

ANZSVS Advisory for Members Regarding Iodinated Contrast Shortage

13 May 2022

The Australian and New Zealand Society for Vascular Surgery has been alerted to a current shortage of iodinated contrast. Whilst we have received assurances that production has been reinstated with expected restoration of supplies in 6-8 weeks, ANZSVS is also aware that limited local supplies during this time may impact on the delivery of vascular surgical procedures.

This advisory serves to provide strategies for vascular surgeons to maintain high-quality patient care and decision-making during periods of restricted contrast availability. We recognise that some alternative strategies may not represent ideal management for all surgeons, and that this advice is given in a time of exceptional circumstances. Where possible we strongly encourage vascular surgeons to continue to provide the highest levels of clinical decision making, safety and patient care.

Background

Iodinated contrast is a key component of modern vascular imaging techniques, including diagnostic CT angiography and Digital Subtraction Angiography (DSA) used in endovascular surgery. It facilitates diagnostic visualisation of vascular structures for the identification of patent, stenosed or occluded vessels, aneurysms, and other vascular pathology. Together with fluoroscopy and DSA, it also assists the direction, placement, and advancement of endovascular devices for procedures such as aortic aneurysm repair, balloon angioplasty, endovascular stent placement, thrombectomy and thrombolysis, and other endovascular surgeries.

GE Healthcare produces iohexol (Omnipaque) and iodixanol (Visipaque) which are widely used iodinated contrast media. As a result of reduced manufacturing capacity at GE Healthcare's primary facility in Shanghai, China there has been a sustained reduction in contrast production, combined with low storage and warehousing worldwide. GE Healthcare has stated that it has three alternate production sites including a facility in Cork, Ireland which are working to address global supply shortfalls.

Alternative Iodinated Contrast Agents

Alternative intravascular iodinated contrast agents available in Australia and New Zealand include:

Bracco Diagnostics

- iopamidol (Isovue)
- iomeprol (Iomeron)

Guerbet, Liebel-Flarsheim

- ioversol (Optiray)

Bayer Medical

- sodium amidotrizoate, amidotrizoate meglumine (Urografin)
- iopromide (Ultravist)

General principles of contrast preservation

1. Can the contrast-requiring investigation or procedure be delayed or avoided?
2. Is there an alternative investigation or procedure that does not require contrast use?
3. Is there a means to reduce the volume of required contrast?

1. Can the contrast-requiring investigation or procedure be delayed or avoided?

Whilst time-critical life and limb-threatening emergencies should not be ignored, vascular surgeons may wish to consider the urgency of the condition at hand, and whether it can be safely deferred until normal contrast supplies are restored. This may involve the delay of routine, scheduled surveillance imaging utilising CT angiography, or temporary postponement of elective, non-urgent surgery. Surgeons should be mindful to balance the impact of such delays and communicate openly and clearly with patients about the impact of resource constraints and the need for service rationing.

2. Is there an alternative investigation or procedure that does not require iodinated contrast use?

For conditions where delay is not possible or may lead to excessive risk or deterioration, vascular surgeons may wish to undertake alternative investigations that do not require iodinated contrast. Examples include:

- MR angiography as a replacement for CT angiography, with the caveat that some body parts may not be suitable for MRI, some patients may be contra-indicated for MRI or gadolinium-based contrast administration
- Reliance on ultrasound-alone for peripheral diagnostic imaging, possibly enhanced with ultrasonic micro-bubble contrast (CEUS, contrast-enhanced ultrasound), as an alternative to preoperative CTA or diagnostic angiography
- Non-contrast CT for thoracic aortic aneurysm screening or assessment instead of CTA
- On-table ultrasound or early post-operative ultrasound as an alternative for intraoperative completion angiography

Where there is an effective open surgical option that does not require contrast imaging this may be considered in place of endovascular surgery. Surgeons should also bear in mind the other resource impacts of such strategies such as HDU or ICU utilisation and extended length-of-stay.

3. Is there a means to reduce the volume of required contrast?

The region of interest should be defined or reduced by obtaining and reviewing previous imaging at other institutions, minimising contrast imaging of transit or access vessels, or of non-essential regions.

Non-iodinated contrast agents may be employed such as gadolinium-based agents (at the cost of reduced image quality) or carbon-dioxide delivery systems (eg Optimed CO₂-Angioset, or Angiodroid). Surgeons should be familiarised with the nuances of CO₂ imaging before routine use.

Supplementary imaging systems such as intravenous ultrasound (IVUS) or external ultrasound can reduce the need for DSA imaging during endovascular procedures

Fusion DSA imaging and novel catheter guidance systems (eg FORS) may be able to reduce the need for contrast imaging to determine vascular landmarks

Strategies to minimise contrast wastage between examinations should be considered, such as:

- utilising the smallest delivery vial suitable for the procedure
- vial repackaging through your hospital pharmacy
- multi-patient administration systems can be employed in order to pool contrast vials (eg Navilyst Medical Squeeze Contrast Controller – Angiodynamics, Angiodyn Contrast Saver System – B Braun)

Contrast dose volumes can be reduced by strategies such as:

- catheter injection close to the region of interest
- contrast dilution, combined with imaging exposure adjustments including good collimation and filter application
- saline “chase” bolus administration or novel dose reduction systems such as DyeVert (Osprey Medical) and ACIST CVi (Bracco Diagnostics)

Communication and Collaboration

It is important to remember that many disciplines will be impacted by this shortage and that co-operation and collaboration is important to ensure that supplies are utilised wisely. Vascular surgeons play a key role in deciding upon and performing diagnostic and interventional endovascular procedures in service of other units and specialties and should assist in the education and decision-making around these requests.

Contrast supplies both within and between healthcare institutions may need to be pooled and shared, with clear communication regarding the urgency and needs of each discipline in real-time across diagnostic and interventional radiology, interventional cardiology, vascular surgery and other specialties. As always we encourage vascular surgeons to continue their collaborative and co-operative approach to patient care.

About ANZSVS

The Australian and New Zealand Society for Vascular Surgery is the peak professional body for Vascular Surgeons. It provides professional support, guidance, and education to surgical trainees and specialist vascular surgeons, and advocacy in the interests of patients with a wide range of vascular disorders. The ANZSVS partners with the Royal Australasian College of Surgeons to provide specialist vascular surgical training recognised by the Australian Medical Council.