



Royal College
of Surgeons
of England

Samantha Goward
Area Coroner for Norfolk
County Hall
Martineau Lane
Norwich
NR1 2DH

19 September 2024

Dear Mrs Goward

Regulation 28 Report to Prevent Deaths: Mr Derryck Lynn Crocker

Matter of Concern:

That there is a lack of understanding of the signs and symptoms of an air embolism and the risk of this following **any** invasive procedure, and that air embolism is not something that is routinely taught as part of the training of doctors.

Royal College of Surgeons of England response, on behalf of the Joint Committee on Surgical Training (JCST):

Air embolism is something that is well recognised by those involved in Vascular Interventional Radiology and lung biopsies i.e. those closely related to the procedures where it is likely to be complication of (e.g. those involved in obstetrics will be more aware and up to date with amniotic fluid embolism) but other specialties are likely to be much less familiar.

In terms of specific surgical specialties, we would draw your attention to the following examples:

Cardiothoracic surgery: There is a recognised association with air embolism during cardiothoracic surgery particularly involving cases where the cardiac chambers are opened and or cardiopulmonary bypass or mechanical circulatory support is used to support the patient's circulation. A knowledge of techniques to de-air the circulation, as well as the pathophysiology or complications of air embolism is covered in several areas within the curriculum.

Neurosurgery: The risks of air embolism are regularly discussed with trainees whenever operating near the venous sinuses. The principal concern being large quantities of air entering the veins within the head and going to the heart causing haemodynamic instability

In respect of the **core surgical curriculum** completed by all surgical trainees:

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We have reviewed the MRCS examination (2013 updated 2018) & Core Surgical Curriculum (CST) (2017 and 2021) syllabus, and discussed this issue with colleagues who are instructors of the Advanced Trauma Life Support (ATLS) and Care of the Critically Ill Surgical Patient (CCrISP) courses.

Assessment and management of thromboembolism is part of the scope of the MRCS/CST curriculum and the part of the syllabus which involves placement/management of central line will have in general included considerations for complications such as air embolism. An understanding of the risks of anaesthesia and medical gases is generic to surgical training.

We believe it to be a commonly asked question in the examination.

There is a brief mention of it within ATLS. However, delivery of courses can vary and such a specialised complication/subject will not have been covered consistently. There isn't a CCrISP scenario related to air embolism for the same reason.

We will flag this within our governance mechanisms for ATLS and CCrISP (ATLS steering group and CCrISP clinical lead and working party) and will draw attention to the risk of air embolism with our membership through our regular communications.

Thank you for drawing this to our attention.

Yours sincerely



Chief Executive

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