The Sutherland Emergency Department

Airway Corner Newsletter

June 2019

	June			Δ May		
Number of intubations	3			5		
Indications	**Trauma**	**Medical:**		**Trauma**	**Medical:**	
	0	ICH/Stroke: 0 Overdose/Ingestion: 1 Sepsis/Resp Failure: 1 Cardiac Failure: 0 Arrest: 0 Other: 1		0	ICH/Stroke: 0 Overdose/Ingestion: 2 Sepsis/Resp Failure:1 Cardiac Failure: 0 Arrest: 2	
Team-leader	**FACEM**	**AT**	**Other**	**FACEM**	**AT**	**Other**
	2	1	0	2	3	0
Intubator	**FACEM**	**AT**	**Other**	**FACEM**	**AT**	**Other**
	0	2	2	1	1	3

Airway ax performed	Yes 2 / No 1			Yes 5 / No 0		
Checklist utilisation	Yes 2 / No 1			Yes 3 / No 2		
ApOx used	Yes 2 / No 1			Yes 3 / No 2		
Induction rx	**Ketamine**	**Propofol**	**Other**	**Ketamine**	**Propofol**	**Other**
	2	2	0	4	0	1 No agents
Paralytic rx	**Rocuronium**	**Suxamethonium**		**Rocuronium**	**Suxamethonium**	
	2	1		4	0	
Laryngoscope	**Direct**	**Video**		**Direct**	**Video**	
	1	2		0	5	
First pass success rate	33%			80%		

Intubation manoeuvres	**Nil**	**NPA/OPA**	**BVM**	**LMA**	**Repositioned**	**Cric**	**Nil**	**NPA/OPA**	**BVM**	**LMA**	**Repositioned**	**Cric**
	0	0	2	0	0	0	4	0	0	1	0	0
Desaturation	2						1					
Hypotension	None						None					
Equipment Failure	1						None					
Aspiration	None						None					
Oesophageal intubation	1						None					
Mainstem intubation	None						None					
Laryngospasm	None						None					
Drug error	None						None					
Airway trauma	None						None					
Cardiac arrest	None						None					

Please contact K Ostrowski or M Raos should any issues arise regarding airway management within the department

Case Observations

Consistency is key. The use of the airway checklist is a key element to providing a consistent approach to Emergency Department airway management. We would like to highlight the value of the airway checklist as an aide memoire and a touchstone for other important interventions such as apnoeic oxygen and verbalizing a plan. An airway checklist is not going to intubate the patient for you, it's not going to make a better mask seal or improve your technique. The airway checklist is there as a prompt to remind us that all our bases are covered, to prime the team and to give a sense of order to a potentially chaotic moment.

Code Brown Scenario of the Month: Unpredicted Anatomically Difficult Airway

Unpredicted difficult airway can be defined any number of ways: a Cormack Lehane Grade of 3 or 4, an intubation attempt which exceeds 10 minutes or an Intubation Difficulty score of 1-5 (moderately difficult) or >5 (very difficult). The rate of unpredicted difficult intubations vary across specialties, locations and indications and range between 1-10% of all intubations. If we first prepare the patient via our current airway management checklist then we can mitigate a large proportion of the difficulties we encounter with anatomical view, oxygenation and tube delivery. What about when you've done all these and you're still staring into the abyss getting PTSD type flashback to your first speculum exam at medical school.

Preparation

We harp on about this but you should have a positive mindset going in, incrementalize the task, visualize the goal, make your plan and share your model. As part of the visualization think about all the small manoeuvres you can use to improve your view some: ELM, lifting the head off the bed, turning the patient's head to the left and advancing the blade to lift the epiglottis. We advocate for assessing all intubations regards airway anatomy and marking the cricothyroid membrane prior to intubation so that physically and psychologically you are prepared for cricothyrotomy. Have the CMAC on remembering that we have 3&4 MacIntosh Blades and a D blade for each CMAC (there's also a size 2 for the reusable CMAC). Use the bougie for each intubation such that when you need it you are familiar with the tactile feel of tracheal rings and "hold-up".

Note: **The blades on the disposable CMAC are not interchangeable with the reusable blade system**.

Specific techniques when you have an anatomically difficult airway

Fibre optic intubation –

Something which we talk about Anaesthetists doing but get little practice at ourselves. Most effective if used first up on the airway in which anatomical or physiological difficulty is predicted. Use in the rescue situation is not advocated for operators without experience.

Bougie –

Reports from Driver et al show that routine use of the bougie improves the first pass success rate across all intubation types including difficult airways. When faced with a CL3 or 4 use the coudet tip to lift the edge of the epiglottis then advance the bougie along the midline feeling for both the tracheal ridges and "hold-up" (where the bougie hits carina then right main bronchus and will no longer advance).

D blade tips
The D blade can facilitate a better view at the expense of ETT delivery. Remember the D blade technique is a midline technique, mould the stylet to the shape of the D Blade and have it loaded prior to intubation. If you're having trouble getting the ETT into position try dropping your right hand 90 degrees to the right to change the axis of delivery.

LMA facilitated intubation –
In this technique where you are unable to deliver the tube or your intubation time has elapsed consider placing an LMA to bag the patient prior to the next attempt. In lieu of removing the LMA prior to the next attempt leave it in situ and run a lubricated 6.0 ETT down the middle of the LMA channel. This is best done with flexible endoscopy to facilitate placement – however if you are a novice at fibre-optic intubation the can't intubate scenario is not the best time to learn.

Reverse corkscrew or corkscrew –
When delivering the ETT between the cords and encountering difficulty with delivery because of snagging on the supra-glottic structures bring the ETT back 1cm rotate 90 degrees counter clockwise and advance the tip again. This should move the bevel from the arytenoid to the midline allowing easier passage.

Hot-switch –
When delivering the ETT and there is hold up past the vocal cords you are in the sub glottis space. If the ETT is held up then you are encountering sub glottis stenosis. The most practical approach is to leave the bougie in situ then perform a hot switch to a smaller by 0.5 ETT. If the patient is having difficulty oxygenating additional oxygen can be delivered by using the Rapi-Fit bougie adapter as the ETT exchange is happening.

Equipment Fact of the Month:
Rapi-Fit Adapter





This nifty bit of kit slides on the end of the bougie and allows you to oxygenate down the central channel. It is in drawer 3 of the airway trolley and won't give you big volumes but will give you a lower saturation dip as you search for that smaller ETT to swap onto the bougie. It snaps onto the end of the bougie and has an ETT adapter to allow oxygen to flow through the bougie as a rescue device.

Word on the Street

The bottom line: This multi-centre randomised prehospital trial looking at LMA vs ETT prehospital airway management did not show a favourable functional outcome at 30 days. How this relates to the ED is unclear, but when a patient arrives in ED post cardiac arrest and is ventilating well through an LMA the focus should be on addressing other reversible causes of arrest and maximizing other interventions and returning to the airway and exchanging for an ETT if needed.

Effect of a Strategy of a Supraglottic Airway Device vs Tracheal Intubation During Out-of-Hospital Cardiac Arrest on Functional Outcome
The AIRWAYS-2 Randomized Clinical Trial

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IMPORTANCE The optimal approach to airway management during out-of-hospital cardiac arrest is unknown.

OBJECTIVE To determine whether a supraglottic airway device (SGA) is superior to tracheal intubation (TI) as the initial advanced airway management strategy in adults with nontraumatic out-of-hospital cardiac arrest.

DESIGN, SETTING, AND PARTICIPANTS Multicenter, cluster randomized clinical trial of paramedics from 4 ambulance services in England responding to emergencies for approximately 21 million people. Patients aged 18 years or older who had a nontraumatic out-of-hospital cardiac arrest and were treated by a participating paramedic were enrolled automatically under a waiver of consent between June 2015 and August 2017; follow-up ended in February 2018.

INTERVENTIONS Paramedics were randomized 1:1 to use TI (764 paramedics) or SGA (759 paramedics) as their initial advanced airway management strategy.

MAIN OUTCOMES AND MEASURES The primary outcome was modified Rankin Scale score at hospital discharge or 30 days after out-of-hospital cardiac arrest, whichever occurred sooner. Modified Rankin Scale score was divided into 2 ranges: 0-3 (good outcome) or 4-6 (poor outcome; 6 = death). Secondary outcomes included ventilation success, regurgitation, and aspiration.

RESULTS A total of 9296 patients (4886 in the SGA group and 4410 in the TI group) were enrolled (median age, 73 years; 3373 were women [36.3%]), and the modified Rankin Scale score was known for 9289 patients. In the SGA group, 311 of 4882 patients (6.4%) had a good outcome (modified Rankin Scale score range, 0-3) vs 300 of 4407 patients (6.8%) in the TI group (adjusted risk difference [RD], −0.6% [95% CI, −1.6% to 0.4%]). Initial ventilation was successful in 4255 of 4868 patients (87.4%) in the SGA group compared with 3473 of 4397 patients (79.0%) in the TI group (adjusted RD, 8.3% [95% CI, 6.3% to 10.2%]). However, patients randomized to receive TI were less likely to receive advanced airway management (3419 of 4404 patients [77.6%] vs 4161 of 4883 patients [85.2%] in the SGA group). Two of the secondary outcomes (regurgitation and aspiration) were not significantly different between groups (regurgitation: 1268 of 4865 patients [26.1%] in the SGA group vs 1072 of 4372 patients [24.5%] in the TI group; adjusted RD, 1.4% [95% CI, −0.6% to 3.4%]; aspiration: 729 of 4824 patients [15.1%] vs 647 of 4337 patients [14.9%], respectively; adjusted RD, 0.1% [95% CI, −1.5% to 1.8%]).

CONCLUSIONS AND RELEVANCE Among patients with out-of-hospital cardiac arrest, randomization to a strategy of advanced airway management with a supraglottic airway device compared with tracheal intubation did not result in a favorable functional outcome at 30 days.

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References

Driver BE, Prekker ME, Klein LR, et al. ***Effect of Use of a Bougie vs Endotracheal Tube and Stylet on First Attempt Intubation Success Among Patients With Difficult Airways Undergoing Emergency Intubation: A Randomized Clinical Trial.*** *JAMA. 2018; 319(21):2179-2189.*

Frederic Adnet, Stephen W. Borron, Stephane X. Racine, Jean-Luc Clemessy, Jean-Luc Fournier, Patrick Plaisance, Claude Lapandry; ***The Intubation Difficulty Scale (IDS)*** **: Proposal and Evaluation of a New Score Characterizing the Complexity of Endotracheal Intubation.** *Anesthesiology* 1997;87(6):1290-1297.

Intubation Difficulty Scale

Parameter	Score
Number of Attempts >1	N_1
Number of Operators >1	N_2
Number of Alternative Techniques	N_3
Cormack Grade - 1	N_4
Lifting Force Required	
Normal	N_5=0
Increased	N_5=1
Laryngeal Pressure	
Not applied	N_6=0
Applied	N_6=1
Vocal Cord Mobility	
Abduction	N_7=0
Adduction	N_7=1
TOTAL: IDS = SUM OF SCORES	N_1-N_7

IDS Score	Degree of Difficulty
0	Easy
0 < IDS ≤5	Slight Difficulty
5 < IDS	Moderate to Major Difficulty
IDS = ∞	Impossible intubation

Rules for Calculating IDS Score:

N_1	Every additional attempt adds 1 pt.
N_2	Each additional operator adds 1 pt.
N_3	Each alternative technique adds 1 point: Repositioning of the patient, change of materials (blade, ET tube, addition of a stylette), change in approache (nasotracheal/orotracheal) or use of another technique (fibroscopy, intubation through a laryngeal mask).
N_4	Apply Cormack grade for 1st oral attempt. For successful blind intubation N_4 = 0.
N_5	Sellick's maneuver adds no points.
Impossible intubation:	IDS takes the value attained before abandonment of intubation attempts.

Cormack Grade[1]

[1] Cormack RS, Lehane J. Difficult tracheal intubation in obstetrics. Anaesthesia 1984;39:1105-1111.