Failed intubation – where to now?

Dr. Nam Le
MBBS FANZCA GCertHealthProfEd
Background/disclosure of interests

- Royal Women’s Hospital & private practice

- ANZCA positions held
  - Supervisor of training for RWH
  - Council member for Victorian region (VRC)
  - Victorian Anesthetic Training Committee member
  - Obstetric Special Interest Group member
  - Difficult Airways Special Interest Group member

- WFSA funded volunteer
My objectives for this talk

- Provide an update on the management of failed airways

- Encourage you to consider whether:
  - A protocol or other aide-memoir is immediately available (both for you and for your Anaesthetist) at your hospital?
  - Are all members of your peri-anaesthesia team familiar with the equipment and protocols?
  - If such an event occurred would your team be able to manage this effectively?
Before we get too far…

What exactly is CICO?

- CICO = Can’t Intubate Can’t Oxygenate
- A CICO event is when all conventional attempts fail
  - Failed intubation
  - Failed LMA insertion
  - Failed face mask ventilation
- Is a rare event
  - Historically not much research, training or education done due to rarity of this crisis
Just a routine operation …
Haven’t we been able to deal with this up until this point?
4th National Audit Project of
The Royal College of Anaesthetists and The Difficult Airway Society

Major complications of airway management in the United Kingdom

Report and findings
March 2011

Editors
Dr Tim Cook, Dr Nick Woodall and Dr Chris Frerk
NAP4 results & recommendations

- Poor planning contributed to poor airway outcomes
- Many cases involved failure to plan for failure
- There was a high failure rate of emergency cricothyroidotomy (60%)
- It was felt that poor equipment, training, insertion technique and ventilation technique contributed to failure
- The technique of cannula cricothyroidotomy needs to be taught and performed to the highest standards to maximise the chances of success
Transition from supraglottic to infraglottic rescue in the “can’t intubate can’t oxygenate” (CICO) scenario

Report from the ANZCA Airway Management Working Group

November 2014
Changes after NAP4

- Emergency response training (including CICO) needs to be undertaken by all anaesthetists at least every 3 years to maintain CPD with ANZCA.

- It is now mandatory for all RWH anaesthetists to have undertaken CICO training every 3 years to maintain accreditation at this site.
The formulation and introduction of a ‘can’t intubate, can’t ventilate’ algorithm into clinical practice

A. M. B. Heard, R. J. Green and P. Eakins

1 Consultant Anaesthetist, Royal Perth Hospital, Perth, Western Australia, Australia
2 Consultant Anaesthetist, Royal Bournemouth Hospital, Bournemouth, Dorset, UK
Figure 1  CICV Algorithm.
CICO Protocol

Failed Oxygenation
>3 Intubation attempts - PLAN A FAIL
Failure to oxygenate via supraglottic device - PLAN B FAIL

Perform Needle Cricothyroidotomy
14G Long Cannula, 5ml syringe, saline
Pillow out. head extended. stabilize trachea

Fail
Is Neck Anatomy Palpable?

Success

Yes
Scalpel Bougie
Oxygenate & Stabilize
Use Jet Ventilation Kit.
Insufflate for 4 sec.
Wait until Sats drop 5% from maximum before insufflating again for 2s.
Size 6 Cuffed ETT

No
Scalpel Finger Cannula
Oxygenate & Stabilize
Use Jet Ventilation Kit.
Insufflate for 4 sec.
Wait until Sats drop 5% from maximum before insufflating again for 2s.
Size 5 Cuffed Melker

Oxygenate & Stabilize
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Consider Wake Up
CICO Protocol

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Size 5 Cuffed Melker
**CICO Protocol**

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**Perform Needle Cricothyroidotomy**
14G Long Canula, 5ml syringe, saline
Pillow out, head extended, stabilize trachea

**Fail**
Is Neck Anatomy Palpable?

**Success**

**Yes**
Scalpel Beugie

**No**
Scalpel Finger Canula

**Oxygenate & Stabilize**
Use Jet Ventilation Kit
Inflate for 4 sec. Wait until SpO2 drop 5% from maximum before insufflating again for 2s.

**Oxygenate & Stabilize**
Use Jet Ventilation Kit
Inflate for 4 sec. Wait until SpO2 drop 5% from maximum before insufflating again for 2s. Consider Wake Up

Size 6 Cuffed ETT

Size 5 Cuffed Melker
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Size 5 Cuffed Melker
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14G Long Cannula, Seldinger syringe, saline
Pillow out head extended, stabilize trachea

Fail
Is Neck Anatomy Palpable?

Success

Yes
Scalpel Bougie

Oxygenate & Stabilize
Use jet Ventilation Kit: Insufflate for 4 sec. Wait until SpO2 drop 5% from maximum before insufflating again for 2s.

Size 6 Cuffed ETT

No
Scalpel Finger Cannula

Oxygenate & Stabilize
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Oxygenate & Stabilize
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Size 5 Cuffed Meeker
CICO Protocol

Failed Oxygenation
>3 intubation attempts - PLAN A FAIL
Failure to oxygenate via supraglottic device - PLAN B FAIL

Perform Needle Cricothyroidotomy
14G Long Gauge, Saline syringe, saline
Pillow out head extended, stabilize trachea

Fail
Is Neck Anatomy Palpable?

Success

Yes
Scalpel Bougie

No
Scalpel Finger Cannula

Oxygenate & Stabilize
Use Jet Ventilation Kit
Insufflate for 4 sec.
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Size 6 Cuffed ETT

Size 5 Cuffed Meiker
Convert to definitive airway?
Table 1 – Criteria to be used in the decision to wake or proceed following failed tracheal intubation at caesarean section

<table>
<thead>
<tr>
<th>Maternal condition</th>
<th>Wake</th>
<th>Proceed to CS</th>
</tr>
</thead>
<tbody>
<tr>
<td>No compromise</td>
<td>Mild acute compromise</td>
<td>Haemorrhage responsive to resuscitation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fetal condition</th>
<th>Wake</th>
<th>Proceed to CS</th>
</tr>
</thead>
<tbody>
<tr>
<td>No compromise</td>
<td>Compromise corrected with IUFR, pH &lt;7.2 but &gt;7.15</td>
<td>Continuing fetal heart rate abnormality in spite of IUFR, pH &lt; 7.15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Anaesthetist</th>
<th>Wake</th>
<th>Proceed to CS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novice</td>
<td>Junior trainee</td>
<td>Senior trainee</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMI</th>
<th>Wake</th>
<th>Proceed to CS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supermorbid</td>
<td>Morbid</td>
<td>Obese</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surgical factors</th>
<th>Wake</th>
<th>Proceed to CS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex surgery or major haemorrhage anticipated</td>
<td>Multiple uterine scars, difficulties expected</td>
<td>Single uterine scar</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aspiration risk</th>
<th>Wake</th>
<th>Proceed to CS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recent food</td>
<td>No recent food, in labour, opioids given, no antacids</td>
<td>No recent food, in labour, no opioids, antacids given</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Airway device</th>
<th>Wake</th>
<th>Proceed to CS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficult face mask ventilation</td>
<td>Adequate face mask ventilation</td>
<td>First generation SAD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Airway pathology</th>
<th>Wake</th>
<th>Proceed to CS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airway oedema, stridor</td>
<td>Suboptimal airway, airway bleeding</td>
<td>Facial oedema, potential deterioration</td>
</tr>
</tbody>
</table>
CICO Protocol

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Failure to oxygenate via supraglottic device - PLAN B FAIL

Perform Needle Cricothyroidotomy
14G Long Gancuin, 5ml syringe, saline
Pillow out head extended, stabilize trachea

Fail
Is Neck Anatomy Palpable?

Yes
Scalpel Bougie

Oxygenate & Stabilize
Use jet ventilation Kit. Insufflate for 4 sec.
Wait until SaO2 drop 5% from maximum before insufflating again for 2s.

Size 6 Cuffed ETT

No
Scalpel Finger Cannula

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Use jet ventilation Kit. Insufflate for 4 sec.
Wait until SaO2 drop 5% from maximum before insufflating again for 2s.
Consider Wake Up

Success

Oxygenate & Stabilize
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Size 5 Cuffed Melker
<table>
<thead>
<tr>
<th>Technique</th>
<th>Success rate (%)</th>
<th>Mean (SD) time in seconds to successful placement</th>
<th>Significant complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scalpel bougie</td>
<td>100</td>
<td>39 (6)</td>
<td></td>
</tr>
<tr>
<td>Surgical cricothyroidotomy</td>
<td>80</td>
<td>61 (20)</td>
<td>Six individuals created tracts too small for tube placement</td>
</tr>
<tr>
<td>Cannula cricothyroid puncture (difficult neck)</td>
<td>40</td>
<td>106 (33)</td>
<td>Major blood vessel punctured on two occasions</td>
</tr>
<tr>
<td>Scalpel finger needle technique (difficult neck)</td>
<td>100</td>
<td>86 (38)</td>
<td>Moderate haemorrhage</td>
</tr>
</tbody>
</table>
CICO Protocol

Failed Oxygenation
- >3 Intubation attempts - PLAN A FAIL
- Failure to oxygenate via suprathermal device - PLAN B FAIL

Perform Needle Cricothyroidotomy
14G Long Cannula, 5ml syringe, saline
Pillow cut, head extended, stabilize trachea

Fail
Is Neck Anatomy Palpable?

Success

Yes
Scalpel Bougie

No
Scalpel Finger Cannula

Oxygenate & Stabilize
Use Jet Ventilation Kit, insufflate for 4 sec.
Wait until Sat’s drop 5% from maximum before insufflating again for 2x.
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Martin Bromley’s message

- We can all get it wrong no matter how good we are
- We need the people around us to help us
- We should maintain an open environment with our colleagues
- Allowing members of the team to voice their concerns
  - It’s about listening

Thanks for listening!