

ESA

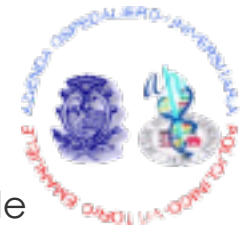


Direct laryngoscopy, stylets and extubation aids



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GdS SIAARTI Gestione Vie Aeree - Director
EAMS Board – Science Officer
ESA SC11 *Respiration and Airway Management*

CONFLICT of INTEREST

Grants from LMA Company (UK), MS&D for lecturing, DEAS for research
Logistic and trip support for lecturing by Teleflex, Verathon Medical, Cook Medical, LMA Company, Karl Storz Endoscopy, DEAS
Instruments lending/donation by Teleflex, Verathon Medical, Cook Medical, LMA Company, Karl Storz Endoscopy, AMBU, Mercury Medical, Laerdal, DEAS
Confidential agreement & consultancy with Mercury Medical, Teleflex, Verathon
Patent with DEAS Medical – no royalties





European
Society of
Anaesthesiology



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Learning objectives



Station 5: Direct laryngoscopy (DL) and stylets

- 1. DL - the basic approach to the glottis**
- 2. Improving intubation success during DL**
- 3. Aids to facilitate intubation during DL**
- 4. Teaching safe direct laryngoscopy**
- 5. Tips & tricks using introducers & stylets**

I

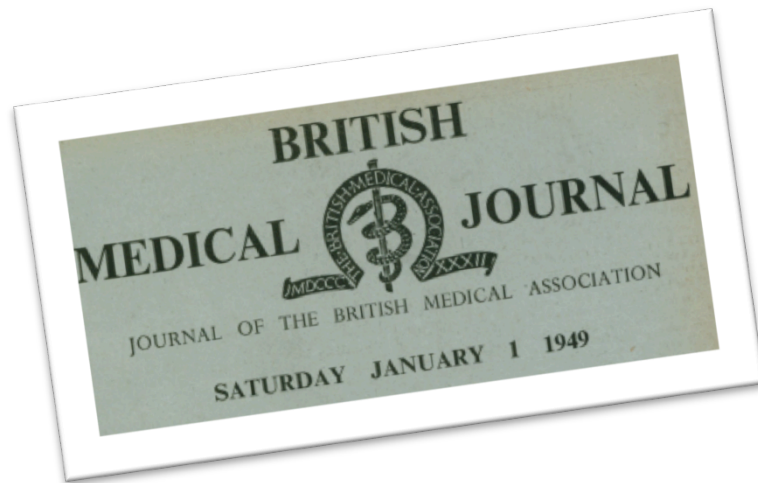
talki
from
esop
more
way r



Where is my
line of sight!?
I can't see anything..

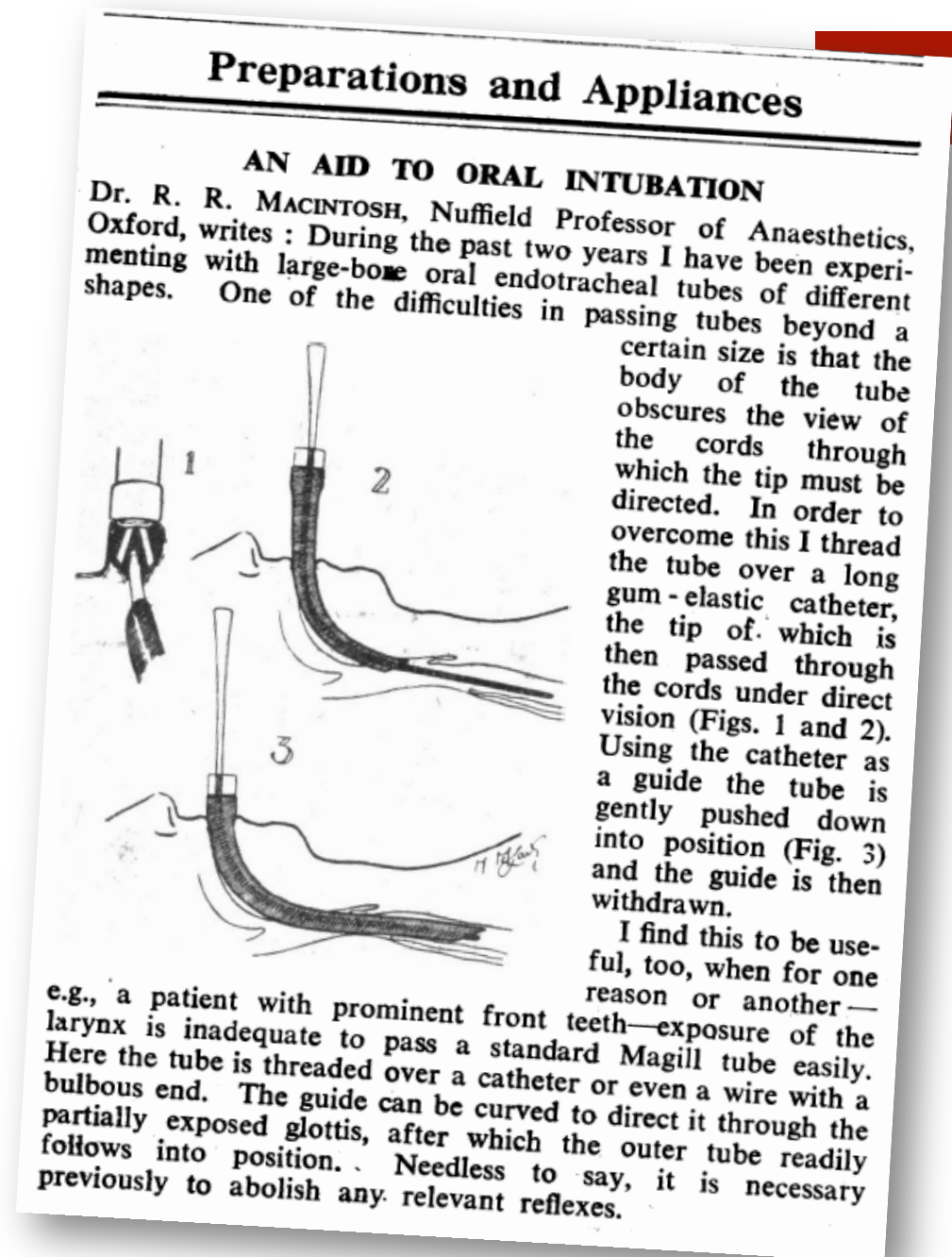


Gum Elastic Bougie



1949
40 cm
Straight tip
Rubber

Urinary Catheter
(for dilation of urethral strictures)
adapted to maintain view during
intubation with Miller (Macintosh)



Eschmann (Venn) Guide

The gum elastic bougie

I was interested in the article by Drs Nolan and Wilson on an evaluation of the gum elastic bougie (*Anaesthesia* 1992; 47: 878–81) since I was responsible for the design and manufacture of this product 20 years ago during my time as Anaesthetic Advisor to Messrs Eschmann Bros. & Walsh. The original prototype was bi-condé, but this had a tendency to double up on itself, so the single condé design was adopted after the design of the Toronto catheter, and this proved satisfactory.

I have always found that the simplest way of using the device is to lubricate the straight end and to pass it up the tube from below until it just protrudes from the upper end.

*Eastbourne District General Hospital,
Eastbourne,
East Sussex BN21 2UD*

P. HEX VENN



1973

60cm

Coudé tip

**Polyester threads +
external resin layer**

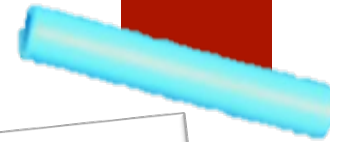
Designed to aid intubation
with both Miller/Macintosh

Venn PH. The gum elastic bougie" *Anaesthesia*, 1993; 48(3): 274–5.

Frova Introducer

1996
65cm
Curved tip 2x2
Hollow
Low density PET

Designed to aid intubation
with both Miller/Macintosh
(VLS)



VBM

CHINESE

VYGON

VBM

SUNMED

CHINESE
FAKE

VBM

PORTEX

VBM

FII/COOK

GEB ESCHMANN

... and many more!



STYLET

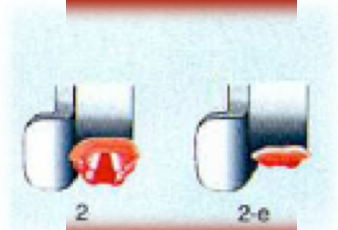
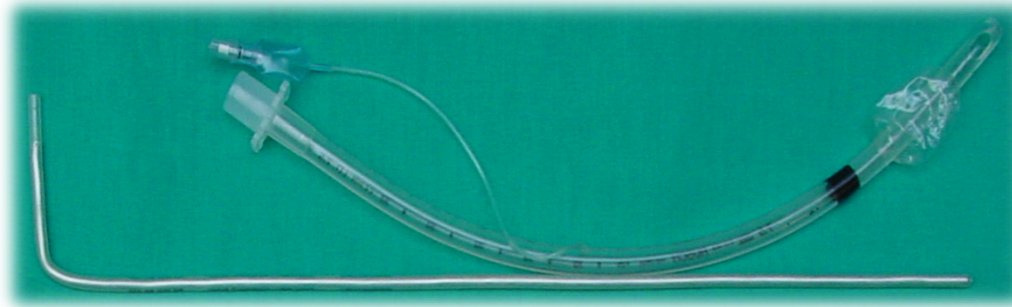
L>ET (35-40 cm)

Solid

Stiffening ET

Addressing ET

Tailored shape



Guide - AEC

L>>>ET (70-80 cm)

Solid/Hollow

Railroading ET during tube exchange

Poorly changeable shape



GEB - INTRODUCER

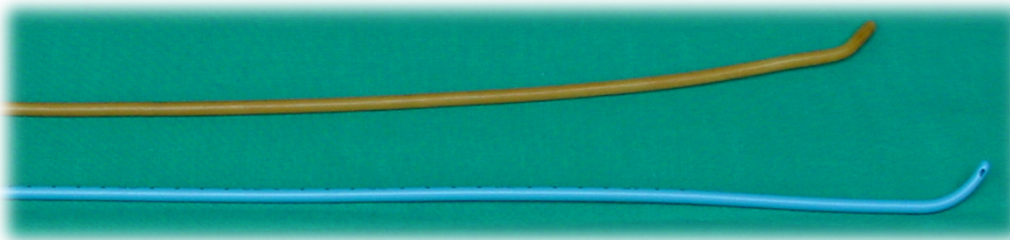
L>>ET (55-65 cm)

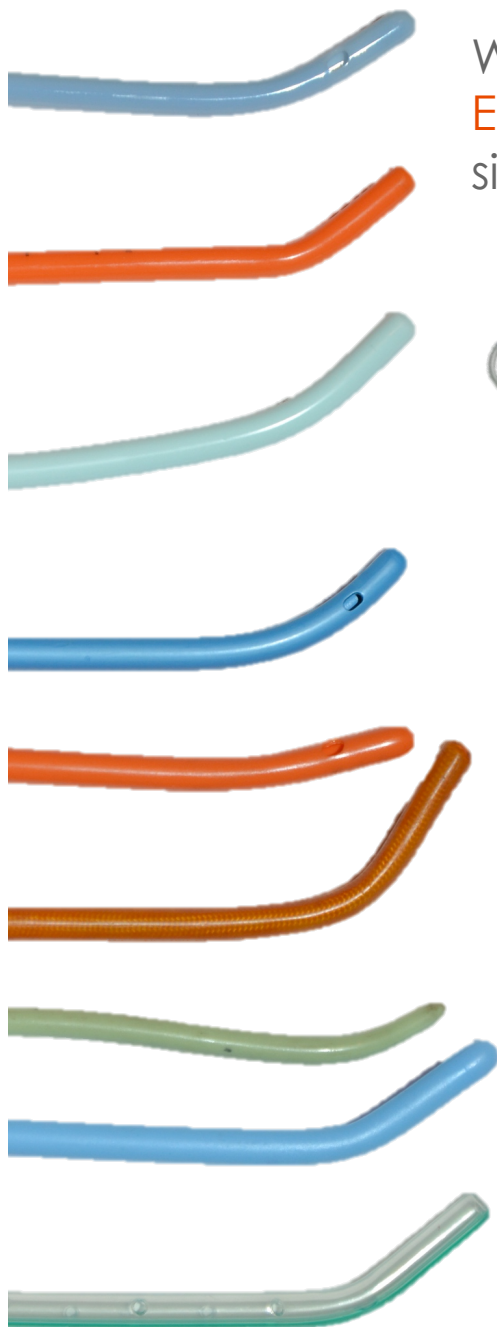
Solid/Hollow

Addressing ET

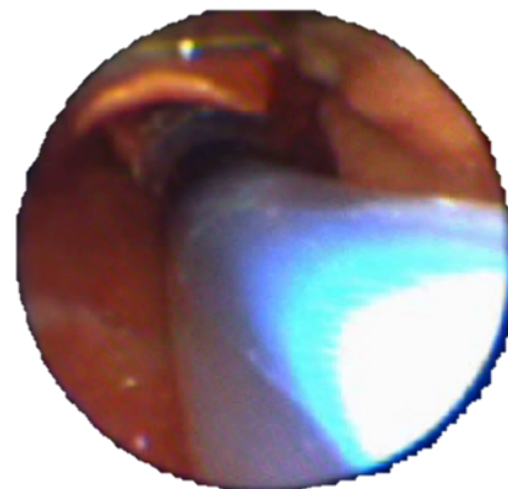
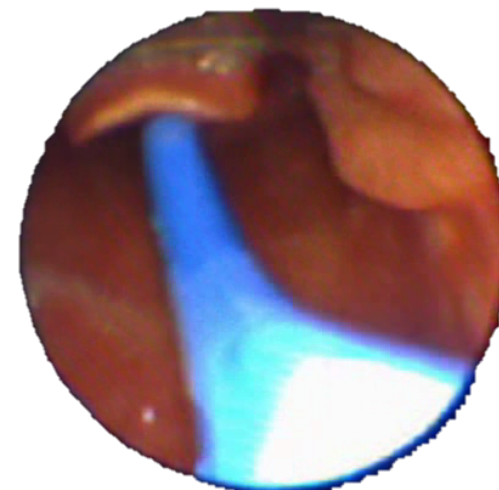
Railroading ET

Poorly changeable shape

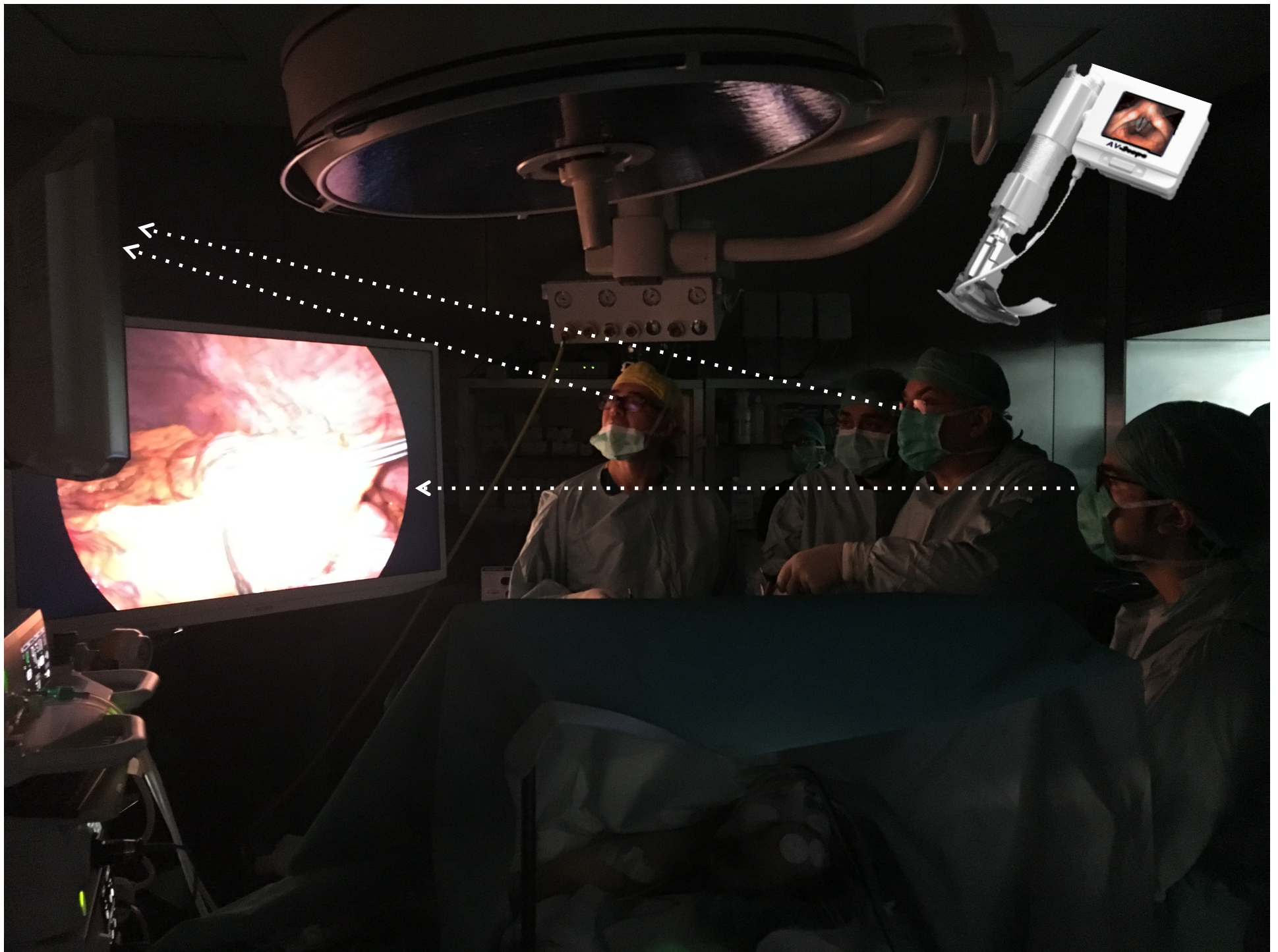




When compared to blind placement of a **styletted ETT** in the CL3 situation, success using the **bougie** is significantly higher: **60** vs **80-95%**.



Walsh R, Cookman L, Luerssen E. Comparison of intubation performance by emergency medicine residents using gum elastic bougie versus standard stylet in simulated easy and difficult intubation scenarios. Emerg Med Australas. 2014;26(5):446-9
Gataure PS, Vaughan RS, Latto IP. Simulated difficult intubation. Comparison of the gum elastic bougie and the stylet. Anaesthesia. 1996 Oct;51(10):935-8.



COMMON MISTAKES USING INTRODUCERS



Original Article

The traffic light bougie: a study of a novel safety modification*

A. Paul,¹ A. A. Gibson,² O. D. G. Robinson² and J. Koch¹

A. Paul,¹ A. A. Gibson,² O. D. G. Robinson,² and J. Koch,¹

the traffic light bougie is a novel safety modification of the standard bougie.

Original Article

Bougie-related airway trauma: dangers of the hold-up sign*

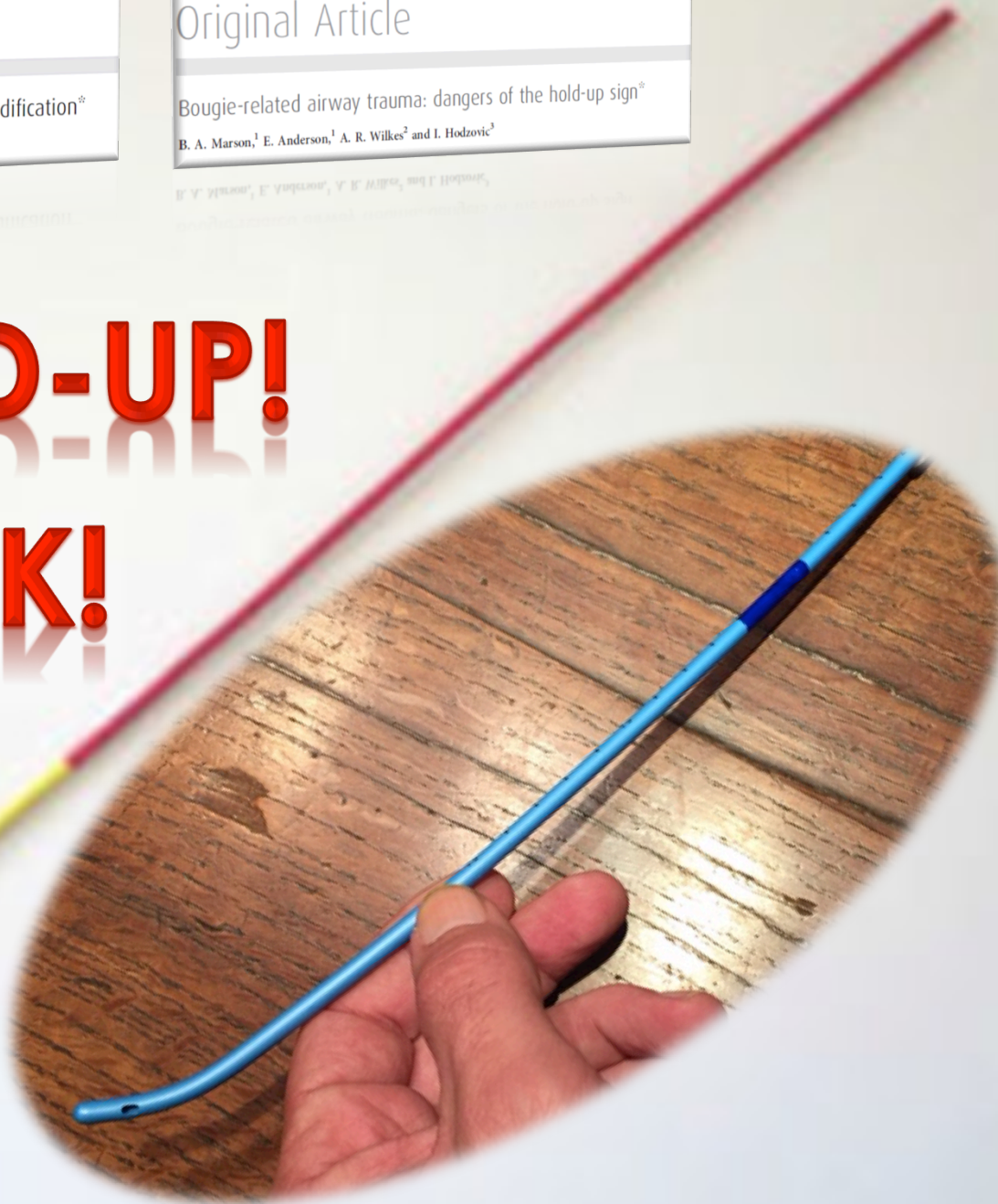
B. A. Marson,¹ E. Anderson,¹ A. R. Wilkes² and I. Hodzovic³

B. A. Marson,¹ E. Anderson,¹ A. R. Wilkes,² and I. Hodzovic,³

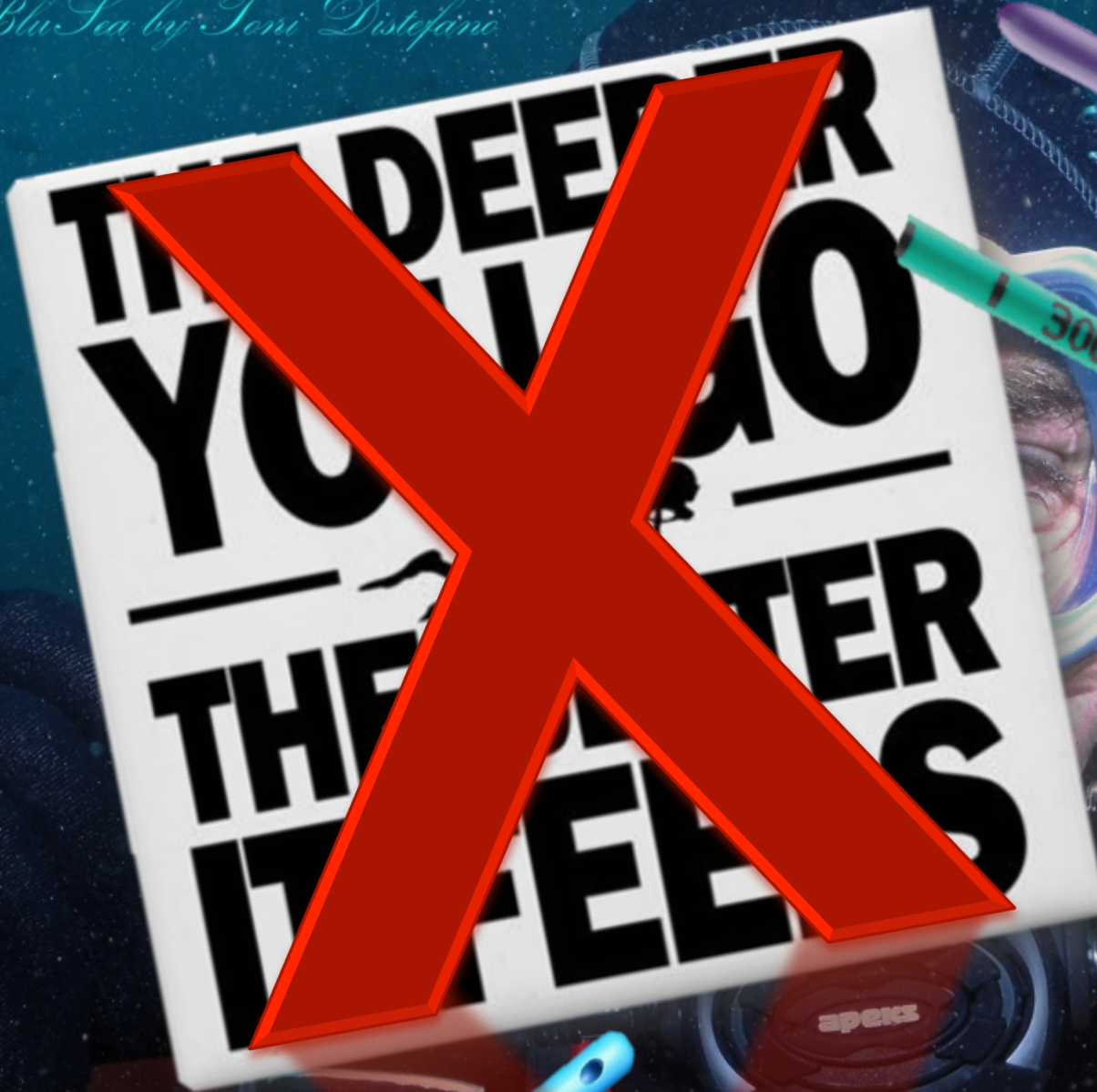
the hold-up sign is a novel safety modification of the standard bougie.

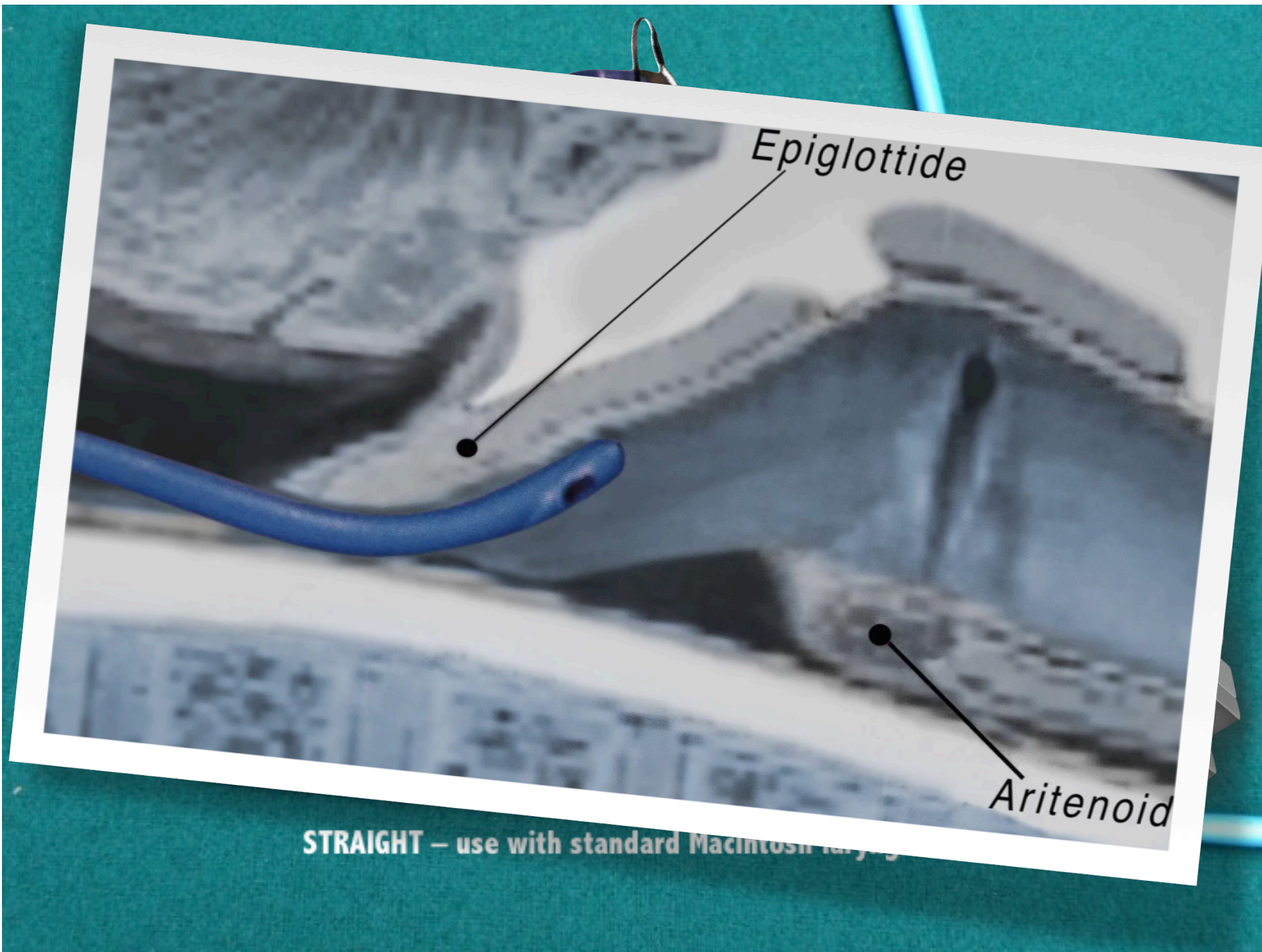
NO HOLD-UP!

NO CLICK!



Blu Sea by Toni Distefano



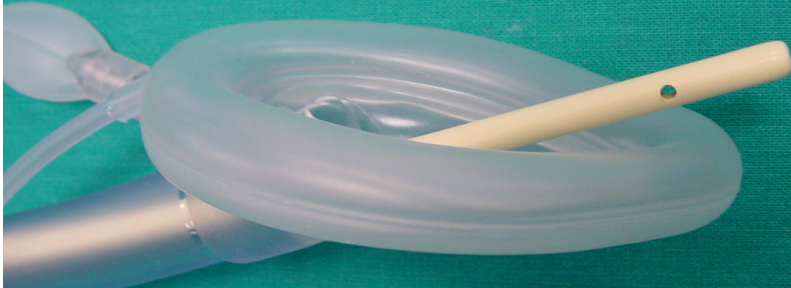


Epiglottide

Aritenoid

STRAIGHT - use with standard Macintosh laryngoscope

44,5% (0-100%) blind



105 pts, 41,6% (10-88%) blind



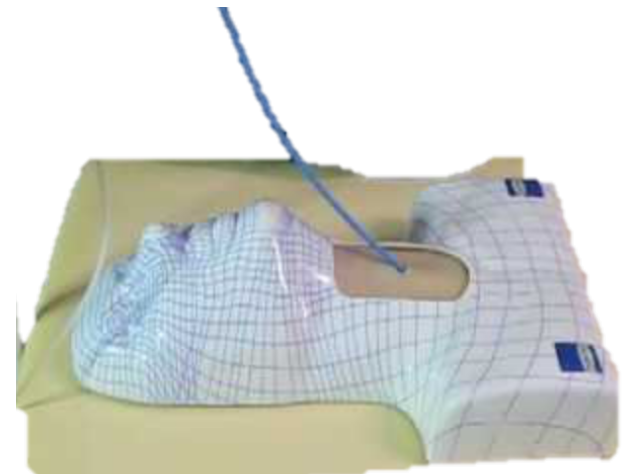
60%, - capnography



intubation through an extra-glottic device

- Blind procedure (solid introducer)
- Semi-blind procedure (hollow introducer)
- combination with FOB
- **LOW SUCCESS RATE**

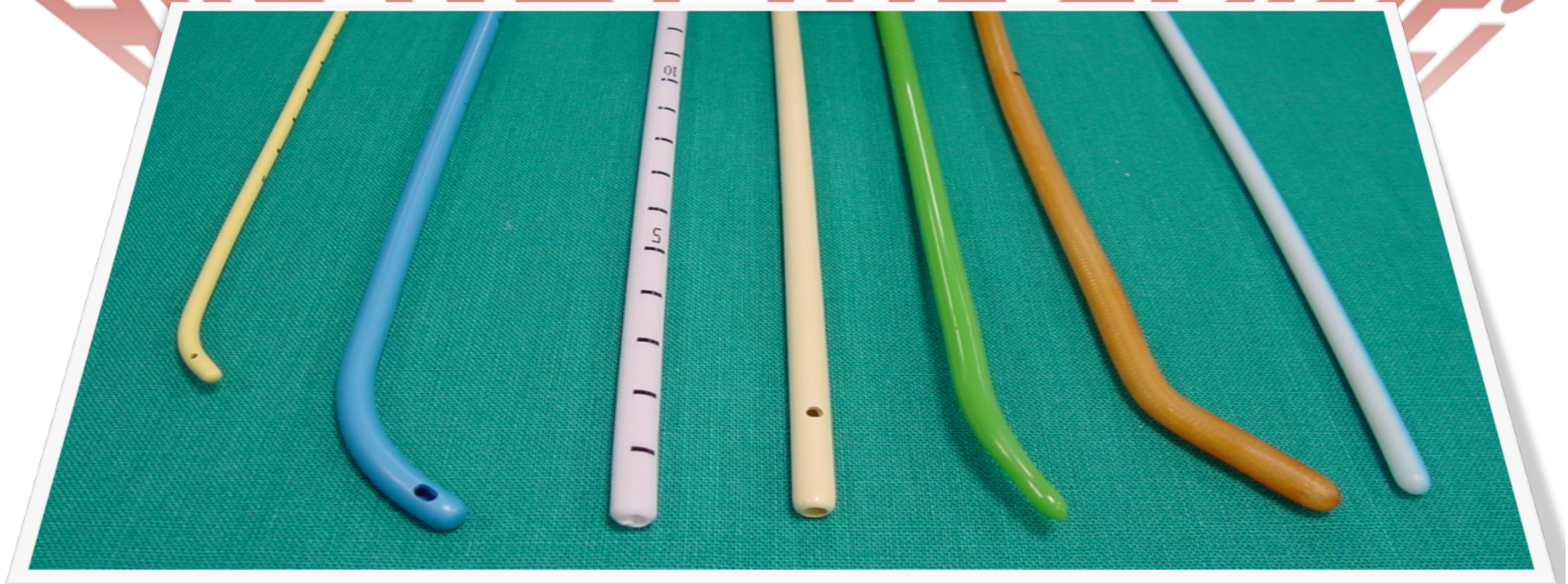
3 step Bougie - Scalpel technique
(Bougie Assisted Crico Thyrotomy - BACT)



CATHETERS



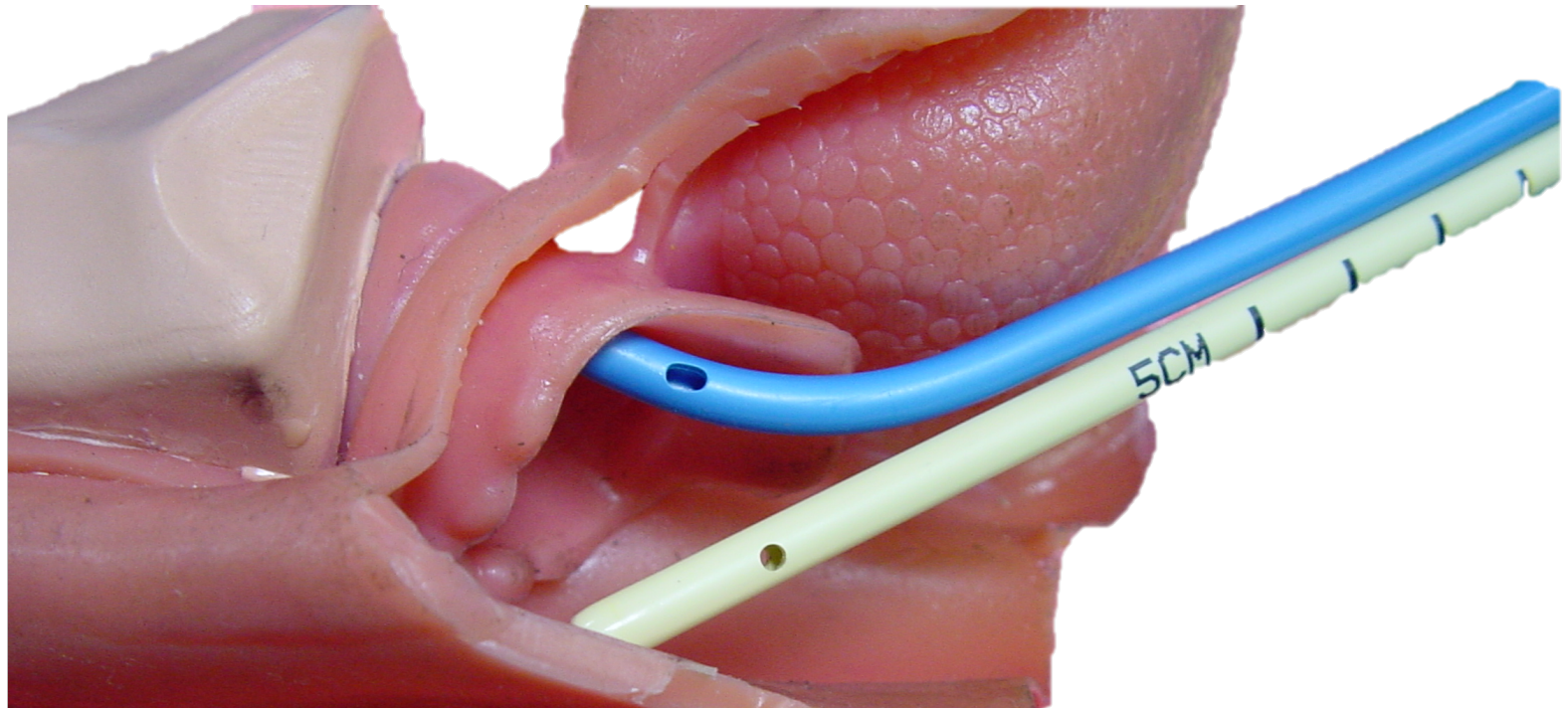
ARE NOT THE SAME



... and AEC



are not Introducers.





TE Procedures (auricular- nasal)

WHY EXCHANGING AN ETT

- Incorrect ETT size
- ETT obstruction
- Cuff leakage/rupture
- The need for an alternative route for ETT intubation (i.e. nasal \leftrightarrow oral)
- Change for a special type of tube (i.e. DLT),
- Change for a regular ETT in place of a special tube



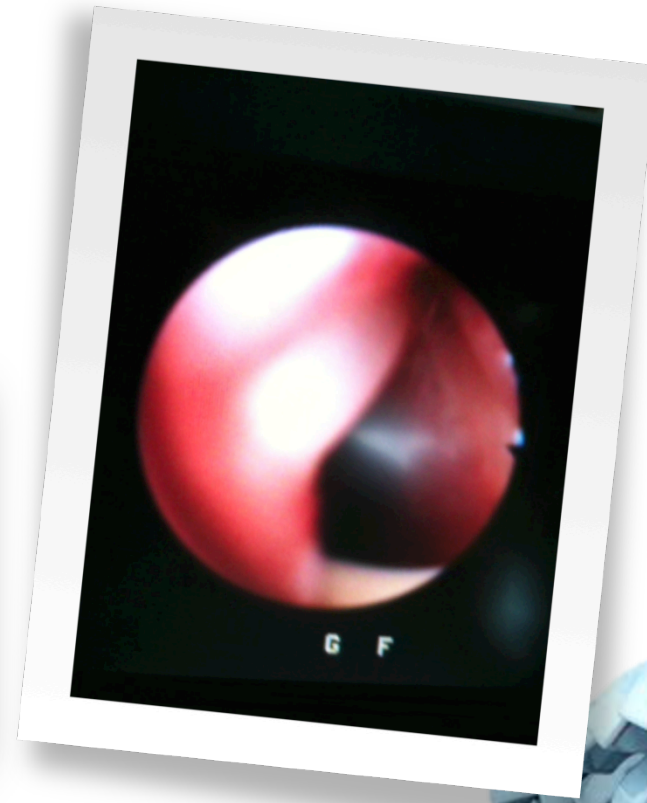


Courtesy Edmund Cohen

Airway Exchange Catheters

Simple Concept, Potentially Great Danger

This issue of ANESTHESIOLOGY includes a case report⁸ that reminds us that although the concept of using an AEC is simple, failure to strictly adhere to a few simple principles and clinical details can result in life-threatening complications. These complications can be divided into two broad categories: (1) barotrauma resulting from air entry exceeding air exit (e.g., as in the case report in this issue) and (2) failure to successfully pass the new ETT over the AEC.



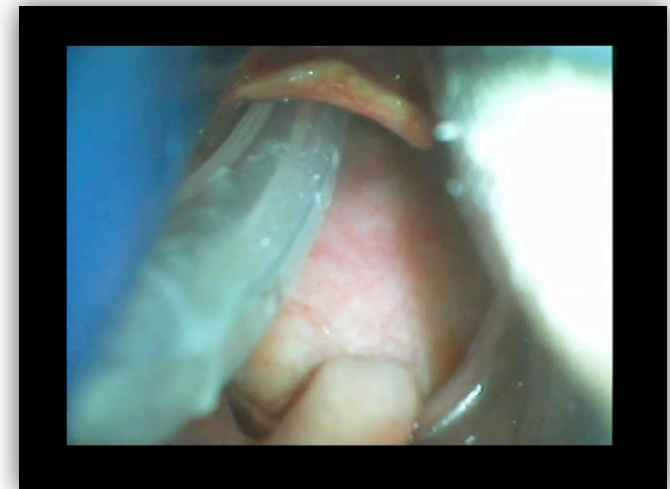
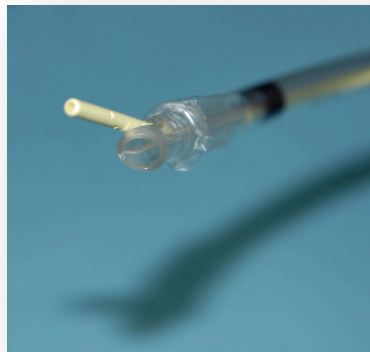
**TUBE EXCHANGE IS A SIMPLE CONCEPT,
NOT A SIMPLE PROCEDURE.**

NOT A SIMPLE PROCEDURE

TUBE EXCHANGE OVER AEC

Practical issues

- Check *in vitro* ET/AEC/(DLT) test
- **Conventional Versus Video Laryngoscopy for Tracheal Tube Exchange: Glottic Visualization, Success Rates, Complications, and Rescue Alternatives in the High-Risk Difficult Airway Patient**
- Thomas C. Mort, MD,* and Barbara H. Braffett, PhD†
- stop against any resistance
- c-clockwise rotation



TIDE EXCHANGE OVER AEC

Macroscopic Barotrauma Caused by Stiff and Soft-Tipped Airway Exchange Catheters: An In Vitro Case Series

Robert Axe, FRCA,* Alex Middleditch, FRCA,* Fiona E. Kelly, MRCP, FRCA, DICM,*
Tim J. Batchelor, FRCS (CTh),† and Tim M. Cook, FRCA*

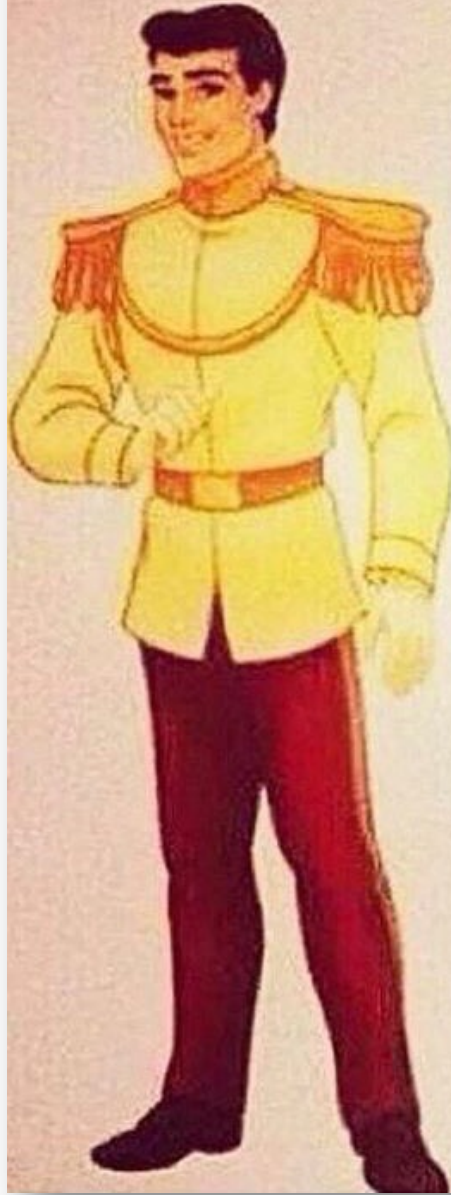
February 2015 • Volume 120 • Number 2

ANESTHESIA &
ANALGESIA
The Official Journal
of the ISAP

- AEC
- the
- Cor
- Flow



rs



Life is not a
fairy tale.

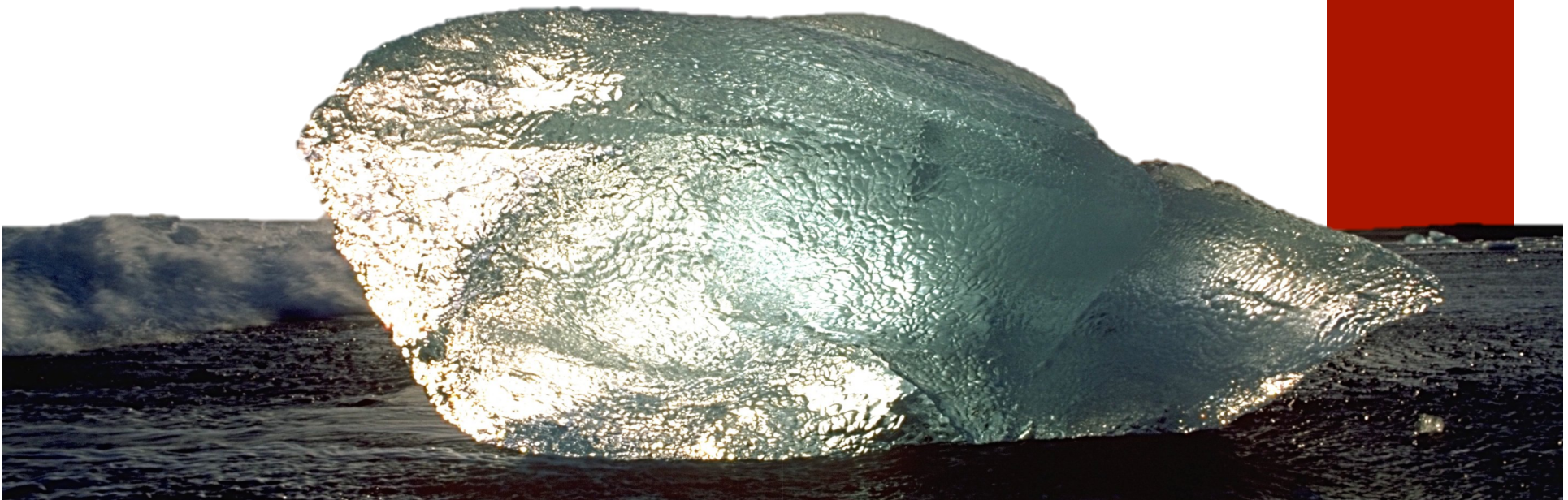
If you lose
your shoe
at midnight,

You're drunk.



The iceberg of extubation accidents

- *Lot of available information on airway accidents during anesthesia induction (Intubation)*
- *Poor information for extubation accidents: only iceberg's tip*
 - ✓ rare after elective surgery (0,1 – 0,45%)
 - ✓ more common in Obese, OSAS, Head & Neck
 - ✓ more common in ICU (2 – 25%)
 - ✓ associated with extremely severe outcomes



Continuous Airway Access for the Difficult Extubation: The Efficacy of the Airway Exchange Catheter



Continuous Airway Access for the Difficult Extubation: The Efficacy of the Airway Exchange Catheter

■ NO AEC

■ AEC

Cricoid

Rescue

Thomas C. Mort, MD

Esophageal IOT

> 3 IOT attempts

Retrospective

51 pts HR < 40

AEC in situ 3,9 h

(5' – 72h range)

SpO₂ < 90%

First pass success

BACKGROUND: The American Society of Anesthesiologists Task Force on the Management of the Difficult Airway regards the concept of an extubation strategy as a logical extension of the intubation process, although the literature does not provide a sufficient basis for evaluating the merits of an extubation strategy. Use of an airway exchange catheter (AEC) to maintain access to the airway has been reported on a

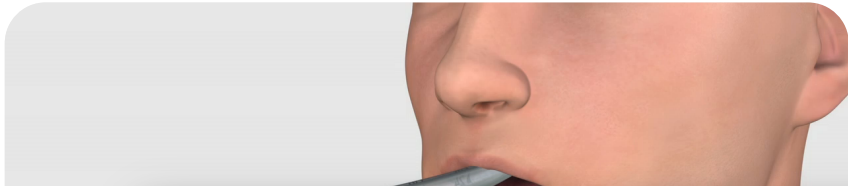
METHODS: We reviewed an observational analysis of a prospectively collected difficult airway quality improvement database for patients who were extubated over an AEC in a known or presumed difficult airway primarily in the intensive care unit. The data were reviewed for time to reintubation, number of attempts to reintubate the trachea, method of securing the airway, incidence of hypoxemia during reintubation, and complications encountered during reestablishment of the airway.

RESULTS: Forty-seven of 51 AEC patients were successfully reintubated over the AEC (92%), with 41 of 47 on the first attempt (87%). In three of the four AEC reintubation failures, the AEC was removed from the glottis during the reintubation attempt, and one patient had significant laryngeal edema precluding endotracheal tube advancement.

CONCLUSIONS: Maintaining continuous access to the airway postextubation via an AEC is an important component of an extubation strategy in selected difficult airway patients. The indwelling AEC appears to increase the first pass success rate in patients with known or suspected difficult airways and decrease the incidence of complications in patients intolerant of extubation and requiring tracheal reintubation.

(Anesth Analg 2007;105:1357-62)

0 20 40 60 80 100



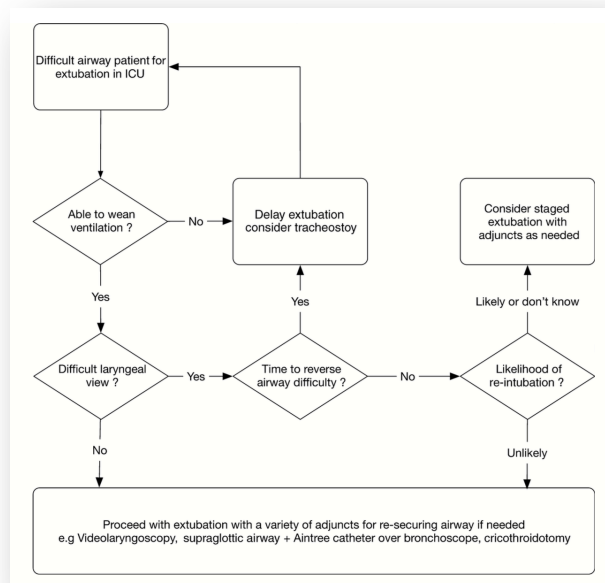


Original Article

An assessment of the tolerability of the Cook staged extubation wire in patients with known or suspected difficult airways extubated in intensive care

S. McManus,¹ L. Jones,² C. Anstey^{3,4} and S. Senthuran^{5,6}

around tracheal extubation in the intensive care unit. Vital signs, incidence of symptoms and patient tolerance of the wire were recorded. Twenty-three patients were enrolled and 17 (73%) tolerated the wire for 4 h. Nasendoscopy was performed in 11 of these patients and revealed one wire was in the oesophagus. The most common symptom was a mild intermittent cough in 13 patients. There was no impact of the guidewire on nursing care in 16 patients, tolera-



Symptom/issue	Incidence of symptom/issues			
	None	Tolerable	Intolerable	Total
Cough	8	13	1	22
Gag	20	1	1	22
Salivation	16	5	1	22
Wheeze	20	2	0	22
Vomiting	22	0	0	22
Haemoptysis	19	3	0	22
Impact of wire on nursing care provision	16	5	1	22



Same recommendations as per tube exchange

Plan B always ready



Staged Extubation Strategy: Is an Airway Exchange Catheter the Answer?

Thus, even when using an AEC, conventional extubation criteria should be strictly observed, and the options for direct laryngoscopy, cricothyroidotomy, fiberoptic or retrograde intubation, and jet ventilation or other techniques for resecuring the airway should be preserved. Although AEC-facilitated extubation is

Peter Biro, MD, DEAA*

Hans-Joachim Priebe, MD, FRCA,
FFARCSI†



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See you in Catania...