Worcestershire Acute Hospitals NHS Trust

Failed Intubation in Obstetrics

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Approved by:	Maternity Governance Meeting/ Anaesthetics and Theatre Governance/ SCSD Governance	
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Key Amendments

Date	Amendments	Approved by
April 2023	Document reviewed and re-approved for 3 years	Anaesthetics and Theatre Governance/ SCSD Governance

Introduction

The incidence of failed tracheal intubation has remained unchanged since the 1970's at 2.6 (95% CI 2.0 to 3.2) per 1000 anaesthetics (1 in 390) for obstetric general anaesthesia and 2.3 (95% CI 1.7 to 2.9) per 1000 general anaesthetics (1 in 443) for caesarean section.

Maternal mortality from failed intubation was 2.3 (95% CI 0.3 to 8.2) per 100 000 general anaesthetics for caesarean section (one death per 90 failed intubations). **Maternal deaths occurred from aspiration or hypoxaemia secondary to airway obstruction or oesophageal intubation (Ref 1).**

The Obstetric Anaesthetists' Association (OAA) and The Difficult Airway Society (DAS) have recently published joint guidelines for the management of difficult and failed intubation in Obstetrics. This guideline sets out the procedure to be followed by Anaesthetists in the event of failed intubation.

The following points are to be highlighted:

1. *The location of key equipment in Maternity theatres, Worcestershire Royal Hospital:*

1 Anaesthetic trolley in each obstetric theatre will contain – basic airway equipment including Hudson masks, oro and nasopharyngeal airways (the latter used only in extremis due to increased risk bleeding into airway), bougie.

1 videolaryngoscope kept in the anaesthetic room with and adult Macintosh blade, sterile, in a tray next to the scope.

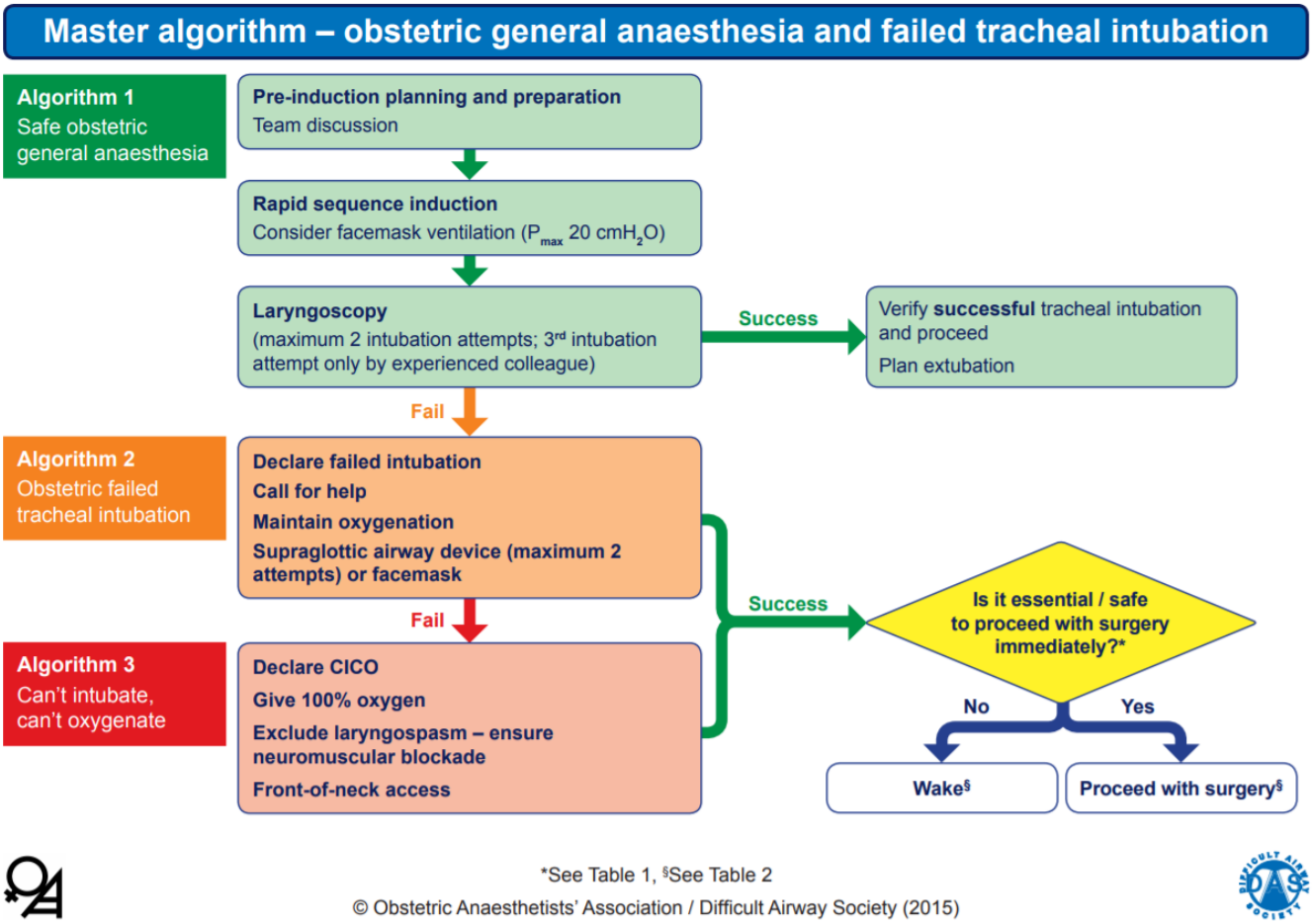
1 "Green box" on the wall behind the anaesthetic machine in each theatre containing equipment required to gain front-of-neck access.

Emergency front of neck access equipment is also kept in the top drawer of trolley in the obstetric anaesthetic room. This consists of: a scalpel, ETT and bougie.

2. *In the most recent Confidential Enquiry into Maternal Deaths and Morbidity 2013-15 (MBRRACE – UK pub. Dec 2017):*

"The choice of tracheal tube for pregnant women should start at size 7.0 and proceed to smaller tube selections if needed (size 6.0 and 5.0)".

Guideline



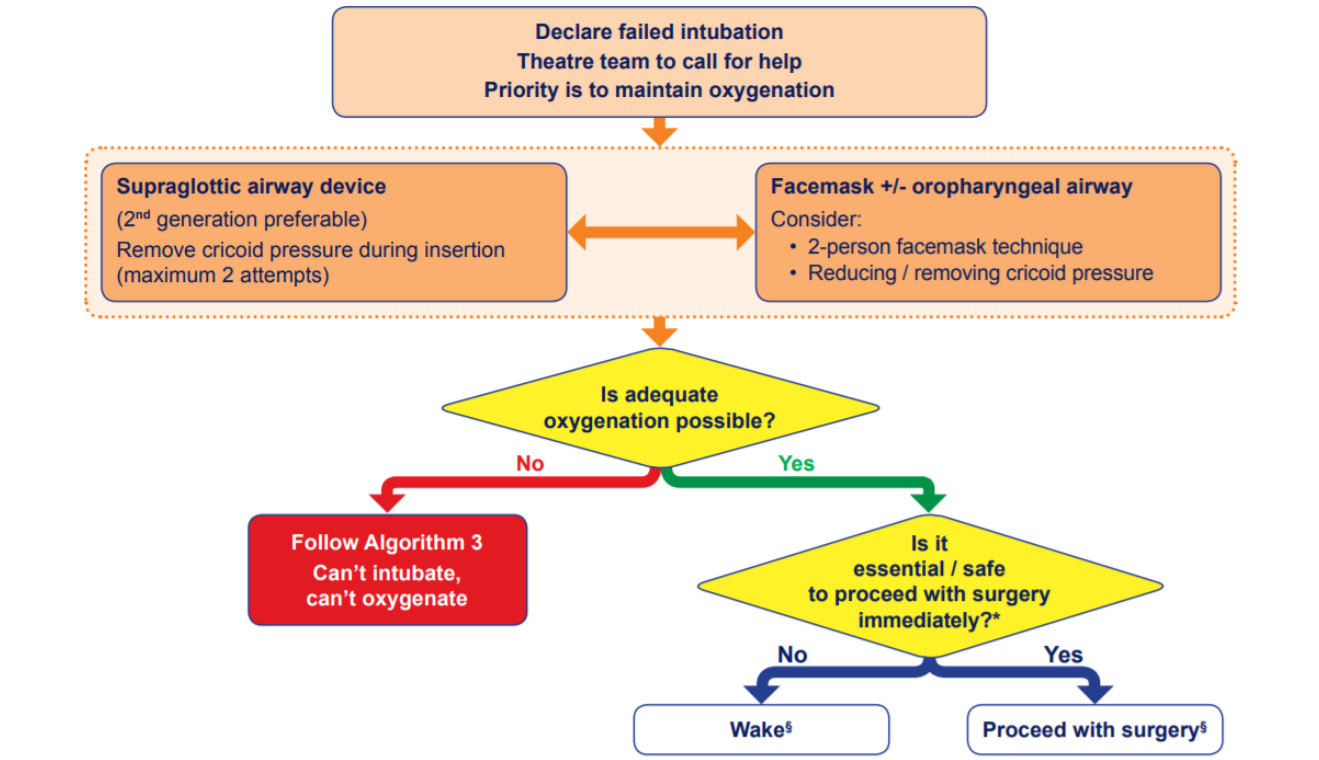
Every anaesthetist **MUST** know the failed intubation drill. Failure to intubate will not harm the patient but failure to oxygenate most certainly will

DO NOT DELAY making the decision that you cannot intubate

Call for senior anaesthetic assistance and a second pair of hands (4th on call Anaesthetist in first instance and General Consultant on call as soon as possible).

Use Algorithm 2 (see below)

Algorithm 2 – obstetric failed tracheal intubation



*See Table 1, §See Table 2

Consider options using Table 1 (see below) as required

Table 1 – proceed with surgery?

	Factors to consider	WAKE			PROCEED
Before induction	Maternal condition	• No compromise	• Mild acute compromise	• Haemorrhage responsive to resuscitation	• Hypovolaemia requiring corrective surgery • Critical cardiac or respiratory compromise, cardiac arrest
	Fetal condition	• No compromise	• Compromise corrected with intrauterine resuscitation, pH < 7.2 but > 7.15	• Continuing fetal heart rate abnormality despite intrauterine resuscitation, pH < 7.15	• Sustained bradycardia • Fetal haemorrhage • Suspected uterine rupture
	Anaesthetist	• Novice	• Junior trainee	• Senior trainee	• Consultant / specialist
	Obesity	• Supermorbid	• Morbid	• Obese	• Normal
	Surgical factors	• Complex surgery or major haemorrhage anticipated	• Multiple uterine scars • Some surgical difficulties expected	• Single uterine scar	• No risk factors
	Aspiration risk	• Recent food	• No recent food • In labour • Opioids given • Antacids not given	• No recent food • In labour • Opioids not given • Antacids given	• Fasted • Not in labour • Antacids given
	Alternative anaesthesia • regional • securing airway awake	• No anticipated difficulty	• Predicted difficulty	• Relatively contraindicated	• Absolutely contraindicated or has failed • Surgery started
After failed intubation	Airway device / ventilation	• Difficult facemask ventilation • Front-of-neck	• Adequate facemask ventilation	• First generation supraglottic airway device	• Second generation supraglottic airway device
	Airway hazards	• Laryngeal oedema • Stridor	• Bleeding • Trauma	• Secretions	• None evident

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.

Then refer to Table 2, to assist management of either waking or continuing surgery

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

After waking

- Review urgency of surgery with obstetric team
- Intrauterine fetal resuscitation as appropriate
- For repeat anaesthesia, manage with two anaesthetists
- Anaesthetic options:
  - Regional anaesthesia preferably inserted in lateral position
  - Secure airway awake before repeat general anaesthesia

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 H_2 receptor blocker i.v. if not already given
- Senior obstetrician to operate
- Inform neonatal team about failed intubation
- Consider total intravenous anaesthesia

Decide Urgency of Delivery

This depends on:

- Your level of experience
- The patient's condition
- The baby's condition

- There are no absolutes – **if you need to choose, the mothers' safety takes precedence over the baby**. If you are inexperienced it is probably better to wake the mother up in all circumstances except when her life is in immediate danger (e.g. massive haemorrhage)
- You should already have called for help in such circumstances
- Severe fetal distress may persuade the more experienced anaesthetist to continue the anaesthetic without protecting the airway – otherwise, wake patient up in the left lateral, head down position and await senior assistance
- Consider regional techniques e.g. spinal or epidural – alternatively consider an awake fibre-optic intubation

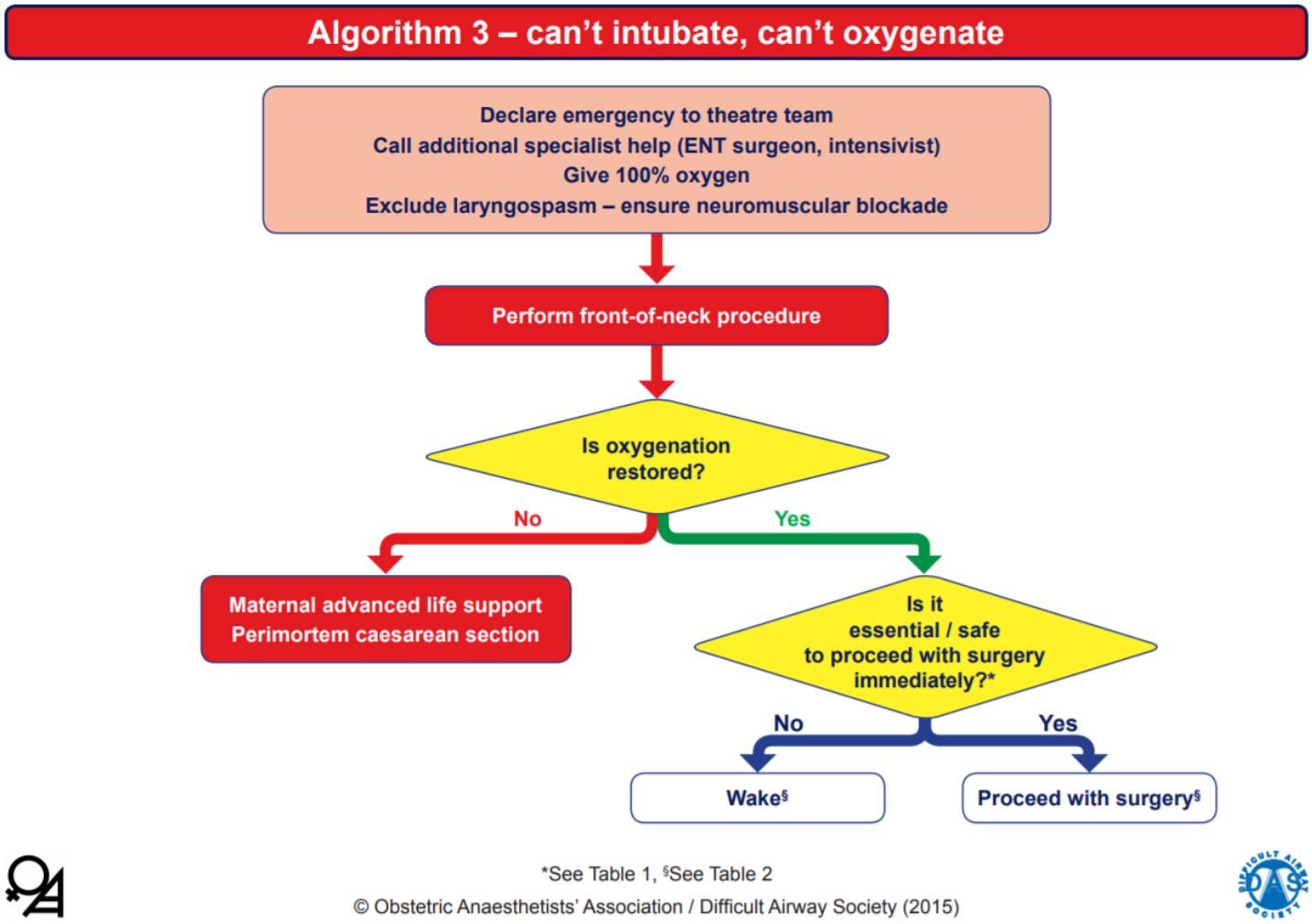
If the decision is made to continue the Anaesthetic

Continue anaesthesia using preferably 2nd generation supraglottic airway with a volatile agent (or facemask +/- oropharyngeal airway if necessary). Manually ventilate until the resumption of spontaneous breathing, then maintain anaesthesia with 50% nitrous oxide in oxygen and a volatile agent (keep the patient deep). Keep the patient in the supine position (lateral tilt until baby delivered), consider tilting the table head up and maintaining cricoid pressure.

Difficult or Impossible Ventilation (Can't intubate, can't Oxygenate)

- Whilst the patient is unable to breath for herself you must continue efforts to oxygenate
- Remember that suxamethonium lasts longer in pregnancy

Use Algorithm 3



- Once oxygenation is established you can turn the patient onto her left side, head down and wait for her to wake up or continue with surgery supine.
- Take care not to dislodge the cricothyroidotomy cannula!

Additional Notes

- Enlist the help of midwives and obstetrician as necessary for turning the patient or manual ventilation of the reservoir bag

- Local infiltration with 0.5% Lignocaine by the obstetrician – (the infiltrate and cut technique) may be used in urgent cases if the obstetrician is familiar with the technique

- Remember to see the patient post-operatively to explain the difficulties and issue a difficult intubation hazard warning at the front of her notes

Under no circumstances should you attempt any other anaesthetic technique until senior (consultant) assistance has arrived. Even in the 'nightmare scenario' it is better to have a live mother with a dead baby than a dead mother (and very possibly a dead or damaged baby)

Once help has arrived you can discuss the most appropriate technique for continuing anaesthesia

Beware of relying on the oximeter to inform of desaturation. In the acute circumstances of maternal desaturation at intubation the response time of the oximeter may exceed the oxygen reserves of the mother!

References

1. Failed tracheal intubation during obstetric general anaesthesia: a literature review S.M.Kinsella[a]A.L.Winton[a]M.C.Mushambi[b]K.Ramaswamy[c]H.Swales[d]A.C.Quinn[e] M.Popat[f]. International Journal of Obstetric Anesthesia. Volume 24, Issue 4, November 2015, Pages 356-374

2. MBRRACE-UK: Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK. December 2017

3. Safe management of the obstetric airway(The OAA/DAS Obstetric Difficult Airway Guidelines).Dr Mary Mushambi, Consultant Anaesthetist -Leicester Royal Infirmary. November 2015