Lessons Learnt From Early Experiences on TEVAR for Ascending Aortic Pathologies

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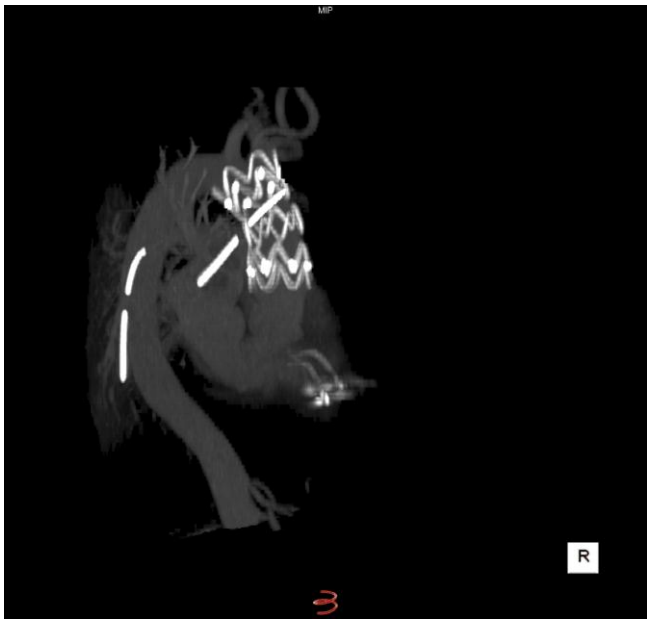


3rd International Meeting on Aortic Diseases
New insights into an old problem
October 4-6 2012 • Liege • Belgium

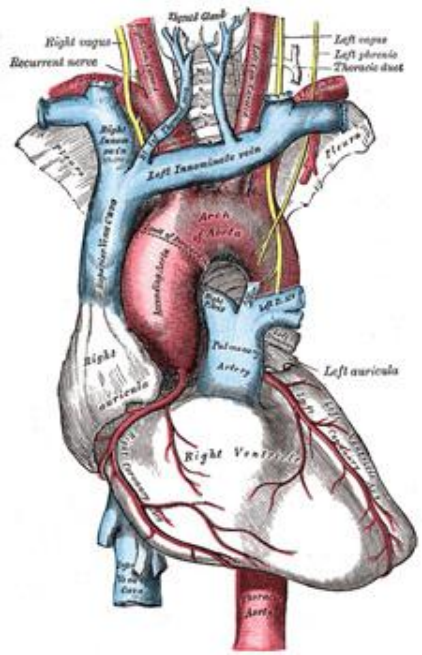
St George's VASCULAR INSTITUTE

Endovascular Revolution

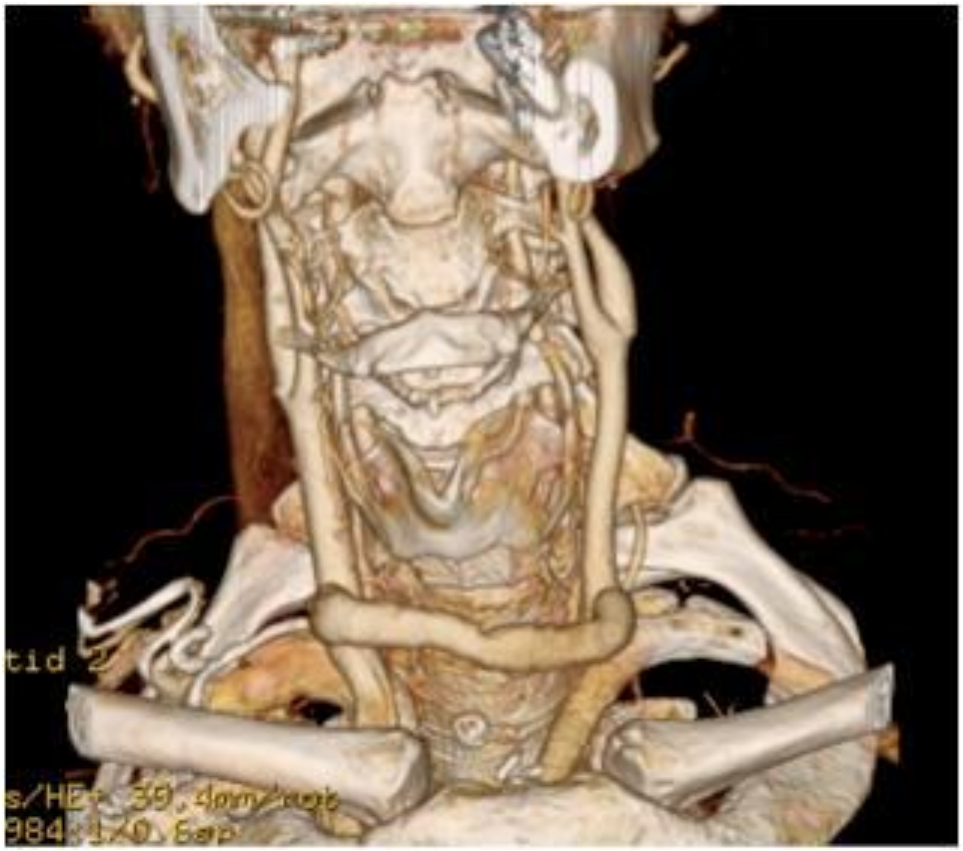
- Now >80% of aortic surgery endovascular
- Proven better results than open surgery
  - Abdominal
  - Thoraco-abdominal
  - Thoracic
- Questions remain
  - Long term durability
  - Cost-effectiveness
  - Ascending aorta/arch

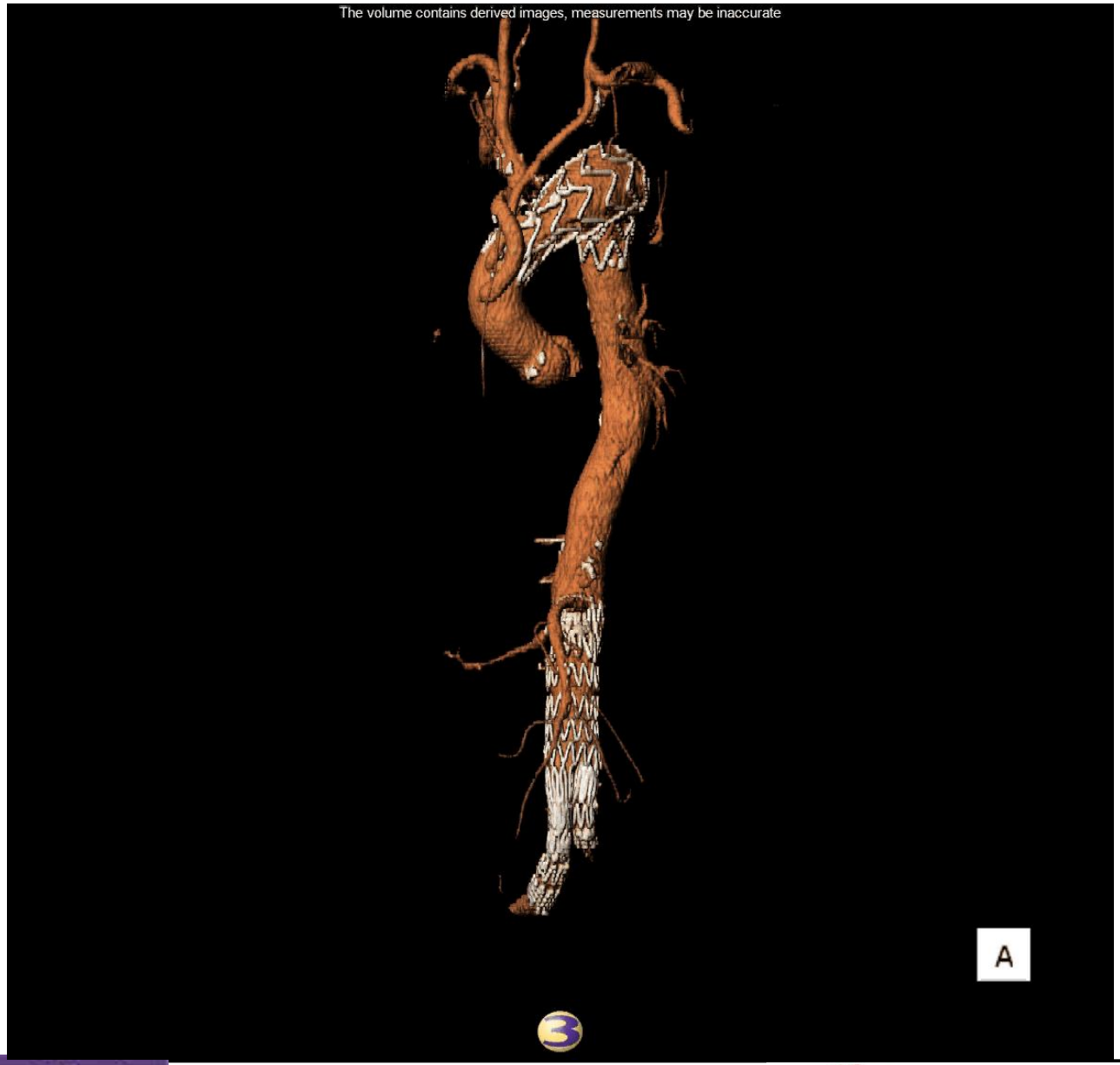
Ascending Aorta/Arch Challenges

- Branches: coronary and arch vessels
- Minimal landing zones
- Risk of trauma to aortic valve/heart
- Angles of the arch: conformability
- Haemodynamic forces:
  - Deployment accuracy/durability
- Access problems

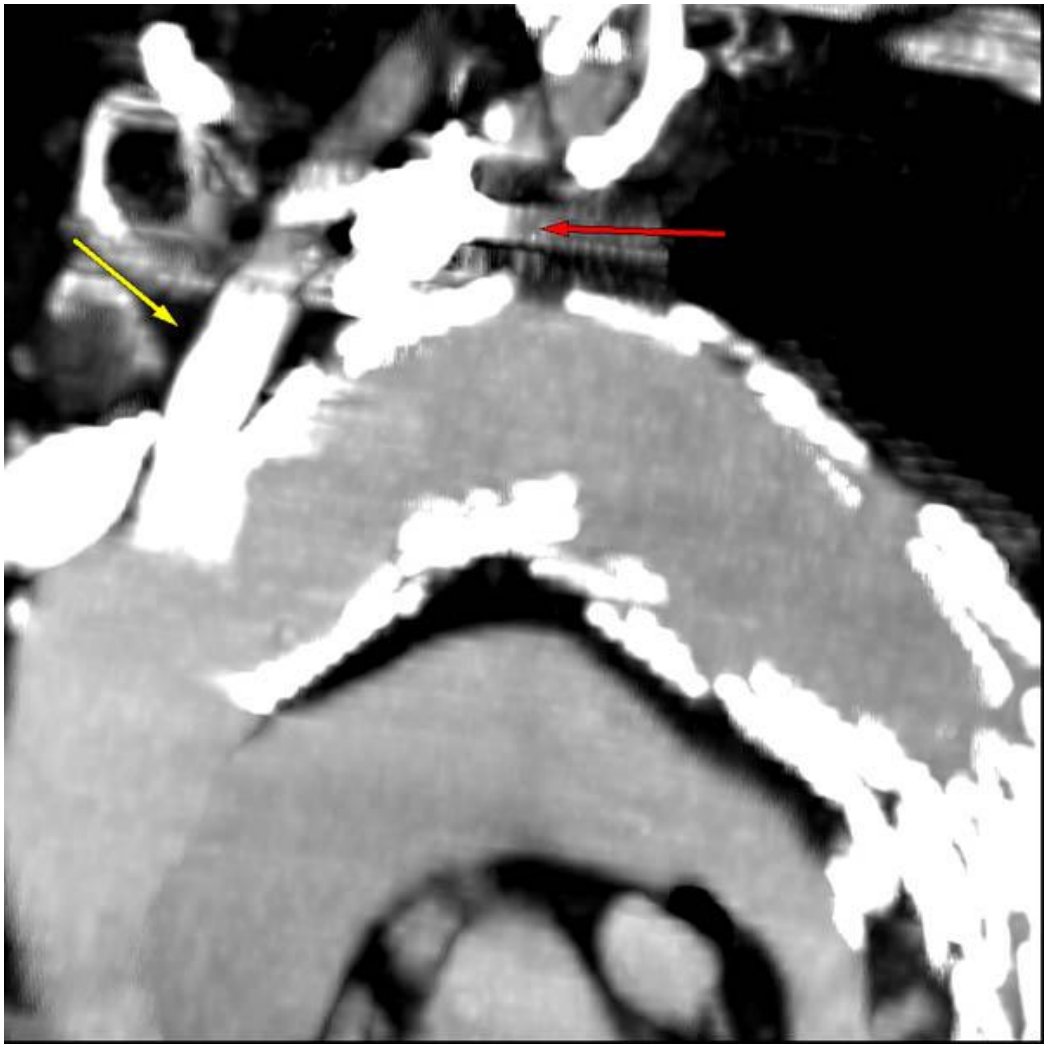


Hybrid Techniques

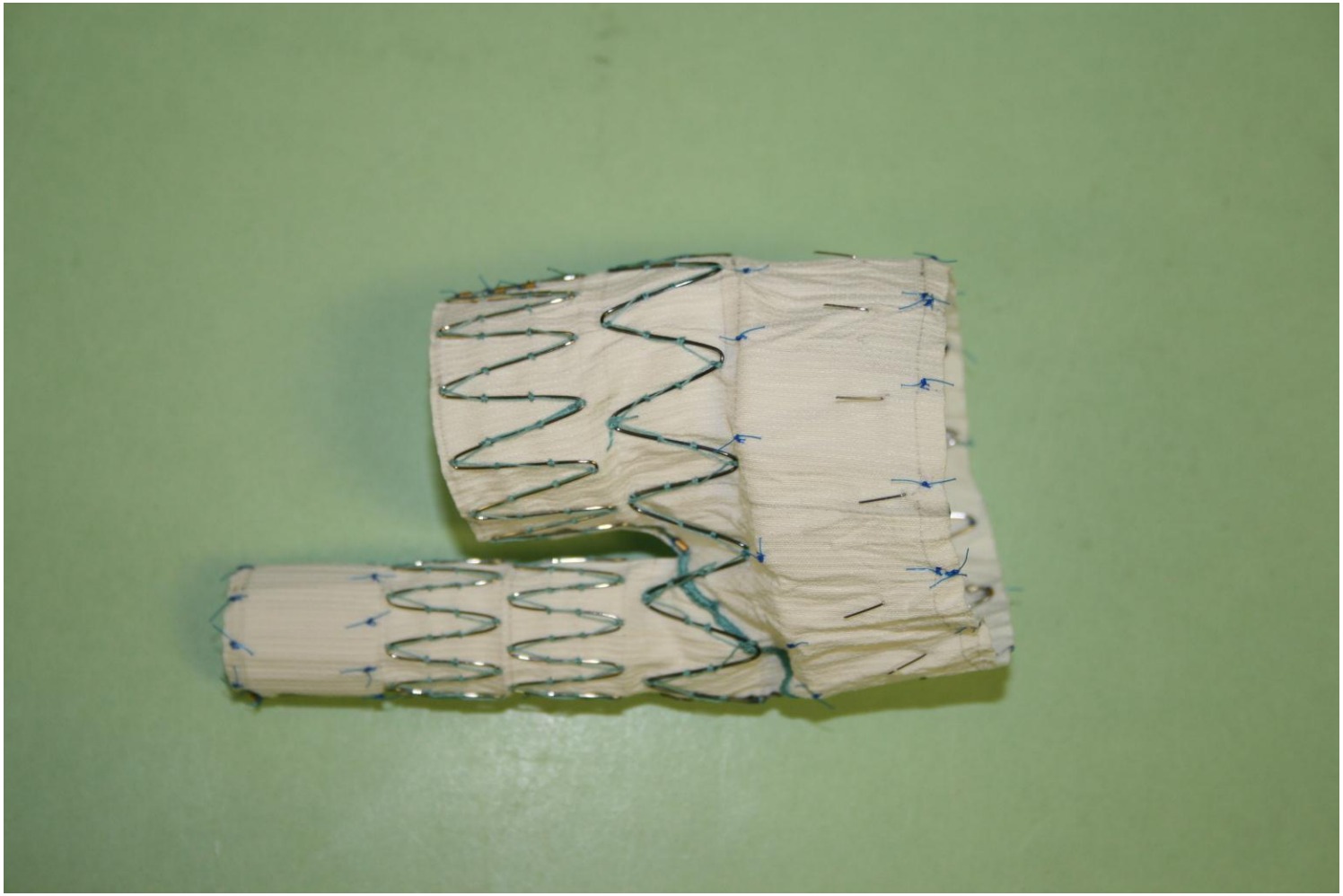




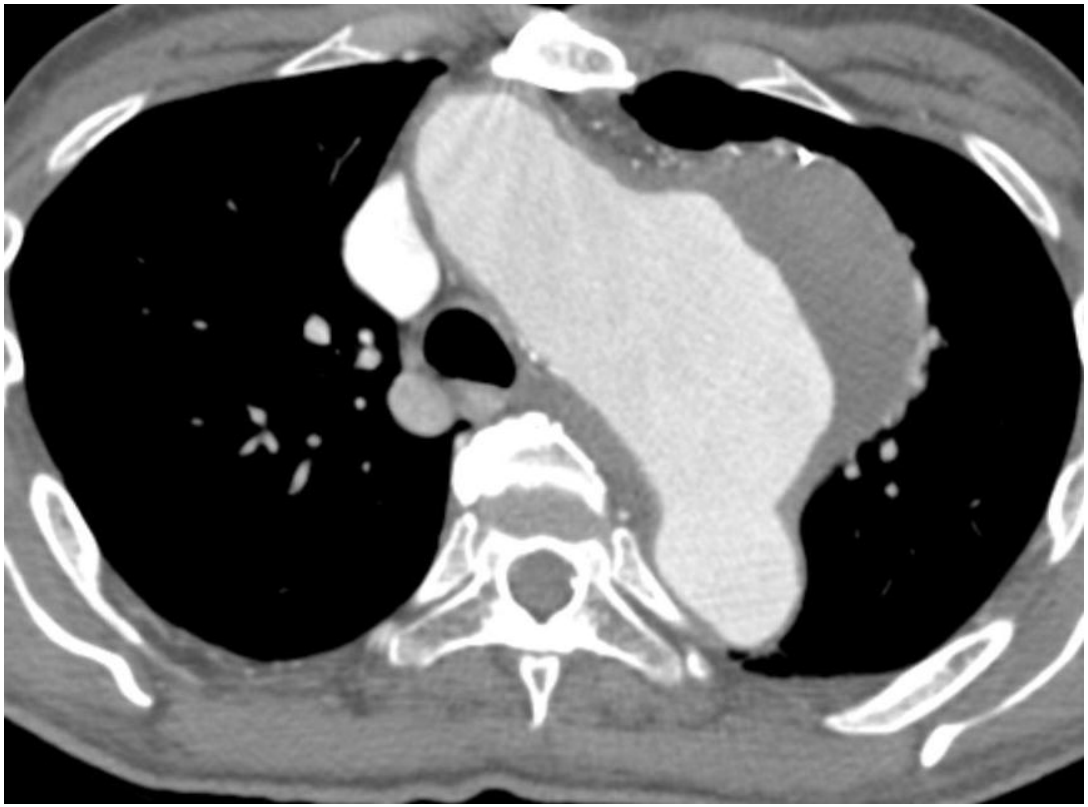
Fenestrated/Chimney solutions

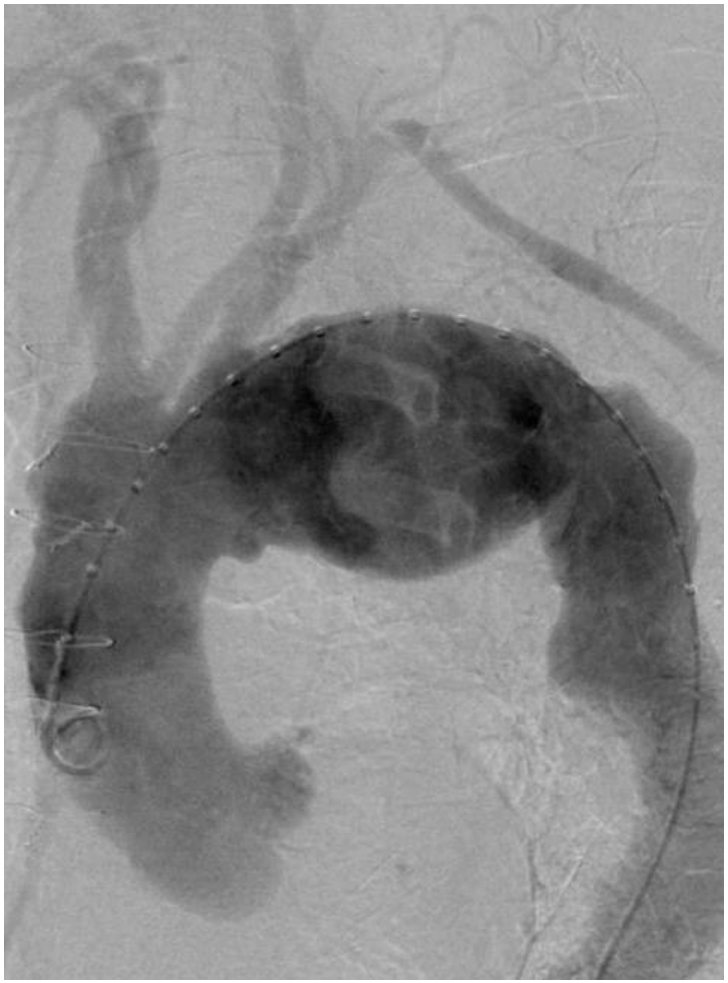


Innominate Branch/Hybrid Solution



Arch Aneurysm





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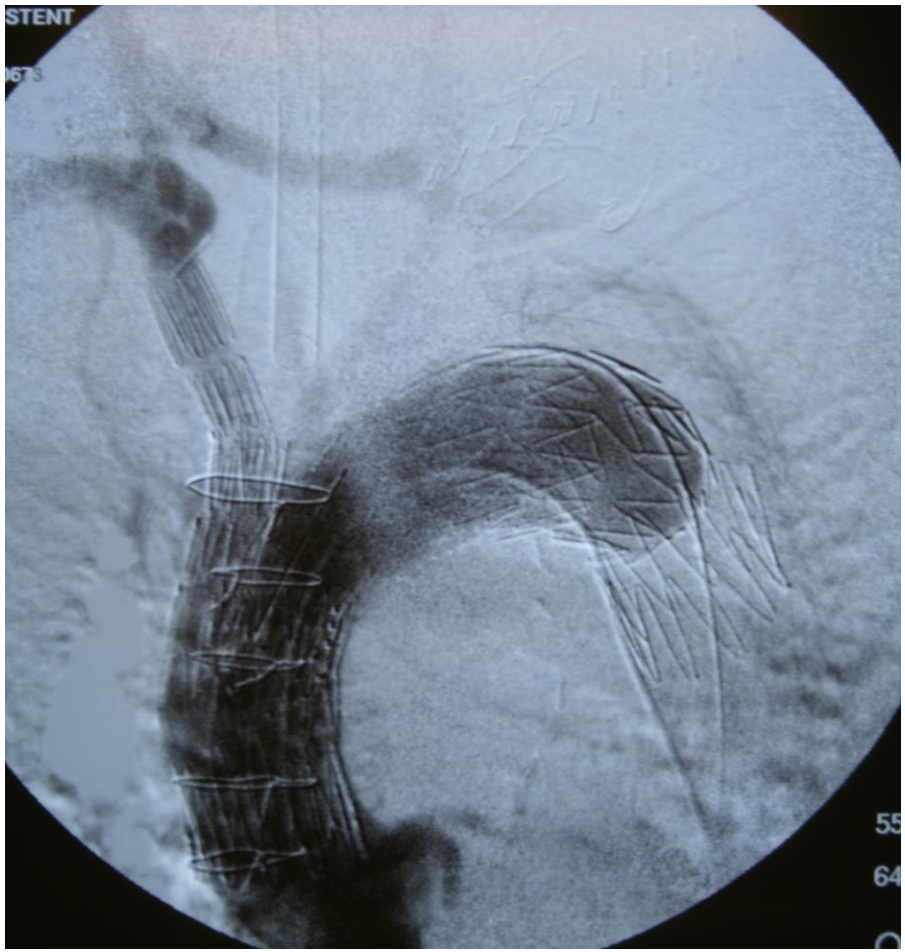



The volume contains derived images, measurements may be inaccurate
Volume Rendering
R

Acute Type A Aortic Dissection

- 2/3 aortic dissections: ascending aorta
- Mortality: 1-2%/hour
- Conservative mortality >60%
- Limited data on patients not in cardiothoracic units

Swee Circ 2008; 117: 1460, Hagan JAMA 2000; 283: 943, Kruger BJS 2012;99:1331

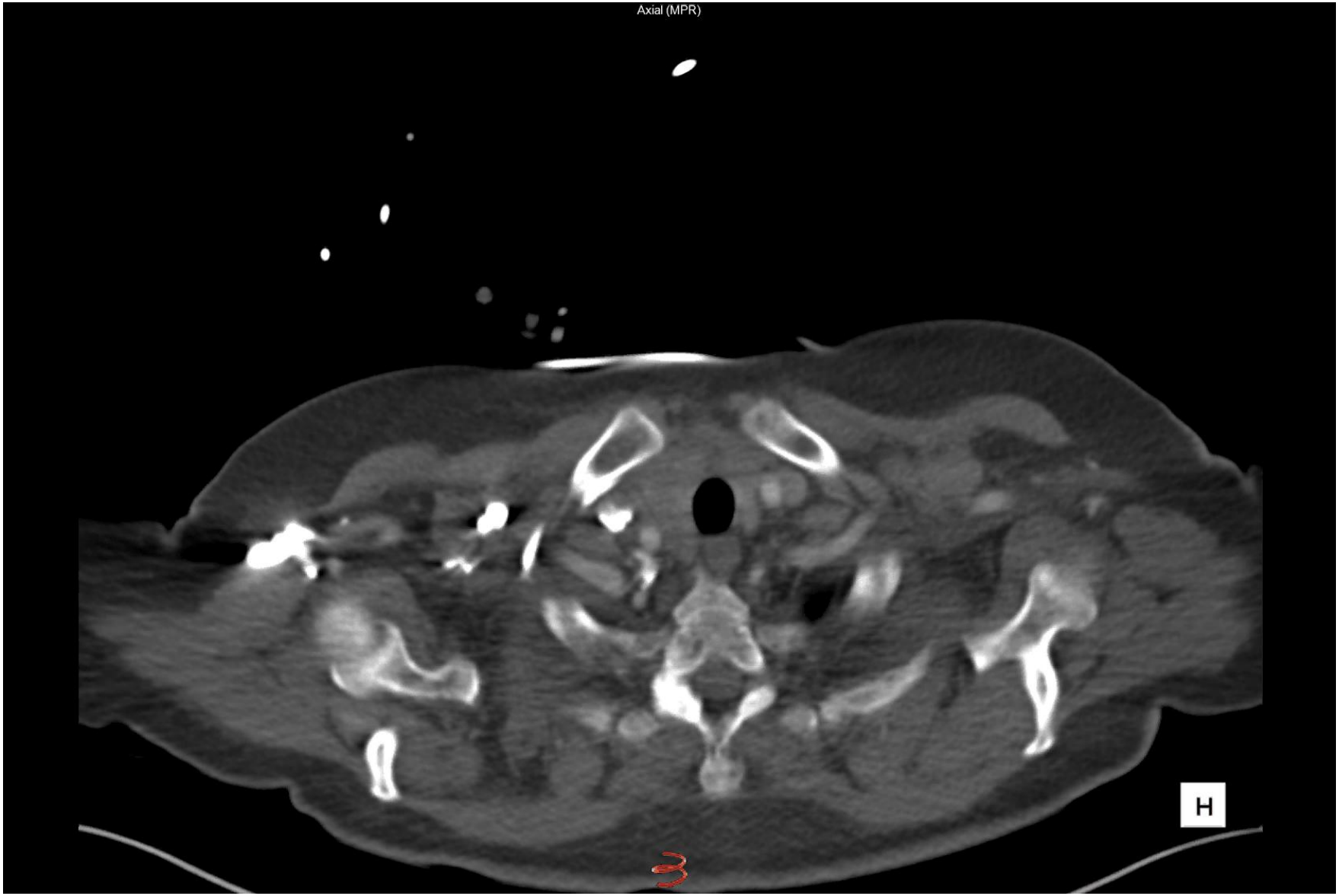
Acute Type A Aortic Dissection

- Surgical mortality 16-28%
- Non surgical candidates: ~40%
  - IRAD:28%
- Over 80: mortality >35%
- 25% surgical re-intervention

Swee Circ 2008; 117: 1460, Hagan JAMA 2000; 283: 943, Kruger BJS 2012;99:1331

Ascending Aortic Grafts

- 28-46mm diameter
- Short flexible graft
- Long delivery device, soft flexible tip
- Not approved for commercial use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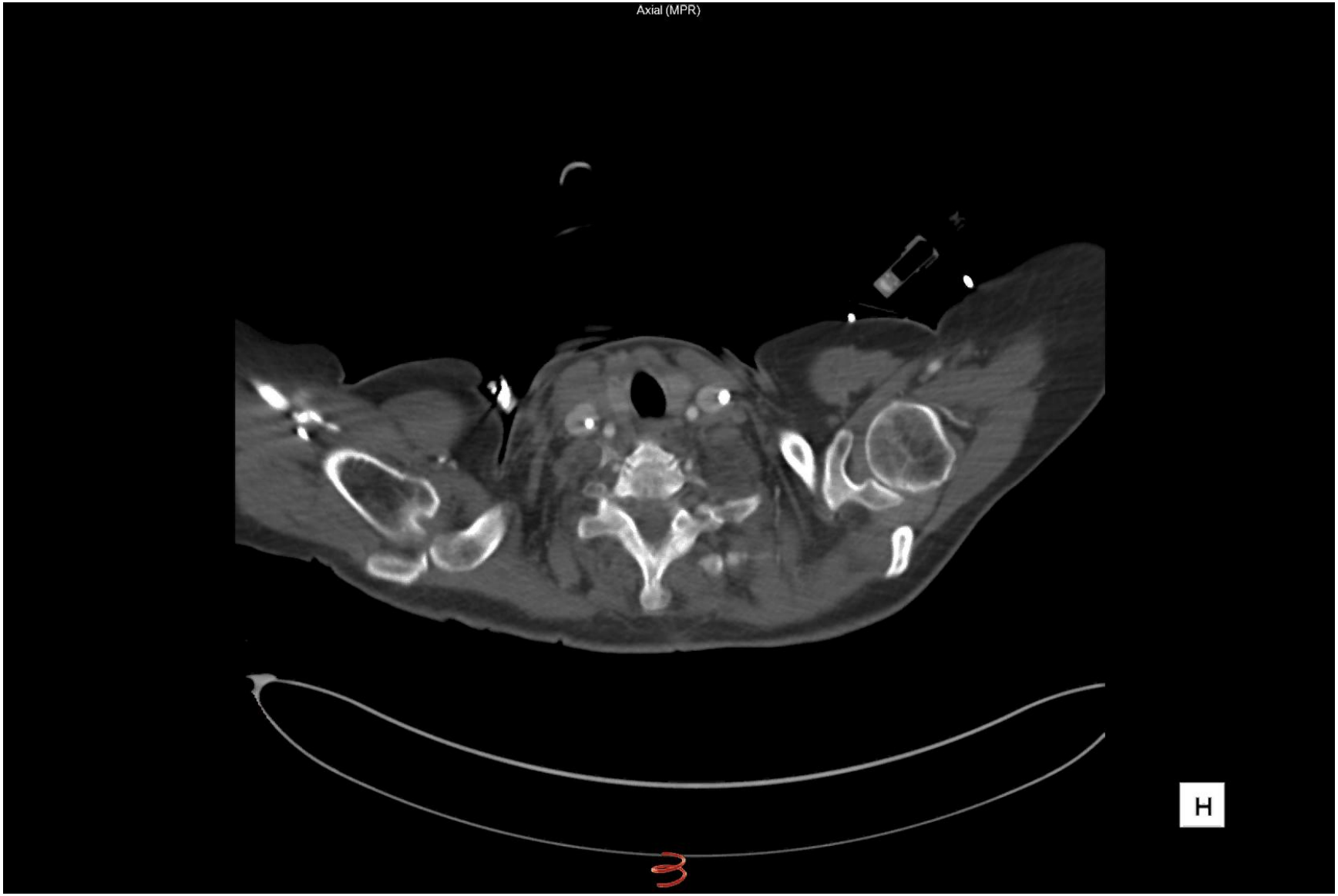
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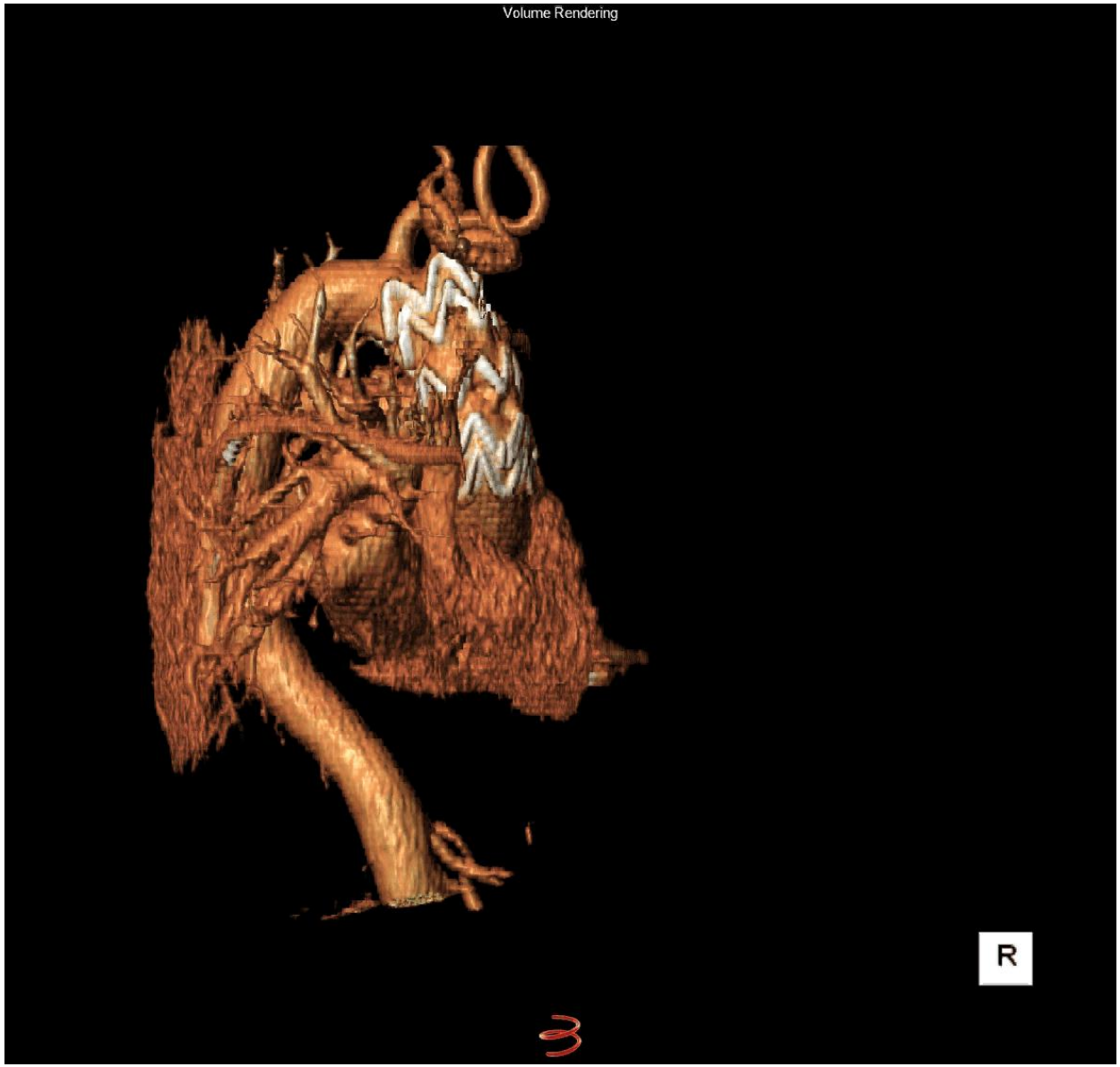
Volume Rendering
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Lessons: *Anatomical Suitability*

- 102 consecutive patients with acute Type A
  - Median distance 1º tear- coronary 23mm (0-128)
  - Median diameter true/total lumen at tear 38/46mm
  - Length ascending aorta 84mm (40-130)
  - *Endovascular repair feasible in 37/102, plus a further 8/13 with bypass/branched device*
- 76 consecutive high resolution CT for type A
  - Entry tear visible in 41%
  - 32% suitable for endovascular repair
  - Most common exclusion: no proximal landing zone

Sobocinski; EJVES 2011;42:442-7

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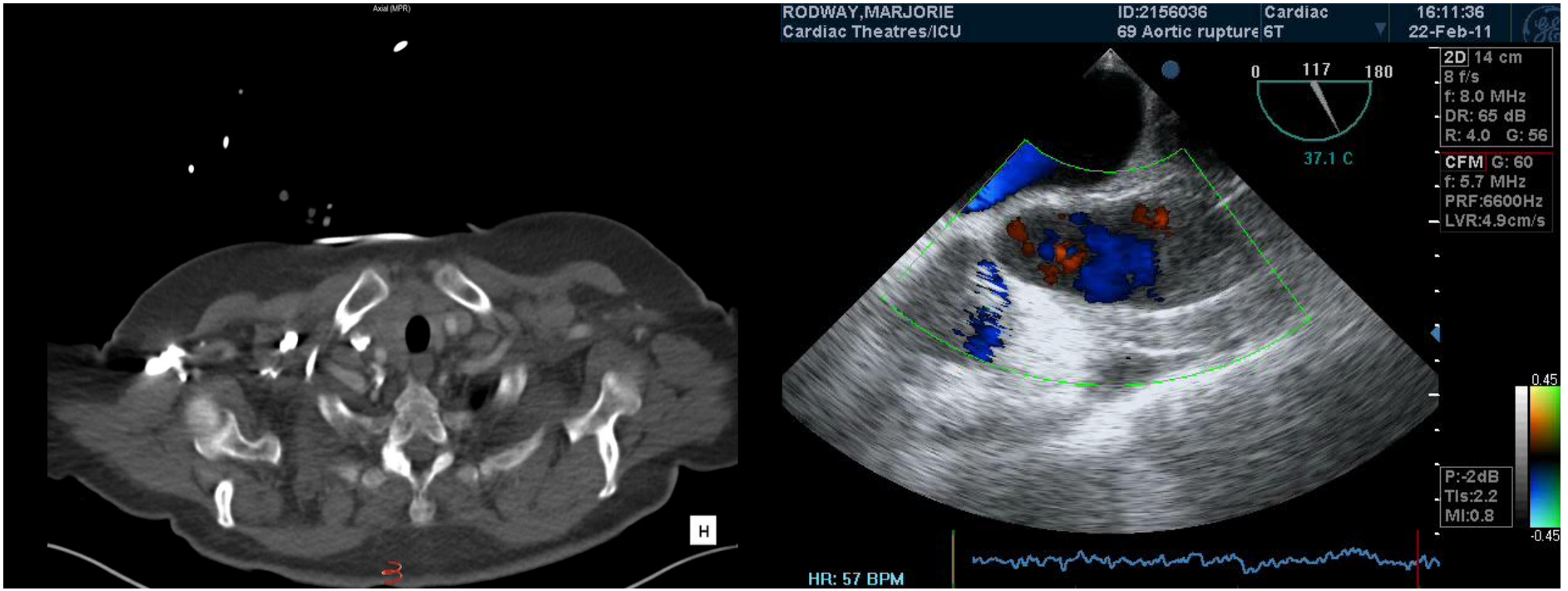
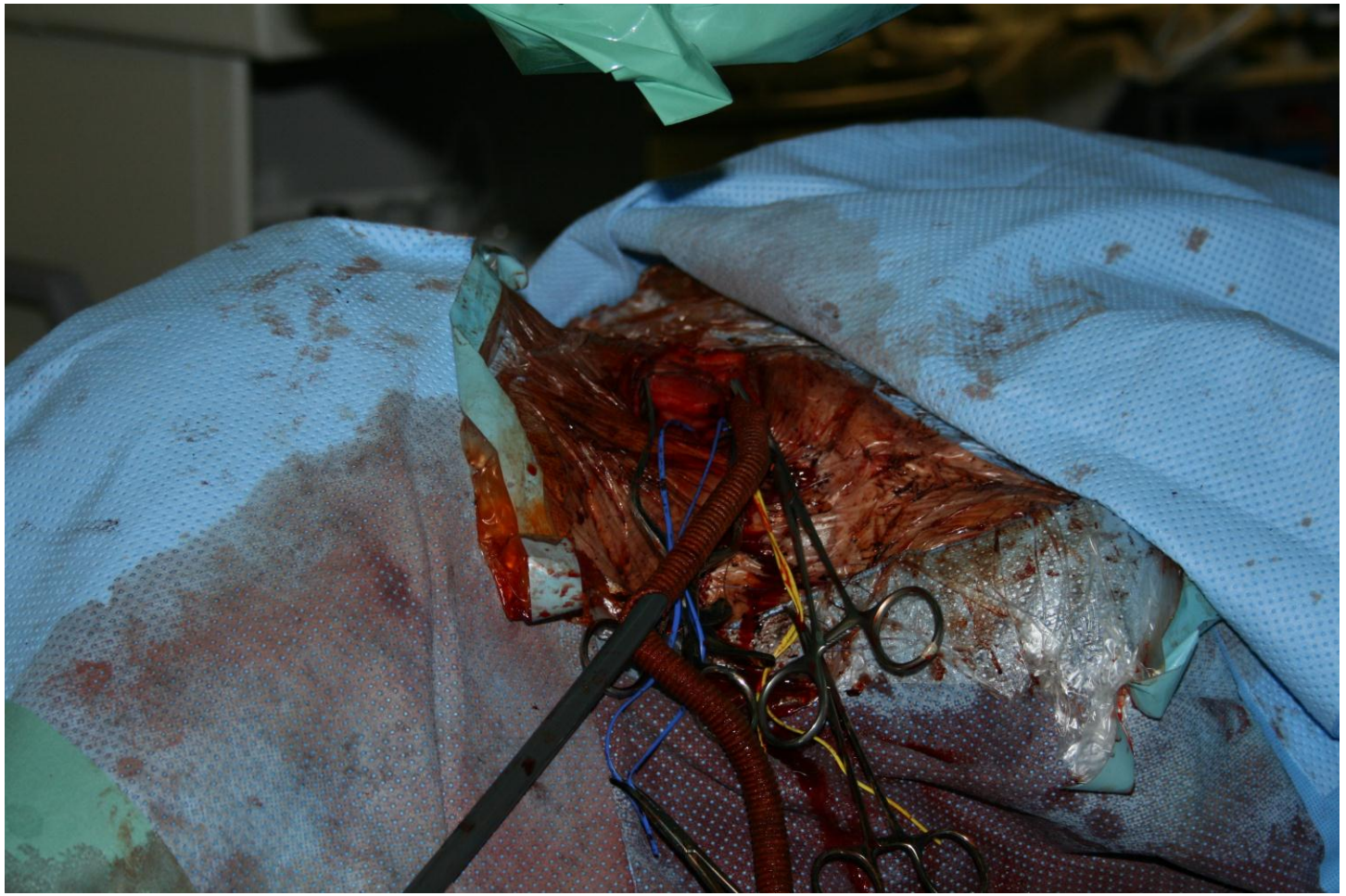
Moon; JVS 2011;53:942-9

Lessons: *Imaging*

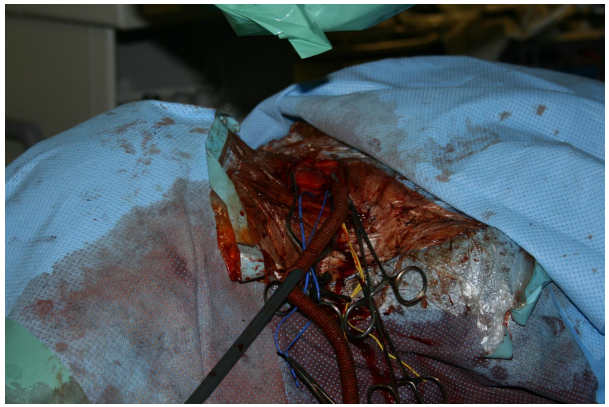


Lessons: *Access Challenges*

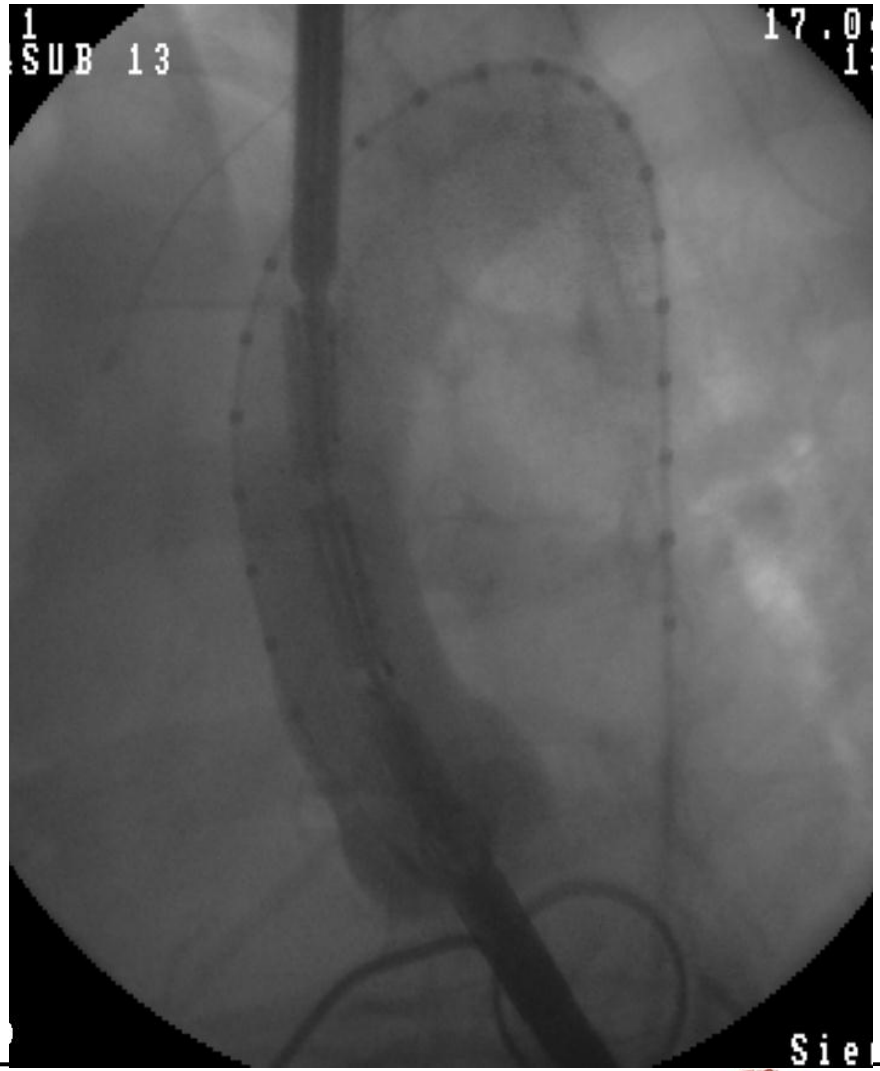


Lessons: *Access Challenges*

- Risk of stroke and vessel trauma
- Consider access vessel calibre, disease, tortuosity
- Length of delivery device from groin
- From supra-aortic vessels
  - need cerebral monitoring/protection
  - shunt/temporary bypass
- ?trans-apical approach



Lessons*: Valvular/Ventricular Trauma*



Lessons: *Control of Cardiac Output*

Treatment of Acute Type A Dissection by Percutaneous Endovascular Stent-Graft Placement

Daniel Zimpfer, MD, Martin Czerny, MD, Joachim Kettenbach, MD, Maria Schoder, MD, Ernst Wolner, MD, Johannes Lammer, MD, and Michael Grimm, MD

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Endoluminal and surgical treatment for the management of Stanford Type A aortic dissection

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Endovascular Stent-graft Treatment of Type A Dissection: Case Report and Review of Literature

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Results of Ascending Endografts

- 45 cases of Type A dissection
  - Entry tear in ascending aorta in 10 cases
- All had CTA, MRA, Angio and Echo
- Repair with standard endografts or cuffs
- Selected bypasses to allow landing zones
- Technical success 44/45
- 30 day mortality 3/45

Ye; EJVES 2011;42:787-94

Results of Ascending Endografts

- But selected group of patients:
  - Age 51 (38-79)
  - All had dissection duration >3 days (range 3-73)
  - A further 79 underwent open surgery and 42 no intervention
- 10 cases with ascending aortic tear
  - 2 deaths 1<30 days, 1 >30 days
  - 1 type 1 endoleak
  - 1 false aneurysm
  - 2 CVA (3 weeks and 1 year)

Ye; EJVES 2011;42:787-94

Summary

- With current technology we are a long way from an solution for the ascending aorta
- Endovascular repair should still be considered experimental and high risk
- Small proportion of patients suitable
- Very specific challenges posed may require very different solutions
  - Branches and ?valve replacement