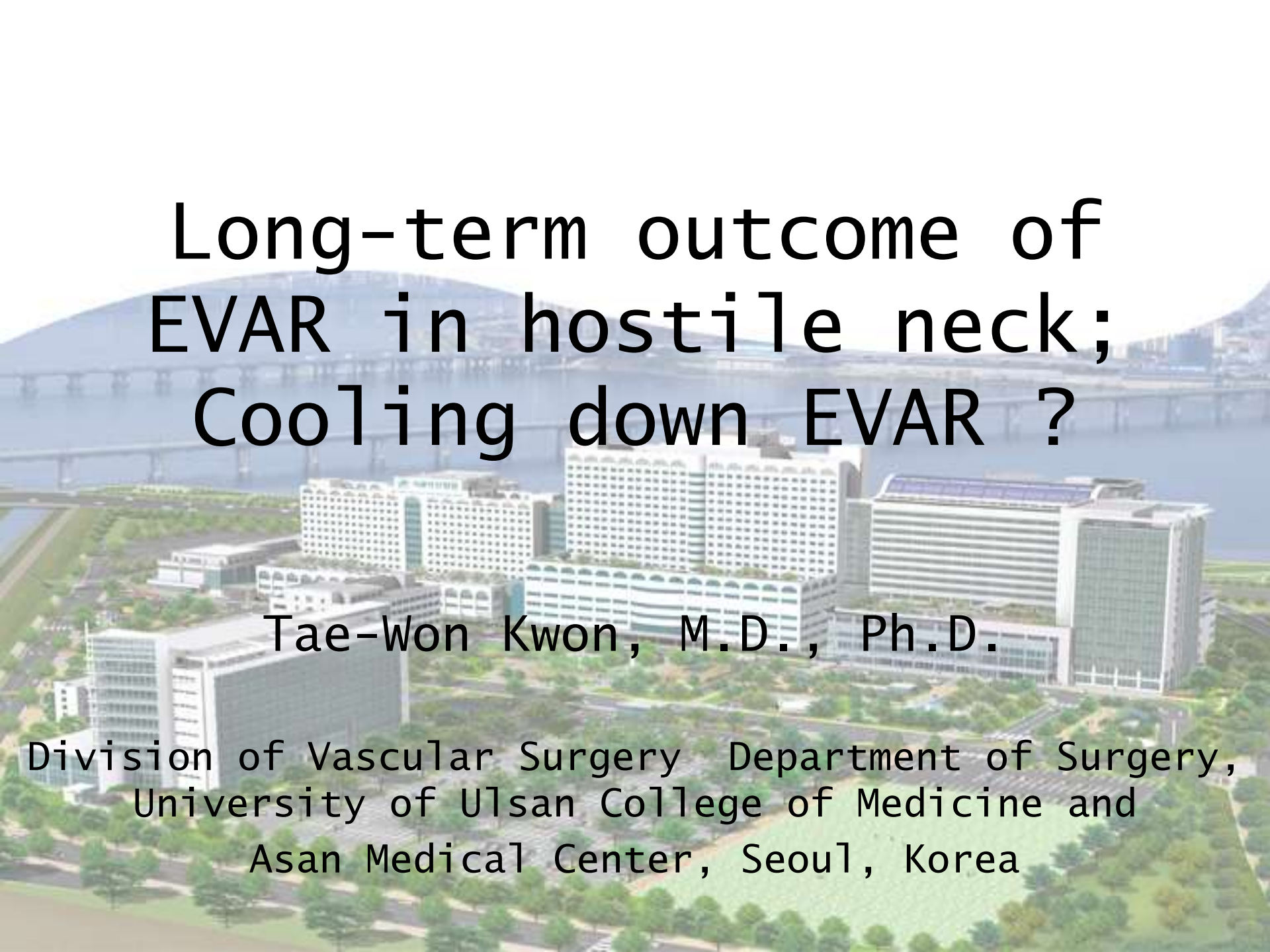
Long-term outcome of EVAR in hostile neck; Cooling down EVAR ?



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University of Ulsan College of Medicine and
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Implantation and
Trouble shooting guide

ENDURANT
AAA Stent Graft System

NATURAL SELECTION

Medtronic

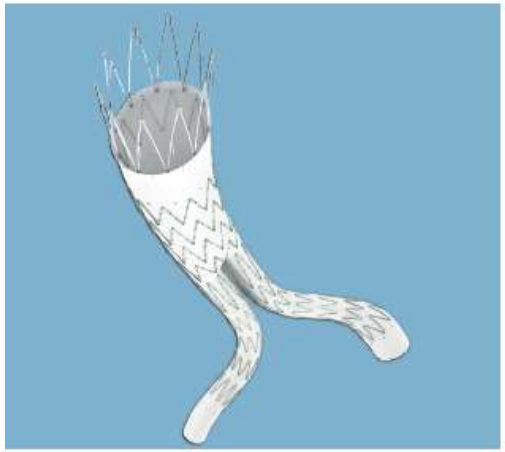
UC200900843EE - Endurant Stent Graft System Implantation & Trouble Shooting Guide

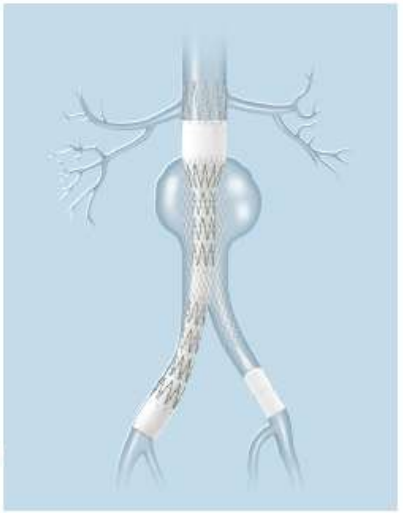
COOK MEDICAL

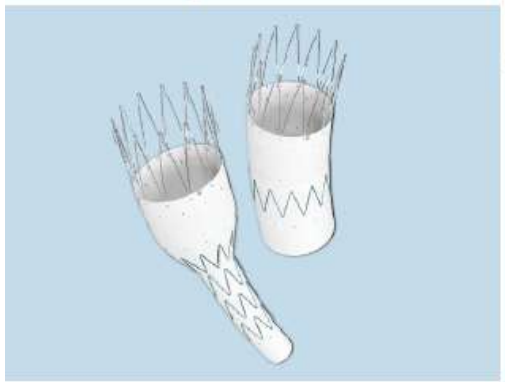
Important Product Information

Zenith® Endovascular Grafts

IFU Supplement







Aneurysm Sac Enlargement after Endovascular Abdominal Aortic Aneurysm Repair

Siem A. Dingemans,[1] Frederik H.W. Jonker,[2] Frans L. Moll,[1] and Joost A. van Herwaarden,[1]
Amsterdam and Rotterdam, the Netherlands

The aim of this study is to give an overview of current knowledge regarding abdominal aortic aneurysm (AAA) growth after endovascular aortic aneurysm repair (EVAR) that could potentially lead to aortic rupture. A search on Pubmed was performed. A total of 705 articles were found after initial search, of which 49 were included in the final selection. Reports on the incidence of aneurysm enlargement after EVAR vary between 0.2% and 41%. Continuous growth could lead to rupture of the aneurysm sac. There are several supposed risk factors for growth after EVAR. Endoleaks remain a hot topic as these could lead to persistent pressurization of the aneurysm sac causing growth. Various types of endoleak exist, of which each kind requires an individual treatment approach, other risk factors for aneurysm growth include endotension and the use of EVAR outside instructions for use (IFU). Reinterventions after EVAR are common; however, it is unclear how frequently these are required because of aneurysm enlargement. Aneurysm enlargement after EVAR remains a subject of debate, as this could lead to aortic rupture. This emphasizes the need for life-long radiologic surveillance during follow-up. Aortic growth after EVAR is often a result of endoleak; however, in some cases, no endoleak is detectable. Endoleak in combination with aortic growth >5 mm generally requires reintervention. A cause of concern is the liberal use of endovascular devices outside the IFU that may result in increased risk of AAA growth after EVAR.

Aortic Neck Anatomic Features and Predictors of Outcomes in Endovascular Repair of Abdominal Aortic Aneurysms Following vs Not Following Instructions for Use

Ali F AbuRahma, MD, FACS, Michael Yacoub, MD, Albeir Y Mousa, MD, FACS, Shadi Abu-Halimah, MD, FACS, Stephen M Hass, MD, FACS, Jenna Kazil, MD, Zachary T AbuRahma, DO, Mohit Srivastava, MD, L Scott Dean, PhD, MBA, Patrick A Stone, MD, FACS

BACKGROUND: A significant number of patients undergo endovascular repair of abdominal aortic aneurysms (EVAR) outside the instructions for use (IFU). This study will examine various aortic neck features and their predictors of clinical outcomes.

CONCLUSIONS: Patients with neck features outside IFU can be treated with EVAR; however, they have higher rates of early and late type I endoleak, early intervention, and late death. (J Am Coll Surg 2016;222:579–589.

Achilles' heel of the procedure

These factors are associated with higher rates of proximal type I endoleaks, reintervention, and aneurysm-related mortality.

Hostile neck;

- short infrarenal length <15 mm,
- angulated >60,
- neck diameter >28 mm,
- conical or tapered morphology as well as significant calcification and thrombus lining of >50% of the neck circumference

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Original Article

Anatomical Features and Early Outcomes of Endovascular Repair of Abdominal Aortic Aneurysm from a Korean Multicenter Registry

Hyunwook Kwon[1], Do Yun Lee[2], Soo Jin Na Choi[3], Ki Hyuk Park[4], Seung-Kee Min[5], Jeong-Hwan Chang[6], Seung Huh[7], Yong Sun Jeon[8], Jehwan Won[9], Seung Jae Byun[10], Sang Jun Park[11], Lee Chan Jang[12], and Tae-Won Kwon[1]

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[9]Department of Radiology, Ajou University School of Medicine, Suwon,
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[11]Department of Surgery, Ulsan University Hospital, University of Ulsan College of Medicine, Ulsan,
[12]Department of Surgery, Chungbuk National University Hospital, Chungbuk National University College of Medicine, Cheongju, Korea

Materials and methods: The Korean EVAR registry (KER) was a template-based online registry developed and established in 2009. The KER recruited 389 patients who underwent EVAR from 13 medical centers in South Korea from January 2010 to June 2010. We retrospectively reviewed the anatomic features and 30-day clinical outcomes.

Neck Anatomy, endoleaks, and adjunctive procedures stratified by IFU

	w-IFU		o-IFU		P-value
	No.	%	No.	%	
Neck Length	374		15		
All endoleak	116	31.0	8	53.3	0.07
Type Ia	37	9.9	4	26.7	0.038
Type Ib	17	4.5	3	20.0	0.008
Type II	64	17.1	1	6.6	0.29
Type III	16	4.3	0	0.0	0.42
Type IV	6	1.6	0	0.0	0.62
Adjunctive procedures	42	11.2	6	40.0	0.001
Neck Angle	206		183		
All endoleak	62	30.1	62	33.9	0.42
Type Ia	22	10.7	19	10.4	0.92
Type Ib	11	5.3	9	4.9	0.85
Type II	31	15.0	34	18.6	0.35
Type III	6	2.9	10	5.5	0.21
Type IV	4	1.9	2	1.1	0.50
Adjunctive procedures	18	8.7	30	16.4	0.022
Neck Diameter	300		89		
All endoleak	96	32.0	28	31.5	0.92
Type Ia	28	9.3	13	14.6	0.16
Type Ib	16	5.3	4	4.5	0.75
Type II	51	17.0	14	15.7	0.78
Type III	10	3.3	6	6.7	0.16
Type IV	5	1.7	1	1.1	0.72
Adjunctive procedures	37	12.3	11	12.4	0.99

Abbreviations :IFU, Instruction For Use




New Devices for EVAR

Excluder C3, Gore medical

AFX2, Endologix

Aortofix, Lombard Medical

Anaconda, Terumo

Nellix, Endologix

Ovation, Endologix

Zenith Alpha, Cook medical

Incraft, Cordis

Heli FX, Aptus Endovascular

E-vita abdominal stent graft system

Multilayer Flow Moderator, Cardiatis

Comparison between Open and Endovascular Repair for the Treatment of Juxtarenal Abdominal Aortic Aneurysms: A Single-Center Experience with Midterm Results

Koji Maeda, Takao Ohki, Yuji Kanaoka, Takeshi Baba, Kenjirou Kaneko, and Kota Shukuzawa, Tokyo, Japan

Background: To evaluate the optimal treatment for juxtarenal abdominal aortic aneurysm (JAAA), we compared the outcomes of open surgical repair (OSR) with endovascular aortic repair (EVAR) using a variety of fenestrated and snorkel EVARs.

Methods: We evaluated overall survival, aneurysm-related death, reintervention, and renal impairment in 152 JAAAs retrospectively, excluding cases of aortic dissection and rupture. Cox models were used to assess survival and assessed postoperative dialysis rates following surgery.

Results: OSR and EVAR were performed in 81 and 71 patients, respectively. The mean age was significantly higher in the EVAR group (overall, 74.5 years; OSR, 71 years; and EVAR; 77 years). High preoperative serum creatinine levels, cerebrovascular disease, and chronic obstructive pulmonary disease were more prevalent in the EVAR group. Mean operative time, hospital stay, and perioperative blood loss were significantly greater in the OSR group ($P < 0.001$ for all). The overall 30-day mortality was 1.9% with no statistical difference between 2 groups. The reintervention rate was significantly higher in the EVAR group ($P = 0.01$). Overall survival rates at 1, 3, 5, and 7 years were 97.4%, 91.6%, 86.3%, and 82.9%, respectively, with no significant difference between groups. Mortality in EVAR was associated with over 3.0 mg/dL of postoperative creatinine, and postoperative dialysis following OSR was associated with operative time and volume of bleeding.

Conclusions: Acceptable outcomes were observed with OSR and EVAR. However, reintervention was more frequently required following EVAR. OSR appears to be the most appropriate first-line treatment for JAAA in good-risk patients; however, EVAR may represent an alternative option in high-risk patients.

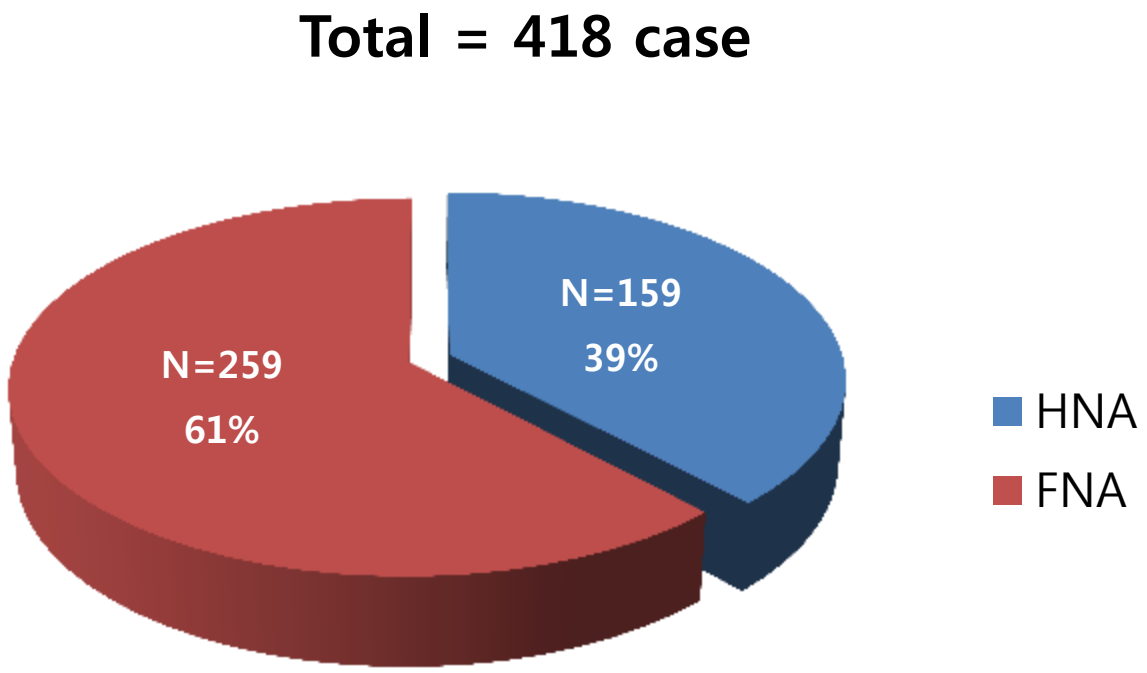
Immediate and Two-year Outcomes after EVAR in "On-label" and "Off-label" Neck Anatomies Using Different Commercially Available Devices. Analysis of the Experience of Two Italian Vascular Centers

Francesco Speziale,[1] Pasqualino Sirignano,[1] Francesco Setacci,[1] Danilo Menna,[1] Laura Capoccia,[1] Wassim Mansour,[1] Giuseppe Galzerano,[2] and Carlo Setacci,[2] Rome and Siena, Italy

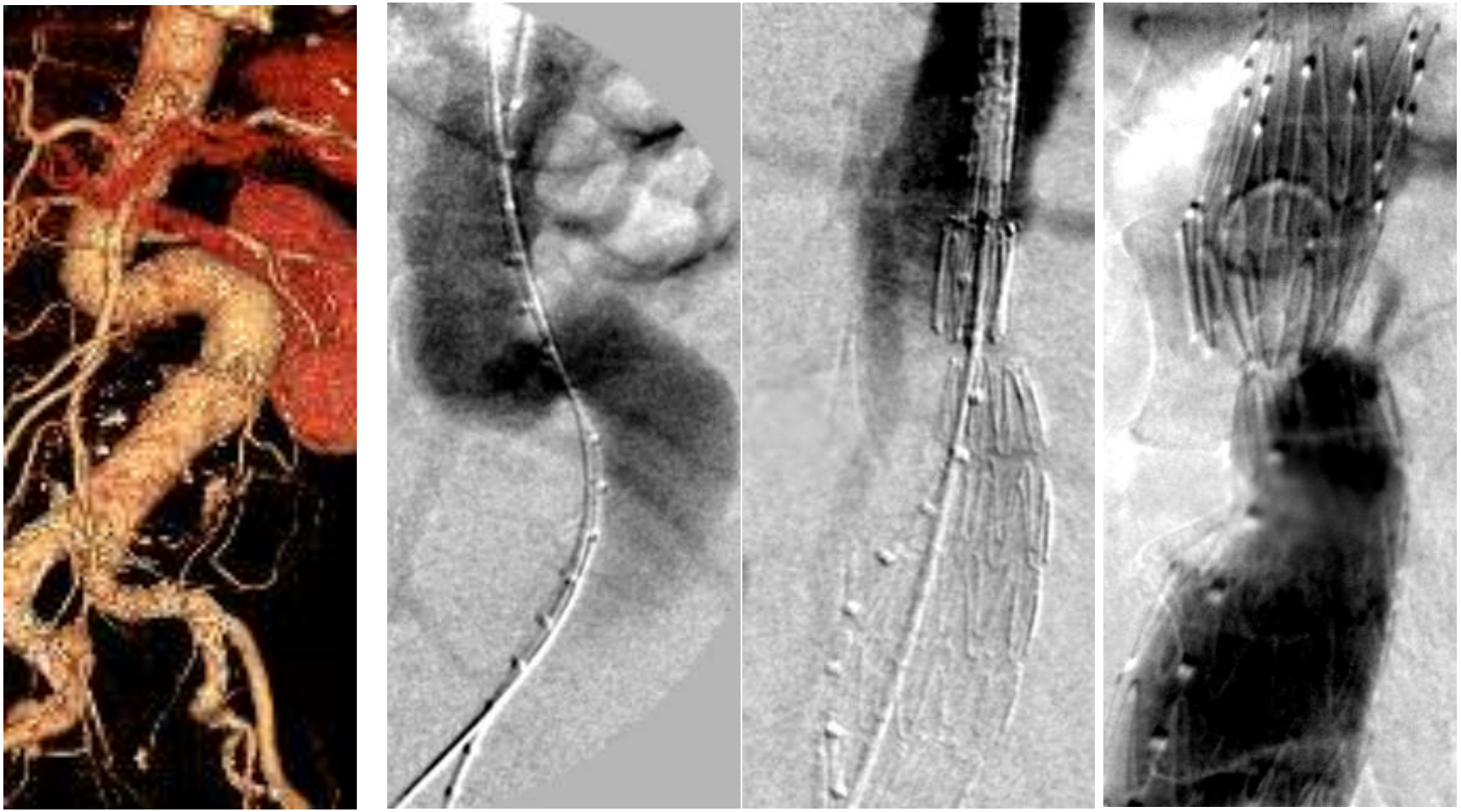
Methods: A double-center study was conducted on a prospectively compiled computerized database between January 2010 and December 2011. One hundred and ninety-six consecutive elective surgery patients were analyzed and divided into 2 groups ("on-label" [on-L] and "off-L" necks) on the basis of their aortic neck anatomy. The neck was classified as an "off-L neck" in the presence of: (1) a noncylindrical neck, (2) an angulated neck, (3) a short neck, and (4) an enlarged neck. The end points were 30-day and 2-year technical and clinical success, evaluated in terms of freedom from reintervention and death.

Ann Vasc Surg 2014; 28: 1892–1900

Asan Medical Center (2007.01-2016.12.31)

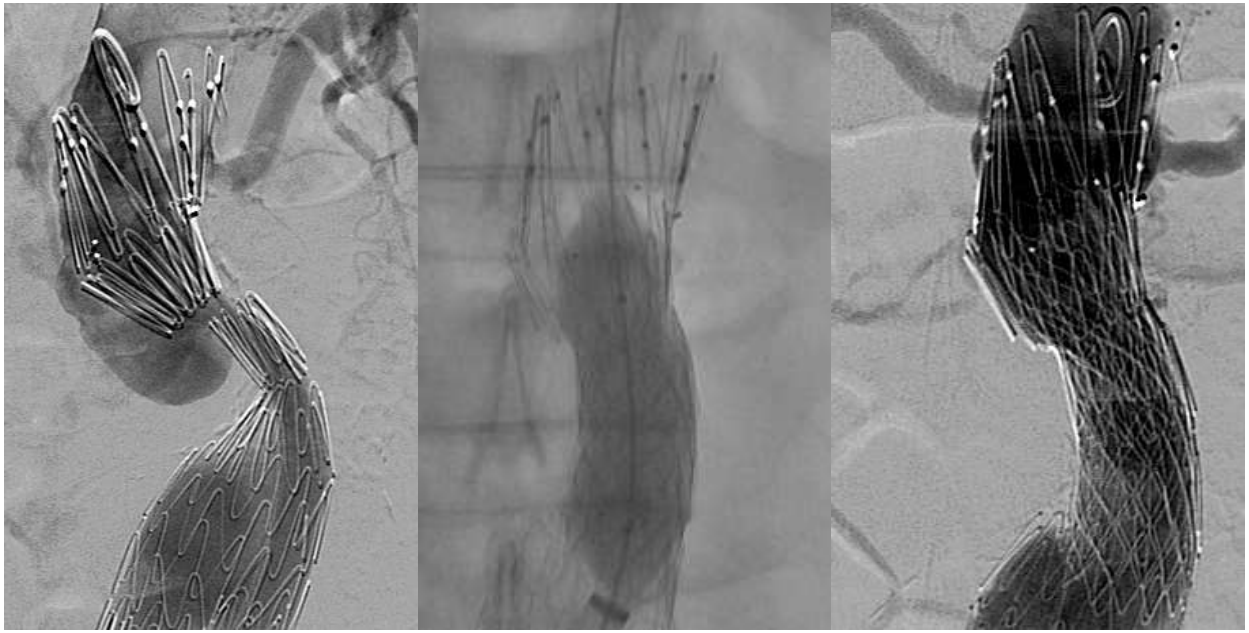


Case. M/72



Maximal diameter of aneurysm sac; 84 mm

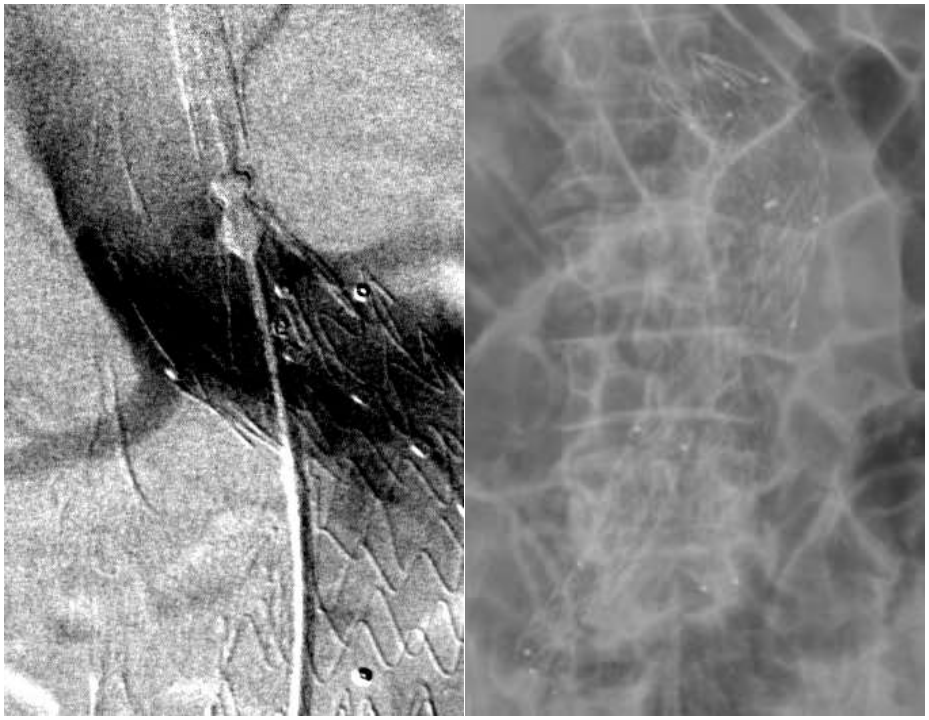
- angulated neck
- 52 mm of neck length
- 26 mm of neck diameter



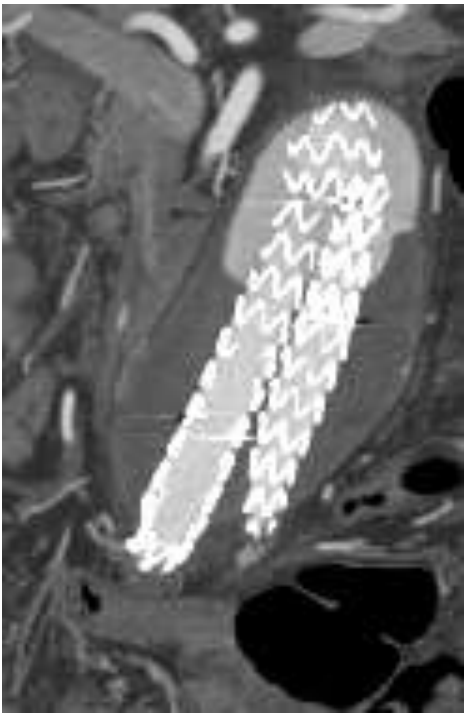
Reintervention, Post- EVAR, day 3
2011-Jan-6

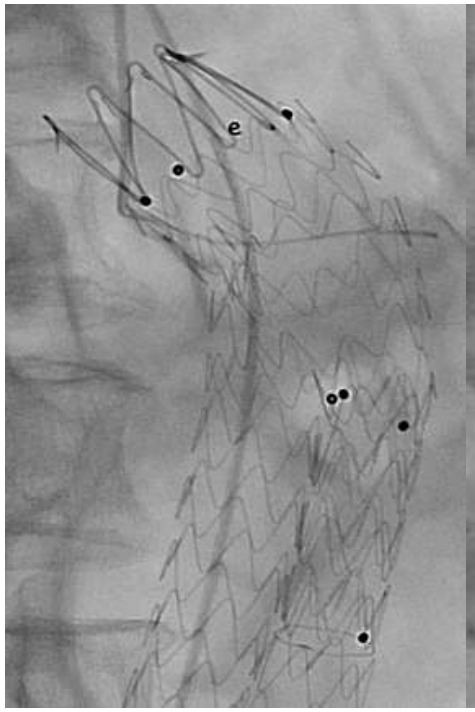
Balloon expandable stent; 14-25mm/30-37 mm
x 2

Case. M/83



Maximal diameter of sac; 68mm
Neck diameter; 25 mm
short angulated neck

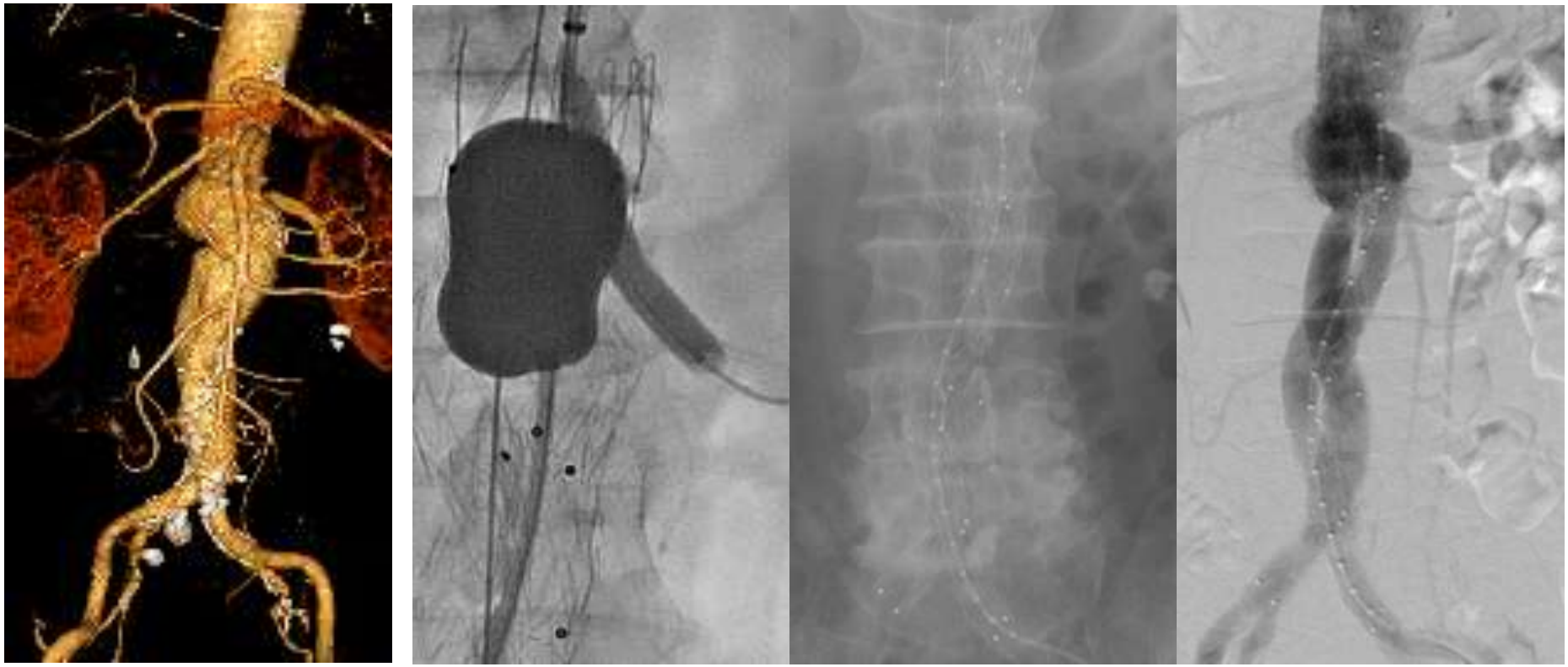




Post-EVAR day 5, 2011-Jul-5

Post-EVAR day 6, coil embolization 2011-Jul-6

Case. M/73



Maximal diameter of aneurysm sac; 65 mm

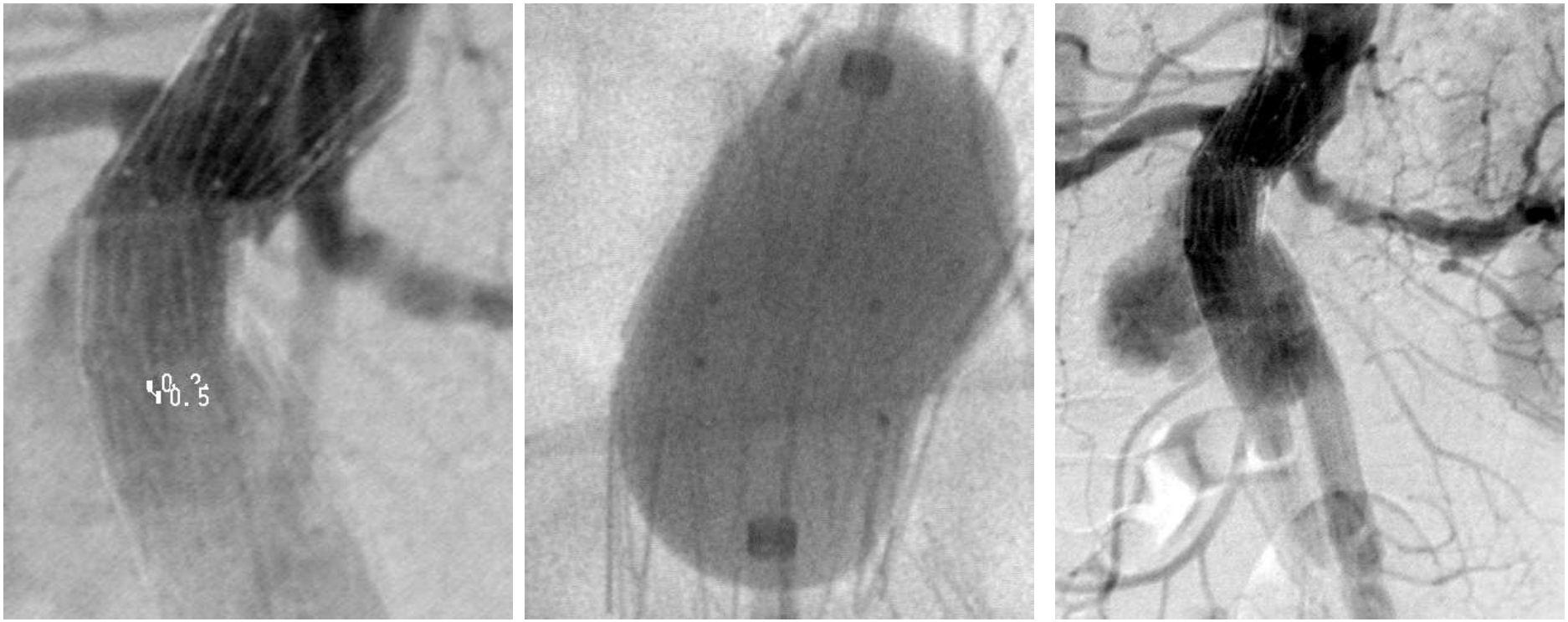
- Short neck
- 28 mm of neck diameter

M.73, 68 mm AAA, ruptured

Hostile neck;
Short and angulated

Zenith 24 mm main body Post-EVAR day 3

Post-EVAR day 8

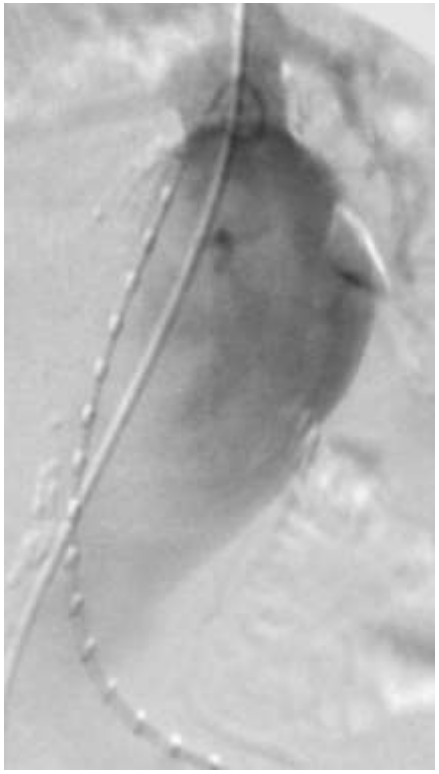


Zenith 28 mm Aortic cuff

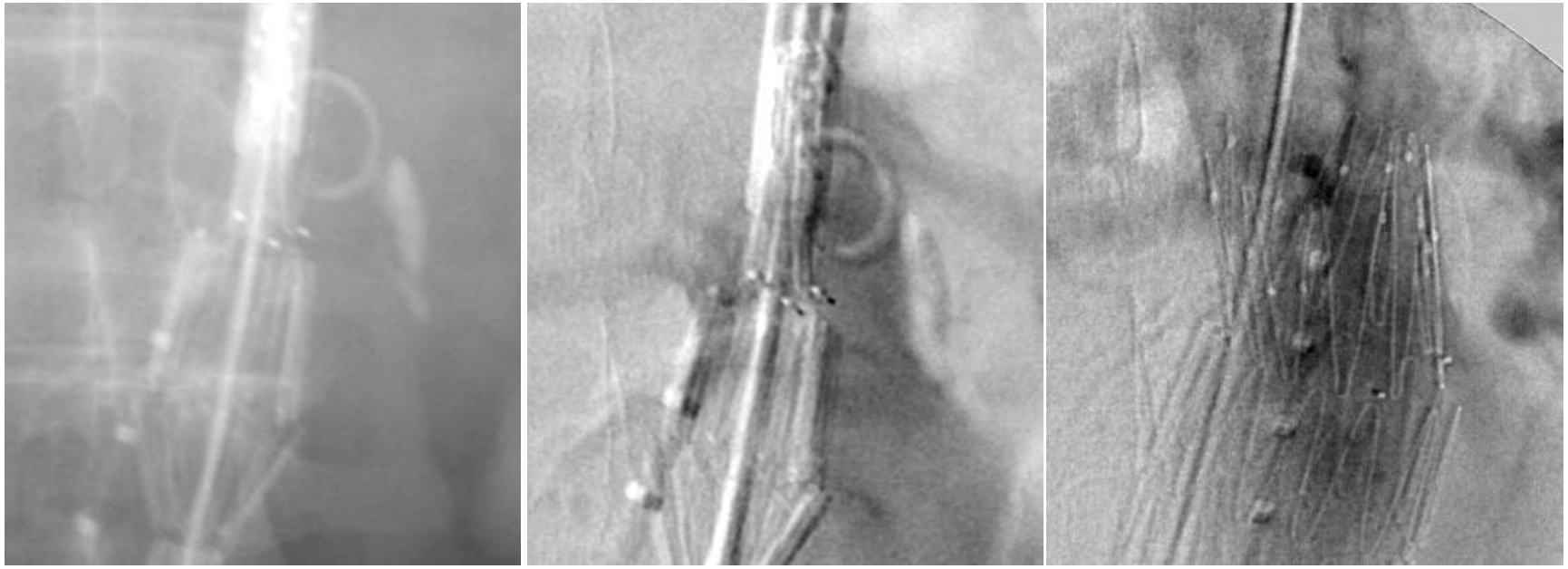
Post-EVAR day 10

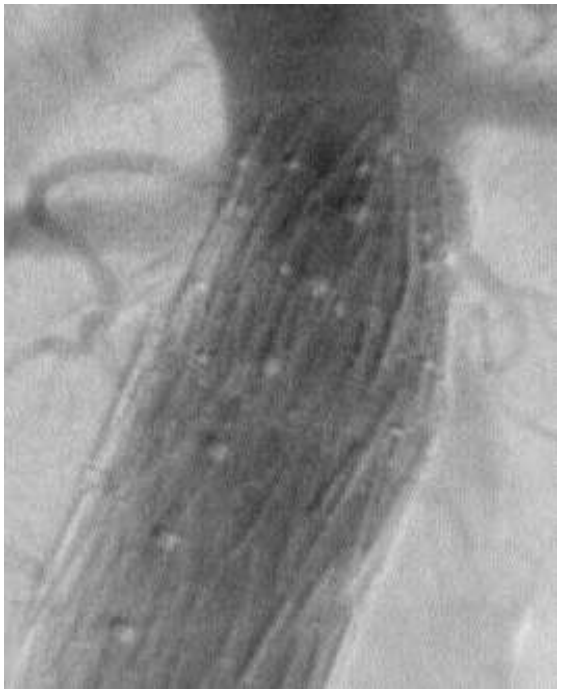
Banding

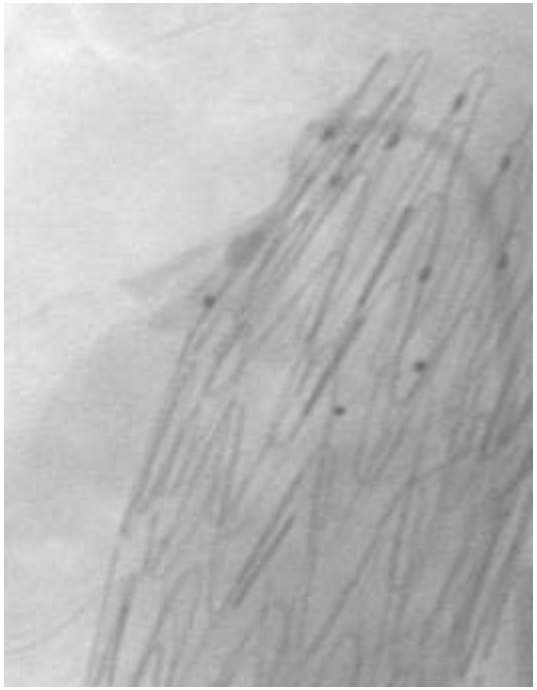
Case. M/62



Maximal diameter of aneurysm sac; 64 mm
Short neck (14 mm) with calcification >50% of the neck circumference







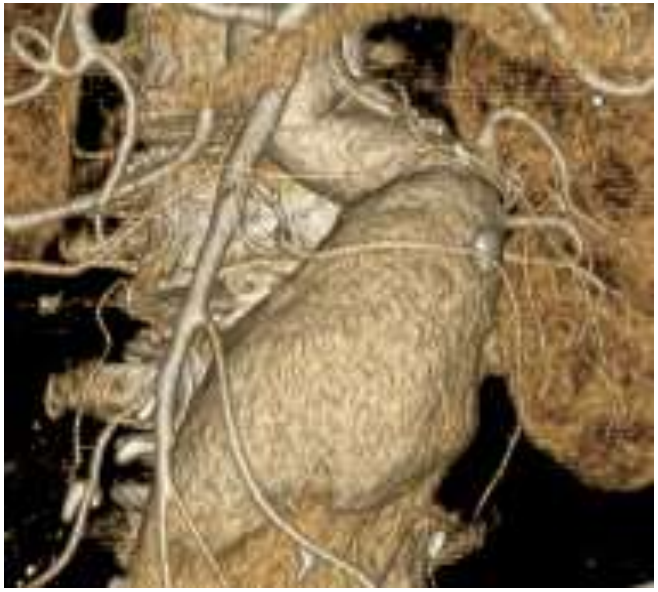
EVAR in hostile neck

- You should have your own definition of hostile neck in performing EVAR.
- Additional procedure or secondary intervention may be needed for short-term result.

Long-term outcome is affected by

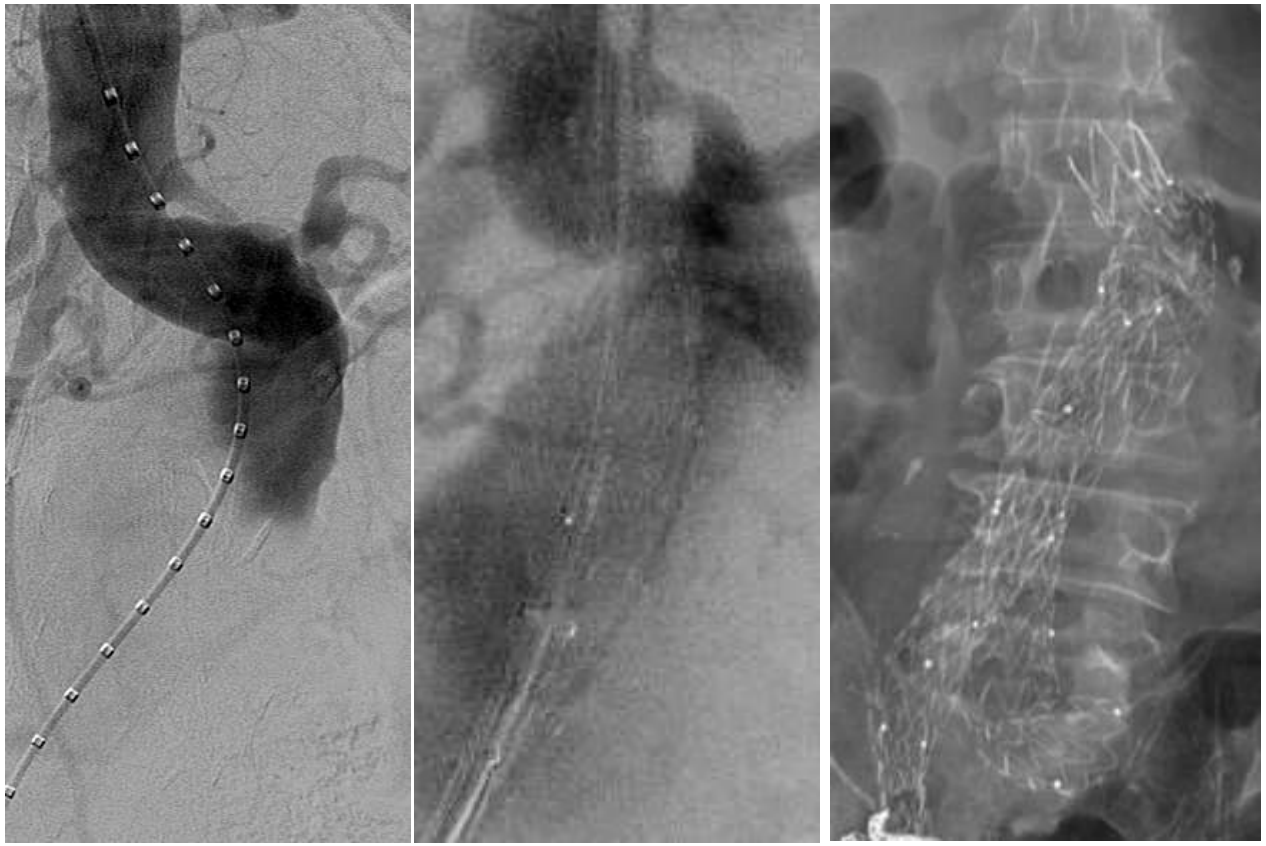
- Morphological change,
- Aneurysm itself
- Characteristics of nitinol-based endografts

Case. M/76



Maximal diameter of aneurysm sac; 80 mm

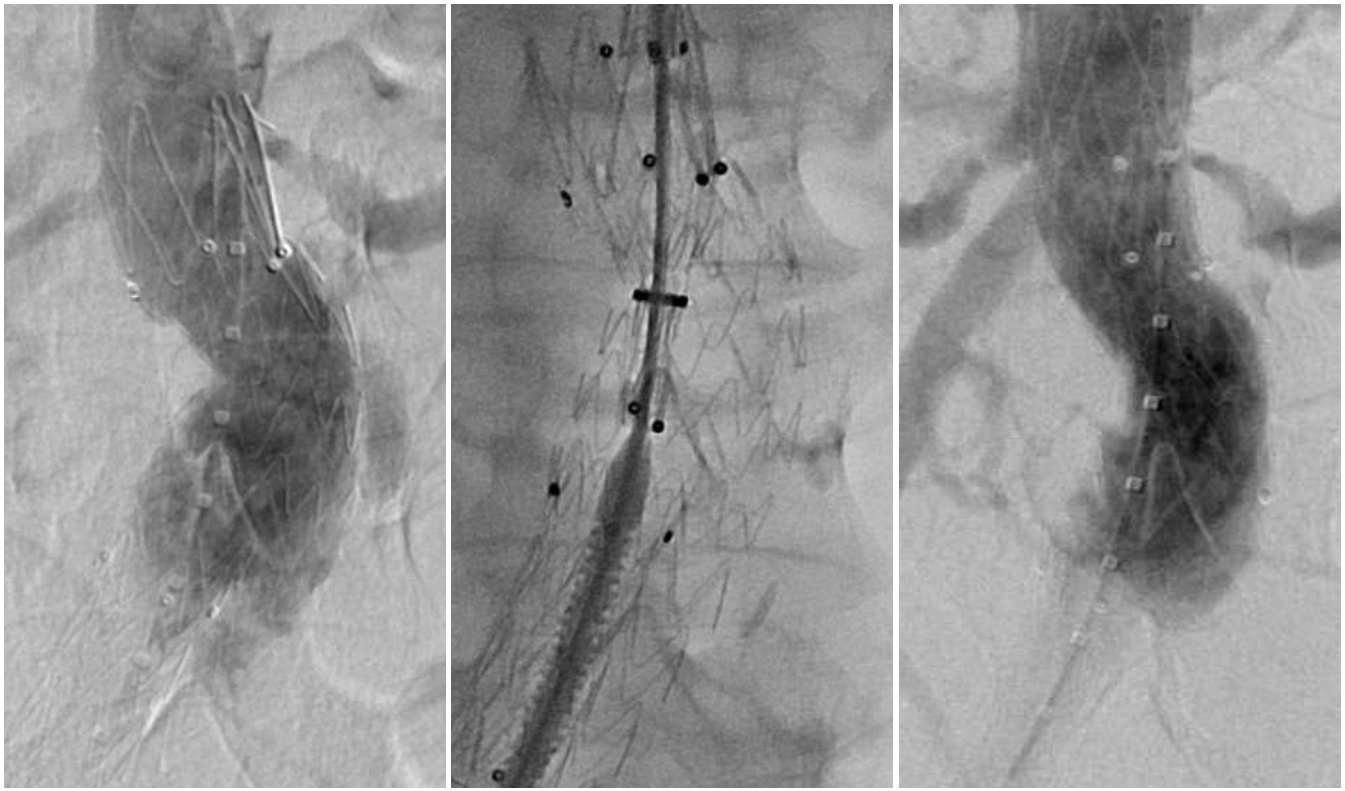
- anglulated neck
- 20 mm of neck diameter
- 25 mm of neck length



EVAR, 2011-Oct-20

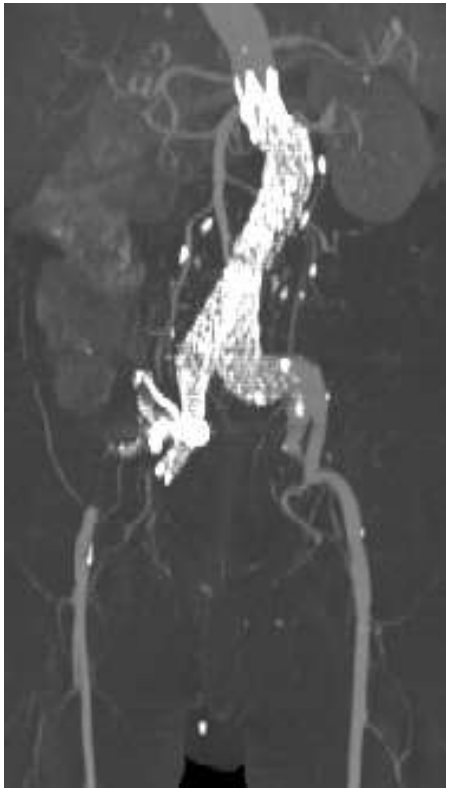
Endurant; 26mm of main body

Post-EVAR day 3,
2011-Oct-23



Post-EVAR day 5,
2011-Oct-25

25 x 40 mm of aortic cuff

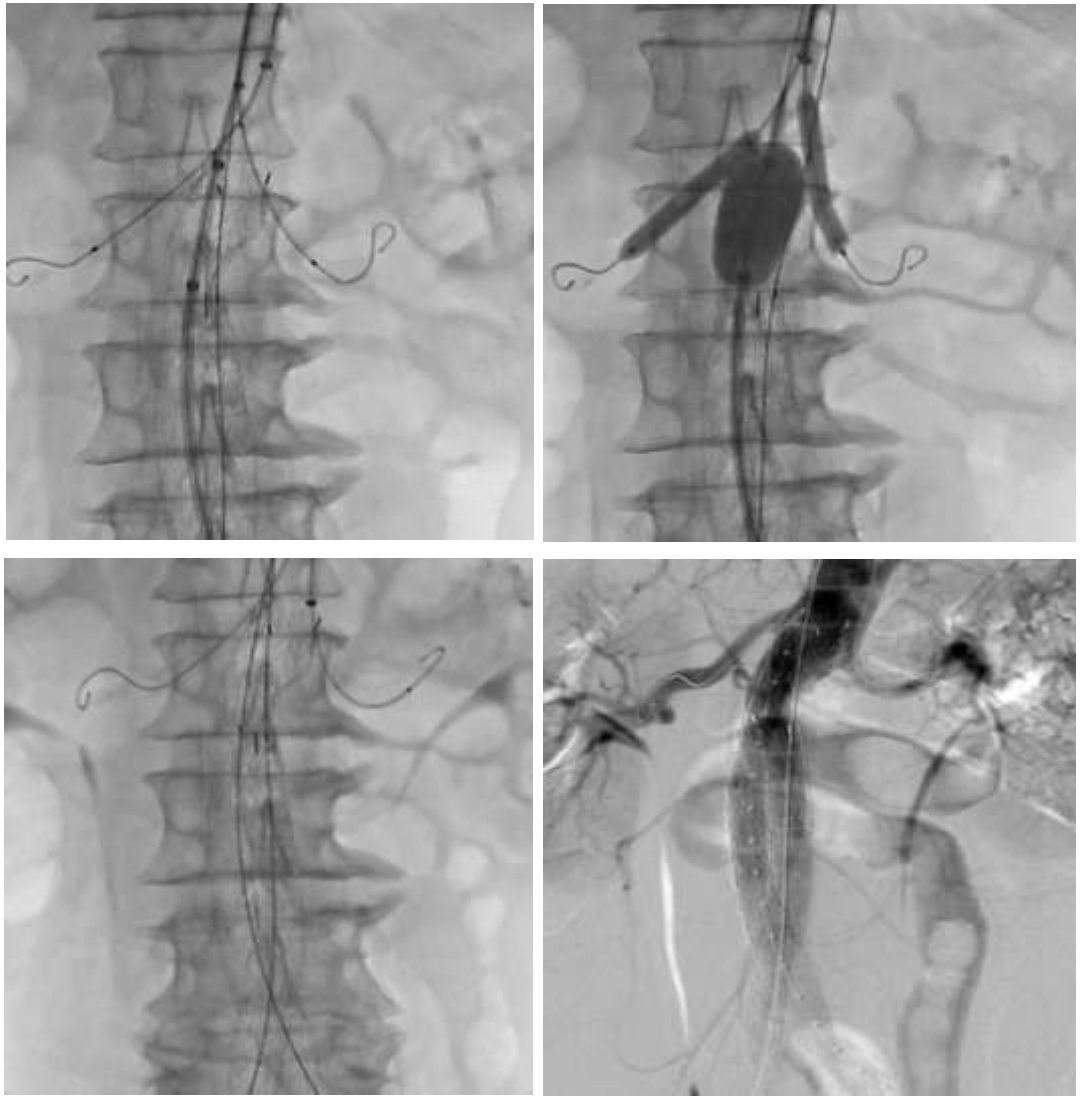


Post-EVAR 2 months,
2011-Dec-27

Case. M/72

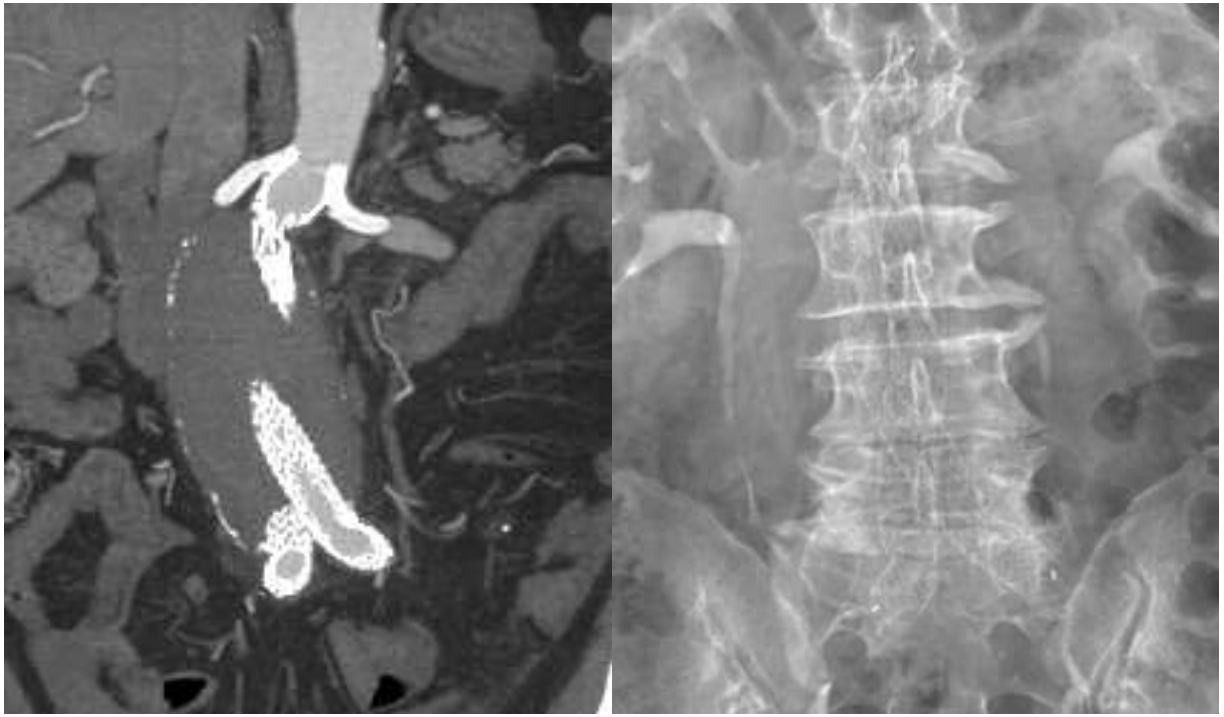
Maximal diameter of aneurysm sac; 60 mm

- Short and anglulated neck
- 22 mm of neck diameter



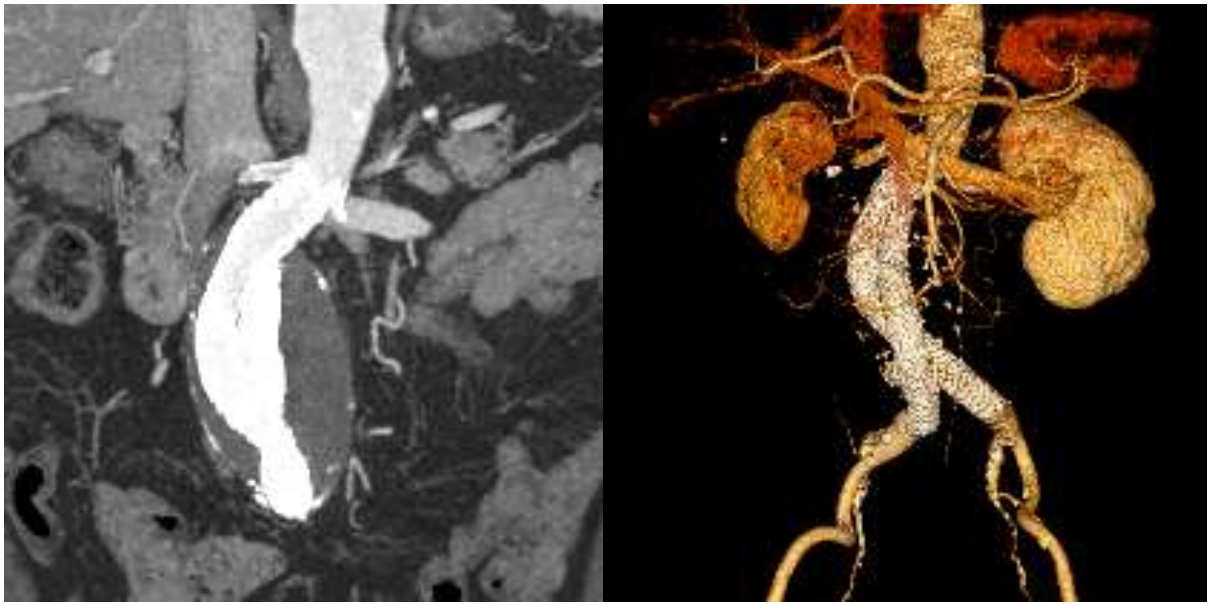
EVAR, 2011-Oct-25

- Excluder
  26mm of main body
- VIABAHN 6mm-5cm, each



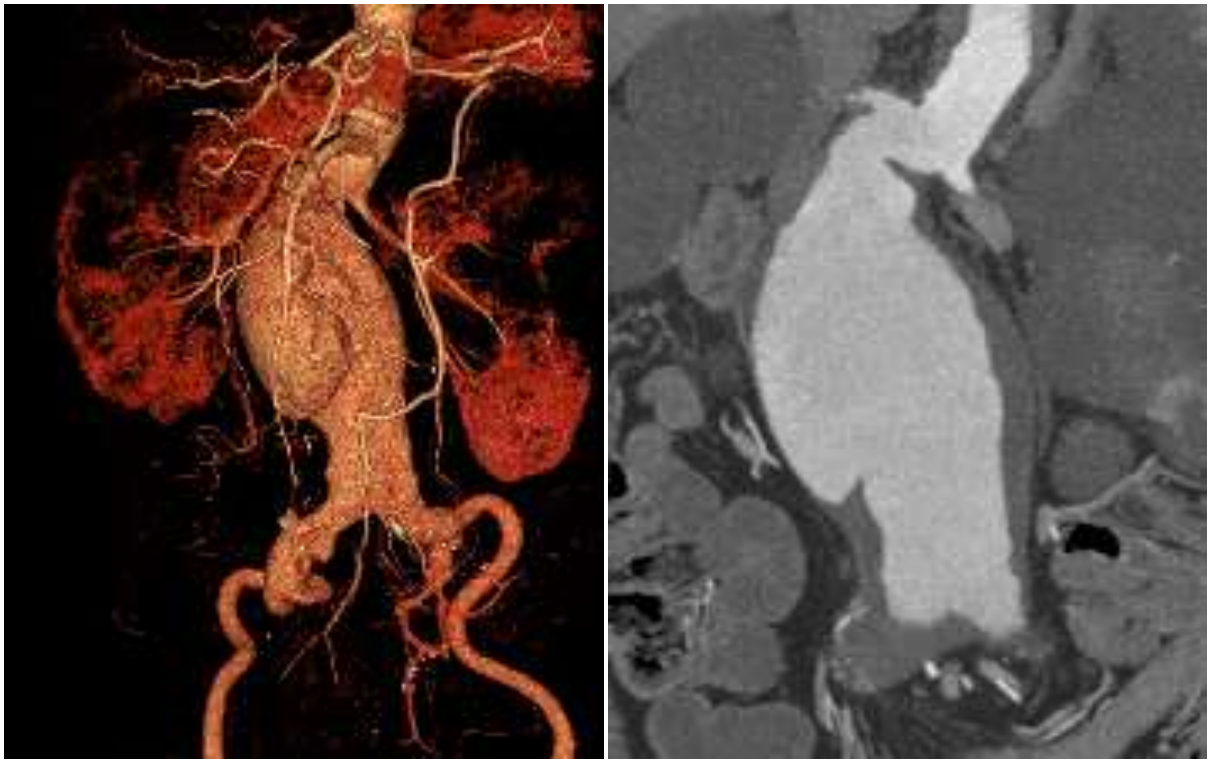
Post EVAR, day 3
2012-Mar-24

Post EVAR, 4 years
2015-Dec-17



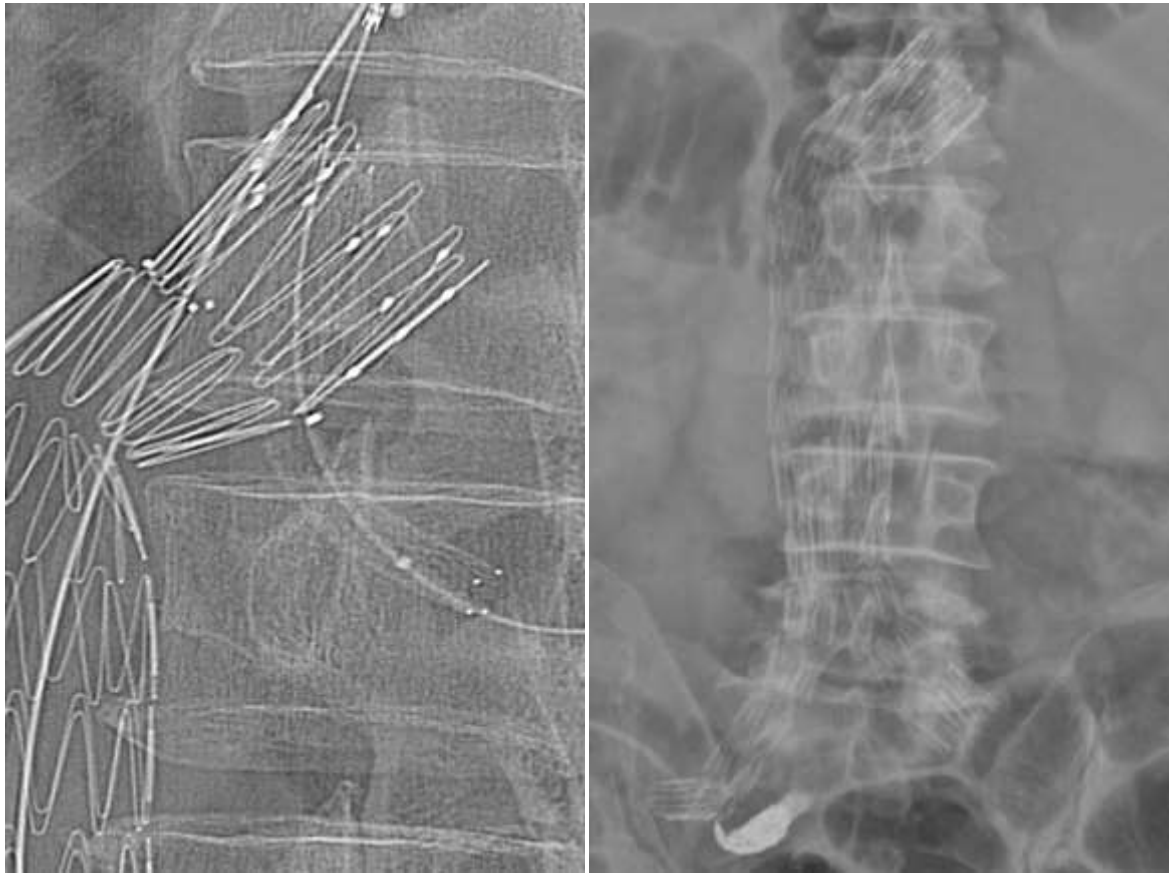
Post EVAR, 4 years
2015-Dec-17

Case. M/69



Maximal diameter of aneurysm sac; 80 mm

- Short, angulated neck
- 20 mm of neck diameter



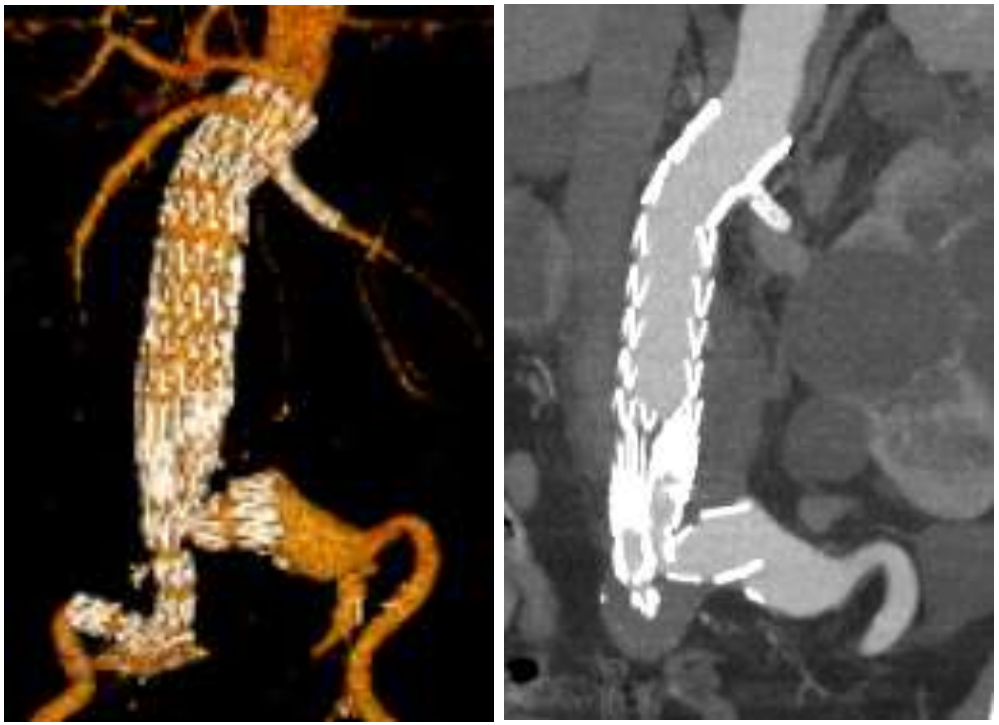
EVAR, 2011-Apr-7

- Zenith
  24 mm of main body
- Bare stent
  6 x 60 mm

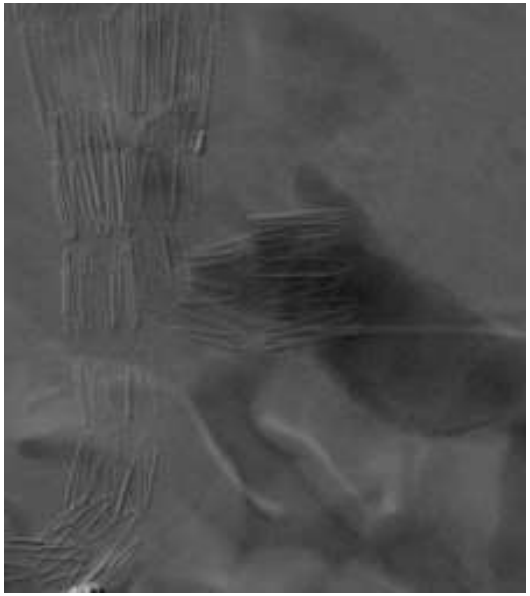
2011-Apr-9

2012-Oct-15

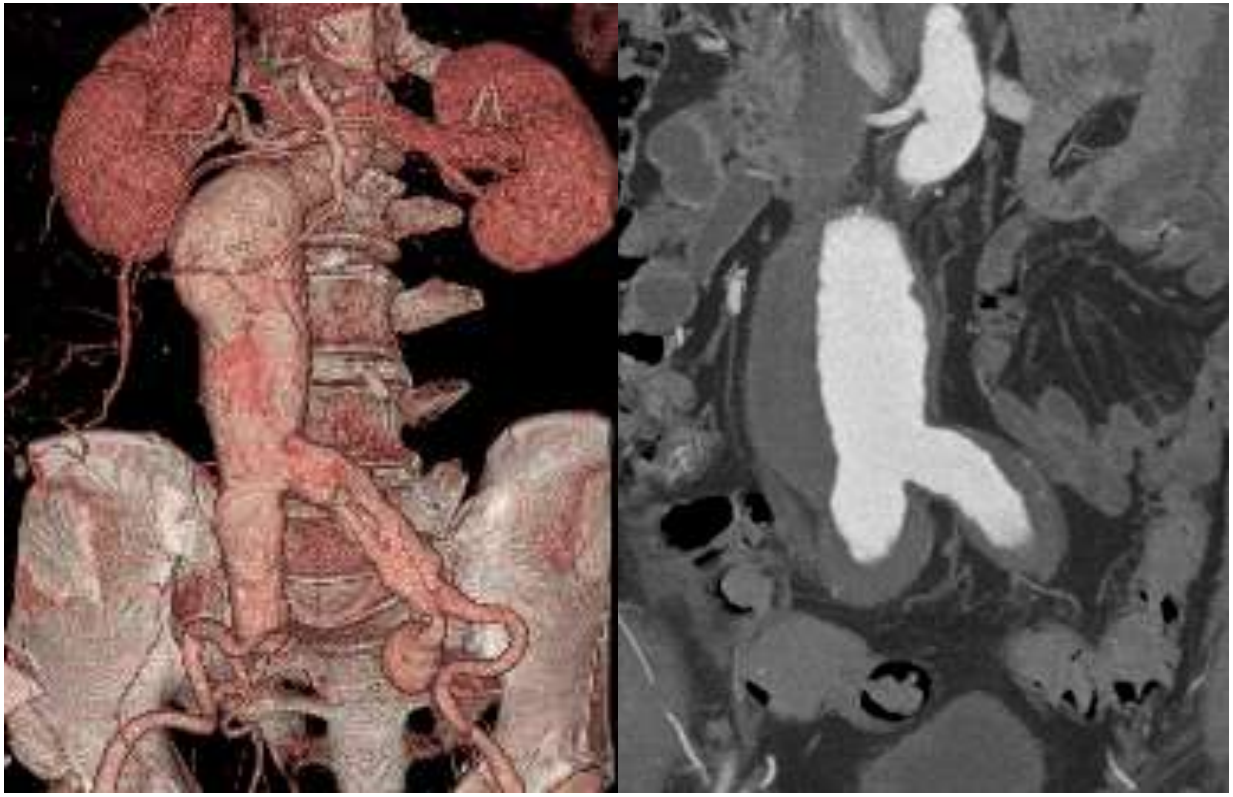
2014-Nov-21



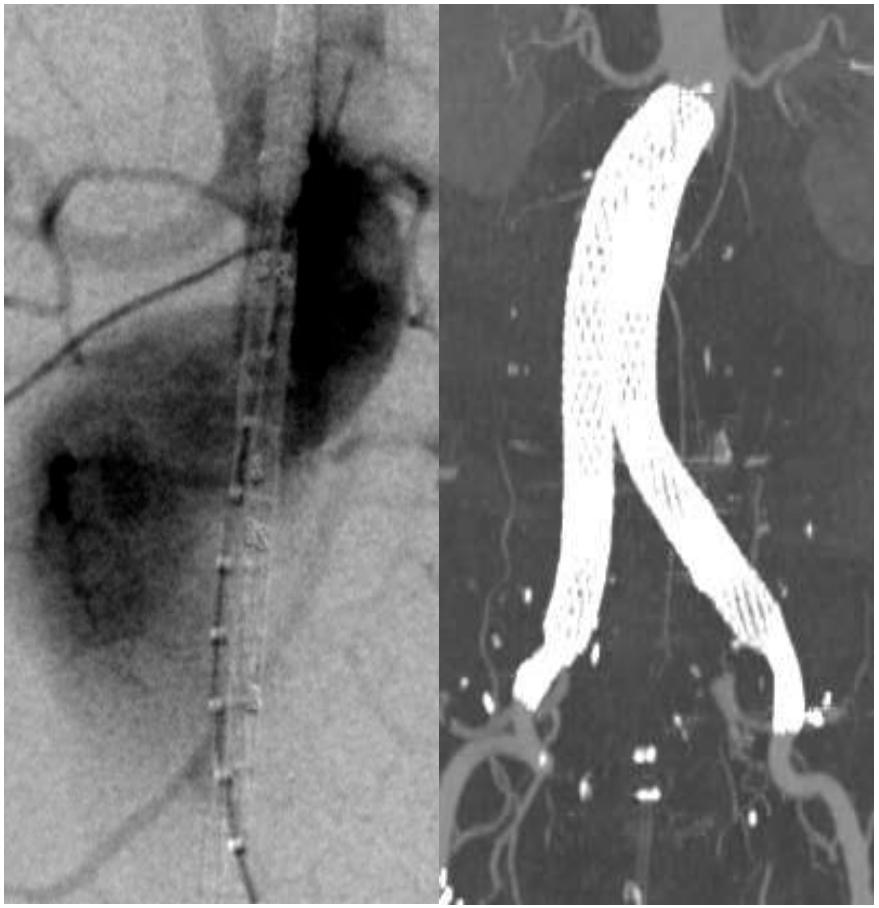
2014-Nov-21
Post EVAR # 3.5 years



Case. M/73

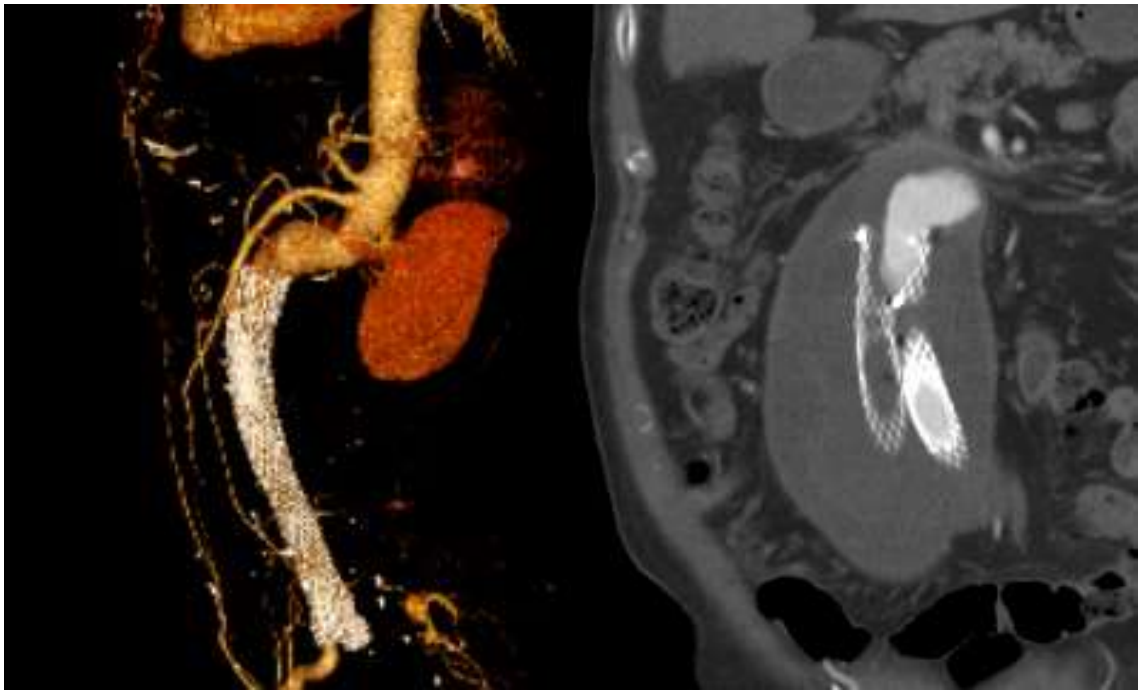


Angulated neck
neck diameter; 23 mm
neck length; 40.2 mm



EVAR, 2008-Aug-7
Talent; main body 28 mm

Post-EVAR, 17 month
2010-Mar-17
Rt limb occlusion;

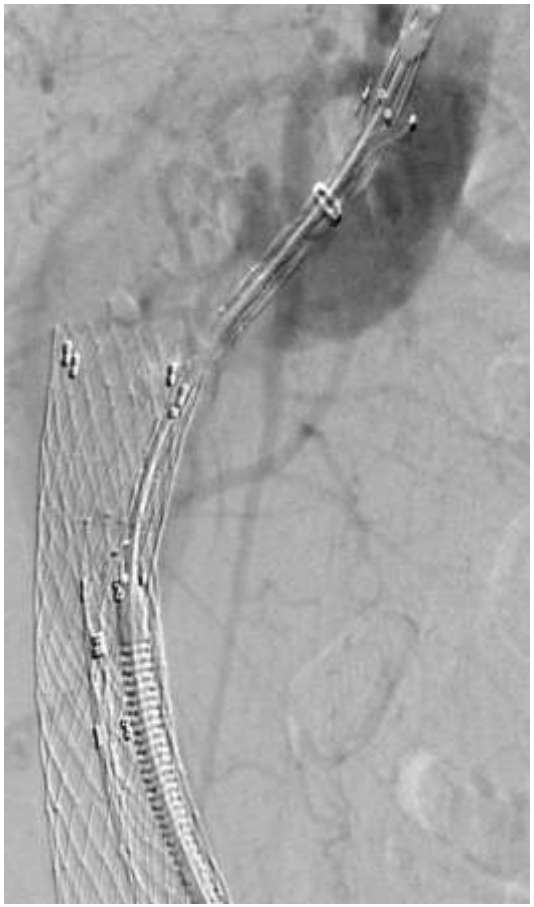


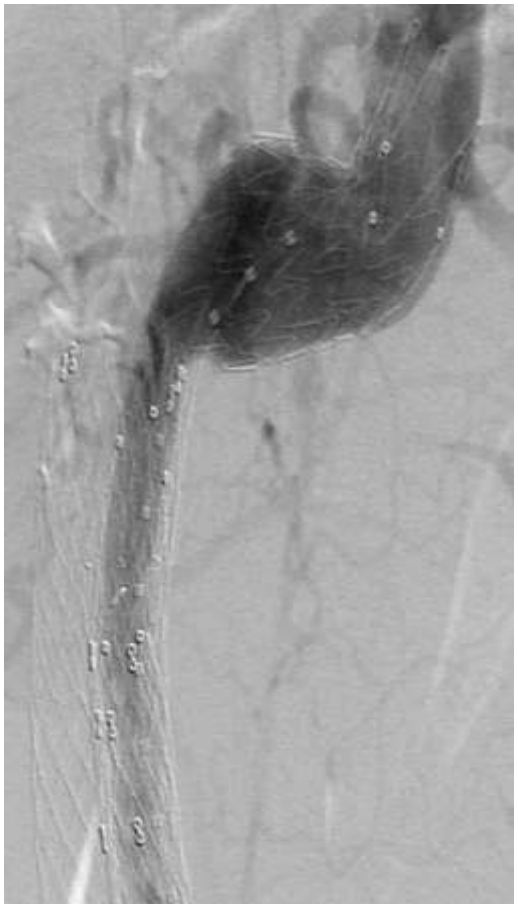
Post-EVAR, 33 month
2011-9-27

78 -> 82 mm

Post-EVAR, 47 month
2012-11-7

82 -> 87 mm, symptomatic



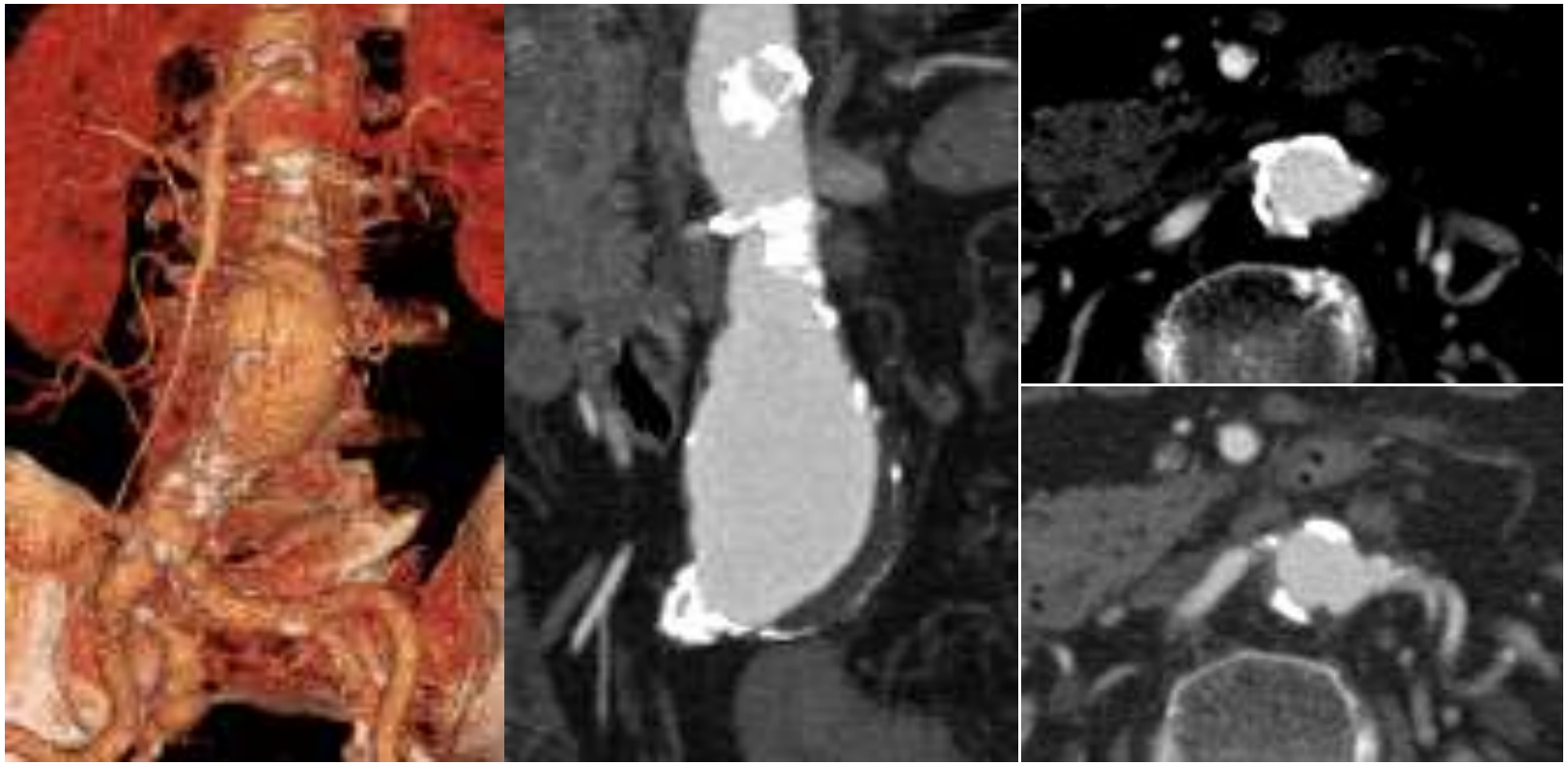


2012-11-7

2013-2-18

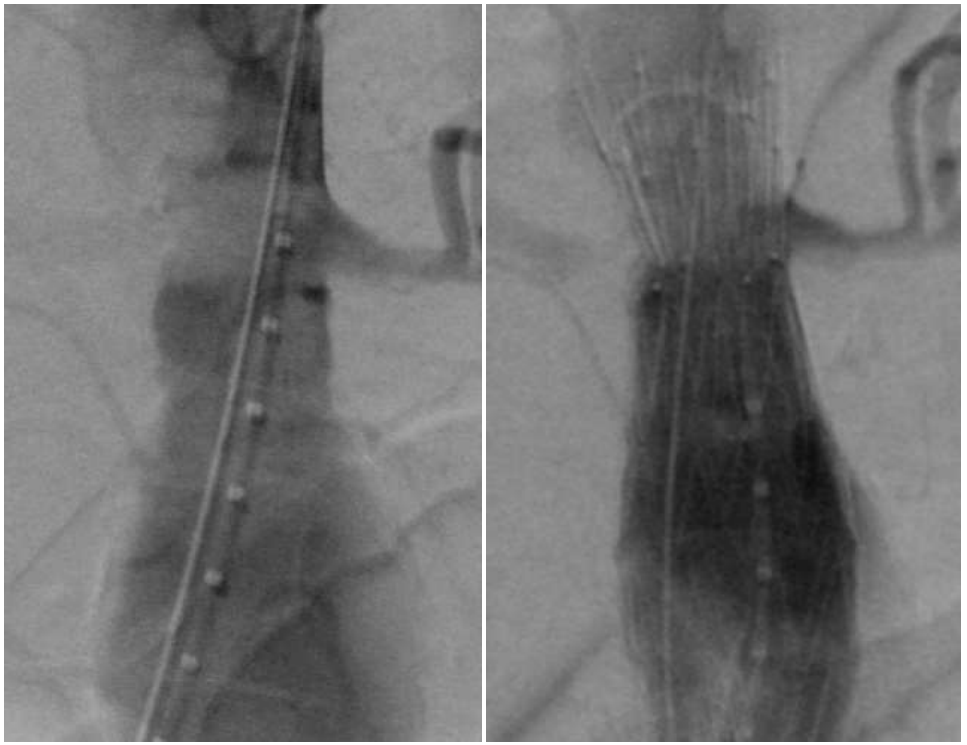
88 -> 88 mm

Case. F/75



Maximal diameter of aneurysm sac; 52 mm

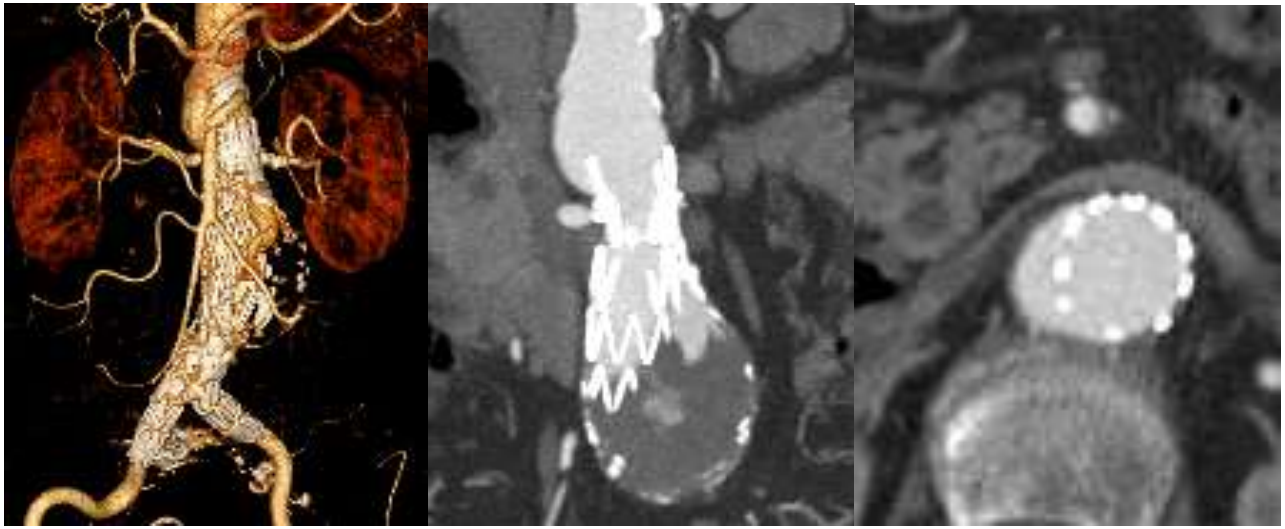
- Short neck with conical morphology
- 18 -22 mm of neck diameter
- calcification >50% of the neck circumference



EVAR, 2008-Oct-30

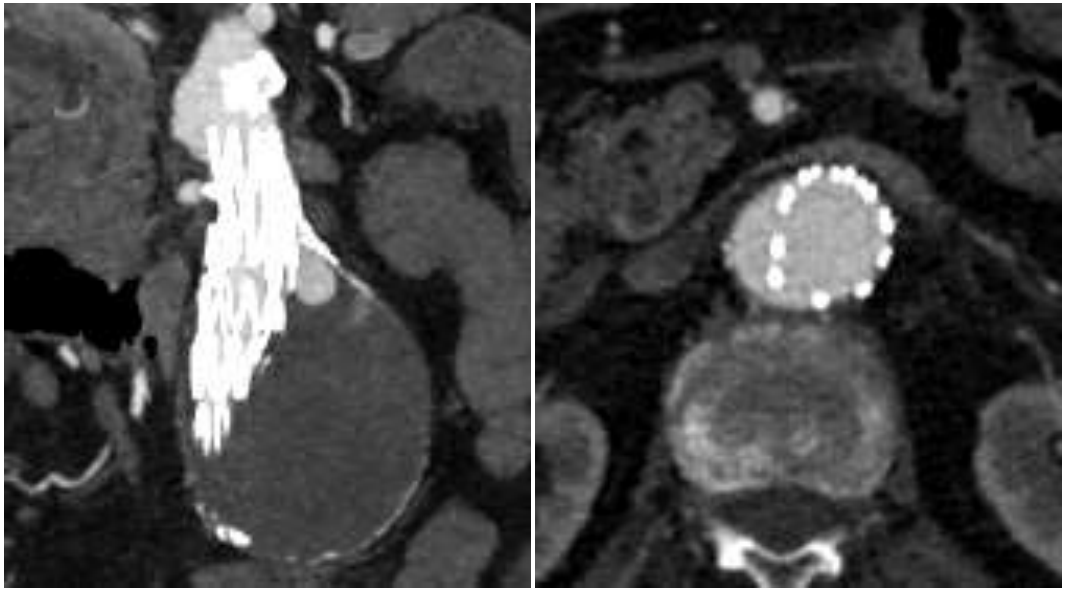
Zenith; 26mm of main body

Post EVAR, 1 day
2008-Oct-31



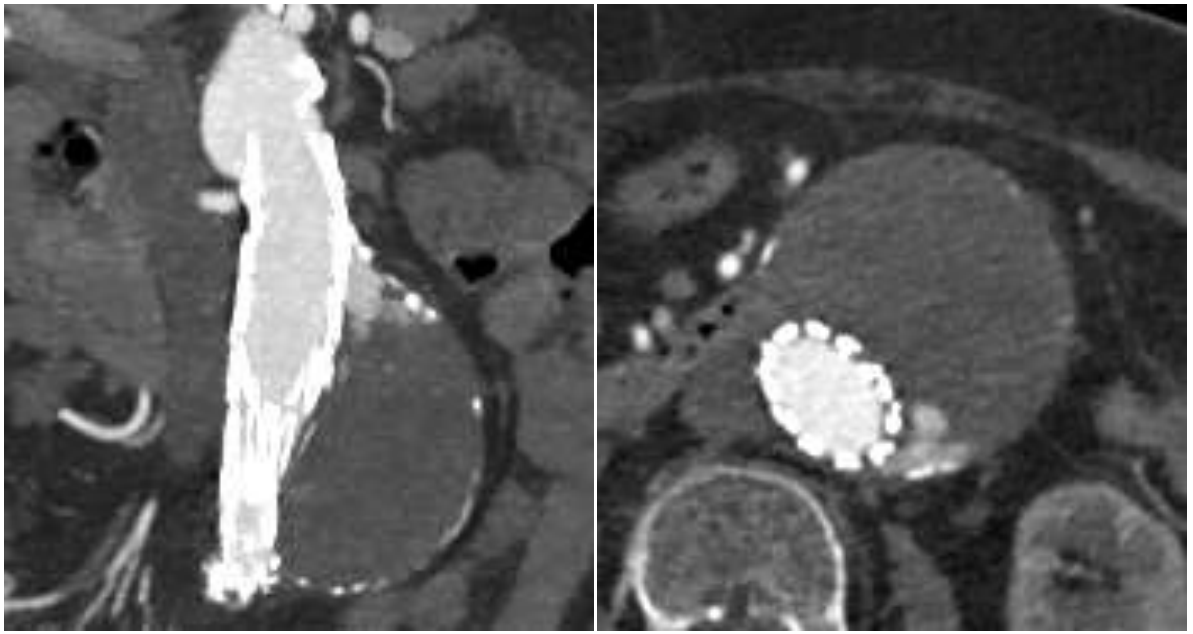
Post EVAR, 38 months,
2012-July-20

44 -> 49 mm



Post EVAR, 5 years,
2013-Oct-4

49 > 56 mm



Post EVAR, 8 years,
2016-Dec-14

56 > 72 mm

Case. M/80

Neck diameter; 22 mm
short neck; 14 mm

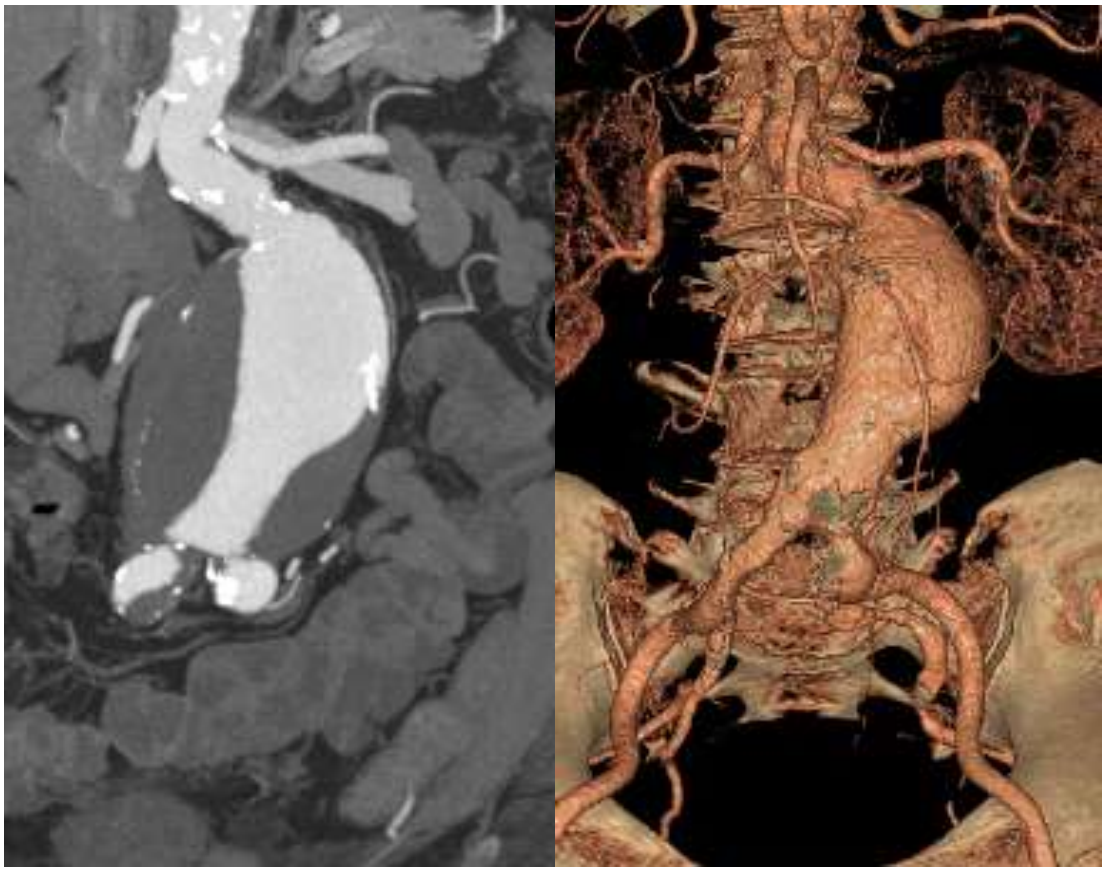
EVAR, 2008-Sep-25

2014-Mar-13
Post-EVAR # 5.5 year

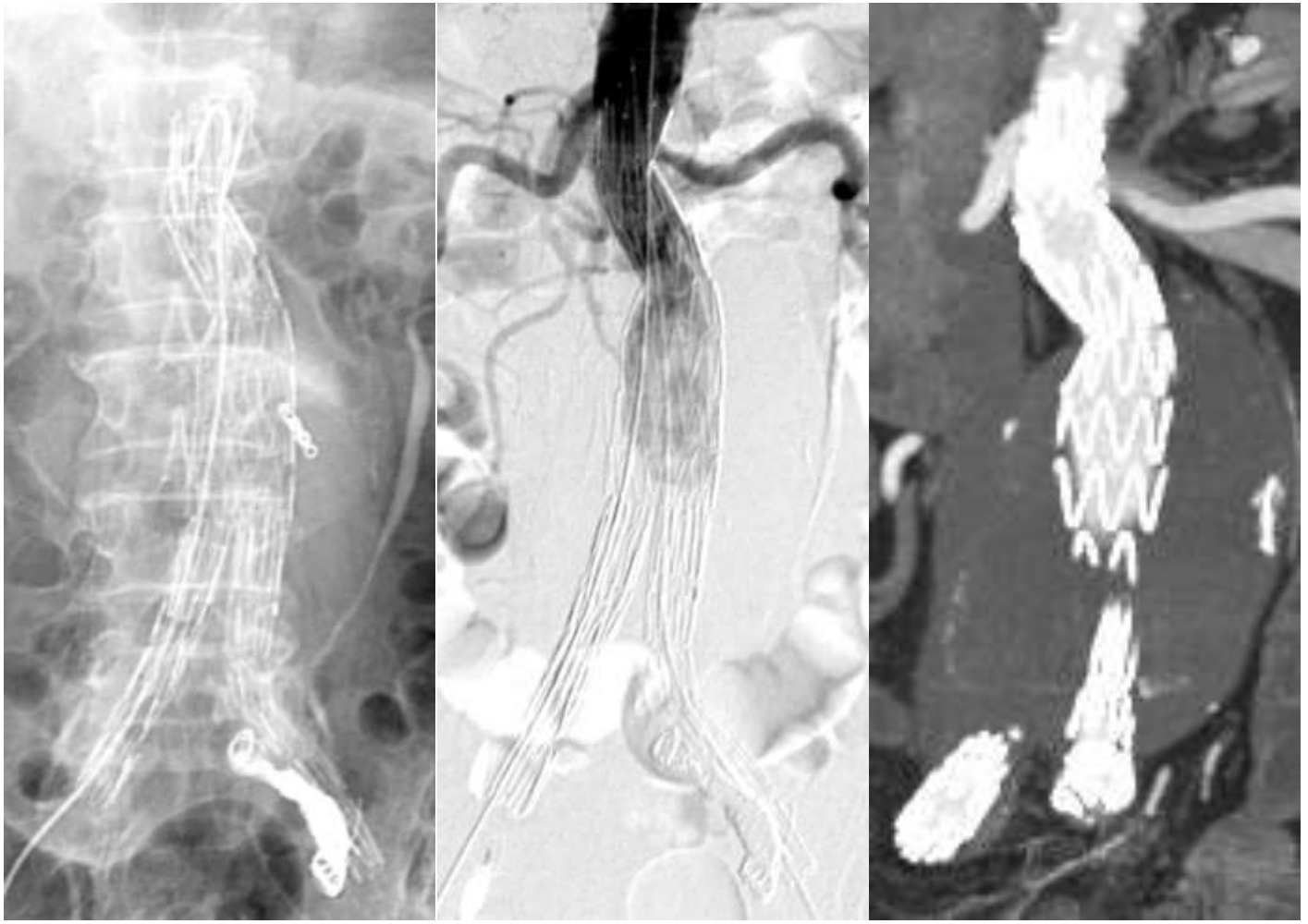
2015-Apr-15
Post-EVAR # 6.5 year

EVAR, 2015-Oct-14
Post-EVAR # 7 year

Case, M/78



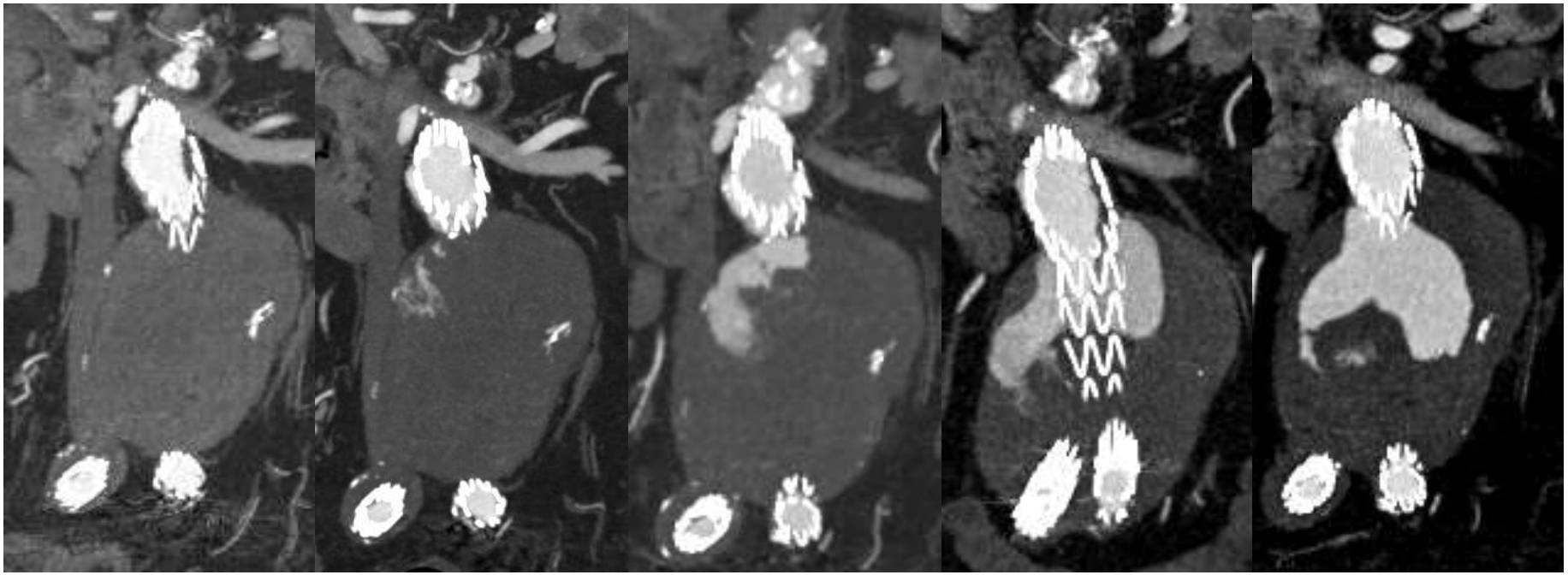
Maximal diameter of the sac ; 71 mm
Neck diameter; 21mm
length; 30 mm
angle; 66′



2006-Dec-12, EVAR

Zenith, 24mm
IMA embo
Lt IIA embo/STG extension

2007-Jan-31,
post-EVAR 3 months



2013-Sep-24, #7 years

2014-Aug-20, #8 years

2015-Aug-24, #9 years

2016-Feb-22, #9.5 years

2016-Aug-29, #10 years

Complications: Anatomical characteristics

	All cases (n=418)	HNA (n=159)	FNA (n=259)	P-value
Secondary intervention		25(15.7)	13(5.0)	0.03
Sac size increase(case)		25(15.7)	29(11.1)	0.18
Early type Ia endoleak		7(10.6)	7(6.9)	0.34
Late type Ia endoleak		1(0.6)	3(1.1)	0.58

- It could make another pathology.
- Life expectancy is getting longer and longer.
- Follow up is needed much longer than you would expect.

Conclusion

EVAR in hostile neck; cooling down ?

Yes, at present for low risk or younger patients.

However, EVAR may represent an alternative option in high-risk patients.


Thank you
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