Authors' affiliations
C Dewar, DF Gorman, Selly Oak Hospital, Brimingham, UK
Correspondence to: Dr C Dewar, Fife Acute Hospitals Trust, Queen Margaret Hospital, Whitefield Road, Dumfermline, Fife KY12 0SU, UK; suzanne@brannan43.fsnet.co.uk
Accepted for publication 29 October 2001

REFERENCES

1 **Jackson MR**, Olson DW, Beckett WC, *et al*. Abdominal vascular trauma: a review of 106 injuries. *Am Surg* 1992;**58**:622–6.
2 **Lucas AE**, Richardson JD, Flint LM, *et al*. Traumatic injury of the proximal superior mesenteric artery. *Ann Surg* 1981;**193**:30–4.
3 **Accola KD**, Feliciano DV, Mattox KL, *et al*. Management of injuries to the superior mesenteric artery. *J Trauma* 1986;**26**:313–19.
4 **Asensio JA**, Berne JD, Chahwan S, *et al*. Traumatic injury to the superior mesenteric artery. *Am J Surg* 1999;**178**:235–9.
5 **Lassonde J**, Laurendeau F. Blunt injury of the abdominal aorta. *Ann Surg* 1981;**194**:745–8.
6 **Fullen WD**, Hunt J, Altenmeier WA, *et al*. The clinical spectrum of penetrating injury to the superior mesenteric arterial circulation. *J Trauma* 1972;**12**:656–64.
7 **Richards JR**, Derlet RW. Computed tomography for blunt abdominal trauma in the ED: a prospective study. *Am J Emerg Med* 1998;**16**:338–42.

Use of the Asherman chest seal as a stabilisation device for needle thoracostomy

K Allison, K M Porter, A M Mason

Emerg Med J 2002;**19**:590–591

We report the use of the Asherman chest seal as a stabilisation device for needle thoracocentesis in the prehospital environment. Although this piece of equipment has been available for five years, primarily for the prehospital treatment of chest wounds,[1] this novel modification of its purpose increases its application to prehospital care. This work was prepared on behalf of the research and developments committee of the Faculty of Pre-hospital Care, Royal College of Surgeons of Edinburgh.

CASE 1

The driver of an articulated lorry was heavily trapped in wreckage after his vehicle was involved in a collision with the rear end of a lorry laying out cones. Examination at scene revealed a left sided chest injury, possible intra-abdominal injury, and probable fractured pelvis. After extrication, the patient's condition suddenly deteriorated and his level of consciousness decreased (Glasgow Coma Score (GCS) 14 to 3). He was found to have paradoxical movements of his chest, absent radial pulse, no pulse oximetry reading, and the ECG tracing showed a sinus tachycardia of 124 beats per minute. Diagnoses of tension pneumothorax or cardiac tamponade leading to the pulseless electrical activity (PEA) were suspected and a Cook emergency pneumothorax drain was inserted with the release of air and dramatic improvement in the patient's condition. The immediate care doctor placed an Asherman seal onto the chest wall with the body of the plastic cannula stabilised within the flutter valve mechanism of the seal. The patient was transferred to hospital with a GCS of 14, radial pulse 120 beats per minute, blood pressure 110/70 mm Hg, and pulse oximetry 95%.

Figure 1 Asherman chest seal in place on patient's left chest wall.

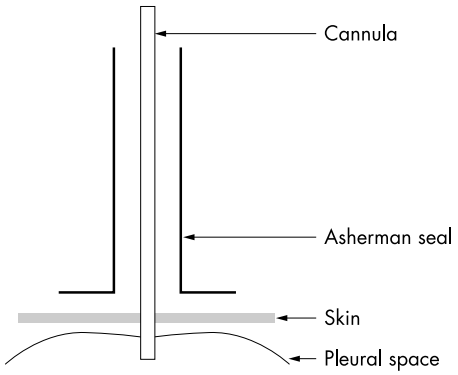

Figure 2 Schematic of needle thoracocentesis cannula secured by placement within an Asherman chest seal.

The patient subsequently had a chest drain in the accident and emergency (A&E) department, before computed tomography and laparotomy for a hepatic injury. The Cook drain and Asherman seal were kept in place throughout these procedures and transfer to intensive care.

CASE 2

A 17 year old man was a non-restrained front seat passenger, trapped in a car after a collision with another vehicle. His airway was clear. He appeared to have decreased breath sounds and an increased percussion note on one side of his chest although this assessment was difficult in a noisy environment. He had a GCS of 12 at scene. During extrication he deteriorated and required bag-valve-mask assisted ventilation. He developed increasing respiratory distress and he had clear signs of a left sided tension pneumothorax. A needle thoracocentesis was performed but was subsequently dislodged and needed replacing during the extrication. After this the venflon was stabilised in position using an Asherman chest seal, which then maintained the position until the completion of extrication and during the 10 minute transfer to hospital. In the A&E department a chest drain was performed and the patient subsequently made a full recovery.

DISCUSSION

Chest trauma is one of the leading causes of trauma deaths[2–5] and tension pneumothorax is one of the immediately life threatening conditions amenable to prehospital treatment.[6] Needle thoracocentesis, entailing the insertion of a large bore cannula into the second intercostals space in the mid-clavicular line, is an established treatment for this condition and buys time before definitive chest drain insertion in hospital.[7] It is recognised that cannula length can be a problem in the thoracocentesis technique.[8 9] Chest drain insertion outside of hospital can prolong scene time and is rarely immediately necessary in most trauma scenarios.

During extrication, patient packaging, and transfer, the needle thoracocentesis can easily be dislodged as the second case identifies. The Asherman chest seal can easily be placed over the barrel of the thoracocentesis cannula and permits a more robust, easy, and readily available stabilisation device for the thoracocentesis cannula than tapes, gallipots, and syringe barrels, which are currently suggested (fig 1 and 2).

Authors' affiliations
K Allison, George Eliot Hospital, Nuneaton, UK
K M Porter, University Hospital Birmingham NHS Trust-SellyOak, Birmingham, UK
A M Mason, Suffolk Accident Rescue Service (SARS), Bury St Edmunds, Suffolk, UK

Correspondence to: Mr K P Allison, 271 Blossomfiled Road, Solihull, West Midlands B91 1TA, UK; kallison@ukonline.co.uk

Accepted for publication 1 May 2002

REFERENCES

1 **Hodgetts TJ**, Hanlan CG, Newey CG. Battlefield first aid: a simple, systematic approach for every soldier. *J R Army Med Corps* 1999;**145**:55–9.
2 **Bielecki K**. Trauma care for the year 2000. *Przegl Lek* 2000;**57** (suppl 5):127–8.
3 **Golden PA**. Thoracic trauma. *Orthopaedic Nursing* 2000;**19**:37–45.
4 **American College of Surgeons**. Thoracic Trauma. In: ACS committee on trauma, ed. *Advanced Trauma Life Support for Doctors (ATLS)*. Chicago: ACS, 1997:125–56.
5 **National Association of Emergency Medical Technicians**. Thoracic trauma. In: NAEMT, ed. *Pre-hospital trauma life support*. Akron, OH: NAEMT, 1990:124–46..
6 **Sanson G**, Di Bartolomeo S, Nardi G, *et al*. Road traffic accidents with vehicular entrapment: incidence of major injuries and need for advanced life support. *Eur J Emerg Med* 1999;**6**:285–91.
7 **Trauma Care**. Thoracic trauma. In: Greaves I, Porter K, Ryan J, eds. *Trauma Care Manual*. London: Arnold, 2001:54–70.
8 **Pattison GT**. Needle thoracocentesis in tension pneumothorax: insufficient cannula length and potential failure. *Injury* 1996;**27**:758.
9 **Britten S**, Palmer SH, Snow TM. Needle thoracocentesis in tension pneumothorax: insufficient cannula length and potential failure. *Injury* 1996;**27**:321–2.