difficult airway algorithms

Introduction:

The difficult airway is defined by the ASA as, "The clinical situation in which a conventionally trained anesthesiologist experiences difficulty with mask ventilation of the upper airway, difficulty with tracheal intubation, or both." [3] According to them, a difficult airway represents "… a complex interaction between patient factors, the clinical setting, and the skills of the practitioner."[3] Recognized societies and independent authors have published guidelines and algorithms to assist the anesthesiologist with managing difficult airway situations. These guidelines emphasize a proactive strategy, including anticipating a difficult airway and forming a management plan.

Case Presentation:

- 69 yo F fell down a flight of stairs, brought to trauma bay
- GCS 8, BP labile, and she called out for help in an impending sense of doom
- Lost pulse in PEA, received chest compressions, epinephrine
- Regained pulses with a sinus rhythm, GCS 6
- Given IV ketamine and rocuronium for intubation

Airway Exam: Thin elderly patient, partially edentulous, no visible neck deformity, in C collar, uncooperative, altered MS.

Airway Management:

1. ED resident via VL, poor view, unable to intubate. Easily mask ventilated.
2. CA3 via VL, grade 2B view, unable to intubate. Easily mask ventilated.
3. Same CA3 via VL + bougie, grade 2B view, unable to intubate. Increased difficulty with mask ventilation.
4. Anesthesiology staff via DL + bougie, grade 2B view, unable to intubate. Received cricothyroidotomy.

Pic 1: Patient Neck CT

2. Actively pursue opportunities to deliver supplemental oxygen throughout the process of difficult airway management.
3. Consider the relative merits and feasibility of basic management choices:
   - Awake intubation *vs.* intubation after induction of general anesthesia
   - Non-invasive technique *vs.* invasive techniques for the initial approach to intubation
   - Video-assisted laryngoscopy as an initial approach to intubation
   - Preservation *vs.* ablation of spontaneous ventilation
4. Develop primary and alternative strategies:

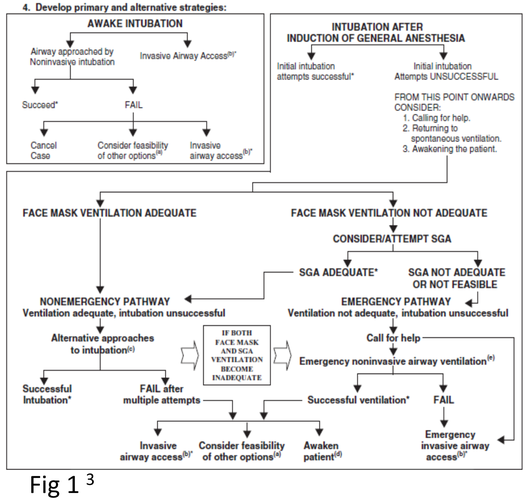

Fig 1 [3]

Age≥47	0.677	0.205	0.001	1.97 (1.32, 2.94)
BMI≥35	0.737	0.222	0.001	2.09 (1.35, 3.23)
NeckCirc≥40	0.931	0.239	<0.001	2.54 (1.59, 4.05)
HxDiffIntub	1.536	0.692	0.026	4.65 (1.20, 18.02)
FacHair	0.849	0.251	<0.001	2.34 (1.43, 3.83)
Short Neck	0.631	0.291	0.030	1.88 (1.06, 3.32)
ObsSA	0.503	0.223	0.023	1.65 (1.07, 2.56)

Table 1 [1]

Combining predictors

Number of risk factors	Total patients	Patients with DMV n (%)	Odds Ratio (95% Confidence Interval)
0	337	7 (2.1)	Referrence
1	559	36 (6.4)	3.25 (1.43, 7.38)
2	410	57 (13.9)	7.61 (3.42, 16.93)
3	93	24 (25.8)	16.40 (6.79, 39.57)

Table 2 [1]

Most common predictors of difficult intubation:

Question	#	%
Indicate any predictors of difficult tracheal intubation (whether known/recognized at the time or not) or factors that contributed to difficult airway management		
Airway obstruction from any cause [1]	31	30%
Past history of difficult intubation	21	21%
Mallampati grade 3–4	19	19%
Limited cervical spine extension	16	16%
Limited mouth opening	13	13%
Secretions/blood in airway	12	12%
Short neck	10	10%
Swollen tongue	6	6%
Short thyromental distance	6	6%
Thick or bull neck	6	6%
History of neck irradiation	5	5%
Pre-eclampsia	2	2%
Prominent teeth	1	1%

Table 3 [2]

Next, choose a primary management strategy:

- VL associated with higher frequency of success in patients with predicted difficult airway (A-1)

- Intubation sty
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- Successful res
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- 38 published
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- Weak eviden
- Limited data

Discussion

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References:

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   Research, 2014 Aug; ht
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3. American Society of An
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