Failed Intubation in Obstetric Patients
Clinical Guideline

V3.0

April 2022
1. **Aim/Purpose of this Guideline**

1.1. To give guidance to obstetric anaesthetists in the preparation for general anaesthesia and management of a failed intubation in an obstetric patient.

1.2. This version supersedes any previous versions of this document.

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Royal Cornwall Hospital Trust  
[mailto:rch-tr.infogov@nhs.net](mailto:rch-tr.infogov@nhs.net)

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2. **The Guidance**

2.1. **Definition**

A failed intubation in obstetrics is one that is not accomplished following a rapid sequence induction of anaesthesia.

2.2. **Incidence**

The incidence of failed intubation has been shown to be as high as 1 in 250 in obstetric patients.

2.3. **Background**

Failed tracheal intubation is an important factor contributing to maternal morbidity and mortality and can delay the delivery of the compromised foetus.

Anaesthetists cannot always predict difficult intubations, but the following can minimise the risk:

- Adequate assessment of the airway pre-operatively
- Having adjunctive airway equipment available
- A plan as to whether to wake the patient or proceed with surgery in the event of failed intubation
- Having a robust plan for the management of a failed intubation (Failed Intubation Drill). In 2015 the Difficult airway society (DAS) in conjunction...
with the Obstetric Anaesthetists Association (OAA) produced new guidelines for the management of difficult and failed intubation in obstetric patients. These are the first national obstetric-specific failed intubation guidelines in the UK.

2.4. DAS and OAA guidelines for difficult and failed intubation consists of 4 algorithms and 2 tables (see appendices)

- Master algorithm gives an overview (Appendix 3)
- Algorithm 1 gives a framework on how to optimise a safe general anaesthetic (GA) technique (Appendix 4)
- Table 1 gives a structure for deciding whether to wake the patient or proceed should intubation fail (Appendix 5)
- Algorithm 2 summarises the management of failed tracheal intubation (appendix 6)
- Algorithm 3 covers ‘can’t intubate, can’t oxygenate’ (Appendix 7)
- Table 2 gives management after failed intubation (Appendix 8)

2.5. **Algorithm 1 – Safe Obstetric general anaesthesia (Appendix 3)**

Importance of preparation and planning

2.5.1. **Pre-theatre planning**

2.5.1.1. An anaesthetic risk assessment should be completed at booking by the midwife and should any single risk factor be identified a referral to the obstetric anaesthetic clinic should be made. Women predicted to have airway difficulties should be referred antenatally for specific anaesthetic plan. Predictors of airway difficulty include (NEW 2022):

- Difficulty extending neck (cannot “look at the ceiling”)
- Limited mouth opening
- Protruding front teeth
- Retrognathia (lower jaw sits further back than upper jaw)

2.5.1.2. **Airway assessment**

An anaesthetic assessment should be made and should include airway assessment for bag mask ventilation, intubation, and front-of-neck access.

2.5.1.2. **Oral piercings should be removed**

2.5.1.3. **Fasting status and antacid prophylaxis (Refer to RCHT fasting guidelines for general anaesthesia)**
2.5.1.4. Omeprazole 40mg (NEW 2022) should be prescribed the night before surgery and the morning of surgery for elective Caesarean Section.

2.5.1.5. High risk women in labour should not eat but may have clear fluids and be prescribed-omeprazole 40mg 12 hourly (NEW 2022)

2.5.1.6. Sodium Citrate should be administered prior to induction

2.5.2. **Plan with team**

2.5.2.1. Category of Caesarean section

2.5.2.2. WHO checklist. May be modified for category 1 Caesarean section

2.5.2.3. Check standardised difficult airway equipment trolley is available

2.5.2.4. Identify senior help and call if necessary

2.5.2.5. Whether to continue or wake patient if difficult intubation occurs. Refer to Table 1 (Appendix 3)

2.5.2.6. Has intrauterine fetal resuscitation been undertaken?

2.5.2.7. **Table 1** – to wake patient or proceed with surgery? (Appendix 3)

2.5.2.8. This should be discussed with the obstetric team prior to induction and factors listed in Table 1 should be considered

2.5.2.9. The anaesthetist should consider whether (s)he would be happy to proceed with surgery with a Supraglottic Airway Device (SAD)

2.5.2.10. Overriding reason to proceed with GA is maternal compromise not responsive to resuscitation and acute foetal compromise secondary to an irreversible cause

2.5.2.11. Firm Indications to wake the mother are supraglottic swelling and continued airway obstruction in the presence of optimised SAD management.

2.5.3. **Rapid sequence induction**

2.5.3.1. Optimise patient position

   - Left lateral tilt

   - Head up 20-30 degrees.

   - Ramped position in morbidly obese parturients
2.5.3.2. Pre-oxygenation

- To fractional ET O2>0.9
- Consider high-flow humidified Oxygen (apnoeic oxygenation) using THRIVE

2.5.3.3. Cricoid pressure

- 10N increasing to 30N as patient loses consciousness
- Reduce this to 20N if patient head-up
- Low threshold to release cricoid pressure if intubation or mask ventilation prove difficult.
- Be prepared to reapply cricoid pressure, suction and introduce head-down tilt if regurgitation should occur

2.5.3.4. Drug administration

- Propofol vs Thiopentone. Use drug most familiar to your practise. Advantage of Propofol is familiarity and suppression of laryngeal reflexes for SAD. Ensure adequate dose
- Suxamethonium vs Rocuronium. Suxamethonium increases oxygen consumption and may cause earlier desaturation. **DO NOT GIVE A 2ND DOSE of SUXAMETHONIUM** no matter how tempting
- Rocuronium is an alternative and may be reversed with sugammadex if necessary (NEW 2022)

2.5.3.5. Consider facemask ventilation

- Low inflation breaths at low pressures (<20cmH2O) after induction.

2.5.3.6. First intubation attempt

- Have a low threshold for using the videolaryngoscope as first line device, especially in morbidly obese, or those with a potential difficult airway. Use for the second intubation attempt if mac blade was used initially.
- If first attempt fails, consider repositioning, releasing cricoid or manipulating assistant’s hand, different laryngoscope, bougie. Avoid airway trauma.

2.5.3.7. Second intubation attempt

- By most experienced anaesthetist present
• Consider manoeuvres above
• Consider further dose of induction agent to prevent awareness

2.5.3.8. Verify tracheal intubation
• Capnography
• Visualising tube between cords
• Auscultation
• Fibre optic visualisation of tracheal rings and carina

2.5.4. Important points
• The prime aim of the failed intubation drill is to keep the mother oxygenated.
• Regional anaesthesia is preferred to a general anaesthetic for delivery of the distressed neonate by caesarean section unless contraindicated.
• Maternal welfare always takes precedence over fetal compromise.
• Morbidly obese women should not be anaesthetised by trainees without senior consultation.

2.6. Algorithm 2 Obstetric failed tracheal intubation (Appendix 3)
If second attempt is unsuccessful, declare a FAILED INTUBATION to the team

2.6.1. Request more experienced help

2.6.2. MAINTAIN OXYGENATION via facemask or SAD

2.6.3. Prevent aspiration and awareness

2.6.4. Consider oropharyngeal airway, 2-person technique and release of cricoid pressure if facemask ventilation is difficult

2.6.5. If facemask ventilation difficult and decision has been made to proceed with surgery, insert 2nd generation SAD with gastric drain (May need to release cricoid pressure)

2.6.6. If first SAD does not provide effective airway, insert alternative size or device

2.6.7. Maximum of 2 insertions
2.7. **Algorithm 3 “Can’t intubate, can’t oxygenate” (Appendix 3)**

2.7.1. Ensure all modifiable features have been treated, eg laryngeal spasm, poor chest wall compliance. A further dose of muscle relaxant may improve the situation.

2.7.2. Call specialist help, ie ENT surgeon or intensivist.

2.7.3. Attempt front of neck procedure with blade, bougie and endotracheal tube.

2.7.4. In the event of failure to restore oxygenation, cardiac arrest protocol should be followed including Caesarean Delivery

2.7.5. **Decision to wake;**

Decision to wake patient may be based on presence of partially compromised airway with suboptimal airway control, airway oedema, stridor, and airway bleeding.

2.7.5.1. If decision to wake, maintain oxygenation and avoid regurgitation, vomiting and awareness.

2.7.5.2. Beware laryngeal spasm on arousal.

2.7.5.3. Reverse muscle relaxant

2.7.5.4. Review urgency of delivery of fetus with obstetrician on awakening – consider regional technique, awake intubation, or elective tracheostomy.

2.7.5.5. Inform neonatologist.

2.7.6. **Decision to proceed;**

Key issues to consider are:

- Airway device and ventilation strategy
- Maintenance of anaesthesia
- Use of cricoid pressure
- Drainage of gastric contents
- Plans to perform delayed tracheal intubation
- Surgery should be performed by most experienced surgeon present
- Constant evaluation of airway patency, ventilation and oxygenation throughout case
- May have to accept suboptimal conditions until after delivery when pulmonary compliance may improve.
2.7.7. **Extubation of the trachea**

- 30% of adverse events occur at the end of anaesthesia (4th NAP project)
- Key issues are planning and preparation including options for re-intubation
- Perform awake extubation unless transfer to the intensive care unit for controlled ventilation and extubation is indicated

2.8. **Debriefing and follow-up**

2.8.1. Successful debriefing is achieved by identifying aspects of good performance, areas of improvement and suggestions of what could have been done differently in future

2.8.2. Perform follow-up visit. If necessary arrange an ENT review if evidence of airway trauma

2.8.3. Ask specifically about awareness

2.8.4. Full documentation should be made about ease of bag mask ventilation, grade of laryngoscopy, airway equipment or adjuncts use. Complete a Difficult Airway Alert on Maxims (NEW 2022).

2.8.5. For a difficult/failed intubation, a letter for the patient and for her GP should be sent.

2.9. **Training and awareness**

Annual training to be carried out by all the anaesthetists that work on the obstetric unit.

2.10. **Documentation**

There should be clear documentation in the maternal records as to the events and treatment administered.

### 3. Monitoring compliance and effectiveness

<table>
<thead>
<tr>
<th>Information Category</th>
<th>Detail of process and methodology for monitoring compliance</th>
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<tbody>
<tr>
<td><strong>Element to be monitored</strong></td>
<td>All cases of failed intubation</td>
</tr>
<tr>
<td><strong>Lead</strong></td>
<td>Anaesthetic Risk Management Lead</td>
</tr>
<tr>
<td><strong>Tool</strong></td>
<td>All cases will be reported via Trusts electronic reporting system (DATIX) and reviewed at the clinical incident review meeting</td>
</tr>
<tr>
<td><strong>Frequency</strong></td>
<td>Every case</td>
</tr>
<tr>
<td>Information Category</td>
<td>Detail of process and methodology for monitoring compliance</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------------------------------</td>
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</table>
| Reporting arrangements | Individual feedback on each case  
Any training needs identified to be reported to the anaesthetic training lead consultant |
| Acting on recommendations and Lead(s) | Any action plans will be monitored through the Maternity Risk Management Forum |
| Change in practice and lessons to be shared | One to one individual feedback  
Training needs addressed through consultant anaesthetic training lead |

4. **Equality and Diversity**

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the 'Equality, Inclusion & Human Rights Policy' or the [Equality and Diversity website](#).

4.2. **Equality Impact Assessment**

The Initial Equality Impact Assessment Screening Form is at Appendix 2.
### Appendix 1. Governance Information

<table>
<thead>
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<th>Information Category</th>
<th>Detailed Information</th>
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<tr>
<td><strong>Document Title:</strong></td>
<td>Failed Intubation in Obstetric Patients Clinical Guideline V3.0</td>
</tr>
<tr>
<td><strong>This document replaces (exact title of previous version):</strong></td>
<td>Failed Intubation in Obstetric Patients Clinical Guideline V2.1</td>
</tr>
<tr>
<td><strong>Date Issued/Approved:</strong></td>
<td>April 2022</td>
</tr>
<tr>
<td><strong>Date Valid From:</strong></td>
<td>April 2022</td>
</tr>
<tr>
<td><strong>Date Valid To:</strong></td>
<td>April 2025</td>
</tr>
<tr>
<td><strong>Directorate / Department responsible (author/owner):</strong></td>
<td>Dr Katherine Sprigge, Anaesthetic Consultant</td>
</tr>
<tr>
<td><strong>Contact details:</strong></td>
<td>01872 25 3132</td>
</tr>
<tr>
<td><strong>Brief summary of contents:</strong></td>
<td>To give guidance to obstetric anaesthetists in the management of a failed intubation in an obstetric patient</td>
</tr>
<tr>
<td><strong>Suggested Keywords:</strong></td>
<td>Use this section to suggest keywords to be added by the Uploader to aid document retrieval.</td>
</tr>
<tr>
<td><strong>Target Audience:</strong></td>
<td>RCHT: Yes CFT: No KCCG: No</td>
</tr>
<tr>
<td><strong>Executive Director responsible for Policy:</strong></td>
<td>Medical Director</td>
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| **Approval route for consultation and ratification:** | Obstetric Consultant Anaesthetists Meeting  
Maternity Guidelines  
Care Group Board |
<p>| <strong>General Manager confirming approval processes:</strong> | Mary Baulch                                                                          |
| <strong>Name of Governance Lead confirming approval by specialty and care group management meetings:</strong> | Caroline Amukusana                                                                  |
| <strong>Links to key external standards:</strong>             | None                                                                                 |
| <strong>Related Documents:</strong>                           | • Management of the difficult and failed airway in obstetric anaesthesia – review     |</p>
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<td>• Obstetric Anaesthetist Association website – <a href="http://www.oaa-anaes.ac.uk">www.oaa-anaes.ac.uk</a></td>
</tr>
<tr>
<td></td>
<td>• Royal College of Anaesthetists website – <a href="http://www.rcoa.ac.uk">www.rcoa.ac.uk</a></td>
</tr>
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<td></td>
<td>• M C Mushambi et al. OAA and DAS guidelines for the management of difficult and failed tracheal intubation in obstetrics: Anaesthesia 2015, 70,1286-1306</td>
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<p>| Training Need Identified? | No – Training on-going through training log books |
| Publication Location (refer to Policy on Policies – Approvals and Ratification): | Internet &amp; Intranet |
| Document Library Folder/Sub Folder: | Clinical / Midwifery and Obstetrics |</p>
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<th>Date</th>
<th>Version Number</th>
<th>Summary of Changes</th>
<th>Changes Made by</th>
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<td>January 2006</td>
<td>V1.0</td>
<td>Initial Issue.</td>
<td>Dr Bill Harvey Consultant Anaesthetist.</td>
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<td>December 2009</td>
<td>V1.1</td>
<td>Addition of a flow chart.</td>
<td>Dr Catherine Ralph Consultant Anaesthetist.</td>
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<td>February 2012</td>
<td>V1.2</td>
<td>Addition of compliance monitoring table.</td>
<td>Dr Catherine Ralph Consultant Anaesthetist.</td>
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<td>17th July 2015</td>
<td>V1.3</td>
<td>Minor change: Spontaneously Breathing following General Anaesthetic: Proceed with caution</td>
<td>Dr Sam Banks Consultant Anaesthetist</td>
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<td>6th September 2018</td>
<td>V2.0</td>
<td>Major change to include DAS/OAA guidelines</td>
<td>Dr Sam Banks Consultant Anaesthetist</td>
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<td>April 2022</td>
<td>V3.0</td>
<td>Minor updates</td>
<td>Dr Katherine Sprigge Consultant Anaesthetist</td>
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**This document is to be retained for 10 years from the date of expiry.**

**This document is only valid on the day of printing**

**Controlled Document**

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Appendix 2. Equality Impact Assessment

Section 1: Equality Impact Assessment (EIA) Form

The EIA process allows the Trust to identify where a policy or service may have a negative impact on an individual or particular group of people.

For guidance please refer to the Equality Impact Assessment Policy (available from the document library) or contact the Equality, Diversity & Inclusion Team rcht.inclusion@nhs.net

<table>
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<th>Information Category</th>
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<tr>
<td>Name of the strategy / policy / proposal / service function to be assessed:</td>
<td>Failed Intubation in Obstetric Patients Clinical Guideline V3.0</td>
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<tr>
<td>Directorate and service area:</td>
<td>Obstetrics and Gynaecology</td>
</tr>
<tr>
<td>Is this a new or existing Policy?</td>
<td>Existing</td>
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<tr>
<td>Name of individual completing EIA (Should be completed by an individual with a good understanding of the Service/Policy):</td>
<td>Dr Katherine Sprigge</td>
</tr>
<tr>
<td>Contact details:</td>
<td>01872 25 2879</td>
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<table>
<thead>
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<th>Information Category</th>
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<tr>
<td>1. Policy Aim - Who is the Policy aimed at? (The Policy is the Strategy, Policy, Proposal or Service Change to be assessed)</td>
<td>To give guidance to obstetric anaesthetists in the management of a failed intubation in an obstetric patient.</td>
</tr>
<tr>
<td>2. Policy Objectives</td>
<td>To appropriately manage a failed intubation incident in the obstetric patient.</td>
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<tr>
<td>3. Policy Intended Outcomes</td>
<td>Safety of the woman.</td>
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<td>4. How will you measure each outcome?</td>
<td>As per Compliance Monitoring Tool.</td>
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<td>5. Who is intended to benefit from the policy?</td>
<td>Obstetric patients undergoing general anaesthesia.</td>
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<td>6a. Who did you consult with? (Please select Yes or No for each category)</td>
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<td></td>
<td>Patients/ visitors: No</td>
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<td>Local groups/ system partners: No</td>
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<td>External organisations: No</td>
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<td>Other: No</td>
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6b. Please list the individuals/groups who have been consulted about this policy.

Please record specific names of individuals/groups:
- Consultant Anaesthetists
- Maternity Guidelines Group
- Care Group Board
- Policy Review Group

6c. What was the outcome of the consultation?

Agreed

6d. Have you used any of the following to assist your assessment?

National or local statistics, audits, activity reports, process maps, complaints, staff or patient surveys: NO

7. The Impact

Following consultation with key groups, has a negative impact been identified for any protected characteristic? Please note that a rationale is required for each one.

Where a negative impact is identified without rationale, the key groups will need to be consulted again.

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<tr>
<th>Protected Characteristic</th>
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<th>Rationale</th>
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<td>Age</td>
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<tr>
<td>Sex (male or female)</td>
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<tr>
<td>Gender reassignment (Transgender, non-binary, gender fluid etc.)</td>
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<tr>
<td>Race</td>
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<td>Disability (e.g. physical or cognitive impairment, mental health, long term conditions etc.)</td>
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<td>Religion or belief</td>
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<td>Marriage and civil partnership</td>
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<td>Pregnancy and maternity</td>
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<td>Rationale</td>
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<td>--------------------------</td>
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<td><strong>Sexual orientation</strong> (e.g. gay, straight, bisexual, lesbian etc.)</td>
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A robust rationale must be in place for all protected characteristics. If a negative impact has been identified, please complete section 2. If no negative impact has been identified and if this is not a major service change, you can end the assessment here.

I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

Name of person confirming result of initial impact assessment: Dr Katherine Sprigge

If a negative impact has been identified above OR this is a major service change, you will need to complete section 2 of the EIA form available here: [Section 2. Full Equality Analysis](#)
Appendix 3

Master algorithm – obstetric general anaesthesia and failed tracheal intubation

Algorithm 1
Safe obstetric general anaesthesia
Pre-induction planning and preparation
Team discussion
Rapid sequence induction
Consider facemask ventilation ($P_{max} < 20$ cmH$_2$O)
Laryngoscopy
(maximum 2 intubation attempts; 3rd intubation attempt only by experienced colleague)
Success
Verify successful tracheal intubation and proceed
Plan extubation
Fail

Algorithm 2
Obstetric failed tracheal intubation
Declare failed intubation
Call for help
Maintain oxygenation
Supraglottic airway device (maximum 2 attempts) or facemask
Success
Is it essential / safe to proceed with surgery immediately?
Yes
Proceed with surgery
No
Wake

Algorithm 3
Can’t intubate, can’t oxygenate
Declare CICO
Give 100% oxygen
Exclude laryngospasm – ensure neuromuscular blockade
Front-of-neck access
Success

*See Table 1, †See Table 2

Algorithm 2 – obstetric failed tracheal intubation

Declare failed intubation
Theatre team to call for help
Priority is to maintain oxygenation

Supraglottic airway device
(2nd generation preferable)
Remove cricoid pressure during insertion
(maximum 2 attempts)

Facemask +/- oropharyngeal airway
Consider:
  - 2-person facemask technique
  - Reducing / removing cricoid pressure

Is adequate oxygenation possible?

Follow Algorithm 3
Can’t intubate, can’t oxygenate

Is it essential / safe to proceed with surgery immediately?*

No

Proceed with surgery9

Yes

Wake9

*See Table 1, 2

Algorithm 3 – can’t intubate, can’t oxygenate

Declare emergency to theatre team
Call additional specialist help (ENT surgeon, intensivist)
Give 100% oxygen
Exclude laryngospasm – ensure neuromuscular blockade

Perform front-of-neck procedure

Is oxygenation restored?

No

Maternal advanced life support
Perimortem caesarean section

Yes

Is it essential / safe to proceed with surgery immediately?*

No

Wake9

Yes

Proceed with surgery9

*See Table 1, 2
### Table 1 – proceed with surgery?

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<tr>
<th>Factors to consider</th>
<th>WAKE</th>
<th>PROCEED</th>
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<tbody>
<tr>
<td><em>Maternal condition</em></td>
<td>• No compromise</td>
<td>• Mild acute compromise</td>
</tr>
<tr>
<td>Fetal condition</td>
<td>• No compromise</td>
<td>• Compromise corrected with intrauterine resuscitation, pH &lt; 7.2 but &gt; 7.15</td>
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<td>Anaesthetist</td>
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<td>• Junior trainee</td>
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<td>Obesity</td>
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<td>Surgical factors</td>
<td>• Complex surgery or major haemorrhage anticipated</td>
<td>• Multiple uterine scars</td>
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<td>Aspiration risk</td>
<td>• Recent food</td>
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<td>Alternative anaesthesia</td>
<td>• No anticipated difficulty</td>
<td>• Predicted difficulty</td>
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<td>Airway device / ventilation</td>
<td>• Difficult facemask ventilation</td>
<td>• Adequate facemask ventilation</td>
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<td>Airway hazards</td>
<td>• Laryngeal oedema</td>
<td>• Bleeding</td>
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Criteria to be used in the decision to wake or proceed following failed tracheal intubation. In any individual patient, some factors may suggest waking and others proceeding. The final decision will depend on the anaesthetist's clinical judgement.


### Table 2 – management after failed tracheal intubation

#### Wake
- Maintain oxygenation
- Maintain cricoid pressure if not impeding ventilation
- Either maintain head-up position or turn left lateral recumbent
- If rocuronium used, reverse with sugammadex
- Assess neuromuscular blockade and manage awareness if paralysis is prolonged
- Anticipate laryngospasm / can't intubate, can't oxygenate

#### Proceed with surgery
- Maintain anaesthesia
- Maintain ventilation - consider merits of:
  - controlled or spontaneous ventilation
  - paralysis with rocuronium if sugammadex available
- Anticipate laryngospasm / can't intubate, can't oxygenate
- Minimise aspiration risk:
  - maintain cricoid pressure until delivery (if not impeding ventilation)
  - after delivery maintain vigilance and reapply cricoid pressure if signs of regurgitation
  - empty stomach with gastric drain tube if using second-generation supraglottic airway device
  - minimise fundal pressure
  - administer H₂ receptor blocker i.v. if not already given
- Senior obstetrician to operate
- Inform neonatal team about failed intubation
- Consider total intravenous anaesthesia