



Clinical Practice Procedures: Airway management/Surgical cricothyrotomy

Policy code	CPP_AM_SUC_0221
Date	February, 2021
Purpose	To ensure a consistent procedural approach to surgical cricothyrotomy.
Scope	Applies to Queensland Ambulance Service (QAS) clinical staff.
Health care setting	Pre-hospital assessment and treatment.
Population	Applies to all ages unless stated otherwise.
Source of funding	Internal – 100%
Author	Clinical Quality & Patient Safety Unit, QAS
Review date	February, 2024
Information security	UNCLASSIFIED – Queensland Government Information Security Classification Framework.
URL	https://ambulance.qld.gov.au/clinical.html

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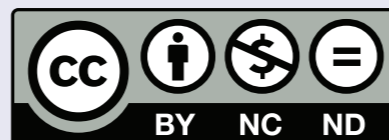
All feedback and suggestions are welcome. Please forward to: Clinical.Guidelines@ambulance.qld.gov.au

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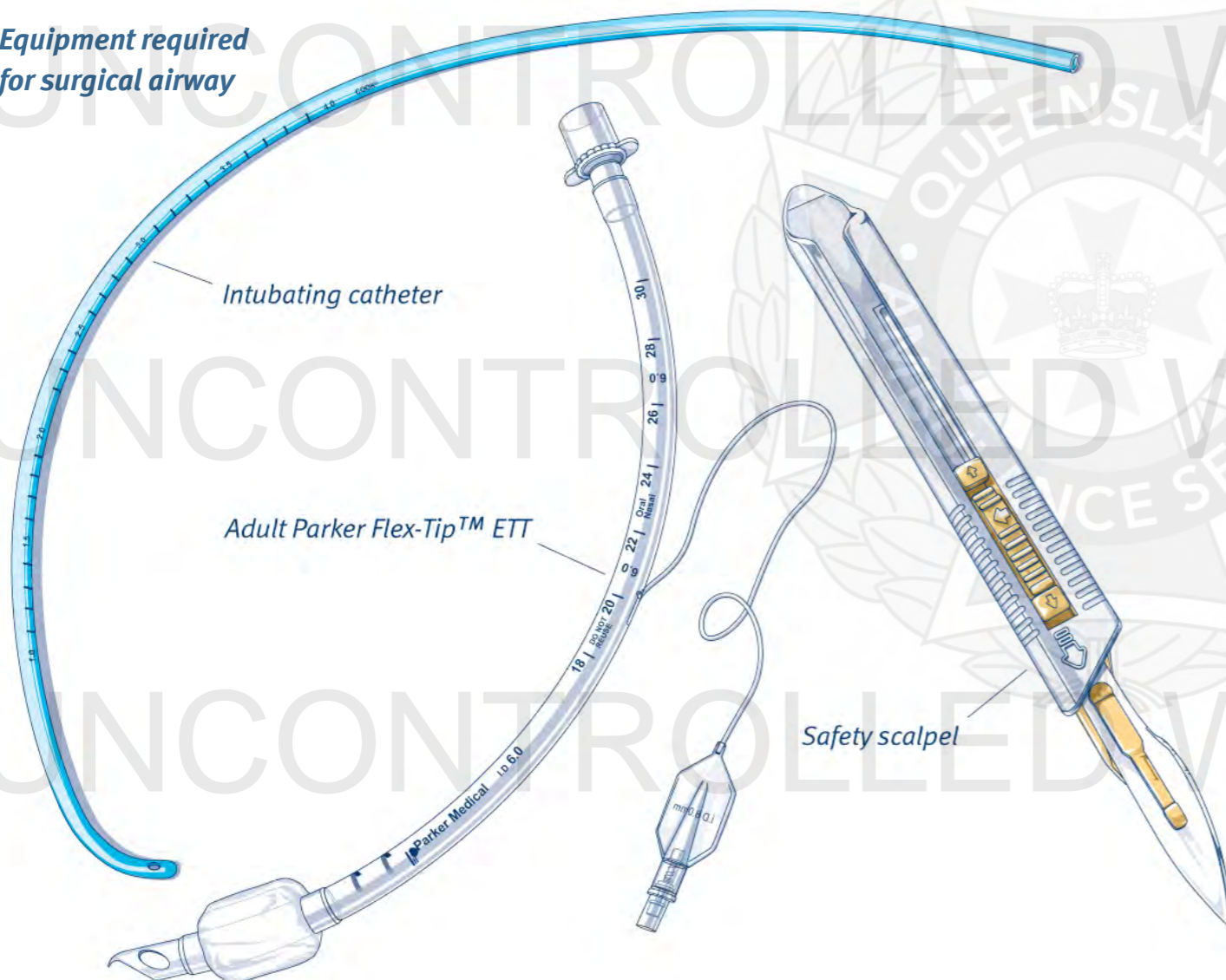
Surgical cricothyrotomy

February, 2021

All clinicians conducting rapid sequence intubations (RSIs) must be skilled in failed airway techniques. Cricothyrotomy is a definitive rescue technique for the failed airway if time (i.e. preservation of oxygenation) does not allow for other approaches, or if they fail.^[1] In addition, mental preparations to perform a surgical airway should be undertaken each time an RSI is considered.

The QAS has adopted an open cricothyroid technique in adults, as numerous studies have shown higher success rates in novice operators compared to 'over the wire' techniques.^[2]

Equipment required for surgical airway



Indications



- **Can't Intubate, Can't oxygenate** (CICO) with decreasing SpO₂
- Primary airway attempt if ETT, LMA or BVM is not feasible (e.g. massive facial trauma or burns)

Contraindications



- Patient less than 12 years of age
- Open tracheal injury

Complications

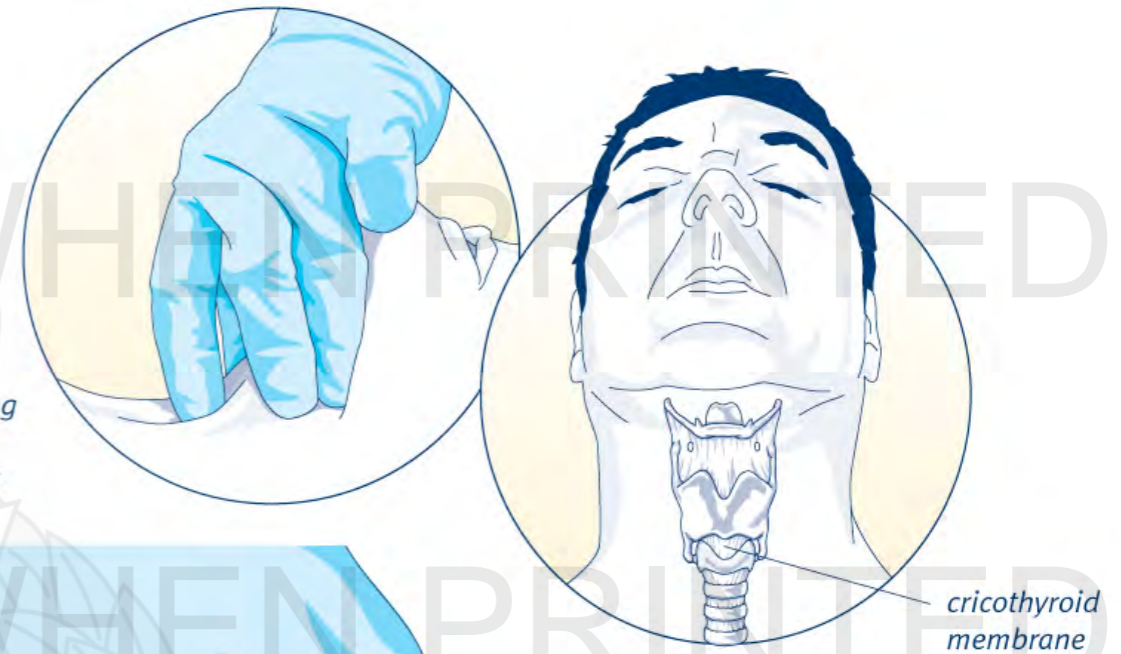


- The surgical field being obscured due to haemorrhage following incision.

Procedure – Surgical cricothyrotomy

1. Apply required infection control measures (refer to the QAS *Infection Control Framework*)
2. Maintain ventilation with bag valve mask or supraglottic airway as best as possible.
3. Prepare the neck with antiseptic solution.
4. With the non-dominant (ND) hand, identify the laryngeal landmarks (thyroid cartilage, cricoid cartilage and the cricothyroid membrane).

ND hand
identifying
laryngeal
landmarks

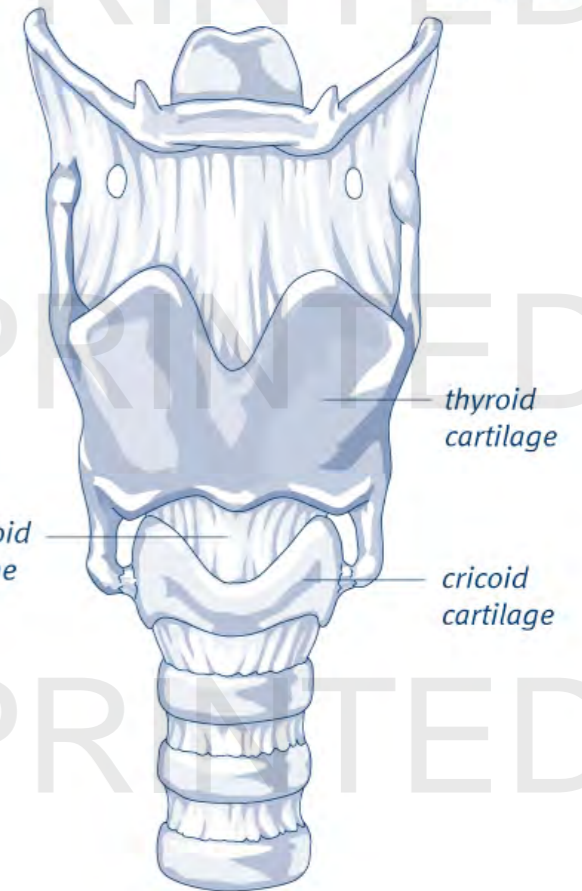
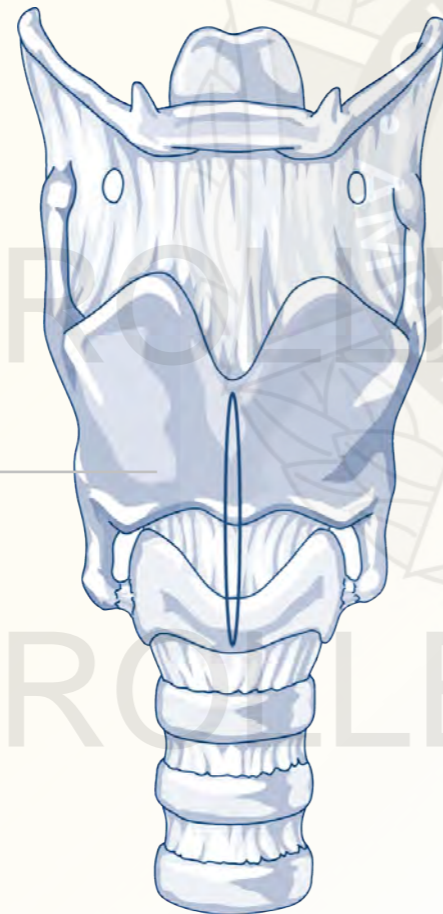


**If the laryngeal landmarks are not identifiable
(e.g. secondary to soft tissue swelling, burns or obesity):**

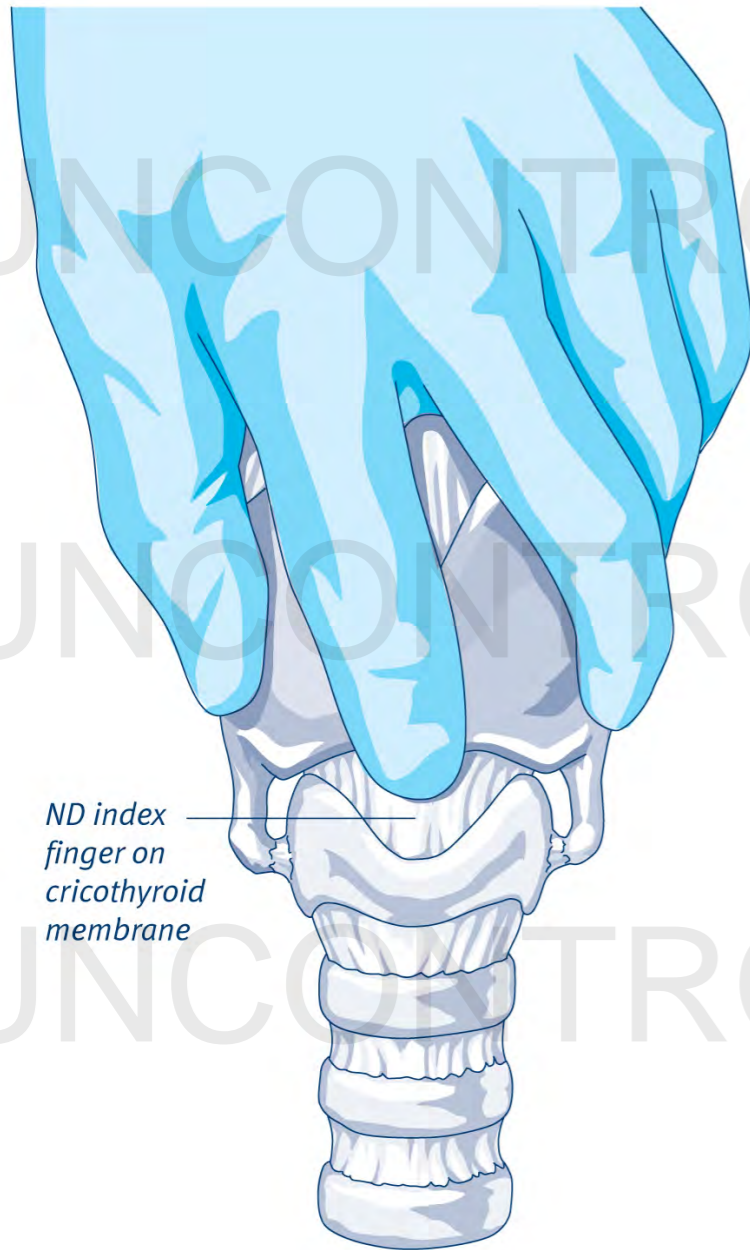
- Make a longitudinal, midline incision at least 8–10 cm in length through skin and the subcutaneous tissue.

Approximately
8–10 cm longitudinal
incision

- Using your fingers, separate the soft tissue and identify the laryngeal landmarks



Procedure – Surgical cricothyrotomy



5. Once the laryngeal landmarks are identified, stabilise the structures with the ND middle finger and thumb, ensuring the ND index finger is on the cricothyroid membrane.

6. Lift the ND index finger and using a scalpel make an incision using the 'SERT' technique with the following steps.

- *Stab* – with the blade facing you, insert it horizontally through the cricothyroid membrane.
- *Extend* – continue the incision as far as possible until resistance is felt.
- *Reverse* – push back to extend further.
- *Twist* – rotate the blade vertically to create a triangular hole beside the scalpel's blade.

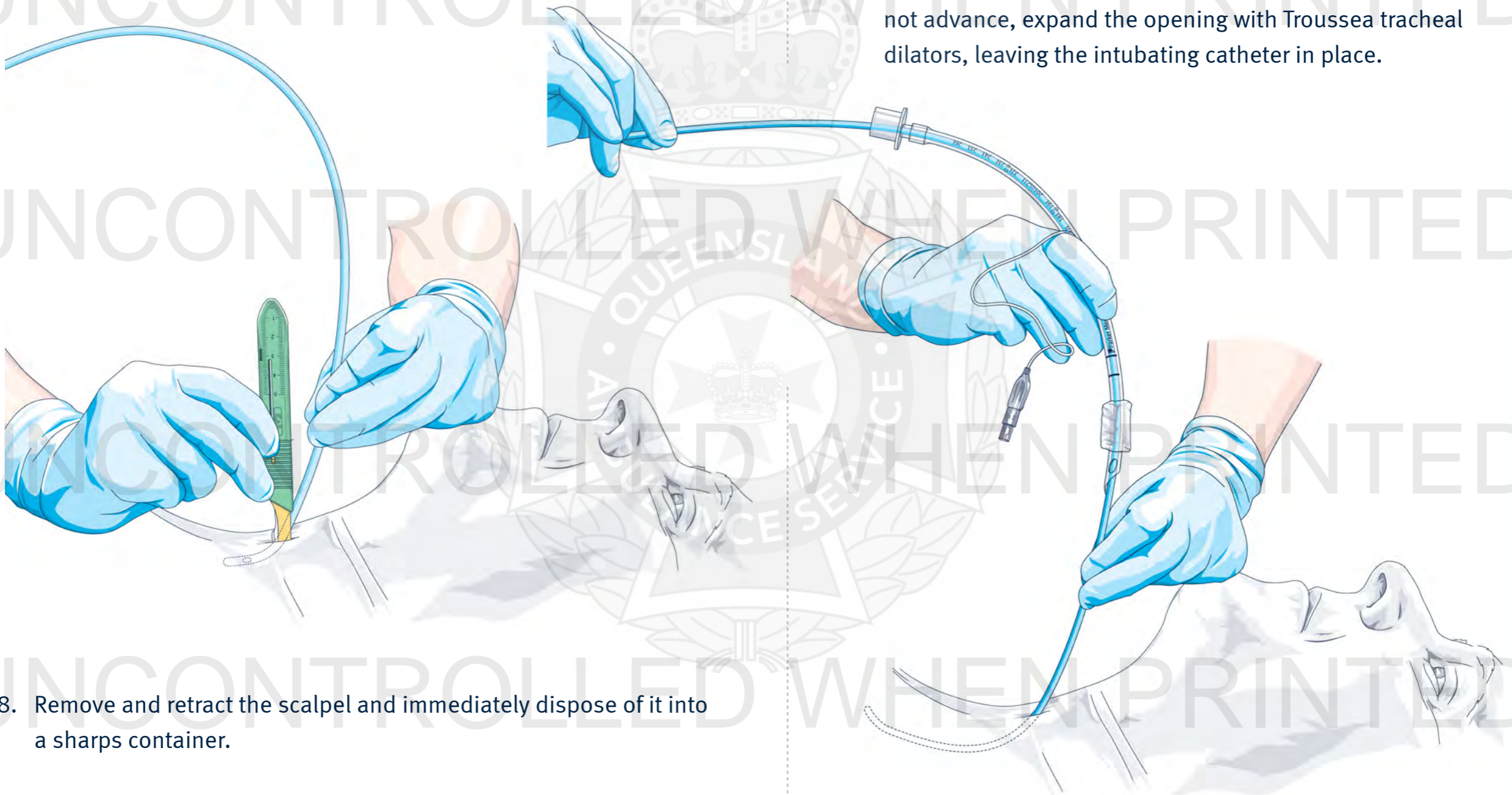


Index finger is lifted off cricothyroid membrane

Procedure – Surgical cricothyrotomy

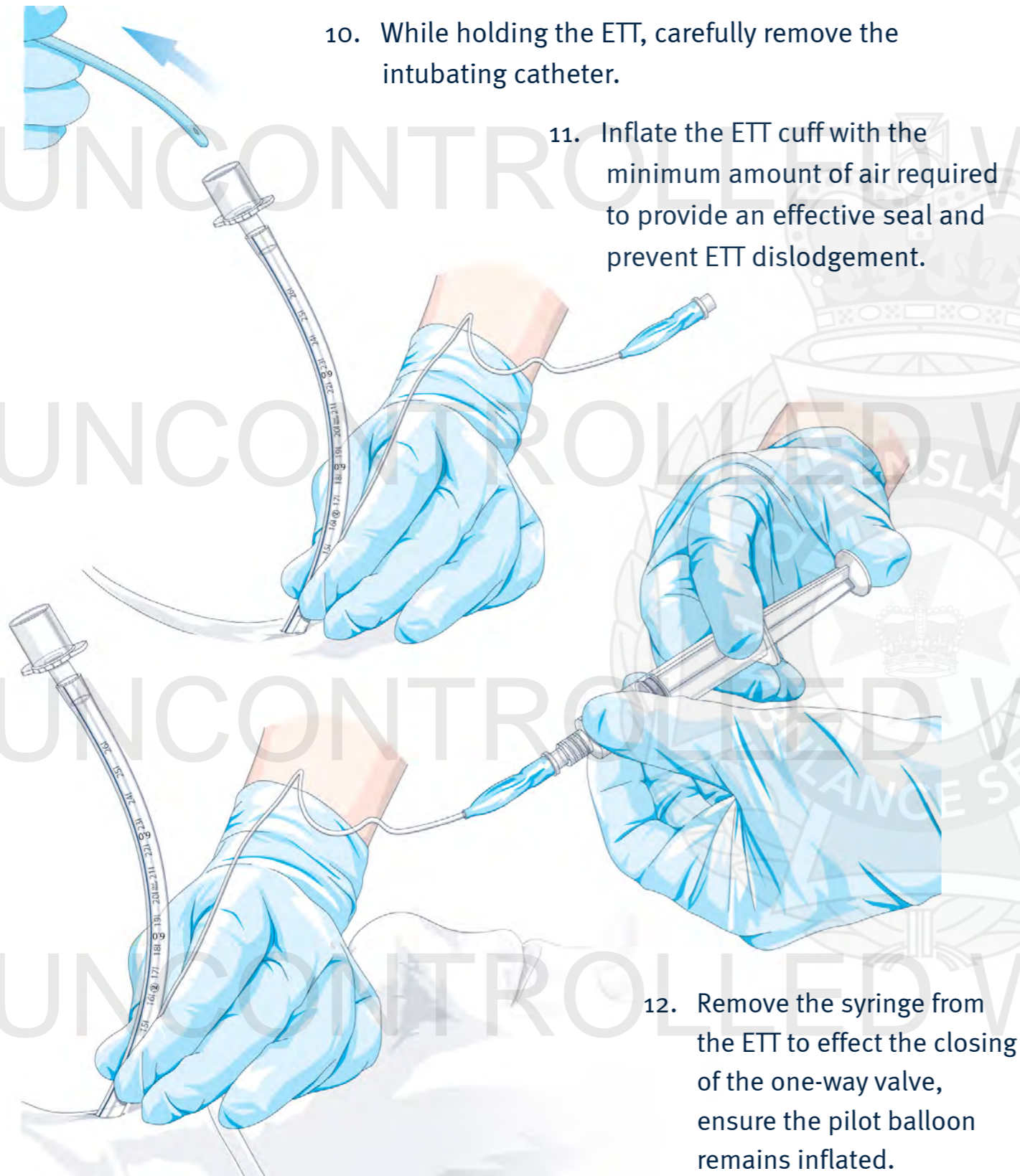
7. With the intubating catheter pointing away from the head and the caude tip parallel to the floor, gently insert it into the trachea to a depth of 15 centimetres.

9. Railroad a lubricated size 6.0 ETT over the intubating catheter until the skin is positioned between the 2 ETT position markers. If the incision is too narrow, a cork screw motion with gentle force may be required. If the ETT does not advance, expand the opening with Troussea tracheal dilators, leaving the intubating catheter in place.



8. Remove and retract the scalpel and immediately dispose of it into a sharps container.

Procedure – Surgical cricothyrotomy



10. While holding the ETT, carefully remove the intubating catheter.

11. Inflate the ETT cuff with the minimum amount of air required to provide an effective seal and prevent ETT dislodgement.

12. Remove the syringe from the ETT to effect the closing of the one-way valve, ensure the pilot balloon remains inflated.

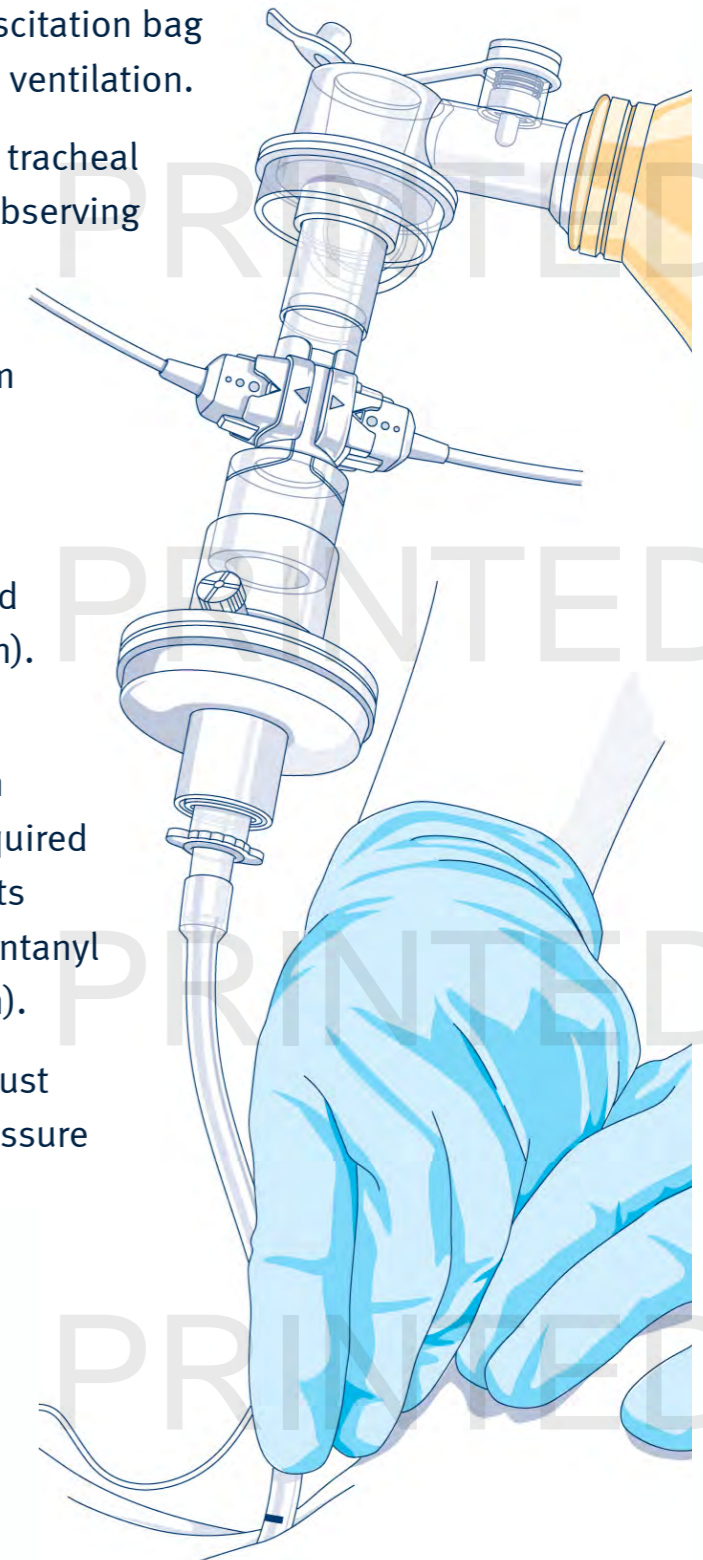
13. Connect a resuscitation bag and commence ventilation.

14. Confirm correct tracheal placement by observing an appropriate continuous EtCO₂ waveform (minimum of 6 ventilations of moderate tidal volume required for confirmation).

15. Administer post-intubation sedation as required (titrated aliquots of morphine/fentanyl and midazolam).

16. Assess and adjust the ETT cuff pressure as required.

17. Assess the wound for uncontrolled haemorrhage and manage accordingly.



Additional information

- The potential for scalpel injury during this procedure is **HIGH**. All precautions that serve to minimise risk to the clinician and patient must be applied.
- Surgical cricothyrotomy should ideally be performed with the ambulance clinician standing or kneeling beside the patient. Ambulance clinicians should ensure proficiency in performing the procedure from either side of the patient.
- The QAS supplies the High Acuity Response Unit with the following non-standard QAS equipment for use when performing a surgical cricothyrotomy:
 - trousseau tracheal dilator (single use item)
 - tracheal hook
- The *tracheal hook* is a **re-usable** medical instrument that requires reprocessing and sterilisation in accordance with the QAS Infection Control Framework.

