

Tracheostomy emergencies: bleeding

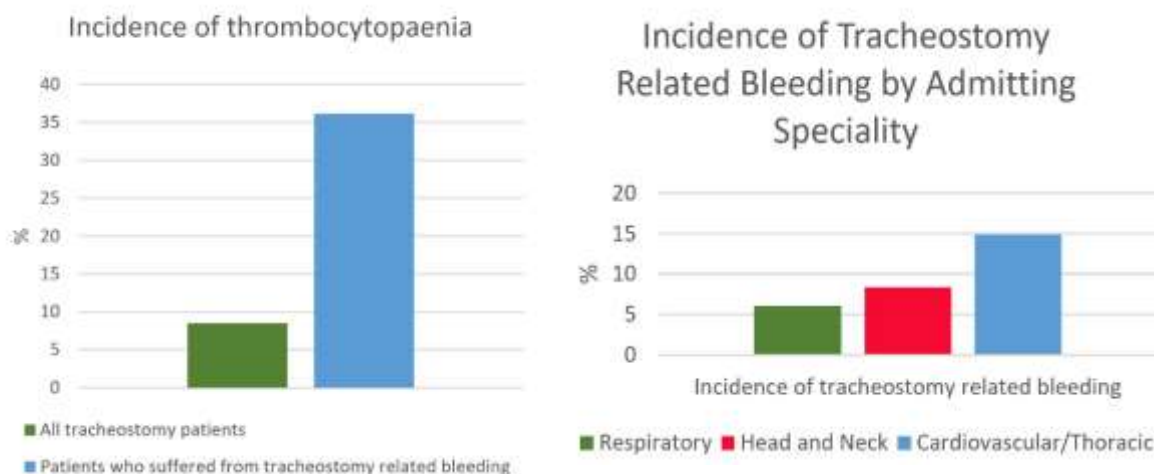
Background

Tracheostomy is a common procedure involving the placement of an artificial subglottic airway. It may be performed for a variety of reasons, including as part of the management of head & neck cancers, respiratory failure or neurological problems. While serious bleeding from a tracheostomy site is relatively rare, there are occasions where life-threatening erosion into a major vessel can occur. This document is intended to guide the approach to assessing and managing patients with tracheostomy related bleeding so that this problem may be recognised and managed in a timely manner.

This document is based on the 'tracheostomy related bleeding' guidance document produced by TRAMS (Austin Health, July 2017). The latest version of the TRAMS document is available from <https://tracheostomyteam.org/data/uploads/pdf/tracheostomy-related-bleeding-2018.pdf>.

Spotlight on bleeding

The UK NCEPOD Report 2014 highlighted tracheostomy related bleeding as a complication with major bleeding affecting 1.2% tracheostomy patients and minor bleeding affecting 4.4% patients. Interim analysis of the observational data from the Global Tracheostomy Collaborative UK dataset suggests that morbidity and mortality are increased significantly if an episode of tracheostomy-related bleeding occurs as an in-patient. There was a significantly higher incidence of bleeding in the patients admitted primarily with a cardiovascular or thoracic problem, although this may simply reflect greater levels of anticoagulation in these groups.



Thrombocytopenia may be a contributing factor to bleeding in a number of cases. From a detailed analysis of nearly 300 patients at one institution (Manchester University Hospital, UK), we noted 8.5% of patients with a newly inserted tracheostomy at suffered from thrombocytopenia ($<50 \times 10^9/L$) at some stage of their in-patient stay. However, 36.2% patients who suffer from tracheostomy related bleeding also suffer from thrombocytopenia. Thrombocytopenia is not uncommon in the critically unwell patient with multiple organ failure. Again, this may explain the particularly high rates of tracheostomy related bleeding within cardiovascular/thoracic patients.

Categorising Tracheostomy Related Bleeding

The potential causes for tracheostomy related bleeding depend very much on the time that has passed since the formation of stoma and tracheostomy tube inserted.

Early bleeding (<4 days)

- Skin related bleeding
- Thyroid related bleeding
- Related to anticoagulant or antiplatelet therapy

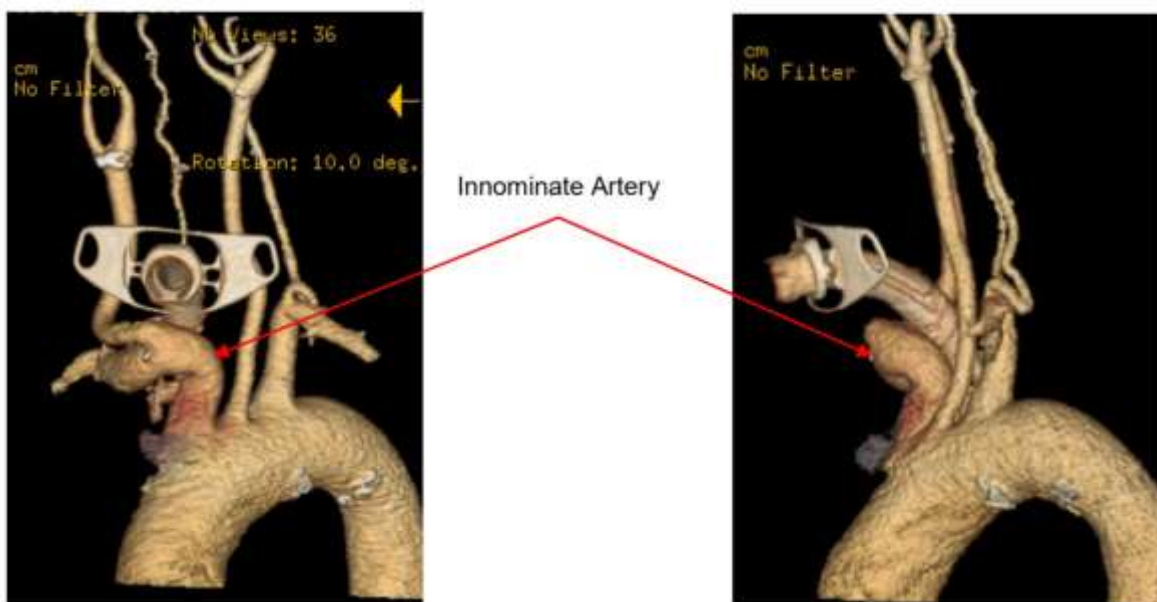
Late bleeding (>4) days)

- Erosion into a large artery (e.g. trache-innominate fistula)
- Granulation tissue
- Mucosal trauma from suction catheters etc

Bleeding can be arbitrarily categorised into small (<10mls) or large (>10mls) volume bleeding. Small volume bleeding at a tracheostomy stoma may herald a major haemorrhage and the treating clinician must always thoroughly evaluate for the possibility of a trachea-arterial fistula.

Trache-innominate artery erosion is a rare late complication associated with high mortality rate. Erosion occurs in less than 1% of tracheostomy cases and is usually associated with:

- low placement of tracheostomy tube;
- excessive movement of the tube;
- over inflation of cuff; and/or
- suboptimal tracheostomy tube position.



Response to Tracheostomy Related Bleeding

All bleeding from a tracheostomy site is potentially serious. An experienced clinician should be involved in evaluation at an early stage in all cases. The specialist surgeon or intensivist who inserted the tracheostomy should be consulted immediately and provide advice. The parent team must also be notified of the bleed.

Recommended actions:

- Sit the patient up
- Administer supplemental oxygen
- Measure vital signs
- If actively bleeding or more than 10 millilitres of bright blood is evident (e.g. stoma dressing soaked and blood leaking beyond dressing), activate emergency response e.g. MET/Arrest team
- If less than 10 millilitres of bright blood (e.g. blood contained within dressing) the patient needs urgent clinical review
- Notify an appropriate head and neck surgeon (bedhead sign) surgeon responsible for the insertion of the tracheostomy.
- In cases of major bleeding and/or the patient has associated hypoxaemia or respiratory distress, activate emergency response e.g. MET/Arrest team

Strategies which may temporarily help in the situation of a major arterial erosion include:

- hyper-inflation of the tracheostomy cuff and/or
- direct digital compression of the bleeding point

In these circumstances, the patient must have their airway secured by a clinician with advanced airway skills and be transferred to the operating room or interventional radiology suite for further evaluation and intervention. Planning for further investigations and interventions will be at the direction of the treating thoracic, ENT surgeon or Maxillofacial Surgeon involved.

A pulsating tracheostomy tube may indicate close proximity to a large vessel, which in itself is a risk factor for a major haemorrhage. This constitutes an emergency the first time it is detected, and an experienced clinician should be involved in evaluation at an early stage in all cases. The specialist surgeon or intensivist who inserted the tracheostomy should be consulted immediately and provide advice.

If cuff is inflated, do not deflate cuff until expert clinical assistance is available as it is possible the inflated cuff is tamponading the blood vessel.

Preventative strategies

Review the risk/benefits of anticoagulation each day

Review the measures of clotting and platelet count, especially in the critically ill and in the first few days post-op. Consider correcting platelet count if it falls below $50 \times 10^9/L$

We recommend discussing this document with your hospital-wide tracheostomy team in order to review and relevant policies and to ensure clear lines of communication and surgical/interventional radiology availability in the event of a tracheostomy-related bleed.

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Legislation/References/Supporting Documents:

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NCEPOD On the right trach 2014 (www.ncepod.org)