

BEST EVIDENCE TOPIC REPORTS

Towards evidence based emergency medicine: best BETs from the Manchester Royal Infirmary

Edited by K Mackway-Jones

Best evidence topic reports (BETs) summarise the evidence pertaining to particular clinical questions. They are not systematic reviews, but rather contain the best (highest level) evidence that can be practically obtained by busy practising clinicians. The search strategies used to find the best evidence are reported in detail in order to allow clinicians to update searches whenever necessary.

The BETs published below were first reported at the Critical Appraisal Journal Club at the Manchester Royal Infirmary.¹ Each BET has been constructed in the four stages that have been described elsewhere.² The BETs shown here together with those published previously and those currently under construction can be seen at <http://www.bestbets.org>.³ Four general topics are covered in this issue of the journal together with two prehospital topics.

- Gum elastic bougies in difficult intubation
- BURP and laryngoscopy
- Local anaesthetic and arterial puncture
- Propofol for sedation in the emergency department

Prehospital BETs

- Spinal boards or vacuum mattresses for immobilisation
- Cervical collars and intracranial pressure

1 Carley SD, Mackway-Jones K, Jones A, *et al*. Moving towards evidence based emergency medicine: use of a structured critical appraisal journal club. *J Accid Emerg Med* 1998; 15:220-2.

2 Mackway-Jones K, Carley SD, Morton RJ, *et al*. The best evidence topic report: a modified CAT for summarising the available evidence in emergency medicine. *J Accid Emerg Med* 1998;15:222-6.

3 Mackway-Jones K, Carley SD. [bestbets.org](http://www.bestbets.org): Odds on favourite for evidence in emergency medicine reaches the worldwide web. *J Accid Emerg Med* 2000;17:235-6.

Gum elastic bougies in difficult intubationReport by Simon Carley, *Specialist Registrar*Checked by John Butler, *Specialist Registrar**Clinical scenario*

A 55 year old woman is brought to the emergency department after an overdose of alcohol and tricyclic antidepressants. She has a tachycardia (110) and a systolic blood pressure of 105 mm Hg. The GCS is 5 (extends to pain). You decide to do an RSI using etomidate and suxamethonium. You are only able to visualise the epiglottis at laryngoscopy (Cormack grade 3 view), and struggle to intubate the patient on the third attempt (having intubated the oesophagus

twice). You wonder if it would have been easier if you had used a gum elastic bougie.

Three part question

In [patients in with a poor laryngoscopic view] is [use of a gum elastic bougie better than simply using the ET tube] at [successfully and quickly achieving tracheal intubation]?

Search strategy

Medline 1966-07/2001 using the OVID interface. [{exp laryngoscopy OR laryngoscopy.mp OR exp intubation, intratracheal OR intubation.mp OR intubate\$.mp} AND {bougie\$ OR gum elastic.mp}] LIMIT to human AND english.

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Table 1

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Nolan JP, 1993, UK	157 patients undergoing elective surgery	PRCT	Number of grade 3 views in neutral position	34/157 (22%)	Small number of truly difficult laryngoscopies in whom differences are likely to be the greatest
	Patients were intubated in the neutral c-spine position		Median time for intubation	20 secs for direct intubation v 25 seconds for use of the bougie	No grade 4 views
	Patients were either intubated direct (just with the ETT) or using a bougie.		Success rate for intubation	5/78 (6.4%) direct intubation patients could not be intubated (they were subsequently intubated using the bougie). 0/79 patients could not be intubated using the bougie	
			Number of patients requiring prolonged time for intubation (>45 seconds)	11 in direct visualised group v none in the bougie group.	

Search outcome

Altogether 78 papers were found of which one directly answered the three part question. This paper is shown in table 1.

Comments

Although the mean time for intubation is longer with the bougie the difference is clinically unimportant. Of greater interest is the number of patients who could not be intubated directly, but who were subsequently intubated using the

bougie. Similarly, there were no prolonged intubation times in the bougie group. Use of a gum elastic bougie appears to ease intubation in a neutral c-spine position.

Clinical bottom line

A gum elastic bougie should be available as an aid to intubation during difficult laryngoscopy.

1 Nolan JP, Wilson ME. Orotracheal intubation in patients with potential cervical spine injuries. An indication for the gum-elastic bougie *Anaesthesia* 1993;48:630-3.

BURP and laryngoscopy

Report by Simon Carley, *Specialist Registrar*
Checked by Rupert Jackson, *Specialist Registrar*

Clinical scenario

A 35 year old man with a severe head injury is brought to the emergency department. He has fallen from a ladder and is leaking CSF from the left ear suggesting a base of skull fracture. He has a GCS of 3 and dilated pupils. There are no other apparent injuries. You decide to intubate him using an RSI technique. Laryngoscopic view is poor despite the use of a McCoy laryngoscope and cricoid pressure. You eventually intubate using a gum elastic bougie. Your assistant performing cricoid pressure asks during the procedure if you want a BURP. Other bodily functions come to mind! Later your colleague explains that BURP (backwards, upwards, to the right, with pressure) on the thyroid cartilage improves the view. You wonder if in fact it is any better than simple cricoid.

Three part question

In [patients in with a poor laryngoscopic view] is [the BURP technique better than simple cricoid pressure] at [improving laryngoscopic view]?

Search strategy

Medline 1966-07/2001 using the OVID interface. [{exp laryngoscopy OR laryngoscopy.mp OR exp intubation, intratracheal OR intubation.mp OR intubate\$.mp} AND {(back.mp

OR backward\$.mp OR posterior.mp) AND pressure.mp} OR BURP.mp] LIMIT to human AND english.

Search outcome

Altogether 72 papers were found of which three were relevant to the three part question. These three papers are shown in table 2.

Comments

Optimising the view at laryngoscopy is an important step in successfully intubating patients in the emergency department. Although these studies only contain small numbers of true grade 3 patients (and no grade 4) there was a consistent improvement in laryngoscopic view. The BURP technique seems to be an additional step beyond simple backward pressure (which is likely to have a similar effect as cricoid pressure). It should therefore be taught to people assisting in RSI in the emergency department.

Clinical bottom line

The BURP technique can improve the laryngoscopic view and should be taught to those assisting in anaesthetic procedures.

1 Benumof JL, Cooper SD. Quantitative improvement in laryngoscopic view by optimal external laryngoscopic manipulation. *J Clin Anesth* 1996;8:136-40.
2 Takahata O, Kubota M, Mamiya K, et al. The efficacy of the "BURP" maneuver during a difficult laryngoscopy. *Anesth Analg* 1997;84:419-21.
3 Vanner RG, Clarke P, Moore WJ, et al. The effect of cricoid pressure and neck support on the view at laryngoscopy. *Anaesthesia* 1997;52:896-900.

Table 2

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Benumof JL, 1996, USA	181 elective patients undergoing GA. Back plus cephalad pressure was compared with standard view	Observational study	Improvement of laryngoscopic view Number of improved views in grade 3 group	All views improved All views improved	
Takahata O, 1997, Japan	630 patients undergoing routine surgery. BURP was compared with back pressure on the larynx	Observational study	Number of improved views in grade 3 group Number of improved views in grade 3 group Number of grade 2 views that improved (to grade 1 or an improved grade 2)	357 grade 1 views, 261 grade 2 views, 12 grade 3 views, 0 grade 4 views. 9 patients with an initial grade 3 Cormack view improved to grade 2 after simple back pressure. All patients with an initial grade 3 Cormack score improved to grade 2 after BURP. 176/261 after back pressure alone. 42/85 further improved with BURP	Comparison was with back pressure on thyroid cartilage rather than on cricoid. Very small number of initial grade 3, and no grade 4 views.
Vanner RG, 1997, UK	55 elective female patients standard view v simple cricoid v cricoid plus upward pressure	Observational study	Number of improved views with upward pressure v simple cricoid alone	Better with upward pressure	Only female patients