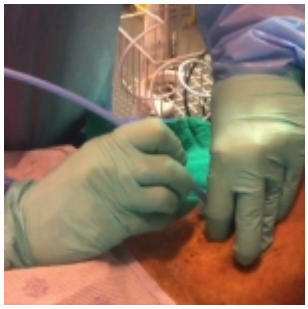
Pearls for front-of-neck emergency airway management



There have been a few emergency surgical airway (ESA) success stories communicated by way of twitter and by email of recent. Great work done by great people. Time for reflection and sharing some **pearls for front-of-neck emergency airway management.**

The Difficult Airway Society (DAS) recently updated their guidelines and made very specific recommendations regarding emergency “front-of-neck access”. While many would argue that there is clinical equipoise when comparing needle versus scalpel ESA techniques, the balance of opinions has come out in favor of a scalpel technique. The DAS authors felt it necessary to make a specific recommendation to use a bougie assisted scalpel technique. This recommendation in part reflects the perceived need to commit to a standardized approach and help address the most common delay associated with an ESA, the decision to perform the procedure.

There are various methods of performing a bougie assisted ESA. Two specific components of the procedure where the approach may vary relate to the direction and purpose of the initial incision and the method of dilating the incised CTM to accommodate the bougie and ETT. Regarding the initial incision, while some recommend directly entering the trachea if the clinician feels confident that they are able to correctly identify the CTM, we recommend always making a vertical landmarking incision. The reasons are simple, we don’t do this often, our own heart rates will be high enough that our fine motor control may be gone AND regardless of clinician experience and patient gender or size, we suck at finding the CTM (See below). Cut vertically to landmark then enter CTM horizontally.

The second variation of the procedure relates how to proceed once the CTM has been incised. We suggest that after extending the incision through the CTM laterally in both directions (without removing the blade) the #10 blade should be reoriented into the vertical/sagittal plane (cutting side towards feet). The wide body/profile of a #10 blade is then sweeped laterally (away from the clinician to the patients left) within CTM space to serve as a dilator/”placeholder” for the bougie. Once the bougie is placed, the small 5.5-6.0 ETT is advanced over it and the bougie removed. 'Fist bumbs' and or 'moon walks' may be performed once the ETCO2 is detected.

Here is a fireside version demonstrating the procedure:

Click here to watch video on YouTube

Step by step:

1. Position yourself to be on the same side of the patient as your dominant hand. (right handed, right side of patient).
2. With left hand stabilize larynx between thumb and middle finger and attempt to palpate CTM from sternal notch upwards and from hyoid down.
3. With your dominant hand using a #10 blade make a 2-3 cm vertical midline incision with 1-3 progressive swipes of the blade.
4. Maintain left hand stabilization of the larynx while the index finger probes the incision to identify the CTM.
5. Once the CTM is identified maintain stabilization of the larynx but move index finger to the superior margin of the CTM and incise the CTM entering the trachea with the blade oriented in the horizontal plane.
6. Without removing the blade extend the incision laterally in both directions.
7. Reorient the blade, still within the CTM space 90* to a vertical/sagittal plane so that the cutting surface of the blade is down (towards the patients feet).
8. Sweep the blade within the CTM to the patients left, away from you and place the bougie alongside the blade.
    a. If there is difficulty placing the bougie, the index left finger can be inserted just after the blade is removed (cutting surface down/caudad) to serve as a dilator/"placeholder"
    b. The index finger may be withdrawn but still within the CTM space, to allow a bougie to be placed alongside of the finger.
9. A number 5.5-6.0 ETT is placed over the bougie into position and then the bougie rmoved.
10. Inflate cuff, ETCO2 and usual post intubation care.

Frerk C, Mitchell VS, McNarry AF, Mendonca C, Bhagrath R, Patel A, O'Sullivan EP, Woodall NM, Ahmad I; Difficult Airway Society intubation guidelines working group. Difficult Airway Society 2015 guidelines for management of unanticipated difficult intubation in adults. Br J Anaesth. 2015

Dec;115(6):827-48. PubMed PMID: 26556848

Bair AE, Chima R. The inaccuracy of using landmark techniques for cricothyroid membrane identification: a comparison of three techniques. Acad Emerg Med. 2015 Aug;22(8):908-14. PubMed PMID: 26198864

Lamb A, Zhang J, Hung O, Flemming B, Mullen T, Bissell MB, Arseneau I. Accuracy of identifying the cricothyroid membrane by anesthesia trainees and staff in a Canadian institution. Can J Anaesth. 2015 May;62(5):495-503. PubMed PMID: 25637060

You-Ten KE, Desai D, Postonogova T, Siddiqui N. Accuracy of conventional digital palpation and ultrasound of the cricothyroid membrane in obese women in labour. Anaesthesia. 2015 Nov;70(11):1230-4. PubMed PMID: 26186092