

Comment(s)

Papers evaluating the effectiveness of proteolytic enzymes consist of case reports or case series only. Almost all used sips of a solution containing papain. Published cases up to 1977 report successful passage of the bolus in 89 of 90 cases treated with enzymes but with two fatalities. Since 1977, only two case reports of proteolytic enzyme use for meat oesophageal impaction have been published. One reported haemorrhagic pulmonary oedema (Hall) while the most recent (Maini) reported aspiration pneumonitis from papain use in a patient at a UK hospital in 2000. No reference to pineapple juice use was found in the literature.

► CLINICAL BOTTOM LINE

There is no evidence to support the effectiveness of fresh pineapple juice in resolving meat impaction in the oesophagus. Proteolytic enzymes have been successful but afford an unacceptable risk of serious complications. Their use should be avoided by doctors in the emergency department.

Cavo JW Jr, Koops HJ, Gryboski RA. Use of enzymes for meat impactions in the esophagus. *Laryngoscope* 1977;**87**:630-4.

Hall ML, Huseby JS. Hemorrhagic pulmonary edema associated with meat tenderizer treatment for esophageal meat impaction. *Chest* 1988;**94**:640-2.

Maini S, Rudralingam M, Zeitoun H, et al. Aspiration pneumonitis following papain enzyme treatment for oesophageal meat impaction. *J Laryngol Otol* 2001;**115**:585-6.

Effervescent agents for oesophageal food bolus impaction

Report by Jason Lee, *Specialist Registrar*

Checked by Ross Anderson, *Senior House Officer*

doi: 10.1136/emj.2004.022053

Abstract

A short cut review was carried out to establish whether fizzy drinks alone are effective at resolving food bolus impaction. Altogether 46 papers were found using the reported search, of which six 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

It is Christmas day when a 70 year old woman is brought to the emergency department by her family with a history of oesophageal obstruction after eating her turkey dinner. You wonder if a fizzy drink might resolve the obstruction.

Table 3

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Rice BT <i>et al</i> , 1983, USA	8 patients with oesophageal meat impaction Tartaric acid and sodium bicarbonate	Case series	Passage of the impacted food bolus Complications	Successfully passed in all cases No complications	Patients given barium before the effervescent agent
Campbell N and Sykes P, 1986, UK	2 patients with oesophageal food impaction Carbex	Case reports	Passage of the impacted food bolus Complications	Successfully passed in both cases No complications	Patients given barium before the effervescent agent
Mohammed SH and Hegedus V, 1986, Denmark	28 patients with impacted oesophageal foreign body	Case series	Passage of the impacted food bolus Complications	8 resolved by barium alone, 16 resolved by barium and soda 4 not resolved Laryngeal aspiration of barium in 1 patient	Patients given barium before the effervescent agent Retrospective
Zimmers TE <i>et al</i> , 1988, USA	Carbonated soda water All episodes (26) of oesophageal food impaction treated with effervescent agents over a 4 year period Tartaric acid and sodium bicarbonate	Case series	Passage of the impacted food bolus Complications	Successfully passed in 17 cases. Unsuccessful in 9 cases "Most vomited" Oesophageal tear in 1 patient	Patients given barium before the effervescent agent Retrospective
Karanjia ND and Rees M, 1993, UK	13 episodes (8 patients) requiring endoscopy for oesophageal food impaction	Case series	Presence or absence impacted food in oesophagus at endoscopy Complications	No foreign body seen in 8 of 8 patient events receiving prior treatment with Coca-Cola. Foreign body seen in 5 of 5 patient events receiving no prior treatment No complications in either group	1 patient given 3 days of Coca-Cola before resolution occurred (after extensive bolus noted at endoscopy) ?Selection bias
Spinou E <i>et al</i> , 2003, UK	Coca-Cola or nothing 1 patient with oesophageal meat impaction Carbex (= sodium bicarbonate, simethicone and citric acid)	Case report	Passage of the impacted food bolus Complications	Successfully passed No complications	Patient given barium before the effervescent agent Buscopan given to the patient 24 hours earlier with no success

Three part question

In [a patient with food bolus impaction] are [effervescent agents effective] at [inducing resolution and minimising complications]?

Search strategy

Medline 1966-10/04 and Embase 1966-10/04 using the Ovid interface. Medline: [effervescent.mp OR fizzy.mp OR exp carbonated beverages OR coke.mp OR cola.mp OR coca-cola.mp OR sodium bicarbonate.mp OR exp sodium bicarbonate OR exp citric acid OR citrate.mp OR citric acid.mp OR tartaric acid.mp OR carbex.mp OR gas-forming.mp] AND [exp Esophageal Stenosis OR {(oesophag\$.mp OR esophag\$.mp) AND (food.mp OR bolus.mp OR exp foreign bodies OR foreign bod\$.mp OR meat.mp OR impact\$.mp OR obstruct\$.mp OR dysphagia.mp OR steak\$.mp)}] LIMIT to human AND English language. Embase: [(effervescent.mp OR fizzy.mp OR exp carbonated beverages OR coke.mp OR cola.mp OR coca-cola.mp OR sodium bicarbonate.mp OR citrate.mp OR exp citric acid OR citric acid.mp OR exp tartaric acid OR tartaric acid.mp OR exp carbex OR carbex.mp OR gas-forming.mp) AND [exp esophagus obstruction OR {(oesophag\$.mp OR esophag\$.mp) AND (food.mp OR bolus.mp OR exp Foreign body OR foreign bod\$.mp OR meat.mp OR impact\$.mp OR obstruct\$.mp OR dysphagia.mp OR steak\$.mp)}] LIMIT to human AND English language.

Search outcome

Altogether 35 papers were found in Medline and 46 papers in Embase. After exclusion of papers using a combination of glucagon or buscopan with effervescent agents, six papers remained that were relevant to the question posed (table 3).

Comment(s)

Effervescent agents have successfully resolved oesophageal food impaction in a number of cases. However, these studies represent only low level of evidence (case reports, case series, or case-control studies) and in most studies the patients had undergone prior barium swallow to conclude the diagnosis. It is feasible that these cases resolved through the "weight of

column effect" of the barium. A wealth of correspondence exists in journals from clinicians stating that they have used effervescent agents "many times" safely and successfully. They do not, however, provide data. Overall, the published success rate of effervescent agents is 80% (52 of 65 cases). The complication rate, 3% (2 of 65 cases), is low but exceeds the figures quoted in the literature for endoscopic removal. More research is needed in this area.

► CLINICAL BOTTOM LINE

Effervescent agents seem to be effective at resolving oesophageal food obstruction but their use is not without risk of complications. Consultation with ENT before their use is recommended.

Rice BT, Spiegel PK, Dombrowski PJ. Acute esophageal food impaction treated by gas-forming agents. *Radiology* 1983;146:299-301.

Campbell N, Sykes P. Non-endoscopic relief of oesophageal obstruction. *Lancet* 1986;ii:1405.

Mohammed SH, Hegedus V. Dislodgement of impacted oesophageal foreign bodies with carbonated beverages. *Clin Radiol* 1986;37:589-92.

Zimmers TE, Chan SB, Kouchoukos PL, et al. Use of gas-forming agents in esophageal food impactions. *Ann Emerg Med* 1988;17:693-5.

Karanjia ND, Rees M. The use of Coca-Cola in the management of bolus obstruction in benign oesophageal stricture. *Ann R Coll Surg Engl* 1993;75:94-5.

Spinou E, Kubba H, Guse J, et al. The radiological management of oesophageal food bolus obstruction using a gas-forming agent and barium. *Auris Nasus Larynx* 2003;30:103-5.

Humeral fractures and non-accidental injury in children

Report by Robert Williams, *Specialist Registrar*
Checked by N Hardcastle, *Senior House Officer*

doi: 10.1136/emj.2004.022061

Abstract

A short cut review was carried out to establish whether proximal humeral fractures in children are indicative of non-accidental injury. Altogether 44 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

Table 4

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Strait RT <i>et al</i> , 1995, USA	124 children under 36 months with humeral shaft fractures identified by retrospective chart review. Subdivided into age less than 15 months and those aged 15 to 36 months. Diagnosis of abuse, indeterminate, or not abuse made by consensus.	Diagnostic retrospective test study	Abuse diagnosed—overall Supracondylar fractures Spiral/oblique fractures	<15 months: 36%; 15–36 months: 1% <15 months: 2/10 (20%) <15 months: 7/12 (58%)	Small numbers Single hospital "Gold standard" of diagnosis of abuse inadequate - based on retrospective chart review, with no standard criteria for the definition of abuse "Abuse"/ "not abuse" not determined in 23 cases. If all these were "abuse", figures change dramatically. In case of Salter Harris I and II and lateral condylar group only single fracture of each type, skewing the validity of the calculations Retrospective
Shaw BA <i>et al</i> , 1997, USA	34 unselected children (<3 years) with humeral shaft fractures	Retrospective diagnostic test study	Transverse Oblique Spiral	Specificity 57% (57%) LR+ 0.39 (0.72) Spec 79% (71%) LR+ 0.78 (0.27) Specificity 68% (76%) LR+ 2.07 (2.58)	Gold standard problem—diagnosis of abuse based on retrospective case note review and information from child protection services; no standard criteria for the definition of abuse Small numbers Single hospital