



STOCKPORT

**DIFFICULT AIRWAY WORKSHOP
FOR SAS ANAESTHETISTS**

19th & 20th June 2017

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Emergency front-of-neck access

- NAP 4 (2011)
- 2.9 million GA in UK
- 58 patients needed FONA
- 16 deaths were anaesthetic related
- 3 cases of severe brain damage
- 1/3 cases occurred during extubation.

Emergency front-of-neck access

- NAP 4 (2011)
- 2.9 million GA in UK
- Major airway related complications 1:22000
- Failed mask ventilation 1:1500
- Failed tracheal intubation 1:2000
- Failed LMA 1:50
- CICO 1:5000 to 10000

Emergency front-of-neck access

- NAP4(2011)
- Emergency surgical airway 58 cases
- Only 11 cases were true CICO
- Tracheostomy 29
- Cricothyroidotomy 29
 - 19 Narrow gauge cannula 12 failed (63%)
 - 7 wide gauge cannula 3 failed (42%)
 - 3 surgical cricothyroidotomy 100% success

Emergency front-of-neck access

Who performed the FONA?

- Surgeon 33 cases 100% success
- Anaesthetist 25 cases 36% success

Plan D: Failed intubation, failed oxygenation in paralysed, anaesthetised patient

- Call for Help
- Declare CICO and progression to FONA
- Give 100% oxygen through upper airway using tight fitting face mask or SAD or nasal insufflation.
- FONA should not be attempted without complete neuromuscular block.

Equipment

- Scalpel with number 10 blade.
- Bougie with coude (angle) tip.
- Tube, cuffed, size 6.0 mm

Patient position

Neck in extension position

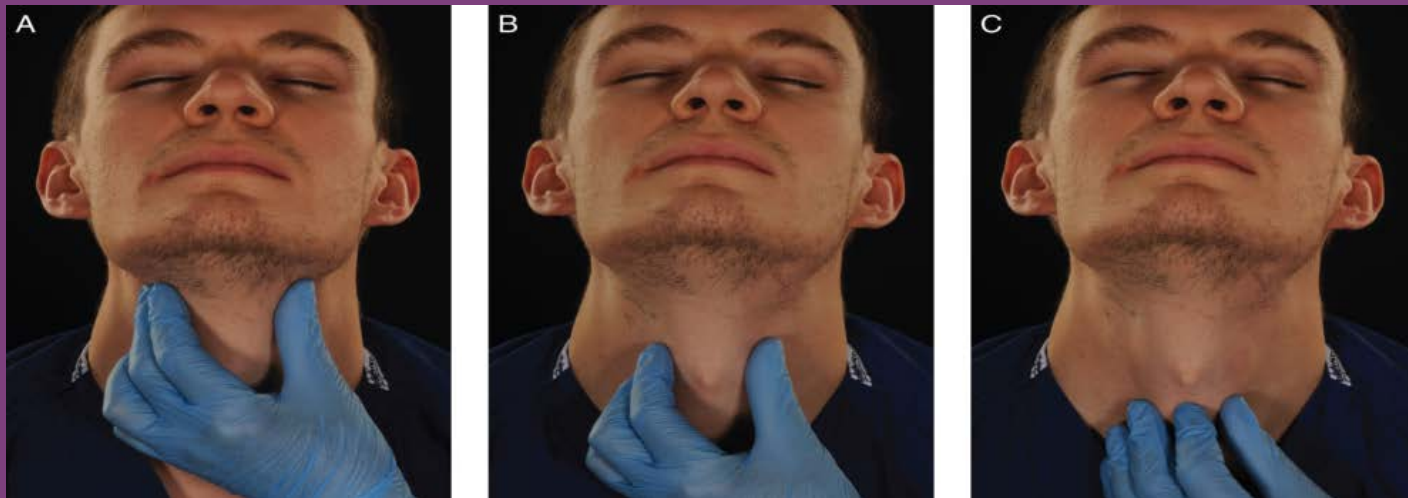
This achieved by:

- **By pushing the pillow under the shoulder or**
- **Dropping the head of the operating table or**
- **Pulling the patient up so that head hangs over the top of the trolley.**

Identify the cricothyroid membrane

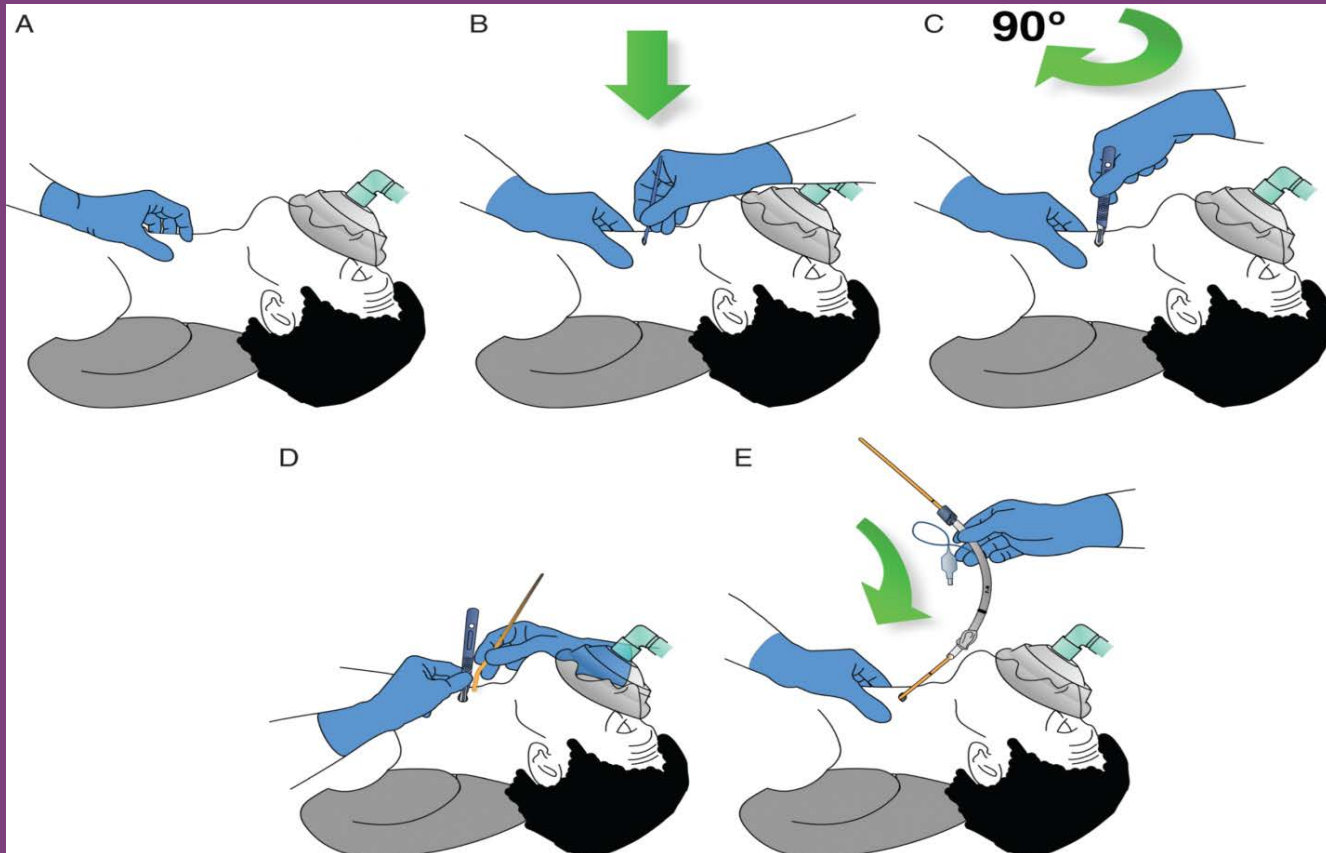
Laryngeal handshake technique described by Levitan.

Performed by the non dominant hand



Scalpel cricothyroidotomy

Stab → Twist → bougie → Tube



Scalpel cricothyroidotomy

1. Continue rescue oxygen via upper airway.
2. Stand on patient's left hand side for right handed and reverse if left handed.
3. Laryngeal handshake – identify laryngeal anatomy & stabilise it.
4. Identify cricothyroid membrane using index finger.
5. Hold the scalpel in your right-hand- make a transverse stab incision through skin and cricothyroid membrane with the cutting edge of the blade facing towards you.
6. Turn the scalpel through 90 degree so that sharp edge is facing the feet
7. Swap hands , now hold the scalpel with your left hand.
8. Maintain gentle traction by pulling the scalpel towards you to open up the incision.

Scalpel cricothyroidotomy

9. Holding the bougie in right hand , at right angle trachea, slide could tip of the bougie down the side of the scalpel away from you.
10. Rotate and align the bougie with patient's trachea and advance gently up to 10-15 cm.
11. Remove the scalpel.
12. Stabilize the trachea and tension skin with left hand.
13. Railroad a lubricated size 6.0 cuffed ETT over the bougie.
14. Rotate the tube over the bougie as it is advanced.
15. Remove the bougie.
16. Inflate the cuff & confirm the position with capnography.
17. Secure the tube.

Scalpel-finger-bougie technique

This technique is used in

1. Impalpable cricothyroid membrane.
2. Other technique have failed.

Equipment, patient , and operator position are as for the scalpel technique.

If an ultrasound machine is immediately available and switched on, it may help in identifying the membrane and major blood vessels.

Scalpel-finger-bougie technique

1. Continue rescue oxygen
2. Identify laryngeal anatomy using laryngeal handshake.
3. Tension the skin with left hand.
4. Make an 8-10 cm midline vertical incision caudad to cephalad
5. Use blunt dissection with finger of both hands to separate the tissue and identify and stabilize the larynx with left hand.
6. Proceed with scalpel technique as above.

Cannula technique

Cannula technique was recommended in DAS guidelines 2004. Not recommended 2015 guidelines.

- Narrow-bore cannula 19/12 (63% Failure)
Purpose design cannula such as Ruvassin (VBM-Germany)
- Wide-bore cannula over guide wire 7/3 (42% Failure)
Such as Melker emergency cricothyroidotomy set uses seldinger technique.
- Non-seldinger wide-bore cannula
These are trocar devices.

Role of ultrasound

- Limited role in emergency situation.
- If immediately available and switched on may help in identify key landmarks but should not delay airway access.
- It is good practice to identify trachea and cricothyroid membrane before induction in an anticipated difficult intubation.
- Airway evaluation using ultrasound is a valuable skill and training in its use is recommended.

Post operative care & follow up

- Difficulties with airway management and its post op implication should be discussed at WHO checklist sign out.
- Postponed the surgery unless it is life threatening.
- Urgent surgical review of the cricothyroidotomy site.
- Post op airway management plan should be documented in the medical notes.
- Document and follow up for potential complication in ITU/HDU.
- Inform the patient.
- GP should be informed through discharge letter/ coding system.
- The code for difficult intubation is SP2y3.
- If you fill DAS Difficult Alert form Das will send Medic Alert directly to the patient.

Summary



Failed intubation, failed oxygenation in the paralysed, anaesthetised patient

CALL FOR HELP



**Continue 100% O₂
Declare CICO**

Plan D: Emergency front of neck access

Continue to give oxygen via upper airway
Ensure neuromuscular blockade
Position patient to extend neck

Scalpel cricothyroidotomy

Equipment: 1. Scalpel (number 10 blade)
2. Bougie
3. Tube (cuffed 6.0mm ID)

Laryngeal handshake to identify cricothyroid membrane

Palpable cricothyroid membrane

Transverse stab incision through cricothyroid membrane
Turn blade through 90° (sharp edge caudally)
Slide coude tip of bougie along blade into trachea
Railroad lubricated 6.0mm cuffed tracheal tube into trachea
Ventilate, inflate cuff and confirm position with capnography
Secure tube

Impalpable cricothyroid membrane

Make an 8-10cm vertical skin incision, caudad to cephalad
Use blunt dissection with fingers of both hands to separate tissues
Identify and stabilise the larynx
Proceed with technique for palpable cricothyroid membrane as above

Post-operative care and follow up

- Postpone surgery unless immediately life threatening
- Urgent surgical review of cricothyroidotomy site
- Document and follow up as in main flow chart

Thank You