



## AORTIC DISSECTION

- Stanford classification of aortic dissection: [1](#)
  - Type A dissection includes the ascending aorta.
  - Type B dissection does not involve the ascending aorta (ie. distal to left subclavian artery).
- Type A dissections are usually surgical emergencies owing to the high risk of acute aortic regurgitation, occlusion of coronary arteries and pericardial rupture. [1](#)

## COMPUTED TOMOGRAPHY

- Contrast enhanced spiral CT scan is the initial investigation of choice for the evaluation of suspected spontaneous aortic dissection. [1](#)
- Comparable accuracy to that of MRI and transoesophageal echocardiography (TOE) with sensitivity and specificity approaching 100%. [2-4](#)
- Superior to TOE and MRI in the assessment of aortic arch vessel involvement. [2](#)



- The diagnosis is based on the demonstration of an intimal flap, which separates the true from the false channel. Secondary findings include internal displacement of intimal calcifications, delayed enhancement of the false lumen and aortic widening. [1,5](#)
- Atypical forms of aortic dissection can also be recognised eg. intramural haematoma, penetrating atherosclerotic ulcer and atypical configurations of the intimal flap. [1,6](#)
- CT findings of: type A intramural haematoma, maximum thickness of haematoma, compression of true lumen, and pericardial or pleural effusion, can predict the progression of aortic intramural haematoma to aortic dissection. [7](#)
- Advantages: [1,3](#)
  - Non-invasive, rapid test.
  - Widely available.
  - Allows distinction of type A from type B aortic dissection.
  - Allows imaging of the entire aorta and demonstrates the extent of involvement and organ ischaemia.
  - Permits follow-up of aortic dissection, aneurysm or intramural haematoma.
- Limitations: [1,3,4](#)
  - Does not provide information regarding the coronary arteries or aortic valve, although multislice CT shows promise in this area and further studies are required.
- Disadvantages:
  - Exposure to ionising radiation.
  - Use of iodinated contrast material.

## TRANSOESOPHAGEAL ECHOCARDIOGRAPHY (TOE)

- Comparable accuracy to that of CT for detection of aortic dissection. [2,4,8](#)
- Advantages: [2,4,8](#)
  - Can be performed at the bedside of critically ill patients.
  - Allows functional cardiac assessment.
  - Permits detection of coronary artery involvement.
- Limitations: [2,4,8](#)
  - Invasive.
  - Limited availability and/or expertise.
  - Obscuration of the proximal aortic arch by interference from air within the trachea.
  - Lack of visualisation of the abdominal aorta (the distal extent of the dissection may not be seen if it involves the abdominal aorta).

## MAGNETIC RESONANCE IMAGING

- Comparable accuracy to that of CT and transoesophageal echocardiography. [2,4](#)





- Advantages: [2,4](#)
  - Provides excellent visualisation of tear localisation, aortic regurgitation, side branch involvement and complications.
  - No exposure to ionising radiation.
  - Non-invasive.
- Limitations: [2,4](#)
  - Expensive.
  - Limited availability.
  - Long examination time.
  - Difficulty of monitoring haemodynamically unstable patients (limited access to the patient).
  - Contraindicated in patients with pacemakers/certain heart valve prostheses.

## REFERENCES

1. Coulam CH, Rubin GD. **Acute aortic abnormalities.** Seminars in Roentgenology 2001;36(2):148-64. (Review article)
2. Sommer T, Fehske W, Holzkecht N, et al. **Aortic dissection: a comparative study of diagnosis with spiral CT, multiplanar transoesophageal echocardiography, and MR imaging.** Radiology 1996;199:347-52. (Level II/III evidence)
3. Oliver TB, Murchison JT, Reid JH, et al. **Spiral CT in acute non-cardiac chest pain.** Clinical Radiology 1999;54:38-45. (Level III evidence)
4. Nienaber CA, von Kodolitsch Y, Nicolas V, et al. **The diagnosis of thoracic aortic dissection by noninvasive imaging procedures.** NEJM 1993;328(1):1-9. (Level II evidence). [Click here to view reference](#)
5. Erbel R, Alfonso F, Boileau C, et al. **Diagnosis and management of aortic dissection. Recommendations of the task force on aortic dissection, European Society of Cardiology.** European Heart Journal 2001;22:1642-81.
6. Williams MP, Farrow R. **Atypical patterns in the CT diagnosis of aortic dissection.** Clinical Radiology 1994;49:686-9. (Level IV evidence)
7. Choi SH, Choi SJ, Kim JH, et al. **Useful CT findings for predicting the progression of aortic intramural hematoma to overt aortic dissection.** J Computer Assisted Tomography 2001;25(2):295-9. (Level III evidence)
8. Keren A, Kim CB, Hu BS, et al. **Accuracy of biplane and multiplane transoesophageal echocardiography in diagnosis of typical acute aortic dissection and intramural hematoma.** J Am Coll Cardiol 1996;28:627-36. (Level II evidence). [Click here to view reference](#)





## FURTHER READING

1. Sebastia C, Pallisa E, Quiroga S, et al. **Aortic dissection: diagnosis and follow-up with helical CT.** Radiographics 1999;19:45-60.
2. Ciagarroa JE, Isselbacher EM, DeSanctis RW, et al. **Diagnostic imaging in the evaluation of suspected aortic dissection.** NEJM 1993;328:35-43.

### Website

For more information go to [www.imagingpathways.health.wa.gov.au](http://www.imagingpathways.health.wa.gov.au)

### Copyright

© Copyright 2007, Department of Health Western Australia. All Rights Reserved.

This web site and its content has been prepared by The Department of Health, Western Australia. The information contained on this web site is protected by copyright.

### Legal Notice

Please remember that this leaflet is intended as general information only. It is not definitive and The Department of Health, Western Australia can not accept any legal liability arising from its use. The information is kept as up to date and accurate as possible, but please be warned that it is always subject to change.

