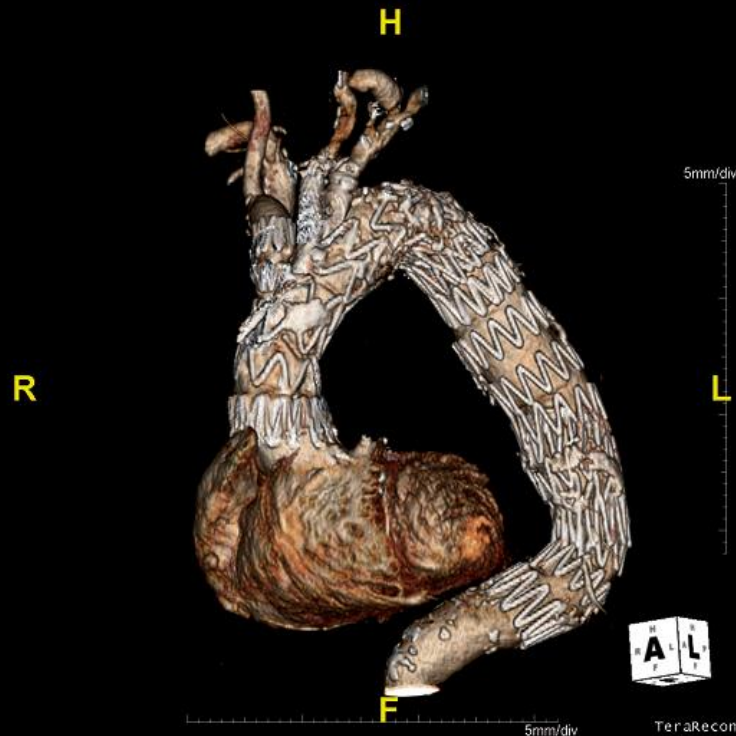


16TH INTERNATIONAL EXPERTS SYMPOSIUM
CRITICAL ISSUES
in aortic endografting 2012



May 24 & 25
LILLE, FRANCE

2012

**Endovascular
treatment of
mycotic thoracic
aneurysms :
Bridge or
definitive
option?**

Peter R Taylor

Guy's and St Thomas' NHS
Foundation Trust
King's College London, King's
Health Partners

Faculty Disclosure



Peter Taylor

*I have **no financial relationships** to disclose.*



Clinical Features

- Rapidly growing aneurysm
- Painful - tender on palpation
- Often ruptured
- Fever
- Raised white blood cell count
- Positive blood cultures



Incidence

0.65 - 1.3% of all aortic aneurysms are infected

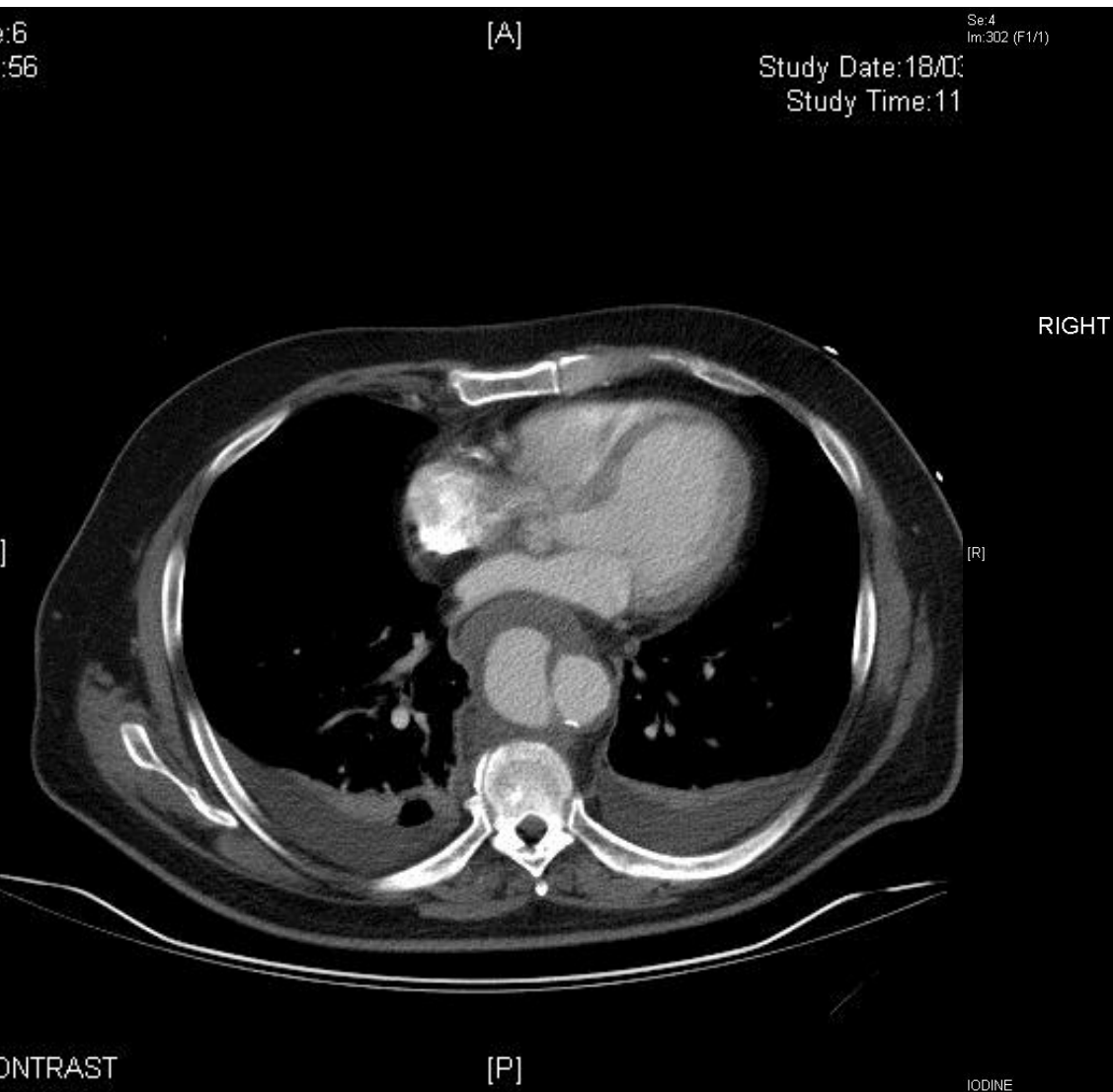
Muller BT et al J Vasc Surg 2001; 33: 106-113.

Organisms:

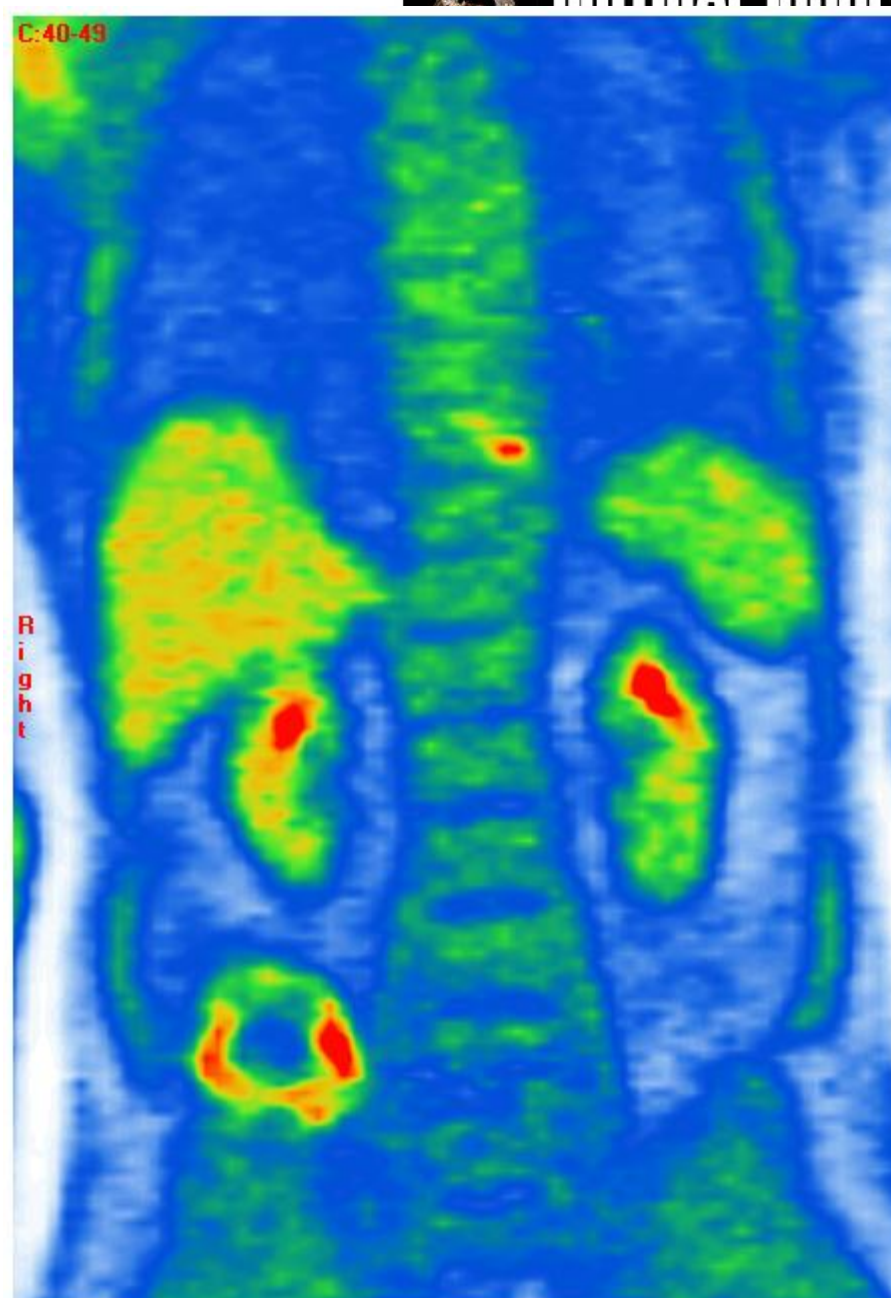
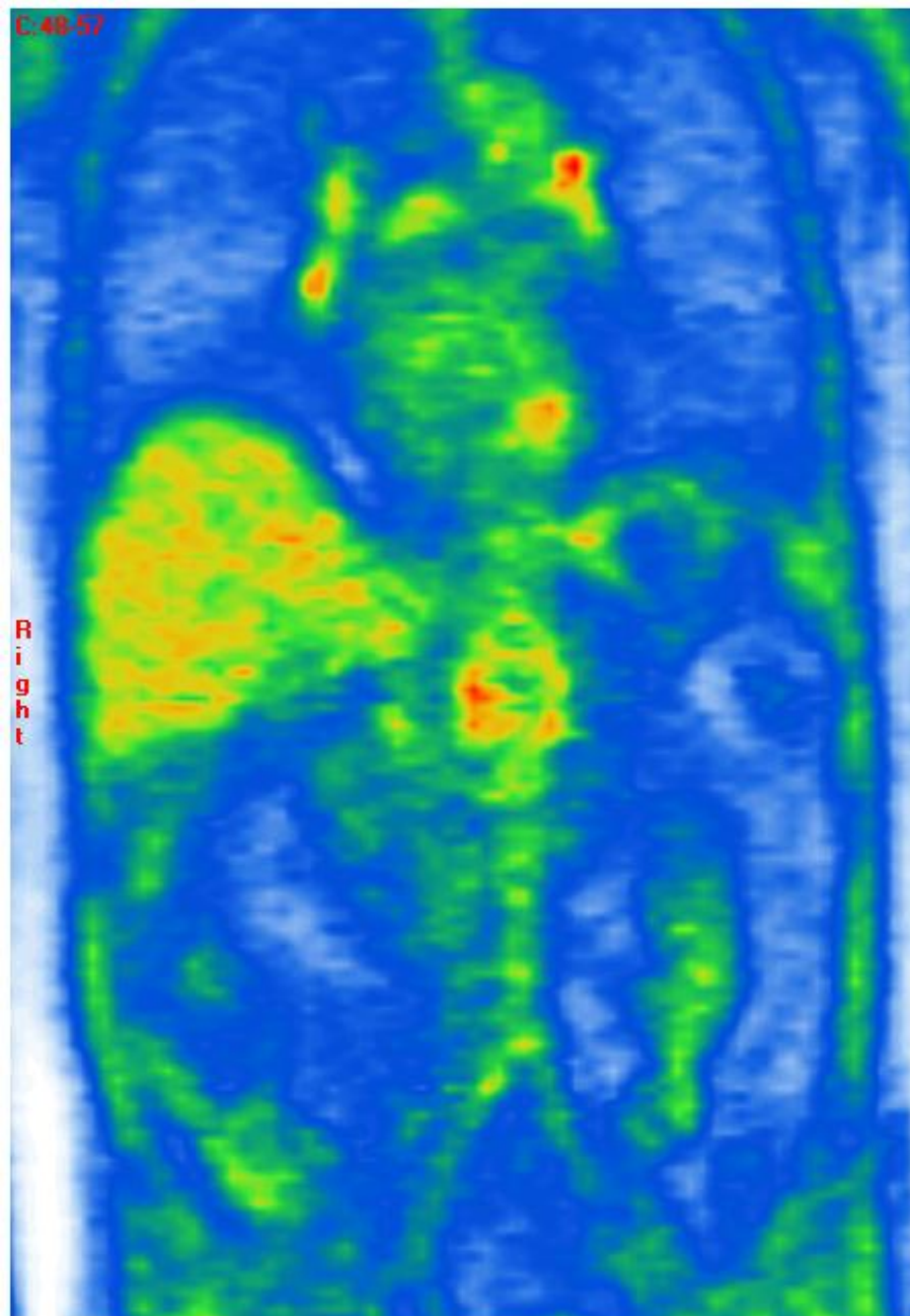
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|--------------------|-----|
| – Culture negative | 25% |
| – Staph Aureus | 30% |
| – Salmonella | 15% |
| – Streptococcus | 10% |

Others:

- | | | |
|----------------|---------------|---------------|
| • E. coli | Serratia | Neisseria |
| • Proteus | Mycobacterium | Clostridium |
| • Enterococcus | Enterobacter | Bacteriodes |
| • Candida | Klebsiella | Acinetobacter |







Traditional Surgery

- Extensive debridement:
extra-anatomic or in-situ reconstruction
- Mortality 25 - 90%
- Replacement of in-situ grafts 20%

Reddy DJ et al Arch Surg 1991; 126:873-878

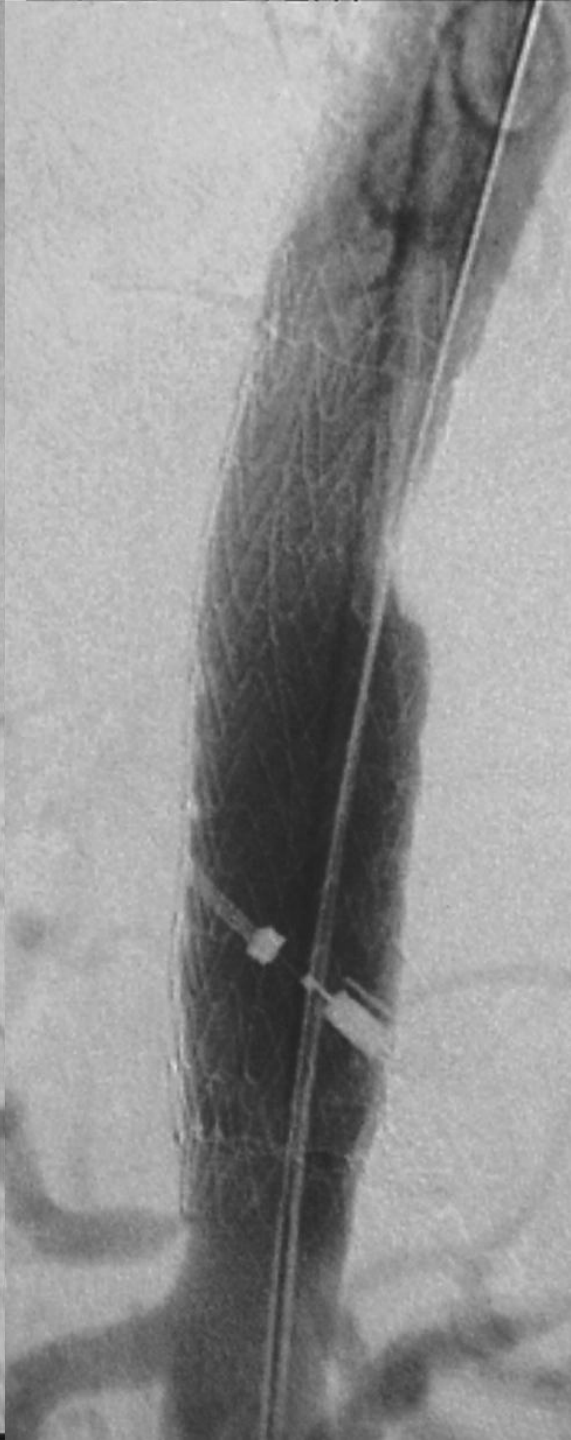
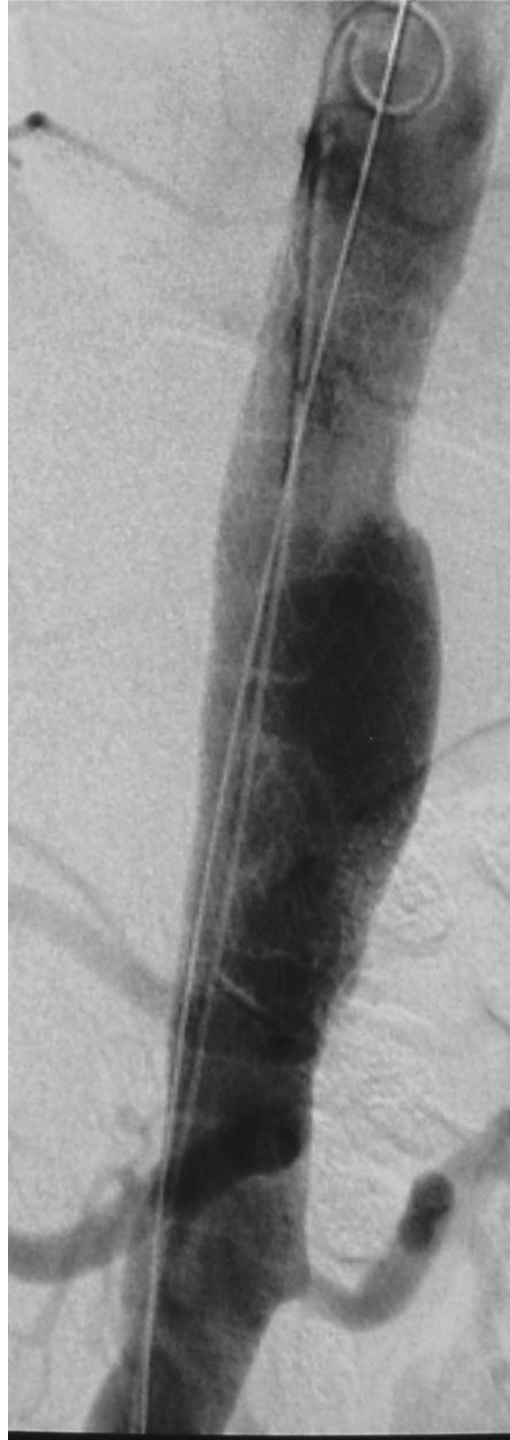
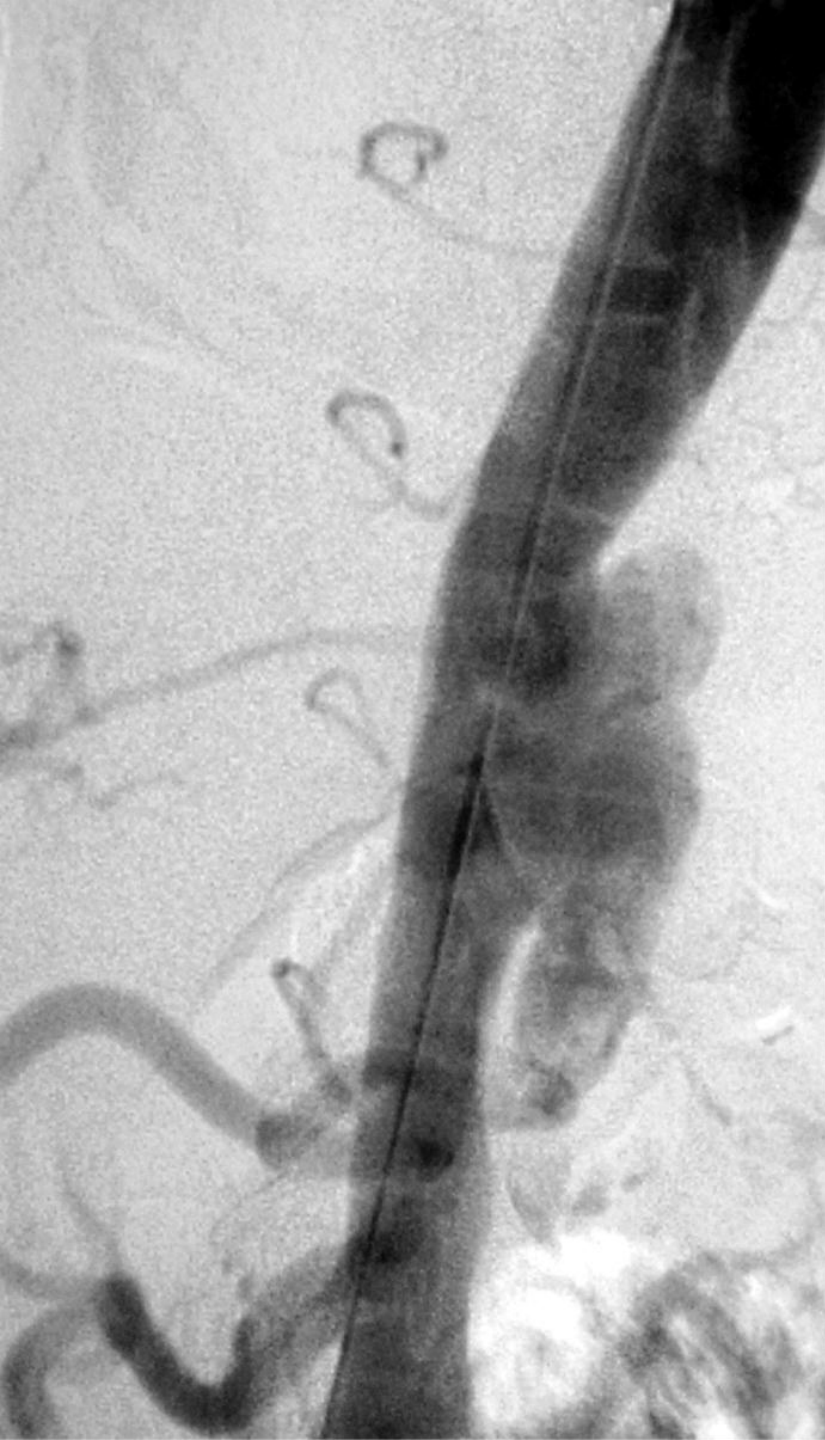
Muller BT et al. J Vasc Surg 2001; 33:106-113

Kyriakides C et al. Eur J Vasc Endovasc Surg 2004; 27:585-589

Kuestner LM et al J Vasc Surg 1995; 21:184-195

Yeager RA et al Am J Surg 1985; 150:36-43





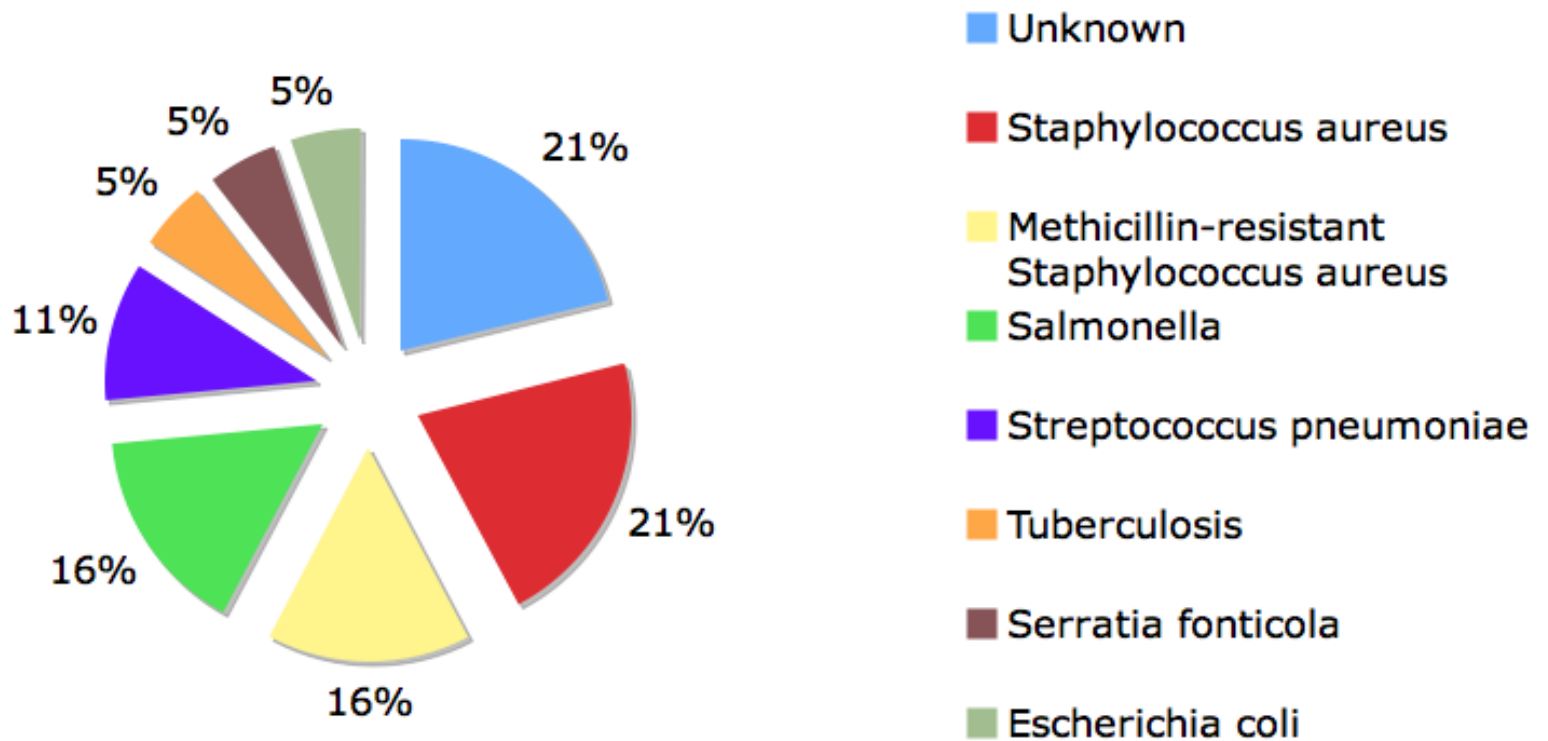
Guy's and St Thomas'

- Diagnostic criteria: two or more
 1. Clinical evidence of infection
 2. Positive blood cultures
 3. Characteristic saccular aneurysm on CT
- Mycotic aneurysms 19/673 (2.8%)
- Age 70 yrs (39-79)
- Rupture 6/19 (32%)

Clough RE Eur J Vasc Endovasc Surg. 2009;37(4):407-12



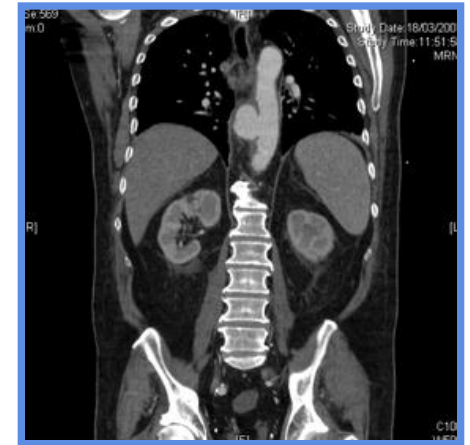
Blood Culture



Pathology

23 aneurysms in 19 patients

| | |
|----|-----------|
| 16 | Thoracic |
| 7 | Abdominal |



6 Aortic fistulae in 19 patients

| | |
|---|-------------------|
| 3 | Aorto-oesophageal |
| 2 | Aorto-bronchial |
| 1 | Aorto-cutaneous |



Mortality

EARLY (< 30-days)

1. Rupture
2. New fistula

LATE (> 30-days)

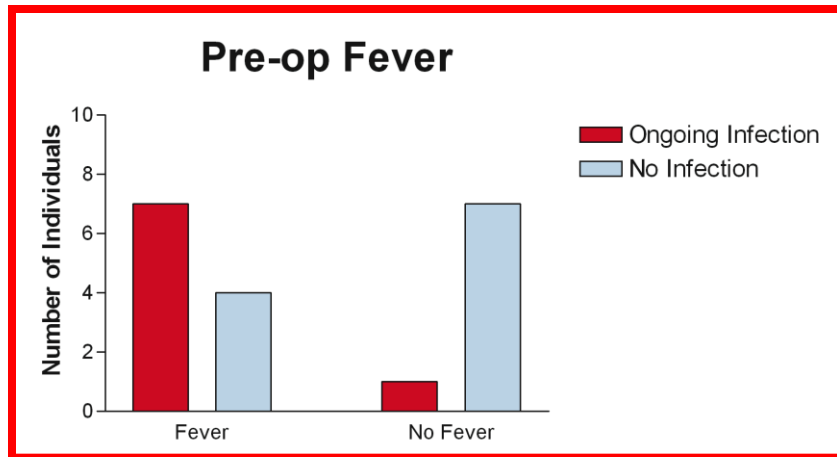
3. New fistula
4. Recurrent fistula
5. Recurrent fistula
6. Sepsis
7. Recurrent fistula
8. Recurrent fistula

→ 8 deaths in the series, **all** aneurysm-related

| | | |
|----------|------|-------|
| Aneurysm | 4/13 | (31%) |
| Fistulae | 4/6 | (66%) |

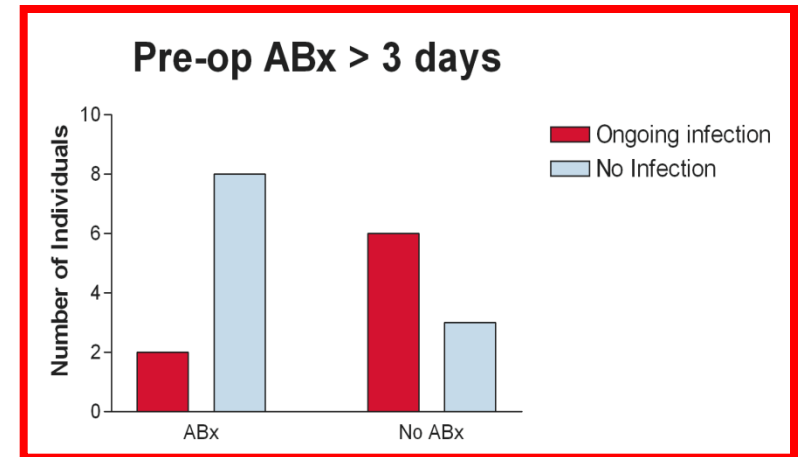


Predictors of Persistent Infection



$P = 0.0258$

OR = 12.25 (1.079 - 139.1)



$P = 0.0397$

OR = 0.1250 (0.0156 - 0.999)

Endovascular Repair

- 22 reports of 48 patients
- 29 men and 19 women
- Median age 64 (range 30 - 90)
- 18 presented with rupture
- 27% no organism found
- 46% received antibiotics for > one week preoperatively

Kan CD et al J Vasc Surg 2007; 46:906-912



Analysis Of Endovascular Repair

- 30 day mortality 5 (10.4%)
- Late mortality 5 (10.4%)
 - 10 deaths, 8 aneurysm-related
- Infected patients: prolonged fever, on-going sepsis, rupture and bleeding
- One year survival
 - Non-infected 94%
 - Infected 39%

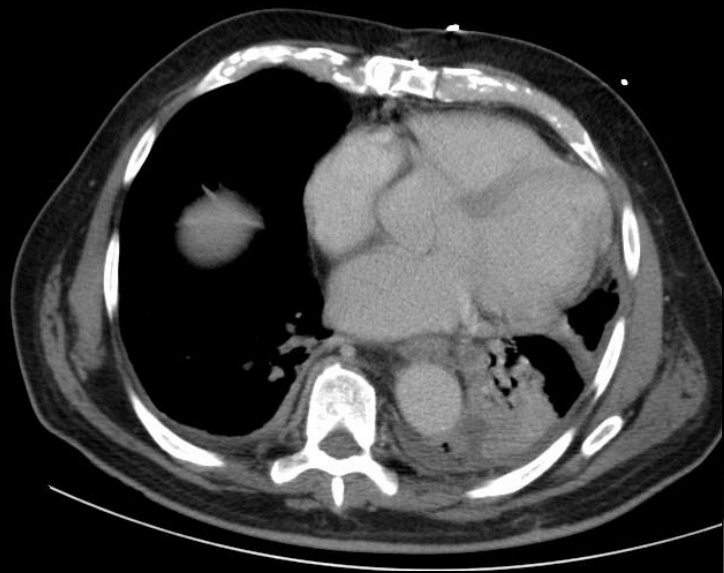
Treatment of infection

- Antibiotics
 - Intravenous then oral
- Duration:
 - Microbiologist: until WBC, ESR, CRP normal
 - Vascular Surgeon: Until you die
 - Patient: “until I can’t be bothered!”

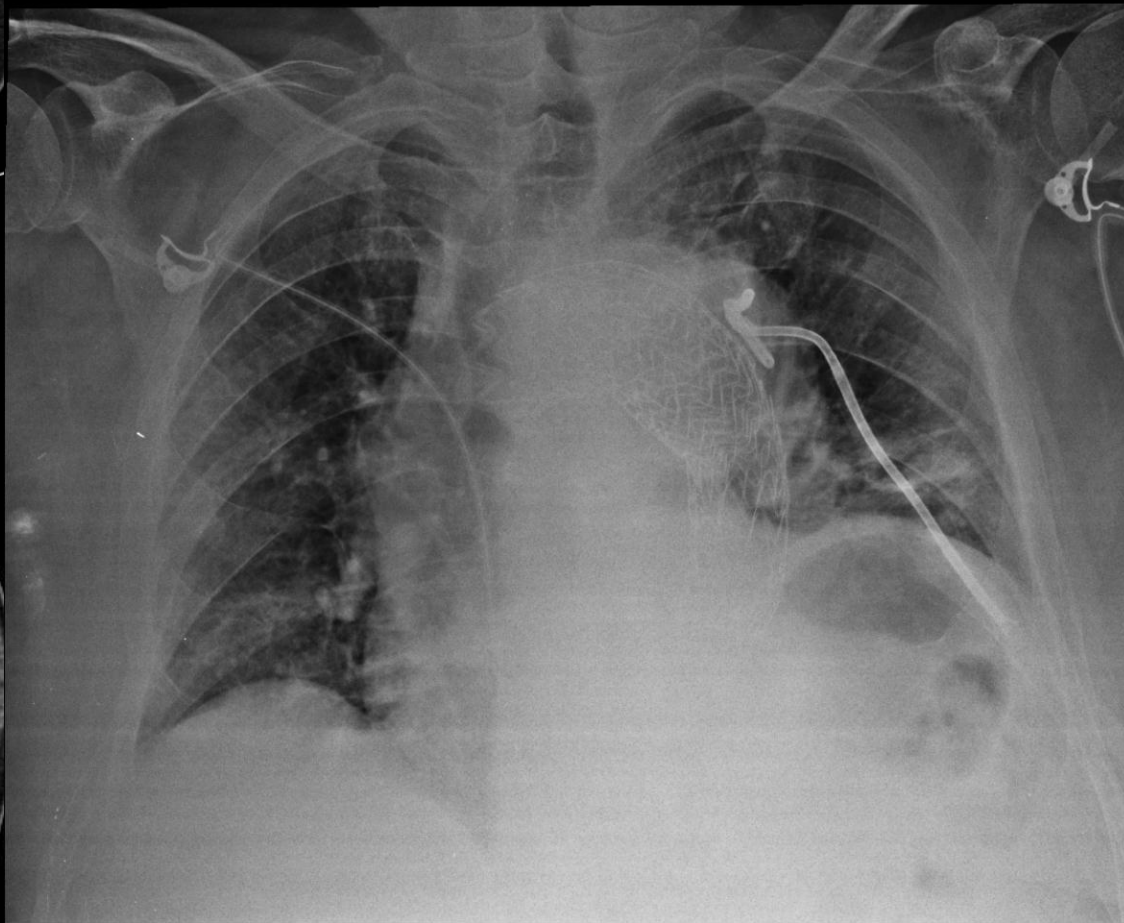


Treatment of endograft infection

- Drainage and irrigation
 - Saline, antibiotics, iodine/chlorhexidine
- Extensive debridement reconstruction
- Further endograft if haemorrhage
 - Doomed to failure
 - May give useful prolongation of life

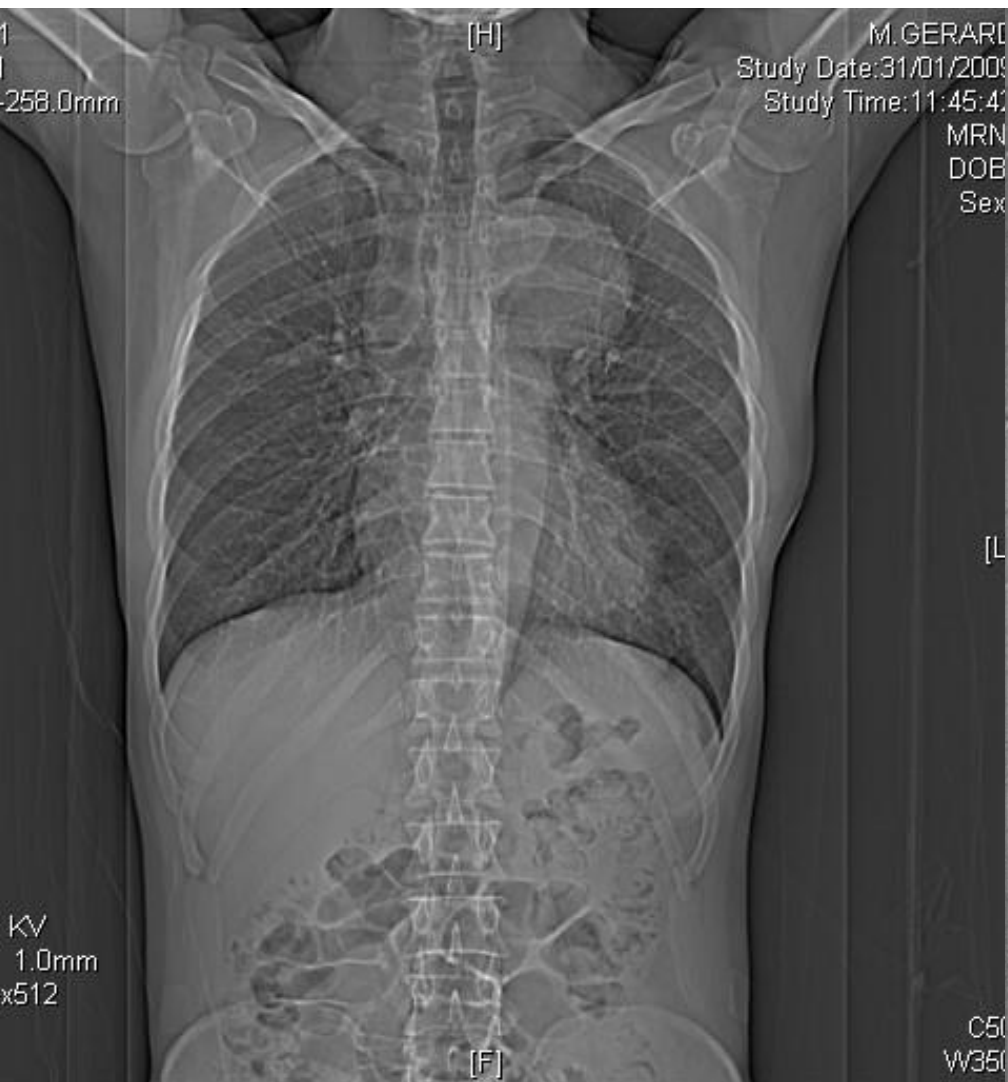


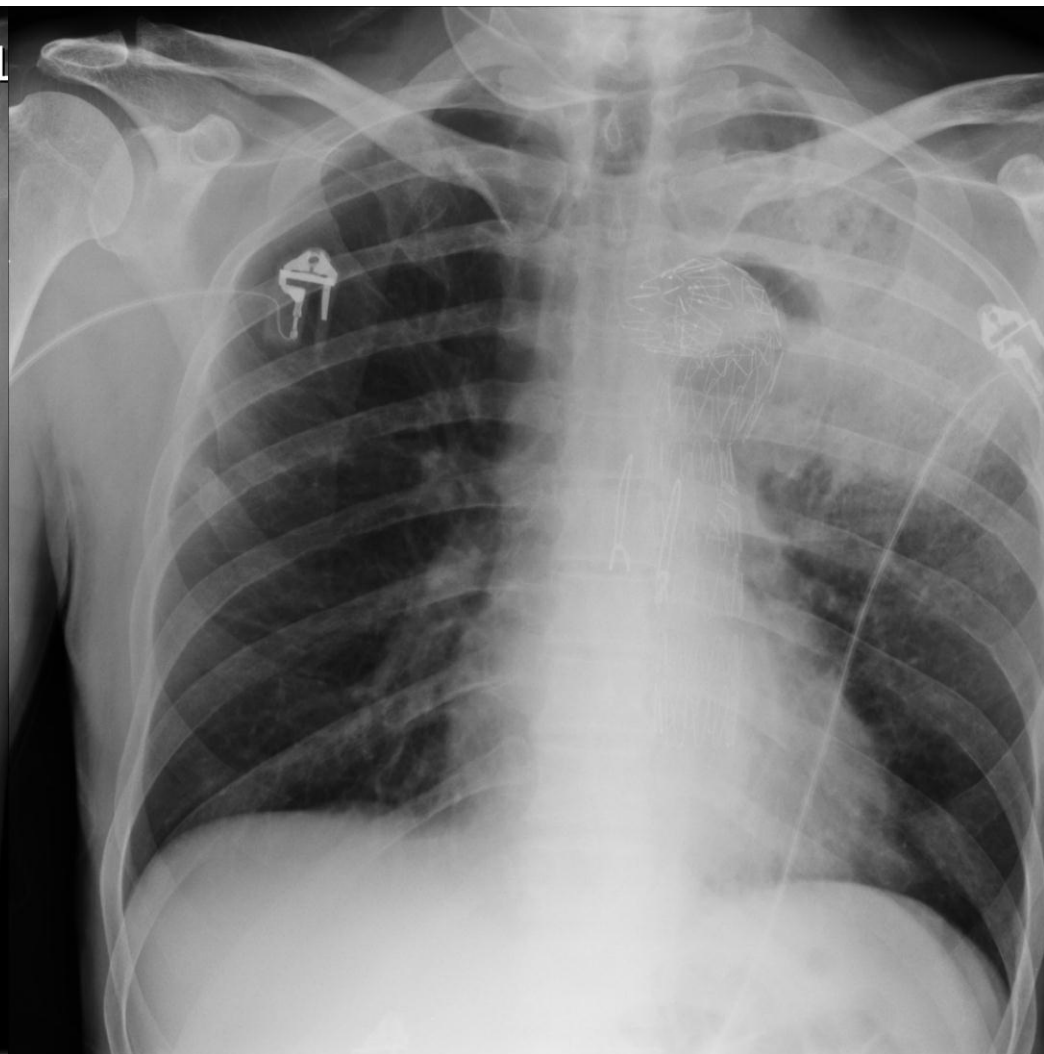
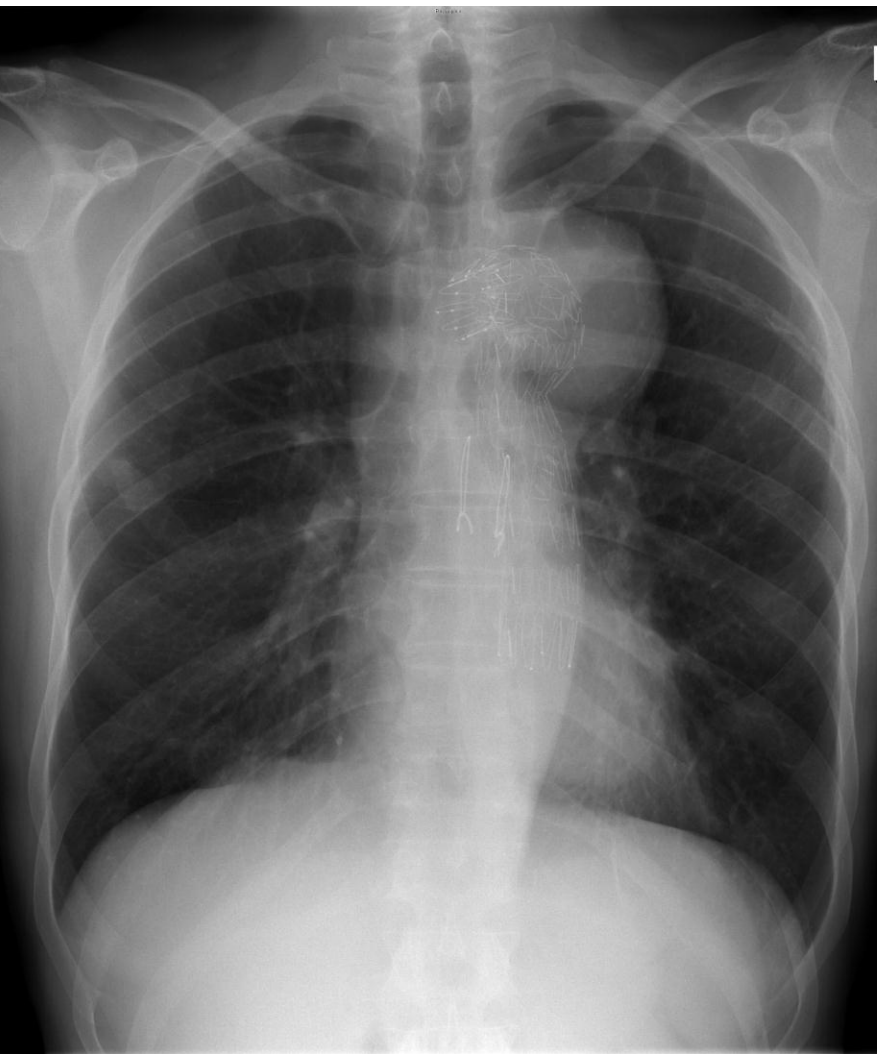
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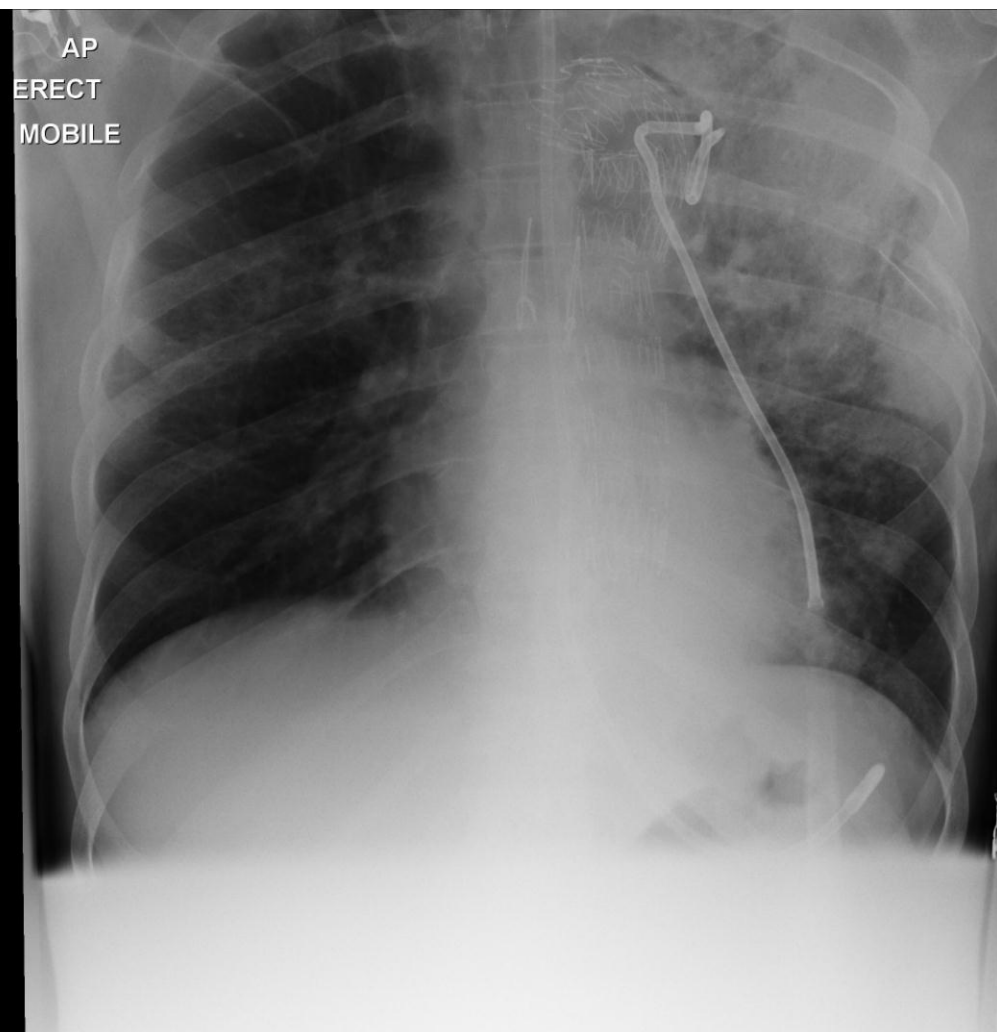
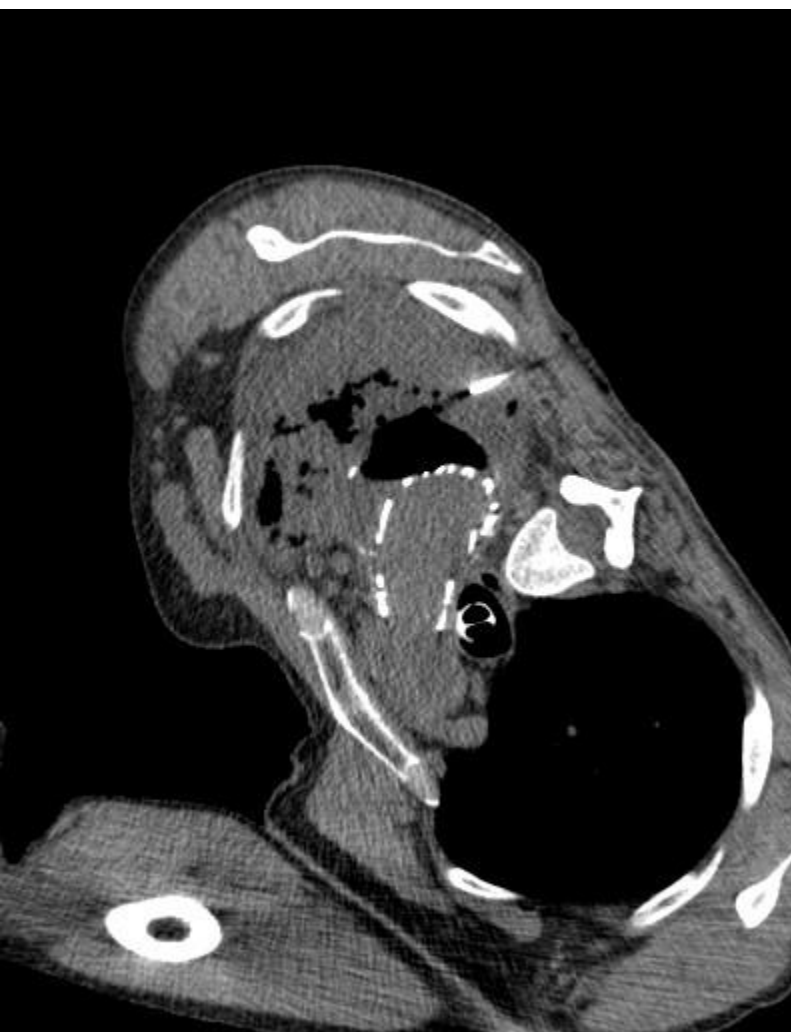


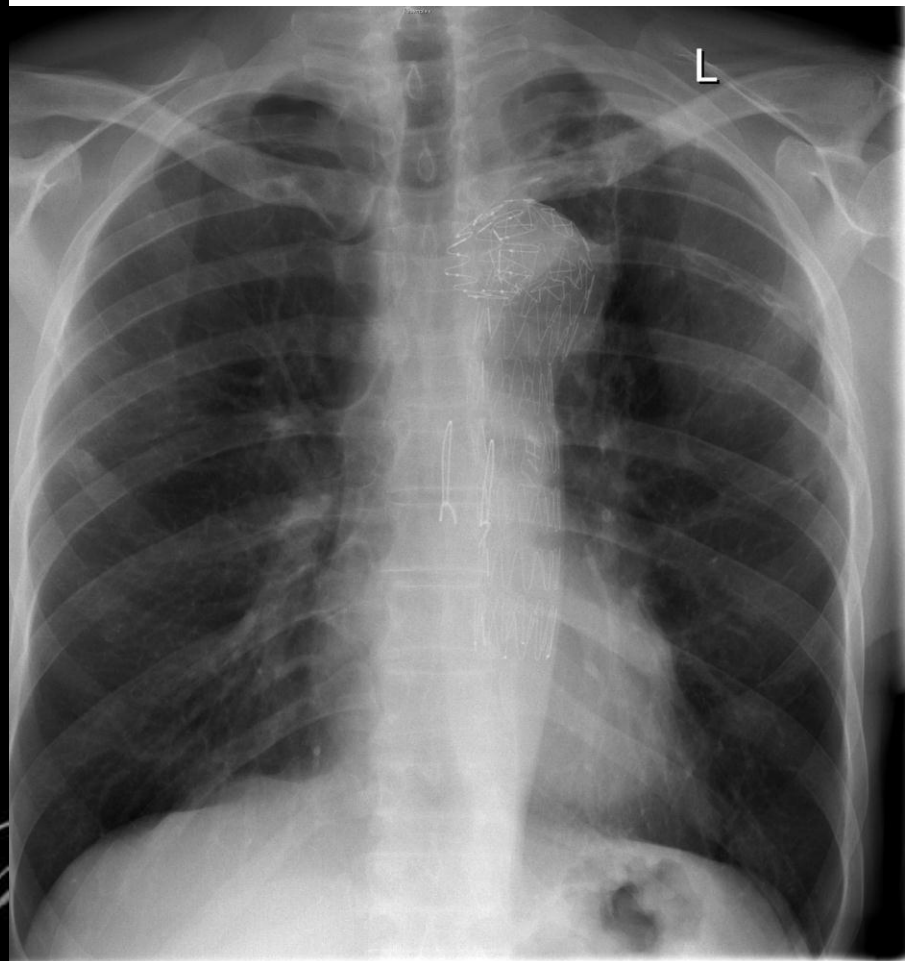
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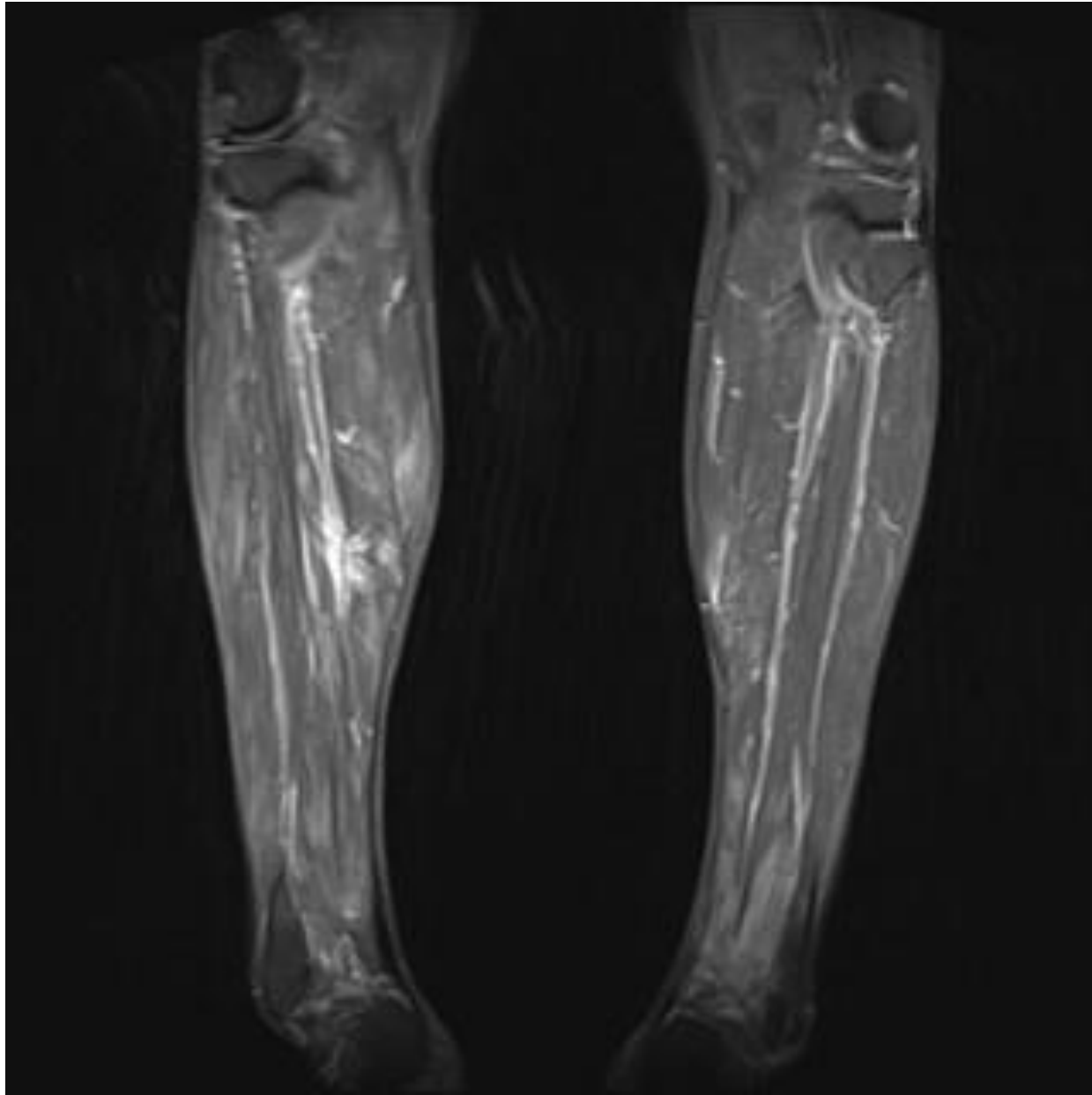












Predictors Of Failure

- Ruptured aneurysm
- Presence of a fistula
- Fever at the time of device deployment
- Unknown organism



Predictors Of Success

- Antibiotics for 3 days prior to procedure
- Additional procedures after stent graft insertion such as:
 - Drainage with irrigation
 - Debridement with graft removal and revascularisation



Open Repair

- 36 patients with open repair

Mortality 36%

Ann Vasc Surg. 2011 Nov;25(8):1020-5

- 23 patients open repair:

Mortality 5%

Rifampicin bonded grafts and omental pedicle grafts

Ann Thorac Surg. 2012 Feb;93(2):438-42.



Bridge or definitive repair?

- Definitive:
 - If the aneurysm is sterile and the patient afebrile
 - Causative organism known
 - Appropriate antibiotics for at least 3 days preop
- Bridge:
 - If the aneurysm is infected and the patient has a fever at the time of implantation
 - Ruptured
 - Fistula
 - No organism identified: inappropriate antibiotics

Bridge

- Removal
 - In situ replacement with homograft or antibiotic or silver impregnated graft
 - Omental or intercostal muscle wrap
 - Or extra-anatomic bypass: ascending aorta to infrarenal aorta
- Fitness for surgery
- Timing

