Table 6

Author, date, and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Carbaat PA and van Crevel H, 1981, Netherlands	100 neurological patients undergoing LP all done by same investigator with 18G needle. 50 ambulant, 50-24 hour bed rest.	Controlled trial	Incidence of headache	ambulant- 38% bed rest- 36% (NS)	p not stated small numbers
Dieterich M and Brandt T, 1985, Germany	160 patients undergoing LP for ? MS. 78 with 30 minute prone with head down tilt, 82 immediately ambulant. 20G and 22G needles used	Controlled trial	Incidence of headache	ambulant 41% head down tilt 44%	Statistical significance not assessed. Patients with prior headache excluded. Substudy of needle size may complicate results. Difficult LP excluded.
			Headache described as above	ambulant 18% head down tilt 14%	
Vilming ST *et al*, 1988, Norway	150 men 150 women for neurological investigation. 75 men and 75 women ambulant. Remainder 3 h prone then 3 h supine. All 22G using needle.	PRCT	Headache	ambulant 35% bed rest 39% (NS)	Significance headache calculated but not stated. Patients with preceding headache excluded.
			Nausea	ambulant 23% bed rest 13% (p<0.05)	
Spriggs DA *et al*, 1992, UK	110 patients undergoing diagnostic LP. 54 ambulant 56 bed rest for 4 hours	PRCT	Incidence of headache	Ambulant 32% Bed rest 31% (NS)	Statistical significance assessed but not given. Small discrepancies between two groups for needle size and operator experience. Patients with headache excluded.
Vimala J *et al*, 1998, Country not stated but ? India	204 patients undergoing diagnostic LP. 100 ambulant 104 24 hour bed rest.	PRCT	Incidence of headache	ambulant 15% (95% CI 12 to 22%) bed rest 18% (95% CI 8 to 22%)	Randomisation method unclear but possibly highly flawed. Discrepancies in needle size and operator experience.
			Headache considered severe	Ambulant 57% Bed rest 12% (p=0.02)	

symptoms in those with preceding headache. A further study is therefore required to assess the question in patients with pre-existing headache.

▸ CLINICAL BOTTOM LINE

Bed rest does not decrease the incidence of post lumbar puncture headache.

Carbaat PA, van Crevel H. Lumbar puncture headache: controlled study on the preventive effect of 24 hours' bed rest. *Lancet* 1981;ii:1133–6.
Dieterich M, Brandt T. Is obligatory bed rest after lumbar puncture obsolete? *Eur Arch Psychiatr Neurol Sci* 1985;**235**;71–5.
Vilming ST, Schrader H, Monstad I. Post lumbar-puncture headache: the significance of body posture. A controlled study of 300 patients. *Cephalalgia* 1998;**8**:75–8.
Spriggs DA, Burn DJ, French J, *et al*. Is bed rest useful after diagnostic lumbar puncture? *Postgrad Med J* 1992;**68**:581–3.
Vimala J, Peter JV, Jeyaseelan L, *et al*. Post lumbar puncture headache: Is bed rest essential? *J Assoc Physicians India* 1998;**46**:930–2.
***Kuntz KM**, Kokmen E, Stevens JC, *et al*. Post lumbar puncture headaches: experience in 501 consecutive procedures. *Neurology* 1992;**42**:1884.

Difficult intubation, the bougie and the stylet

Report by Ian Jones, *Registered Paramedic*
Checked by Katherine Roberts, *Research officer*

Abstract

A short cut review was carried out to establish whether a gum elastic bougie is more effective than a stylet at improving the success rate in difficult intubation. Altogether 32 papers were found using the reported search, of which one presented the best evidence to answer the clinical question. The author, date, and country of publication, patient group studied, study type, relevant outcomes, results, and study weaknesses of this best paper are tabulated. A clinical bottom line is stated.

Clinical scenario

A paramedic ambulance is dispatched to a 36 year old woman who has fallen from a horse. On arrival the rider is not wearing a helmet, is unconscious, and has laboured diaphragmatic breathing. A cervical spine injury is suspected and orotracheal intubation is indicated because of the reduced respiratory effort, possible head injury, and the long transport time to the nearest emergency department. The patient has a grade 3 laryngoscopic view (Cormack and Lehane). You wonder whether intubation would be made easier if you had a gum elastic bougie or stylet.

Three part question

In a [restricted view intubation] is the [gum elastic bougie more effective than a stylet] at [improving the intubation success rate]?

Search strategy

Medline and HealthStar 1966–06/02 using the OVID interface. [{exp intubation, intratracheal OR intubat$.mp OR intubation$.mp OR exp intubation OR exp laryngoscopy OR laryngospcopy.mp} AND {introducer.mp OR bougie$.mp OR gum elastic.mp OR stylet$.mp}] LIMIT to human AND English.

Search outcome

Altogether 334 papers found of which one was relevant. This is shown in table 7.

Comment(s)

The use of simulated views is less than ideal. Despite this drawback the results clearly answer the question posed. A further study comparing the bougie, the lighted and unlighted stylet in both grade 3 and grade 4 views would be useful.

▸ CLINICAL BOTTOM LINE

The gum elastic bougie is superior to the stylet at increasing the intubation success rate, when tested on simulated grade 3 views.

Gataure PS, Vaughan RS, Latto IP Simulated difficult intubation. Comparison of the gum elastic bougie and the stylet. *Anaesthesia* 1996;**51**:935–8.

Table 7

Author, date, and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Gataure PS *et al*, 1996, UK	100 patients undergoing elective surgery randomly split into 2 equal groups. Group 1 were intubated using 2 attempts with a bougie followed by a stylet while group 2 were intubated with 2 attempts with a stylet followed by a bougie. Simulated grade 3 views were used. Bougie *v* stylet	RCT	Success rate after 2 attempts	48/50 (96%) *v* 33/50 (66%) p<0.001	Not tested with grade 4 views. The study did not compare lighted stylets against bougies and unlighted stylets
			Mean time for 2 intubation	30.1 sec *v* 36.6 sec	The study used simulated difficult intubations rather than actual difficult intubations

To stab or slash: the percutaneous dilatation or standard surgical approach to cricothyroidotomy in prehospital care

Report by Ian Jones, *Registered Paramedic*
Checked by Katherine Roberts, *Research officer*

Abstract
A short cut review was carried out to establish whether surgical or percutaneous dilatation techniques offer better success rates in emergency cricothyroidotomy. Altogether 114 papers were found using the reported search, of which two presented the best evidence to answer the clinical question. The author, date, and country of publication, patient group studied, study type, relevant outcomes, results, and study weaknesses of these best papers are tabulated. A clinical bottom line is stated.

Clinical scenario
A paramedic ambulance is dispatched to a 24 year old man who has been ejected through the windscreen of his car. On arrival at the scene the patient is found to have major maxillofacial injuries with a seriously compromised airway. Airway control cannot be achieved by manual techniques and endotracheal intubation is not possible. You decide to attempt cricothyroidotomy and wonder whether the surgical technique is preferable to the percutaneous dilatation technique.

Three part question
In an [adult requiring emergency cricothyroidotomy] is [the standard surgical approach more effective than a percutaneous dilatation method] at [achieving an open airway and minimising complications]?

Search strategy
Medline 1966–06/02 using the OVID interface. [{cricothyroid.mp OR surgical airway.mp} AND {percutaneous.mp OR needle.mp OR surgical}] LIMIT to human AND English.

Search outcome
Altogether 144 papers found of which 142 were irrelevant to the study. The two remaining papers are shown in table 8.

Comment(s)
The study by Johnson *et al* found statistically significant differences in the insertion times and the subjective ease of use of the procedure, which were both in favour of the surgical approach. This study was of a lower quality than the Eisenburger study, which found no statistically significant differences between the techniques.

▸ CLINICAL BOTTOM LINE
There is no convincing evidence that either technique is superior in the prehospital environment. The operator should use the technique with which they are most familiar.

Johnson DR, Dunlap A, McFeely P, *et al*. Cricothyrotomy performed by prehospital personnel: a comparison of two techniques in a human cadaver model. *Am J Emerg Med* 1993;**11**:207–9.
Eisenburger P, Laczika K, List M, *et al*. Comparison of conventional surgical versus Seldinger technique emergency cricothyrotomy performed by inexperienced clinicians. *Anesthesiology* 2000;**92**:687–90.

Table 8

Author, date, and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Johnson DR *et al*, 1993, USA	Human adult cadavers.	Controlled trial	Insertion success:	86% *v* 73% (p=0.186)	The use of pig skin instead of human skin.
	SA *v* PD.		Insertion times:	55+/–35 sec *v* 148+/–96 sec (p<0.01)	Some of the procedures performed on violated cricothyroid membranes because of lack of cadavers
			Ease of method (0 to 10 scale)	3.0+/–1.5 *v* 5.1+/–3.3 (p<0.01)	
Eisenburger P *et al*, 2000, Austria	40 consecutive unembalmed adult human cadavers, who had died 4–24 hours previously	Controlled trial	Insertion success:	70% *v* 60%	Limited size of the trial
			Insertion times:	102+/–42 *v* 100+/–46	
	SA *v* Seldinger cricothyroidotomies		Ease of method (1 to 5 scale)	2.2 *v* 2.4	