


ThinkAskLearn
Health Professional Education

**'I really can't breathe'- Pearls of
Respiratory Assessment in ED**


David Corkill
Emergency Nurse Educator
MEmergN, MAdvPrac (Hth Prof Edu), BN, Dip App Sc
www.thinkasklearn.com.au



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A quick case....


- A 45 year old male,
- Drinking heavily, with wife at friends party
- Wife noticed him to be missing
- Found ALOC on front lawn
- Ambulance found hypoxic, vomiting, initially GCS 3 – woken to GCS 13



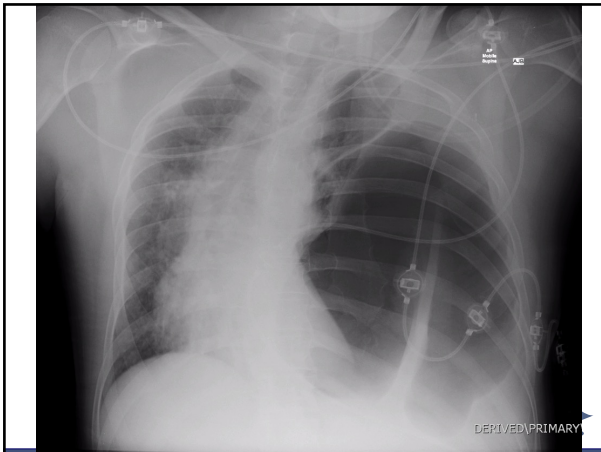
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IN ED

- GCS 13 at best,
- P 96, BP 115/76 Sats 95% Rm air
- 'Decreased air entry Lt side, lying on side'
- Slightly Combative
- Thought to be intoxicated, wake and review and probably home.
- Get CXR to rule aspiration....



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Tension Pneumothorax Clinical Signs

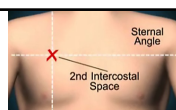
- Deviation of the trachea
- Hyper-expanded chest
- Increased percussion note
- Decreased Airway movement
- Central venous pressure is usually raised
- More commonly tachycardia, tachypnoea, and hypoxic



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Needle Decompression

- To Xray or Not - Clinical diagnosis
- Complications of Needle decompression
 - Lung damage, ineffective, air embolism, kinked,
- It should not be used lightly.
- It should never be used just because we don't hear breath sounds on one side. BUT
- In clear cut cases: shock with distended neck veins, reduced breath sounds, deviated trachea, it could be life saving.



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Spontaneous tension pneumothorax: what is it and does it exist?

G. Simpson, S. Vincent and J. Ferns

Internal Medicine Journal 42 (2012)

Tension pneumothorax occurs when the intra-pleural pressure exceeds the atmospheric pressure throughout inspiration as well as expiration (BTS 2003)

Very few cases reports (24) – nearly all discredited!



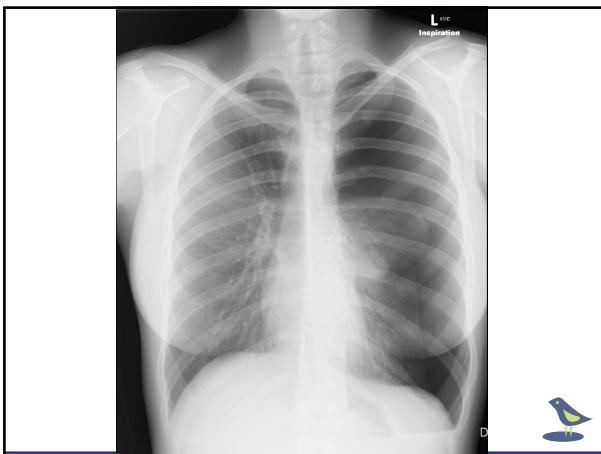
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Pneumothorax: To tube or not to tube?

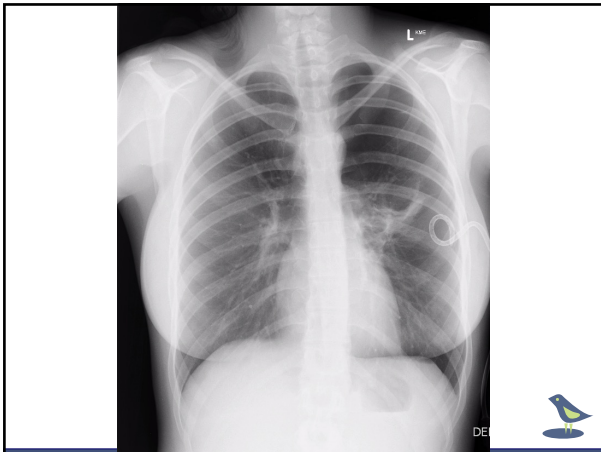
- Little good evidence on this varies modality
- Guidelines somewhat useful for spont pnx
 - Large pneumothorax
 - Clinically unstable
 - RR > 24 bpm
 - PR <60 or >120 bpm
 - O2 sat <90% rm air
 - Not able to speak full sentences
- Traumatic Haemothorax – Large ICC (28-32F)
- Small Pnx, stable patient – observe
- Pnx and ventilation = Chest Tube



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What to do, What to do

- Chest drains are painful
 - 50% patients experience 9/10 pain despite analgesia
- Considerable risk of injury
 - Organ damage, bleeding, infection, ongoing pain
- 10-30% continue to have air leak at 5 days
- Needs admission (Av LOS 4 days)
 - Time of work, care of family, other duties
- Chest drains not common until 70yrs ago and some authors reports of conservative Mx



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What to do, What to do

Spontaneous pneumothorax; a multicentre retrospective analysis of emergency treatment, complications and outcomes

S. G. A. Brown,^{1,2,3} E. L. Ball,^{4,5} S. P. J. Macdonald,^{1,2,4} C. Wright⁷ and D. McD Taylor^{4,9}

May 2014

INTERNAL MEDICINE JOURNAL

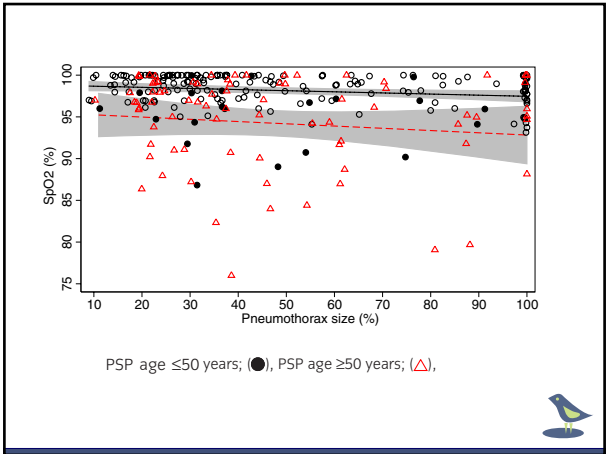
- Retrospective chart review
- 5 Aust hospitals



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PSP (n = 225)	
Age (years)	26 (20–41)
Male	183 (81%)
Previous pneumothorax	55/224 (25%)
Previous pneumothorax same side	37/223 (17%)
Hours from symptom onset to presentation	12 (2.3–48)
SpO ₂ <92% on arrival	4/215 (2%)
Respiratory rate on arrival	20 ± 4.2
Heart rate on arrival	82 ± 17
Systolic blood pressure on arrival	132 ± 19
Verbal pain score	4 (1–6)
Side of pneumothorax – right	105 (47%)†
Haemopneumothorax on initial CXR	4 (1.8%)
Calculation of pneumothorax size where CXR available for investigator review	
<32%	68/186 (37%)
32 to ≤50%	49/186 (26%)
>50 to <100%	43/186 (23%)
100% (complete)	26/186 (14%)

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The NEW ENGLAND JOURNAL of MEDICINE

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Conservative versus Interventional Treatment for Spontaneous Pneumothorax

S.G.A. Brown, E.L. Ball, K. Perrin, S.E. Asha, I. Braithwaite, D. Egerton-Warburton, P.G. Jones, G. Keijzers, F.B. Kinnear, B.C.H. Kwan, K.V. Lam, Y.C.G. Lee, M. Nowitz, C.A. Read, G. Simpson, J.A. Smith, Q.A. Summers, M. Weatherall, and R. Beasley, for the PSP Investigators*

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To Chest Tube or Not!

- 154 ICC vs 164 conservative Mx in large to mod PNX
- Primary outcome
 - Lung Re-expansion at 8wks
- Secondary Outcome
 - Per-protocol analysis of the primary outcome, Time to radiographic resolution, Time to symptom resolution of symptoms (no pain or analgesia use), PTX recurrence >24 hours after chest tube removal, Adverse events, Length of hospital stay in the first 8 weeks, Number of invasive procedures, Number of radiologic investigations, Number of days off from work, Chest-tube drainage for >72 hours, Patient satisfaction



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Chest Tube - Results

- Average age 26yo,
- Over 80% were male
- Av Pnx size 66%
- 2 groups were essential the same
 - Vitals, wt, ht,
 - Smoking – slightly less in conservative group



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Chest Tube - Results

- Re-Expansion at 8 weeks
- Intervention group: 129 of 131 (98.5%)
- Conservative group: 118 of 125 (94.4%)
 - Risk Difference -4.1%; 95% CI -8.6 to 0.5; p = 0.02 for non-inferiority
- Re-Expansion within 8 Weeks with Missing Data as Worst-Case Scenario:
 - Intervention: 93.5%, Conservative: 82.5%
 - Risk difference – 11.0%; 95%CI- 19.4 to -3.5
 - Lower boundary of the 95% CI was not within the pre-specified noninferiority margin of -9%



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Chest Tube - Results

Secondary Outcomes	Intervention Group	Conservative Group	RR/HR (95% CI)
Time to Radiographic Resolution (Median)	16d	30d	0.49 (0.39 - 0.63)
Time to Symptom Resolution (Median)	15.5d	14d	(12 - 19)
Pneumothorax Recurrence	16.8%	8.8%	1.90 (1.03 - 3.52)
Adverse Events	49 events in 41pts	16 events in 13pts	---
Serious Adverse Event	12.3%	3.7%	3.30 (1.37 - 8.10)
Inpatient Days	6.1 +/- 7.6	1.6 +/- 3.5	2.8 (1.8 - 3.6)
Days Off from Work (Mean)	10.9 +/- 12.7	6 +/- 7.3	2.0 (1.0 - 3.0)
>72hr Chest Tube Drainage	51%	9.3%	5.51 (3.32 - 9.14)
Patient Satisfaction (Mean)	5.3	5.4	0.68 (0.43 - 1.07)
Procedure Required	94.2%	15.4%	6.10 (4.24 - 8.77)
Hospital Revisit	28.6%	17.3%	1.54 (1.01 - 2.36)



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Weaknesses

- Open label (bit hard to blind)
 - May lead to bias (CXR resolution)
- Lots of pts assessed but only a few Rx
 - 2637 for 316 trial participants
- Significant number lost to follow up esp in conservative MX group
 - 25 pts – 15.4% of Conservative Mx
 - 28.5% lost to f/p
 - 26 yo males come and get a cxr at 8 wks
 - Or they are dead! (haha)



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Conclusions

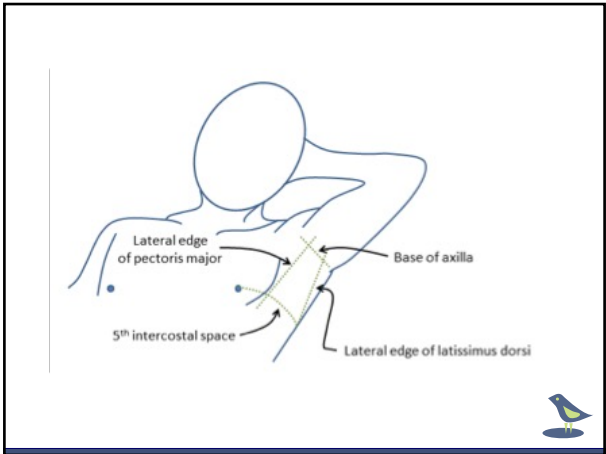
- First every study into this issue!
- Looks great but lost to follow up a concern
- Is the data robust enough?
- For well patients with ability to follow up then it is reasonable not to put a chest tube in patients
- “95% of patients no chest tube in our dept”



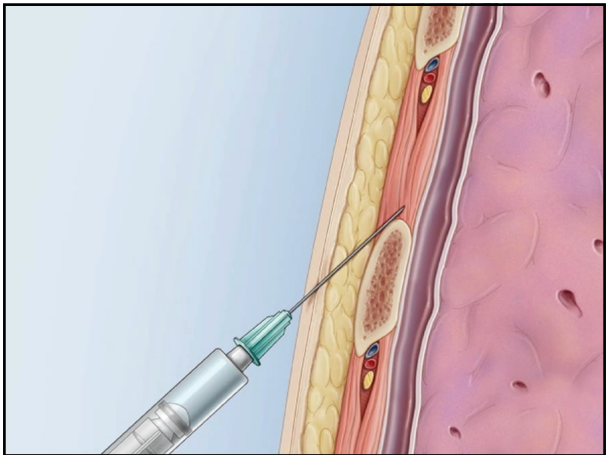
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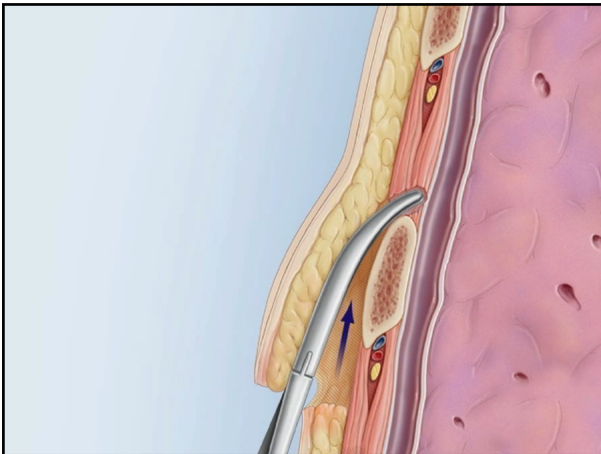
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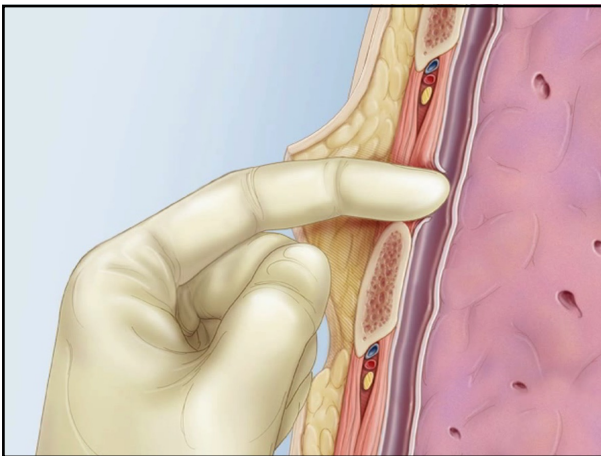
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Pneumothorax - ICC

- ICC insertion is painful
- Often not required
- Preference to pig tail tube for moderate
- Let me know if you see a spontaneous tension pnx!



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