Introduction

Failed intubation is the failure to pass an endotracheal tube into the trachea following induction of a general anaesthetic. Failed intubation is encountered almost 10 times more often in the obstetric population (1:390 compared with 1:3000 in the non-pregnant population).

Causes of failed intubation in obstetrics:

- Increased pharyngeal and laryngeal vascularity and oedema
- Large breasts
- Incorrectly applied cricoid pressure
- Co-morbidities such as obesity
- Situational factors such as urgency of surgery and remote site of the labour ward
- Inexperience of anaesthetist and ODP
- Human factors and fixation errors
- The need for rapid sequence induction
- Reduced functional residual capacity and reduced safe apnoea time

This document sets out the procedures and processes to follow in the event of a failed adult intubation in obstetrics with the intention of providing safe and effective care to this patient group.

Scope:

These guidelines are for the use of all staff involved in the management of failed intubation in obstetrics. This includes midwifery, obstetric, anaesthetic and theatre staff.

Legal Liability (standard UHL statement):

Guidelines issued and approved by the Trust are considered to represent best practice. Staff may only exceptionally depart from any relevant Trust guidelines providing always that such departure is confined to the specific needs of individual circumstances. In healthcare delivery such departure shall only be undertaken where, in the judgement of the responsible healthcare professional it is fully appropriate and justifiable - such decision to be fully recorded in the patient’s notes.
**Risk Management:**

A clinical incident reporting form must be completed for all obstetric emergencies. Please refer to the Maternity Service Risk Management Strategy for details.

**Related documents:**

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<tr>
<td>High Dependency Care</td>
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<td>Maternity Records Documentation Policy</td>
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<td>Patient case note documentation policy (trust wide)</td>
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<td>Swabs, instruments, needles and other accountable items within maternity</td>
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<td>Resuscitation policy (trust wide)</td>
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<td>Fetal heart rate monitoring in Labour</td>
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**Recommendations:**

1. Measures should be put in place to reduce the incidence of failed intubation

2. The 2015 OAA DAS Obstetric difficult airway guidelines should be followed if intubation is difficult or if failed intubation occurs

**Recommendation One:**

1. Measures should be put in place to reduce the incidence of failed intubation

- High risk patients should be referred to antenatal anaesthetic clinics for planning the management strategy.
- Attendance at delivery suite wardrounds: Be aware of patients who may be potentially difficult to intubate so that a plan can be put in place such as an early working epidural
- Carry out airway assessment whenever possible
- Avoid general anaesthesia if possible and consider intrauterine fetal resuscitation where appropriate
• Carry out WHO check list and communicate any concerns with the team.
• Communicate with senior colleagues if airway problems are anticipated
• Attain optimum position for direct laryngoscopy before attempting intubation
• Know your intubation equipment – Do not use unfamiliar equipment in a failed intubation situation
• Use appropriate induction agents and muscle relaxants
• Have a trained assistant to apply cricoid pressure. Incorrectly applied cricoid pressure is a common cause of a failed intubation.
• Make sure you are trained in basic and advanced airway skills.
• Follow the OAA/ DAS safe obstetric general anaesthetic algorithm (Algorithm 1)

2. The OAA DAS Obstetric difficult airway guidelines should be followed if intubation is difficult or if failed intubation occurs

The OAA & DAS published the first national obstetric failed intubation guidelines in 2015, which address all the airway related issues specific to pregnant women. It consists of 4 algorithms and 2 tables. Algorithm 2 & 3 provide guidelines on management of patients with failed tracheal intubation and can’t intubate, can’t oxygenate scenario.

Safe obstetric GA

Algorithm 1 gives guidance on how to administer a safe obstetric general anaesthetic. The guideline concentrates on pre-theatre preparation and team planning, using WHO safety checklist and planning for wake or proceed if there is an airway issue. Therefore it is important to create awareness among the team members of a potential problem that could arise.

Before giving a GA:

➢ Consider what you will do if you fail to intubate the patient. Are you going to proceed with the operation OR are you going to wake the patient up?
➢ The answer depends on several factors which are listed in Table 1 of the OAA DAS obstetric difficult airway guidelines.
➢ This should ideally be discussed with the obstetricians and a combined decision by the obstetrician and the anaesthetist should be made prior to giving a GA
➢ Table 1 from the guidelines should be followed
Preparation for rapid sequence induction including equipment, optimal positioning and preoxygenation are vital.

Head up position should be used in all GAs and the ramping pillow is recommended in obese women.

Pre-oxygenate the woman to an end-tidal oxygen concentration of 0.9 followed by administration of oxygen via nasal cannulae for apnoeic oxygenation.

If giving a GA, propofol is now the preferred induction agent, although thiopentone can still be used if indicated. Give correct dose of induction agent and muscle relaxant (suxamethonium or rocuronium). If rocuronium is used as the muscle relaxant, ensure that sugammadex is available and a precalculated dose is readily available. Have a second syringe of propofol to avoid awareness in cases of an unexpected difficult airway and a second syringe of suxamethonium (if using suxamethonium) in case the contents of the first syringe is accidentally lost.
Gentle facemask ventilation (peak airway pressure of <20cm H₂O) following administration of induction agent and neuromuscular blocker will help to prolong safe apnoea time. It is important to select an appropriate laryngoscope including a video-laryngoscope for either the first or second intubation attempt. Airway problems should be communicated after the first failure to intubate. Maximum two attempts at intubation should be performed, (a third attempt should be only in a situation whereby an experienced anaesthetist arrives after a trainee has had two attempts already). If the initial laryngoscopy view is not optimal, cricoid pressure should be released or reduced to try to improve the view.
Failed intubation should be declared after two unsuccessful attempts at tracheal intubation and help should be summoned. Attention should be paid to oxygenation at this stage and this can be achieved by using either second generation supraglottic airway device (in UHL this would be an I-gel) or using a facemask (Algorithm 2). A maximum of two attempts must be made at inserting supraglottic device to reduce the risk of airway trauma. Cricoid pressure should be released to facilitate the placement of supraglottic airway device successfully. If face mask is used to oxygenate the woman following a failed intubation, cricoid pressure may need to be released and two hands face mask ventilation used if there is difficulty in face mask ventilation.
Can’t Intubate, Can’t oxygenate

If oxygenation is impossible despite attempts with either the use of a supraglottic airway device or face mask ventilation, a can’t intubate, can’t oxygenate scenario should be declared.

Algorithm 3 gives an outline of the management of the can’t intubate can’t oxygenate situation. ENT and ITU team must be called for help. Administration of 100% oxygen must be continued. Laryngospasm must be excluded at this stage by administering a neuromuscular blockade.
The DAS failed intubation guidelines recommends the scalpel, bougie and tube cricothyroidotomy as the Front-of-Neck (FON) procedure (in the figure below).
Management after Failed intubation

COMBINED OBSTETRICIAN AND ANESTHETIC PLAN is necessary for the decision to proceed with surgery or to abandon surgery after failed intubation. The discussion should have been considered prior to giving a GA as stated above but once a failed intubation has occurred, Table 1 should be referred to once more to make the final decision of whether to wake or proceed.

Table 2 gives guidance on the management of either waking the mother or proceeding with surgery following failed intubation.
Master Algorithm is a summary of all three algorithms and the two tables.
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$_{\text{max}}$ 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

Fail

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

*See Table 1, †See Table 2

References:


26. Fenton PM, Reynolds F. Life saving or ineffective/An observational study of the use of cricoid pressure and maternal outcome in an African setting. IJOA 2009: 18; 106-110
27. Vanner R. Cricoid pressure. Editorial. IJOA 2009: 18;103-105
30. Singh SR, Grey T, Tighe SQM. Cricoid pressure: is it taught and applied correctly. DAS Annual scientific meeting.

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