

CIRA Case of the Week

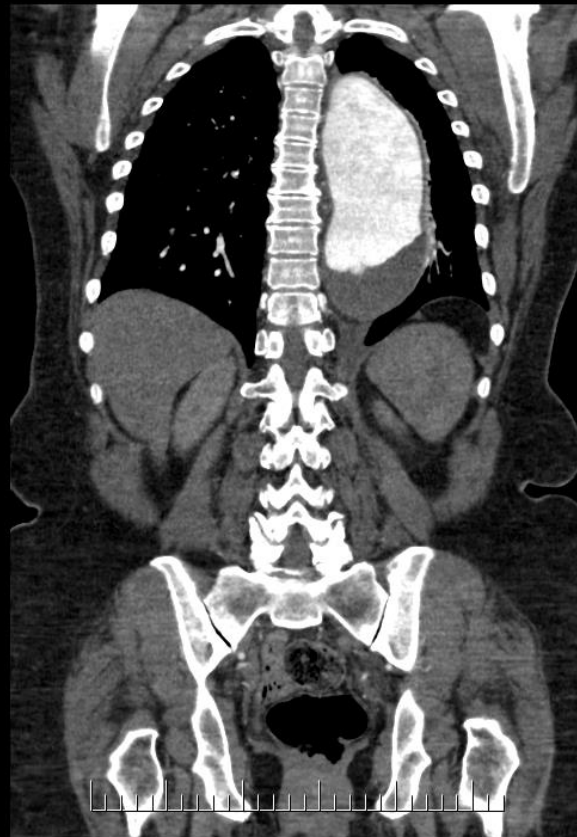
November 2015

Case Courtesy of Dr. Virginie Demers

University of Toronto

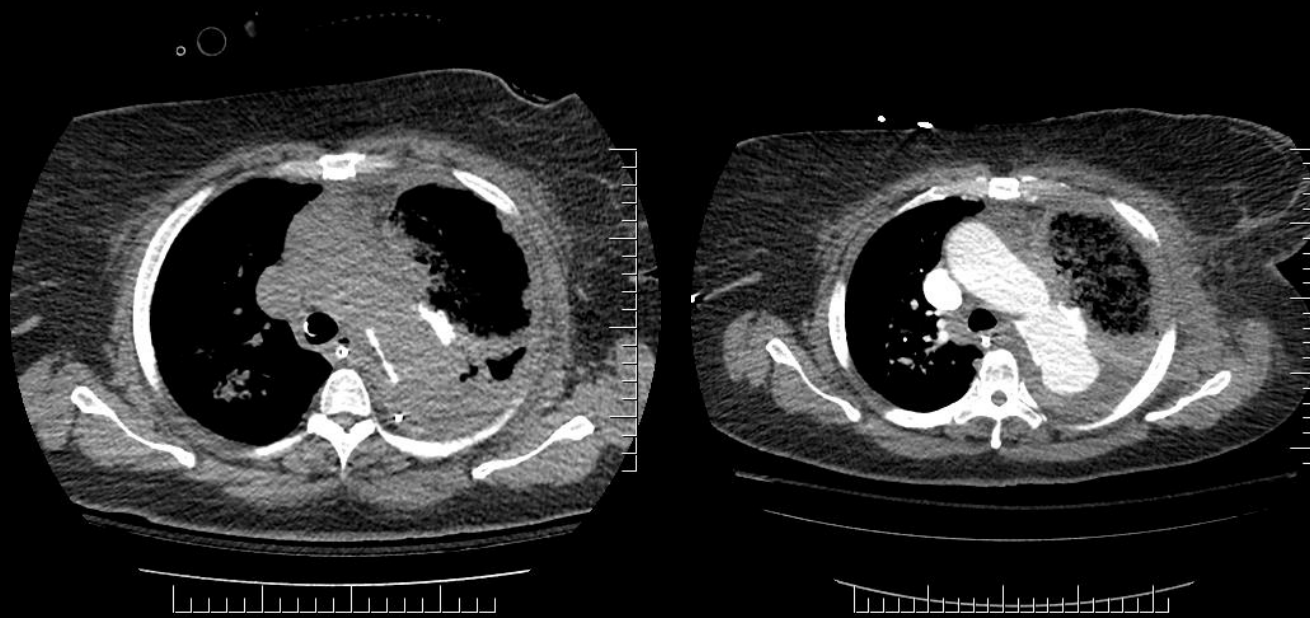
Case 1

- 59 year old female
- Admitted for open repair of thoracoabdominal aneurysm

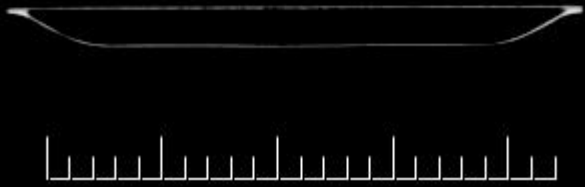
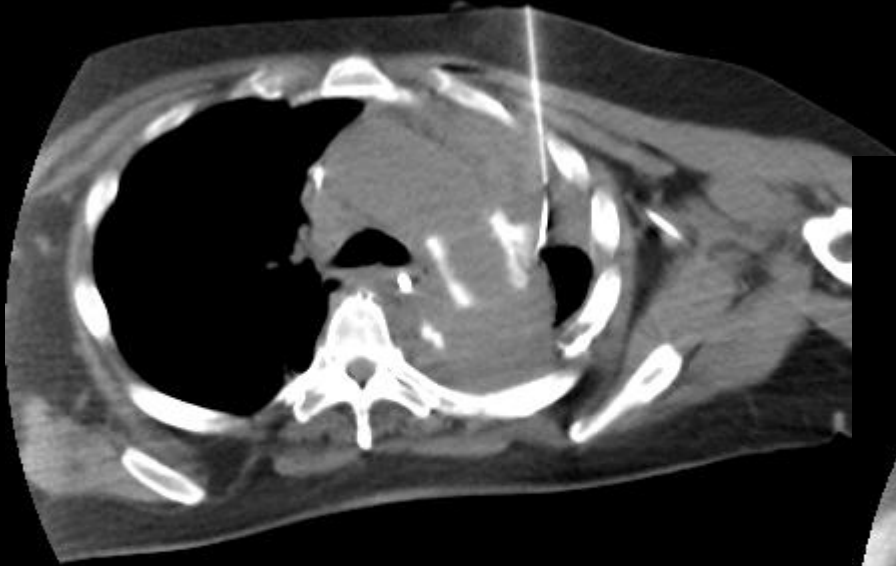


CASE HISTORY

- Complicated peri-operative course
- Necrosis of left upper lobe requiring left upper lobectomy
- Development of left upper lobe empyema requiring antibiotics treatment and insertion of drain by IR

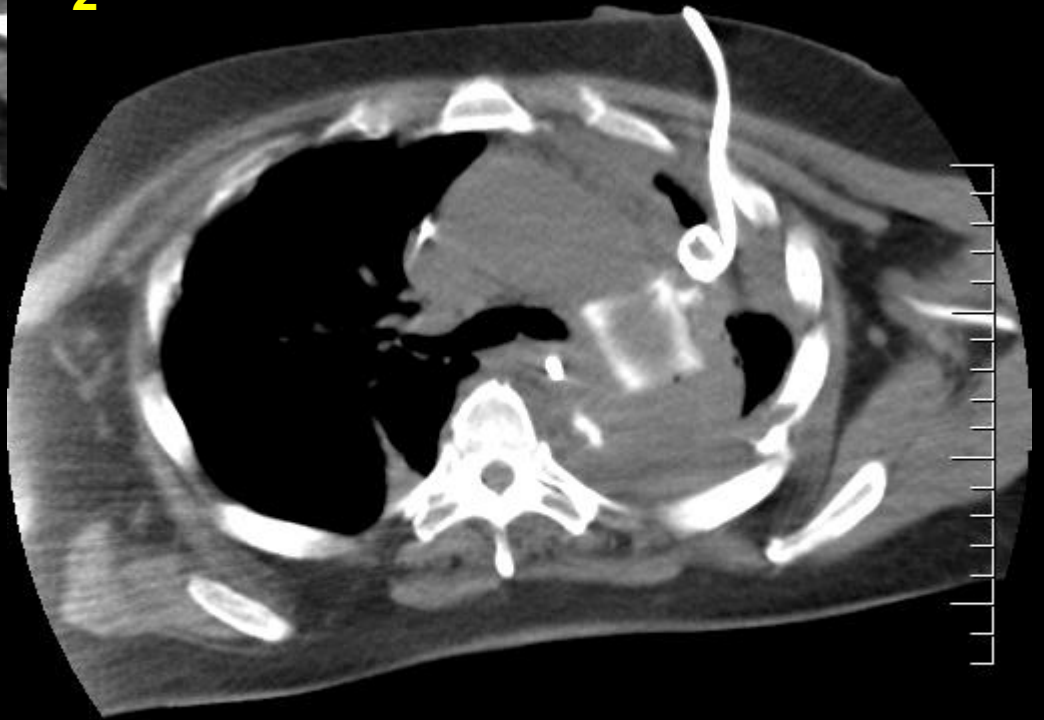


1



CT

2

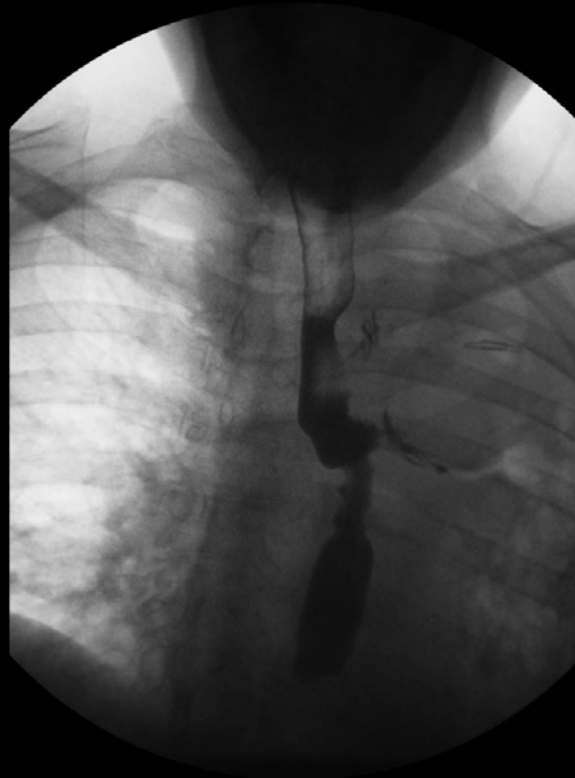


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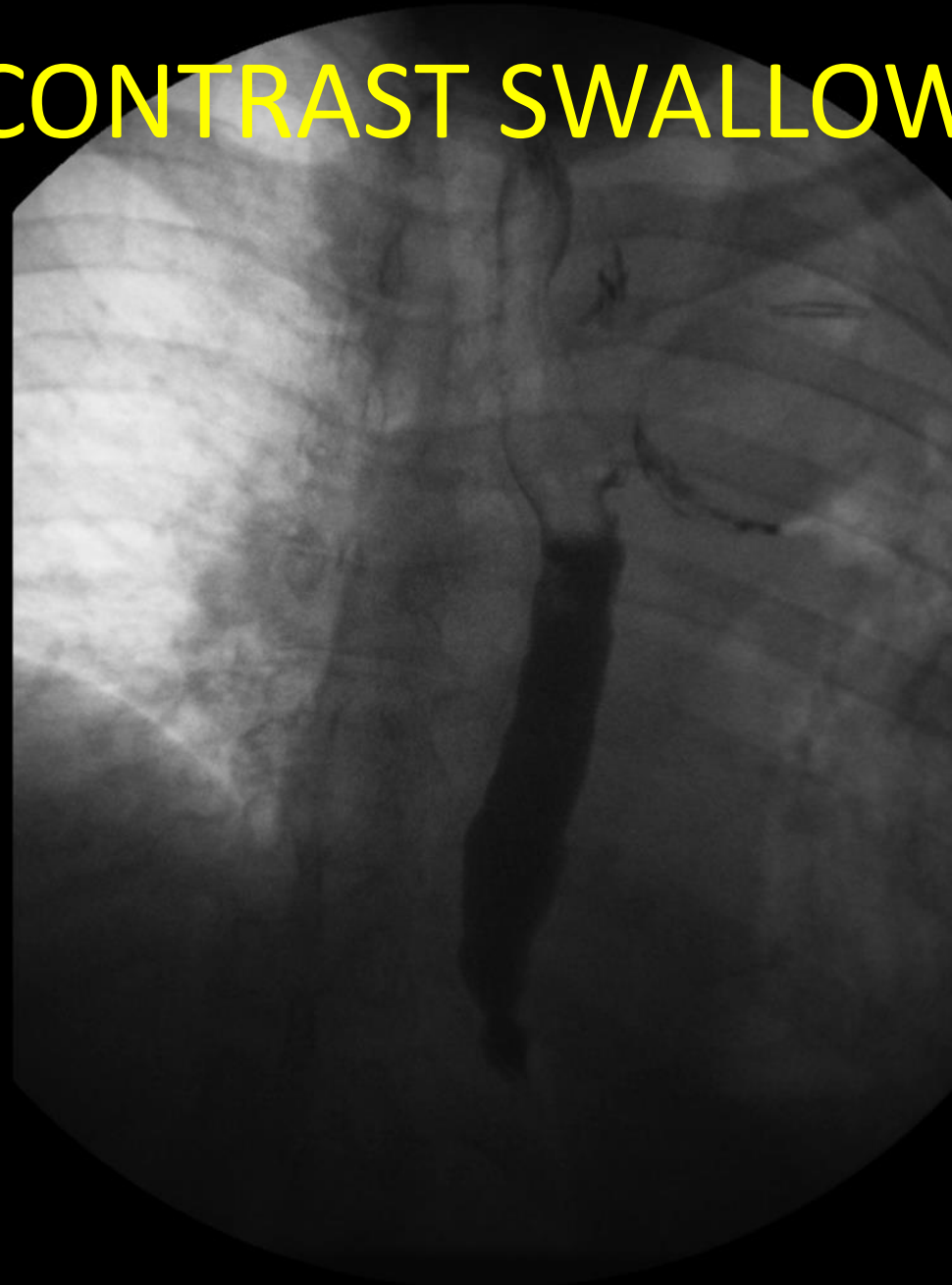


CASE HISTORY

- Discharged home after a few months
- Few weeks later, the patient noticed leakage through the incision when she was drinking



CONTRAST SWALLOW



CASE HISTORY

- A barium swallow confirmed the fistula
- She was admitted for an esophageal stent (Ultraflex stent)
- Then discharged home

Case 2

- 63 year old female with history of endometrial cancer treated with radiotherapy
- Presented to outside hospital with exsanguinating lower GI bleed
- CT abdomen/pelvis demonstrated a **large pelvic abscess with fistula to her external iliac artery** on the left and involvement of the sigmoid colon
- The patient was transfer to a tertiary care institution, Toronto General Hospital

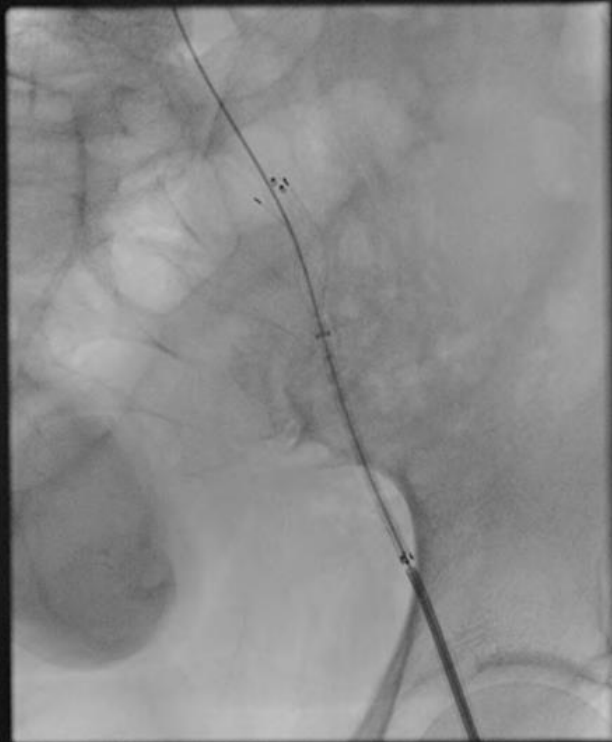


Fistula to
external
iliac artery

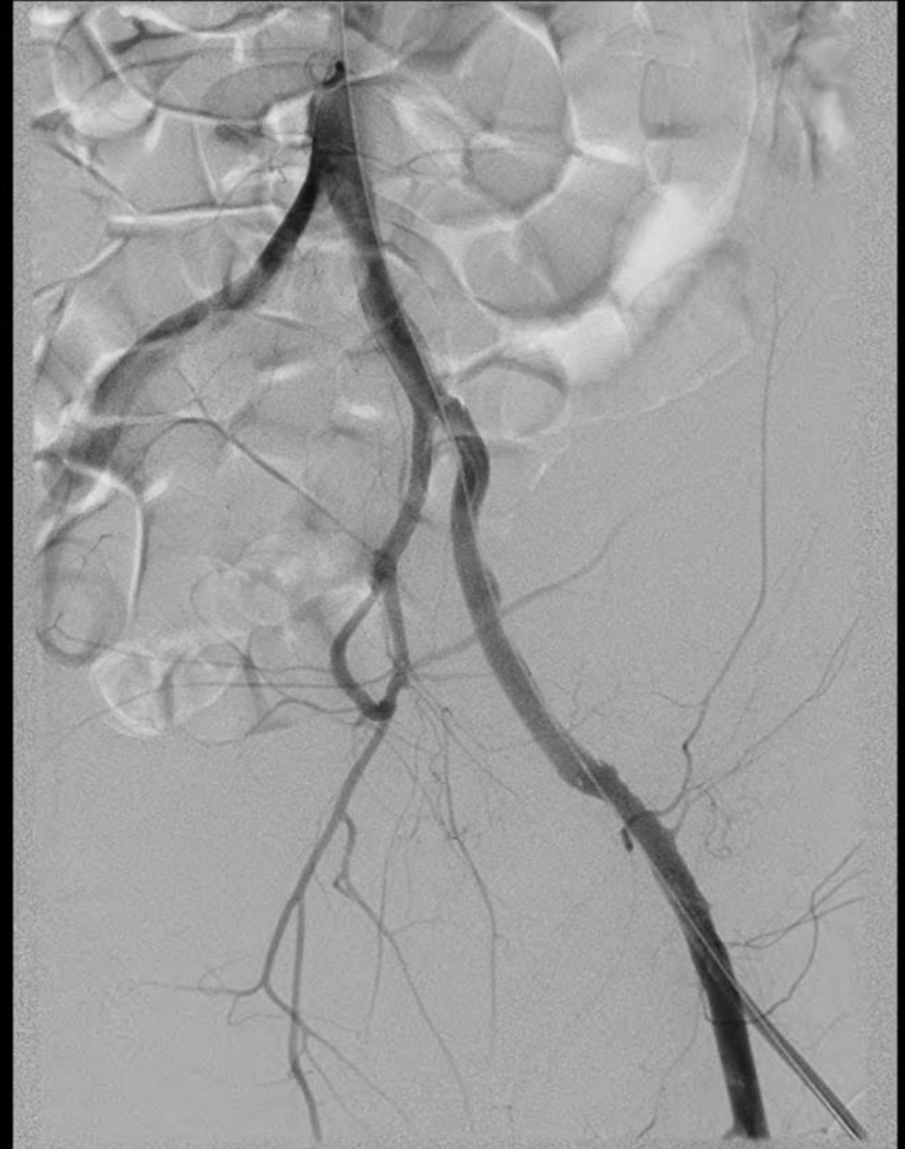
LT



LT
9/80 FLUENCY



LT
9/80 FLUENCY



A Fluency 9 x 80 mm left external iliac artery stent was inserted

CASE HISTORY

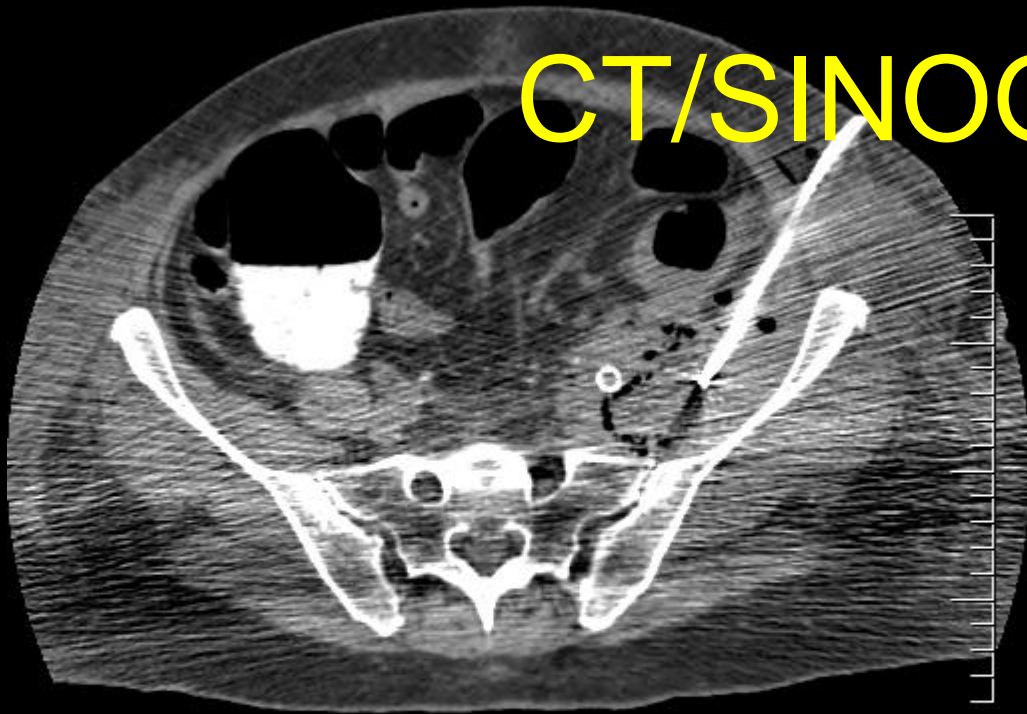
- At the time, there was discussion about deploying an Amplatzer device in the left common iliac artery and embolizing the left internal iliac artery + fem-fem bypass with ligation of the external iliac artery
- The risk of infection and unwillingness of the patient lead to decision to go for conservative chronic suppressive antibiotic therapy (lifelong)
- The patient underwent defunctioning colostomy to decrease pelvic sepsis
- Patient developed bilateral DVT – IVC filter insertion
- Drainage of pelvic collection by IR



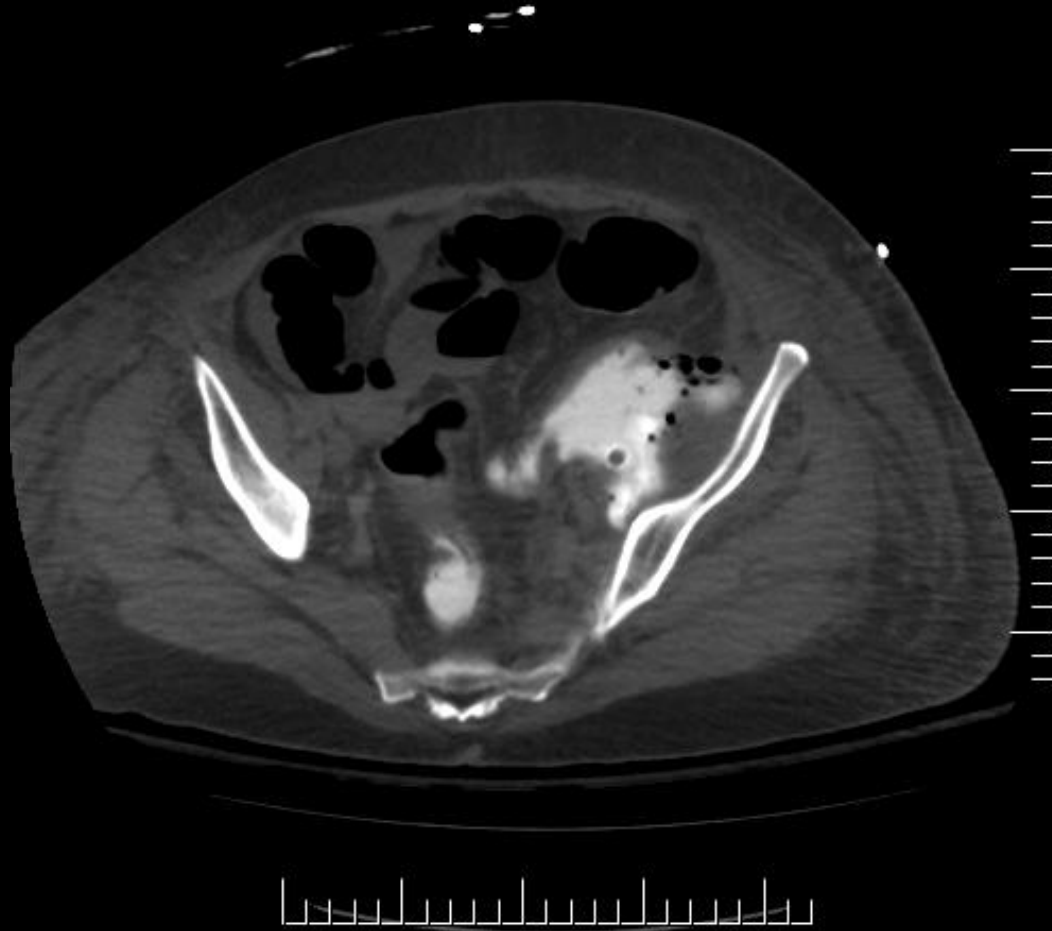
CT



CT/SINOGRAM



CT



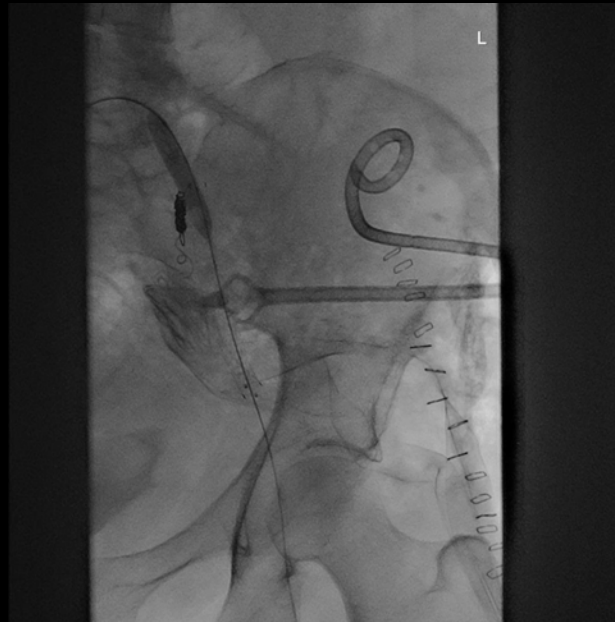
CASE HISTORY

- 2 months later, the patient presented with recurrent bleed
- An additional stent was deployed above the external iliac artery stent

PROCEDURAL DETAILS

Pelvic arteriography was performed. No extravasation. Clear narrowing through the stent graft. Because of the severe bleed, it was assumed that there was bleeding around the stent graft. It was elected to stent the entire common and left external iliac system.

The internal iliac artery was coil embolized on the left side with one 8 mm stainless steel coil and two 6 mm Nester coils. Angiography after embolization showed active extravasation from the superolateral aspect of the Fluency stent graft.

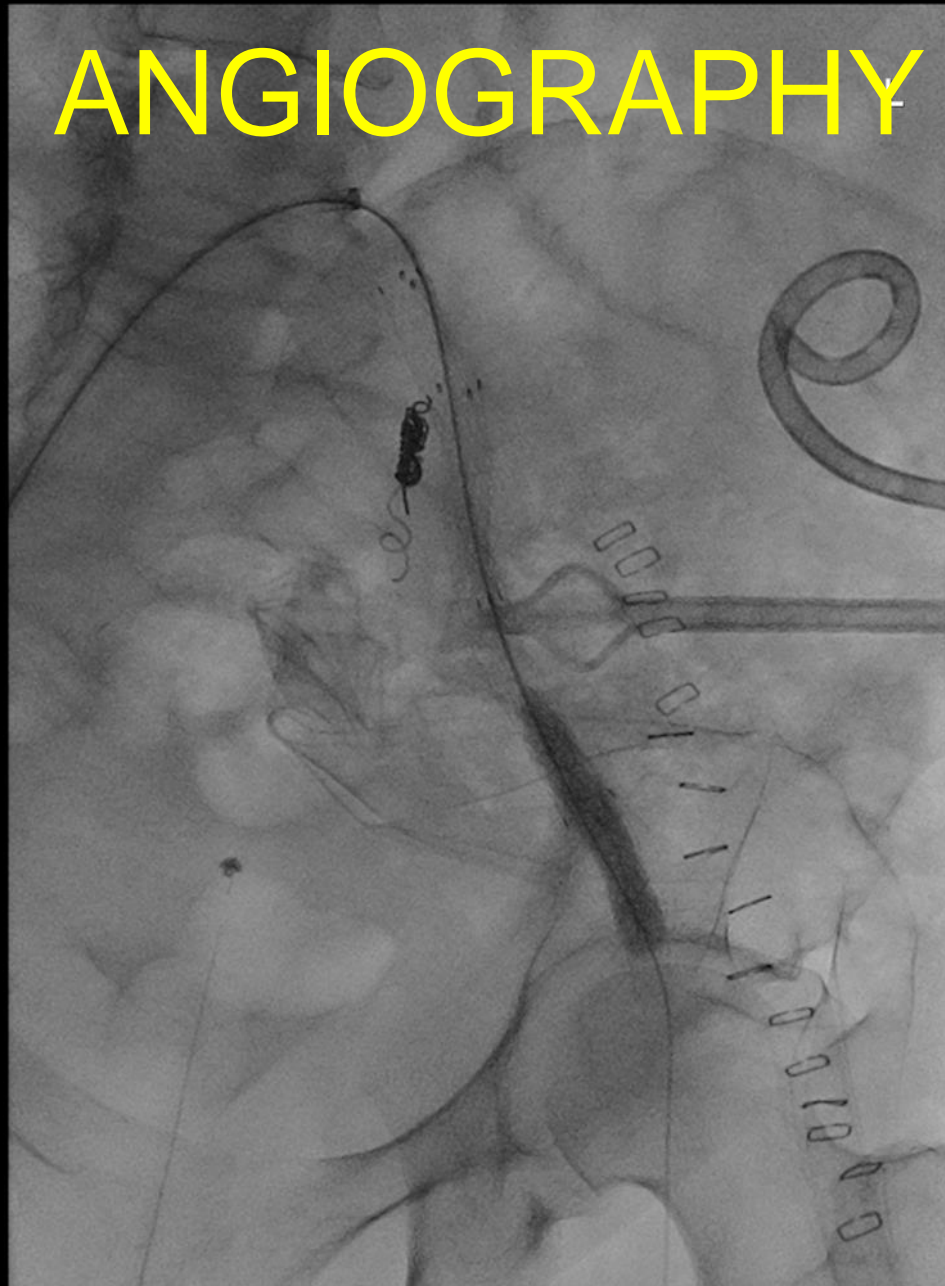


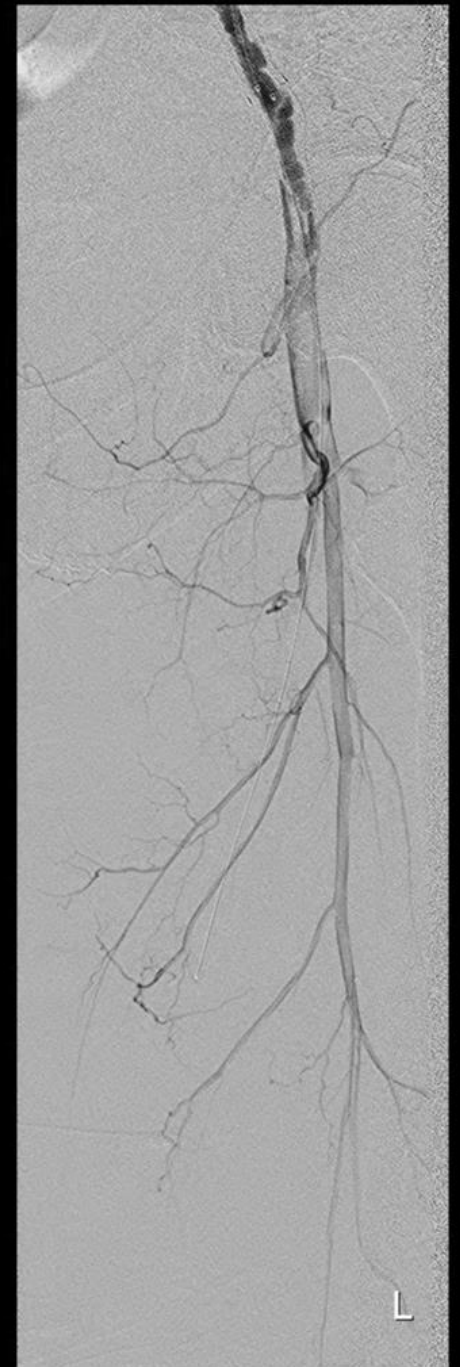
PROCEDURAL DETAILS

- The stent graft was then traversed into the common femoral artery. An 8 mm x 150 mm Viabahn stent graft then deployed from the distal external iliac artery to the top of the existing stent graft. A 10 x 60 mm Fluency stent graft was then inserted from the mid external iliac artery, proximally to the mid left common iliac artery. This was all post-dilated with a 10 x 40 mm angioplasty balloon.

Completion arteriography showed no further hemorrhage. However, there is now thrombosis of the left common femoral, profunda femoris and SFA.

ANGIOGRAPHY





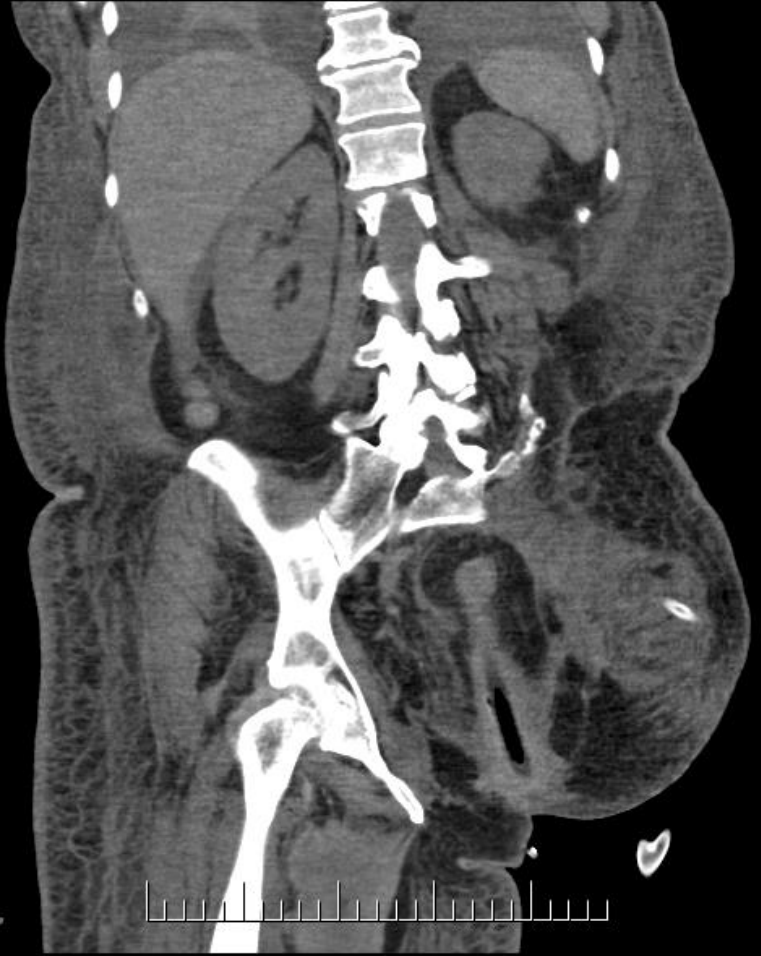
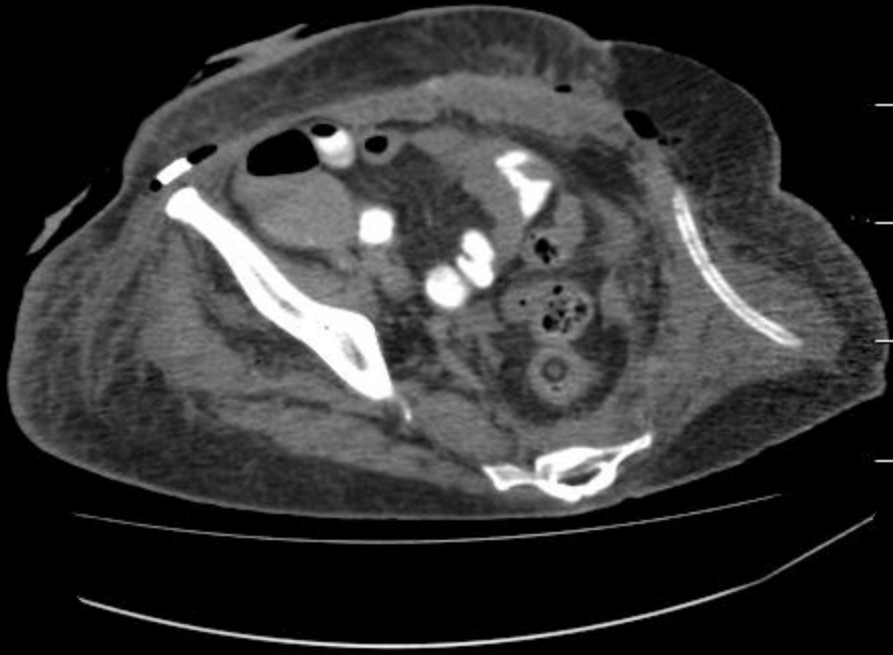
Completion arteriography showed no further hemorrhage. However, there is now thrombosis of the left common femoral, profunda femoris and SFA.

Patient was transferred to the OR for left femoral embolectomy, right to left femoral cross over graft with rifampin soaked graft and thrombus removed from left CFA to left popliteal.

CASE HISTORY

- Despite the successful surgery, the patient had subsequent complications with persistent infection of the graft.
- Eventual left hind quarter resection

CT



Stent graft infections



- 3 scenarios:
 - Open AAA repair (Case 1)
 - Endovascular AAA repair/stent insertion
 - Stent inserted in the context of previously existing infected site (Case 2)

Endovascular graft infections: more than a theoretical risk?

- Conventional open repair of AAA has a reported graft infection rate of **0.5% to 3%** and has been well reported in the last 30 years.
- Little data on infective complications involving endografts after endovascular aneurysm repair (EVAR).
- Most of the surveillance concentrates on the technical aspects of the procedure, including endoleaks, device migration, neck dilatation, and rupture.
- The largest series published (9739 endovascular procedures), reported a mean frequency of infection at **0.43%** (Ducasse series).
- In a case series from Ireland (509 cases), the incidence of stent graft-related sepsis was **6.2/1000** person-years.

Table III. Variables of patients with stent graft–related sepsis after endovascular aneurysm repair

Variable	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6
Age at graft infection	71	75	77	76	67	70
Gender	Male	Male	Male	Male	Male	Male
Pre-existing risks	Angina, NIDDM, smoking	Angina, CABG, COAD, smoking, hypertension	Ex-smoking, prostatism	NIDDM, hypertension, chronic renal impairment	MI, CVA, smoking, hypertension, COAD	CABG, Crohn disease
Immunodeficiency	Nil	Nil	Nil	Nil	Nil	Myelodysplasia
Urgency	Elective	Elective	Elective	Elective	Emergency	Elective
Device	Aortobiliac	Aortobiliac	Aortobiliac	Aortobiliac	Aortouniliac	Aortobiliac
Manufacturer	Zenith	Zenith	Zenith	Talent	Talent	Zenith
Procedure setting	OR	OR	OR	IR	IR	IR
Antibiotic prophylaxis	Cefuroxime, 1.5 g	Cefuroxime, 1.5 g	Cefuroxime, 1.5 g	Cefuroxime, 1.5 g	Cefuroxime, 1.5 g	Cefuroxime, 1.5 g
IV single dose	Teicoplanin, 400 mg	—	—	Teicoplanin, 400 mg	Teicoplanin, 400 mg	—
Anesthesia	General	General	General	General	Local	General
Adjuvant procedures	Coil embolization of left IIA	Nil	Thrombin injection, coil embolization	Nil	Nil	Nil
Presentation	Left psoas abscess	Left psoas abscess	Endograft infection	Endograft infection	AEF	AEF
Interval between EVAR sepsis diagnosis	6 months	12 months	61 months	12 months	10 months (PM)	5 months
Microbiology culture	<i>Propionibacterium avidum</i> (blood)	<i>Streptococcus</i> spp; coliforms (abscess)	<i>Staphylococcus epidermidis</i> (blood)	<i>Staphylococcus aureus</i> (blood)	Nil	Nil
Treatment	EAB, removal of infected graft	EAB, removal of infected graft	EAB, removal of infected graft	Conservative	Nil	Conservative
Outcome	Survived	Survived	Survived	Died, systemic sepsis (8 wks postdiagnosis)	Died, rupture	Died, possible rupture
Duration of follow-up from graft removal to date/death	3 months, alive	53 months, died of diverticular bleeding	35 months, alive	—	—	—

NIDDM, Noninsulin dependent diabetes; EAB, extra-anatomic bypass; CABG, coronary artery bypass grafting; COAD, chronic obstructive airway disease; IIA, internal iliac artery; MI, myocardial infarction; CVA, cerebrovascular accident; OR, operating room; IR, interventional radiology.

Causes

- Multiple causes
- Contamination during EVAR procedure = source of early infection.
- Secondary infection from a remote source is another pathophysiological mechanism of graft contamination:
- For instance, Van den Berg et al reported a stent-graft infection following septic complication of a kidney stone 1 year after EVAR procedure.

Diagnosis

- Diagnosis of endograft infection is based on clinical and radiological findings - leukocytosis, fever, and back pain are typical clinical signs.
- CT scan may show a fluid collection around the rim of the aneurysmal sac. Air bubbles can be seen within the aneurysmal sac.
- Puncture of the collection or sac for microbiological analysis gives the definitive diagnosis.
- After intravenous administration of antibiotics, treatment is always resection of the endograft and aneurysmal sac, followed by extra-anatomic bypass or in situ venous bypass.