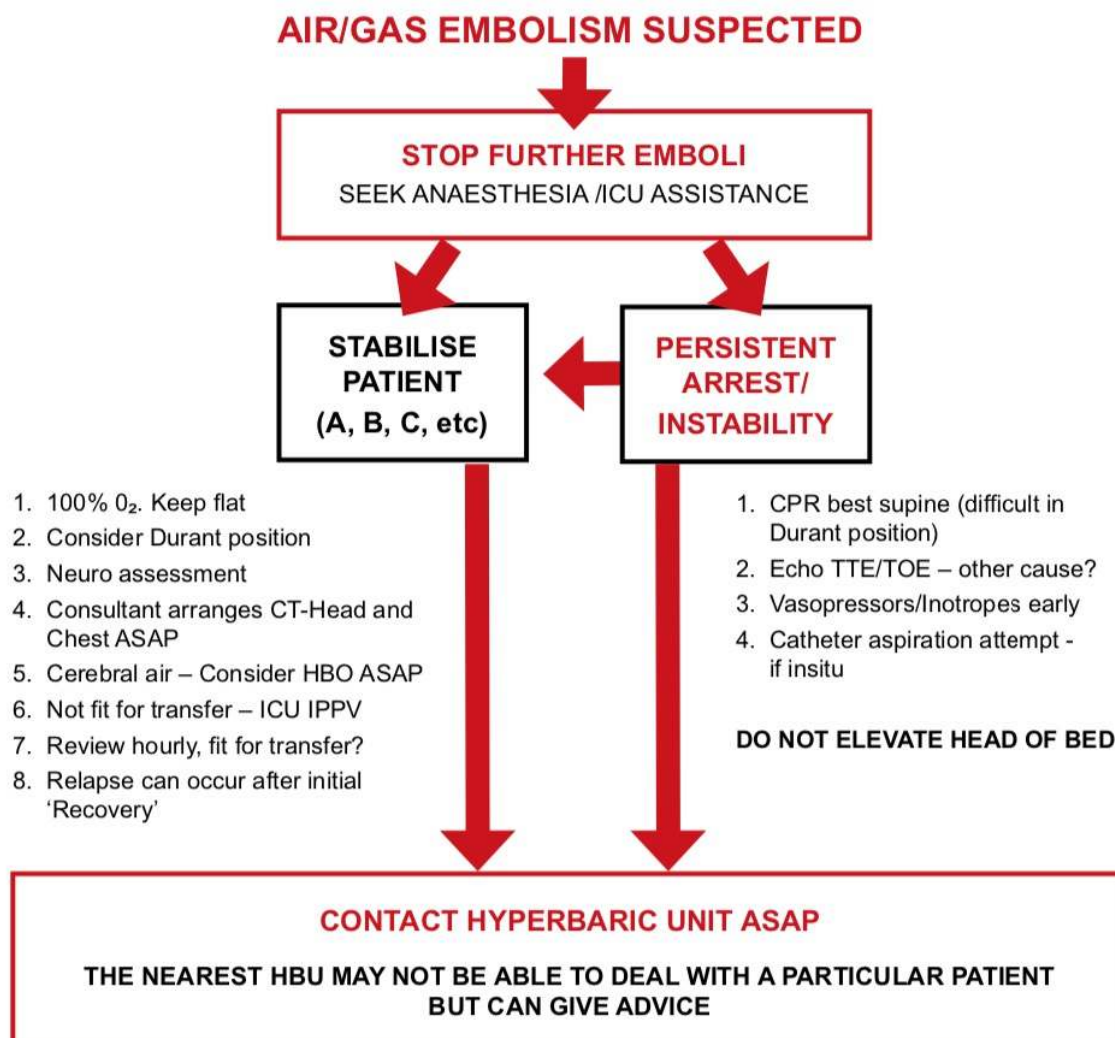


Major Air / Gas Embolism Guideline

Prevention is better than cure – Meticulous care during device insertion, use & removal
PLEASE SEE GUIDELINE ON CVC REMOVAL

Summary flowchart of approach to suspected gas embolism:



Not all HBUs have consultant anaesthetists in the unit available 24/7

Most units have a 1h callout time after hours

Early contact will facilitate ICU/ anaesthesia staffing arrangement in the nearest unit or transfer further afield.

Aberdeen	0345 408 6008
Chichester	01243 330 096
Great Yarmouth	01493 452 452
Hull	01482 659 471
London (Whipps Cross)	07999292999
Rugby-Midlands	07940 353 816
Oban	0345 408 6008
Plymouth	07831 151 523
Wirral	0151 648 8000

CONTRAINDICATIONS

Bullous lung disease

Undrained – Pneumothorax

Others are relative (discuss risk/benefit)

****The aim of Urgent CT imaging is to rule out another cause for the clinical picture; should not delay urgent Hyperbaric referral in obvious cases.**

Air bubbles may disappear but damage persists in many cases!

Procedures at risk of gas embolism

- **Vascular access devices; *insertion, use & removal*** (CVC, IABP rupture)
- **Diagnostic procedures;** (Thoracocentesis, LP, arterial angiography)
- **Surgical procedures;** (Neuro, Head & Neck, Cardiothoracic, Vascular, Laparoscopic, C-Section, Orthopaedic)
- **Trauma;** chest trauma, blast injury, DCI (diving incidents)

Major air embolism – Probably >0.5ml/kg

Symptoms and Signs

- Desaturation, wheezing, breathlessness
- Hypotension, chest pain, heart failure, cardiovascular collapse
- Altered mental status, cerebral embolism

Management of suspected or confirmed air/gas embolism

1. Stop air/gas entrainment
2. Provide high flow oxygen (15lpm via non-rebreather mask with reservoir if spontaneous ventilating, or 100% oxygen if ventilated)
3. Lie patient in left lateral and head down position if possible
4. Continuous monitoring of ECG, BP and oxygen saturations
5. Call for senior medical attendance
6. Consider aspiration of right sided gas via existing central venous access
7. If signs of haemodynamic or respiratory compromise call ITU
8. Call 2222 if peri-arrest / cardiac or respiratory arrest and commence normal CPR protocol
9. Consider urgent CT Head and Chest and TTE/TOE
10. Consider Hyperbaric Oxygen Therapy Unit referral – Aberdeen 0345 408 6008
11. If normal physiology and well for 60mins, wean O₂ and allow patient back to normal position

Reference

1. Mirski MA, Lele AV, Fitzsimmons L, Toung TJK. Diagnosis and treatment of vascular air embolism. Anesthesiology. 2007 Jan.;106(1):164–77.
2. <https://www.ics.ac.uk/ICS/ICS/GuidelinesAndStandards/ICSGuidelines.aspx>

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