

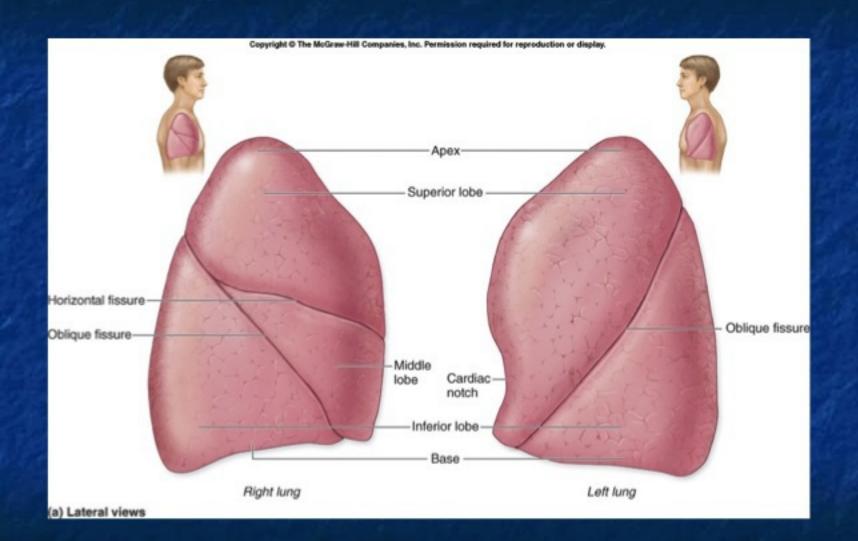
Indications for chest tube

- Absolute indications
 - Pneumothorax
 - Haemothorax
 - Traumatic arrest (bilateral)
- Relative indications
 - Rib fractures and positive pressure ventilation
 - Profound hypoxia/hypotension and penetrating Chest injury
 - Profound hypoxia/hypotension and unilateral signs of a haemothorax

(Trauma.org)

Other indications

- Empyema and complicated parapneumonic pleural effusion
- Malignant pleural effusion
- Post-operative indications



Chest trauma

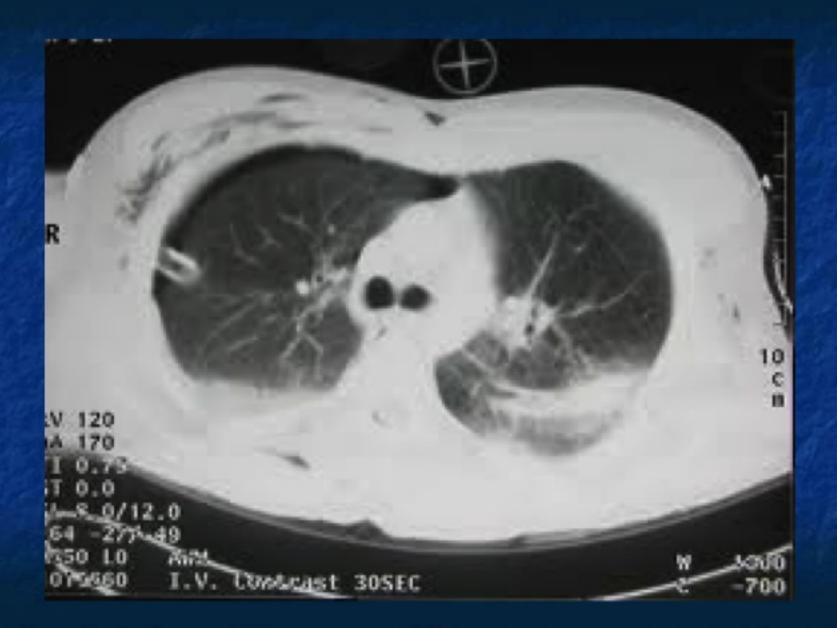
- USA trauma centres 25% traumatic deaths are related to injuries within the thoracic cage
- Chest injuries occur in approximately 60% of polytrauma cases

East Practice Management Guidelines 2011

Complications 1

- Tube malposition
 - Intraparenchymal
 - Fissure
 - Chest wall
 - Mediastinal
 - Abdominal





Complications 2

- Blocked drain
- Dislodged drain
- Re-expansion pulmonary oedema
- Subcutaneous emphysema
- Nerve injuries
- Cardiac and vascular injuries
- Residual pneumo/haemothorax
 - Empyema/fibrothorax
- Infectious

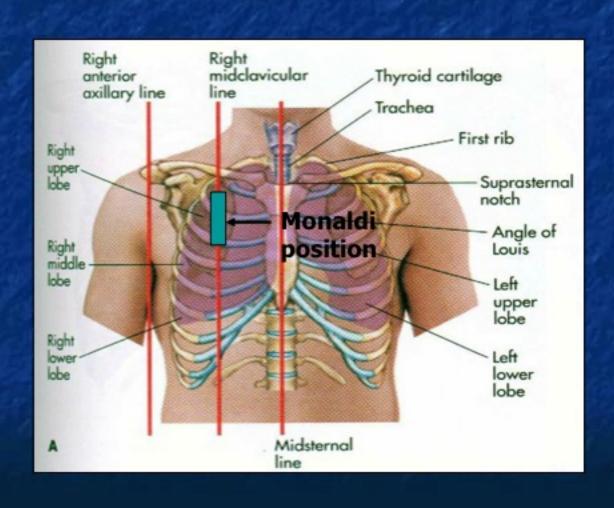
Where?

Positions 1

Posterior axillary line Midaxillary line Anterior axillary line

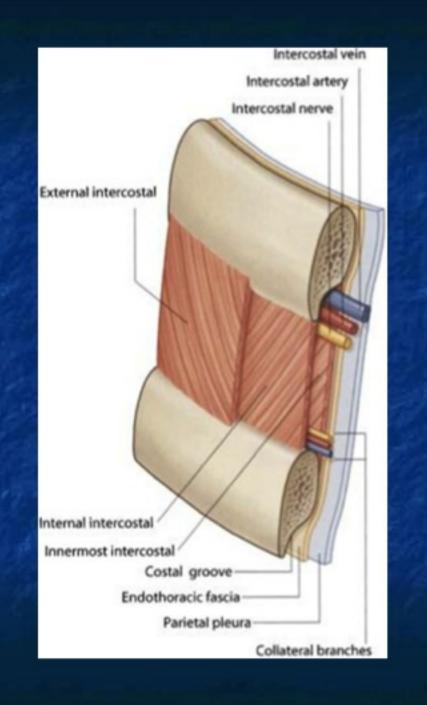
Bülau position

Positions 2

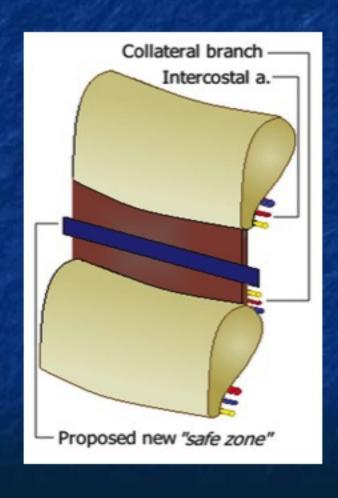


Positions 3





"Ideal" procedural safe zone



What is big enough?

ATLS 8th Edition

- 36-Fr tube for haemothorax
- 38-Fr tube for massive haemothorax

Less clear advice regarding pneumothorax

BTS guidelines for the management of spontaneous pneumothorax

There is no evidence that large tubes (20–24 F) are any better than small tubes (10–14 F) in the management of pneumothoraces. The initial use of large (20–24 F) intercostal tubes is not recommended, although it may become necessary to replace a small chest tube with a larger one if there is a persistent air leak. [B]

 Does size matter? A prospective analysis of 28–32 versus 36–40 French chest tube size in trauma

Inaba, Kenji MD; Lustenberger, Thomas MD; Recinos, Gustavo MD; Georgiou, Crysanthos MD; Velmahos, George C. MD; Brown, Carlos VR; Salim, Ali MD; Demetriades, Demetrios MD; Rhee, Peter MD

The Journal of Trauma and Acute Care Surgery Issue: Volume 72(2), February 2012, p 422–427

Table 1. Comparison of Clinical and Demographic Characteristics According to Small or Large Chest Tubes in Patients With a Hemothorax

Total (n = 275)	Small Chest Tube (n = 144)	Large Chest Tube (n = 131)	P
35.8 ± 16.5	36.9 ± 17.0	34.6 ± 15.9	0.260
17.8% (49/275)	20.8% (30/144)	14.5% (19/131)	0.171
87.3% (240/275)	86.1% (124/144)	88.5% (116/131)	0.545
52.7% (145/275)	50.7% (73/144)	55.0% (72/131)	0.479
11.3% (31/275)	9.7% (14/144)	13.0% (17/131)	0.394
12.4% (34/275)	8.3% (12/144)	16.8% (22/131)	0.033
9.8% (27/275)	5.6% (8/144)	14.5% (19/131)	0.013
16.4% (45/275)	8.3% (12/144)	25.2% (33/131)	< 0.001
26.5% (73/275)	28.5% (41/144)	24.4% (32/131)	0.448
18.9% (52/275)	18.1% (26/144)		0.705
189 ± 10.1	18.3 ± 10.0	19.5 ± 10.3	0.355
28.7% (79/275)	22.9% (33/144)	35.1% (46/131)	0.026
1.8% (5/275)	1.4% (2/144)	2.3% (3/131)	0.672
10.5% (29/275)	10.4% (15/144)	10.7% (14/131)	0.942
33.1% (91/275)	34.7% (50/144)	31.3% (41/131)	0.547
	358 ± 16.5 17.8% (49/275) 87.3% (240/275) 52.7% (145/275) 11.3% (31/275) 12.4% (34/275) 9.8% (27/275) 16.4% (45/275) 26.5% (73/275) 18.9% (52/275) 18.9 ± 10.1 28.7% (79/275) 1.8% (5/275) 1.8% (5/275)	358 ± 16.5 17.8% (49/275) 20.8% (30/144) 87.3% (240/275) 86.1% (124/144) 52.7% (145/275) 50.7% (73/144) 11.3% (31/275) 9.8% (12/144) 12.4% (34/275) 9.8% (12/144) 16.4% (45/275) 26.5% (73/275) 18.9% (12/144) 18.9% (52/275) 18.9% (41/144) 18.9% (52/275) 18.1% (26/144) 18.3 ± 10.0 28.7% (79/275) 1.4% (2/144) 1.8% (5/275) 1.4% (2/144) 1.8% (5/275) 1.4% (2/144)	35.8 ± 16.5 36.9 ± 17.0 34.6 ± 15.9 17.8% (49/275) 20.8% (30/144) 14.5% (19/131) 87.3% (240/275) 86.1% (124/144) 88.5% (116/131) 52.7% (145/275) 50.7% (73/144) 55.0% (72/131) 11.3% (31/275) 9.7% (14/144) 13.0% (17/131) 12.4% (34/275) 8.3% (12/144) 16.8% (22/131) 9.8% (27/275) 5.6% (81/144) 14.5% (19/131) 16.4% (45/275) 8.3% (12/144) 25.2% (33/131) 16.4% (45/275) 8.3% (12/144) 25.2% (33/131) 18.9% (52/275) 18.1% (26/144) 19.8% (26/131) 18.9% (52/275) 18.1% (26/144) 19.8% (26/131) 18.9 ± 10.1 18.3 ± 10.0 19.5 ± 10.3 28.7% (78/275) 22.9% (33/144) 35.1% (46/131) 10.5% (29/275) 1.4% (2/144) 2.3% (3/131) 10.5% (29/275) 10.4% (15/144) 10.7% (14/131)

Table 1 . Comparison of Clinical and Demographic Characteristics According to Small or Large Chest Tubes in Patients With a Hemothorax

Two-Year Experience of Using Pigtail Catheters to Treat Traumatic Pneumothorax: A Changing Trend

Narong Kulvatunyou, MD, Aparna Vijayasekaran, MD, Adam Hansen, MD, Julie L. Wynne, MD, Terrance O' Keeffe, MD, Randall S. Friese, MD, Bellal Joseph, MD, Andy Tang, MD, and Peter Rhee, MD

The Journal of **TRAUMA®** Injury, Infection, and Critical Care • Volume 71, Number 5, November 2011

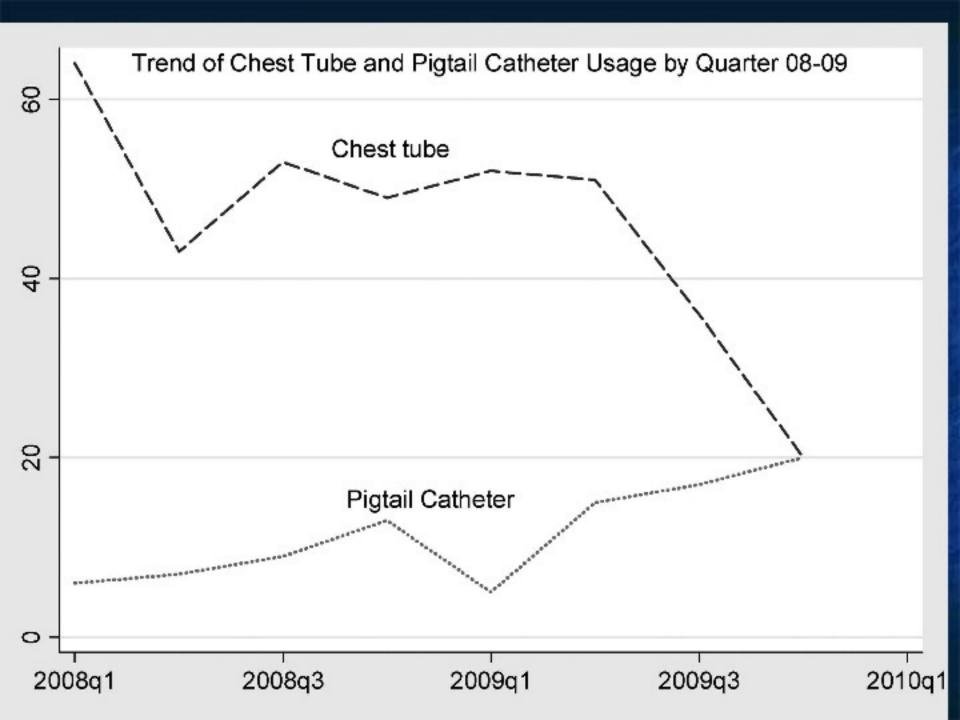


TABLE 2.

TABLE 2. Demographics and Outcome Comparison Between Chest Tube and Pigtail Catheter Inserted for Pneumothorax

	Pigtail (n = 75)	Chest Tube (n = 146)	p
Age (yr), mean ± SD	43 ± 21	40 ± 18	0.22
Gender (male), %	64%	79%	0.01
Blunt, %	83%	87%	0.31
Injury Severity Score, mean ± SD	17 ± 11	21 ± 14	0.14
Chest Abbreviated Injury Scale score, mean ± SD	3.2 ± 0.8	3.3 ± 0.8	0.48
Mechanical ventilation, %	36%	47%	0.58
Tube days, mean ± SD	4 ± 1.6	4.4 ± 2.3	0.17
Insertion-related complication, n (%)	3 (4%)	4 (2.7%)	0.61
Ventilator day (d), median	0 (0, 2.5)	0(0,3)	0.07
ICU day (d), median	0 (0, 5)	2 (0, 5)	0.13
Failure rate, n (%)	8 (11%)	6 (4%)	0.06
Hospital length of stay (d), median	6 (3, 10)	15 (9, 24)	< 0.001

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Journal of Trauma-Injury Infection & Critical Care. 71/5 1104-1107, November 2011.

J Trauma Acute Care Surg.

2012 Dec;73(6):1423-7.

14 French pigtail catheters placed by surgeons to drain blood on trauma patients: is 14-Fr too small?

Kulvatunyou N, Joseph B, Friese RS, Green D, Gries L, O'Keeffe T, Tang AL, Wynne JL, Rhee P.

