Surveillance of Type B Aortic Dissection

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No conflicts of interest.

Overview

- Review of Type B aortic dissection (TBAD) and their natural history
- Summary of guidelines
- Clinical examples

What is an arterial dissection?

- Tear in the intima to create a potential space.
- Blood tracks between the intima and the media of the vessel to create a true and false channel.
- Dissection may or may not propagate.



Type B aortic dissection (TBAD) • The classification of is crucial because it dictates management. • Stanford Type A Dissection: Originates in the ascending aorta Stanford Type B Dissection: Originates at or distal to the **left** subclavian in the descending thoracic aorta. • Non-A Non-B: Originates in the aortic arch.

• This discussion will only focus on Type B dissections.



TBAD: Temporal classification

- Acute (<2 weeks)
- Sub-acute (14-90 days)
- Chronic (>90 days)
- Dissections behave differently at each stage. As the primary care practitioner, you may see patients at all three stages in your office.

TBAD require long-term surveillance.

- Acute phase: A subset of patients will develop a complicated TBAD and require early surgery.
- Sub-acute phase: Patients with high-risk features may need an intervention to prevent late aortic degeneration and aneurysm formation.
- Chronic phase: May develop an aortic aneurysm. Typically require extensive open surgical reconstruction.





Why is **Early** surveillance important in the sub-acute phase?

 Identifies a subset of patients who may benefit from prophylactic intervention with a thoracic endograft (TEVAR) to PREVENT late aneurysmal degeneration.



Christoph A. Nionaber, MD. PhD: Stephen Kinchs, MD. Hervé Rousseau, MD. PhD: Holger Eggsbrecht, MD: Tin C. Rohlers, MD: Guenther Rundt, MD, PhD. Thon Coluss, MA: Dierk Scheinert, MD. PhD: Martin Czerny, MD. PhD: Thio Kleinfeldt, MD. Burkhart Zipfel, MD: Louis Labrousse, MD: Rossella Faitori, MD, PhD: Hüssyin Ince, MD, PhD: Circ Cardiovasc Interv August 2013

- Patients with uncomplicated TBAD and high-risk anatomic features randomized to medical care vs. medical care + thoracic stent-graft (TEVAR) placement in the sub-acute phase.
- No difference in outcomes during the first two years after randomization and treatment.
- After two years a significant benefit was seen for patients treated with thoracic stent placement.



Why is LONG-TERM surveillance important?

- 25-50% of patients who survive an acute aortic dissection will have disease progression and develop an aortic aneurysm:
 - Thoracic aortic aneurysm
 - Abdominal aortic aneurysm
 - Thoracoabdominal aneurysm
- Up to 30% of patients will eventually require an intervention due to aneurysmal disease.

Any aortic event within 1 year of diagnosis of thoracoabdominal aneurysm >4.0cm





Surveillance: When to image?

• None of the societies provide a comprehensive surveillance schedule for both acute, subacute and chronic stages.

- Subtle differences between society guidelines.
- Real-life imaging schedules may be influenced by local resources.

Society Position Statement

Canadian Cardiovascular Society/Canadian Society of Cardiac Surgeons/Canadian Society for Vascular Surgery Joint Position Statement on Open and Endovascular Surgery for Thoracic Aortic Disease

If patients remain uncomplicated, early follow up imaging at 48-72h and at <u>1-4 weeks is recommended</u> to detect early signs of aneurysm expansion and radiologic malperfusion".

<u>Circulation</u>

ACC/AHA CLINICAL PRACTICE GUIDELINE

2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease: A Report of the American Heart Association/American College of Cardiology Joint Committee on Clinical Practice Guidelines



In patients who section and IM cal therapy alo CT (or MRI) is

B-NF

Eur J Vasc Endovasc Surg (2017) 53, 4–52

Editor's Choice — Management of Descending Thoracic Aorta Diseases Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS)

Table 5. Suggested disease specific follow up protocol for conservative management.
Modalities Interval Indications for closer follow up or
potential intervention
ATRAD CT or MRI 3 m. 6 m. vearly
April crowth >5 mm/vear

 Intervention
 Intervention

 3 m, 6 m, yearly
 Aortic growth >5 mm/yearly

 In stable condition after 3 years
 Aortic diameter >50 mm

 follow up, the interval can be extended to 2–3 years
 Aortic diameter >50 mm

After TBAD patients should have a CTA at: ~1 month 2-3 times in the first year Then annually.

Who should follow these patients?

- My feeling is that they should be followed by a vascular surgeon well versed in conservative management, endovascular repair and open repair.
- If the patient has poorly controlled hypertension, refer to medicine or cardiology.

Imaging pitfalls

Anecdotally, two main pitfalls seen in clinical practice:

- Wrong imaging selected (eg need a CT C/A/P, but the whole aorta is not imaged)
- 2) Incorrect imaging interpretation:
 Often very complex arterial anatomy best interpreted by interventional radiology or a vascular surgeon.

Case examples:

Case 1:

- 58F
- Type B Aortic dissection 2016
- Complicated unremitting back pain.
- Underwent emergent TEVAR to cover entry tear.





2023 – Surveillance CT: Rapid aneurysm expansion to 7.2CM



Management

- Underwent open thoracoabdominal aneurysm repair.
- Reconstruction of thoracic aorta to infrarenal aorta. Celiac, SMA, Renal bypasses.

Case 2

- 41M. Type A dissection extending from aortic root to femoral arteries.
- Type A segment repaired emergently with total arch repair.
- Type B from subclavian to femoral not repaired.

Surveillance CT at 6 months:

- Residual aortic dissection
- New 2.5cm left common iliac aneurysm



3 months later

- Repeat episode of HTN and abdominal pain.
- Iliac aneurysm 2.5 → 3.5cm.
- New left leg malperfusion.





- Juxtarenal aortic repair.
- Bypass to inferior mesenteric artery
- Bypass to Left internal iliac artery
- Bypass to left common femoral artery
- Patient DC home on POD 6 with no postoperative complications.

Summary

- TBAD is a lethal disease that requires long term surveillance.
- CTA is the best imaging modality
- Low threshold to refer to vascular surgery.

Summary:

After TBAD patients should have a CTA at: ~1 month 2-3 times in the first year Then annually.

Questions?

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