

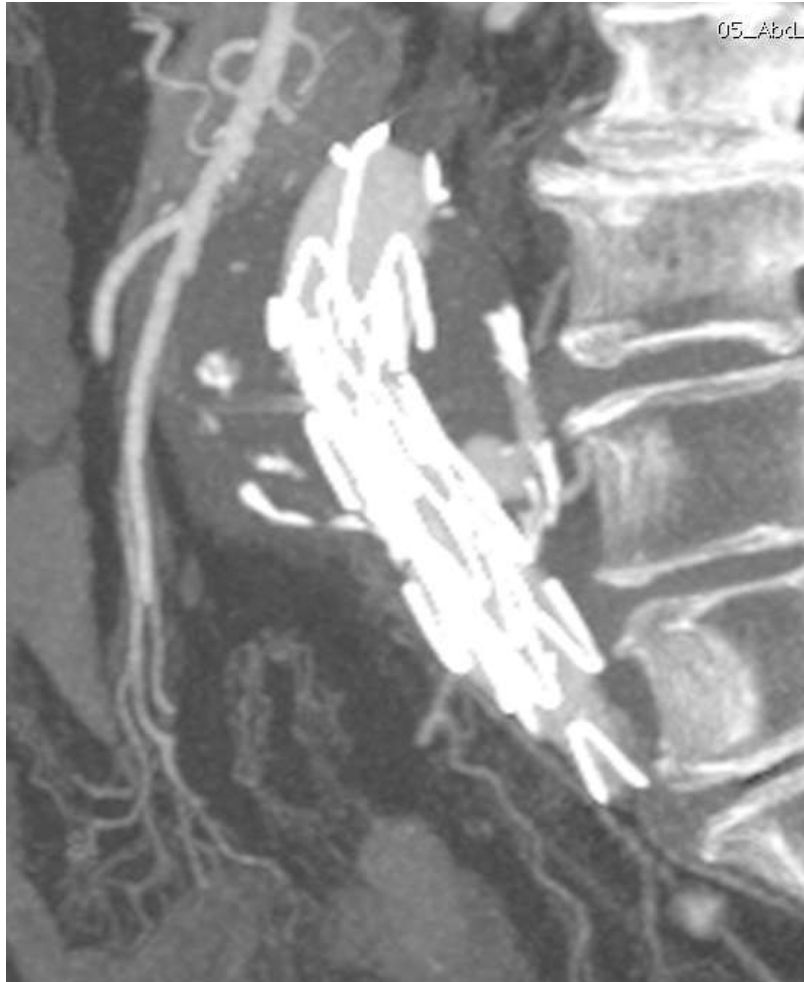
Type II Endoleak – Decision Making, Tips and Tricks

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Disclosures

none

Introduction



Incidence rates
reported: 8-45%

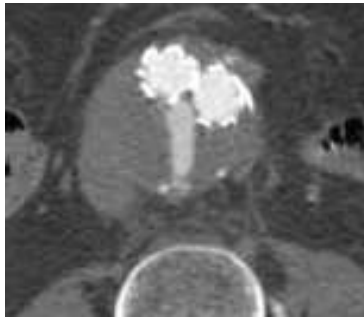
Lo et al. 2016; J Vasc Surg 4:895-901

O'Connor et al. 2015; Semin Intervent Radiol 32:272-277

Avgerinos et al. J Vasc Surg 2014 60:1386-91

Fact is: T2EL are
most common.

Rationale of conservative management



35-75% of all type II endoleaks disappear within 6 months

Hajibandeh S, Ahmad N, Antoniou GA, Torella A. Is Intervention better than surveillance in patients with type 2 endoleak post endovascular abdominal aortic repair? *Interact Cardiovasc Thor Surg* 2015;20:128-34



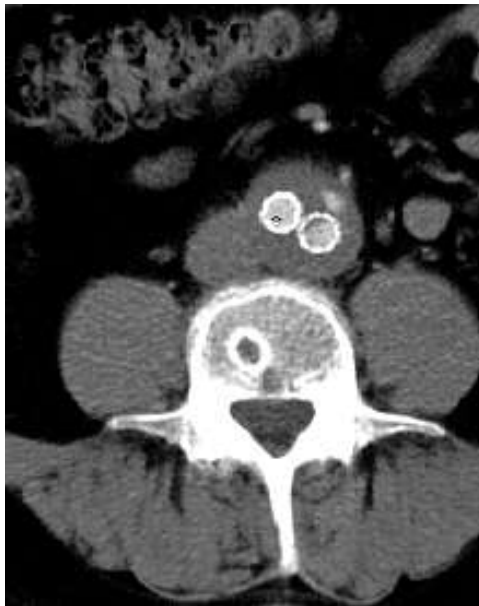
If T2EL persist after 6 months, likelihood of aneurysm sac expansion increases:
24-52% vs 13%

Van Marrewijk CJ, Fransen G, Laheij RJ et al. Is a type II endoleak after EVAR a harbinger or risk? Causes and outcome of open conversion and aneurysm rupture during follow-up. *Eur J Vasc Endovasc Surg* 2004;27:128-137

Jones JE, Atkins MD, Brewster DC et al. Persistent type 2 endoleak after endovascular repair of aortic aneurysm is associated with adverse late outcomes. *J Vasc Surg* 2007;46:1-8

Good things come to those who wait

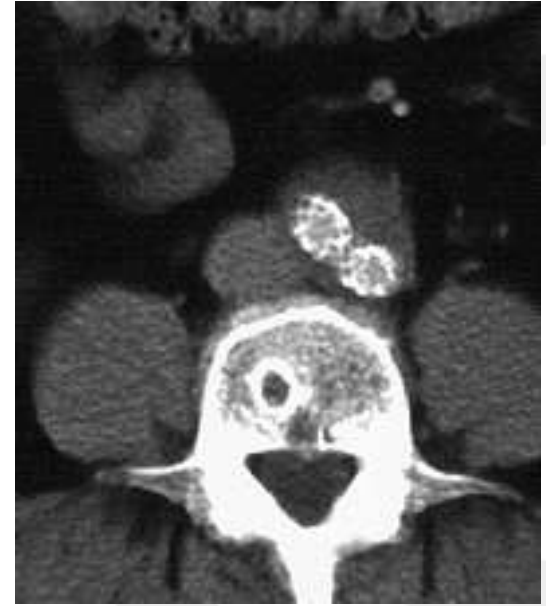
24 months

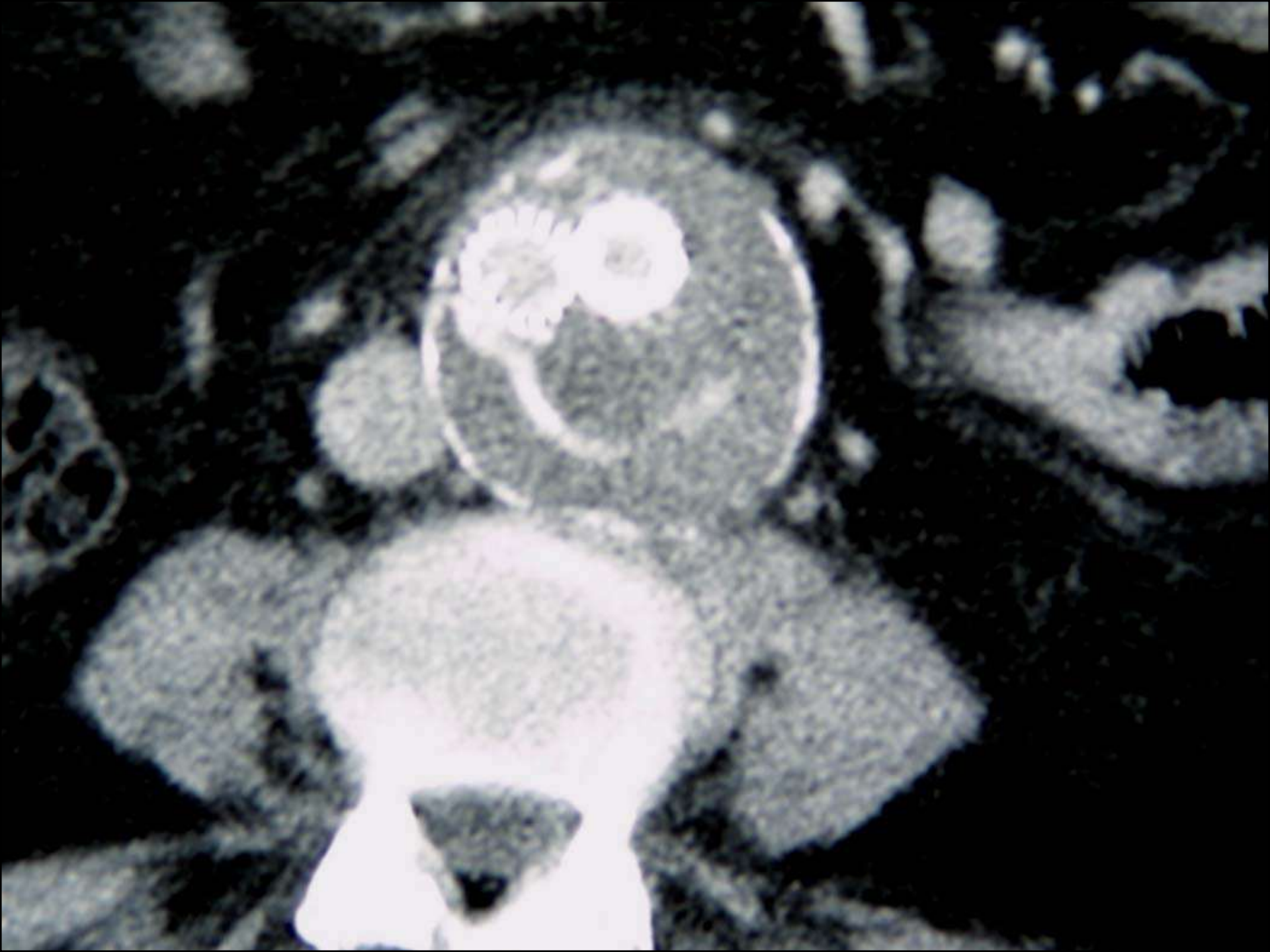


36 months



48 months





When should we treat?

- **Aneurysm sac growth ≥ 5 mm in surveillance imaging**

Ozdemir BA, Chung R, Benson RA et al. Embolisation of type 2 endoleaks after endovascular abdominal aneurysm repair. *J Cardiovasc Surg* 2013;54:485-90

Chung R, Morgan RA. Type 2 Endoleaks Post-EVAR. Current Evidence for Rupture Risk, Intervention and Outcomes of Treatment. *Cardiovasc Intervent Radiol* 2015;38:507-22

- **Risk factors?**

Aoki A, Maruta K, Hosaka N. Evaluation and Coil Embolization of the Aortic Side Branches for Preevention of Type II Endoleak after Endovascular Repair of Abdominal Aortic Aneurysm. *Ann Vasc Dis.* 2017(4):351-358.

Fujita S, Resch TA, Kristmundsson T et al. Impact of intrasac thrombus and a patent inferior mesenteric artery on EVAR outcome. *J Endovasc Ther* 2010;17:534

Löwenthal D, Herzog L, Rogits B et al. Identification of Predictive CT angiographic Factors in the Development of High-Risk Type 2 Endoleaks after Endovascular Aneurysm Repair in Patients with Infrarenal Aortic Aneurysms.

Fortschr Röntgenstr 2015;187:49-55

Poll 06/01/2020 - 31/01/2020

VASCUPEDIA@LINC - ENDOLEAKS-CASE-BASED SOLUTIONS



The topic of this month is called Endoleaks. For more information to the discussion, please join us on Thursday, January 30, 2020 in Live. Please answer the questions and to inform us about all type of endoleaks. Your participation will provide us with valuable information that will challenge the experts during the discussion.

Do you think that type 2 endoleaks can lead to aneurysm rupture?

Yes



79%

No



21%

Risk factors for reinterventions

- Number and diameter of lumbar arteries

Dudeck O, Schnapauff D, Herzog L et al. Can Early Computed Tomography Angiography after Endovascular Aortic Aneurysm Repair Predict the Need for Reintervention in Patients with Type II Endoleak? *Cardiovasc Interv Radiol* 2014

Löwenthal D, Herzog L, Rogits B et al. Identification of Predictive CT angiographic Factors in the Development of High-Risk Type 2 Endoleaks after Endovascular Aneurysm Repair in Patients with Infrarenal Aortic Aneurysms. *Fortschr Röntgenstr* 2015;187:49-55

- Patency and size of the IMA

Samura M, Morikage N, Otsuka R et al. Endovascular Aneurysm Repair with Inferior Mesenteric Artery Embolization for Preventing Type II Endoleak: A Prospective Randomized Controlled Trial. *Ann Surg.* 2020;2:238-244

Yeung JJ, Hernandez-Boussard TM, Song TK et al. Preoperative thrombus volume predicts sac regression. *J Endovasc Ther* 2009;16:380-88

Arko FR, Rubin GD, Johnson BL et al. Type-II endoleaks following endovascular AAA repair: preoperative predictors and long-term effects. *J Endovasc Ther* 2001;8:503-510

Fujita S, Resch TA, Kristmundsson T et al. Impact of intrasac thrombus and a patent inferior mesenteric artery on EVAR outcome. *J Endovasc Ther* 2010;17:534

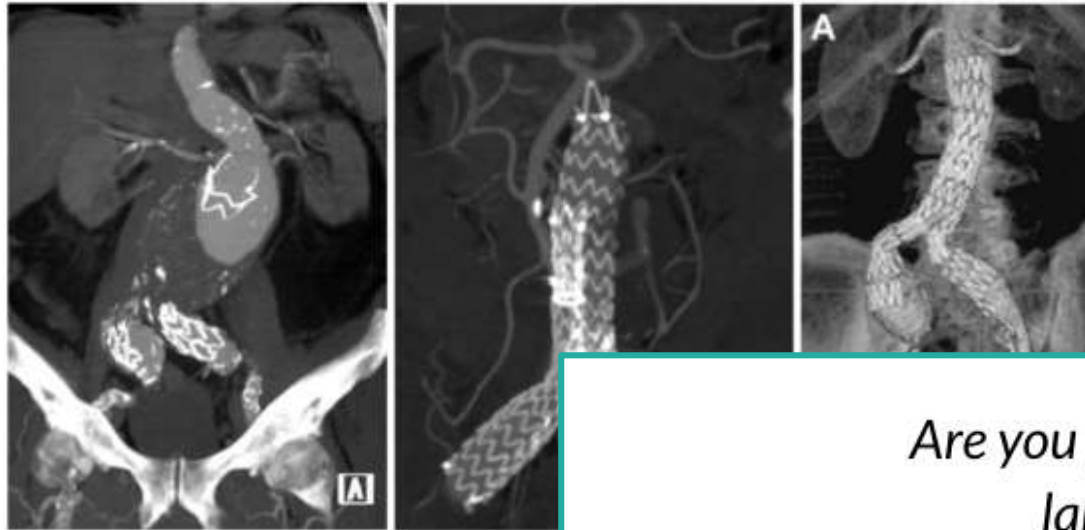
- Thrombus

AbuRahma AF, Mousa AY, Campbell JE et al. The relationship of preoperative thrombus load and location to the development of type II endoleak and sac regression. *J Vasc Surg* 2011;53:1534-41

Yeung JJ, Hernandez-Boussard TM, Song TK et al. Preoperative thrombus volume predicts sac regression. *J Endovasc Ther* 2009;16:380-88

Poll 06/01/2020 - 31/01/2020

VASCUPEDIA@LINC - ENDOLEAKS-CASE-BASED SOLUTIONS



The topic of this month is called ENDOLEAKS-C. For more information to the discussants of the session, please contact the organizers on Thursday, January 30, 2020 in Leipzig, during the session. Please answer the questions and to inform the experts of all type of endoleaks. Your participation will provide unique data for the session. Your answers will challenge the experts during the session.

Are you performing a pre-embolisation of large inferior mesenteric arteries to prevent a type 2 endoleak before EVAR?

Yes

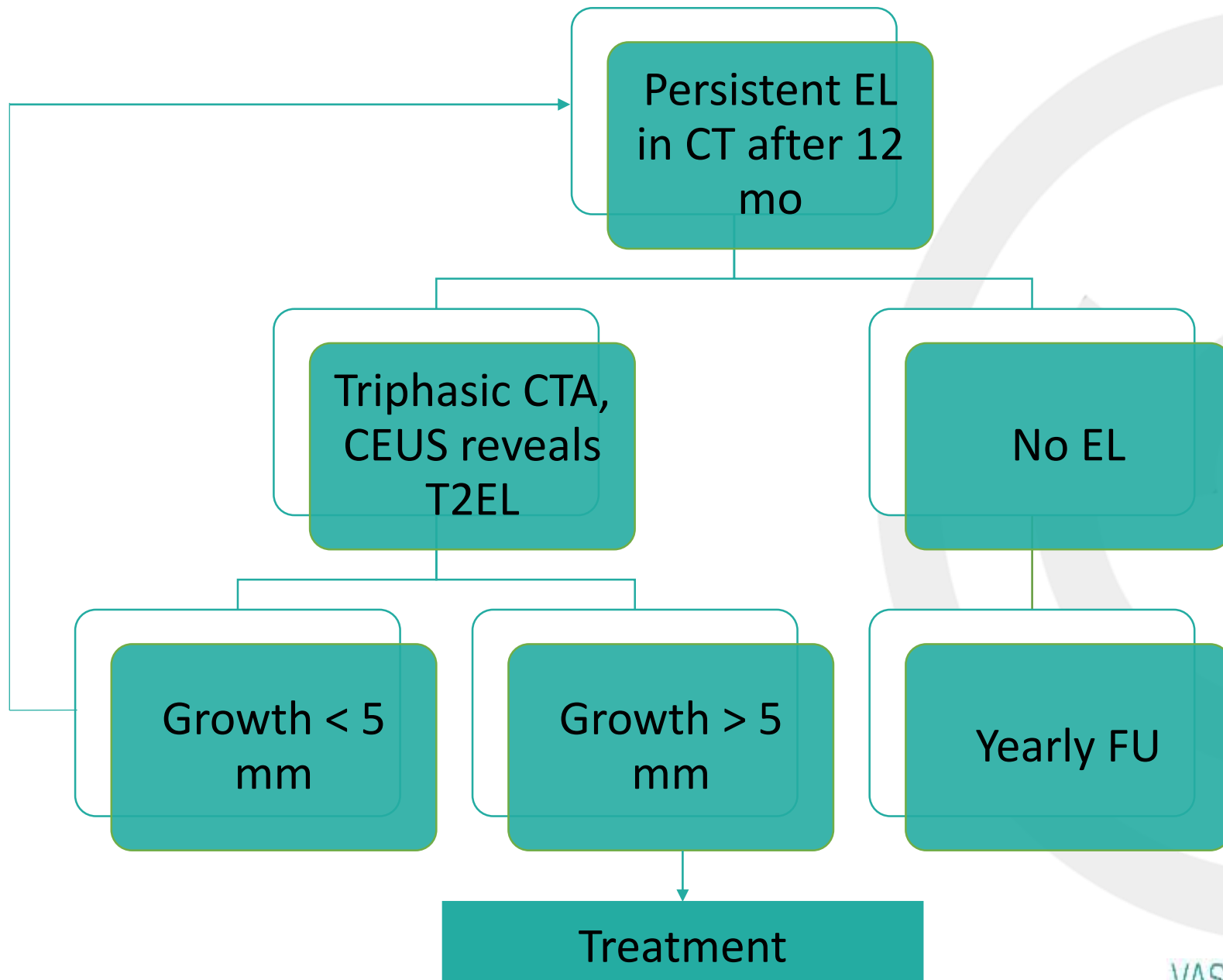


21%

No



79%

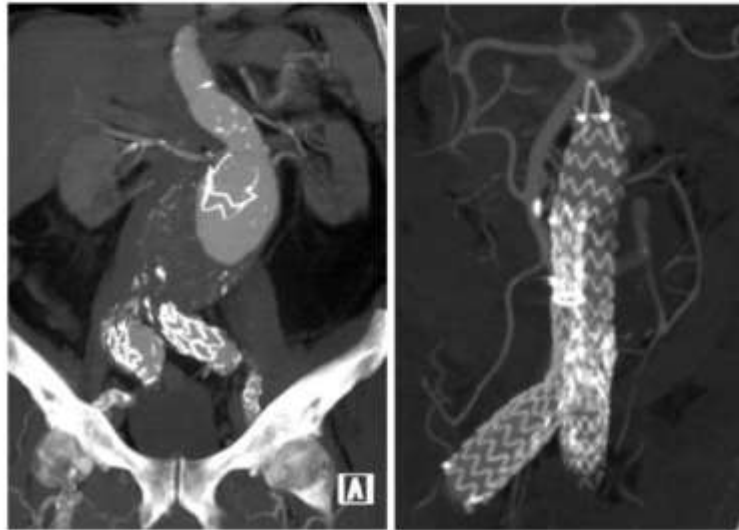


How could we treat?

- Transarterial
 - Bosiers MJ, Schwindt A, Donas KP, Torsello G. Midterm results of the transarterial use of Onyx in the treatment of persisting type II endoleaks after EVAR. *J Cardiovasc Surg (Torino)*. 2013;54(4):469–475.
- Translumbar
 - Baum RA, Carpenter JP, Golden MA et al. Treatment of type 2 endoleaks after endovascular repair of abdominal aortic aneurysms: comparison of transarterial and translumbar techniques. *J Vasc Surg* 2002;35:23-29.
- Para endograft
 - Coppi G, Saitta G Coppi G et al. Transealing: A Novel and Simple Technique for Embolization of Type 2 Endoleaks Through Direct Sac Access From Dital Stent-graft Landing Zone. *Eur J Vasc Endovasc Surg* 2014;47:394-401.
 - Quinones-Baldrich W, Levin ES, Lew W, Barleben A. Intraprocedural and postprocedural perigraft arterial sac embolization (PASE) for endoleak treatment. *J Vasc Surg* 2014;59:538-41
- Transcaval
 - Gilles KA, Fillinger MF, DeMartino RR, et al. Results of transcaval embolization for sac expansion from type II endoleaks after endovascular aneurysm repair. *J Vasc Surg* 2015;61:1129-36
- Surgical ligation of feeding vessel

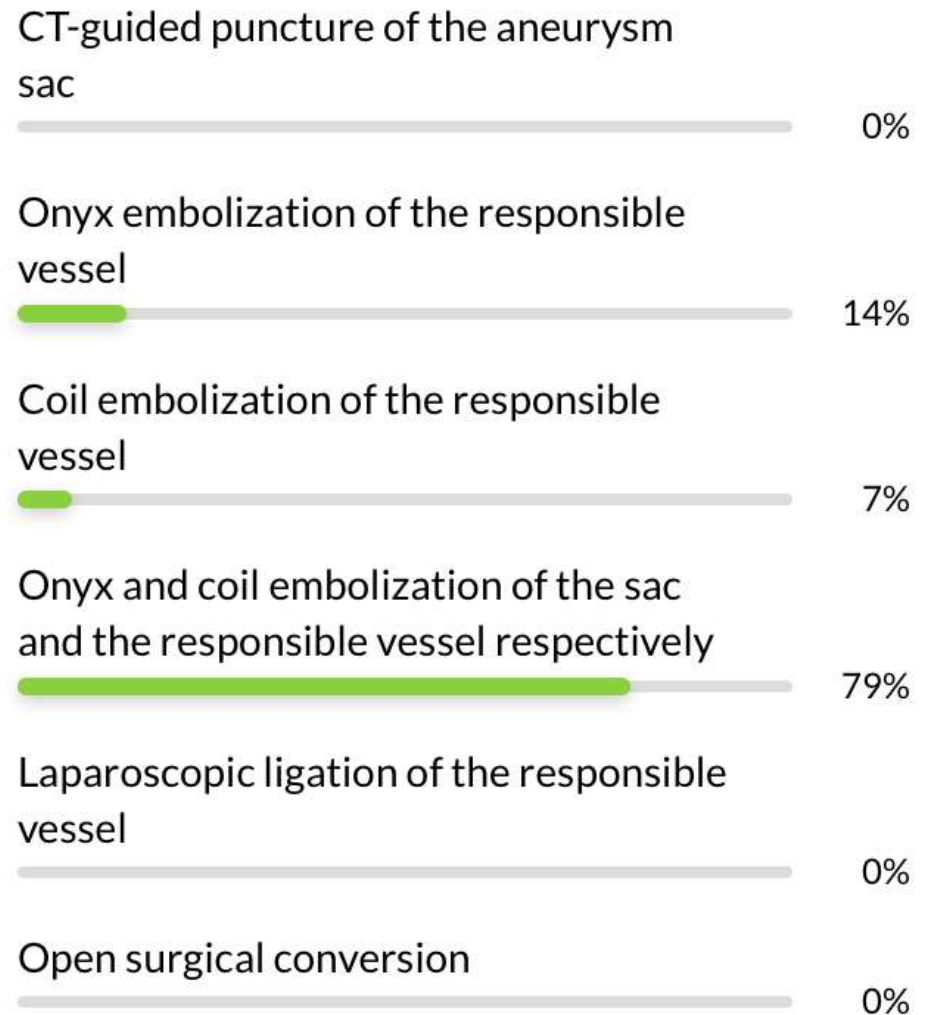
Poll 06/01/2020 - 31/01/2020

VASCUPEDIA@LINC - ENDOLEAKS-CASE-BASED SOLUTION



The topic of this month is called ENDOLEAKS-CASE-BASED SOLUTIONS. For more information to the discussants of the session about endoleaks, please contact the organizers on Thursday, January 30, 2020 in Leipzig, during the LINC symposium. We will answer the questions and to inform the experts about your current practice and to answer all type of endoleaks. Your participation will provide unique data for an interesting discussion. We will challenge the experts during the session.

How do you treat type 2 endoleaks post EVAR?

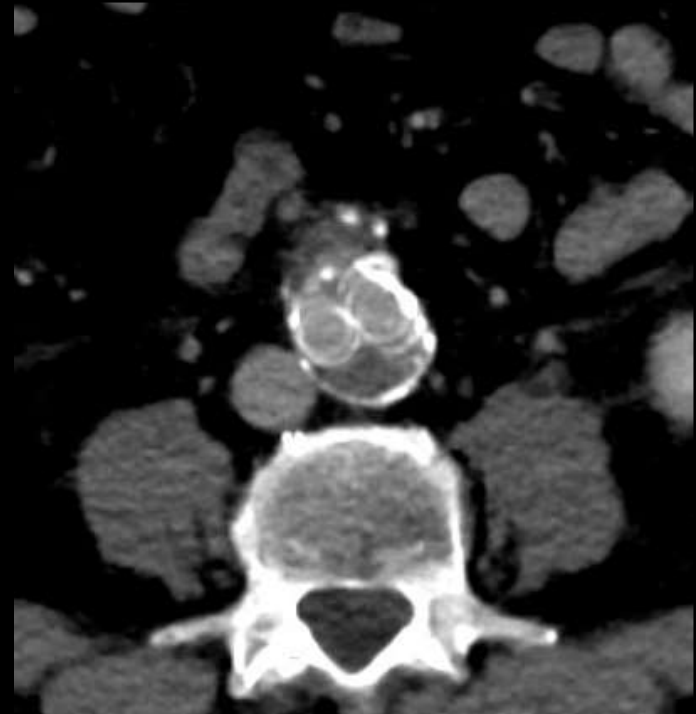


Male, 67 y

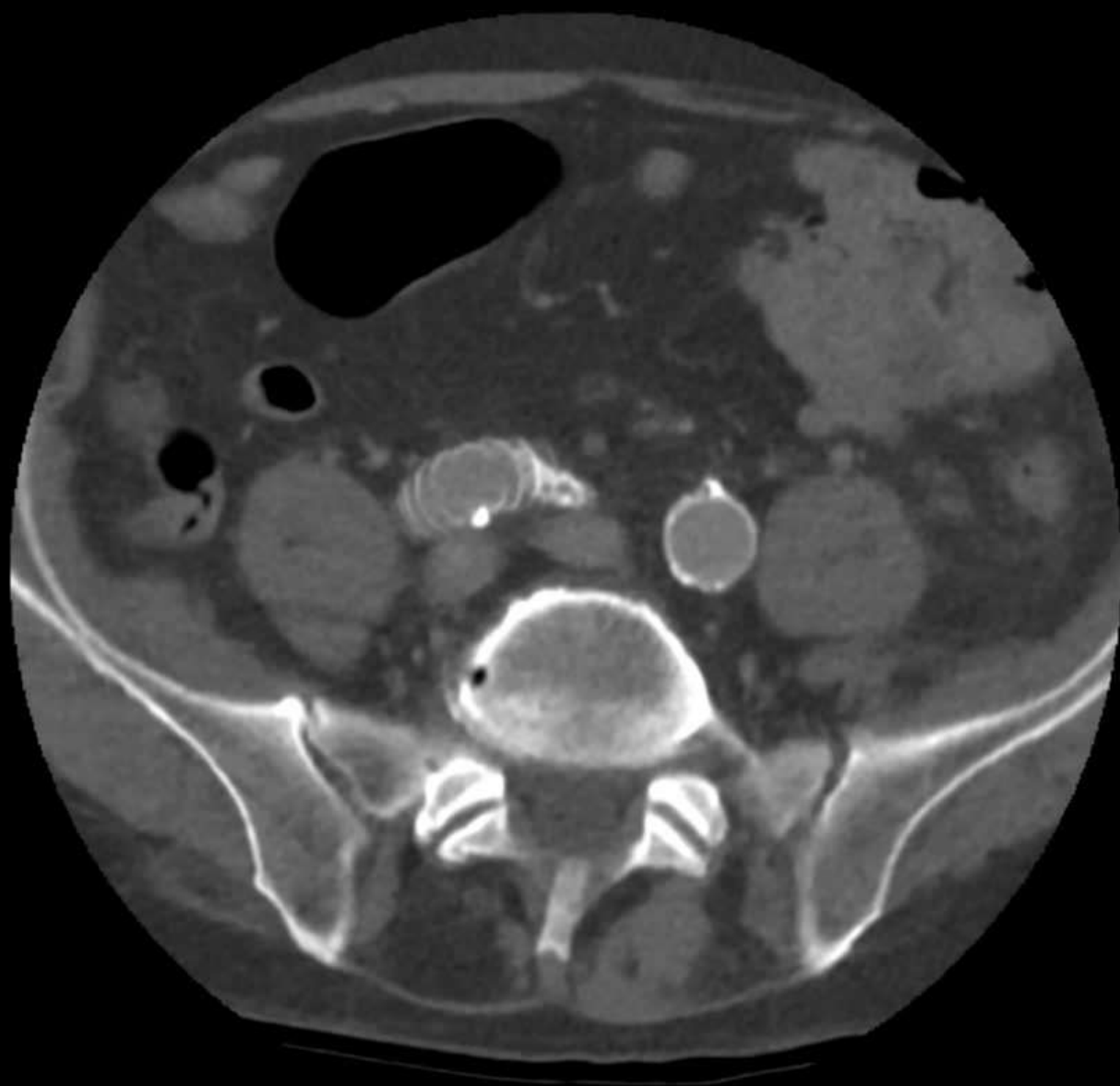
Initially 52 mm AAA,
treated at OSH

DUS control at 12 mo:
60 mm

Tri-Phase CTA:
60 mm from type IIb EL
(IMA)





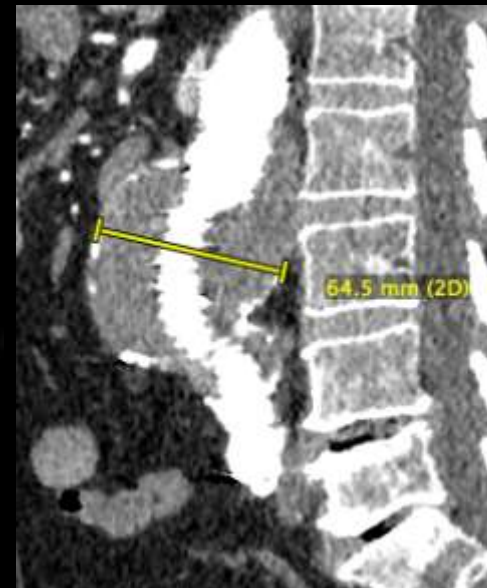
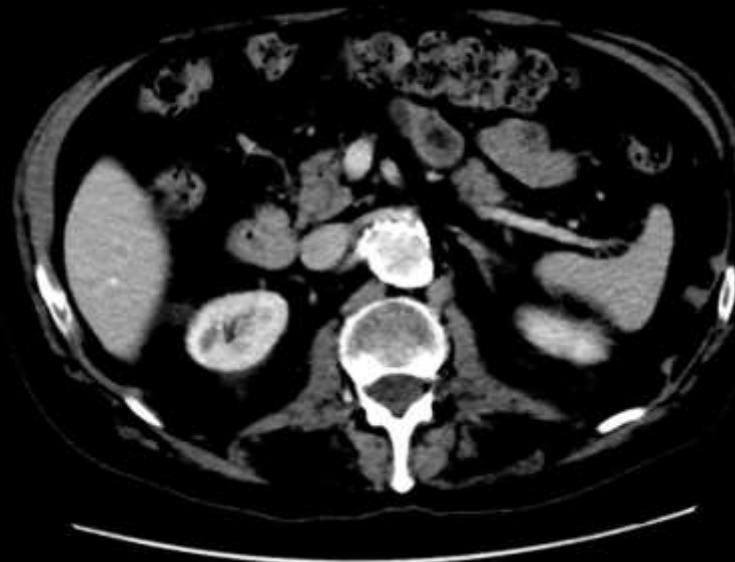
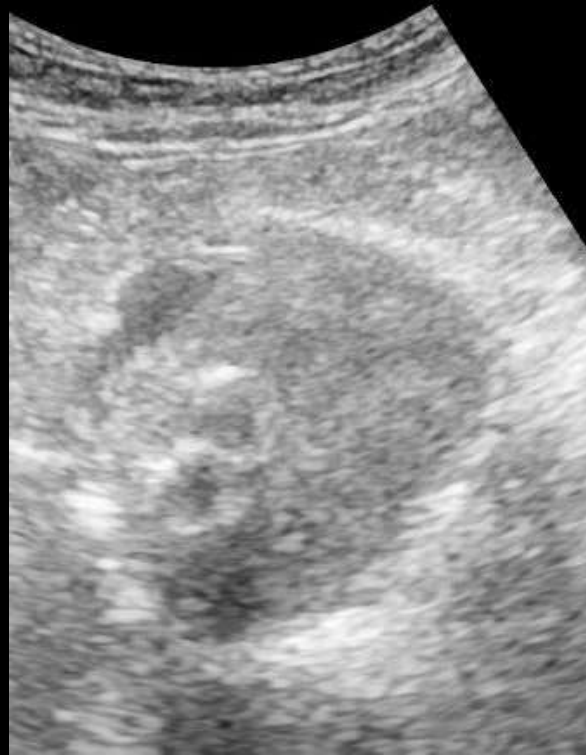


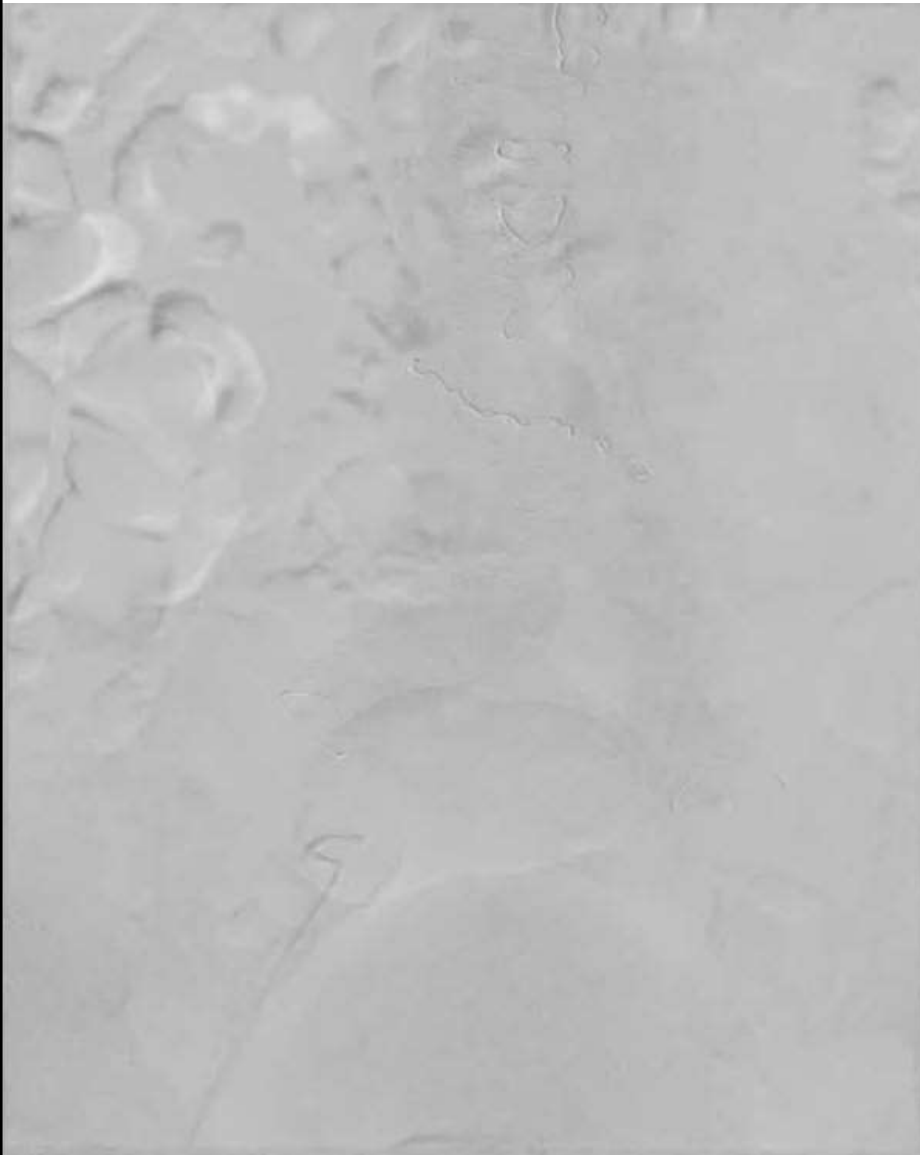
6 months later:

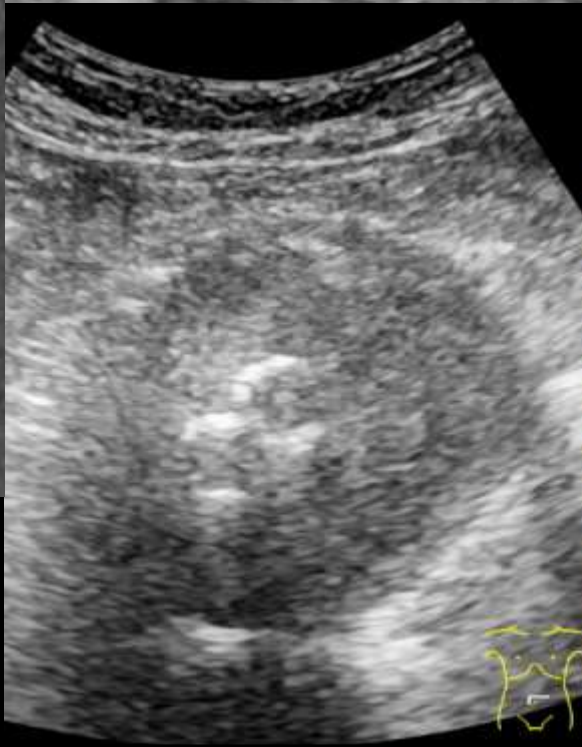
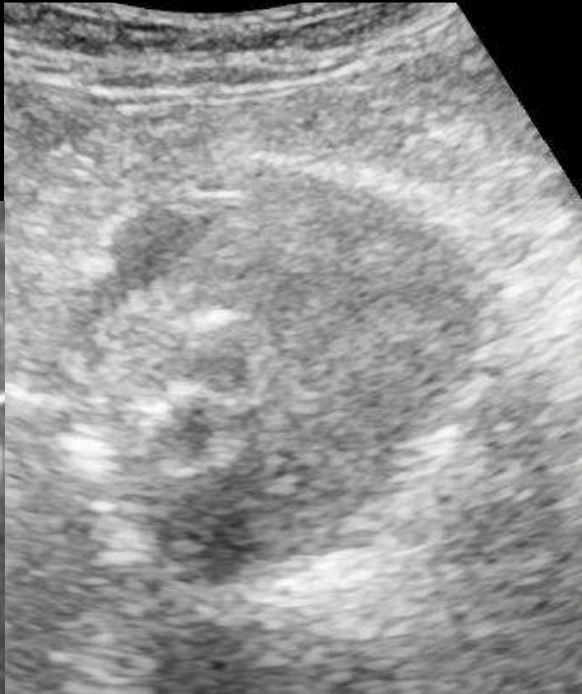
CEUS:

Maximum
diameter 64
mm, type II EL

Trip-Phase CTA:
Type IIa EL from
L3 lumbar







Conclusions

- Type II endoleaks are a major determinant of reinterventions of endovascular aortic aneurysm repair
- Most type II endoleaks do not necessitate treatment
- When aneurysm sac increases, make sure it really is a type II endoleak
- Treatment strategy and material is mainly dependent on anatomic criteria and interventionalist expertise

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