Université de Montréal

CHUM

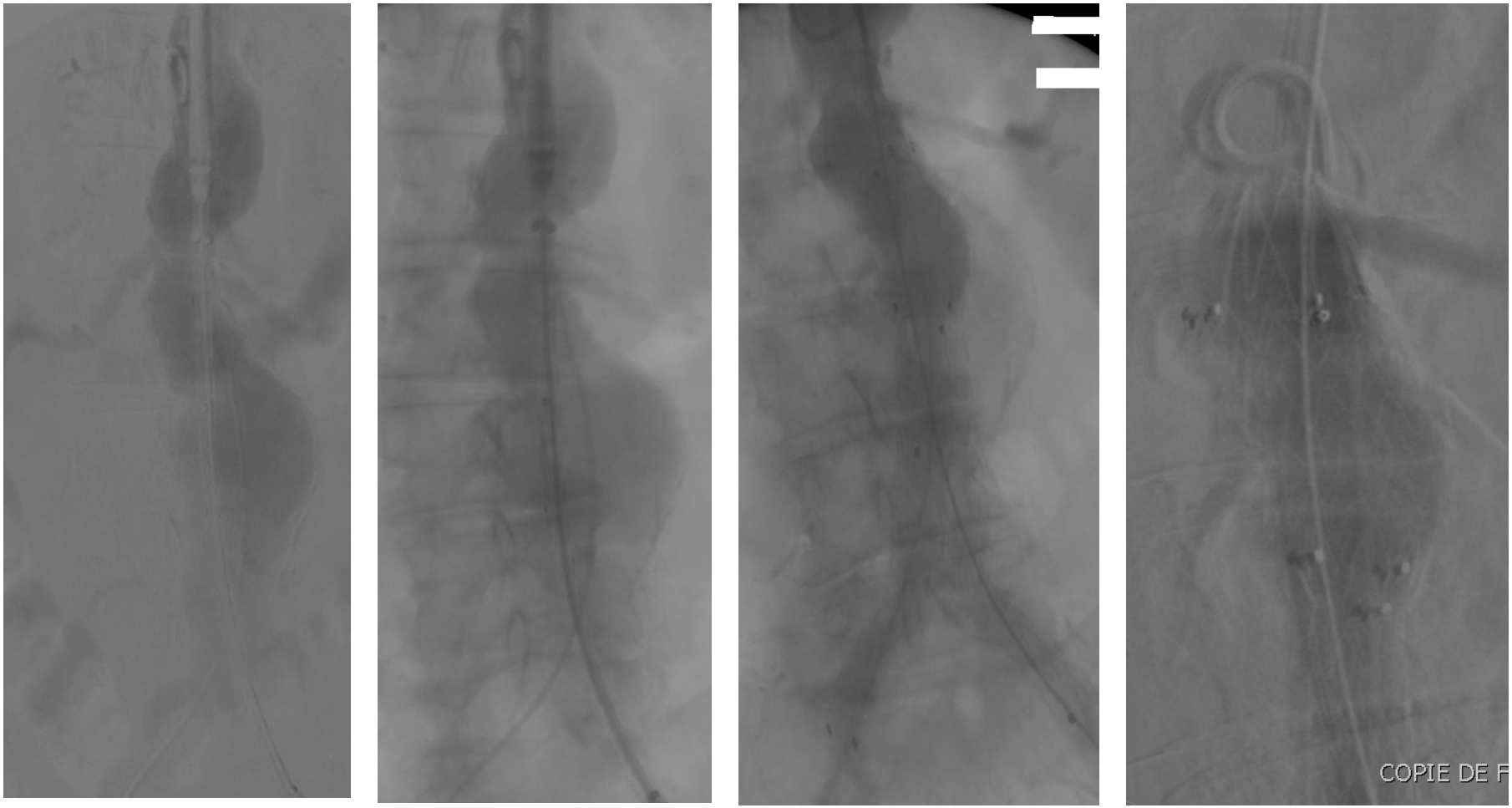
Case of the Day
November 2014

Case courtesy of Drs. H. Alturkistani and P. Gilbert

Clinical History

- 90 year old female
- 6.3 cm infrarenal abdominal aortic aneurysm with irregular morphology and a very short, conical superior neck
- Patient was treated with a stent graft by endovascular approach in 2009 in hospital outside CHUM

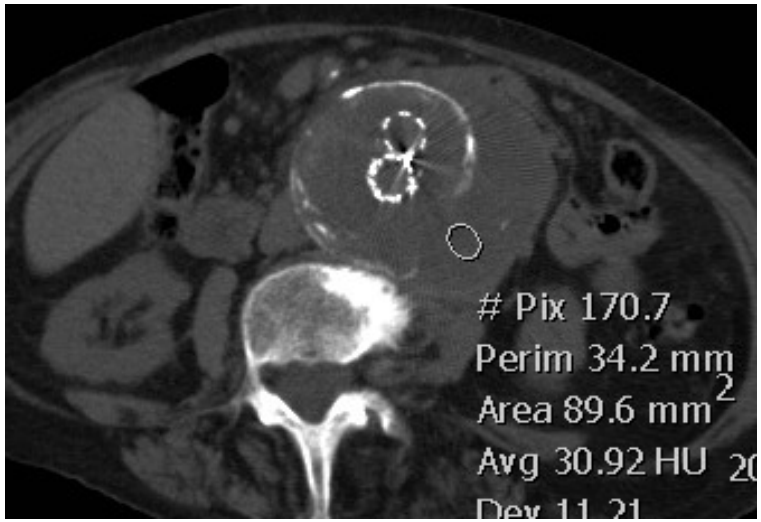
Endoprosthesis in 2009

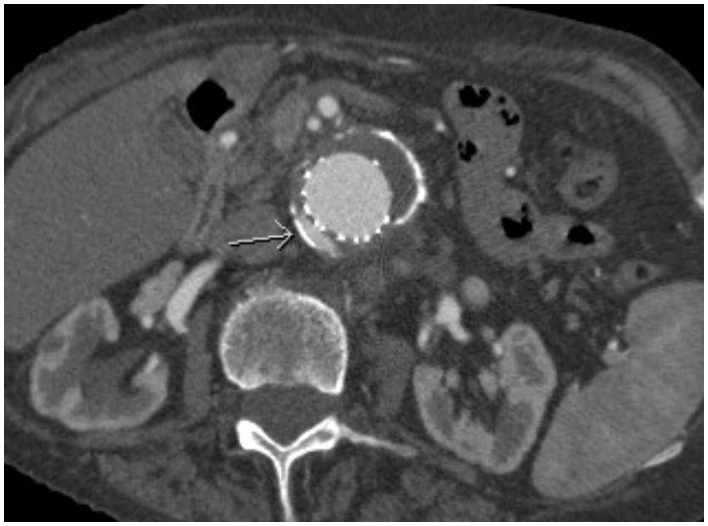


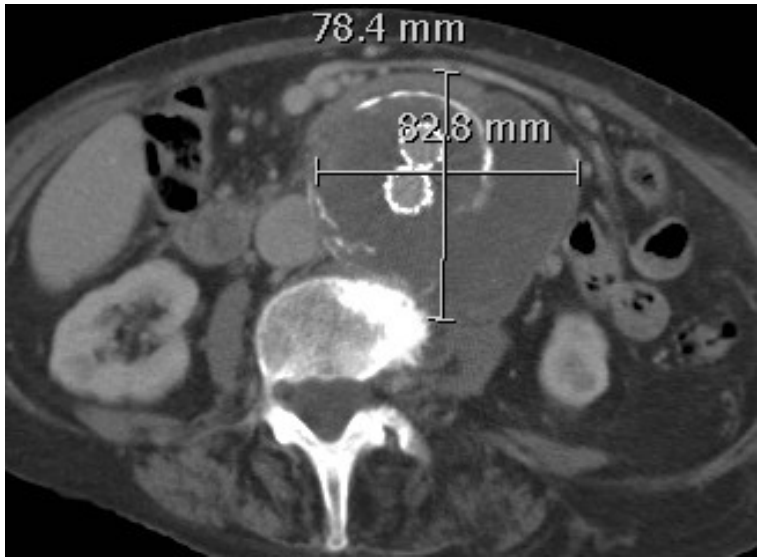
Irregular aneurysm, covered part far from renal arteries, no good sealing zone

CT angio F/U

- CT scan September 2013







Aneurysm sac size increase
Contained rupture

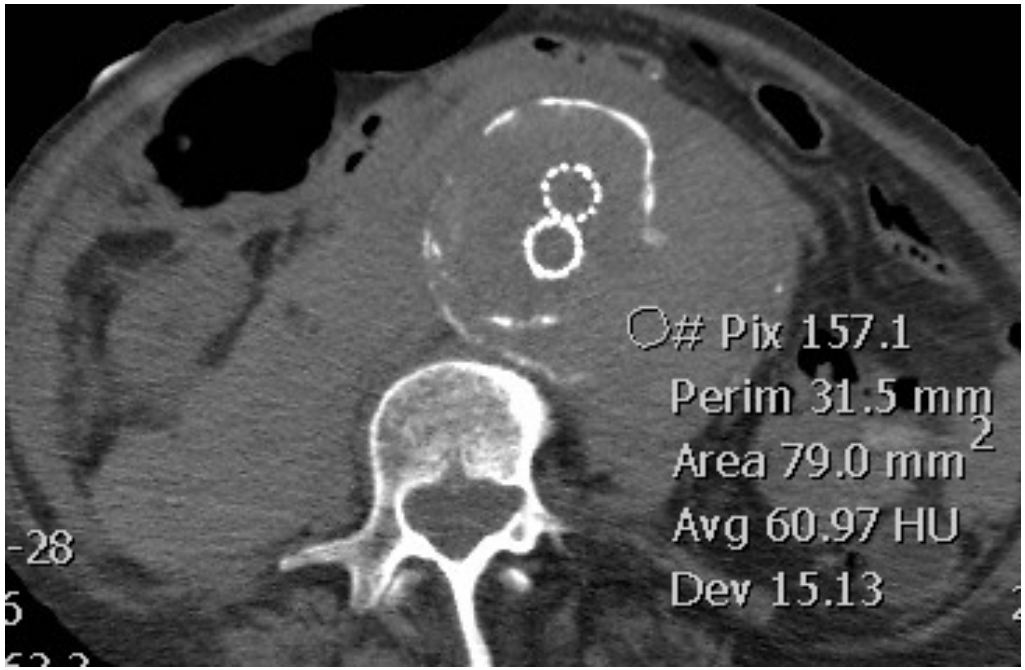
As the rupture was well tolerated and not symptomatic:

- Conservative treatment was suggested
- Option of endovascular treatment was not suggested to patient

28 January 2014

- Patient transferred to our hospital with a deteriorating ruptured abdominal aortic aneurysm
- Patient was actually independent and asked us to save her life

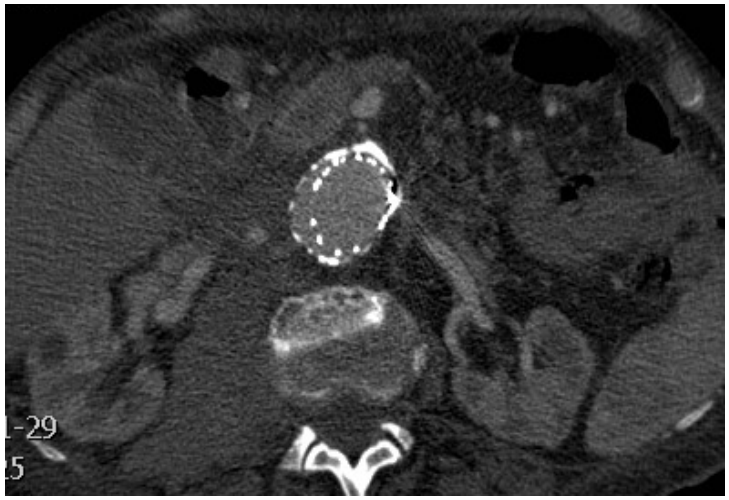
CT scan C-

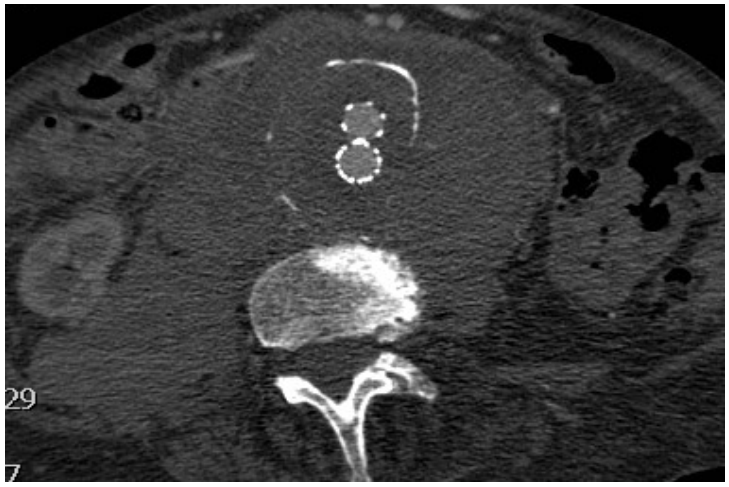


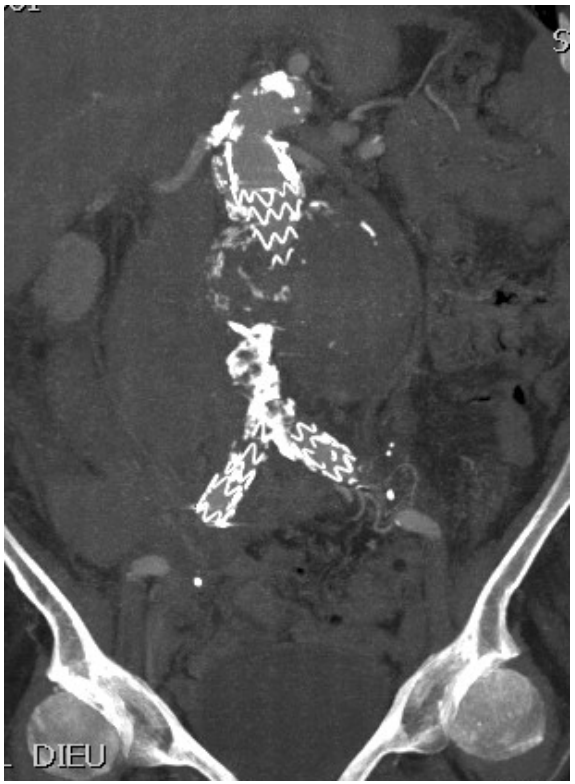
Peri-aortic hematoma enlarged
in comparison to CT of
September 2013 with mass effect
On the right kidney

29 January 2014

- CT angio of abdominal aorta repeated in our center to plan the treatment







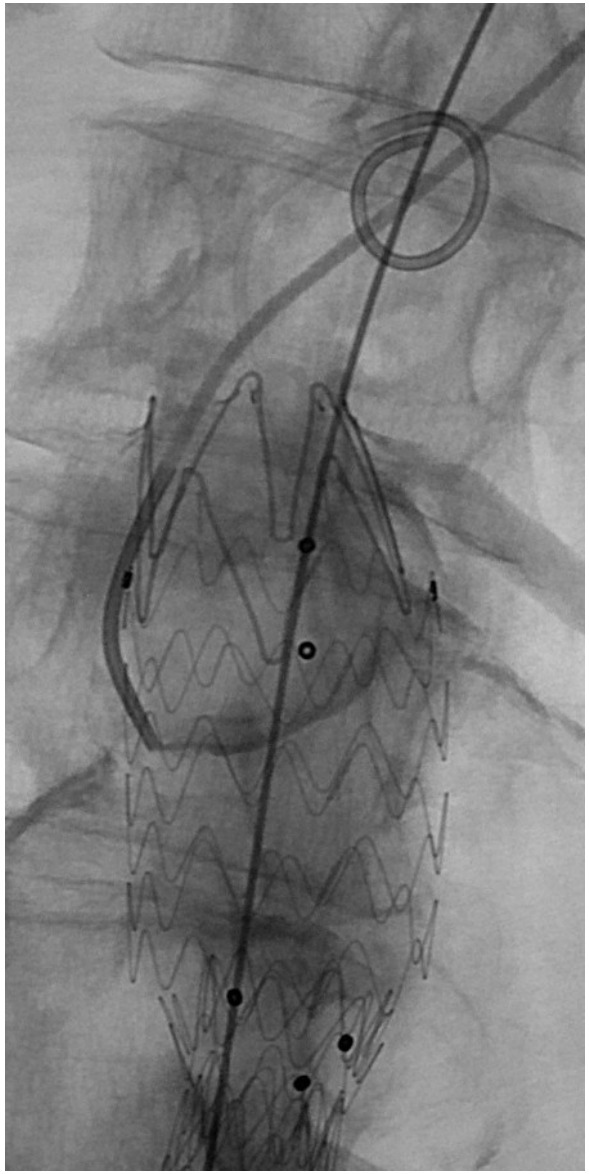
- Type IA endoleak
- Signs of rupture with significant retroperitoneal hemorrhage and mass effect on right kidney
- No active contrast leak

- Endovascular intervention by establishing a more proximal stent to cover the endoleak and possible embolization was discussed with the vascular surgery team

Stent graft insertion + embolization 29/1/2014

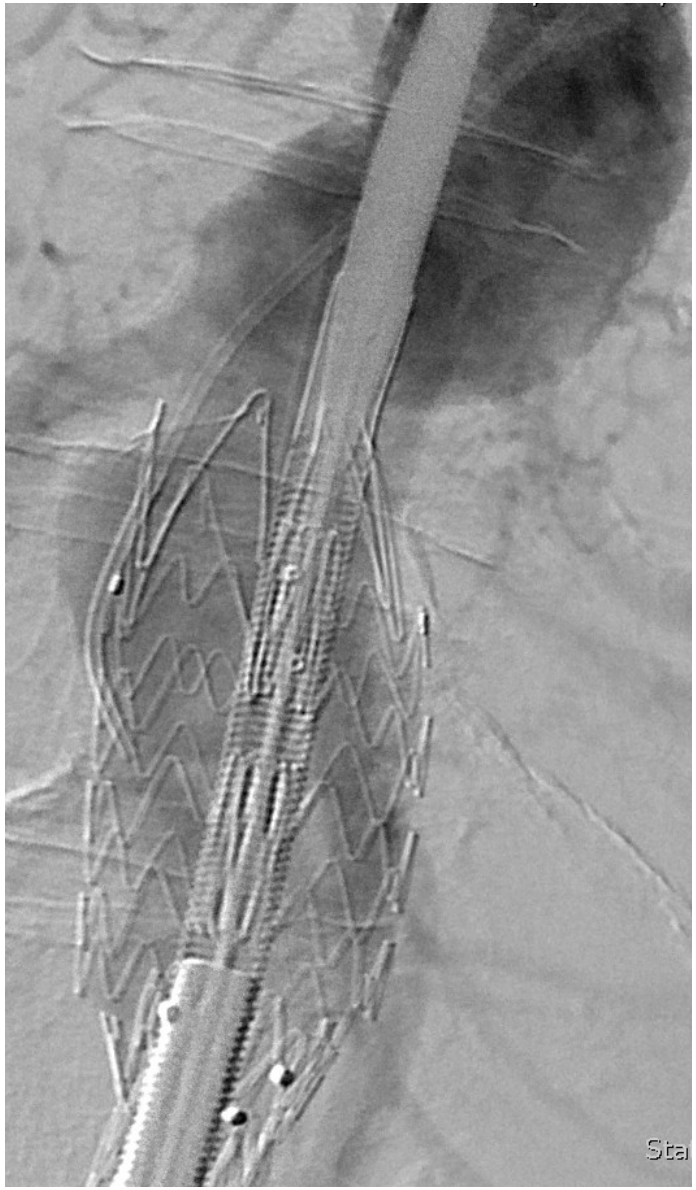
- Right femoral access

  by surgical dissection
- Left brachial direct puncture which was used to pass an H1 catheter to get in the endoleak at the right lateral margin of the proximal portion of the stent graft
- Pigtail catheter via femoral access (superior to renal arteries)

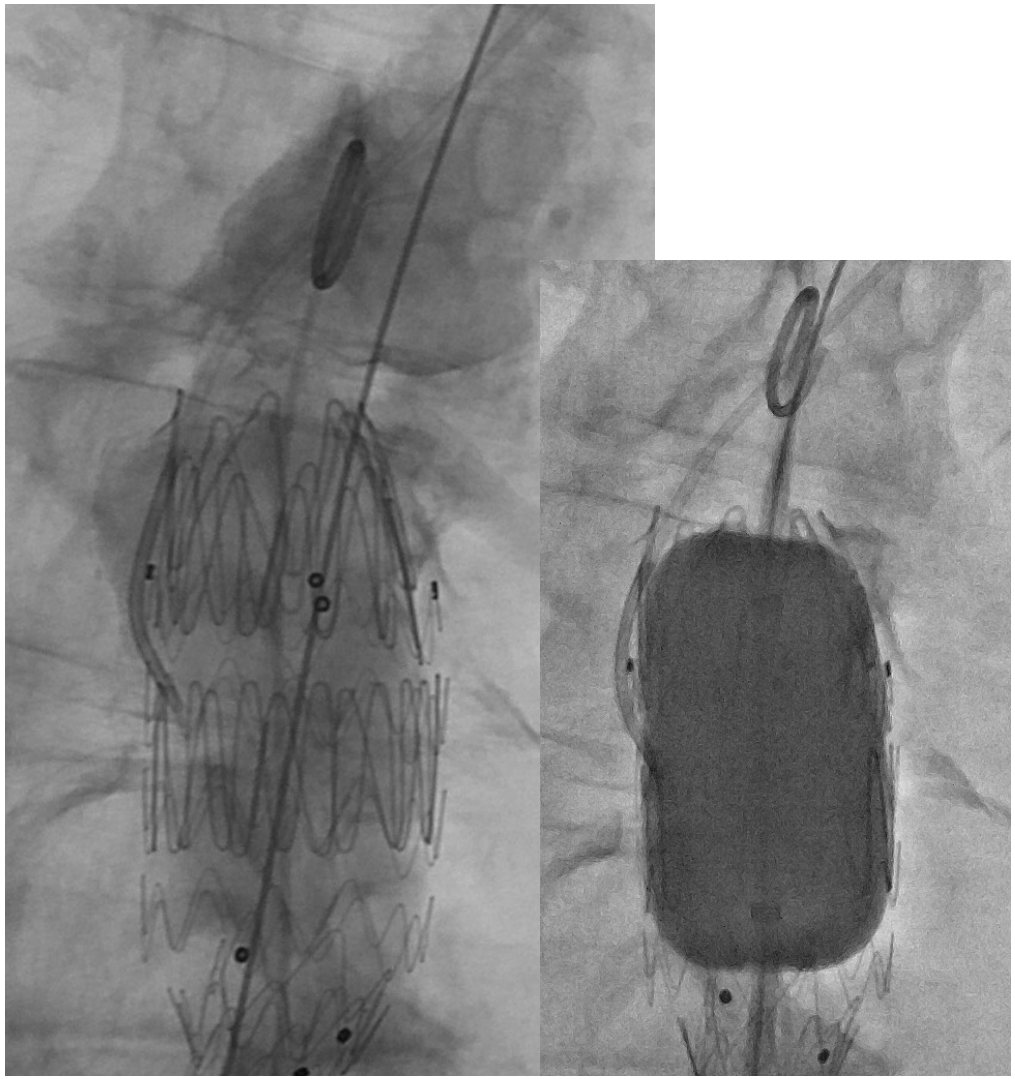


- Second right CFA puncture
  (to pass aortic stent graft via
  Lunderquist guidewire)

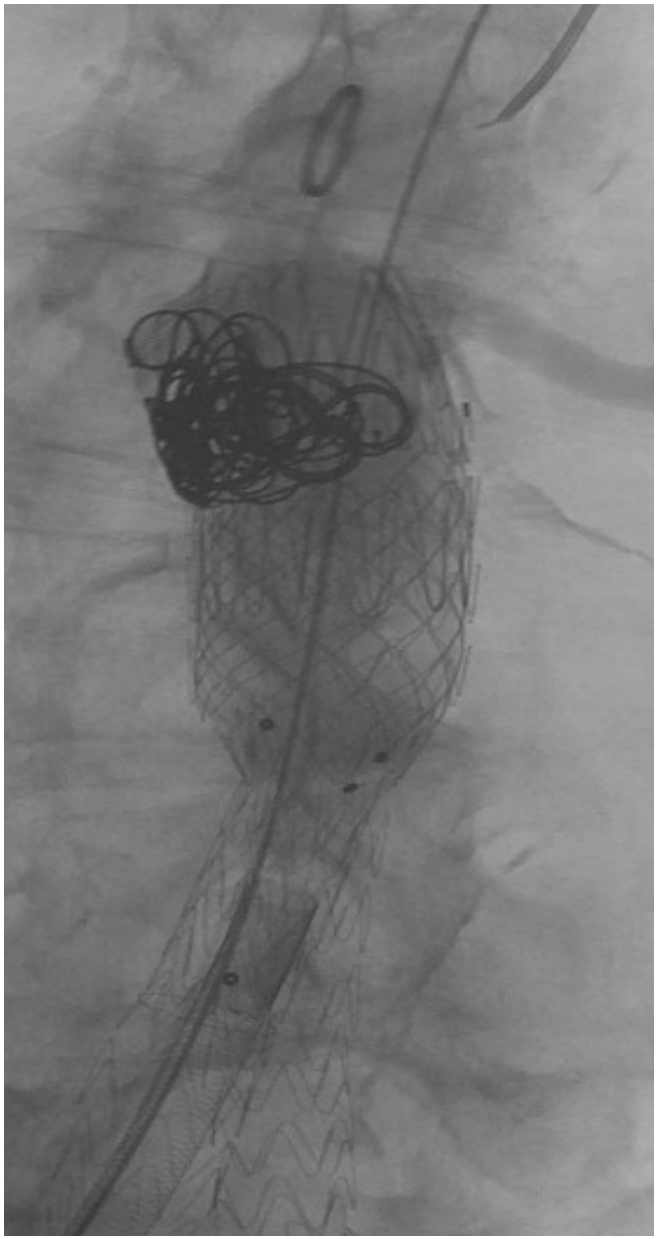
- Endoprosthesis (stent-graft)
  32 mm proximal diameter x
  39 mm length



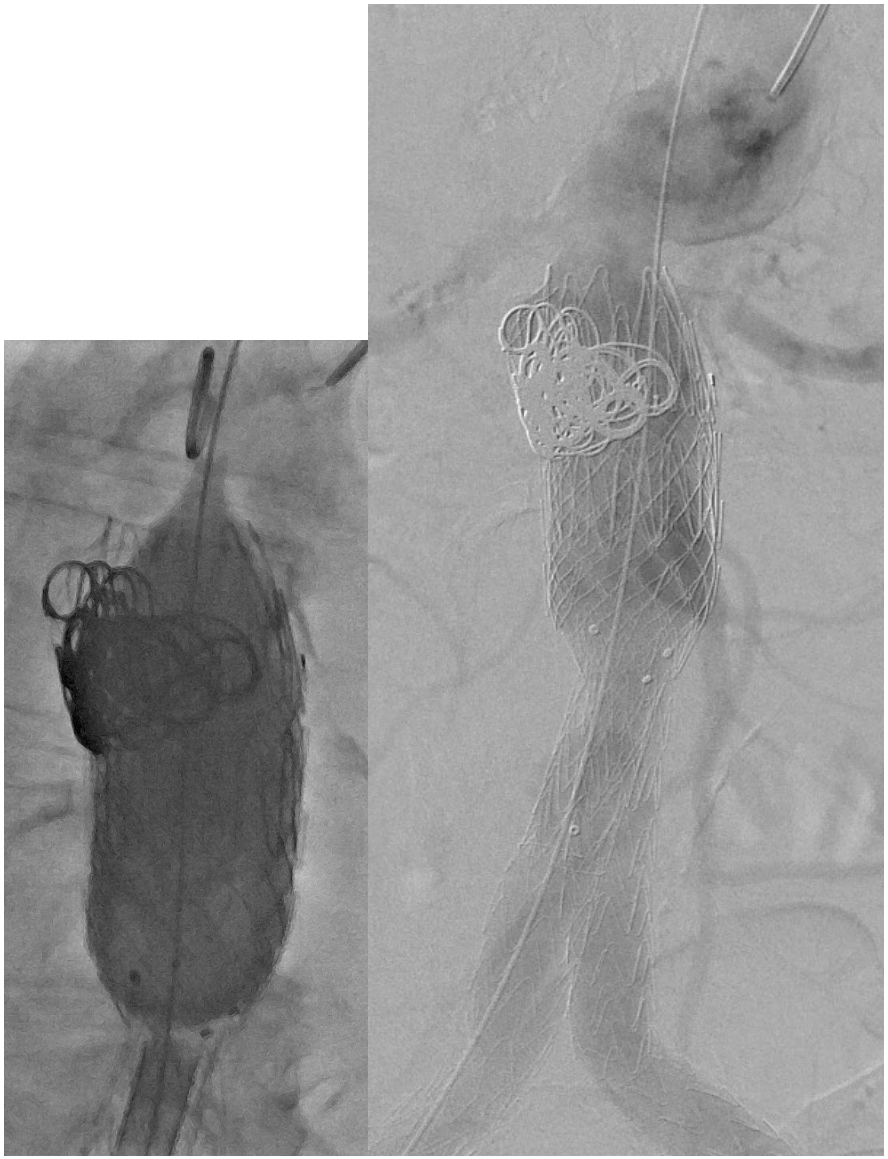
- It was deployed immediately below the left renal artery which is at lower level than right
- Dilatation with a compliant balloon



- After that, embolization of endoleak through brachial catheter (H1) with IDC coil

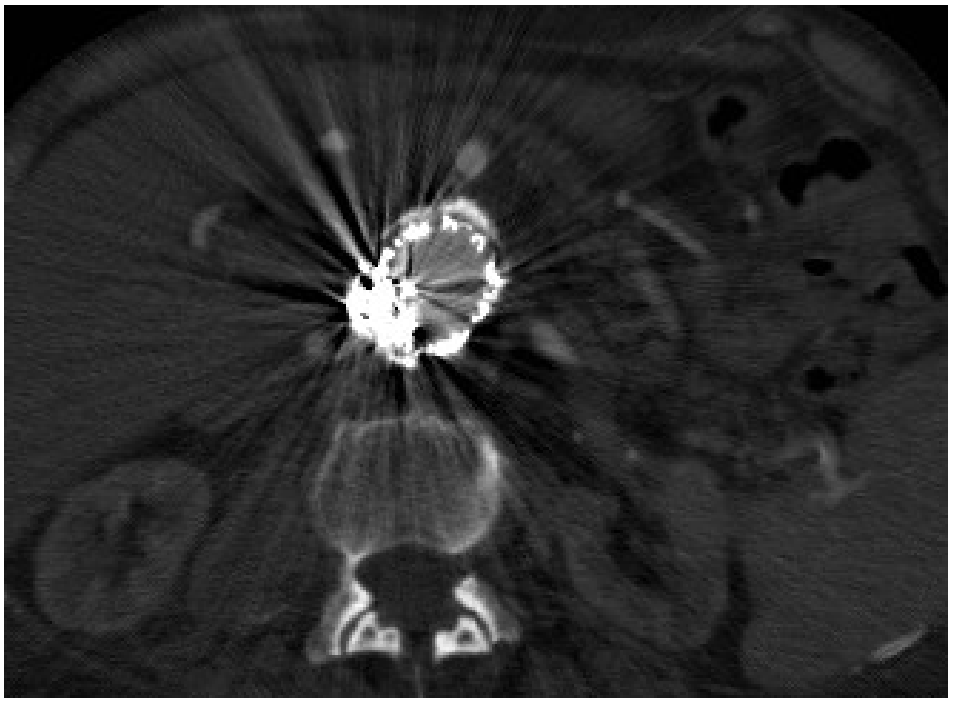


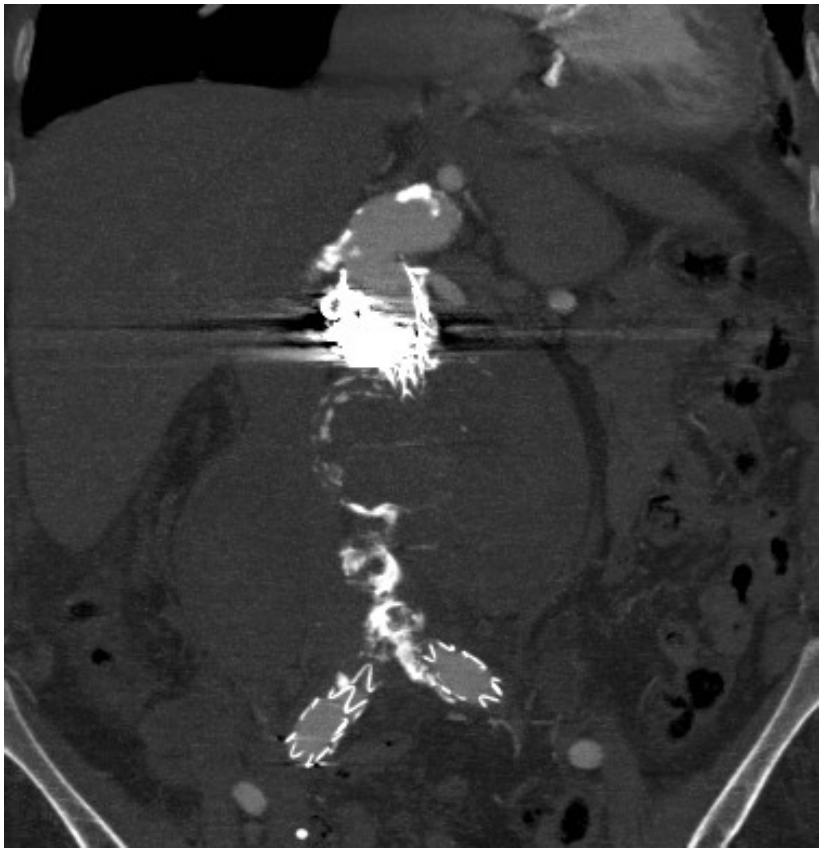
- To ensure a good seal, we inserted a Palmaz stent (mounted on a 33 mm balloon) and positioned at the level of renal arteries
- Control aortography shows:
  - Good apposition of the prosthesis
  - No endoleak
  - Permeability of renal arteries
  - Good aortoiliac vascularization



CT angio 20/2/2014

- Follow-up CT scan 1 month after intervention
- Residual periaortic hematoma
- No contrast leak
- Stents intact



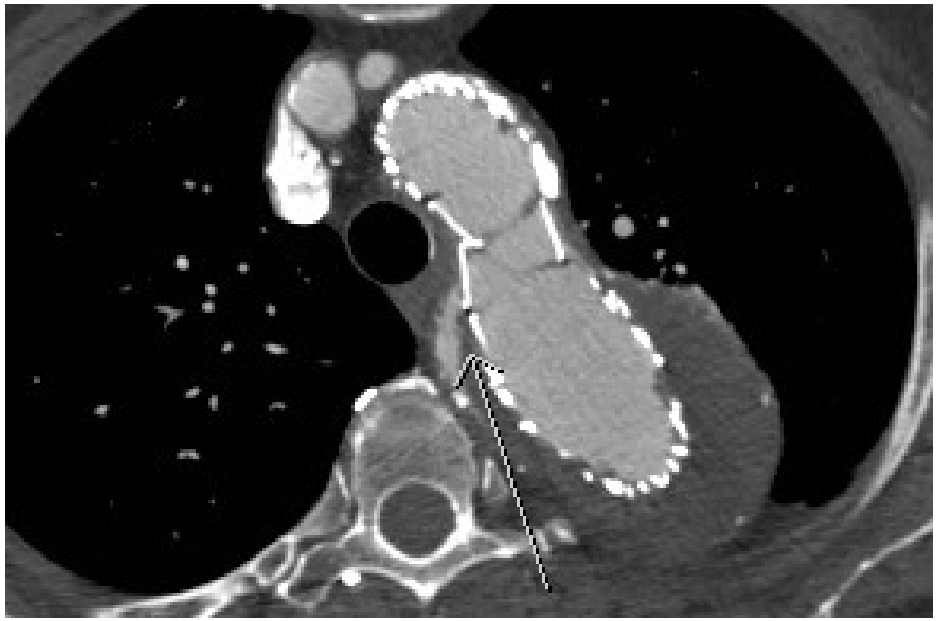


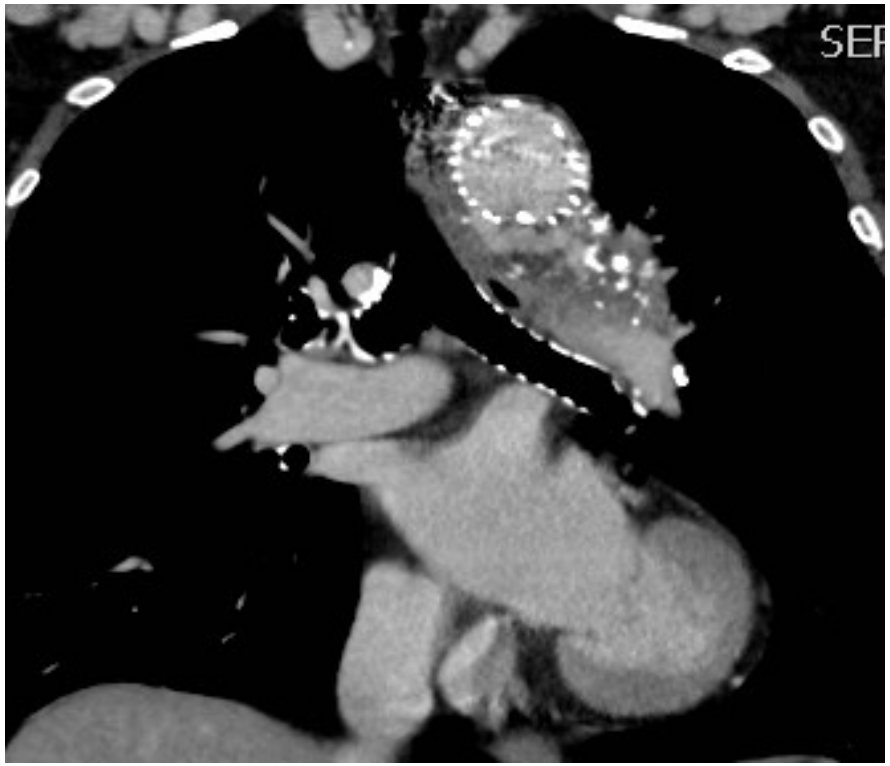
Other option of treatment

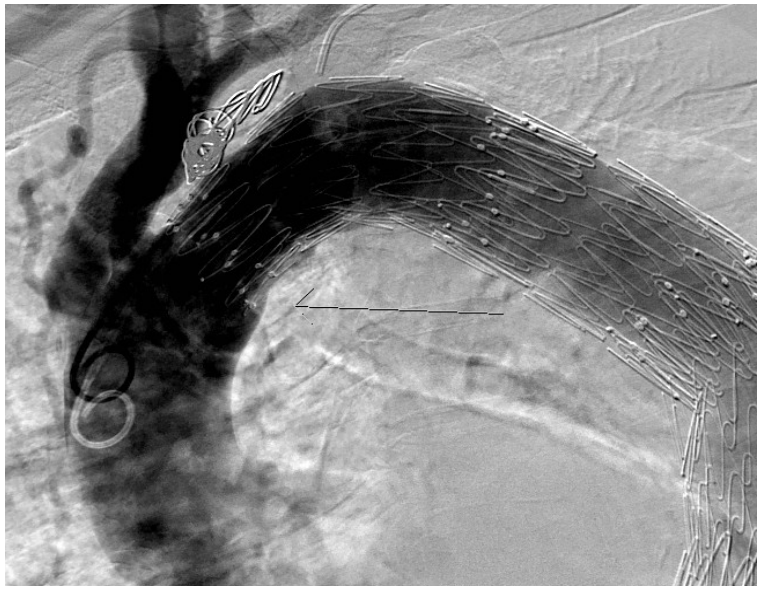
- Other option to treat type IA endoleak:
  - Embolization of aneurysm sac with Onyx

72 y/o female with a thoracic aorta stent graft

Type IA endoleak (arrow)

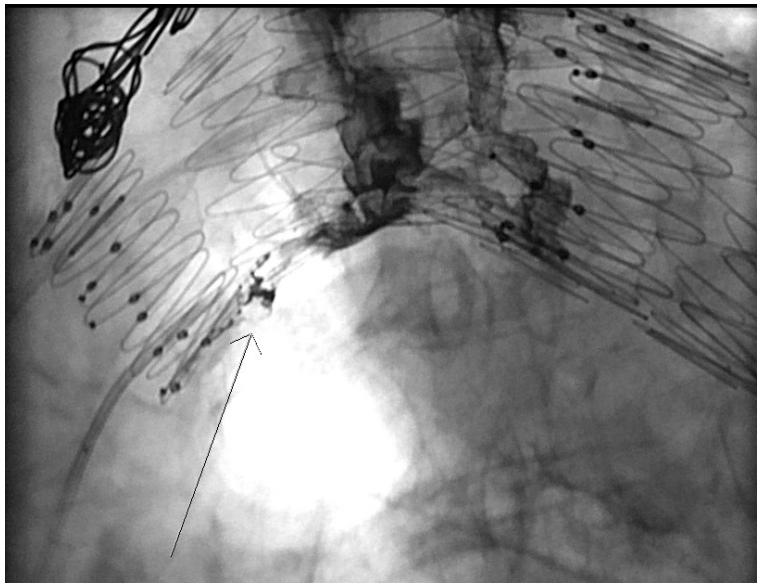




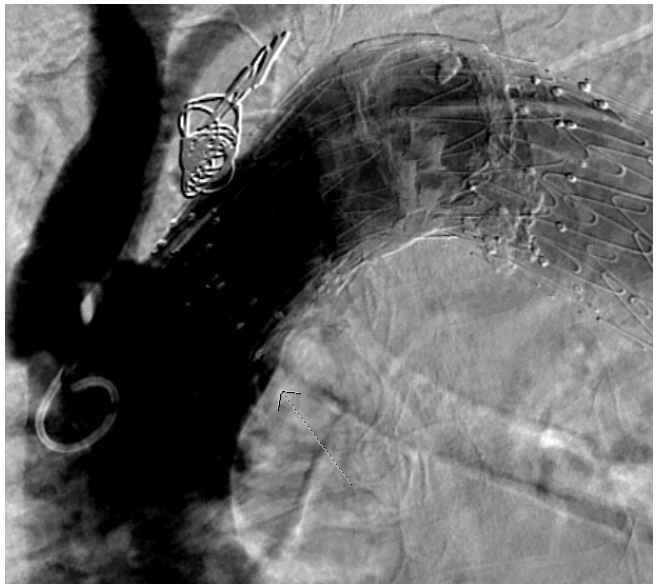


Aortography shows the type IA endoleak

Injection via SIM1 catheter situated between stent and aortic wall better demonstrates the endoleak



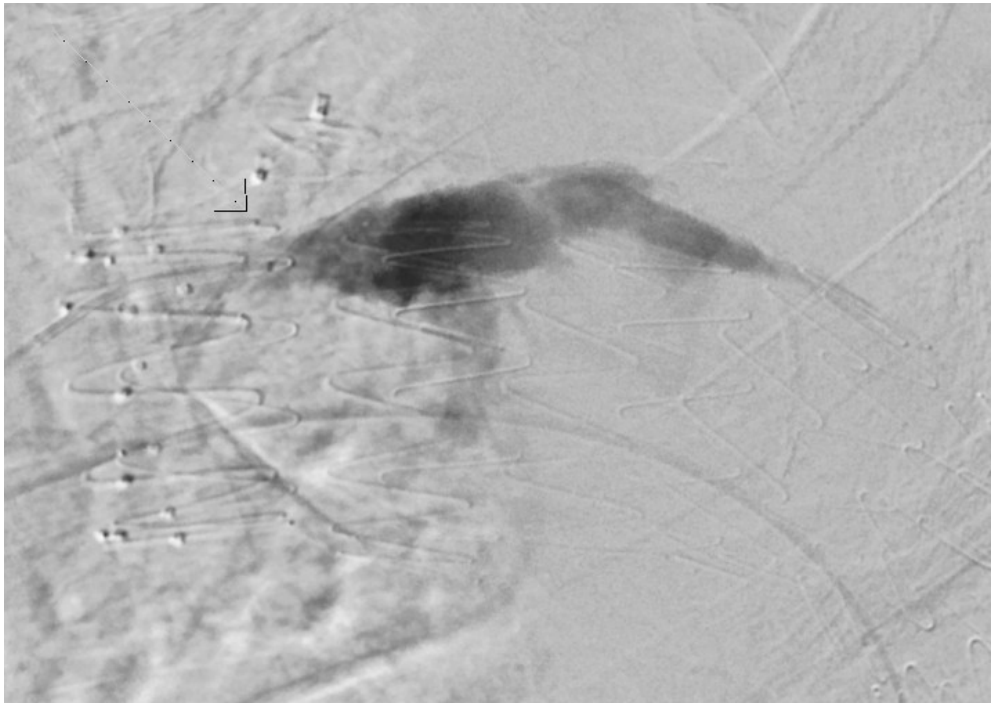
Embolization with Onyx



Final control with satisfactory result

77 y/o male with thoracic aorta stent graft

Injection with SIM1 catheter situated between stent and aortic wall demonstrates the endoleak



Control post-Onyx

Endoleak types

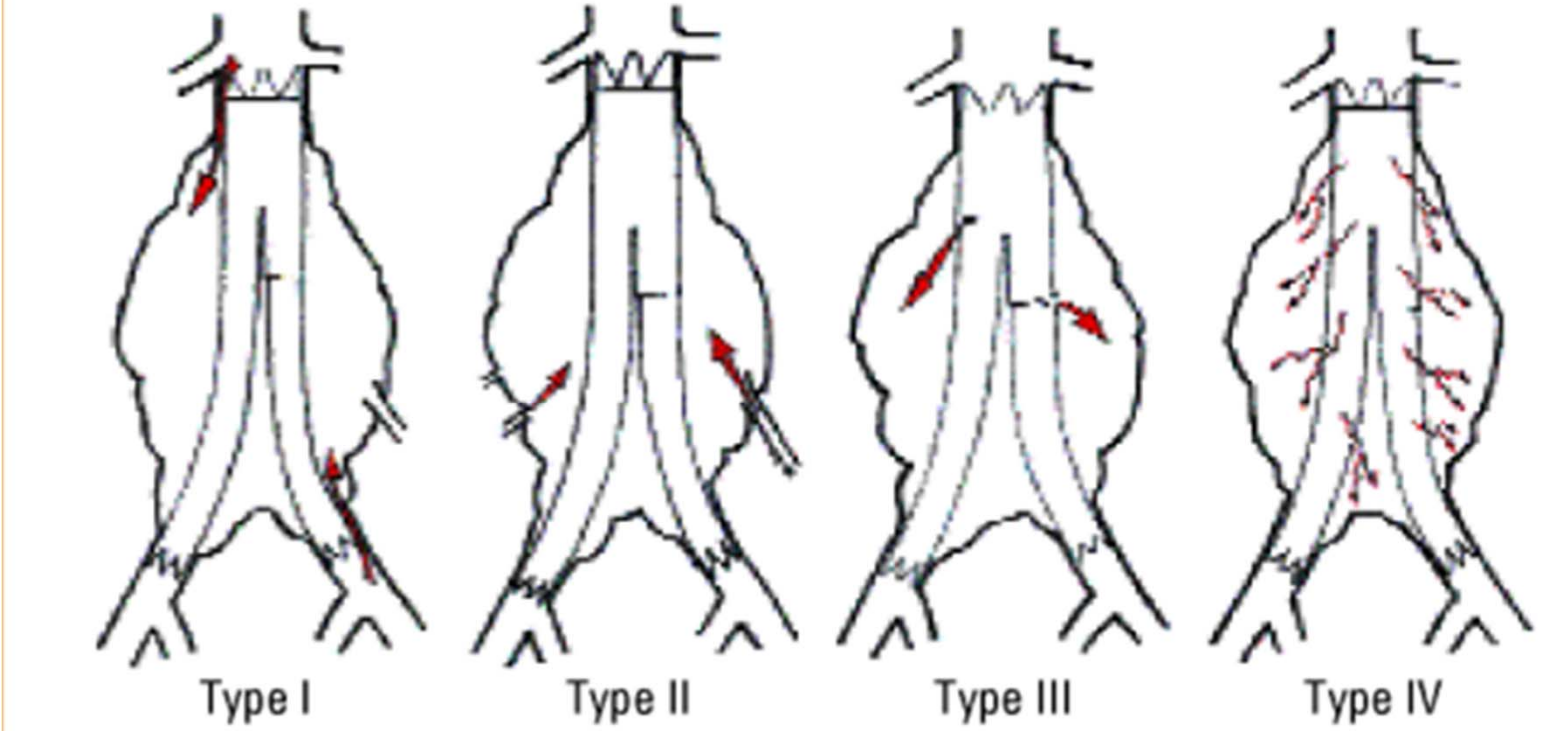


Fig. 2. Mécanismes des endofuites.

Type I Endoleaks

- In general all types: 15-50% post stent graft
- Type I occurs in 12.6% of cases. Types I and II are the most commonly seen
- Type I endoleak (like type III) requires rapid treatment, because of direct communication with the aortic arterial flow and its high blood pressure (elevated risk of rupture)

- Type Ia (proximal) endoleak:

  - Caused by short, irregular, angulated or conical neck

  - If detected during initial procedure: compliant balloon angioplasty

  - If detected thereafter: proximal extension, balloon-mounted, high radial pressure (Palmaz) stent, fenestrated endoprosthesis +/- Onyx/coil embolization

- Type Ib (distal) endoleak:

  - Iliac extension, with embolization of the internal iliac artery if the extension extends into the external iliac artery