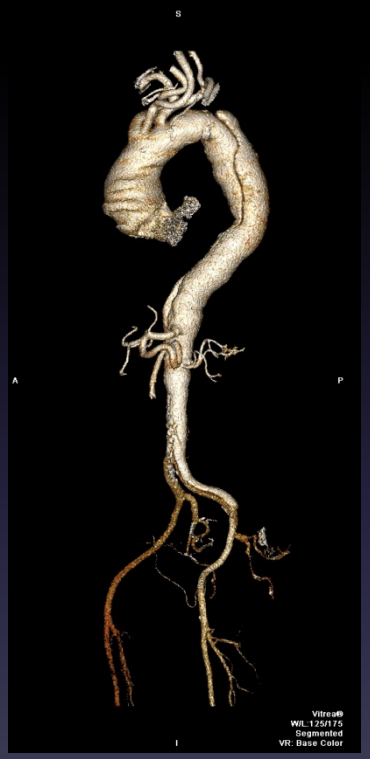
CIRA Case of the Day
May 2015

Case Courtesy of Drs. Brendan Diederichs and Jason Wong

University of Calgary

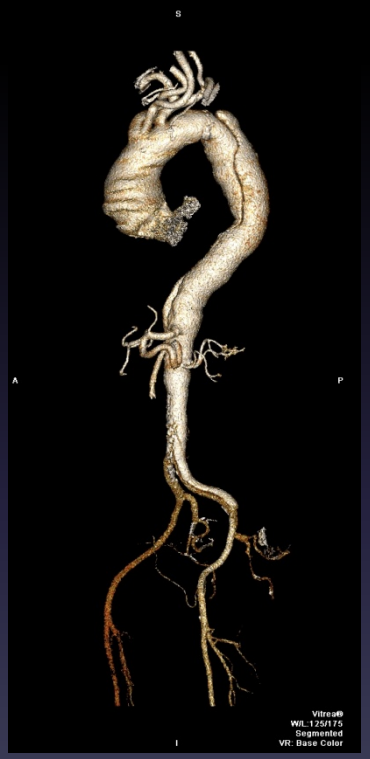
Background

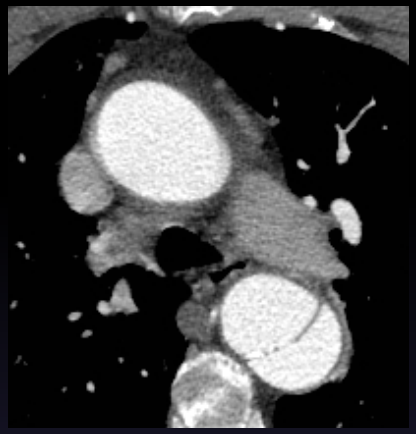


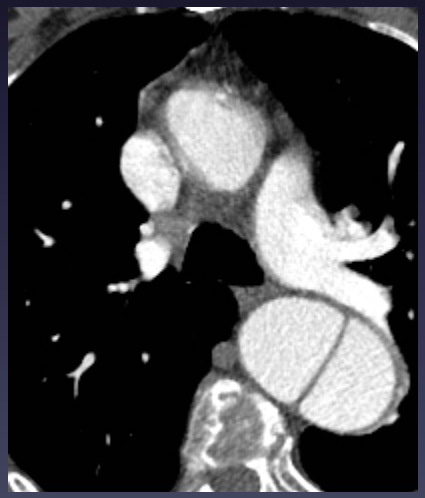
- 74 F with longstanding fusiform ascending aortic aneurysm
- Acute type B dissection while on vacation in Colorado Sept 2011 complicated by ischemic gut, treated medically
- After presenting to medical care in Calgary June 2012, elective surgical graft repair of the ascending aortic aneurysm was performed for interval enlargement over 6 months.
- By July 2013, serial follow-up CTA showed progressive overall interval enlargement of the dissected, aneurysmal descending thoracic aorta.
- Maximal Diameter 4.2 cm (2011), 4.8 cm (2012), 5.6 cm (2013)
- Patient elected to undergo endovascular repair of her Type B dissection

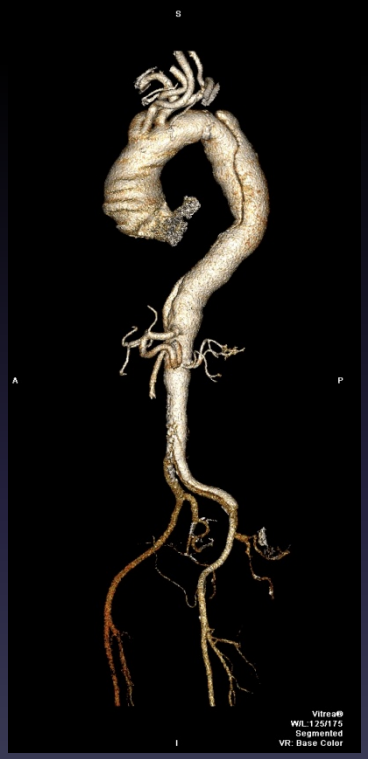
2011

2013



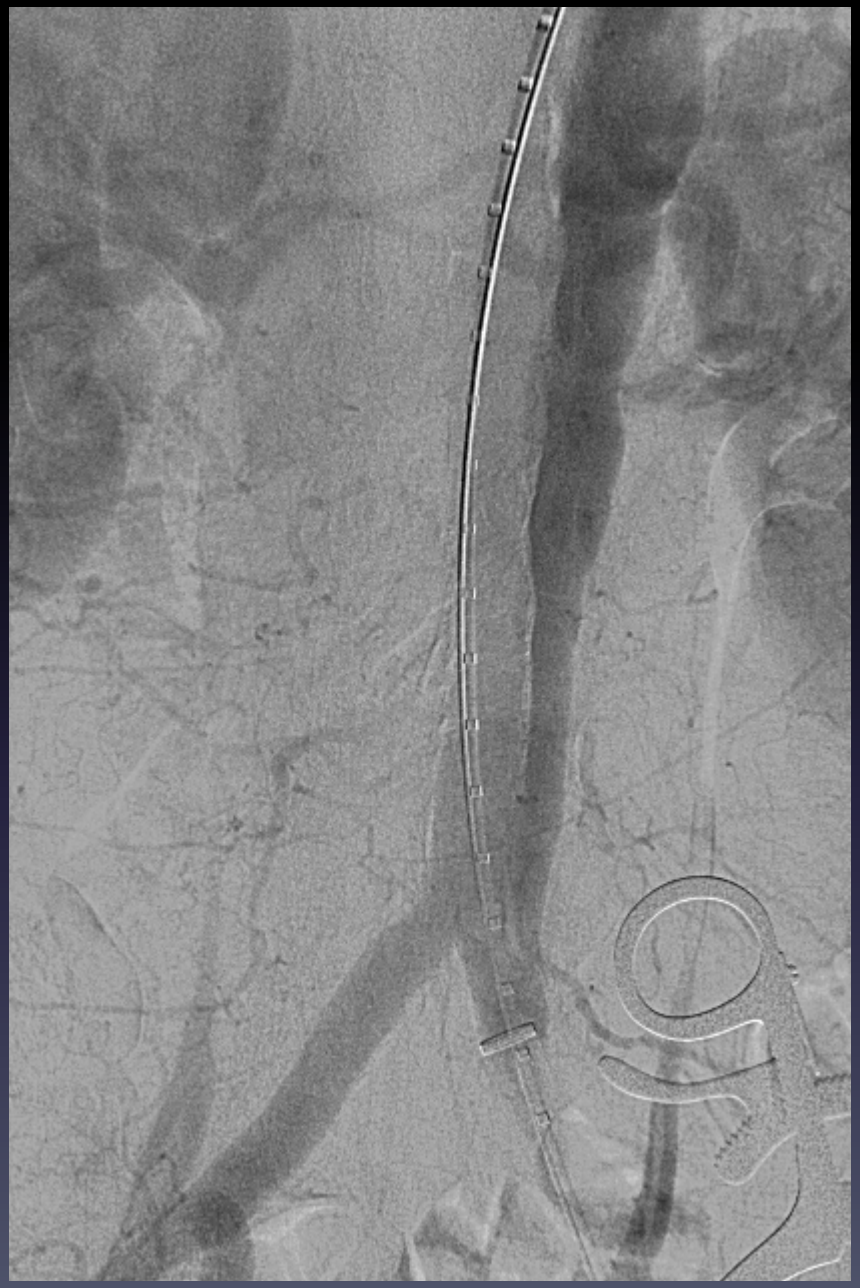






- Pt brought to hybrid OR under GA
- Left CFA accessed following cutdown
- Via separate stab incision, a guide wire was introduced into the left CFA and exchanged for a stiff Lunderquist wire. A 24-French Gore DrySeal sheath was introduced into the left femoral artery
- There was some resistance to advancement, however, this was able to be overcome with gentle pressure
- 31 mm x 15 cm and 37 mm x 20 cm Gore C-tag devices were sequentially deployed for repair of the Type B aneurysm with excellent result

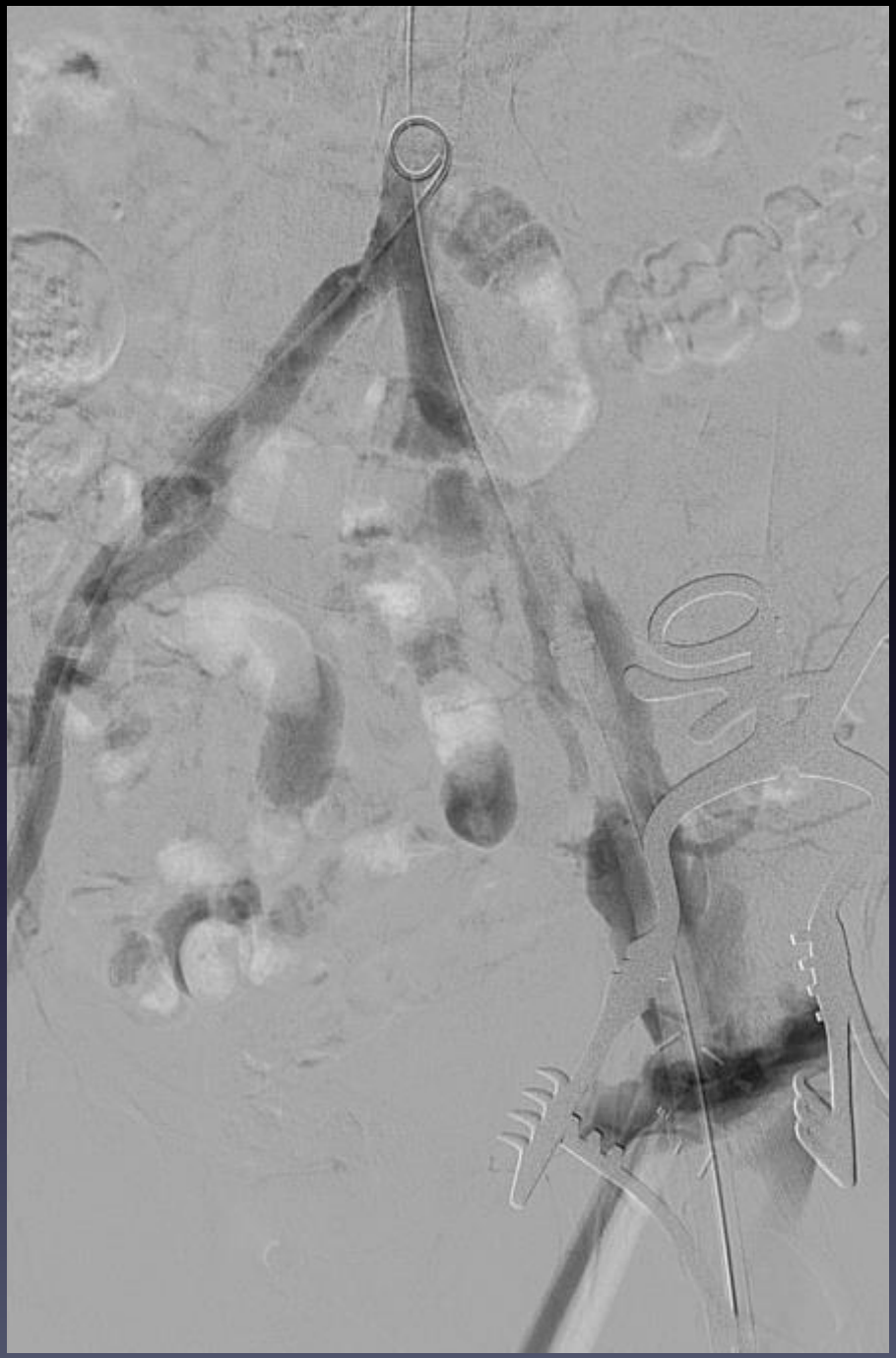
Final Angiographic Result



- Resistance was encountered while attempting to withdraw the sheath. Pt. immediately demonstrated precipitous drop in MAP with massive bleeding from groin wound which would not tampenade with direct compression.

- Anaesthesia staff initated aggressive volume and pressor resuscitation with CPR to further support blood pressure. Simultaneously a 12mm balloon was advanced into the left common iliac artery and inflated.

- The right CFA was percutaneously accessed. A 14F sheath was placed and a pigtail catheter advanced. Initial angiogram revealed no active extravasation with the left EIA balloon inflated.



- Following continued aggressive resuscitative measures, the patient stabilized hemodynamically with the balloon inflated.

- The EIA balloon was then partially deflated and an angiogram rapidly performed, revealing marked extravasation from near the iliac bifurcation extending inferolaterally out the surgical wound.

- The balloon was quickly reinflated.

- A Coda balloon was advanced through the right CFA access and inflated in the infrarenal abdominal aorta.

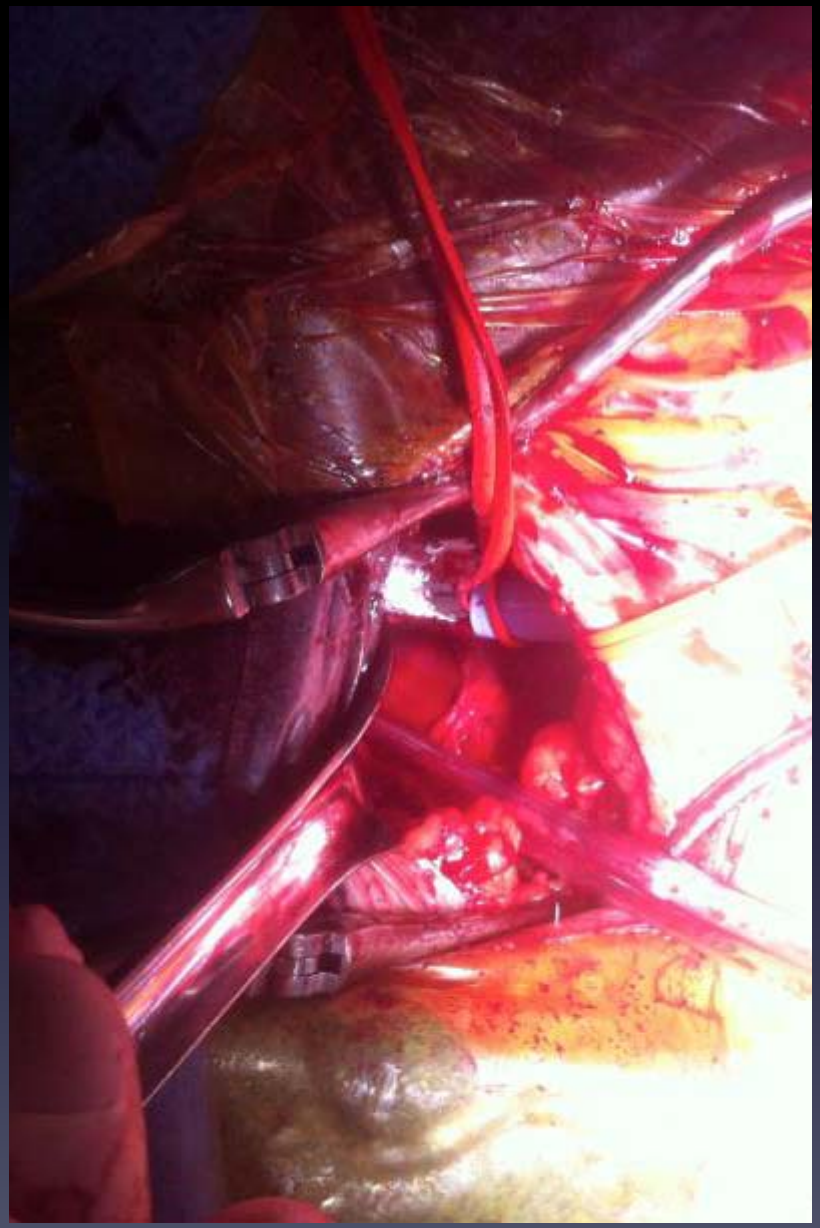
- At this point the external iliac was presumed lacerated, though otherwise intact.

- The 12 mm left EIA balloon was deflated and an 11 mm x 5 cm VIABAHN stent was deployed in the proximal EIA with intentional overlap of the internal iliac origin. A second 13 mm x 5 cm VIABAHN stent was deployed more proximally with overlap into the common iliac.

- Subsequent angiogram revealed continued extravasation more distally.

- Therefore two additional 11 mm x 5 cm VIABAHN devices were placed in an overlapping fashion.

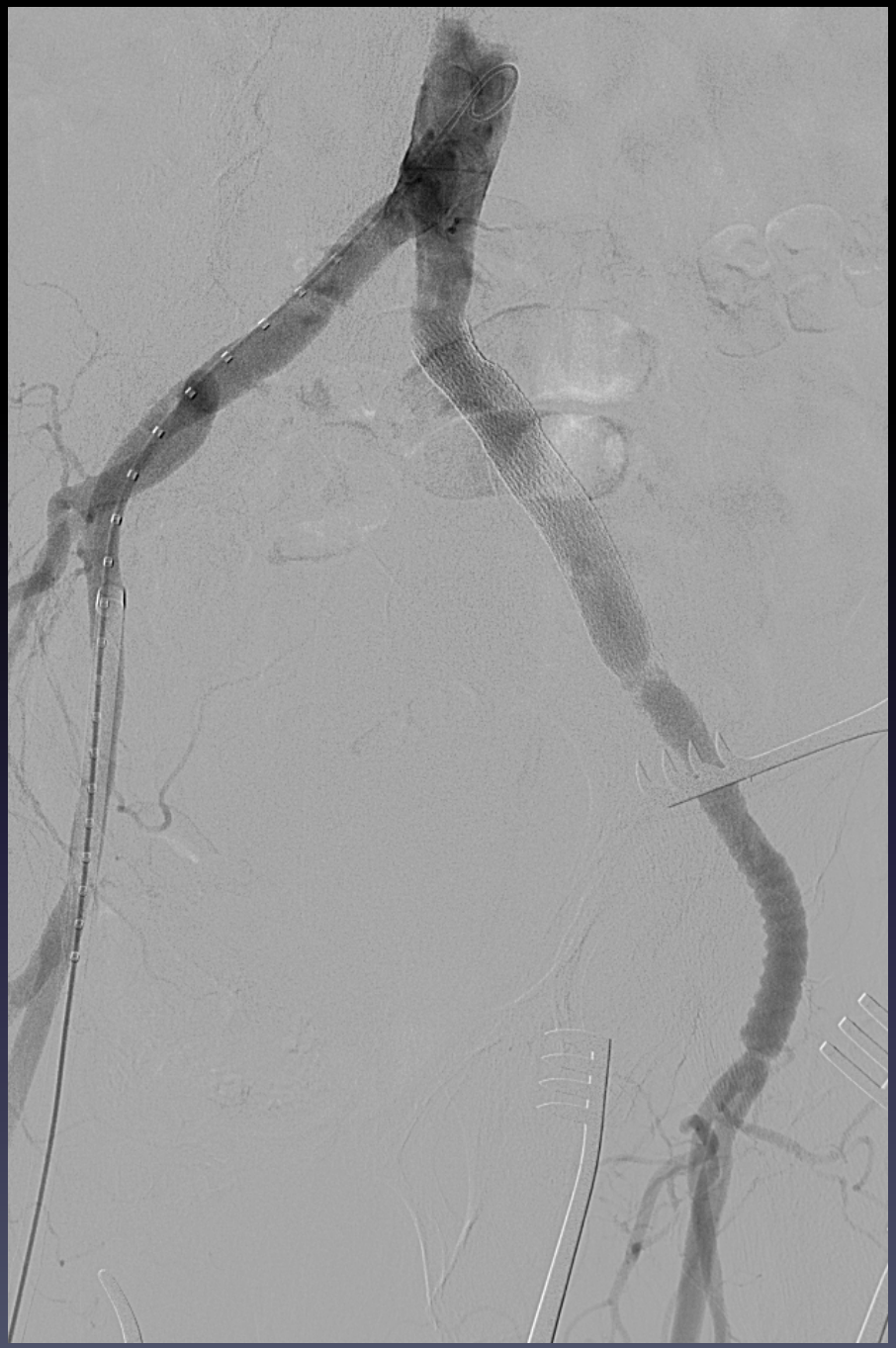
- The two distal stents immediately displaced and it became apparent the EIA was at least partly avulsed.



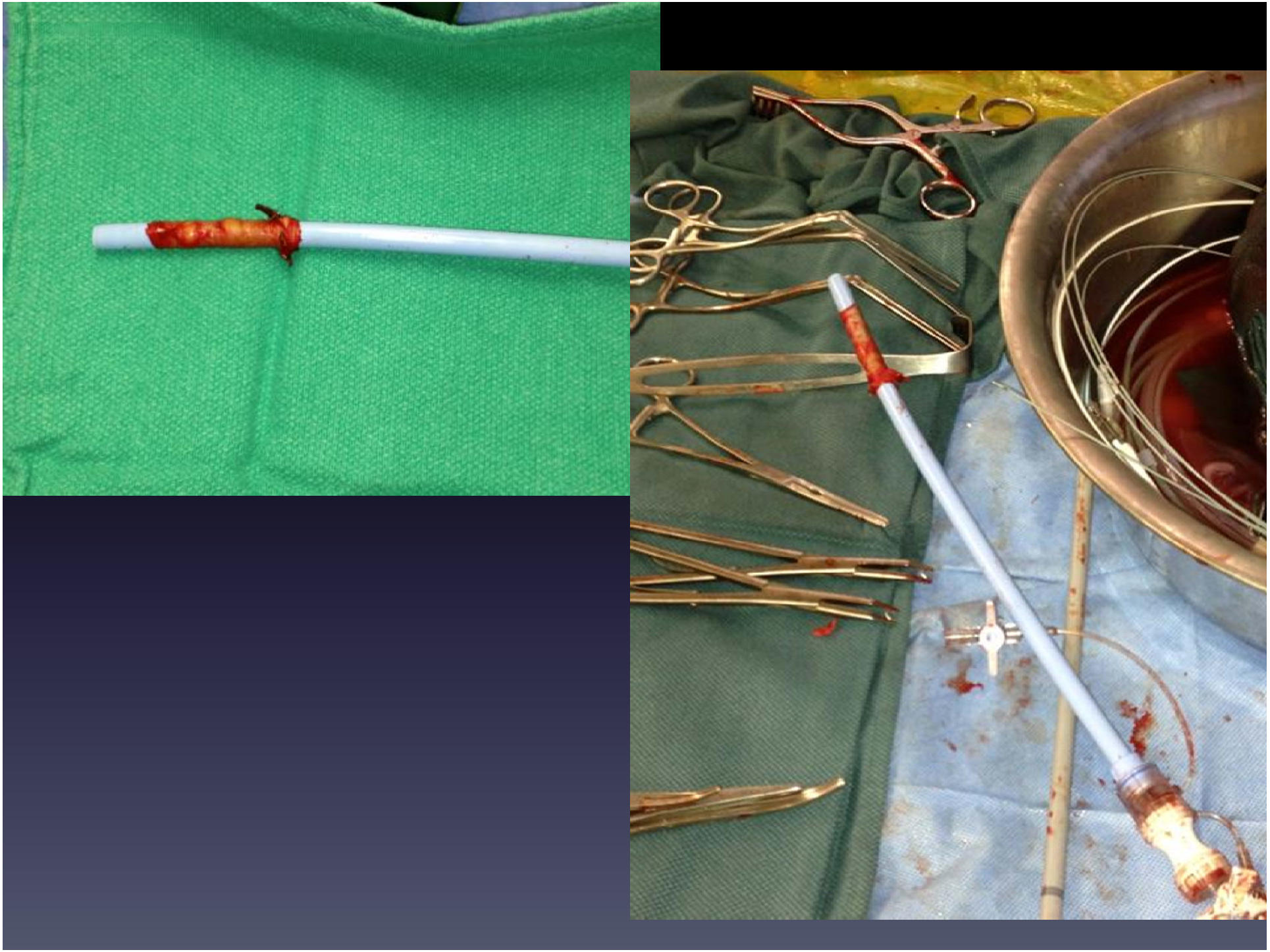
- The left groin incision was extended superiorly in a retroperitoneal fashion, revealing complete avulsion of the external iliac from the femoral. The distal most portion of the EIA stent is completely uncovered. The end of the 24F sheath is seen on the left of the image.

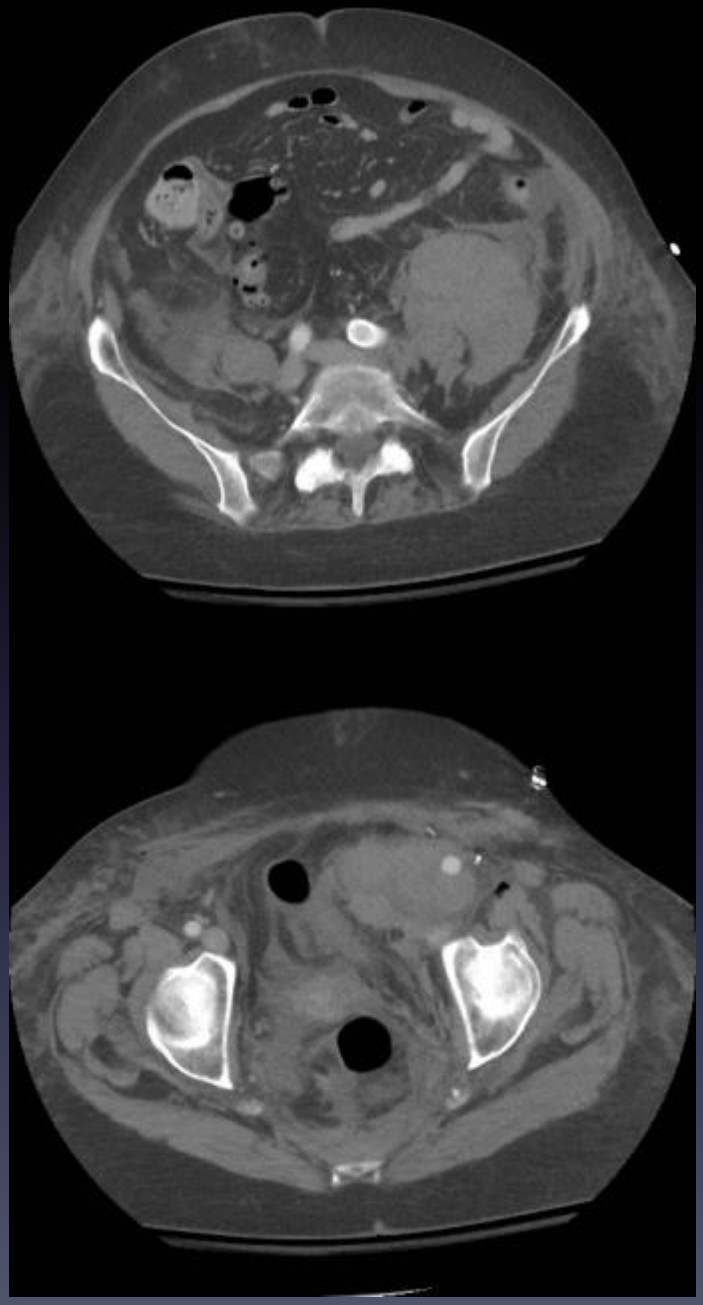
- These were clamped together and the Coda balloon was deflated to temporarily restore blood flow to the lower extremity.

❖ An 8mm Dacron graft was sewn into the free end of the distal-most VIABAHN device and the CFA proximal to its bifurcation.



- Excellent hemostasis was achieved





- Pt. was extubated in ICU shortly following arrival.
- Post op CT showed large retroperitoneal hematoma with no active extravasation.
- Uncomplicated post-operative course, discharged home several days later.

Endovascular management of iliac rupture during endovascular aneurysm repair

JD. Fernandez et al. J Vasc Surg. 2009 ;50(6):1293-9;

- 10 yr single centre retrospective review of Iliac ruptures during EVAR/TEVAR

- **369 EVARs and 67 TEVARs. 11 iliac conduits used, all during TEVAR (16%).**

- **18 ruptured iliac arteries in 17 patients; 11 EVAR (2.98%), 6 TEVAR patients (8.9%). 17 ruptures in 16 patients were successfully treated with endovascular stent graft placement. 11% procedural mortality in ruptured group**

- **Iliac rupture was more likely to occur during TEVAR (8.9%) than EVAR (2.98%; P .0239)**

- **Significantly more women were in the ruptured group 76% vs 19%; P < .0001**

- **Rupture more likely with larger sheath and smaller vessel**

- Iliac artery rupture is a recognized complication of TEVAR
- Endovascular management is preferable, and is predicated by configuration of injury and the ability to maintain hemodynamic control
- Tortuosity, small diameter, and atherosclerotic calcification of the iliac arteries are associated with an increased incidence of injury
- Prevention is the optimal approach, including careful selection of approach based on vessel diameter at preoperative imaging, utilization of smallest possible calibre delivery system, and liberal use of iliac conduits where necessary.

C. Rockman. Semin Vasc Surg; 2004. 7: 298–306
M. Tillich, et al. Radiology; 2001. 219: 129–136
J.P. Henretta, et al. Am J Surg; 1999. 178: 212–218
JD. Fernandez, et al. J Vasc Surg. 2009 ;50(6):1293-9;