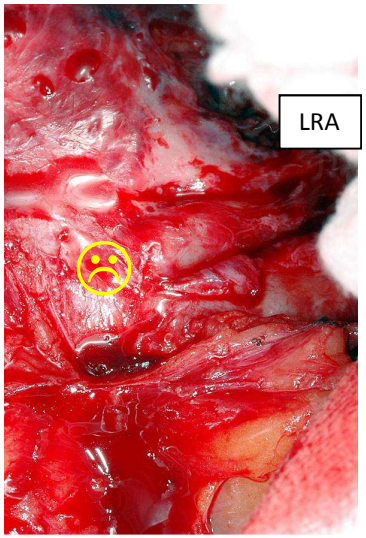
Challenges in Aortic Branches Surgery

Anatomical remodelling

Difficult access

Scar tissue





TOOL TO FACILITATE DEBRANCHING

TOOL TO FACILITATE DEBRANCHING

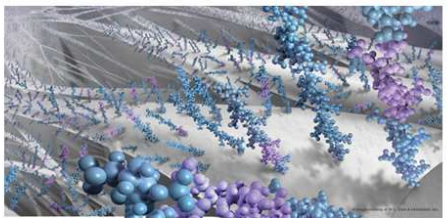
STAT TECHNIQUE

Sutureless **T**elescoping **A**nastomotic **T**echnique

VORTEC

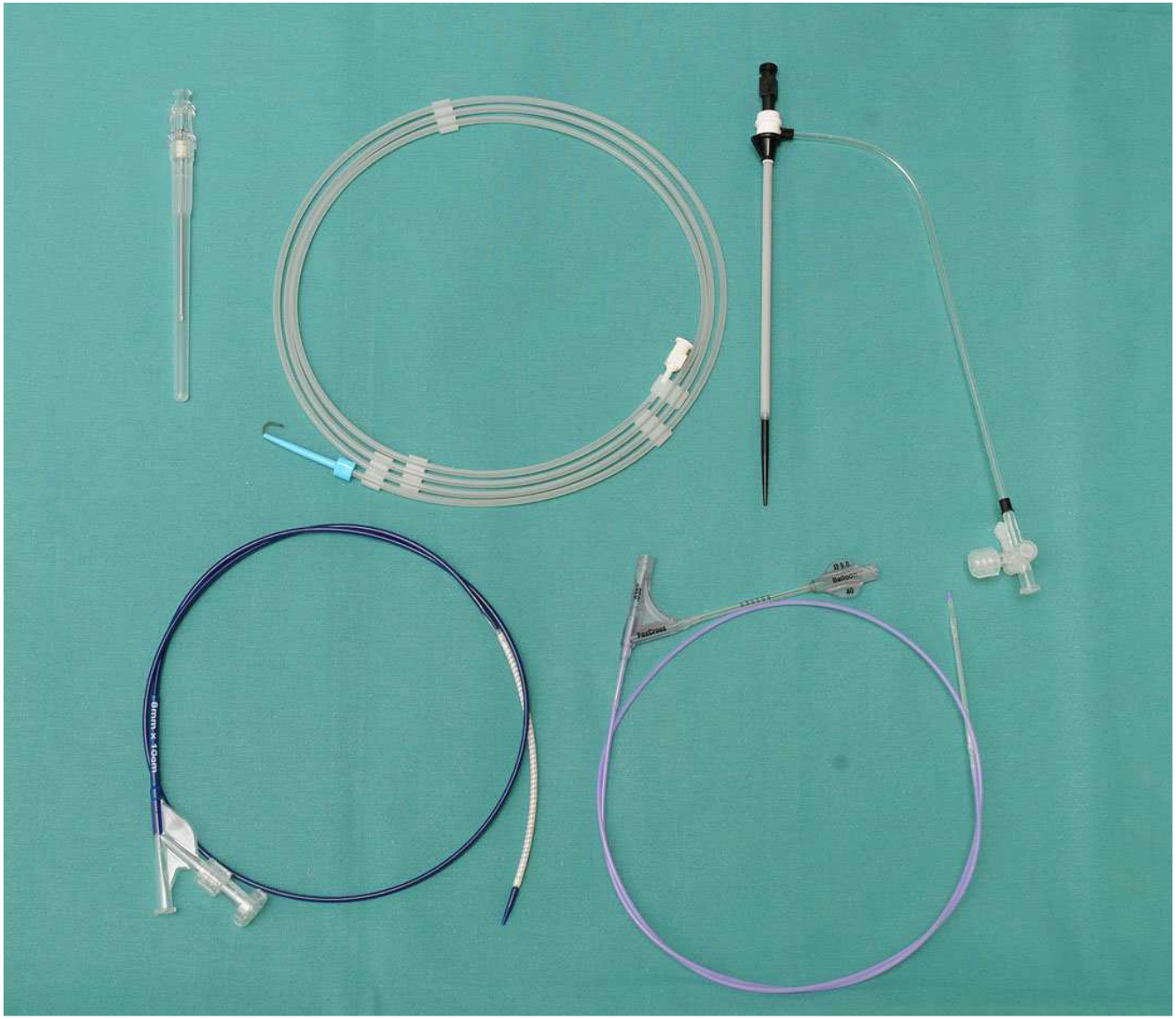
Viabahn **O**pen **R**ebranching **TEC**hnique

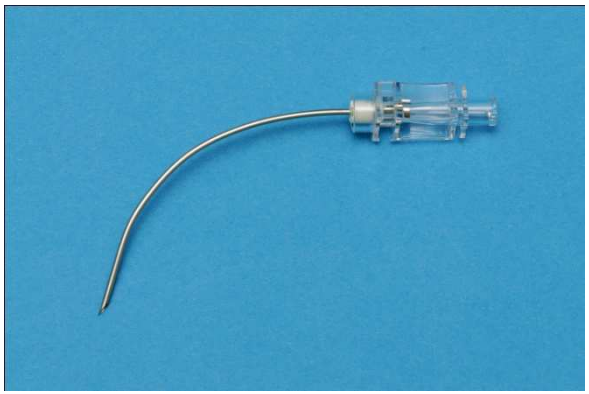
- Low-profile
- Flexible
- Anti-thrombotic coating
  - (Propaten®)

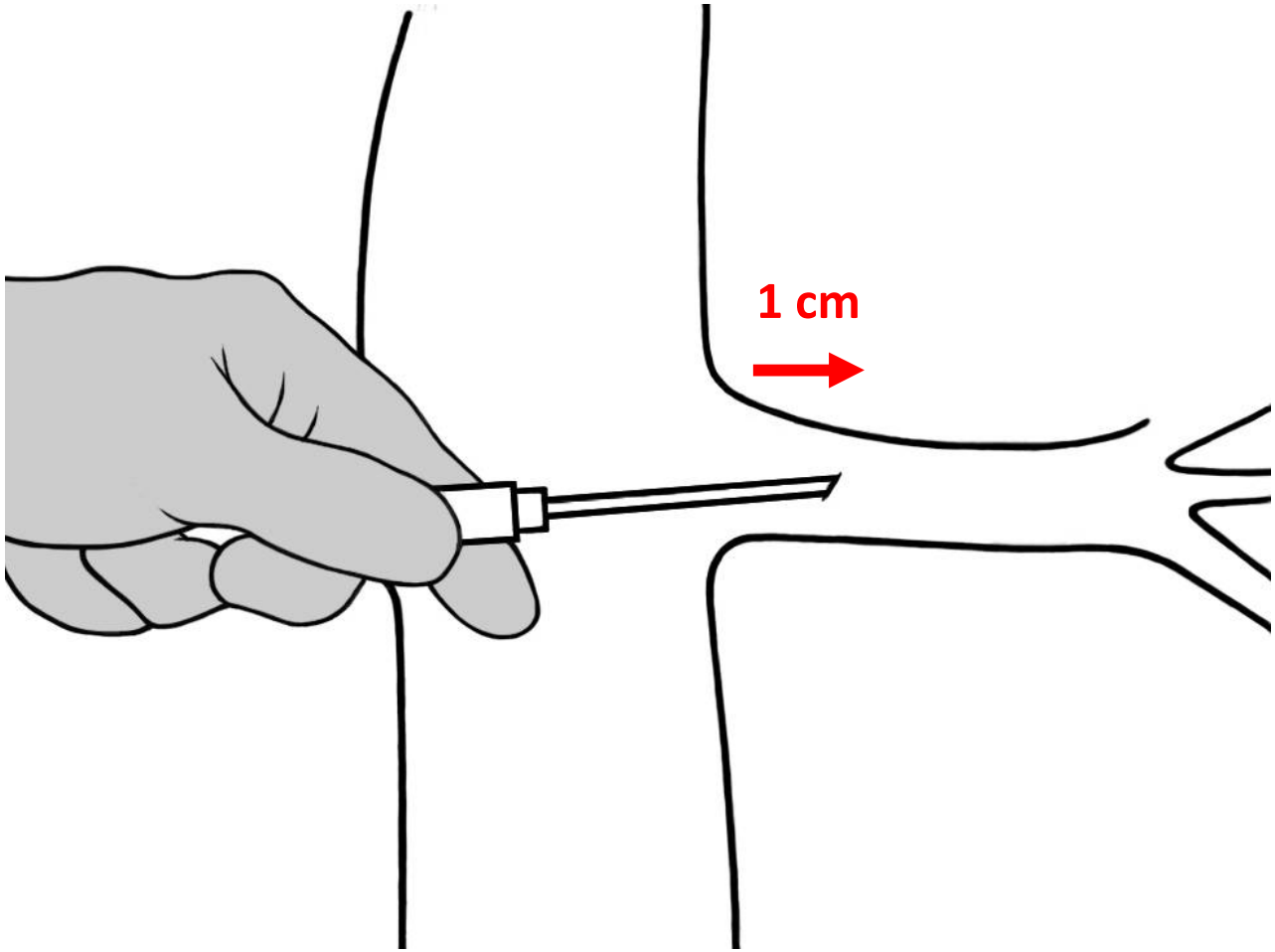


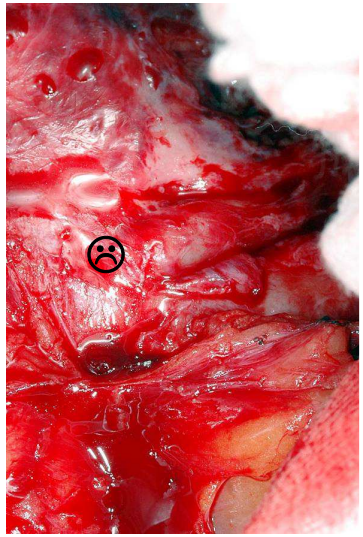
VIABAHN ENDOPROSTHESIS GORE

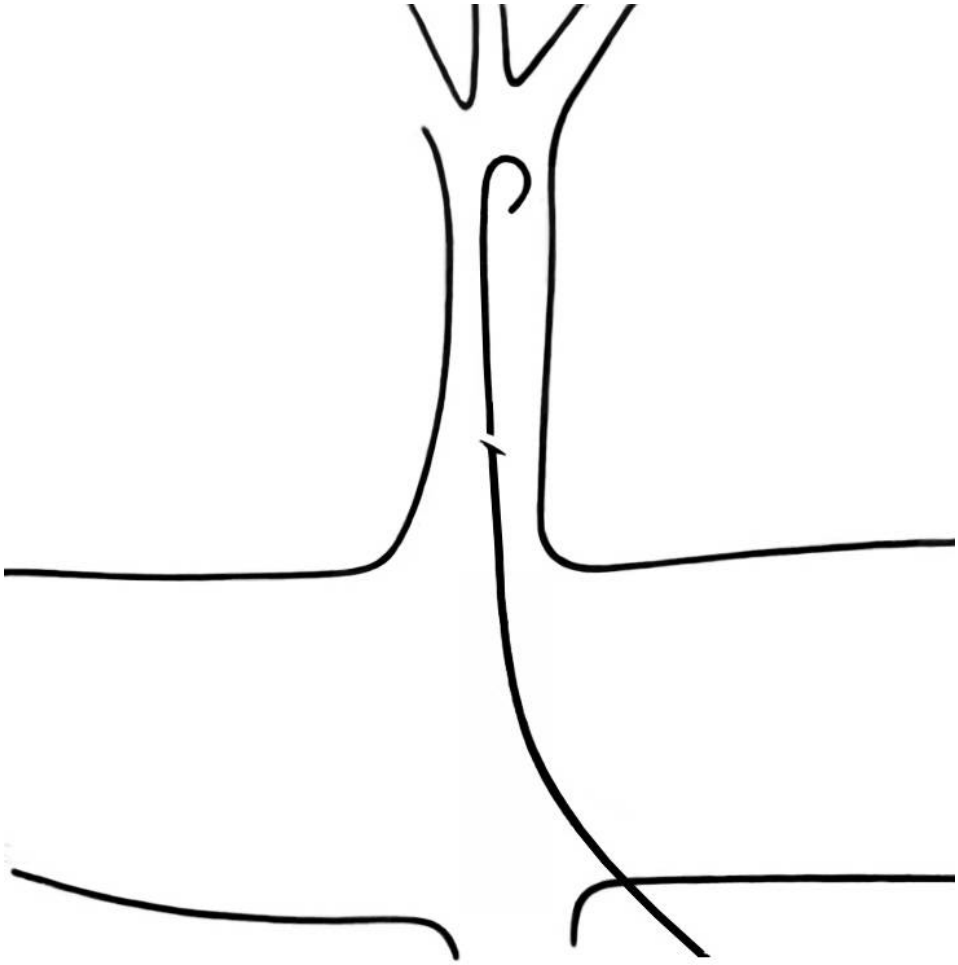
VORTEC/STAT - Material

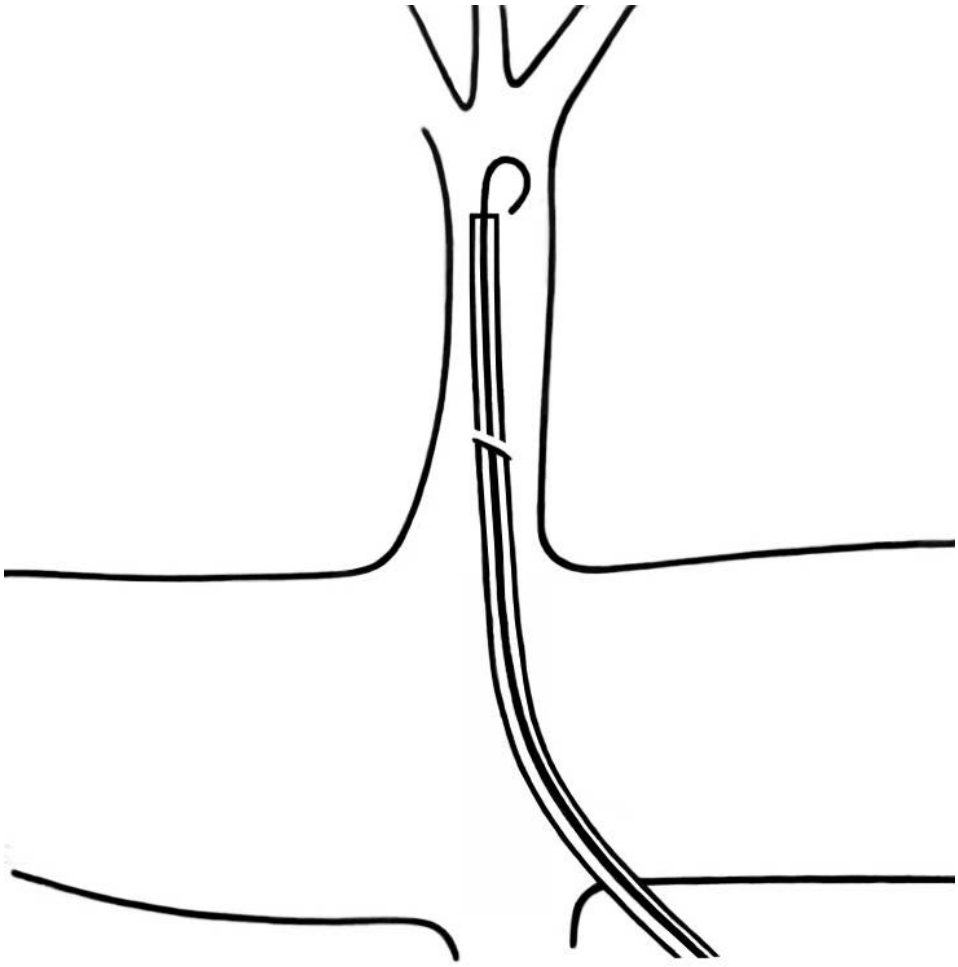


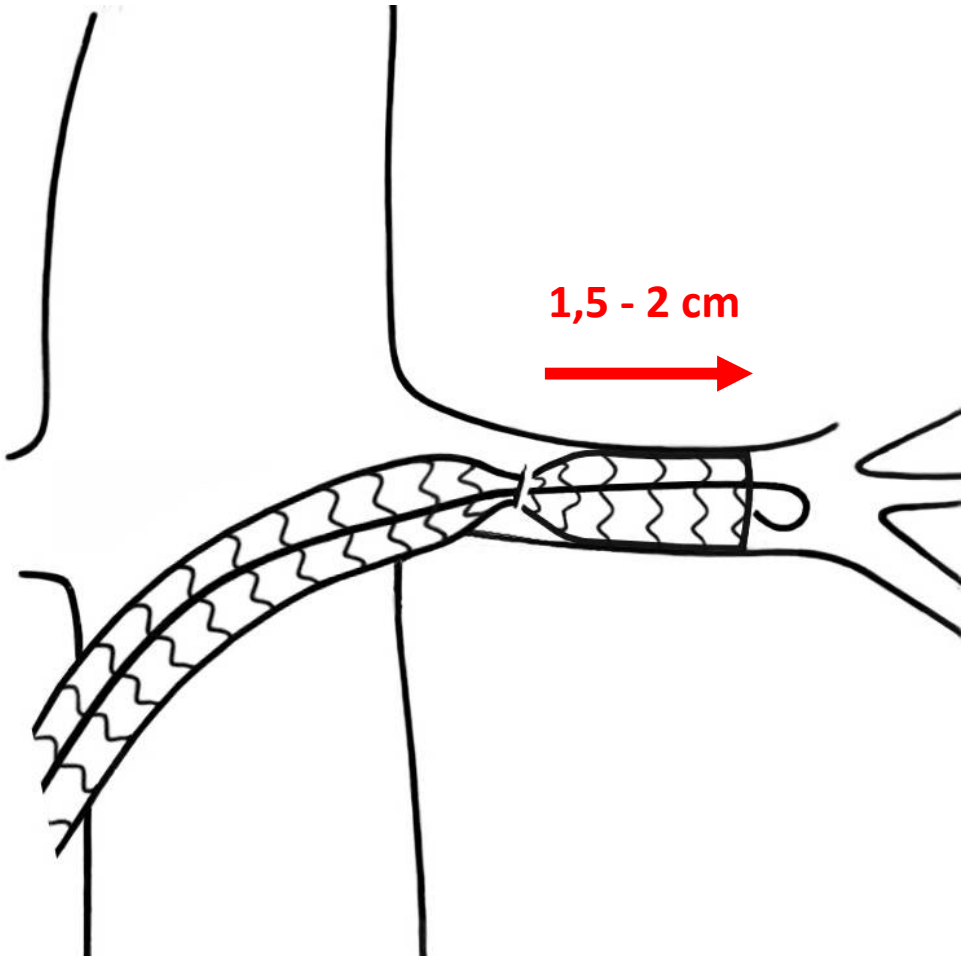


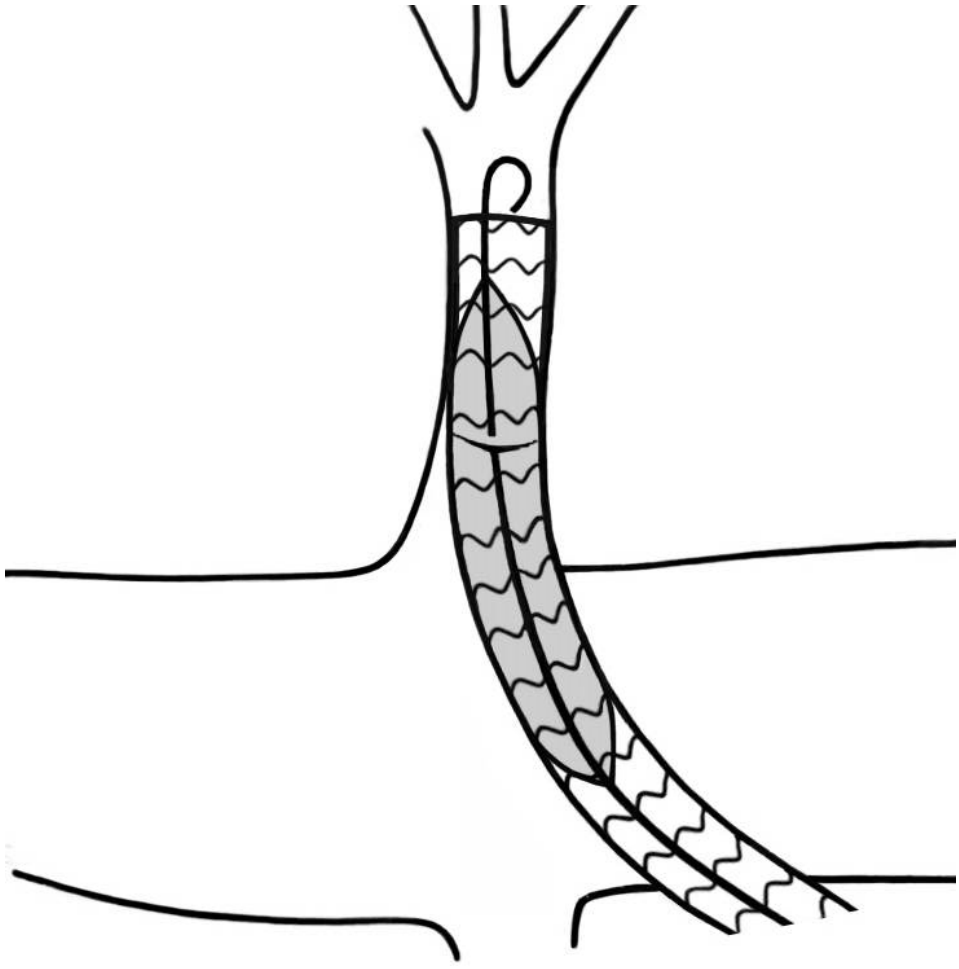

1 cm

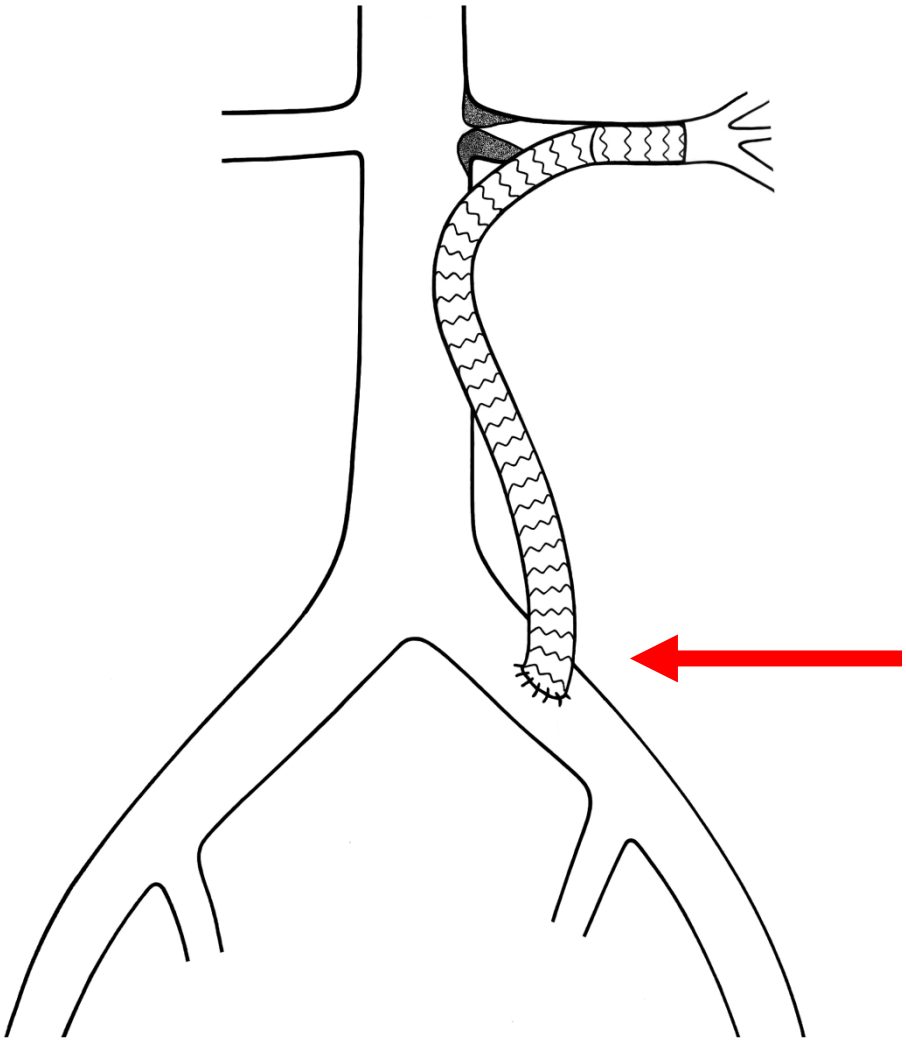




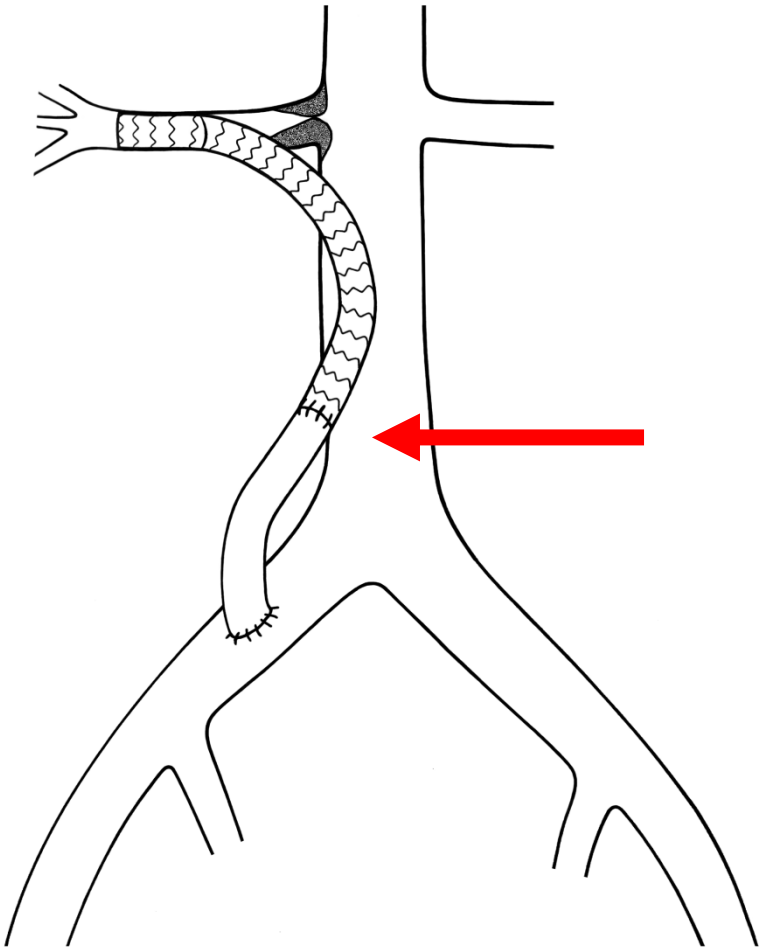



1,5 - 2 cm

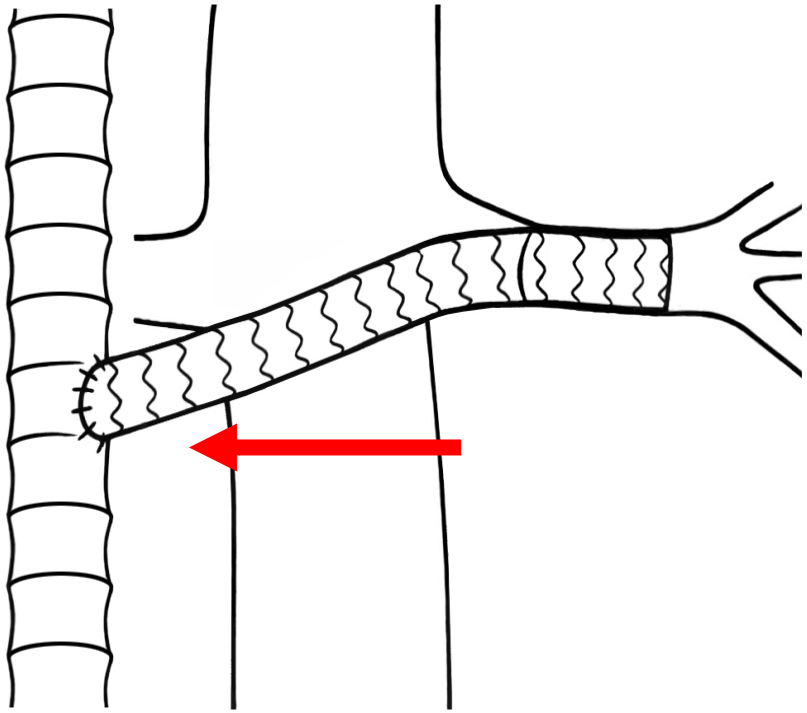




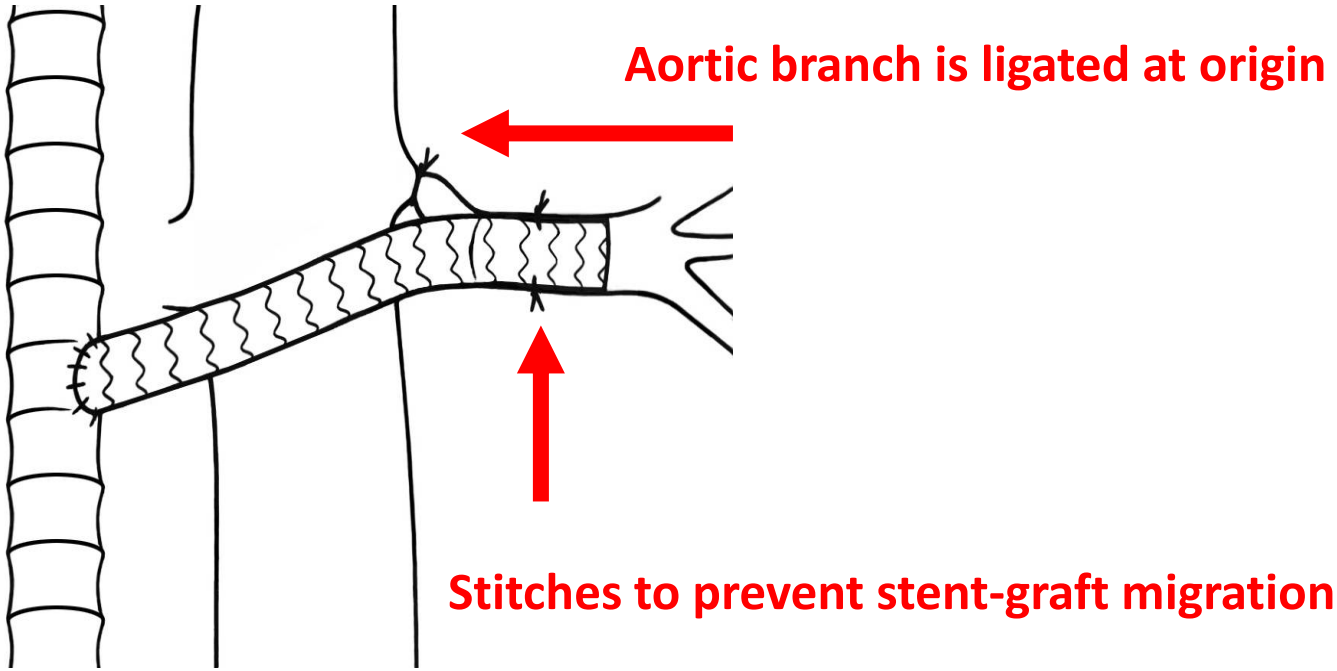
End-to-Side Anastomosis to native artery



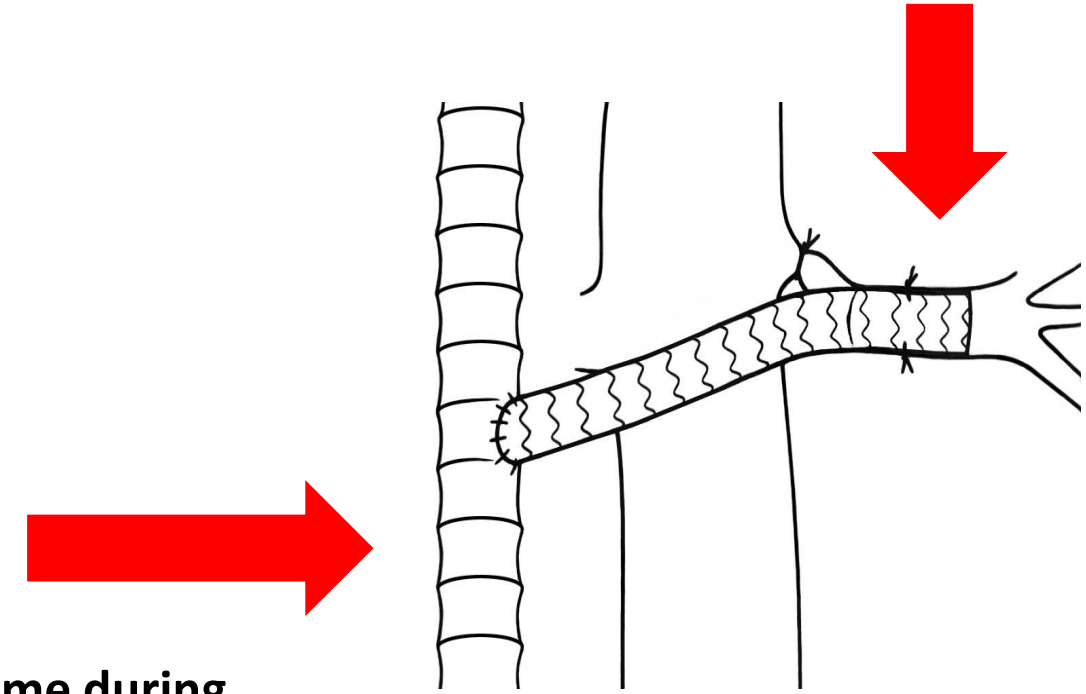
End-to-End Anastomosis to inflow graft



End-to-Side Anastomosis to Inflow graft

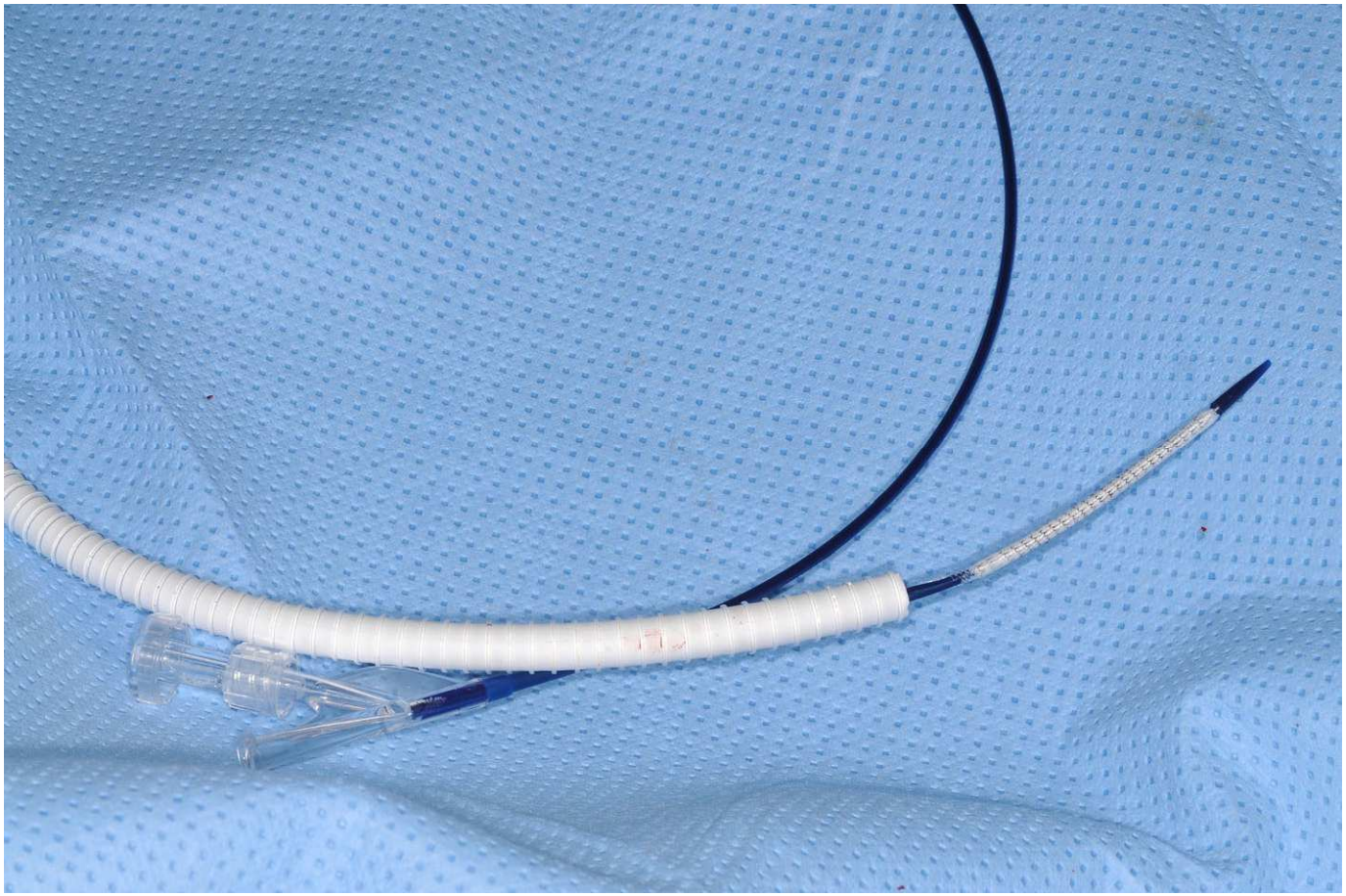

Aortic branch is ligated at origin
Stitches to prevent stent-graft migration

Tool to perform challenging branch anastomosis

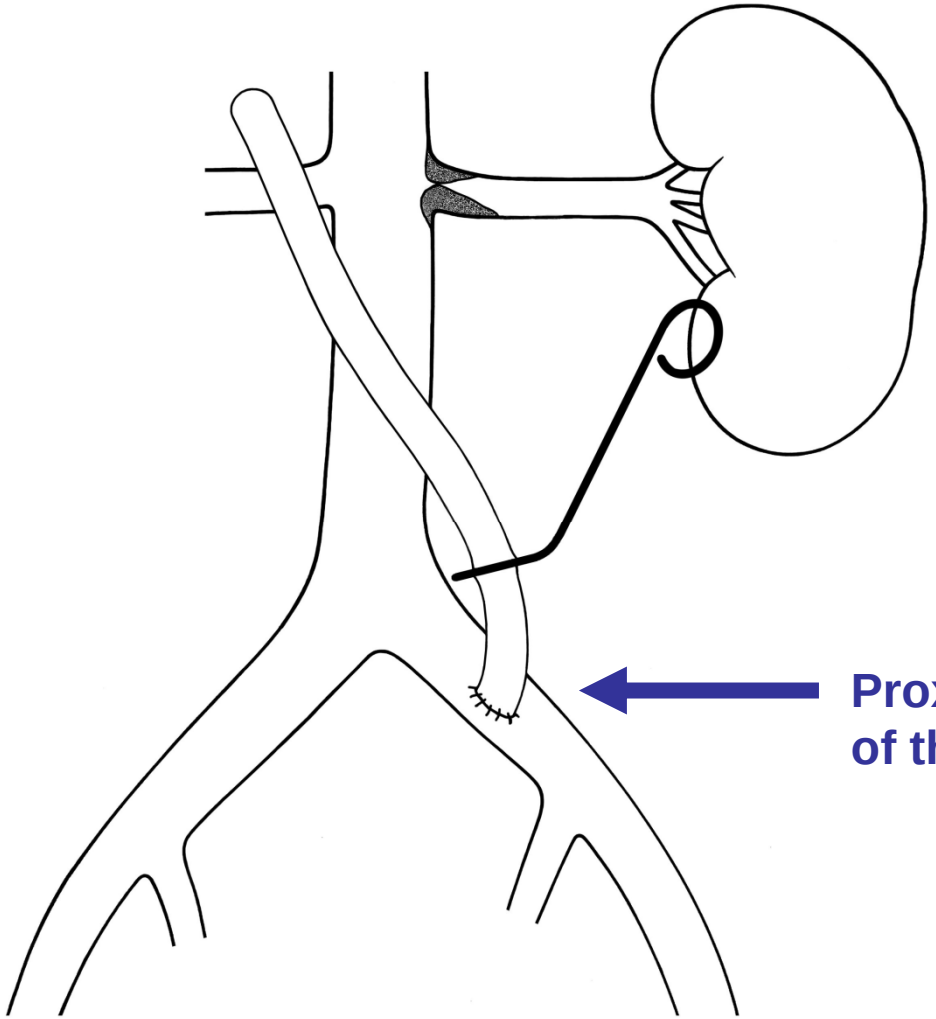


Ischemia time during proximal anastomosis

STAT- **S**utureless **T**elescoping **A**nastomotic **T**echnique

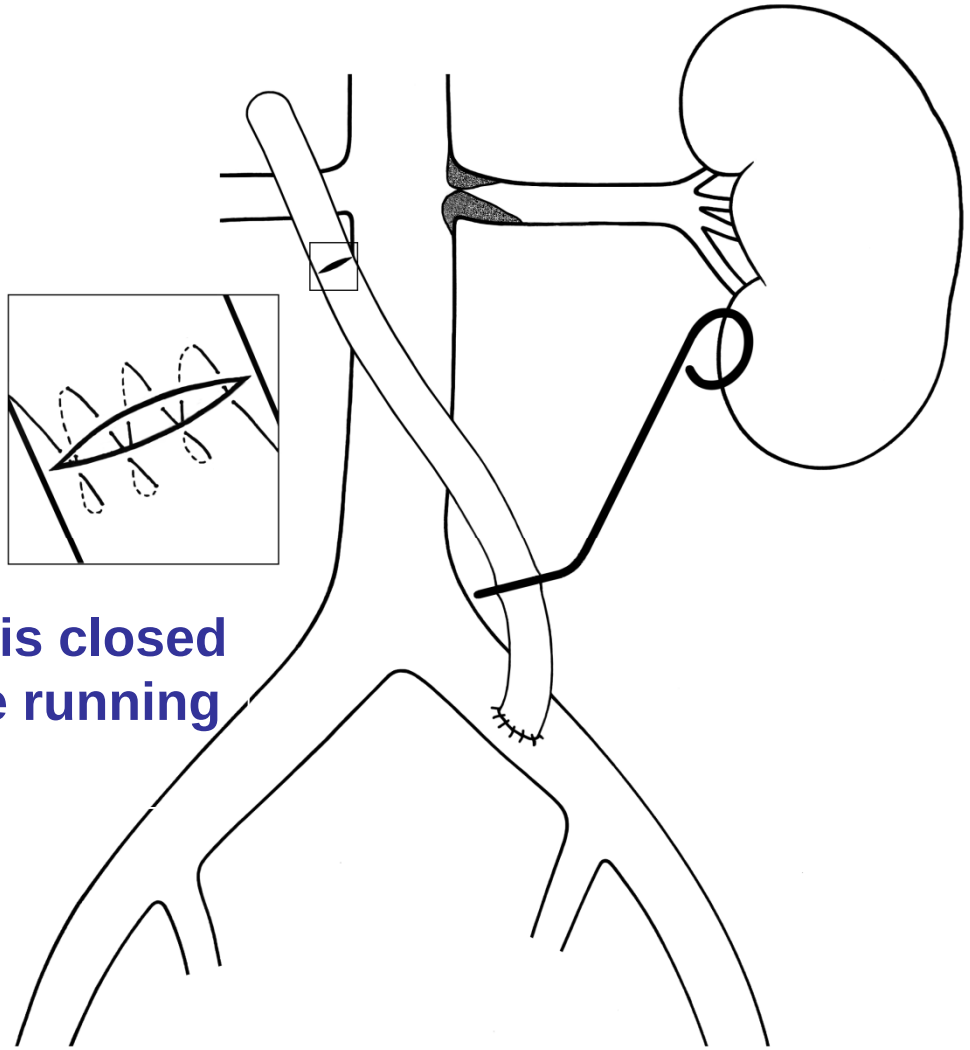


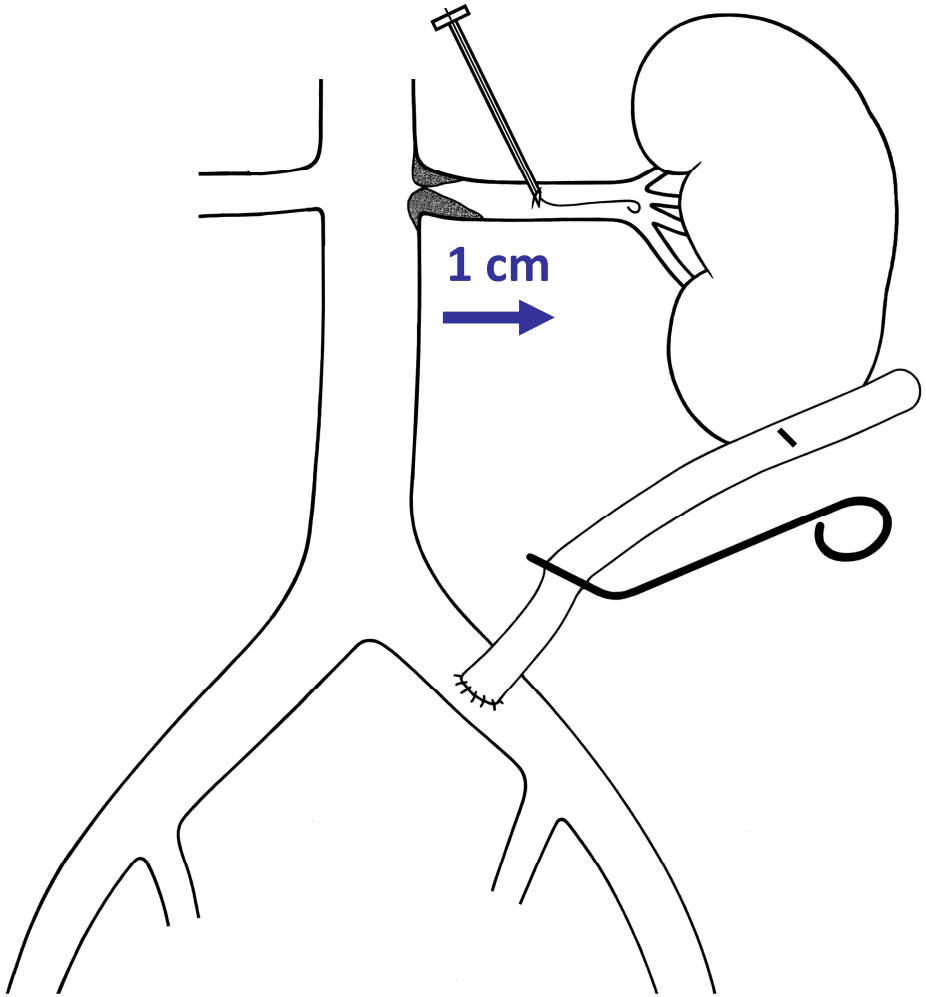
STAT
Sutureless Telescoping Anastomotic Technique

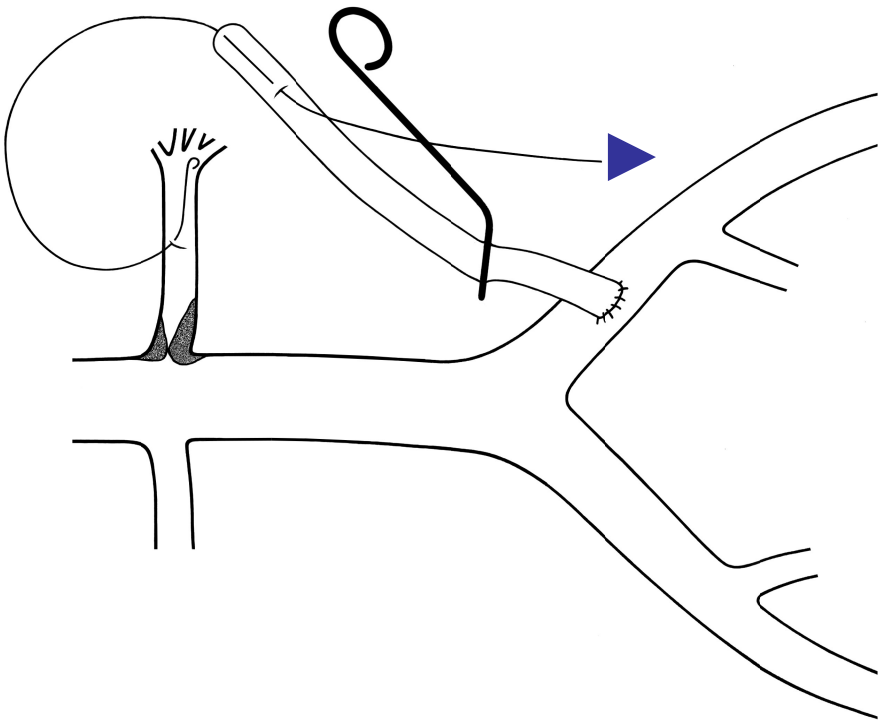


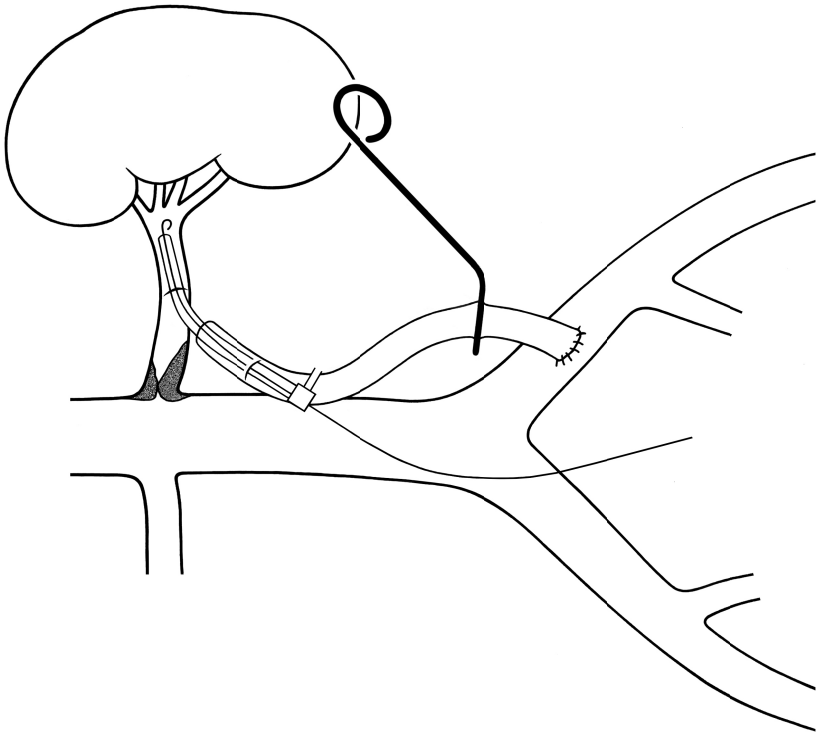
Proximal anastomosis
of the inflow graft

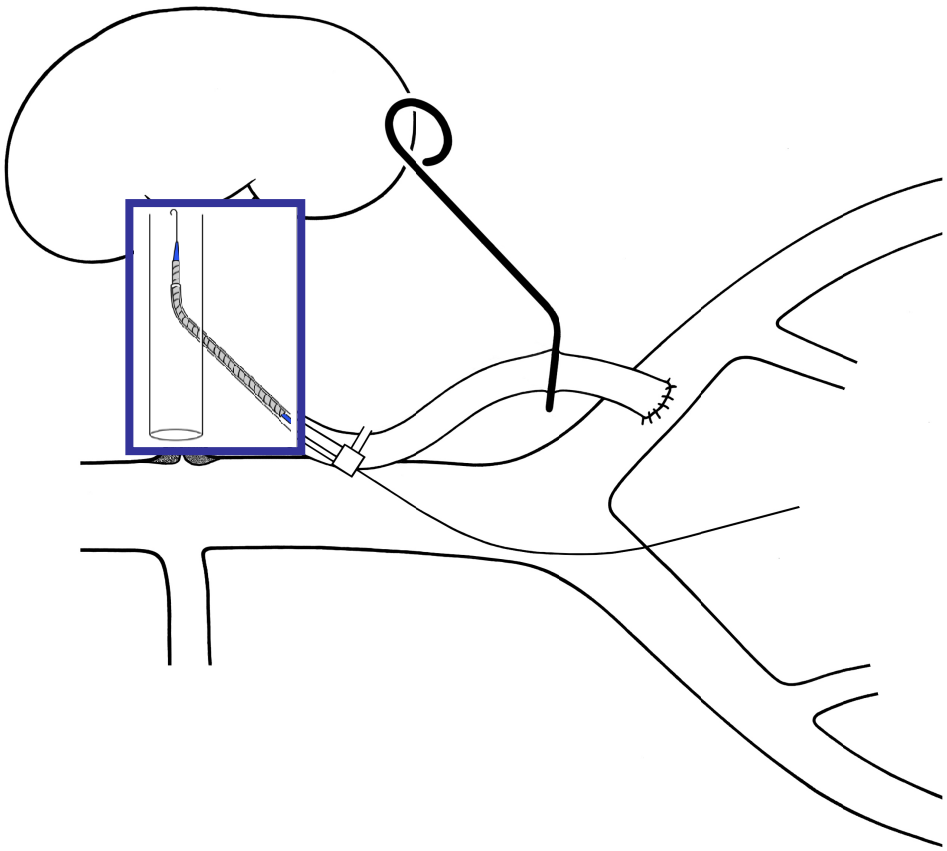
Small transverse incision is closed temporarily with a Prolene running suture

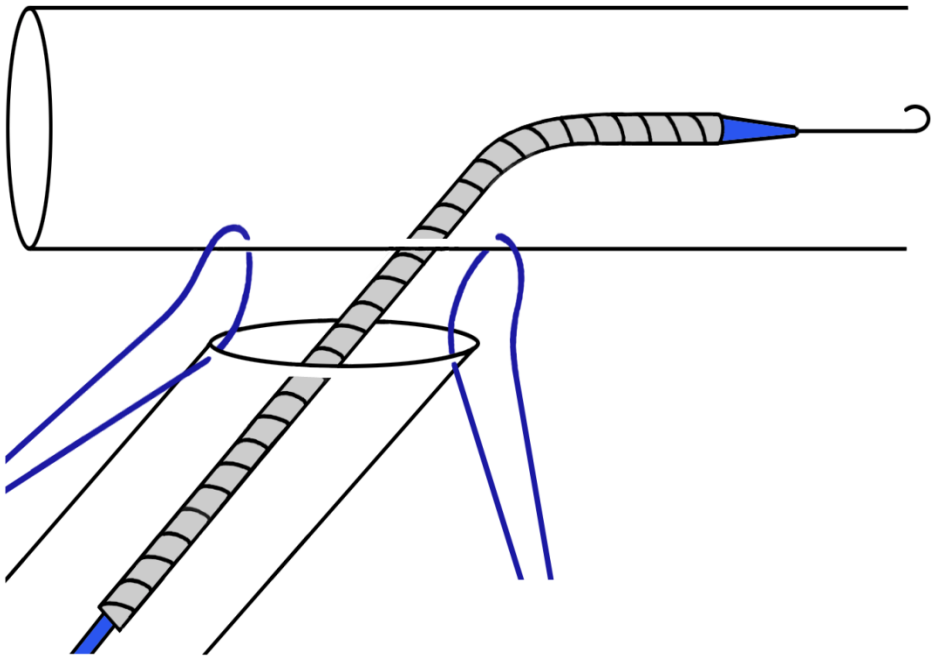



1 cm

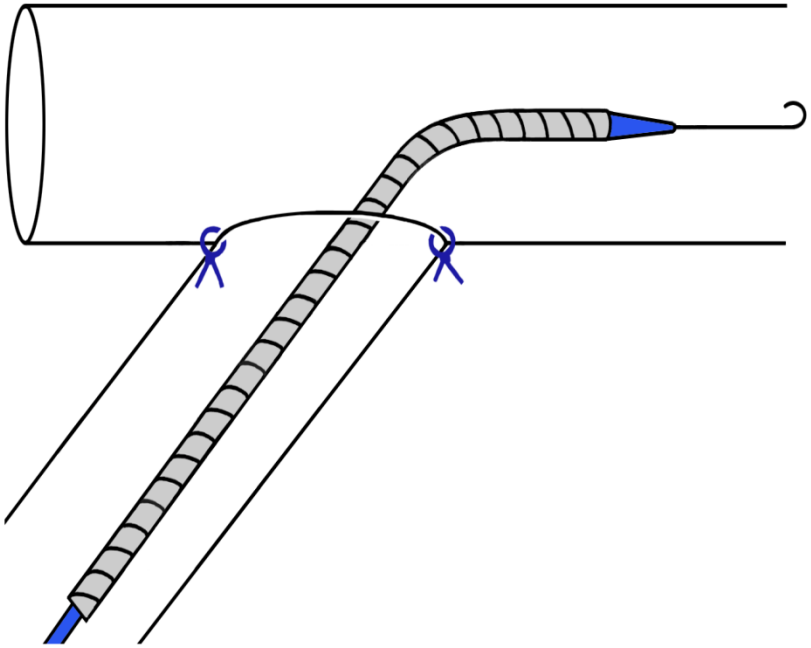


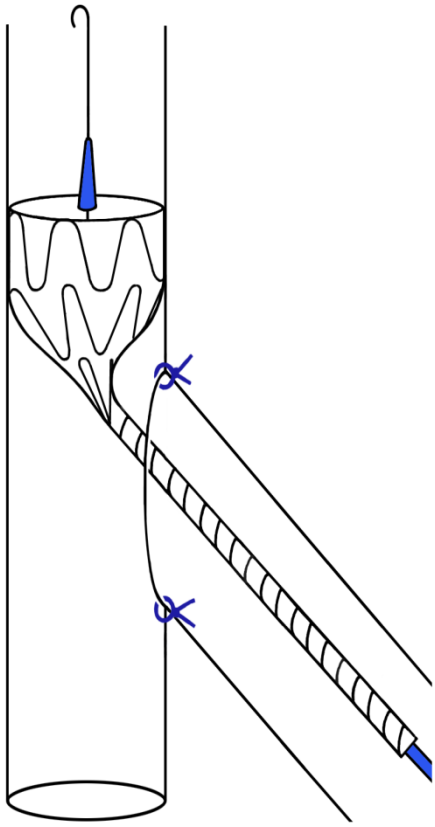


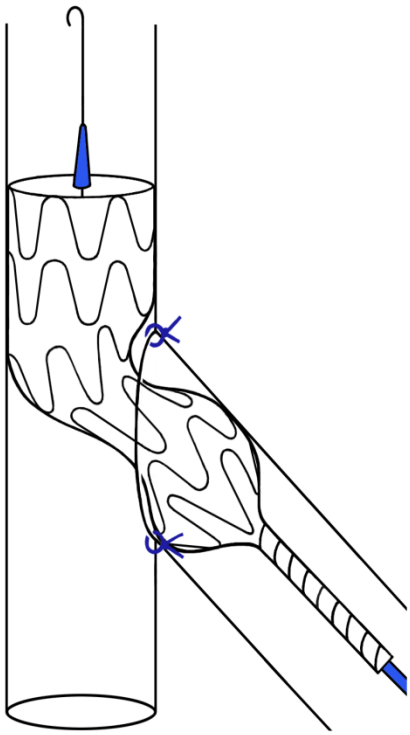


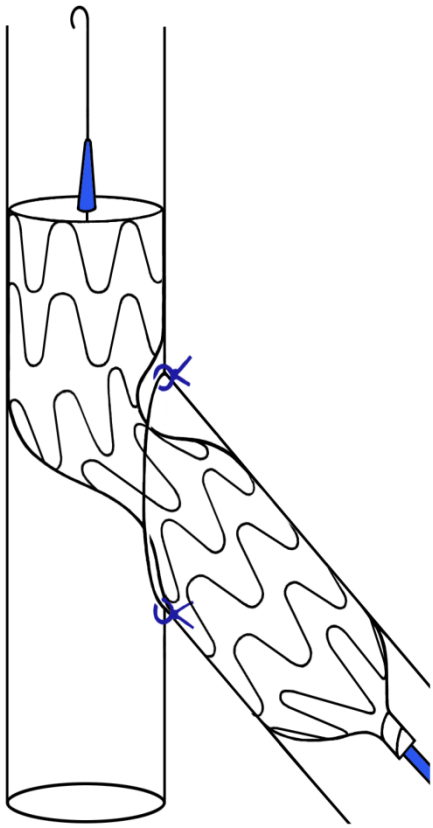


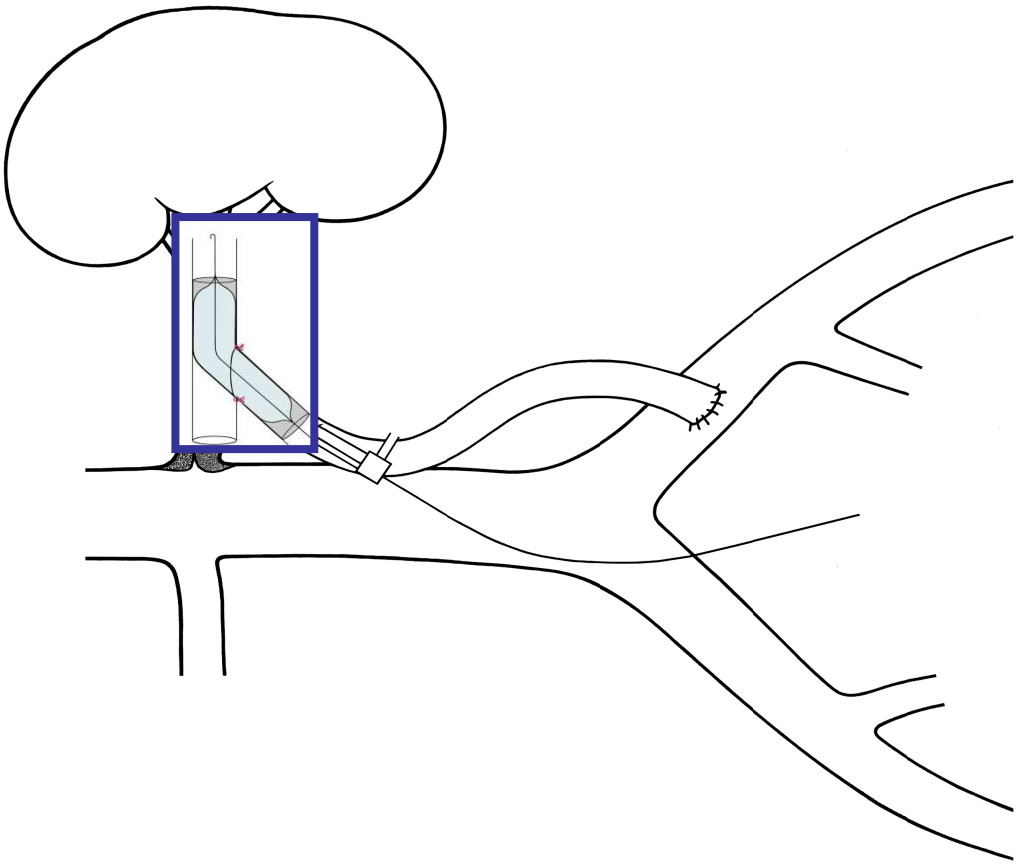
Inflow graft



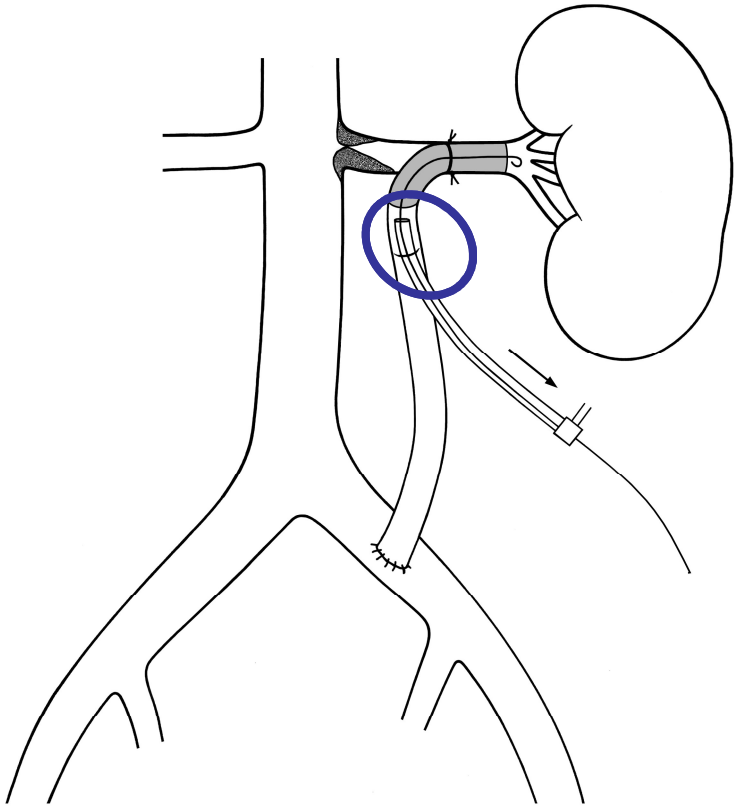


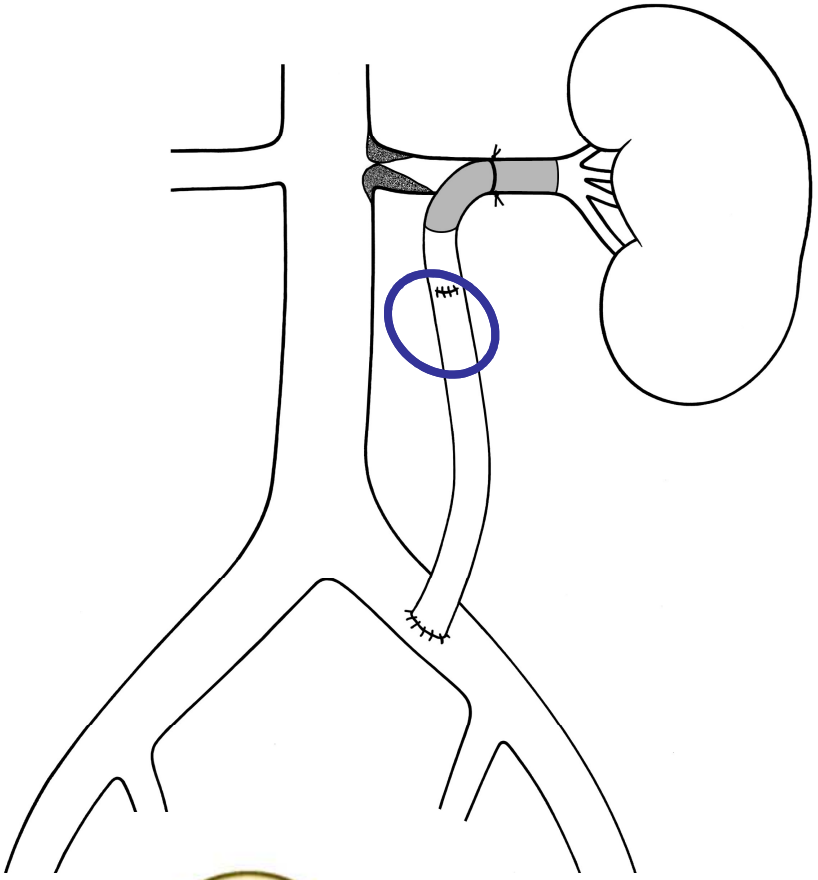






STAT
Sutureless Telescoping Anastomotic Technique





<1‘ ischemia time

How to choose diameter of stent-graft?

Viabahn (2.5cm-5cm-10cm-15cm)	**Target vessel**
5mm	4.0mm - 4.7mm
6mm	4.8mm – 5.5mm
7mm	5.6mm – 6.5mm
8mm	6.6mm – 7.5mm

How to choose diameter of stent-graft?

Viabahn (2.5cm-5cm-10cm-15cm)	**Target vessel**
5mm	4.0mm - 4.7mm
6mm	4.8mm – 5.5mm
7mm	**5.6mm – 6.5mm**
8mm	6.6mm – 7.5mm

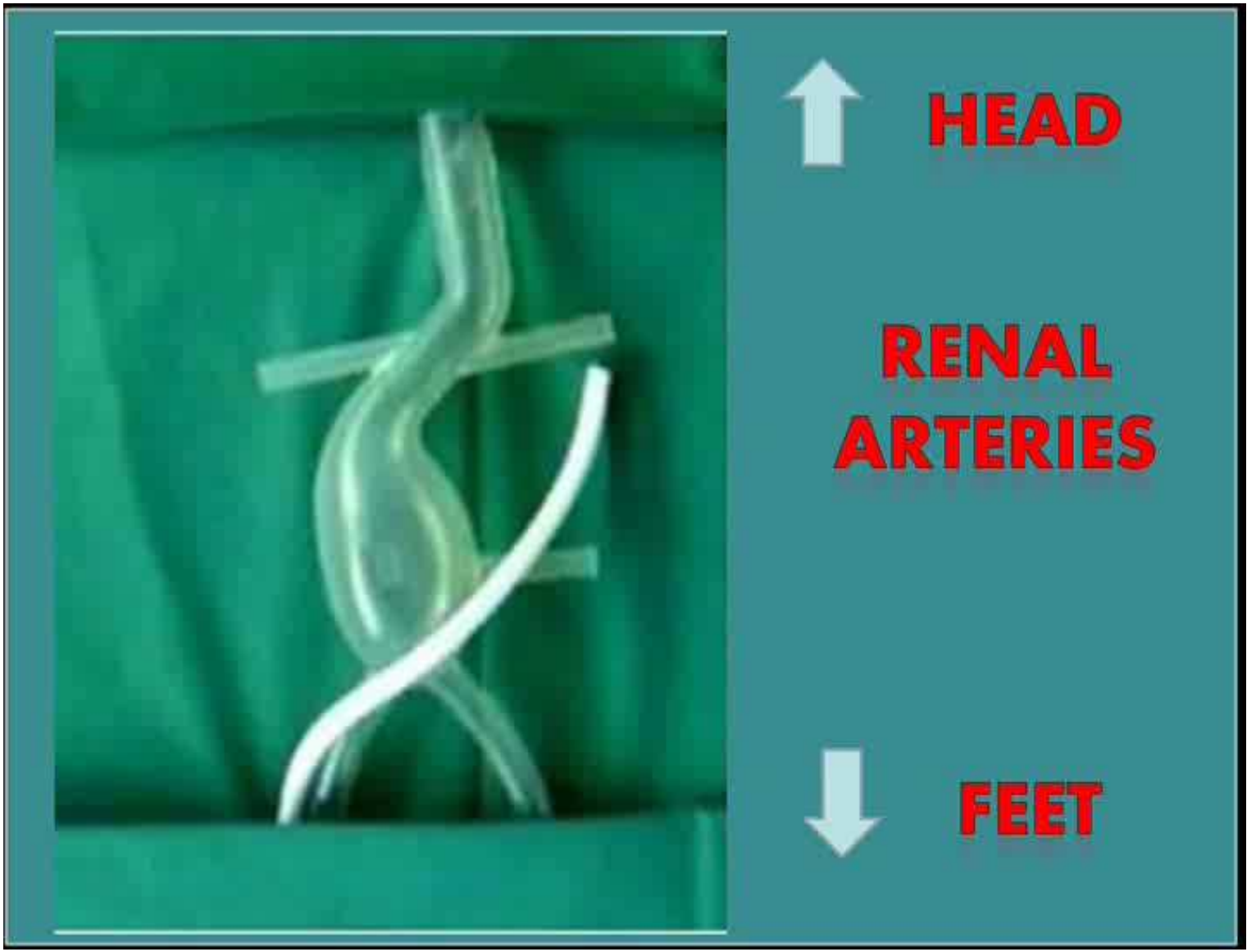
How to choose diameter of inflow graft?

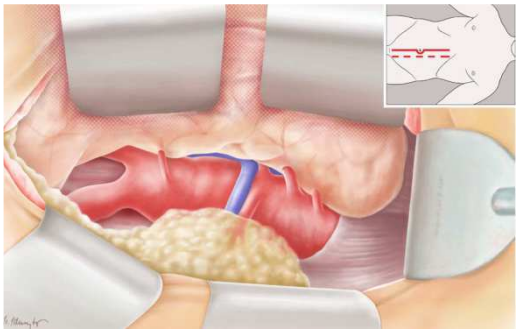
Viabahn (2.5cm-5cm-10cm-15cm)	**Inflow (Interposition) graft**
5mm	5mm
6mm	5mm
7mm	6mm
8mm	7mm

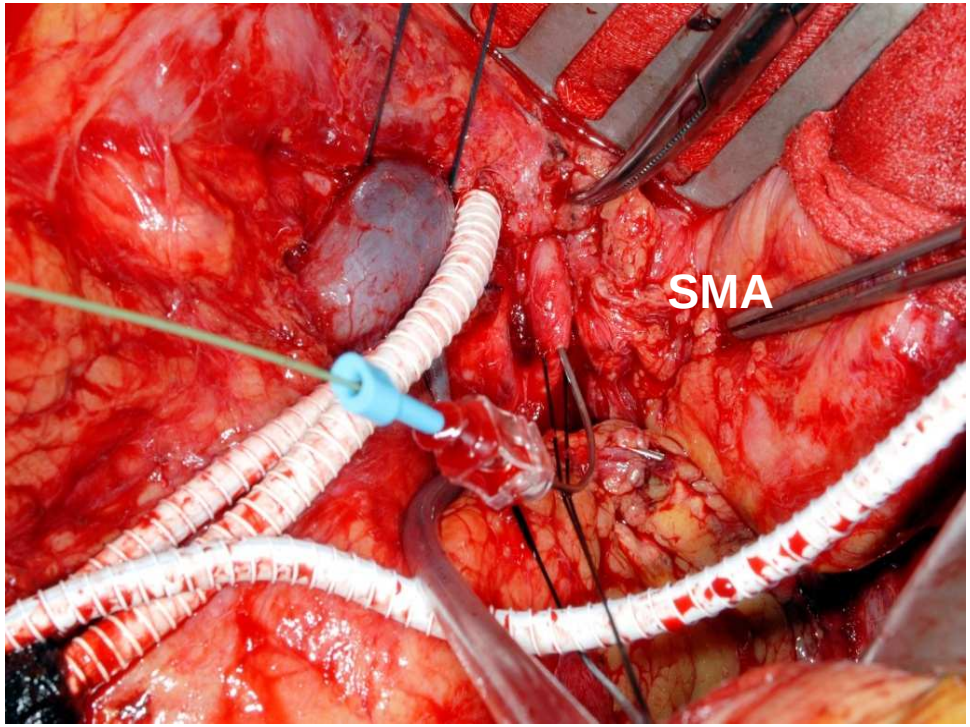
How to choose diameter of inflow graft?

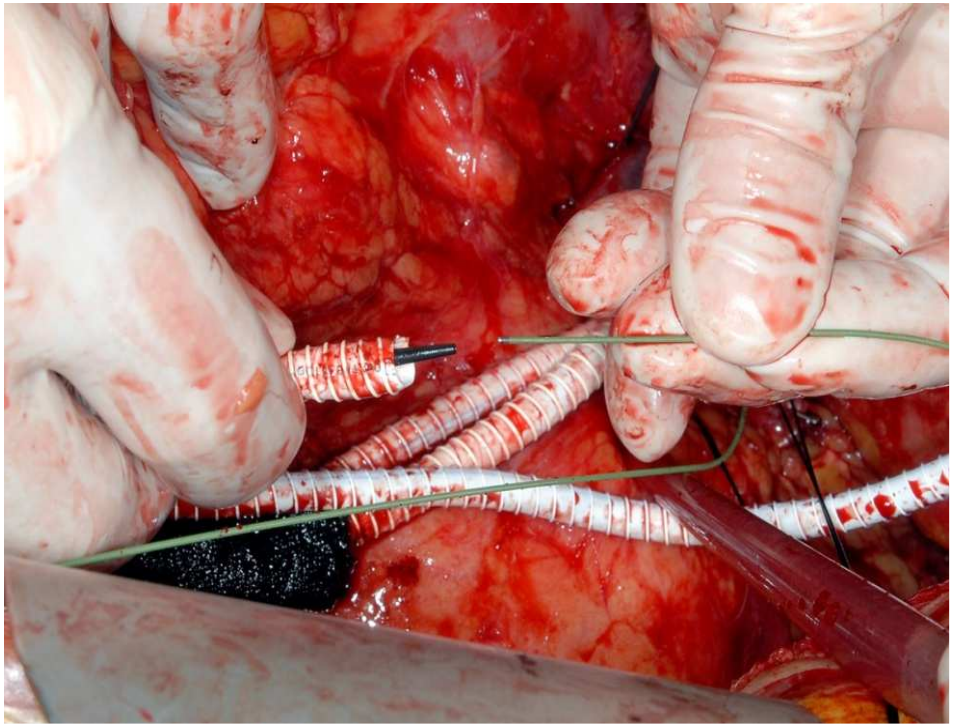
Viabahn (2.5cm-5cm-10cm-15cm)	**Inflow (Interposition) graft**
5mm	5mm
6mm	5mm
7mm	**6mm**
8mm	7mm

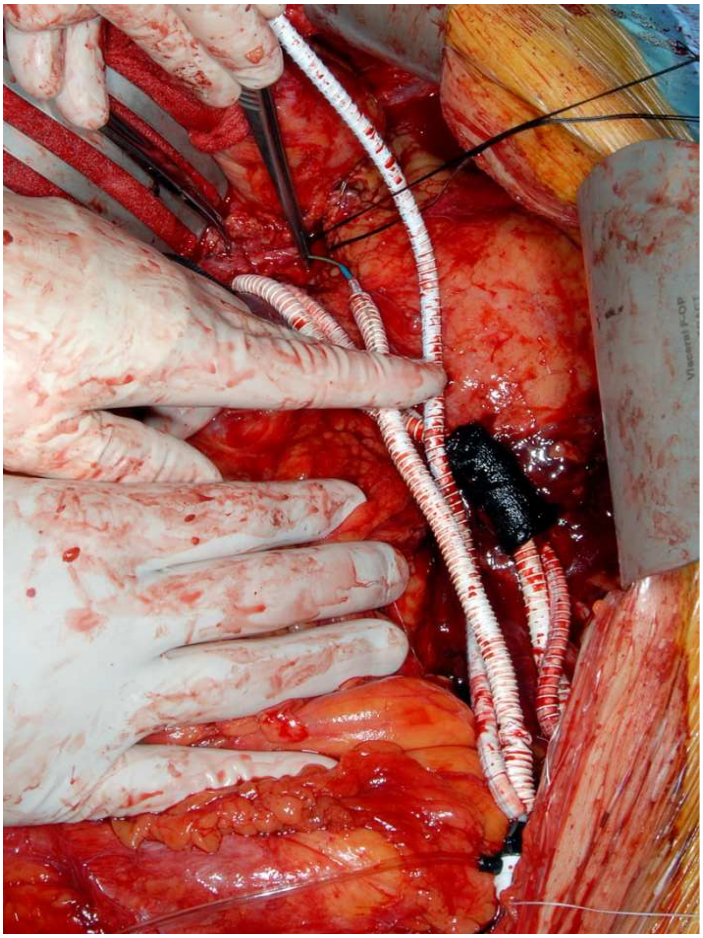
VORTEC / STAT
VISCERAL ARTERIES

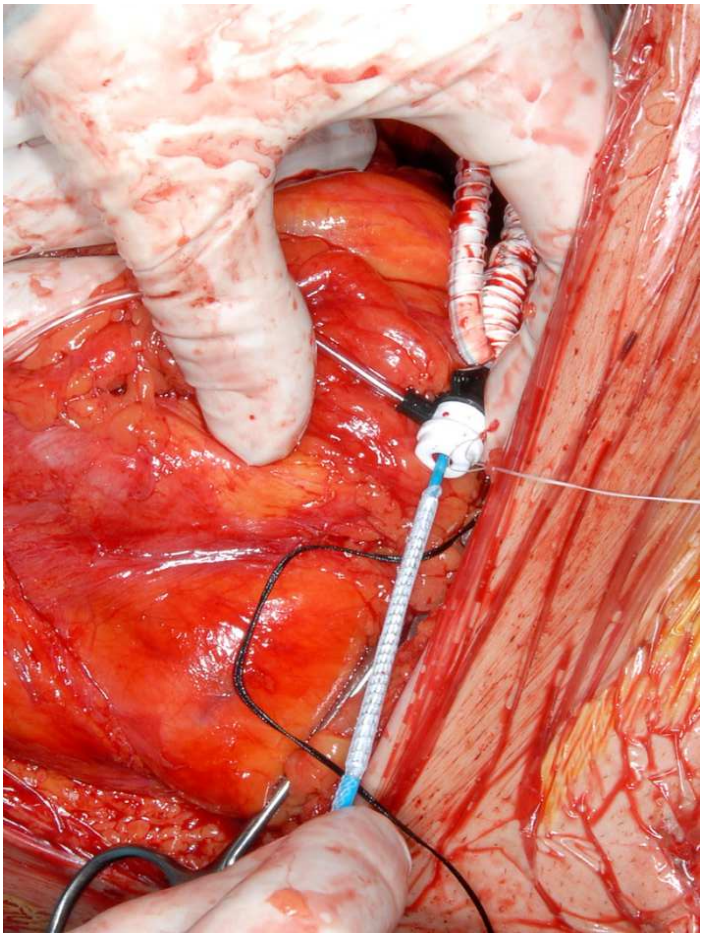

HEAD
RENAL ARTERIES
FEET

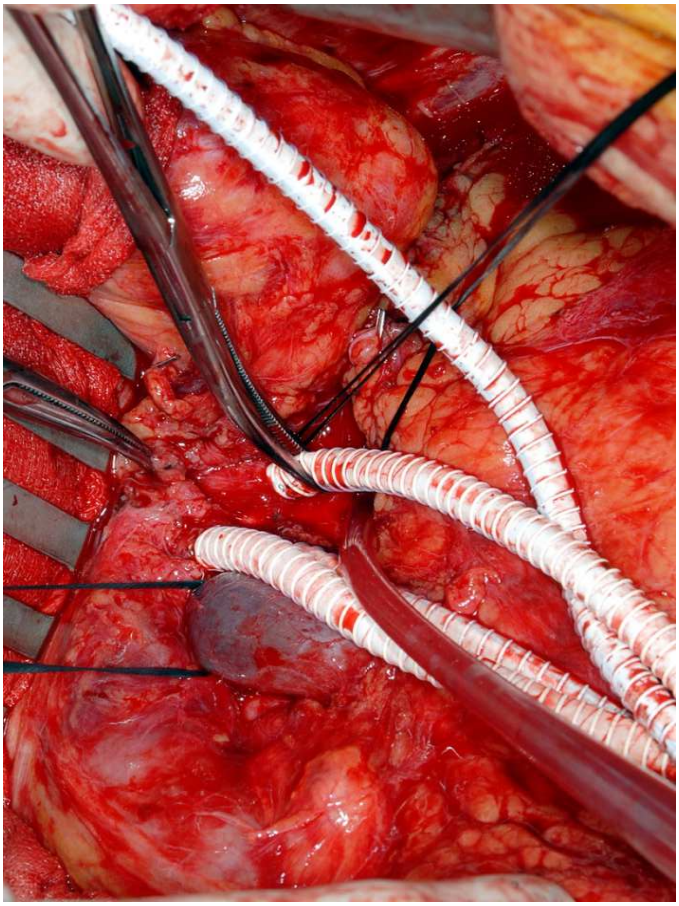


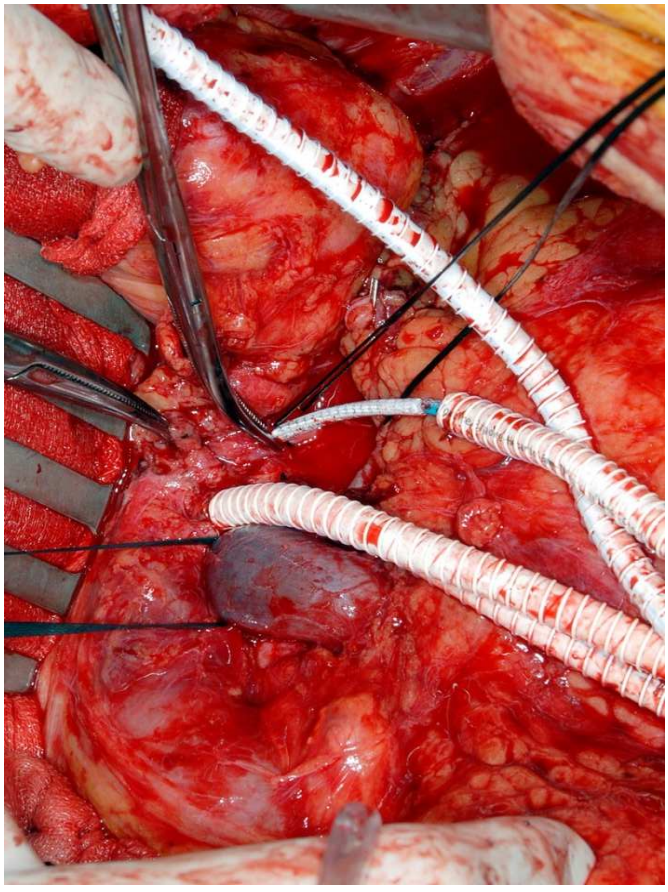

SMA

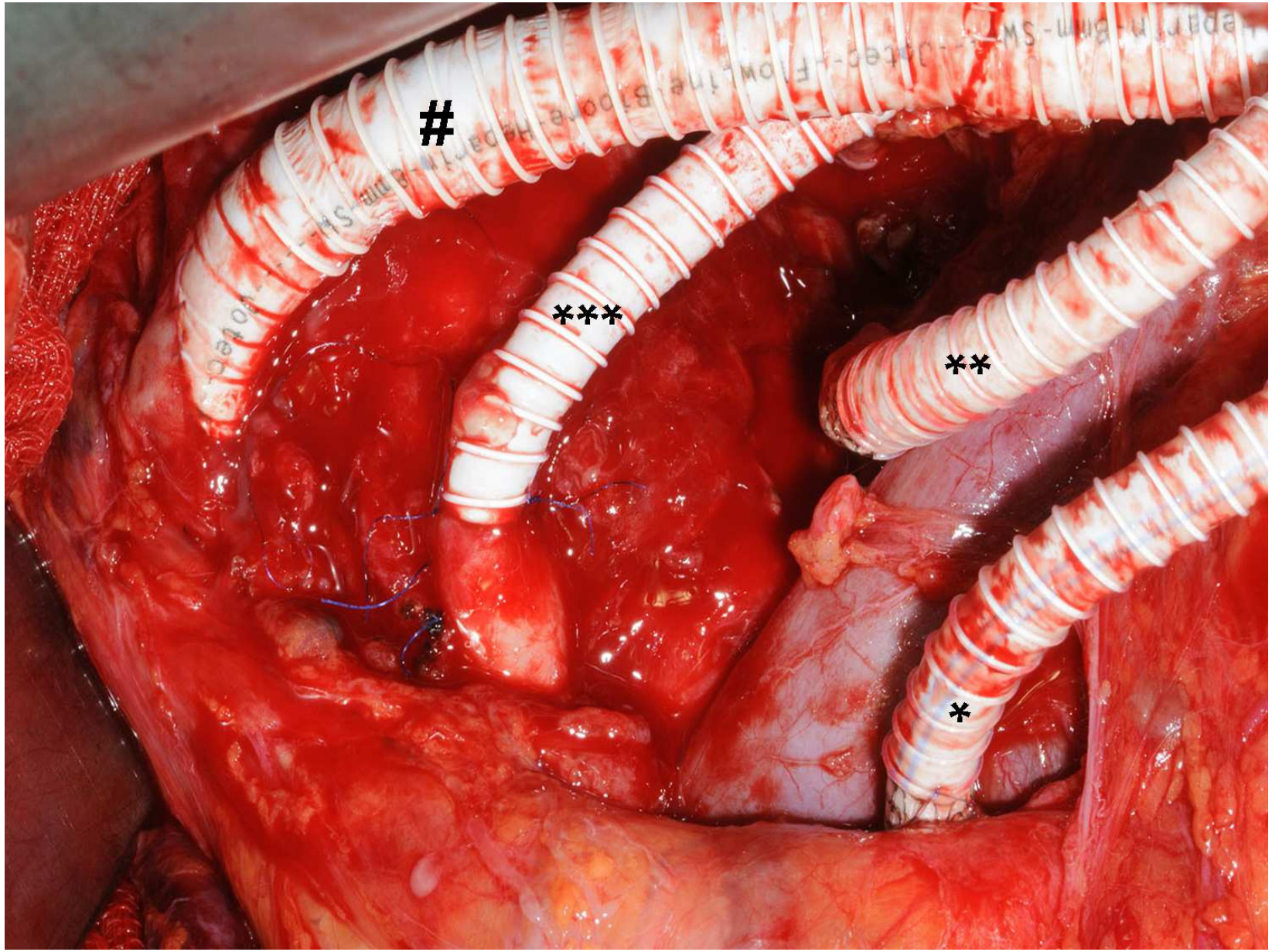


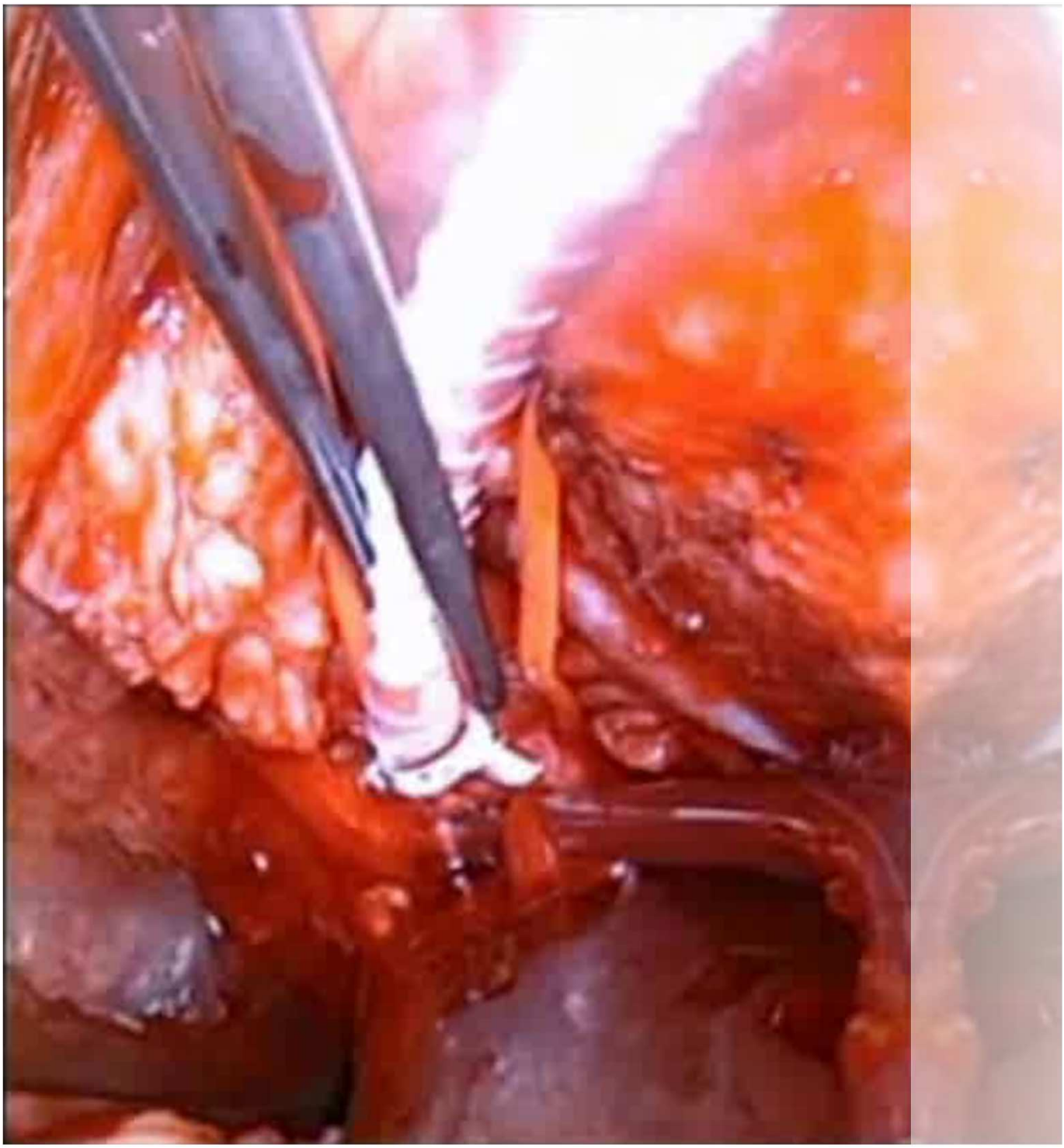






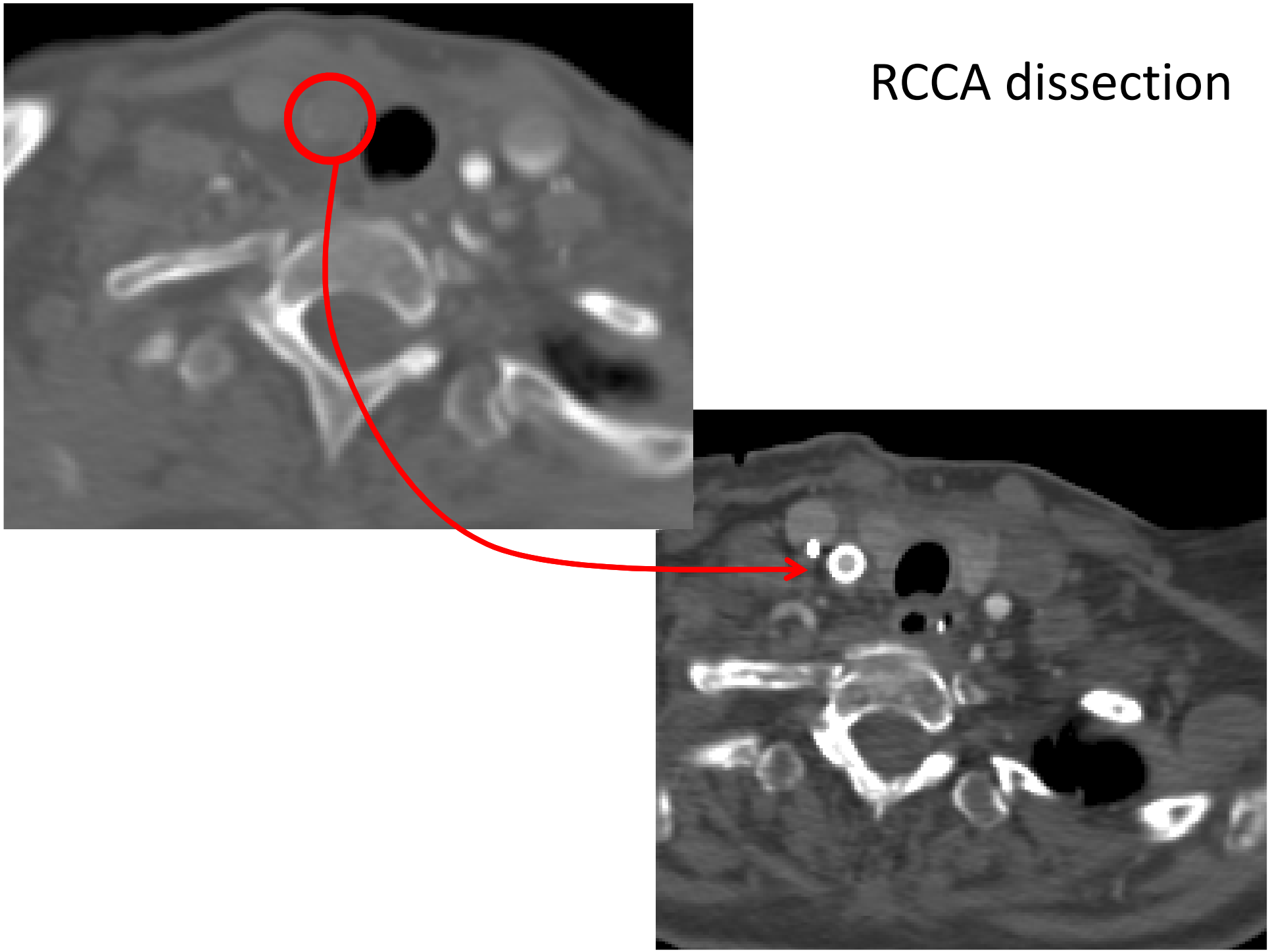


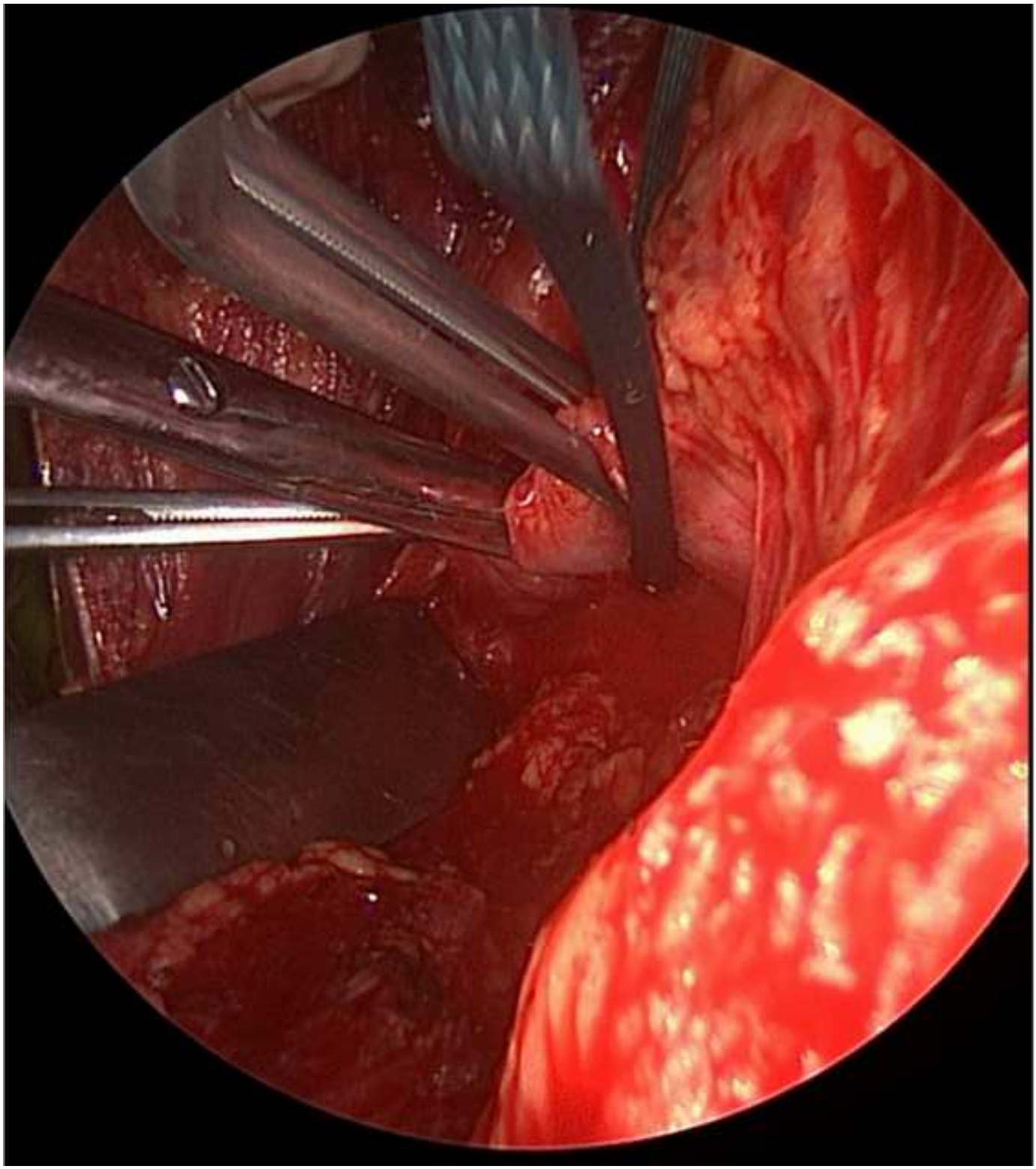


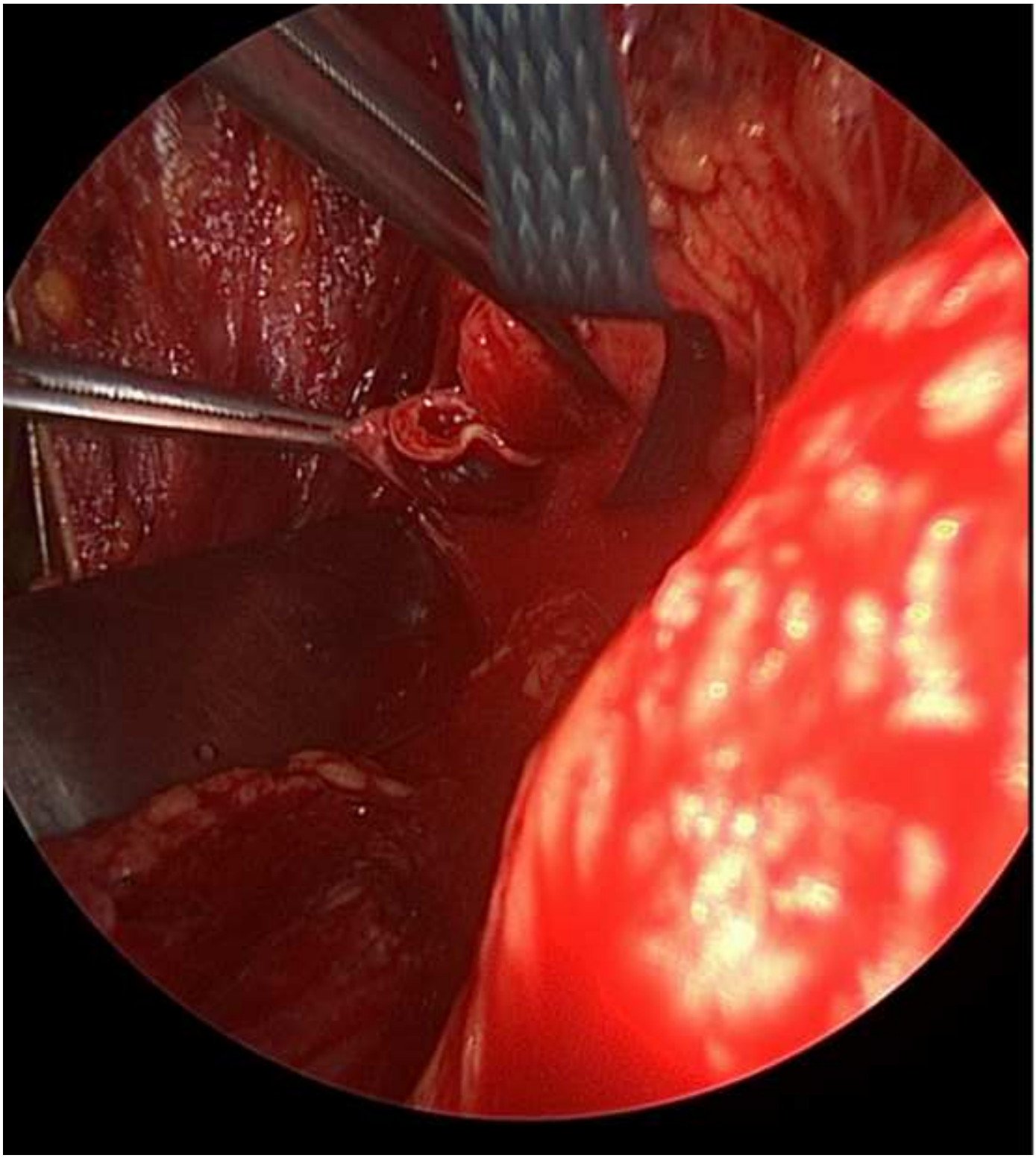


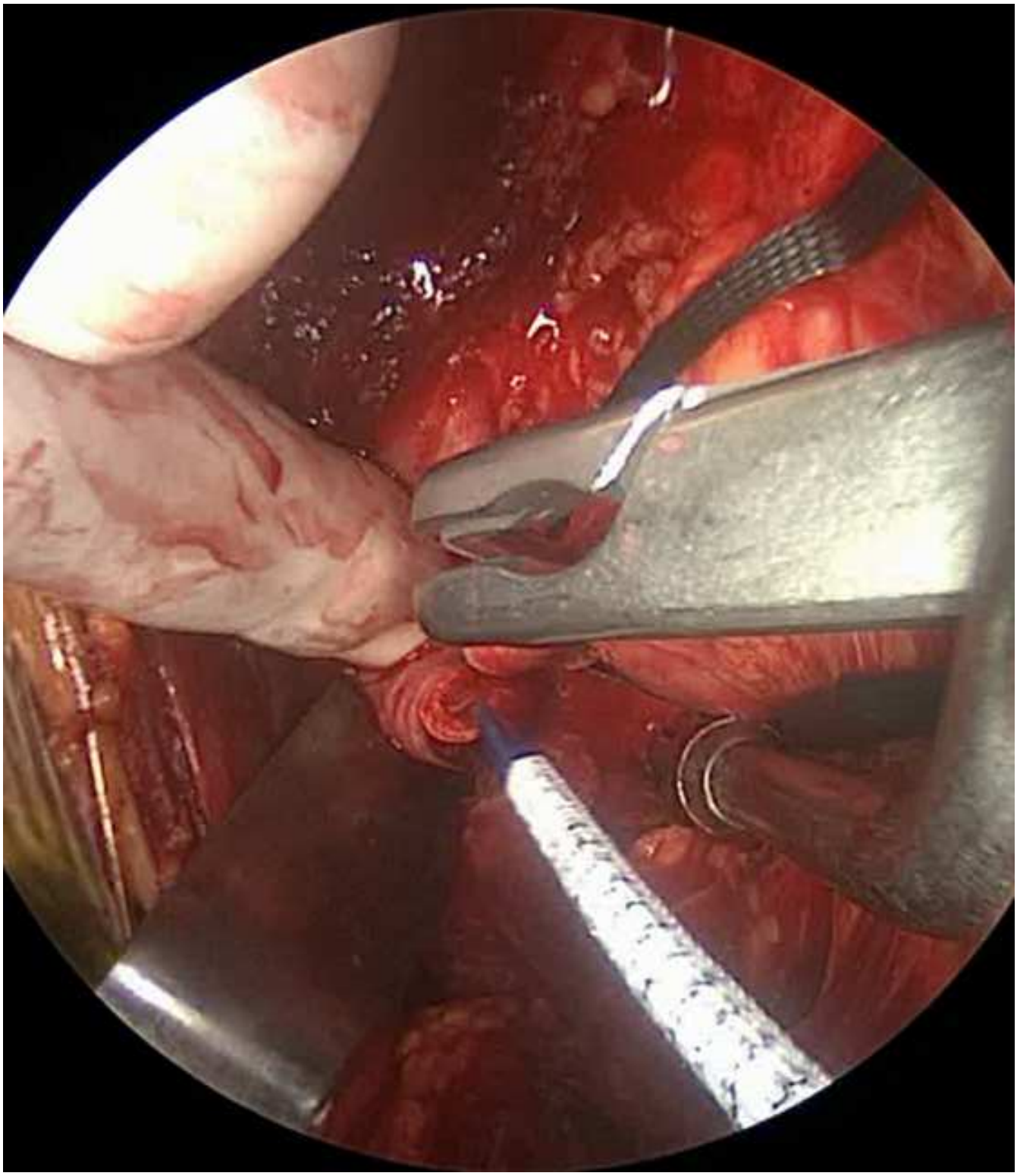
VORTEC / STAT
SUPRAAORTIC ARTERIES

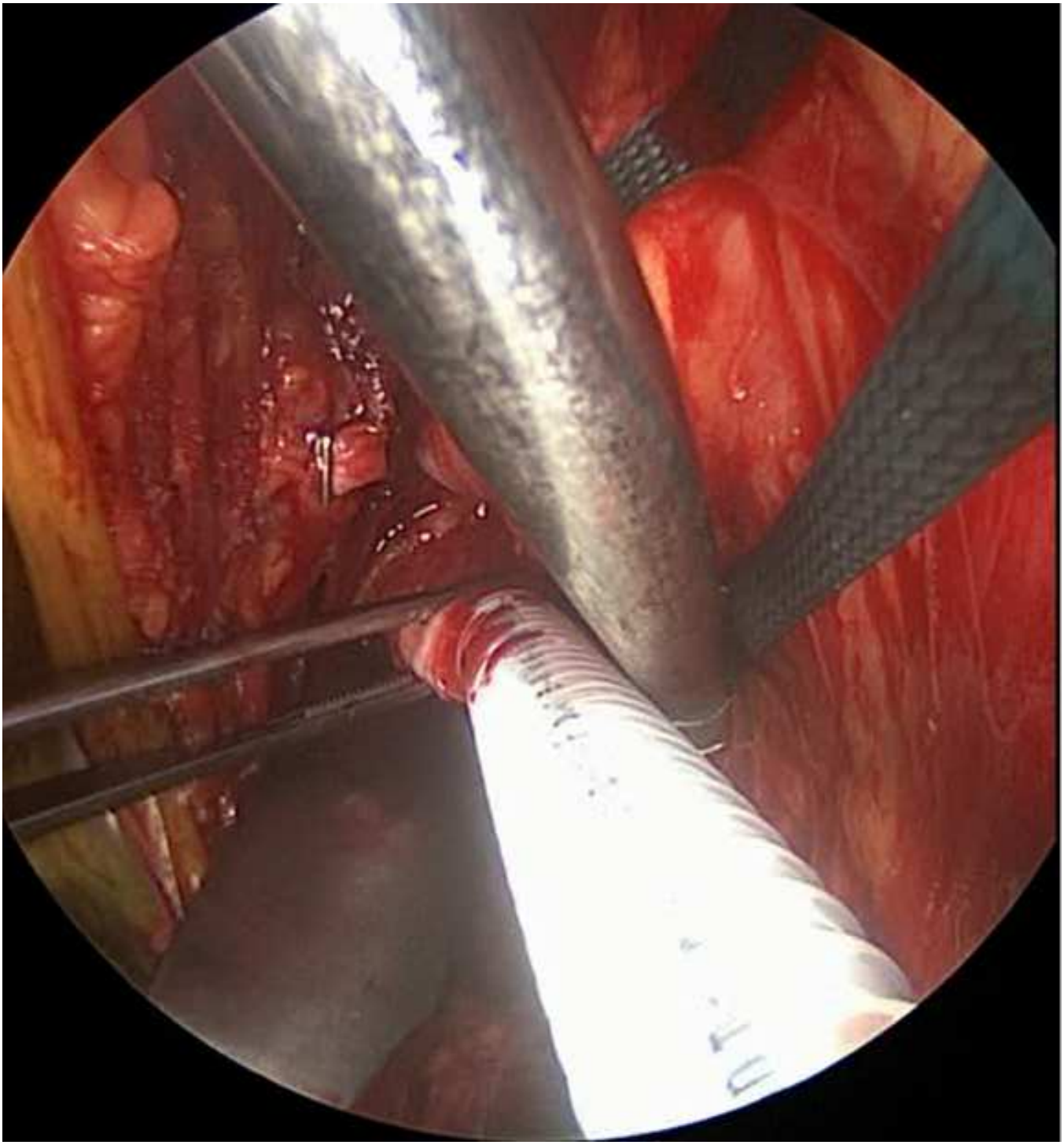
RCCA dissection

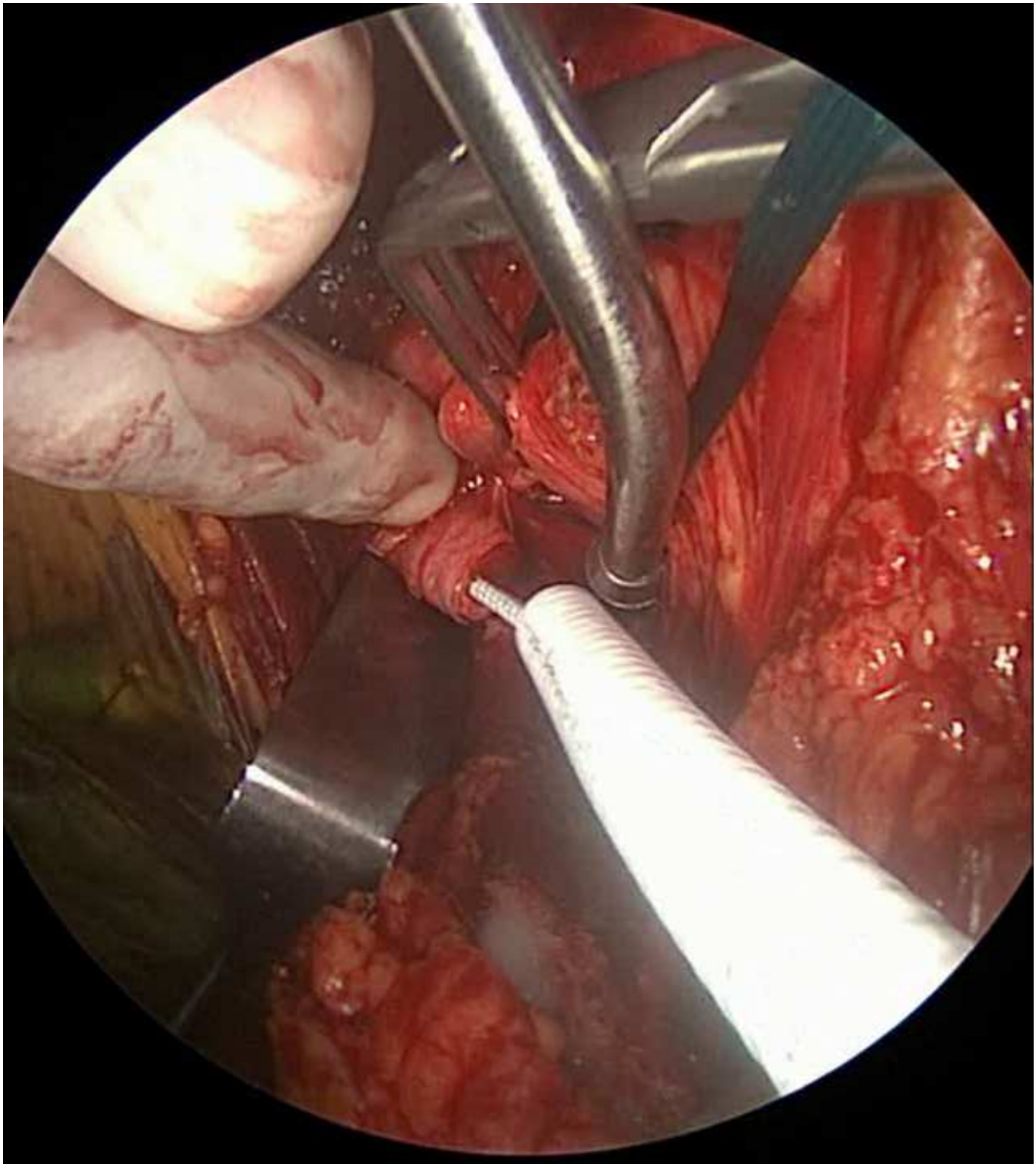


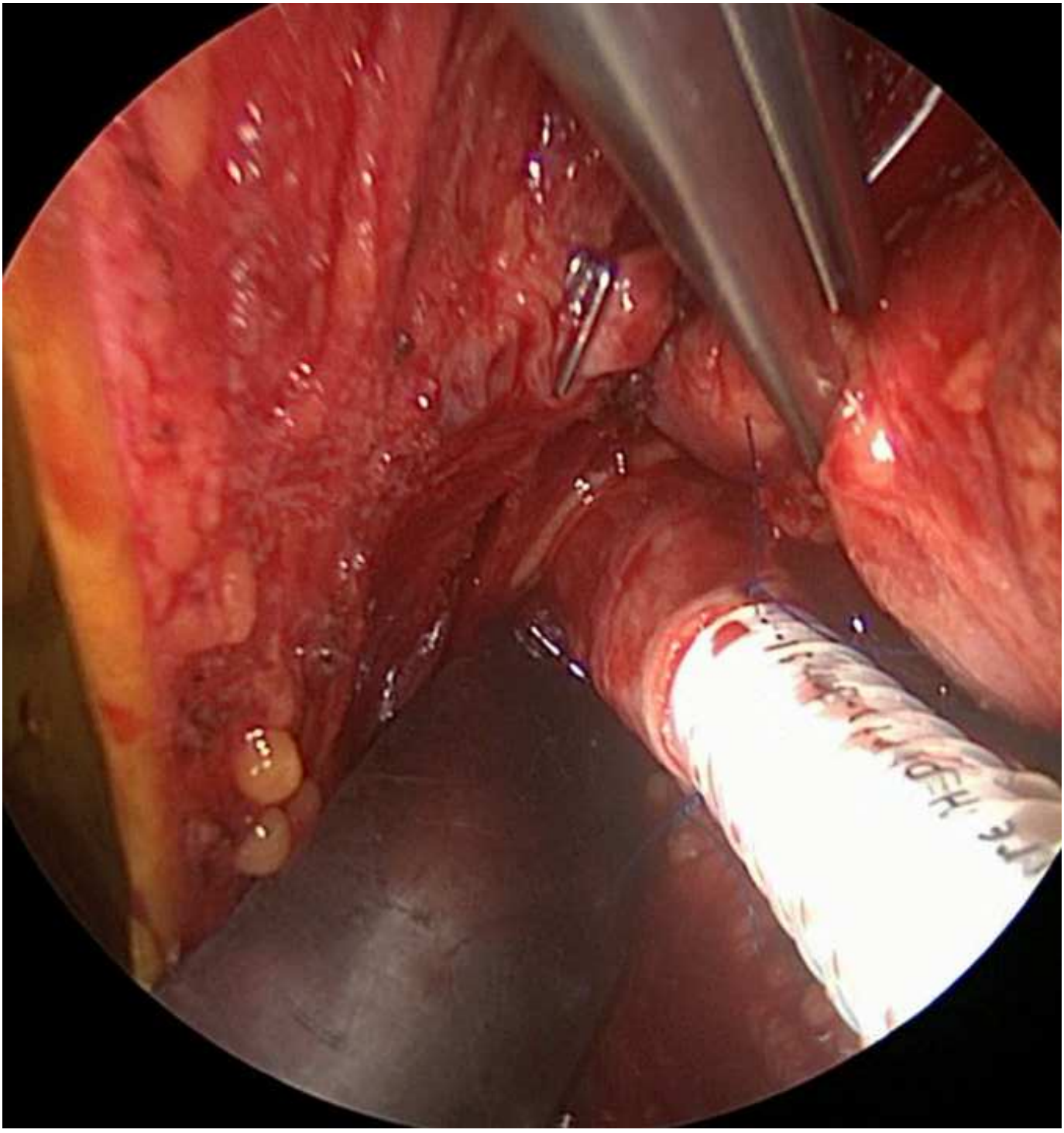






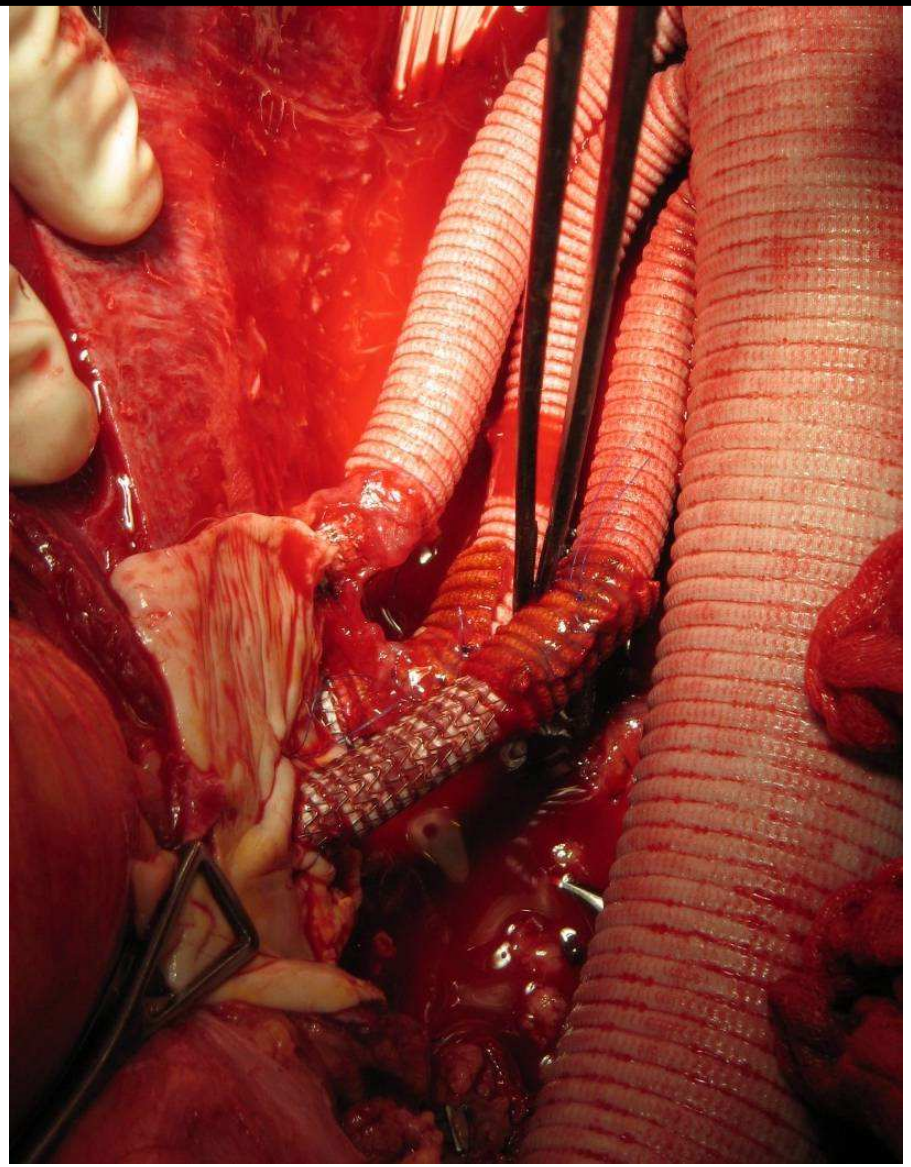






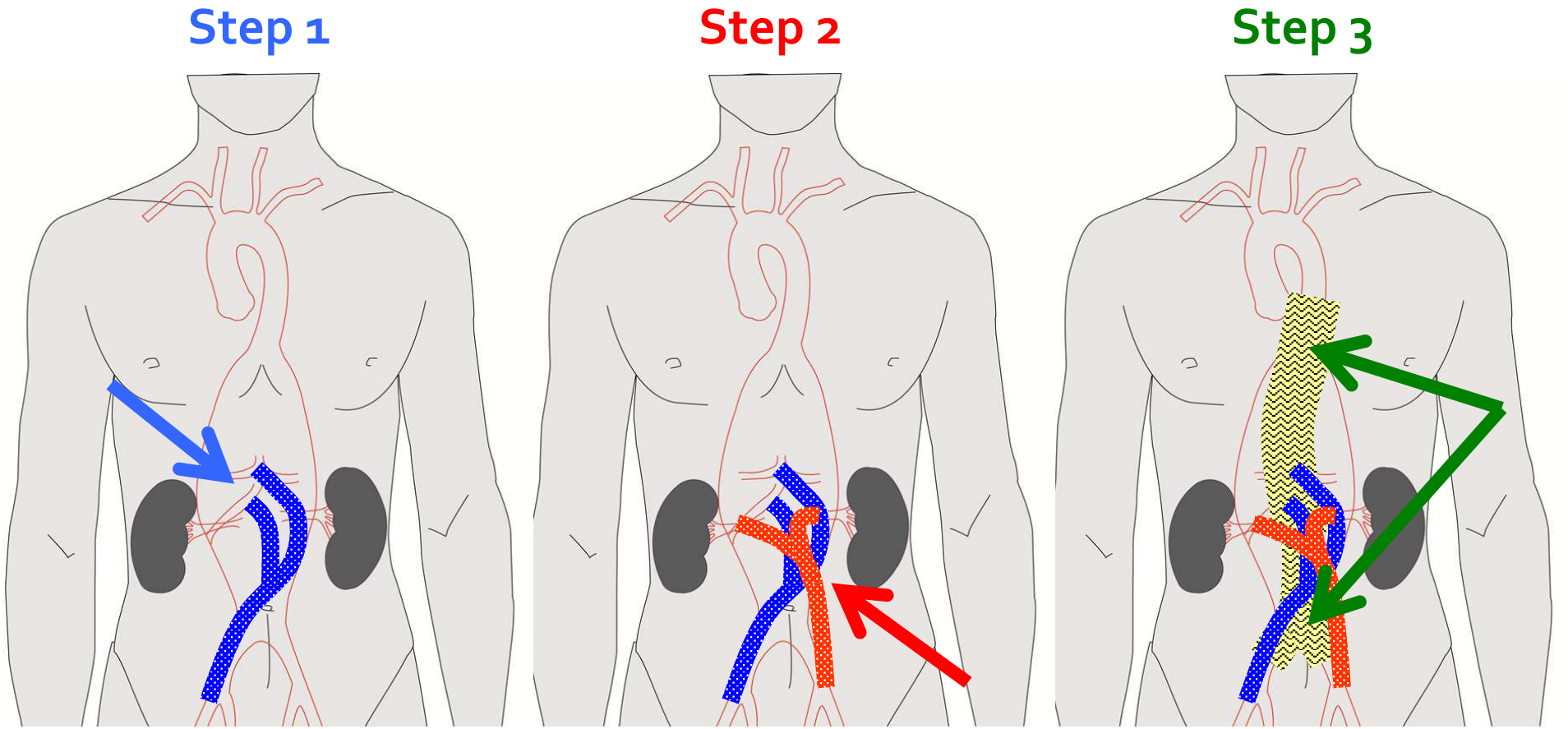
STAT / VORTEC
IN OPEN AORTA SURGERY

Open TAA repair



STAT / VORTEC
IN THE MULTISTEP PROCEDURES

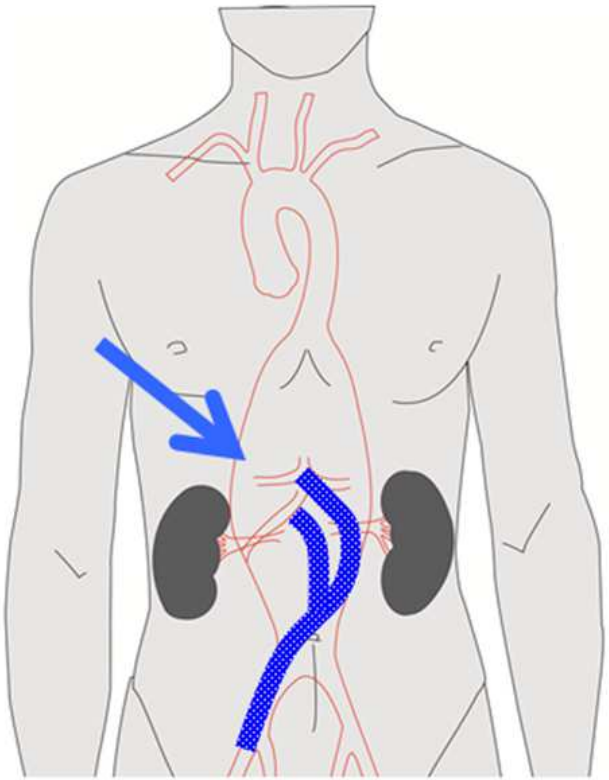
Stepwise Open Debranching



Hybrid Open +Endo-Debranching

1. Open surgery

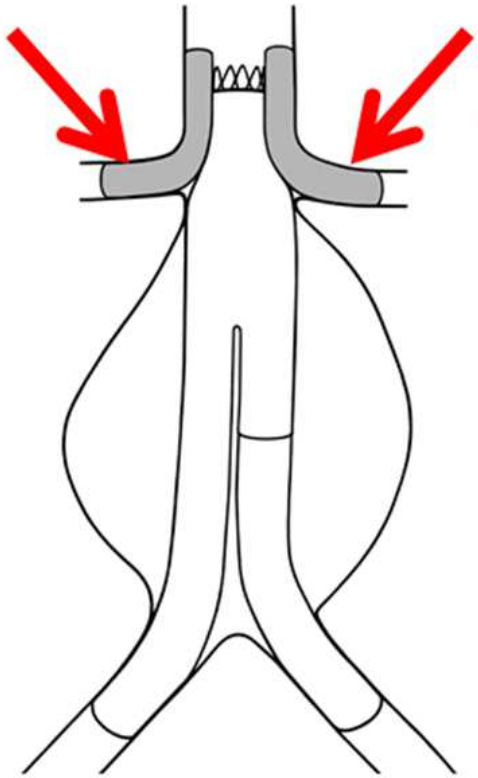
Step 1



Visceral arteries

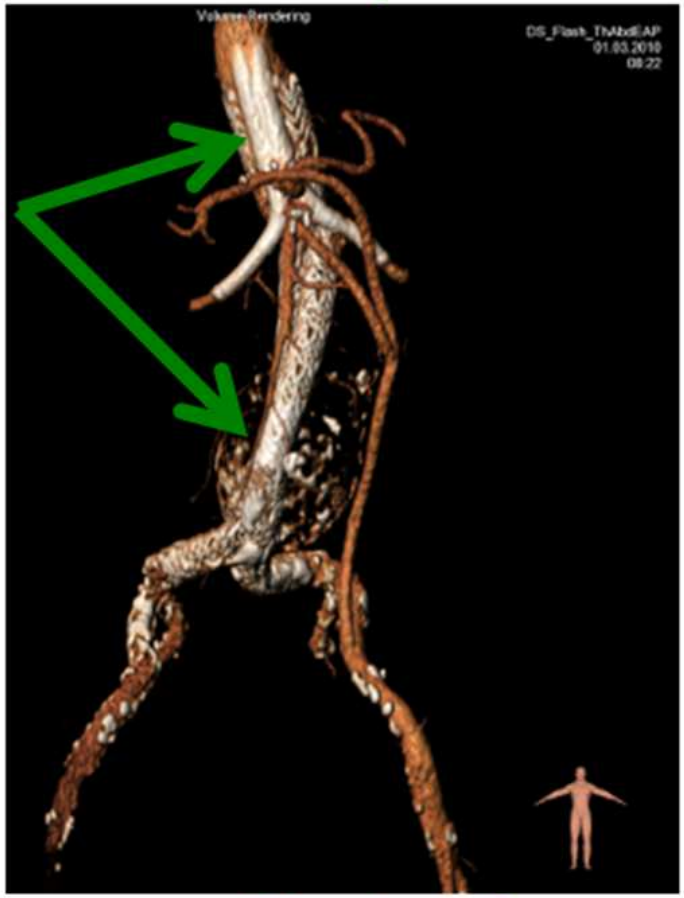
2. Endovascular procedure

Step 2a

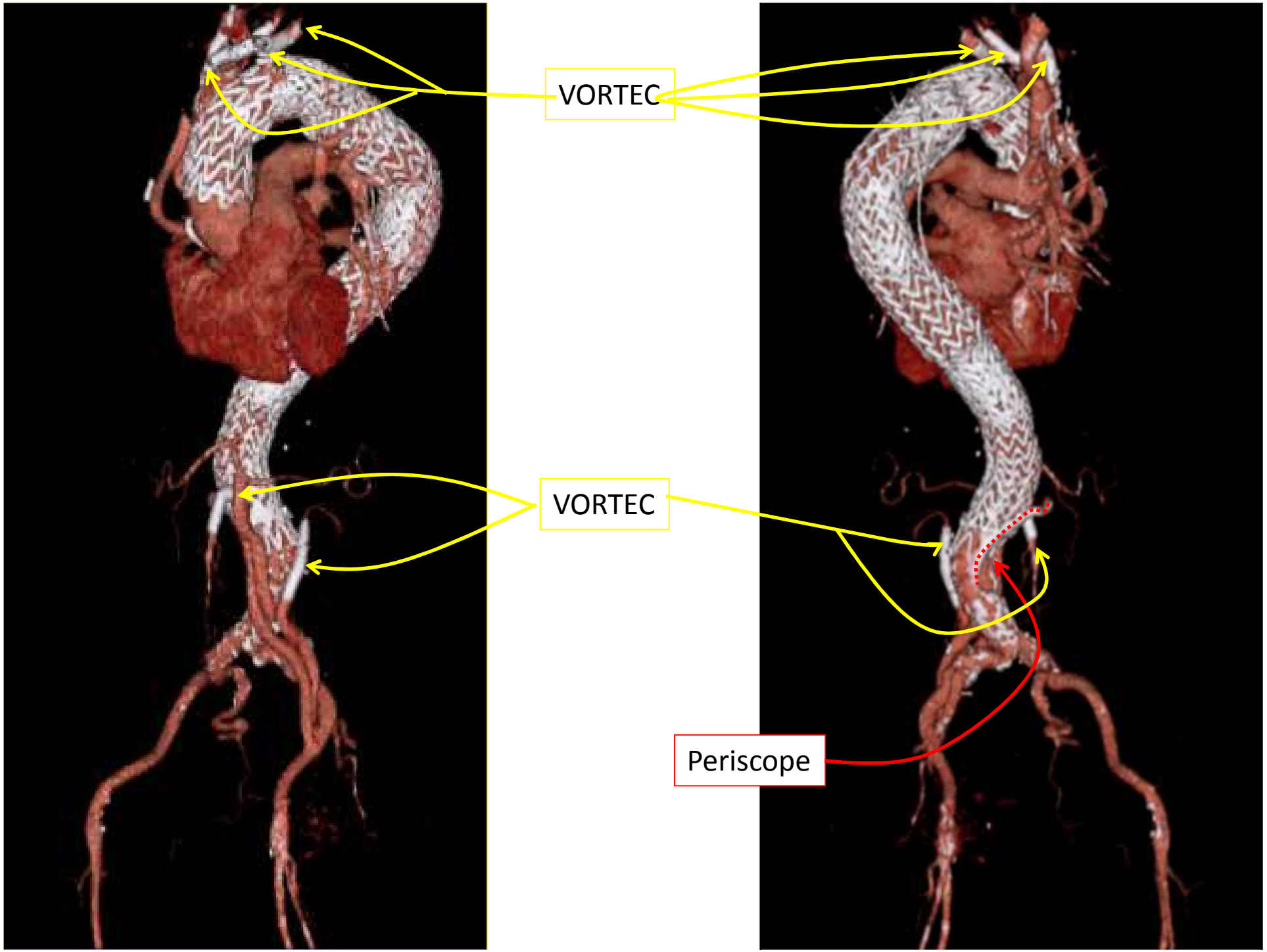


Renal arteries

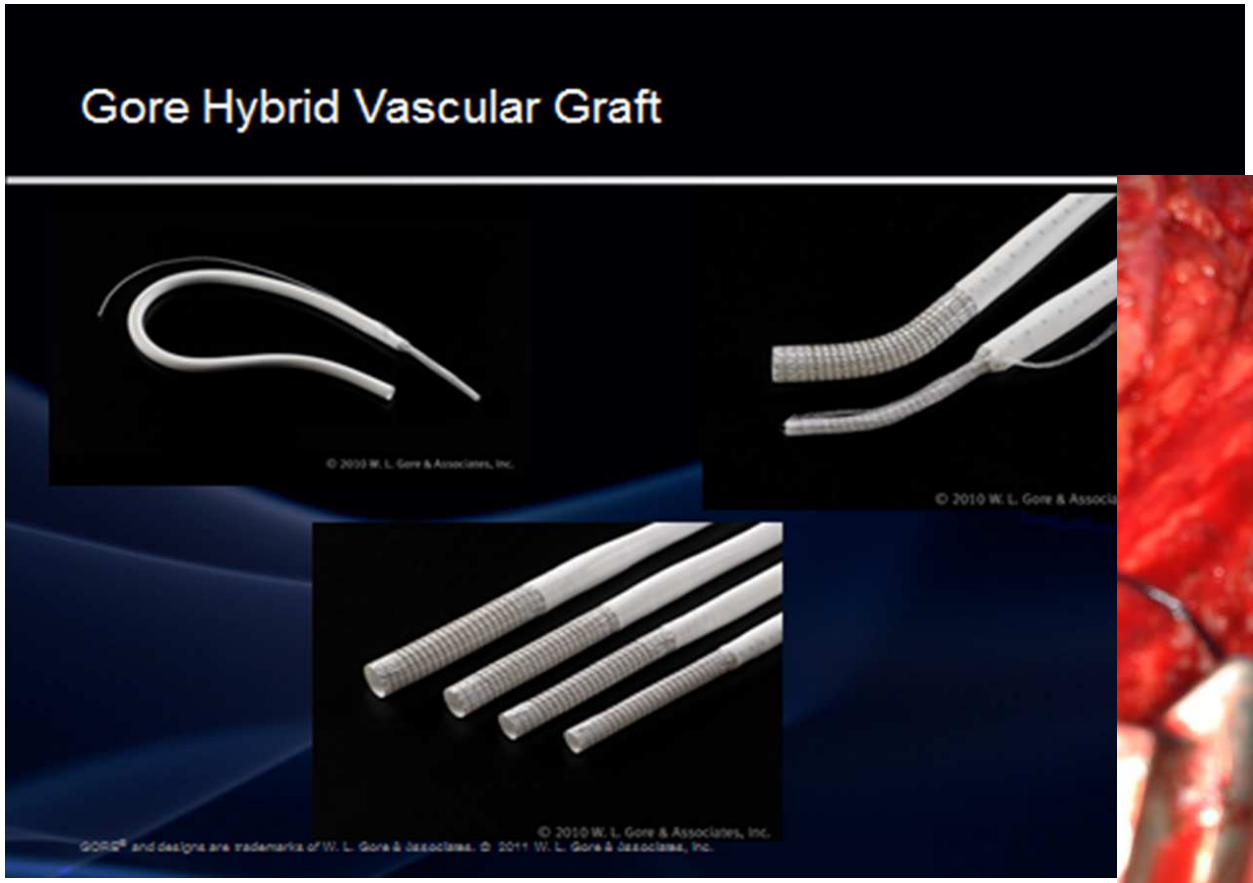
Step 2b



Stentgraft


VORTEC
VORTEC
Periscope

STAT / VORTEC
INDUSTRY MODIFICATION


Gore Hybrid Vascular Graft
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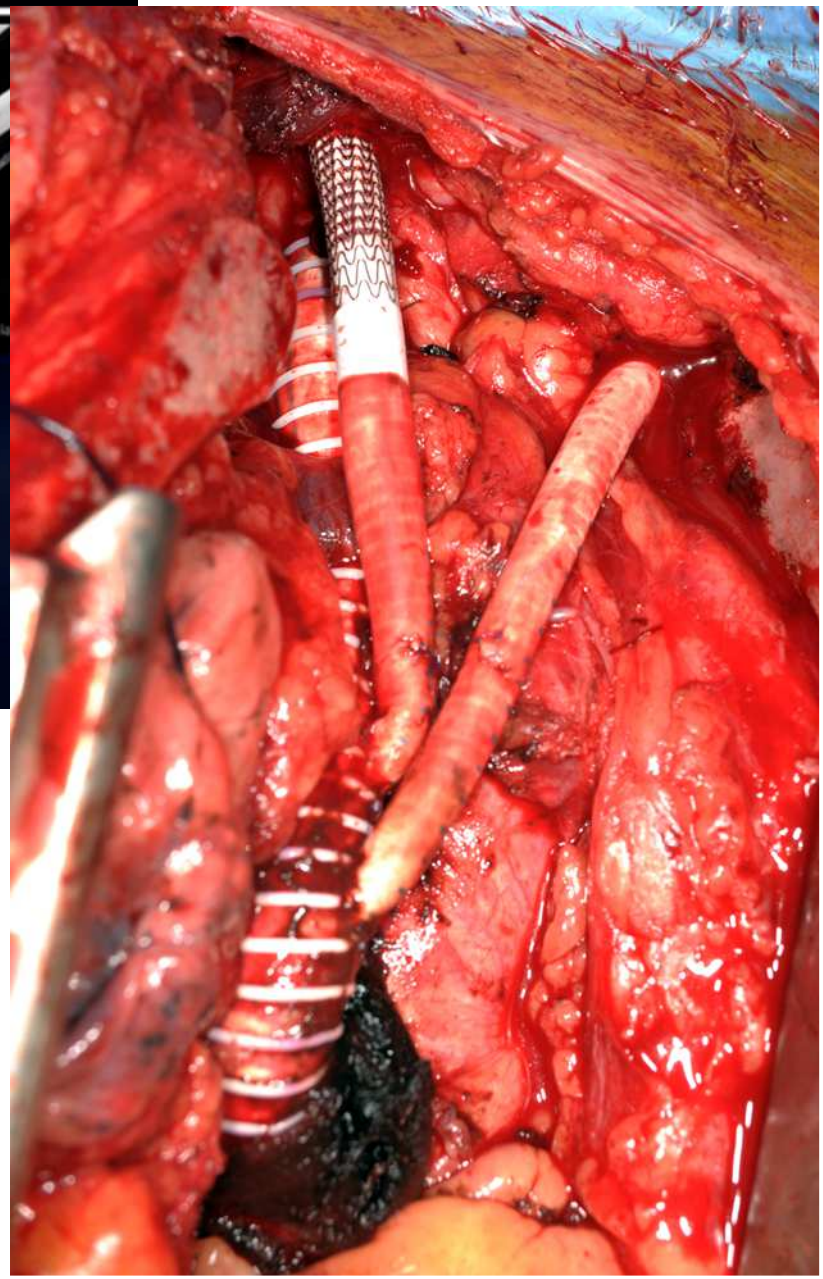
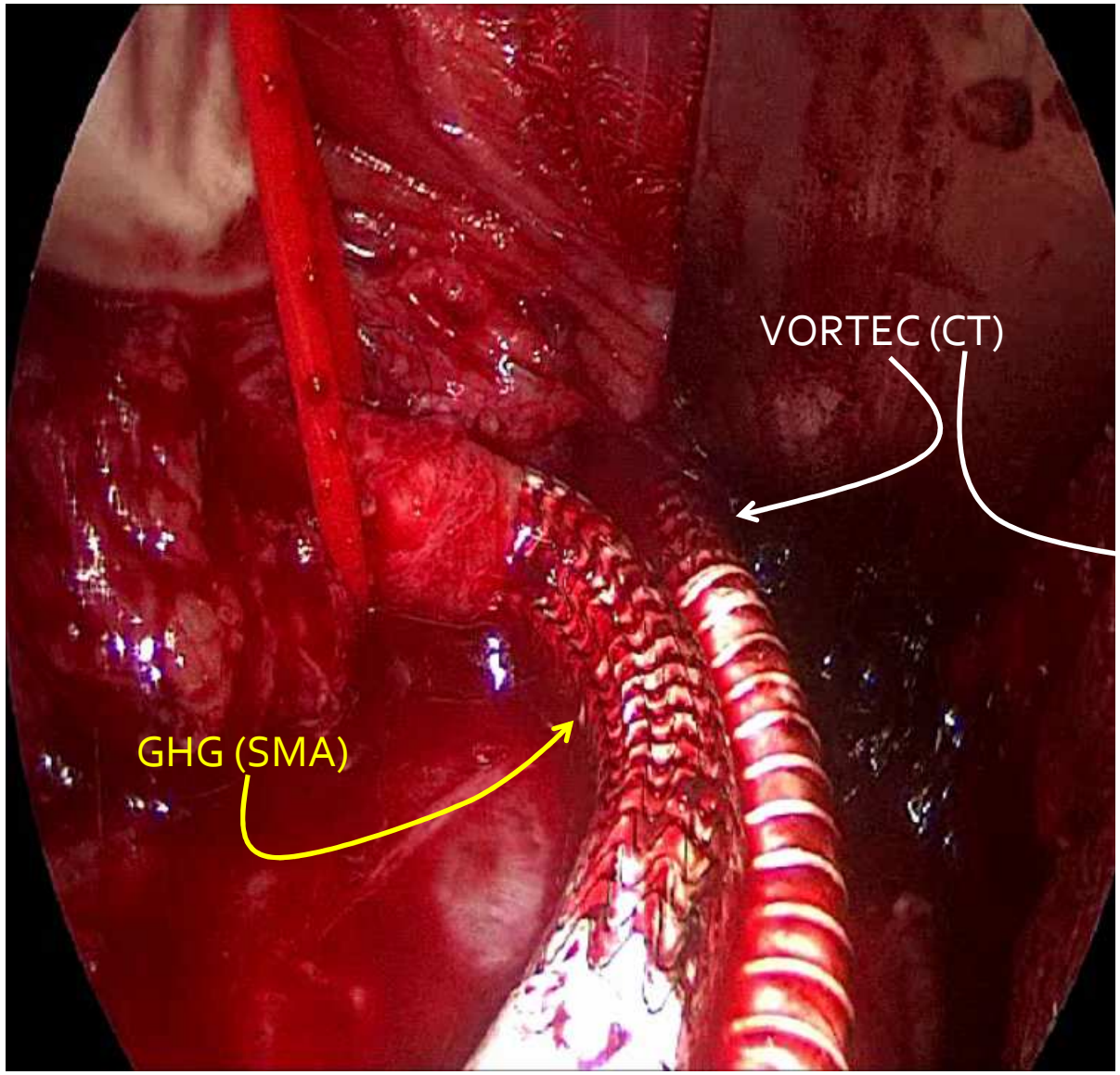
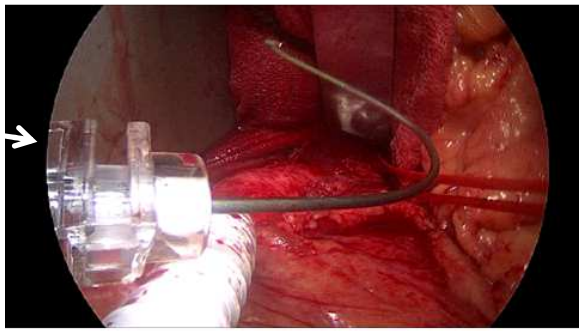




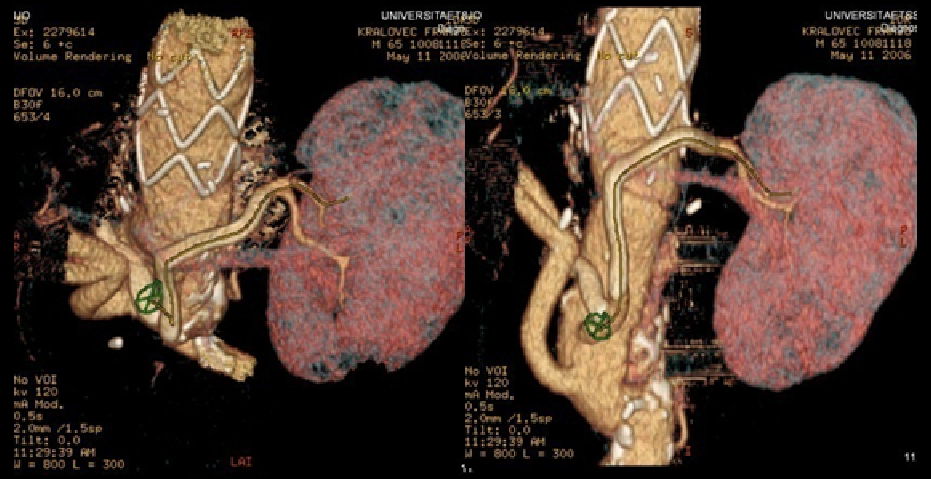
Full midline laparotomy

Bending the needle



STAT / VORTEC FOLLOW-UP

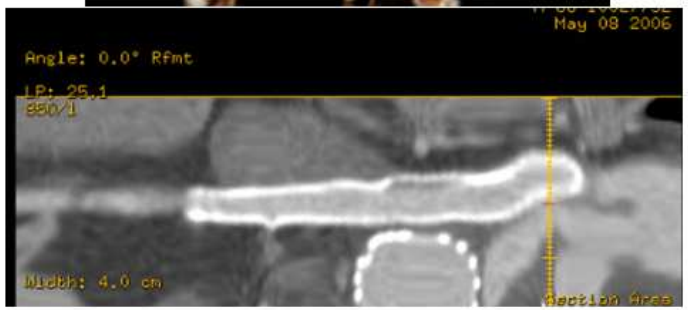
Follow-up



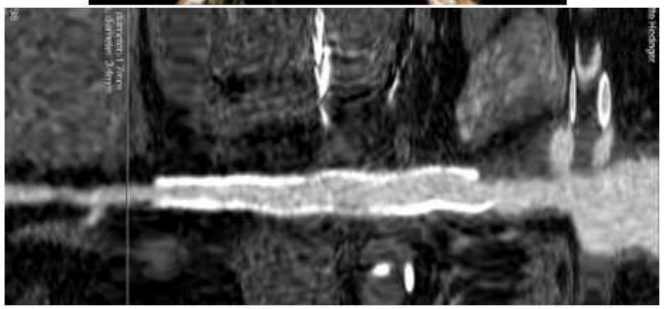
Point Name	Mean (mm)	Min (mm)	Max (mm)	Area (mm2)
Dia.prox.hae	9.6 ± 1.1	8.9 ± 1.1	10.3 ± 1.1	72.3 ± 17.3
Dia.beg.haem	4.5 ± 1.1	4.3 ± 1.1	4.6 ± 1.1	15.6 ± 8.5
Dia.mid.haem	4.7 ± 1.0	4.6 ± 1.0	4.9 ± 1.0	17.7 ± 8.0
Dia.end.haem	5.0 ± 1.0	4.7 ± 1.0	5.3 ± 1.0	19.8 ± 8.3
Dia.dist.hae	4.1 ± 1.0	3.9 ± 1.0	4.3 ± 1.0	13.1 ± 7.2

HR in January 2005 (88 years old)

HW, 1917

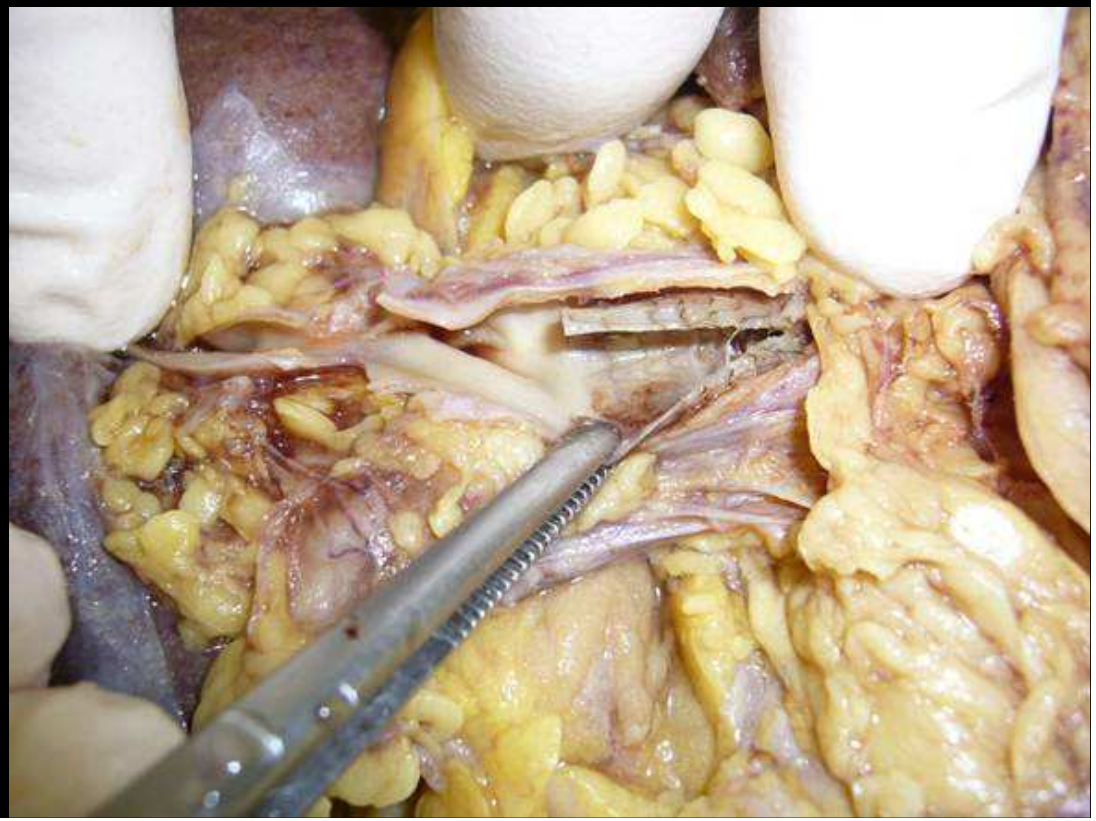


May 2006 (15 months)



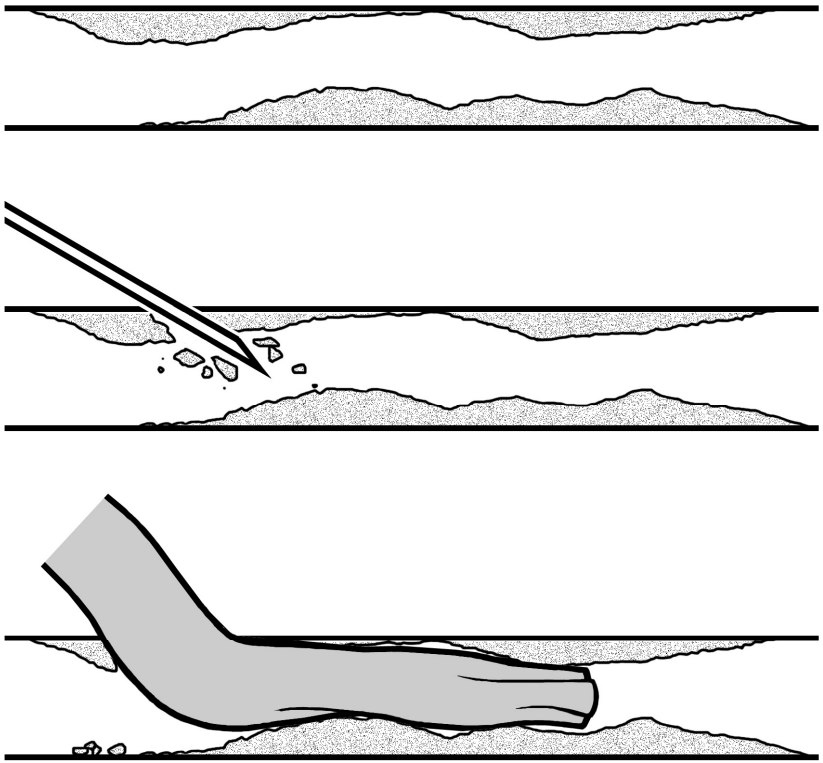
June 2010 (64 months)

Follow-up (autopsy)

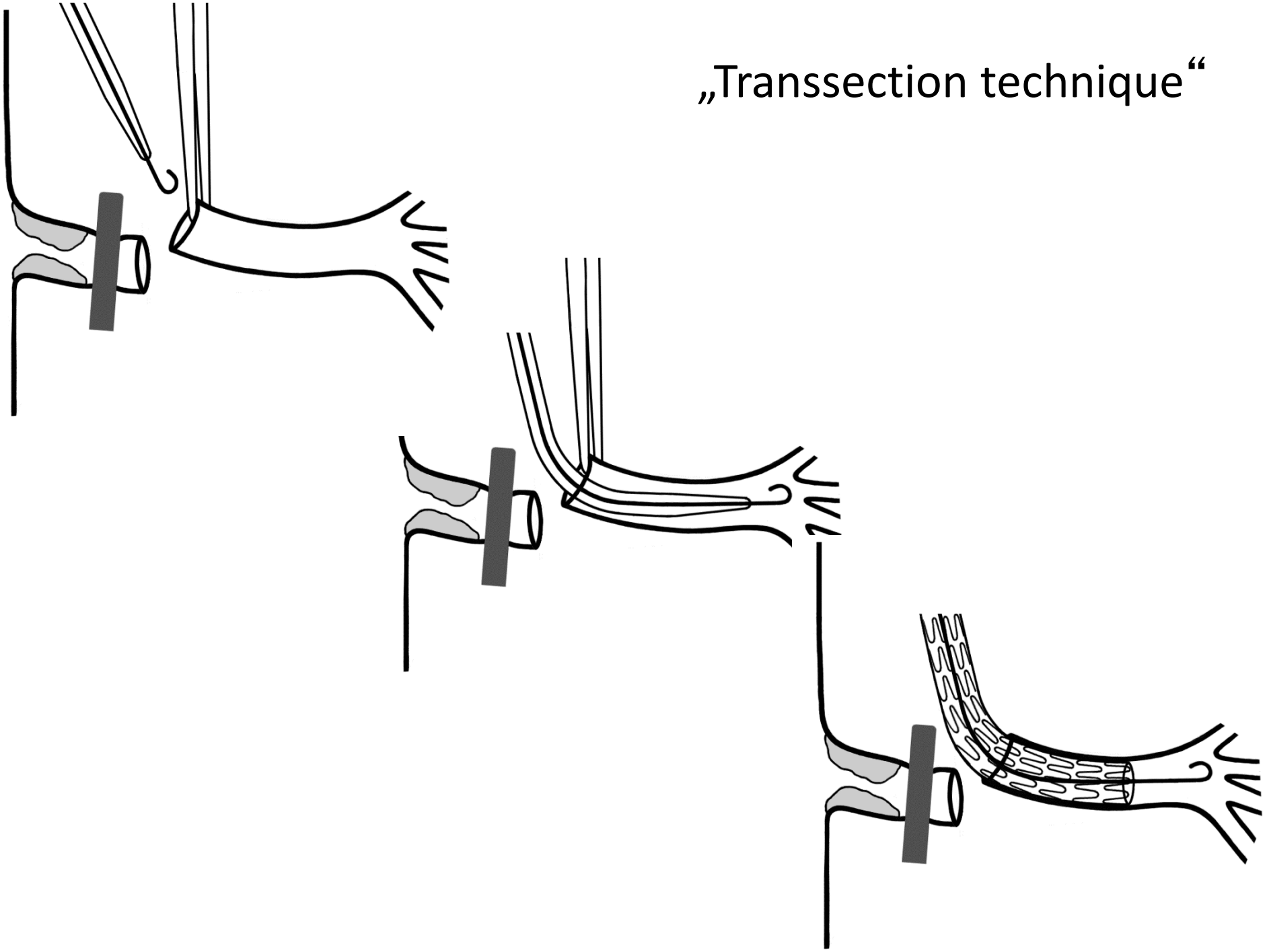


STAT / VORTEC LIMITATIONS

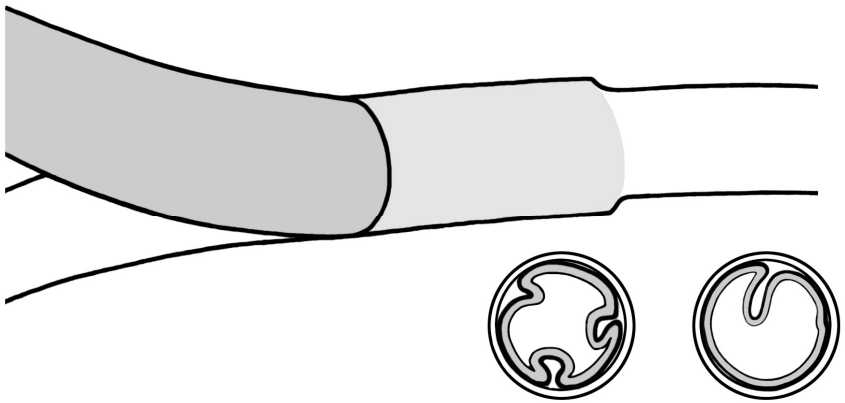
Limitations – severe/diffuse disease



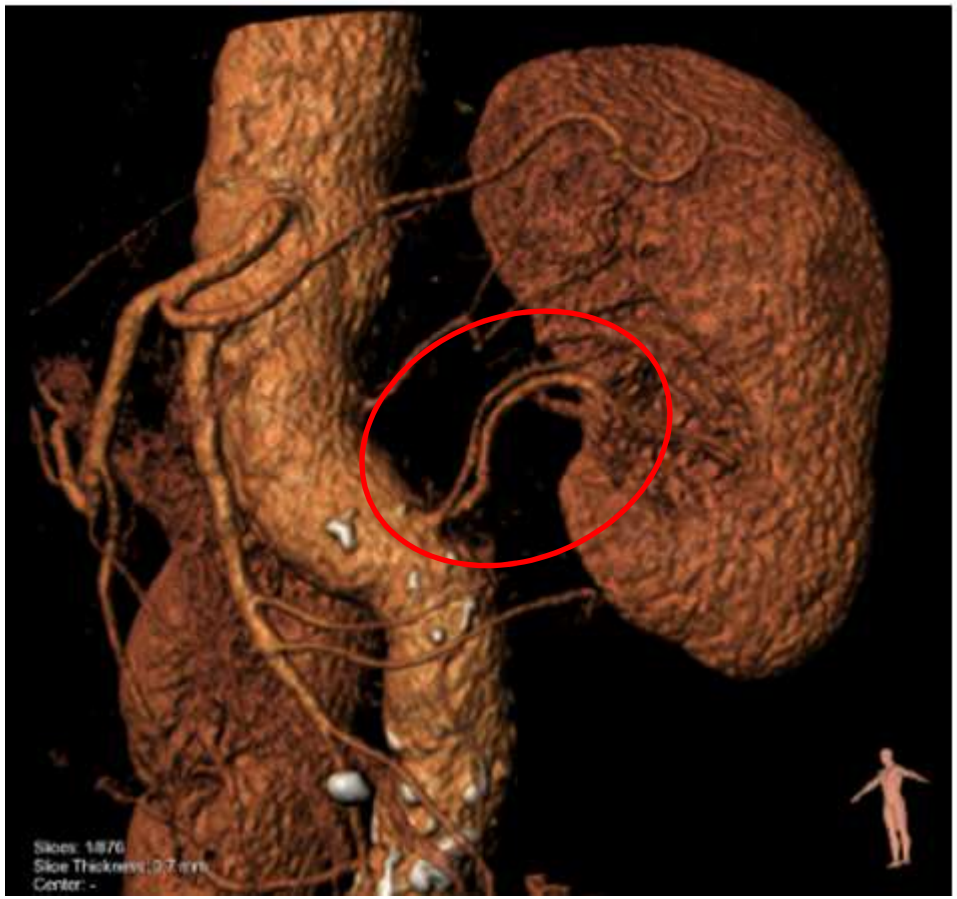
„Transsection technique“



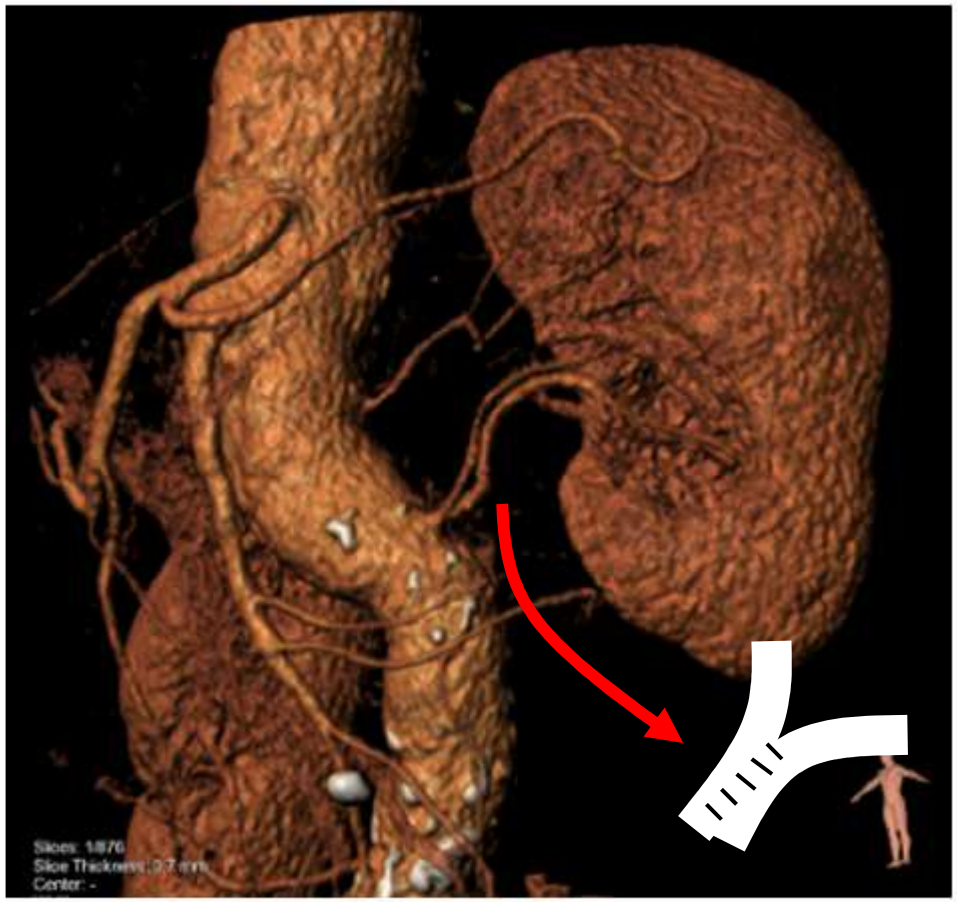
Limitations – diameter < 3.8mm



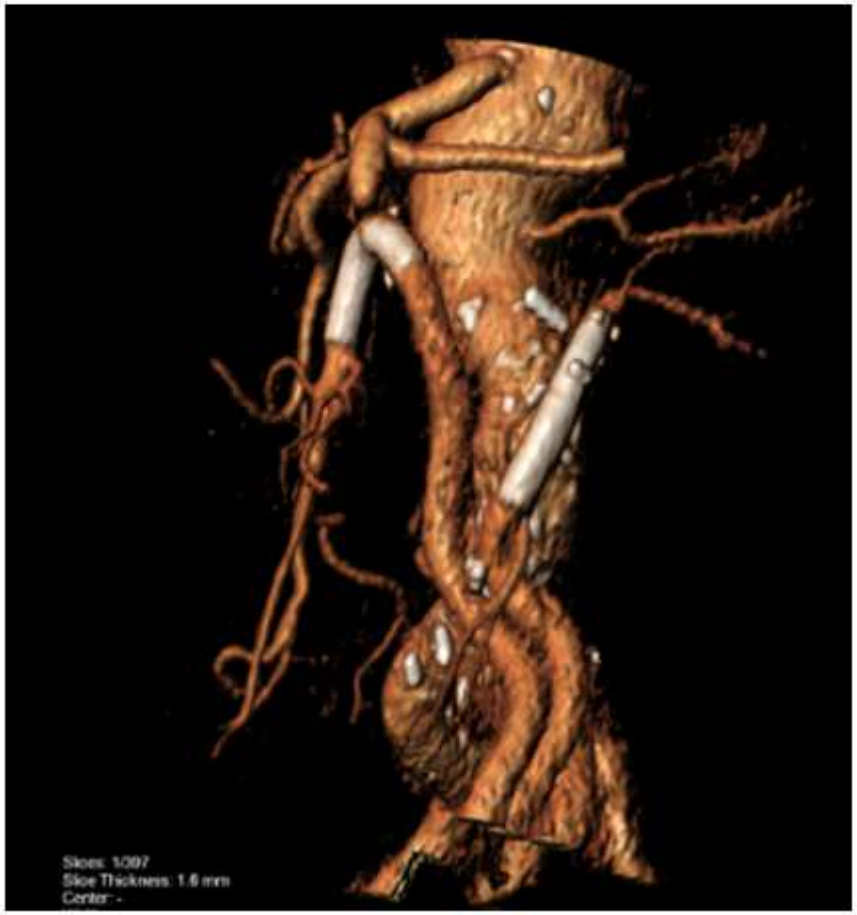
Limitations



Limitations



two-in-one plasty



VORTEC / STAT
Advantages

- **Standardized technique (98% success rate)**
- **Minimal Vessel Dissection**
- **No Vessel Clamping**
- **Primary patency rate at 4 years > 85%**

VORTEC / STAT
Levels of benefit

- **Level 1**
  - Reduces technical difficulties
  - Reduces ischemia time
  - No anastomotic bleeding
- **Level 2**
  - Reduces invasiveness of aortic surgery
    - Allows performing anastomosis where sutured anastomosis is not possible
- **Level 3**
  - No learning curve for endovascular surgeons

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