CONTROVERSES ET ACTUALITES EN CHIRURGIE VASCULAIRE
CONTROVERSIES & UPDATES IN VASCULAR SURGERY
JANUARY 19-21 2017
MARRIOTT RIVE GAUCHE & CONFERENCE CENTER
PARIS, FRANCE

Techniques You Must Know to Deal with Type 1a Endoleak

How We Do FEVAR and BEVAR after EVAR

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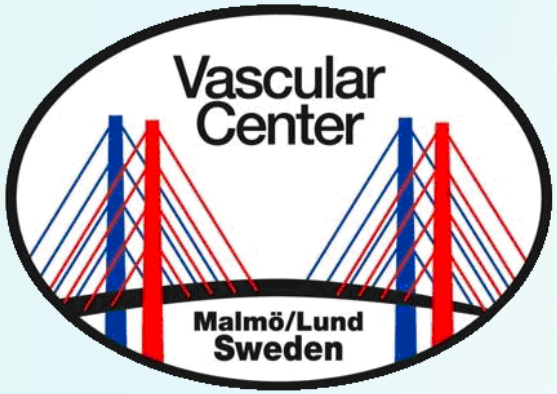

Conflicts of Interest

- COOK Medical - Consulting, Speaker, IP, Research support
- Medtronic – Advisory Board
- Aortica – Advisory Board
- Cordis – Research Support
- GORE – Research Support, Speakers

Indications for Secondary FEVAR/BEVAR

- Previous Infrarenal EVAR
  - Neck dilatation
  - Migration
  - Type 1a endoleak
- Previous Infrarenal Open
  - Pseudoaneurysm
  - Disease progression
- Previous FEVAR
  - Neck dilatation
  - Type 1a Endoleak

Fenestrated Stent-Grafts for Salvage of Prior Endovascular Abdominal Aortic Aneurysm Repair

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WHAT THIS PAPER ADDS

This is the largest series reporting the mid-term results of fenestrated endovascular aneurysm repair (F-EVAR) to treat complications after previous standard infrarenal endovascular aortic aneurysm repair (EVAR). This study shows that F-EVAR is safe and effective in salvaging prior EVAR, and clearly advantageous in terms of perioperative mortality and morbidity compared with open conversion. Nevertheless, increased technical difficulties should be expected due to the pre-existing stent graft.

Objectives: To review our experience with fenestrated endovascular aneurysm repair (F-EVAR) to treat complications after previous standard infrarenal endovascular aneurysm repair (EVAR).

Methods: A prospectively maintained database including all consecutive patients with juxtarenal abdominal aortic aneurysm that were treated with F-EVAR after failed previous EVAR within the period March 2002 to November 2012 at the University Medical Center of Groningen, Netherlands (up to October 2009), and the Klinikum Nürnberg Süd, Germany (from November 2009) was analyzed. Evaluated outcomes included initial technical success, operative mortality and morbidity, and late procedure-related events with regard to survival, target vessel patency, endoleak, renal function, and reintervention.

Results: A total of 26 patients (24 male, mean age 73.2 ± 6.5 years) were treated. All patients had proximal anatomies precluding endovascular reintervention with standard techniques. In 23 patients a fenestrated proximal cuff was used, and in three patients a bifurcated fenestrated stent graft. Technical success was achieved in 24 (92.3%) patients. One patient required on-table open conversion because of impossibility to retrieve the top cap as a result of twist of the ipsilateral limb. In the second patient the right kidney was lost due to inadvertent stenting in a smaller branch of the renal artery. Catheterization difficulties, all related to the passage through the limbs or struts of the previous stent graft, were encountered in 11 (42.3%) cases, including five (19.2%) patients with iliac access problems and six (23.1%) with challenging renal catheterization. Operative target vessel perfusion success rate was 94.6% (70/74). Operative mortality was 0%. Mean follow-up was 26.8 ± 28.5 months. No proximal type I endoleak was present on first postoperative CTA. The mean aneurysm maximal diameter decreased from 73 ± 20 mm to 66.7 ± 21 mm ($p < .05$). There were six late deaths, one of them aneurysm related. Estimated survival rates at 1 and 2 years were 94.1 ± 5.7% and 87.4 ± 8.4%, respectively. Patency during follow-up for the target vessels treated successfully with a fenestrated stent graft was 100% (70/70). Reintervention was required in four cases, including one acute conversion due to rupture, one for iliac limb occlusion and two for type Ib and II endoleak. Renal function deterioration was observed solely in the two cases of primary technical failure.

Conclusions: F-EVAR represents a feasible option for the repair of juxtarenal abdominal aortic aneurysm after prior EVAR failure. It is advantageous in terms of mortality and less morbid than open surgery, but is associated with increased technical challenges because of the previously placed stent graft. Outcome seems related to initial technical success.

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Keywords: Abdominal aortic aneurysm, Aneurysm, Endovascular aneurysm repair, Fenestrated, Juxtarenal, Migration, Type I endoleak

CLINICAL RESEARCH STUDIES

Late rescue of proximal endograft failure using fenestrated and branched devices

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Objective: Endovascular aneurysm repair (EVAR) will fail over time in a percentage of patients. Mechanical failure of the device, progression of aortic disease, or interface complications between the device and the native vasculature may contribute. Our aim was to evaluate the role of fenestrated and branched endografts as treatment options for failed devices.

Methods: Between January 2001 and June 2013, 970 patients were enrolled into a physician-sponsored investigational device exemption (PSIDE) study and treated with a fenestrated/branched endograft. All patients treated for nonurgent proximal neck failure of an infrarenal endoprosthesis previously implanted during EVAR comprised the study group. Patients treated for a primary aneurysm within the PSIDE were evaluated as a comparison group to identify preoperative risk factors for failure. A retrospective review was undertaken to determine the details of the initial EVAR, whereas the prospective PSIDE database was used to assess outcomes of secondary treatment. Three-dimensional imaging techniques were used to define all morphologic measurements. Statistical analysis included comparisons between categoric variables with the χ^2 test and between continuous variables with the Wilcoxon rank sum test between patients with late failures and those with native aortic repair. Kaplan-Meier curves were used to analyze overall survival.

Results: Of 970 patients enrolled in the PSIDE, 54 (5.6%) had late failure of a prior endograft. Fenestrated/branched devices were used to address the failure in each patient. The etiology of failure was related to a proximal neck issue in all patients: type Ia endoleak in 38, stent migration in 18, neck degeneration in 28, or some combination of these factors. The endovascular rescue procedure took place a mean of 61 months after the primary procedure. The mean aneurysm diameter at reintervention was 67 mm. Patients requiring a secondary fenestrated procedure were younger at the time of their primary intervention ($P = .039$) and were more likely to have a history of chronic renal insufficiency ($P = .05$) compared with other patients in the PSIDE. Technical success rate in the study group was 85% (44 of 52). Successful stenting was achieved in 71 of 77 (92%) target vessels. Thirty-day mortality was 3.8% (two of 52). Fluoroscopy dose and operating time were longer in the rescue group ($P = .07$) than in the control group ($P = .008$). Secondary interventions were required in 36.5% (19 of 52) of patients.

Conclusions: Our series demonstrates the risk for late failure after EVAR is greater in patients who are younger and have chronic renal impairment at the time of implantation. Branched and fenestrated repair after failed EVAR is more complex than repair in the native aorta. More research is needed to identify patients at higher risk of failure after EVAR to prevent the need for rescue in the future. (J Vasc Surg 2014;59:1479-87.)

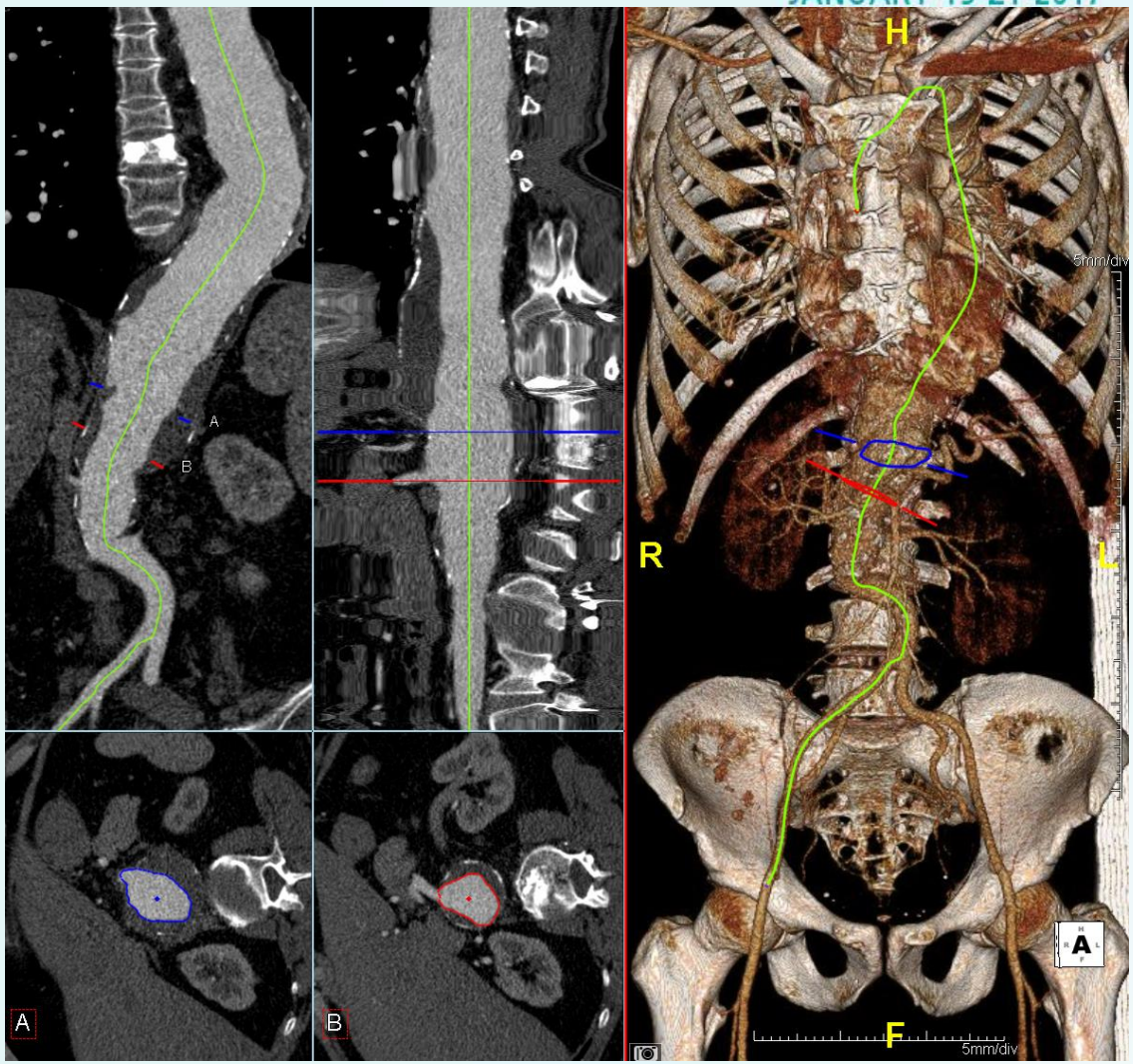
What is The Difference From Standard FEVAR/BEVAR Procedures?

- Planning
  - Working in limited Space
  - Access (Going through previous device)
- Identifying New Device vs. Old Device
- Target Vessel Access
  - Going through Previous Suprarenal Stent

PLANNING

Anatomic Substrate

- Preoperative 3D Imaging is critical
- Understanding of device deployment
- Planning for TV anatomy

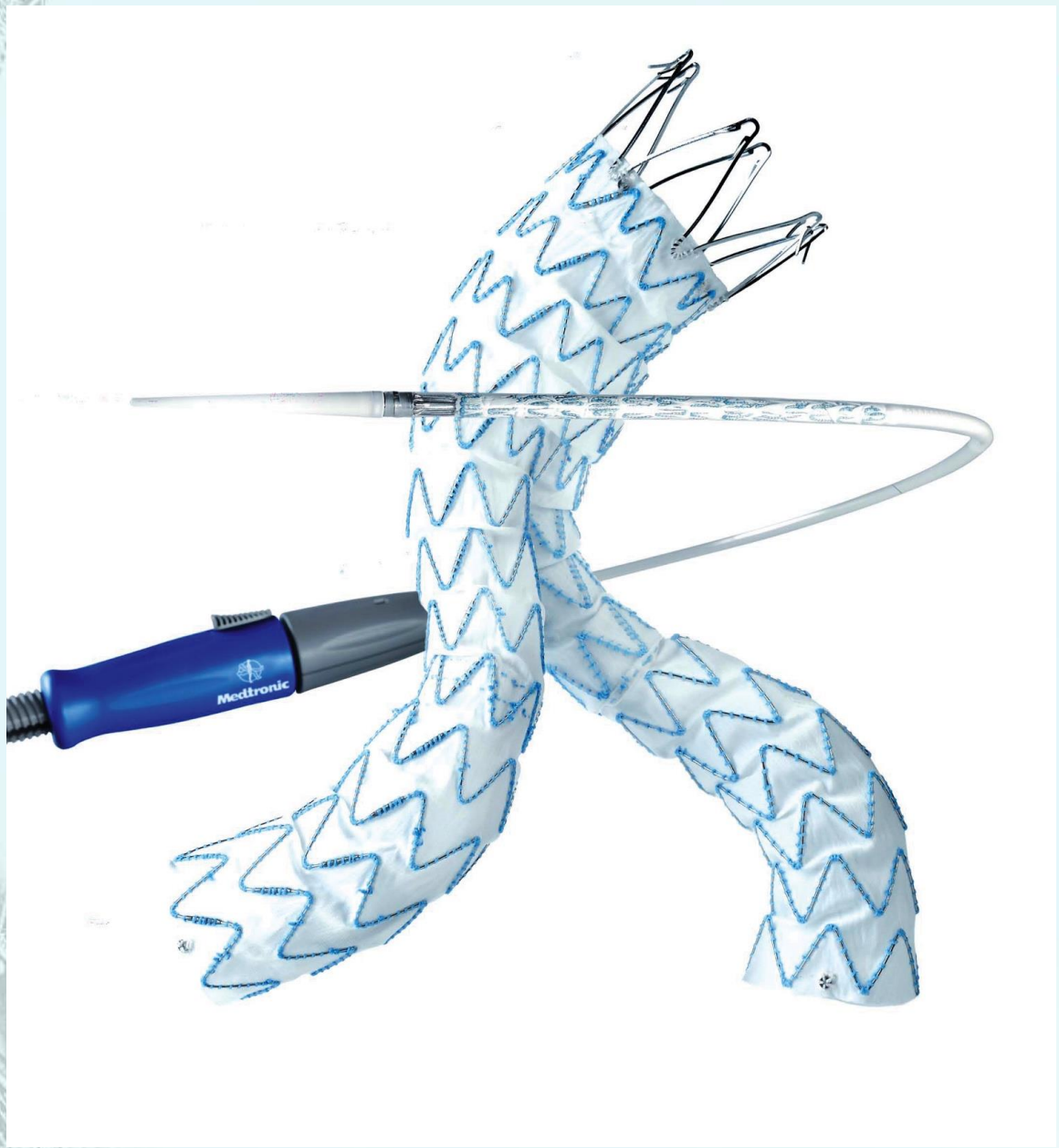


Device Substrate

Branches or Fenestrations??

- Emergency?
- Target vessel anatomy
- Access anatomy
- Extent of coverage needed
- Type of previous endograft

Tailor Graft to Patient in Planning


Medtronic

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Endovascular treatment of aneurysms using fenestrated-branched endografts with distal inverted iliac limbs

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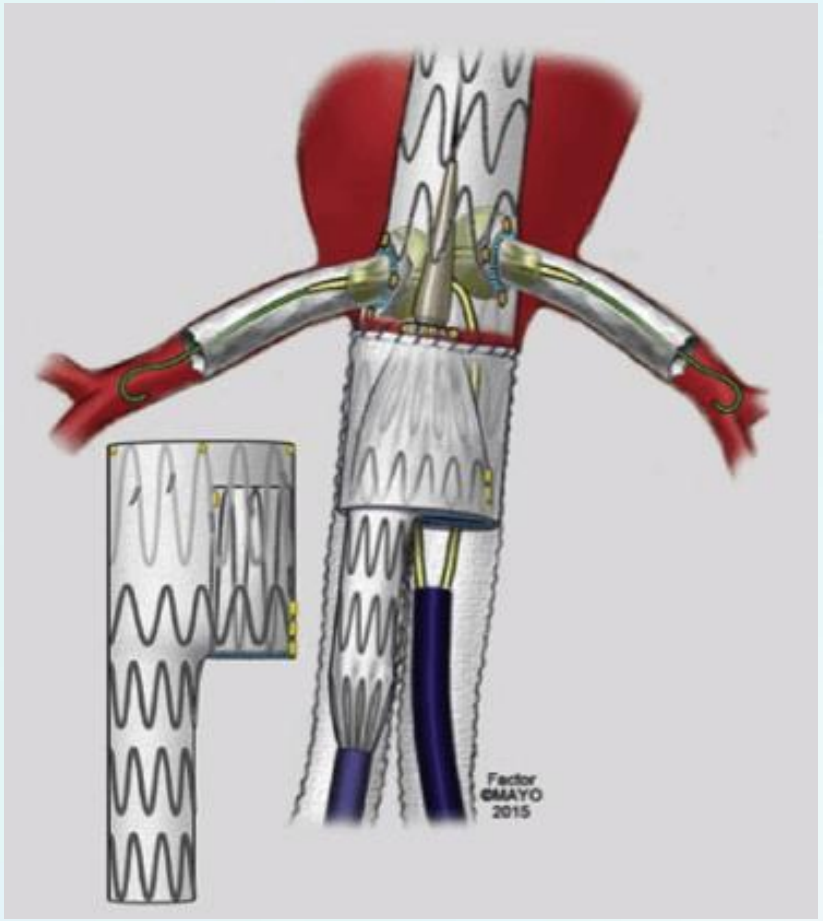

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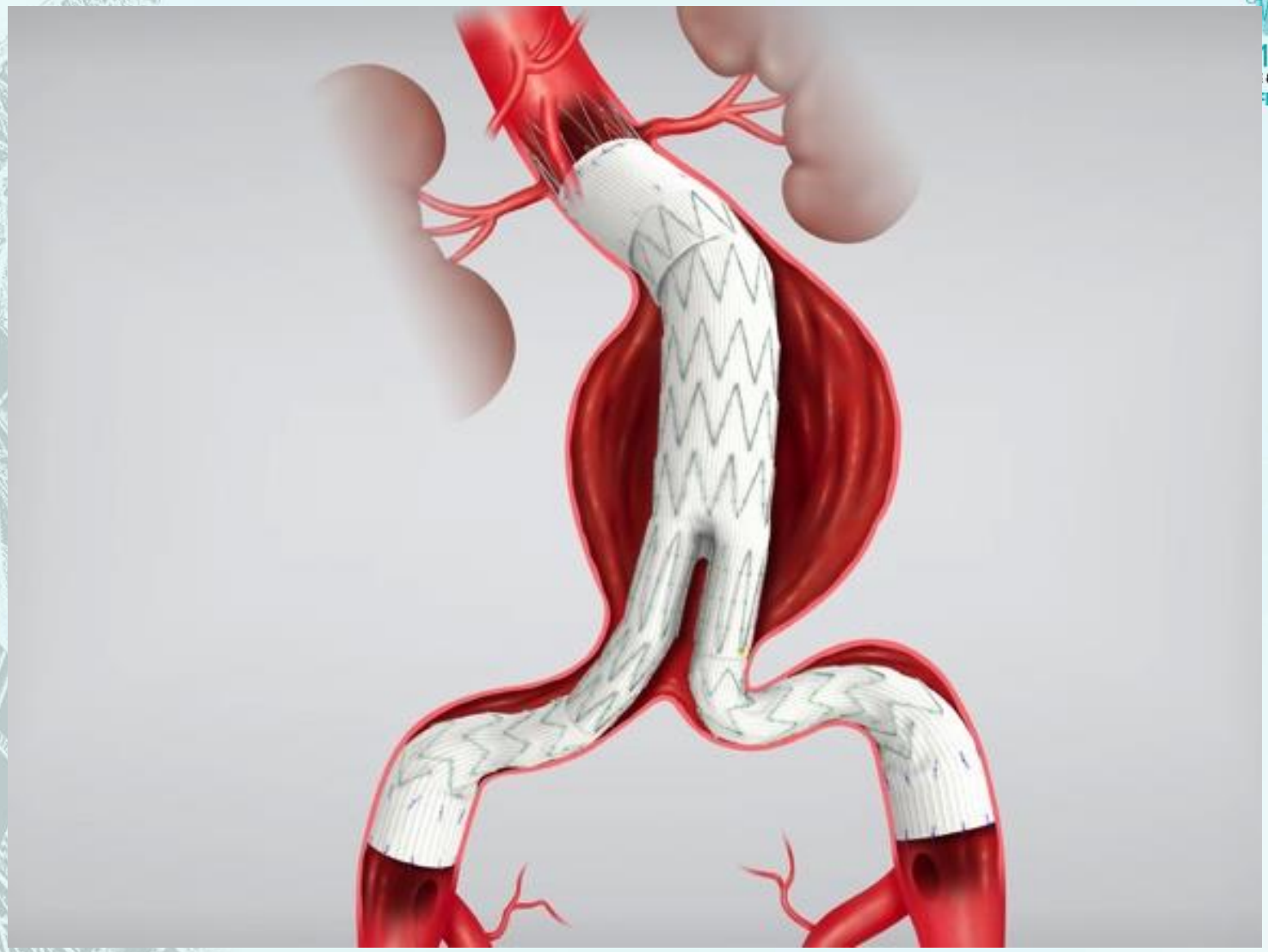


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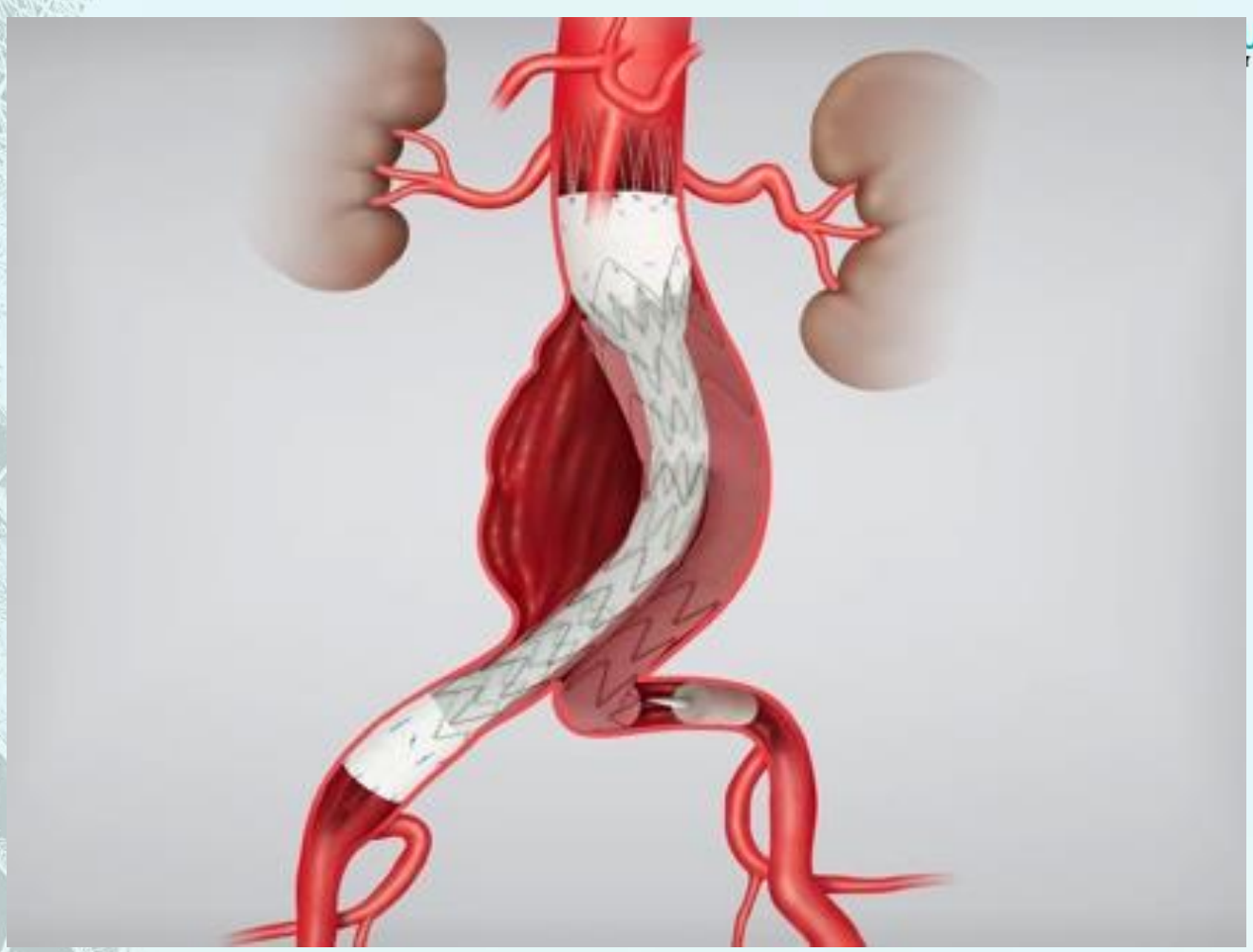

2003


Bild 8 av 27
MALMO UMAS
TPEG aorta lumbalis
2003-03-14
Series: 1


Bild 27 av 27
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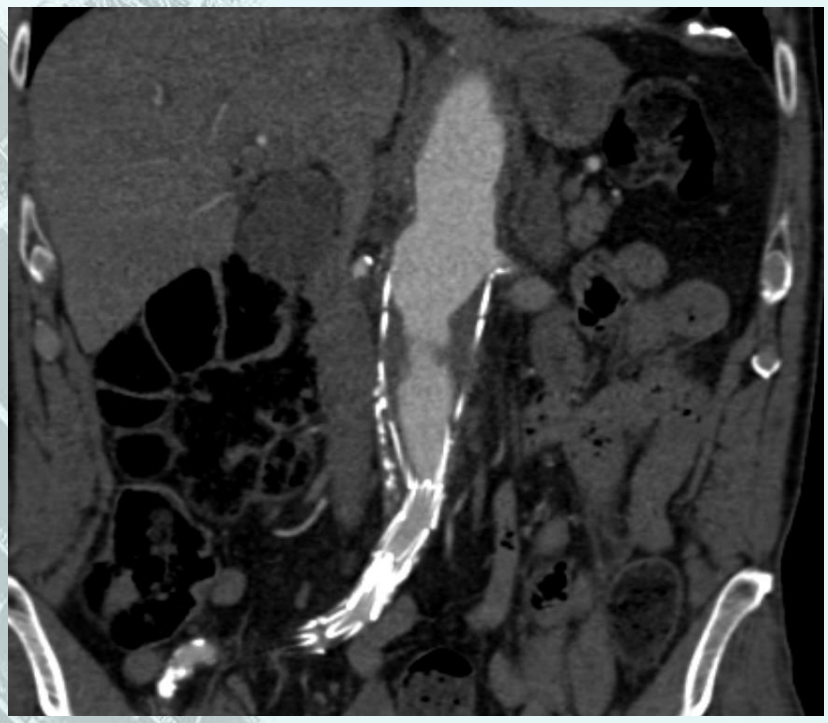
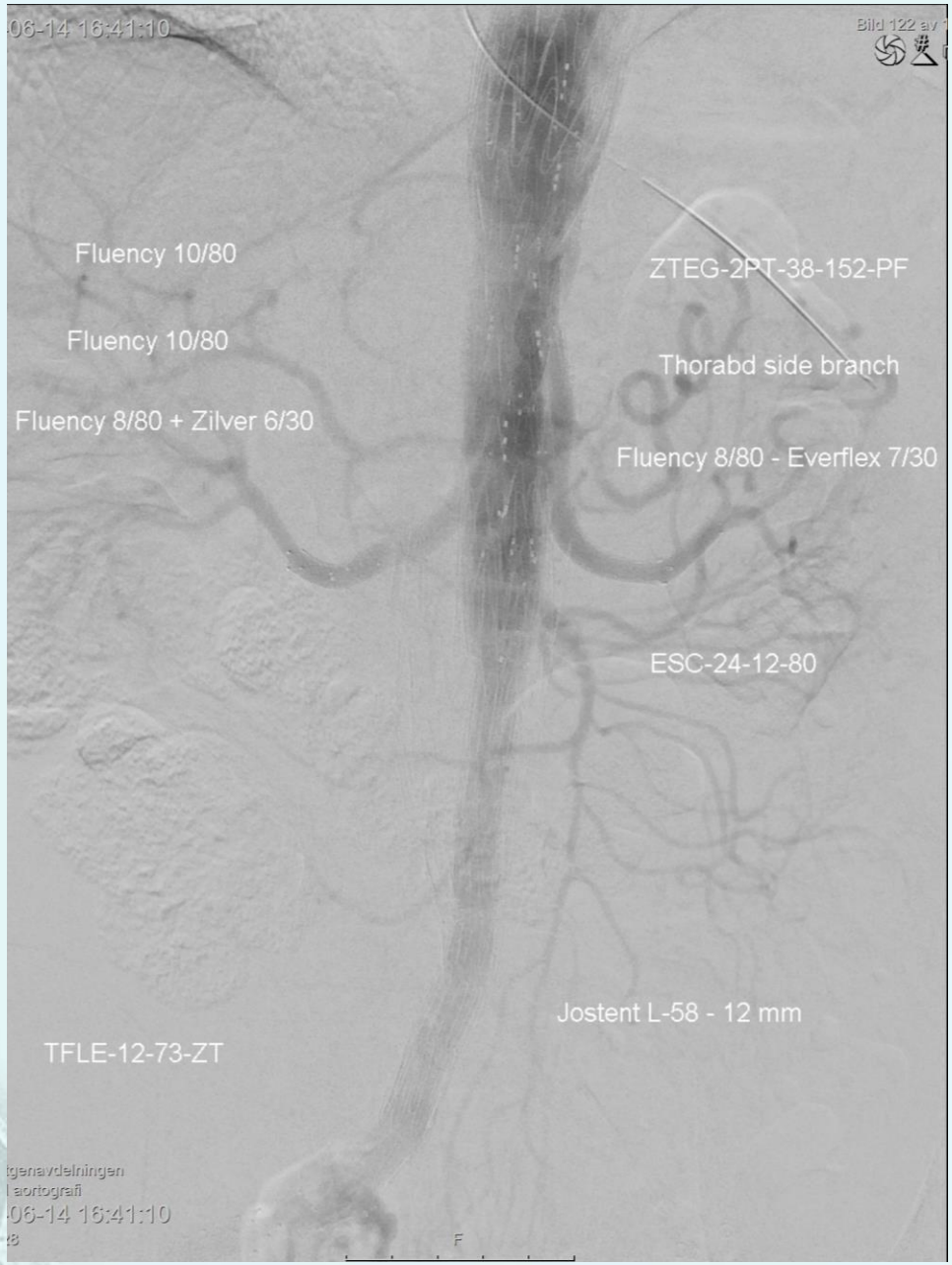
TPEG aorta lumbalis
2003-03-14
Series: 1

2011



2011

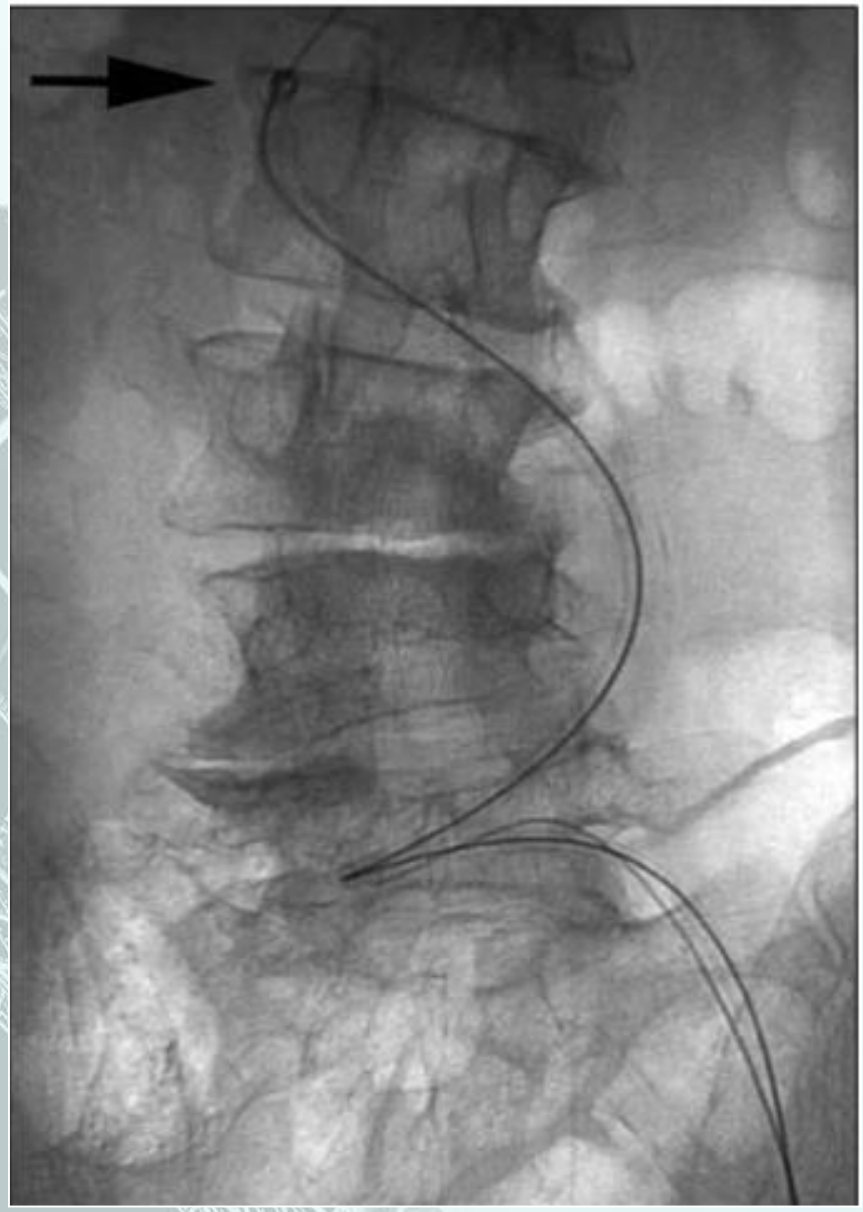

Fluency 10/80
Fluency 10/80
Fluency 8/80 + Zilver 6/30
ZTEG-2PT-38-152-PF
Thorabd side branch
Fluency 8/80 - Everflex 7/30
ESC-24-12-80
Jostent L-58 - 12 mm
TFLE-12-73-ZT

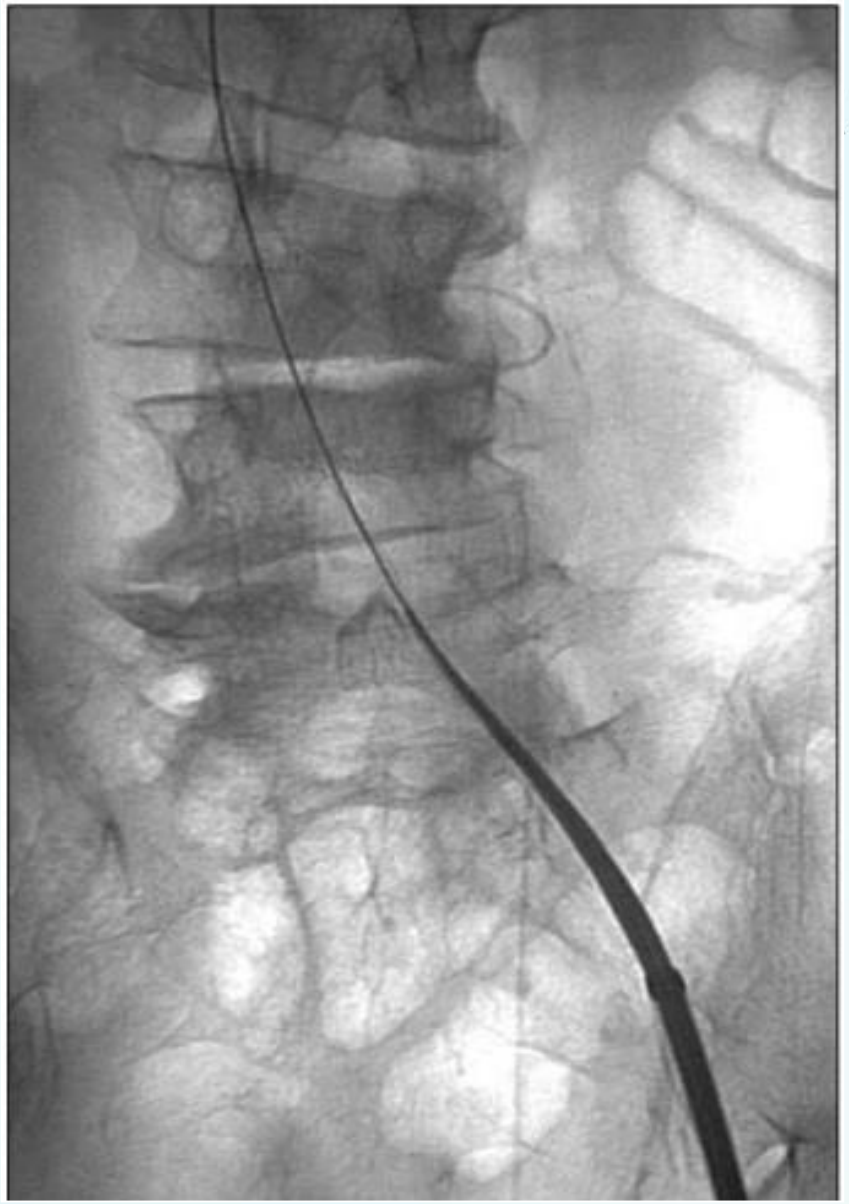
Access Through Previous EVAR

- Rotation of device
  - Malalignement of Fenestrations

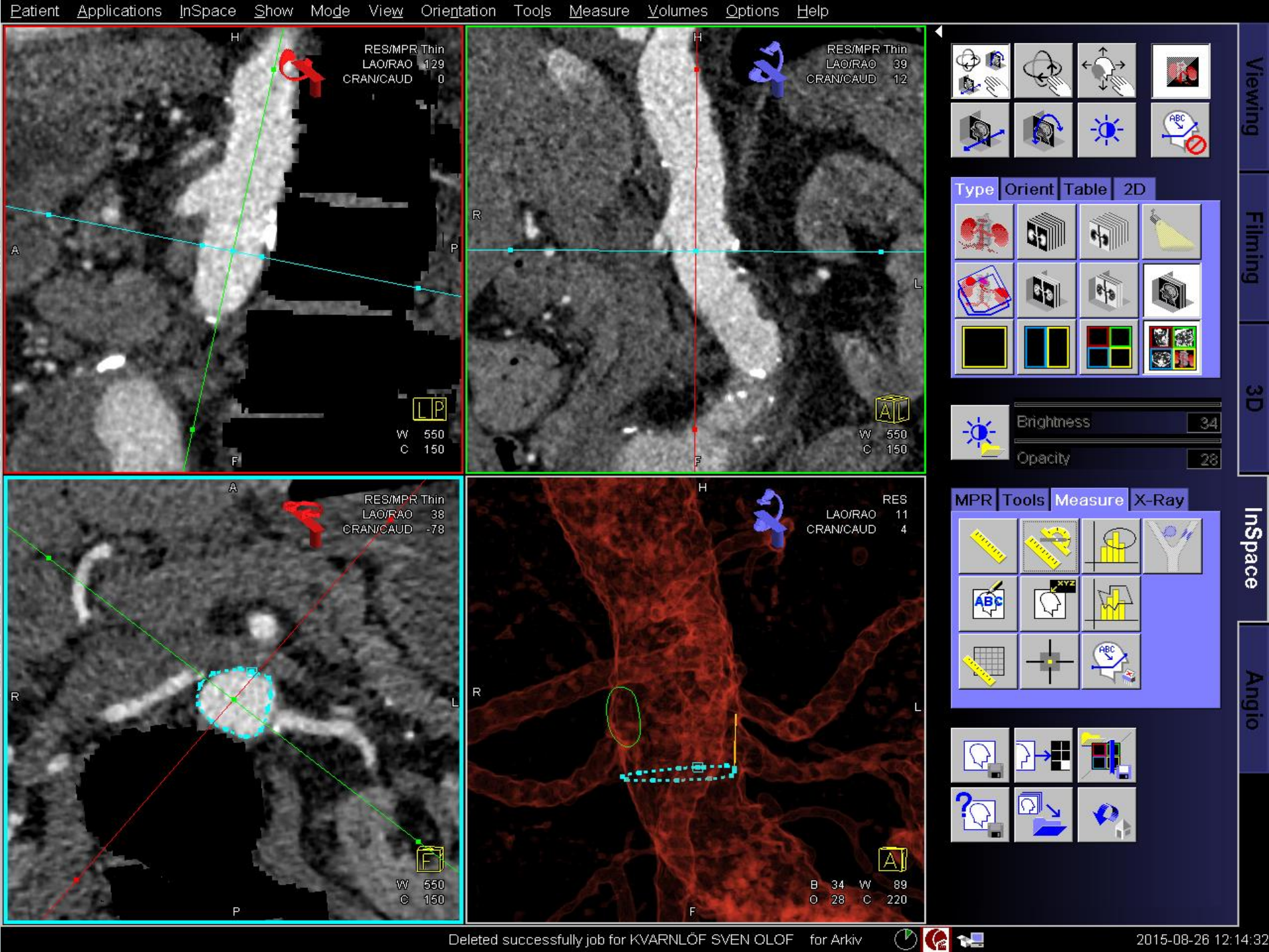
Avoiding/Adjusting Device Rotation

- Control Rotation With Dilator
  - Adjust Device Before Insertion
- Use Contralateral Side
- Brachio-Femoral Wire





INTRAOPERATIVE GUIDANCE


Patient Applications InSpace Show Mode View Orientation Tools Measure Volumes Options Help
RES/MPR Thin
LAO/RAO 129
CRAN/CAUD 0
RES/MPR Thin
LAO/RAO 39
CRAN/CAUD 12
RES/MPR Thin
LAO/RAO 38
CRAN/CAUD -78
RES
LAO/RAO 11
CRAN/CAUD 4
W 550
C 150
B 34 W 89
O 28 C 220
Type Orient Table 2D
Brightness 34
Opacity 28
MPR Tools Measure X-Ray
Viewing Filming 3D InSpace Angio
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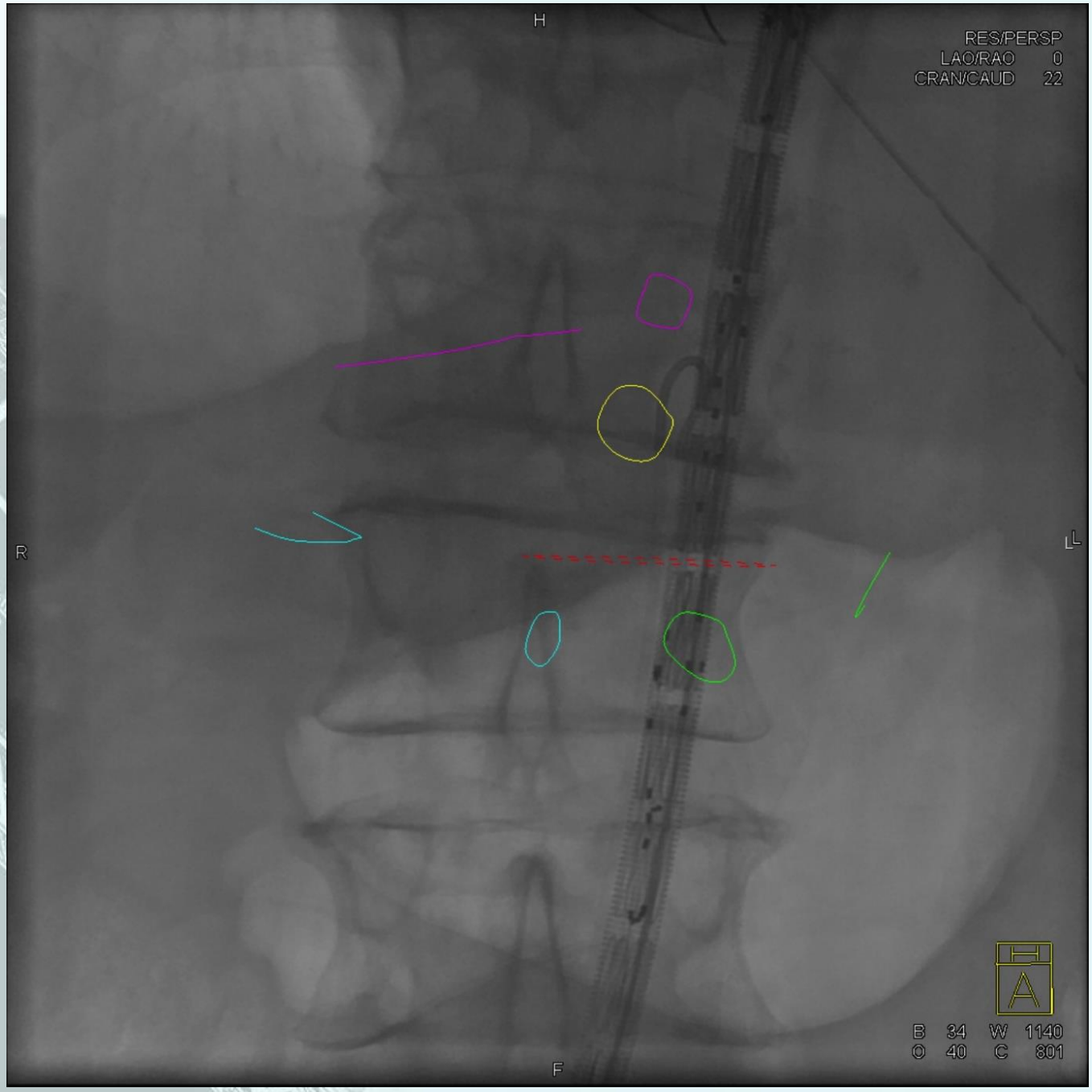
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RES/PERSP
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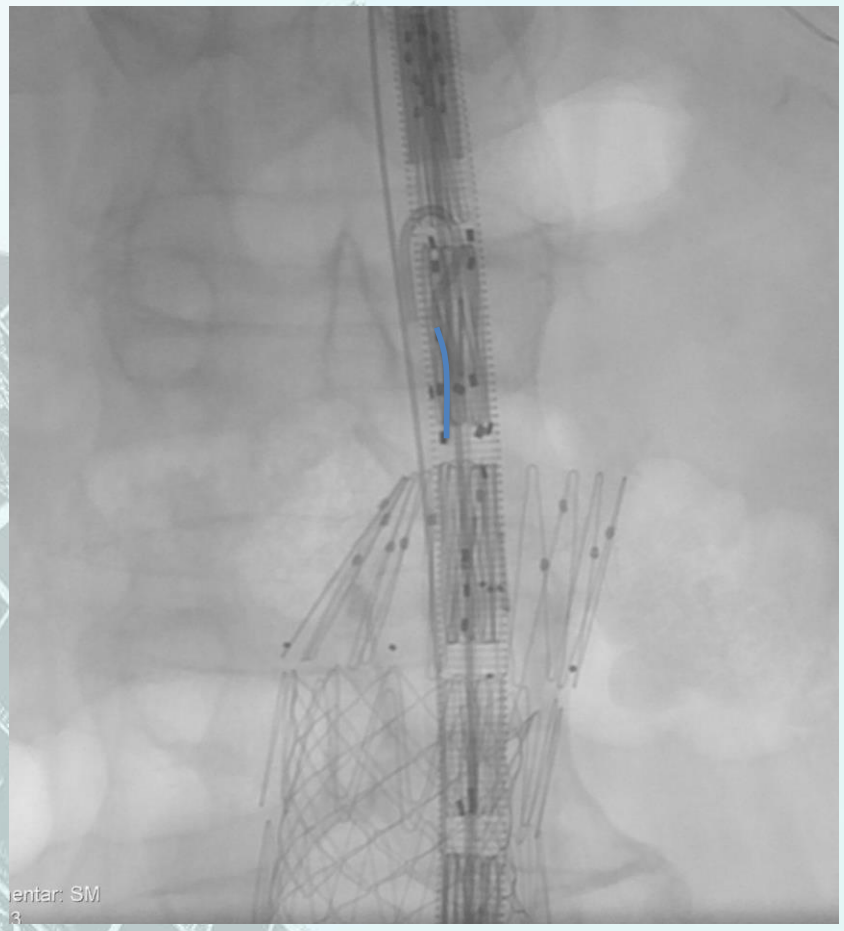
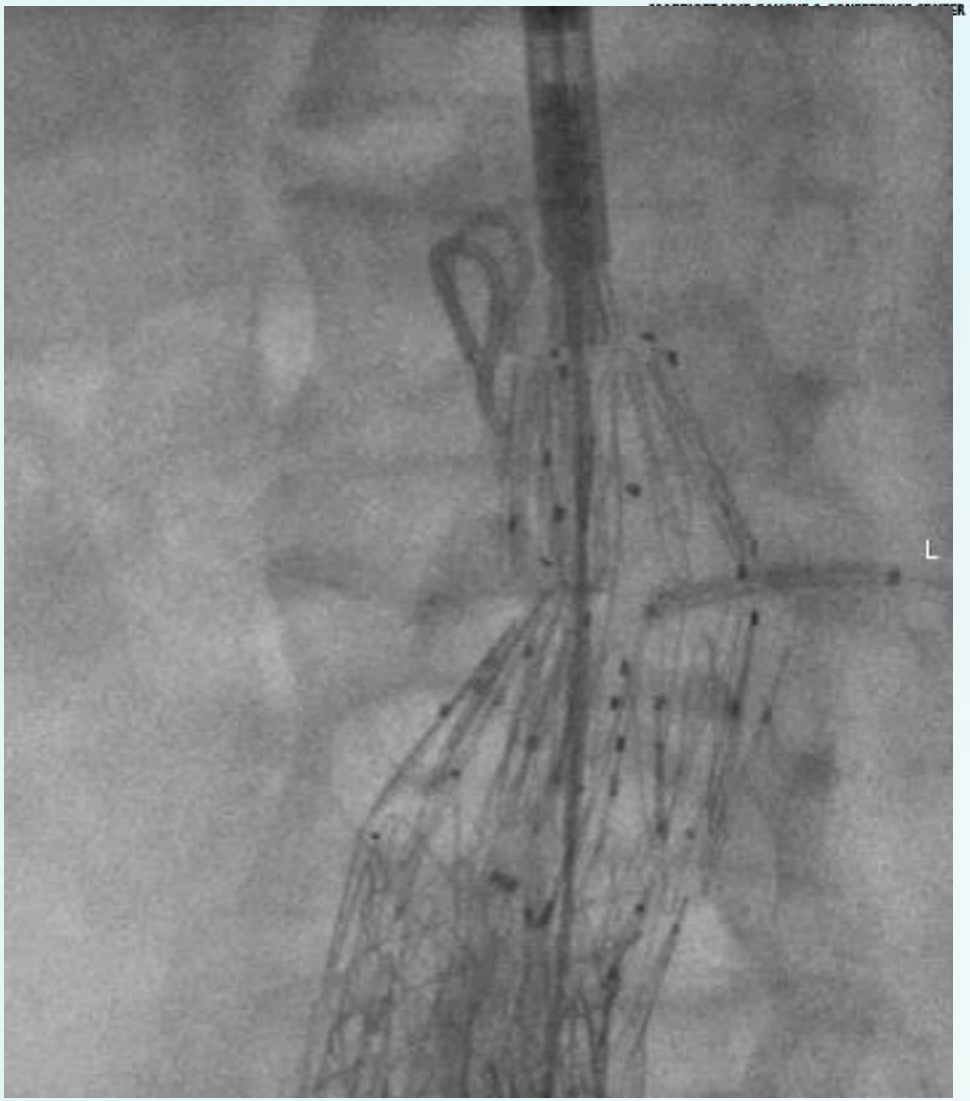
B 34 W 1140
O 40 C 801

IDENTIFYING NEW DEVICE VS. OLD DEVICE

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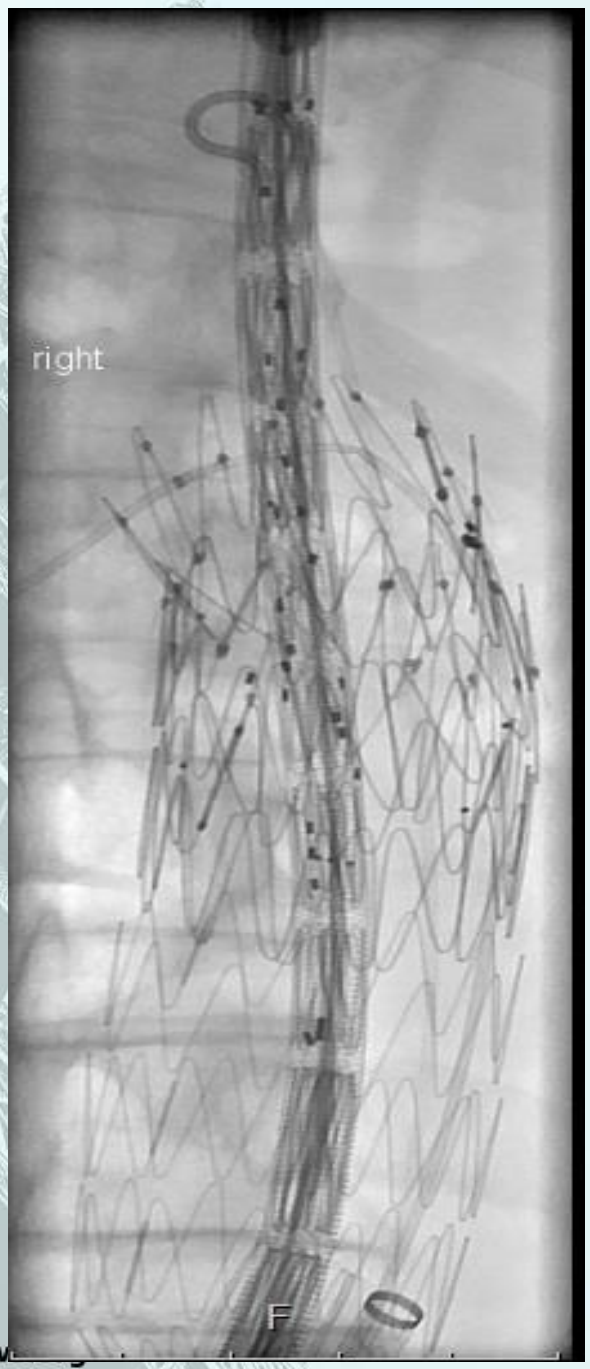
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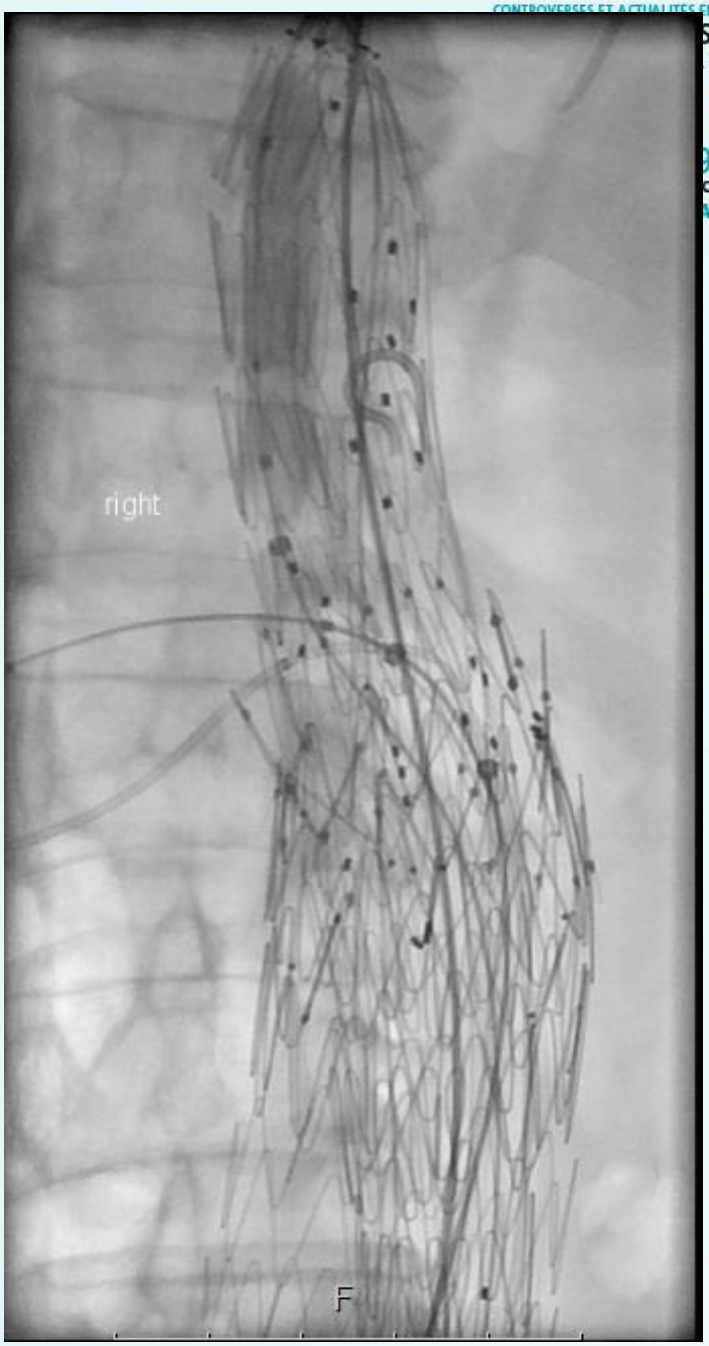
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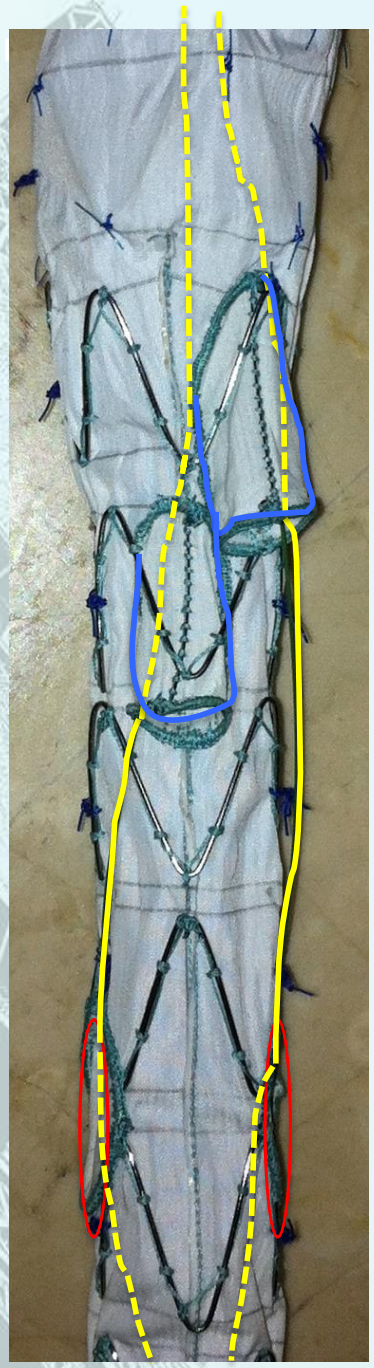
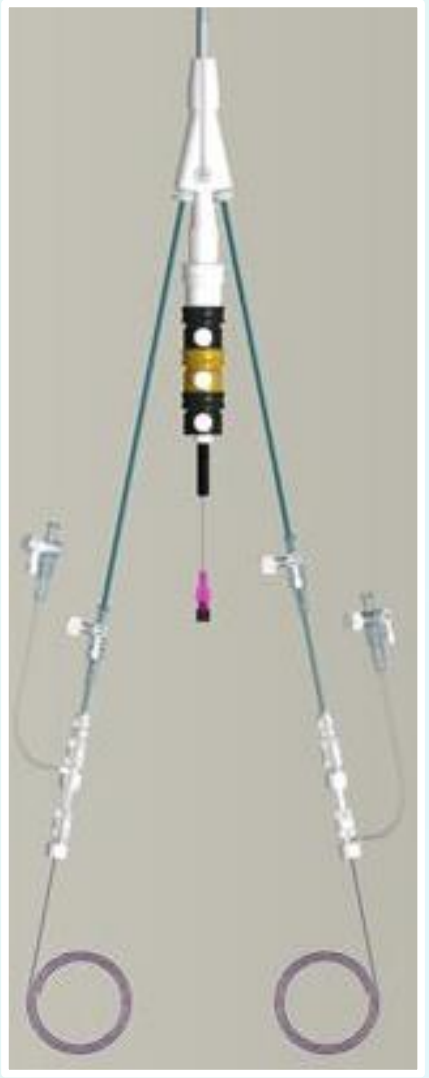
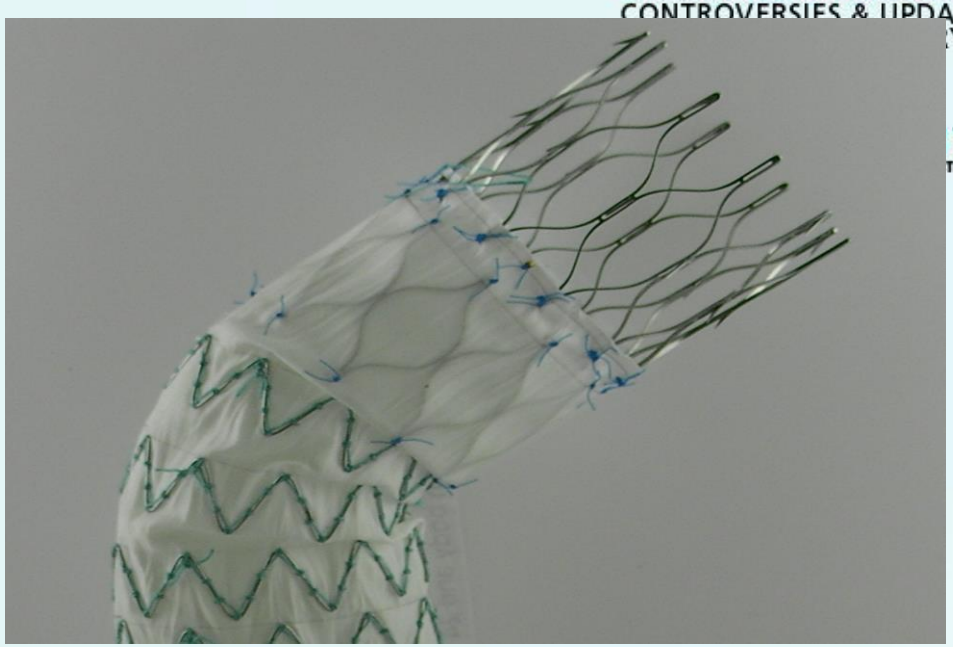




TARGET VESSEL ACCESS



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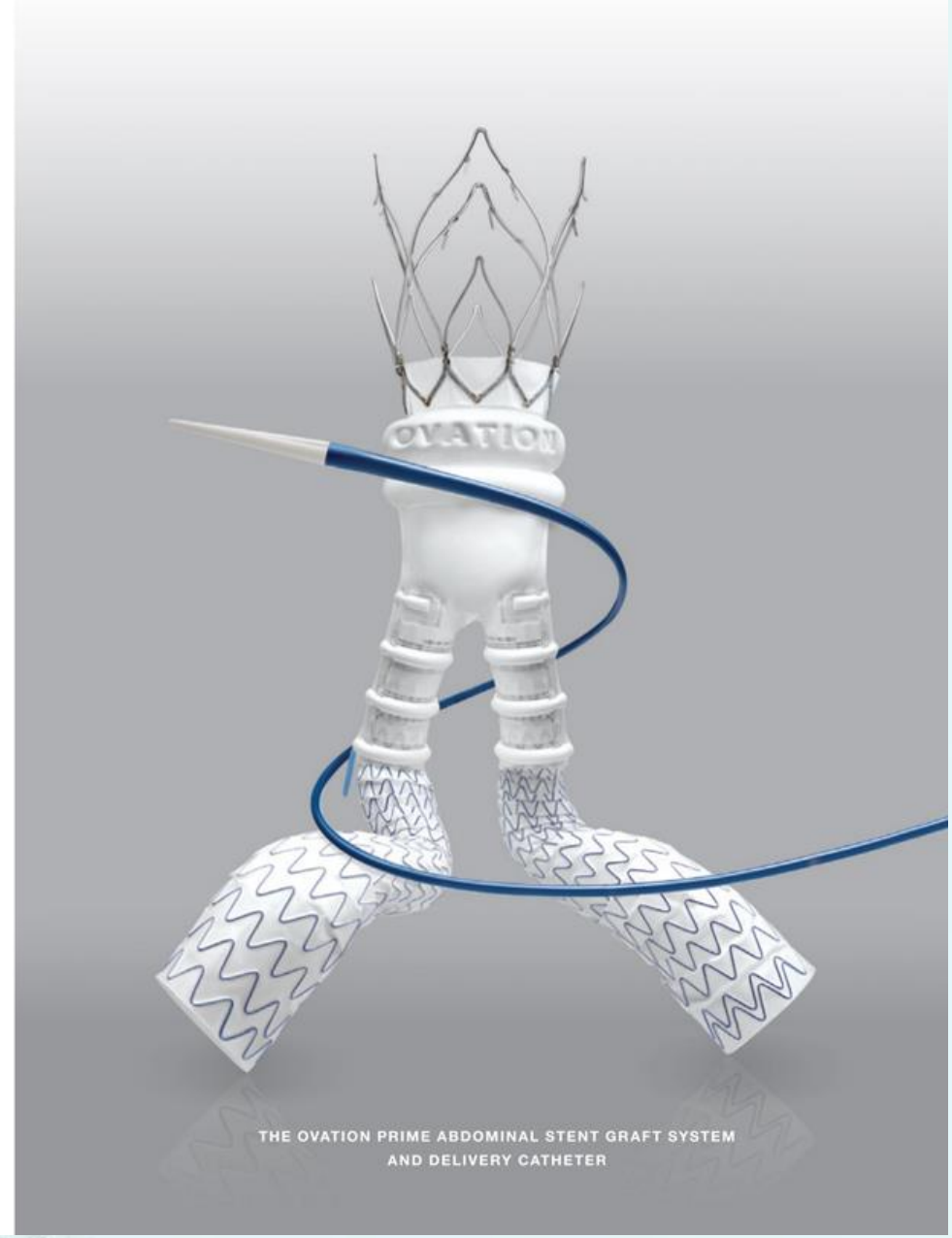
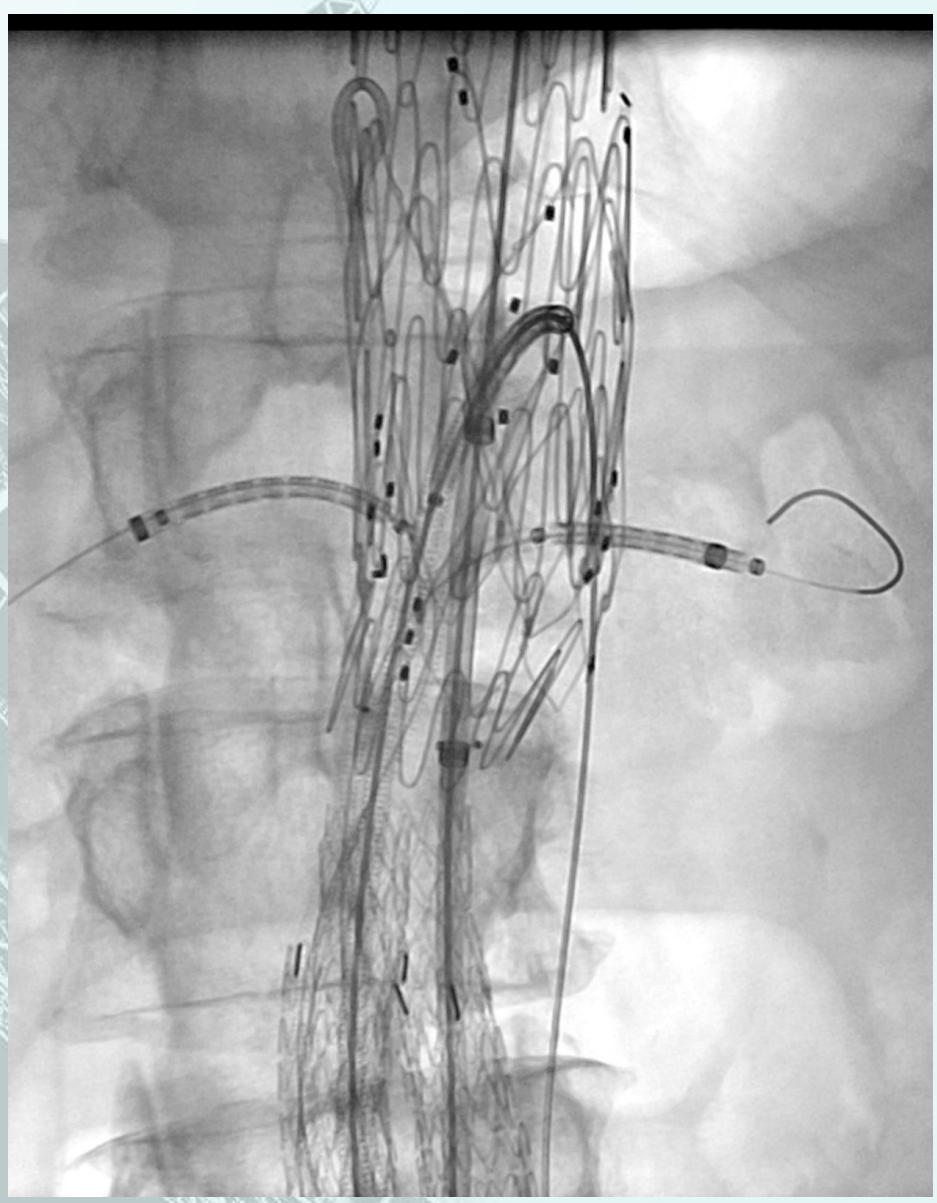
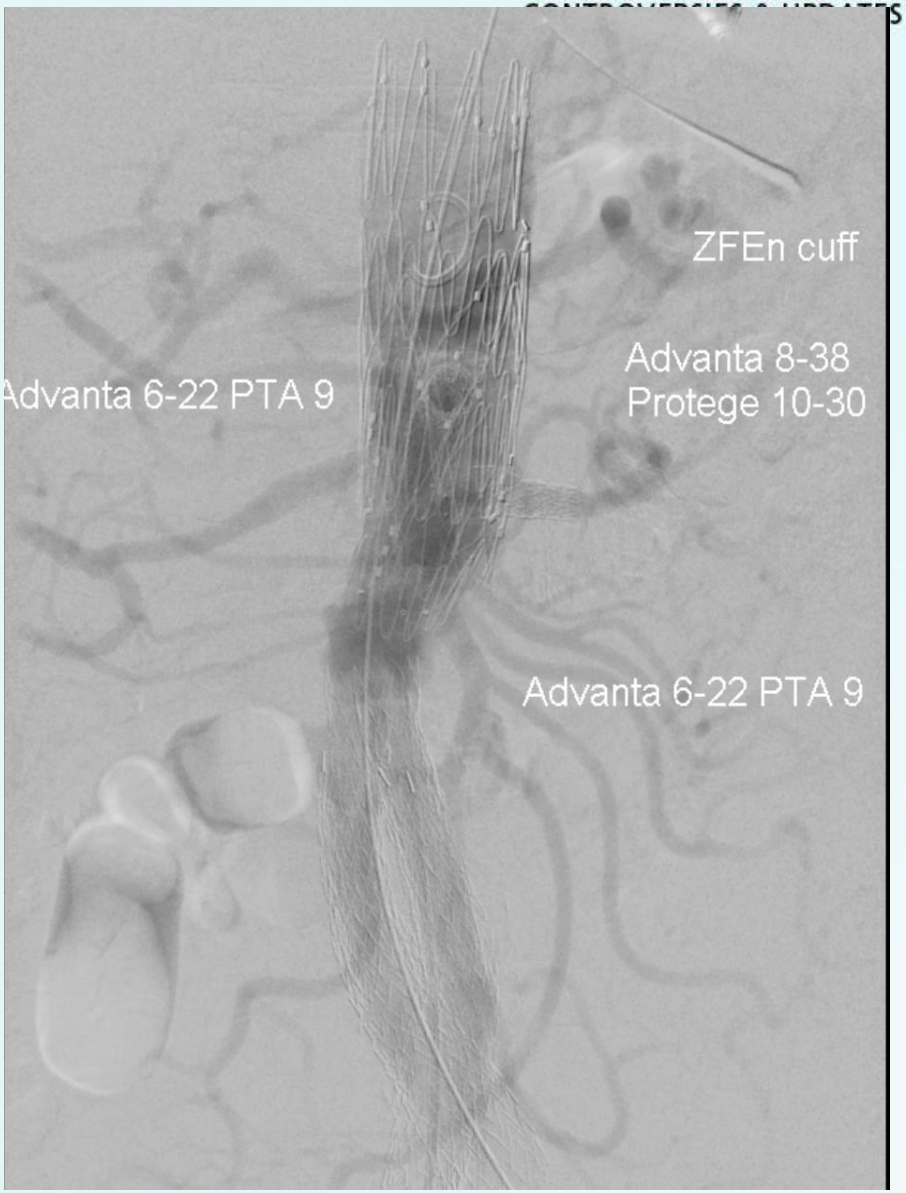
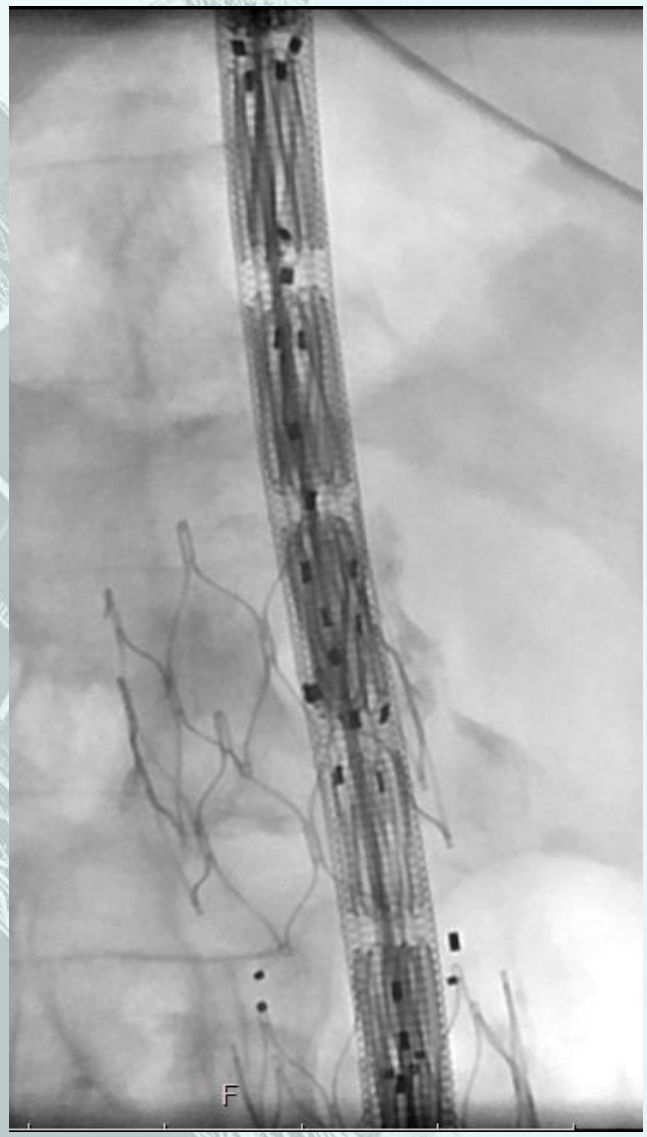


THE OVATION PRIME ABDOMINAL STENT GRAFT SYSTEM
AND DELIVERY CATHETER

www.cacvs.org




ZFEn cuff
Advanta 8-38
Protege 10-30
dvanta 6-22 PTA 9
Advanta 6-22 PTA 9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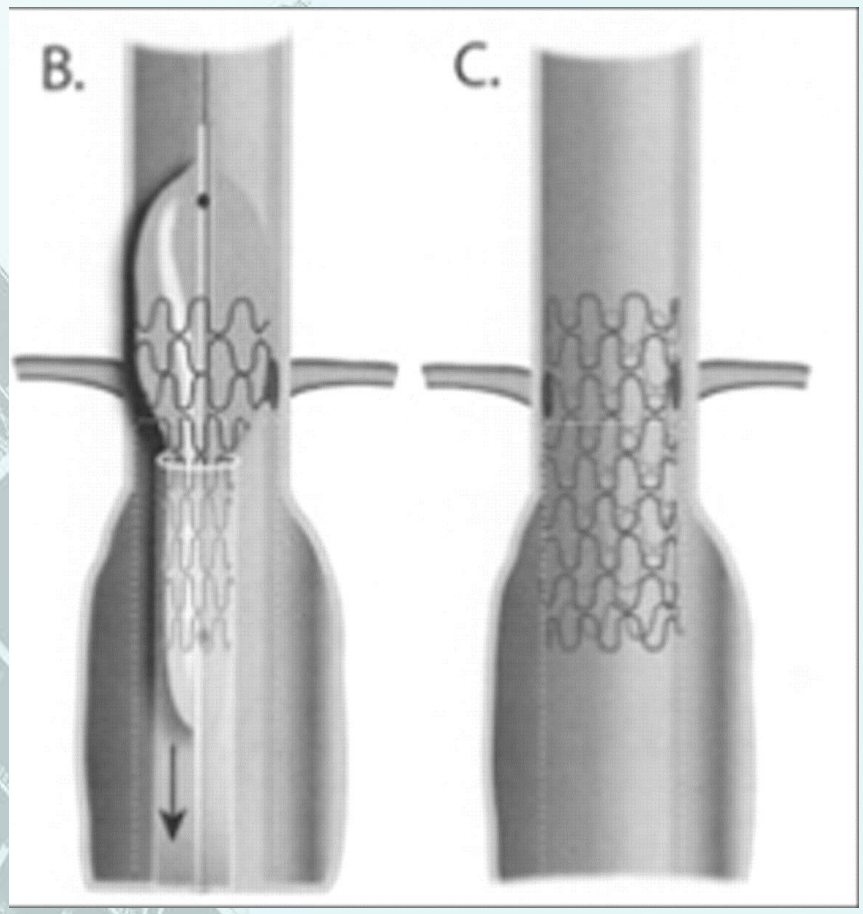
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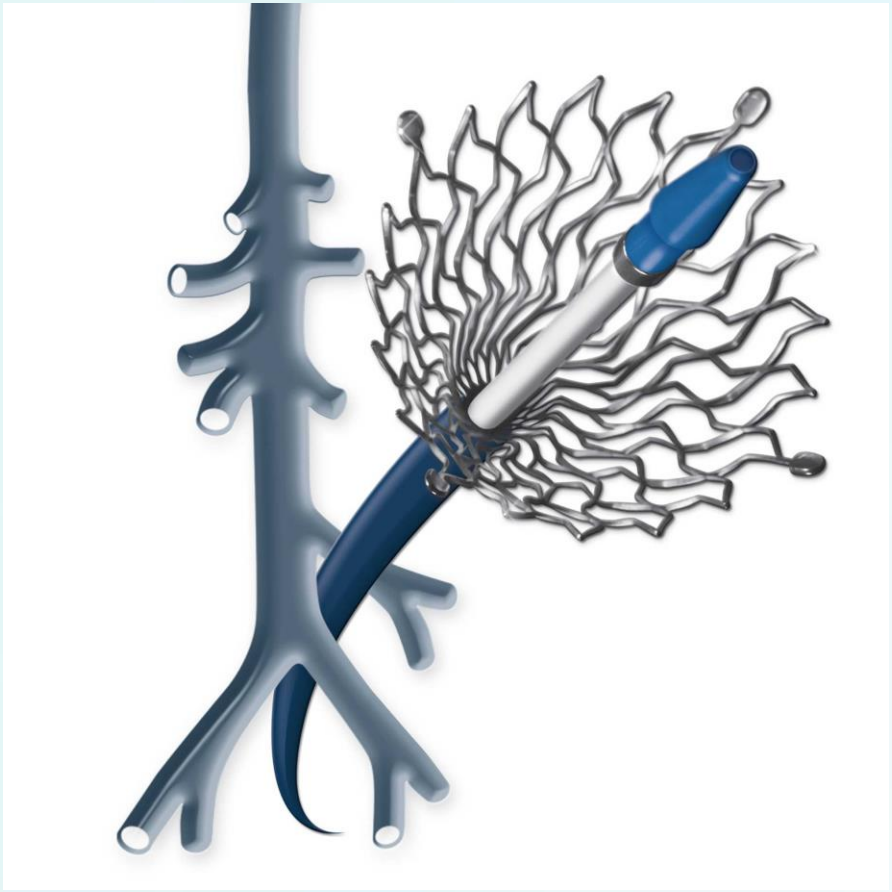
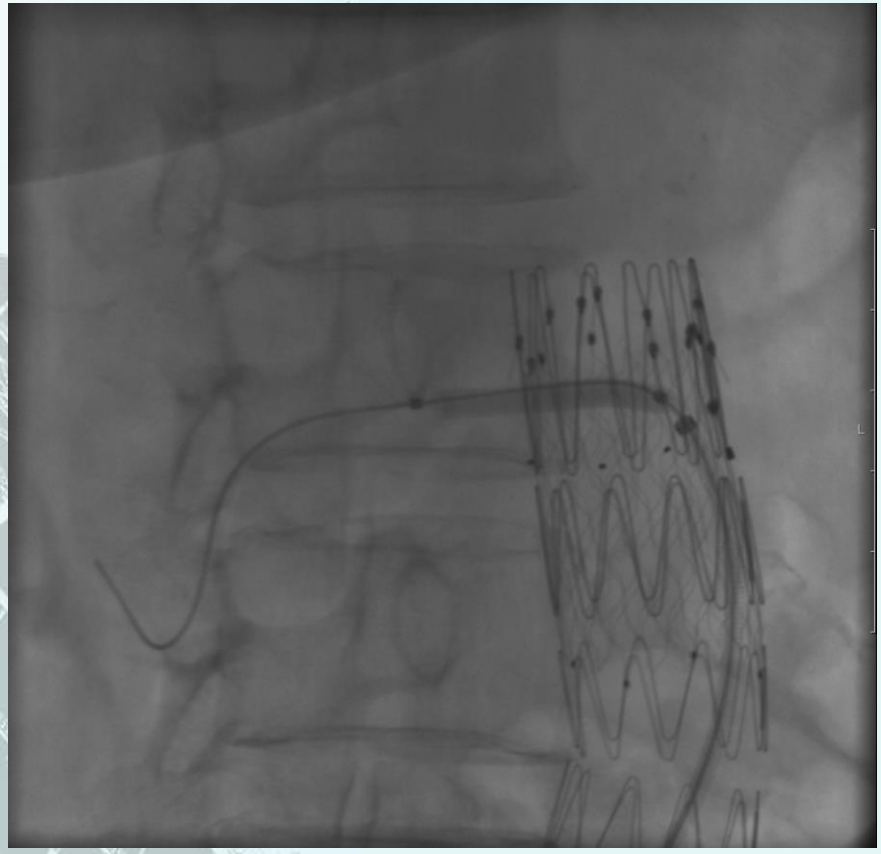
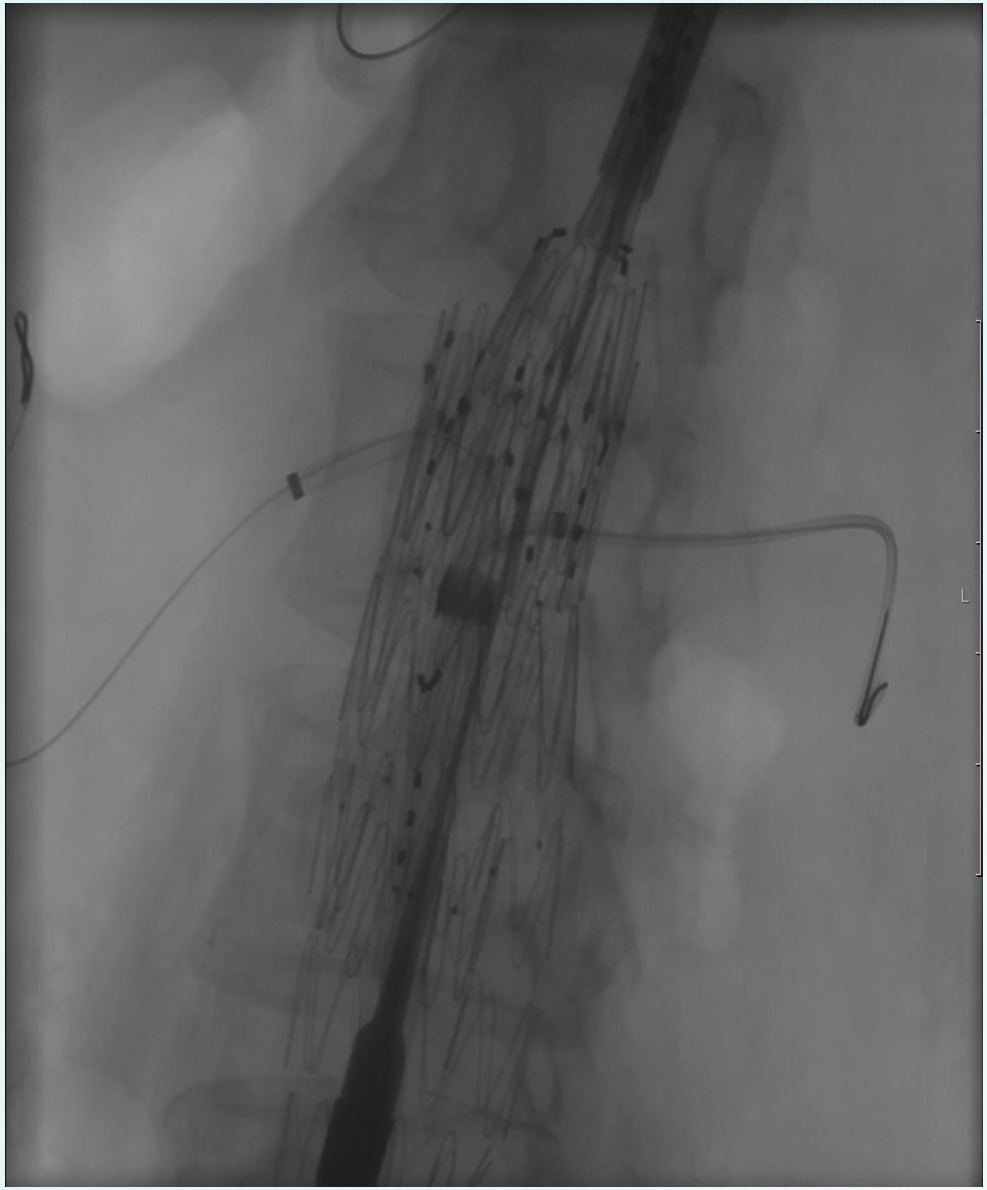






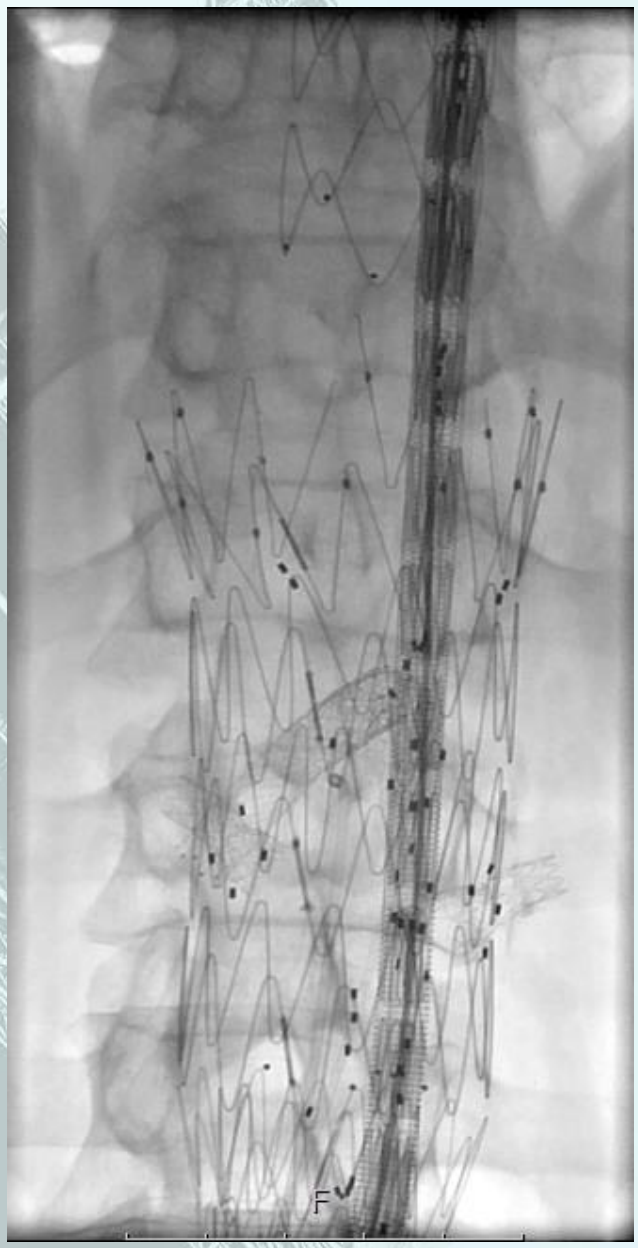
Malmö Cohort

- 2002-2015
- 43 patients
- Indications
  - Type 1a - 56%
  - Aneurysm formation - 30%
  - Pseudoaneurysm - 14%
  - Median FU 33months

Malmö Cohort

- 81% fenestrated cuffs
- 19% branch cuffs
- Technical Success 91%
  - 2 celiac trunk occlusion w/o sequele
  - 1 hepatic artery overstented w/o sequele
  - 1 failed renal artery stent
- Median hospital stay 5 days
- 30d mortality 0%

PREVIOUS FEN REDO




right
dvanta 8-38 - 12 mm prox
Begraft 6/28 - 9 prox
egraft 6/38 - 9 prox
ZFEN-30-22-201
3 Fen + 1 branch
MD-bif-24-12-106
nverted limb
Fluency 13,5 - 80
F

Summary

- Planning Is Still Everything (Almost☺)
  - Know Previous Device
  - Know Aortic Anatomy
- Use Ancillary techniques for positioning, guidance and implantation


THINK
DO IT RIGHT
THE FIRST
TIME!
PLAN AHEA
D