

REAL-TIME IN-PLANE ULTRASOUND GUIDED INTERPLEURAL CATHETER INSERTION FOR ANALGESIA AFTER TRAUMATIC RIB FRACTURES

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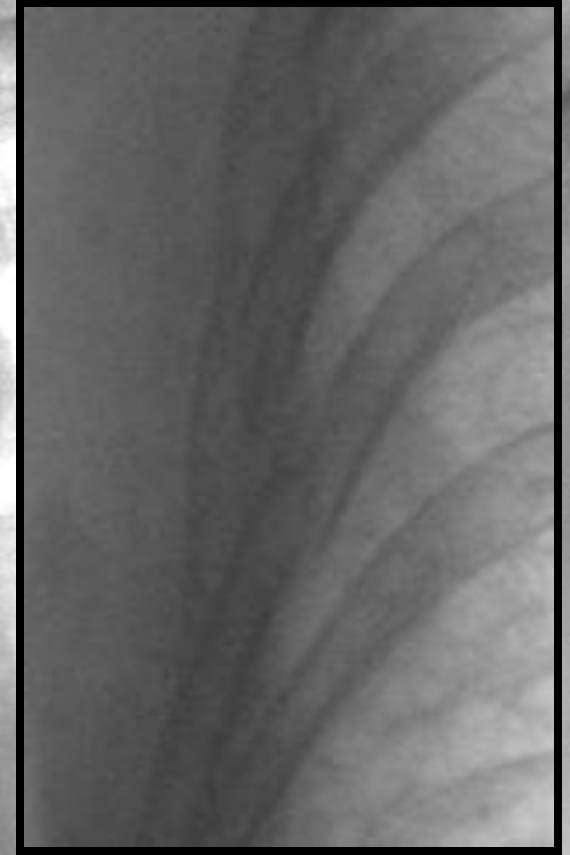
RIB FRACTURES

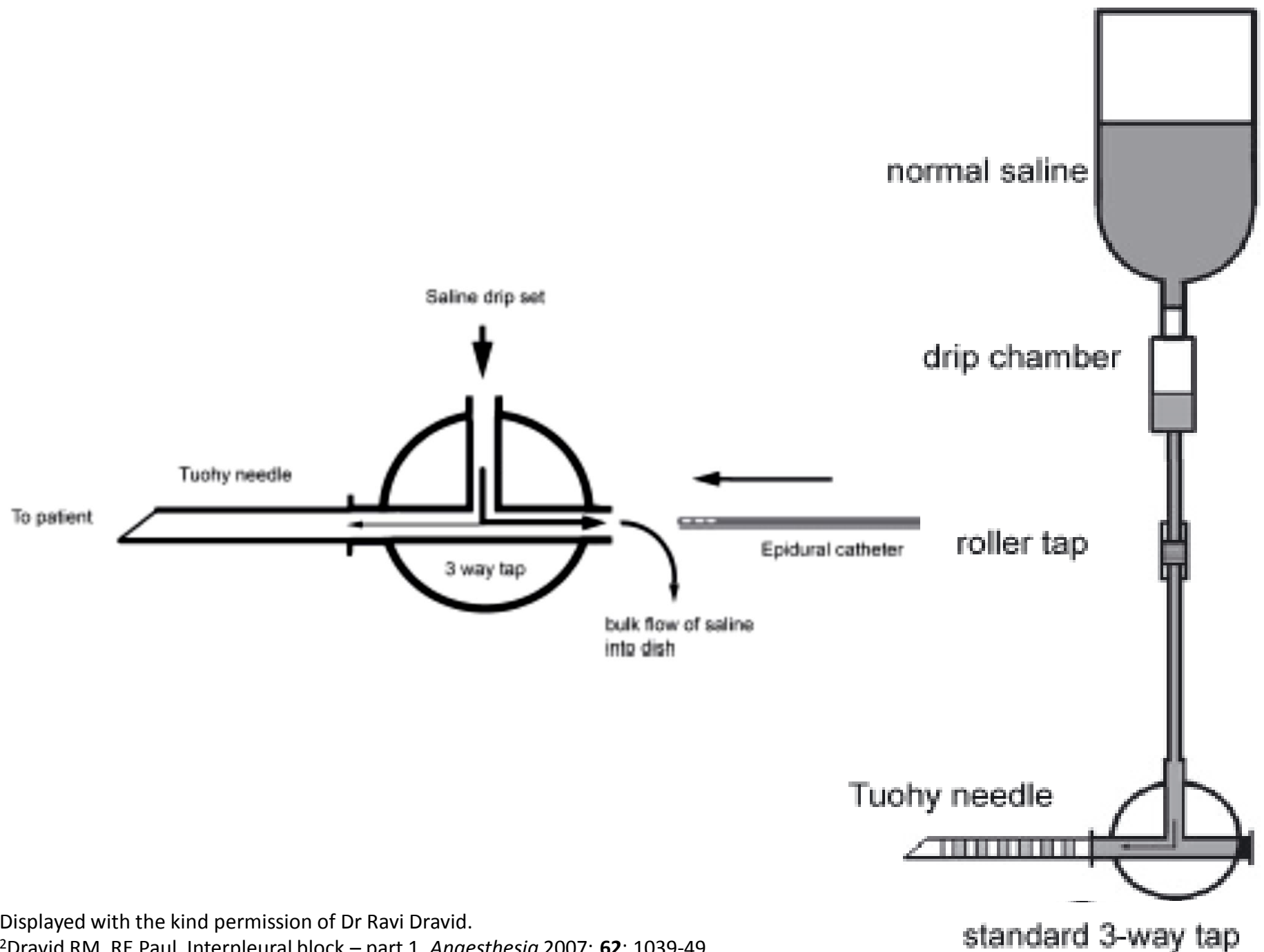
- Pain can lead to pneumonia
 - splinting, reduced chest expansion
 - inhibits effective coughing
- NSAIDs and opioid drugs form the mainstay of treatment but have associated toxicity
- NPSA Signal, March 2011¹:
 - *management of pain and morbidity from fractured ribs is sub-optimal*
 - *the need to actively manage pain from rib fractures is not always recognised*

¹www.nrls.npsa.nhs.uk/resources/type/signals/?entryid45=130182.

CASE 1

- **85-year-old lady with COPD**
- **Fractured right neck of femur**
- **Severe (R) chest pain**
- **CXR**
 - **Fractured right 3rd to 6th ribs laterally**
- **Effective analgesia essential to maintain respiratory function**

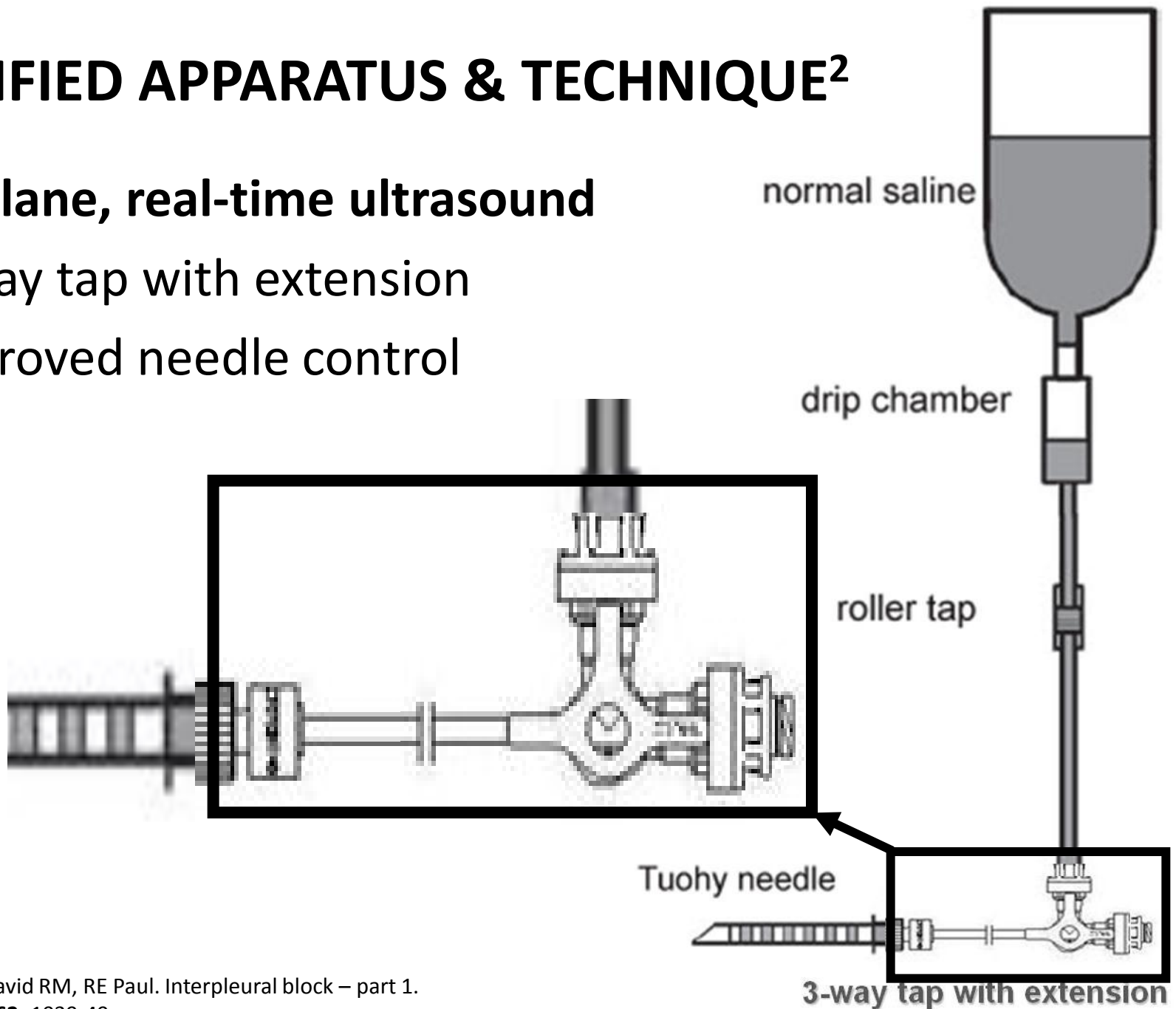


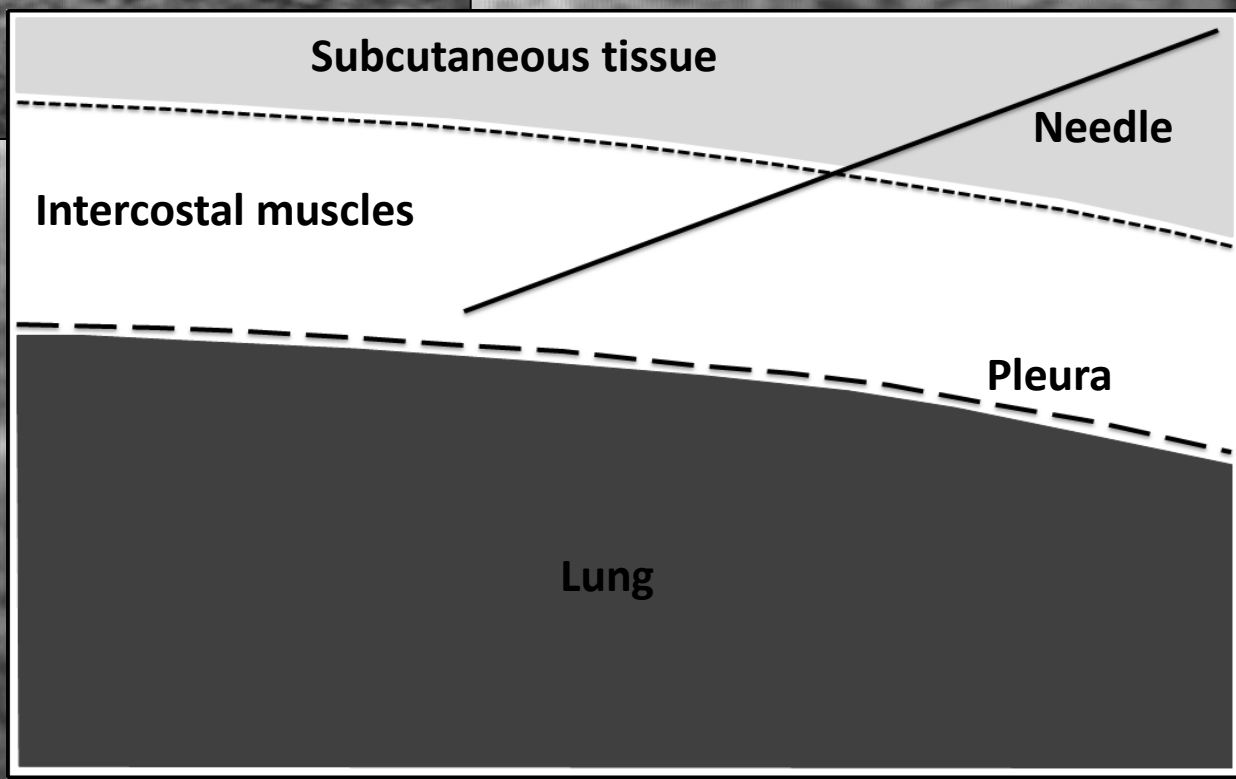
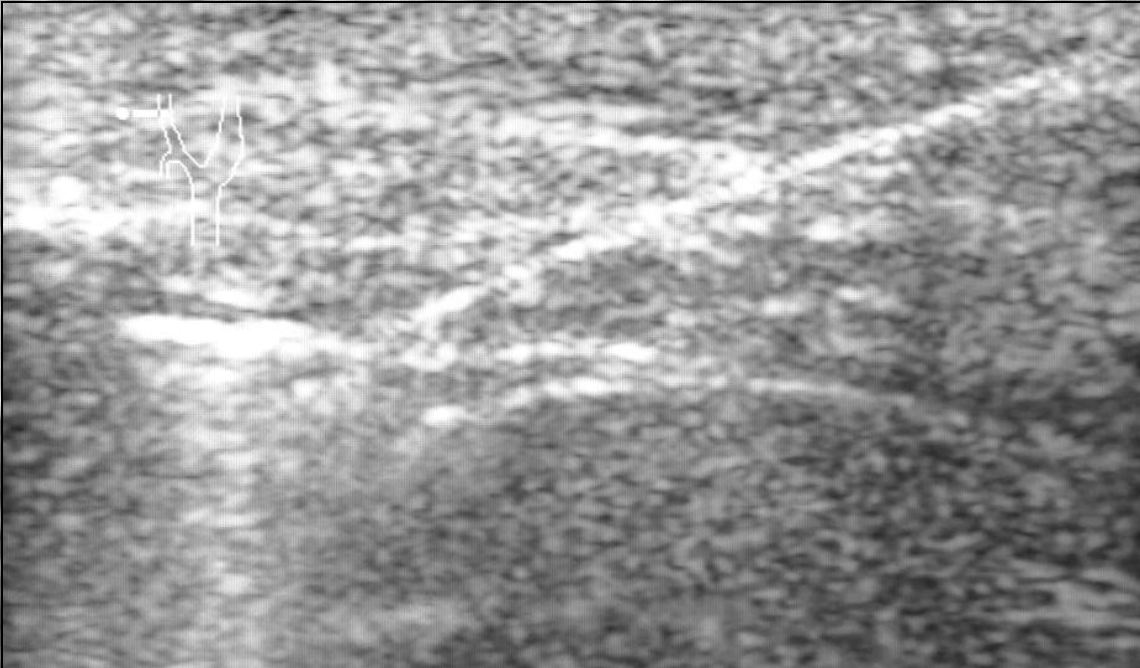


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²Dravid RM, RE Paul. Interpleural block – part 1. *Anaesthesia* 2007; **62**: 1039-49.

MODIFIED APPARATUS & TECHNIQUE²

- In-plane, real-time ultrasound
- 3-way tap with extension
- Improved needle control





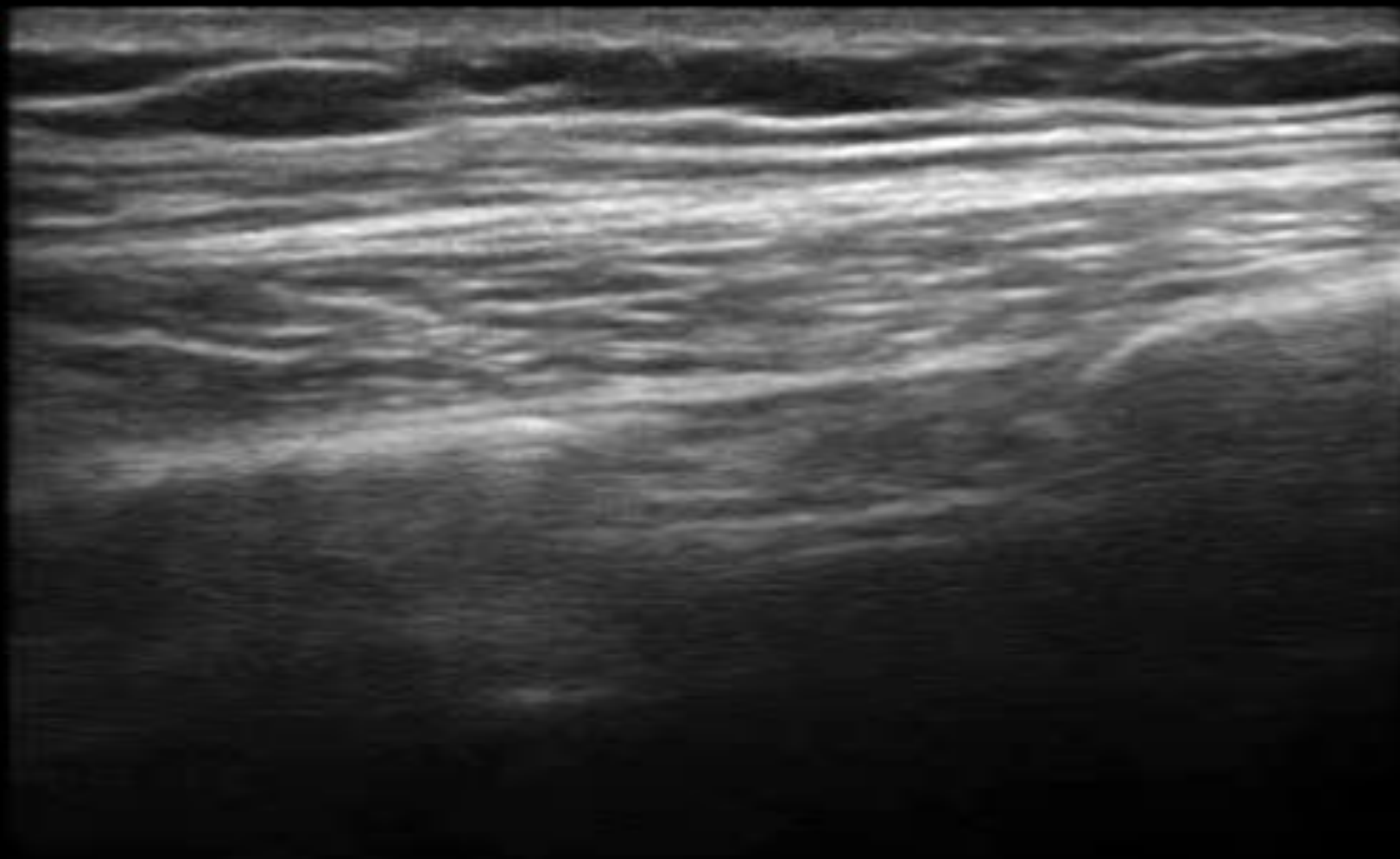
CASE 1

- 20 ml bolus of plain 0.125% bupivacaine
 - 5-10ml/hr continuous infusion
- Improvement noted within 30 minutes
- Complete analgesia in 60 minutes
- Hip hemi-arthroplasty – spinal anaesthesia
- Uneventful recovery

OUR METHOD

- **Consent**
- **Transfer to theatre**
- **Analgesia/Sedation** ketamine
- **Position** lateral
ribs uppermost
- **US localisation of pleura** out-of-plane
in-plane

1

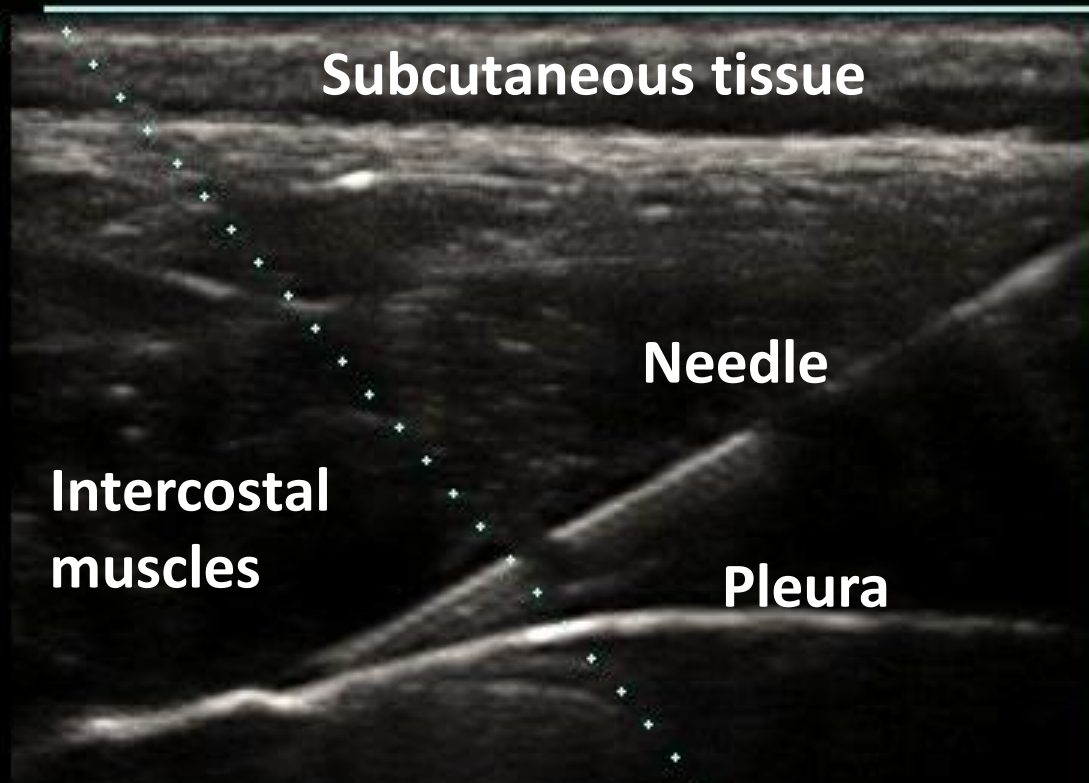




Res

S

MBe



Nrv

HFL



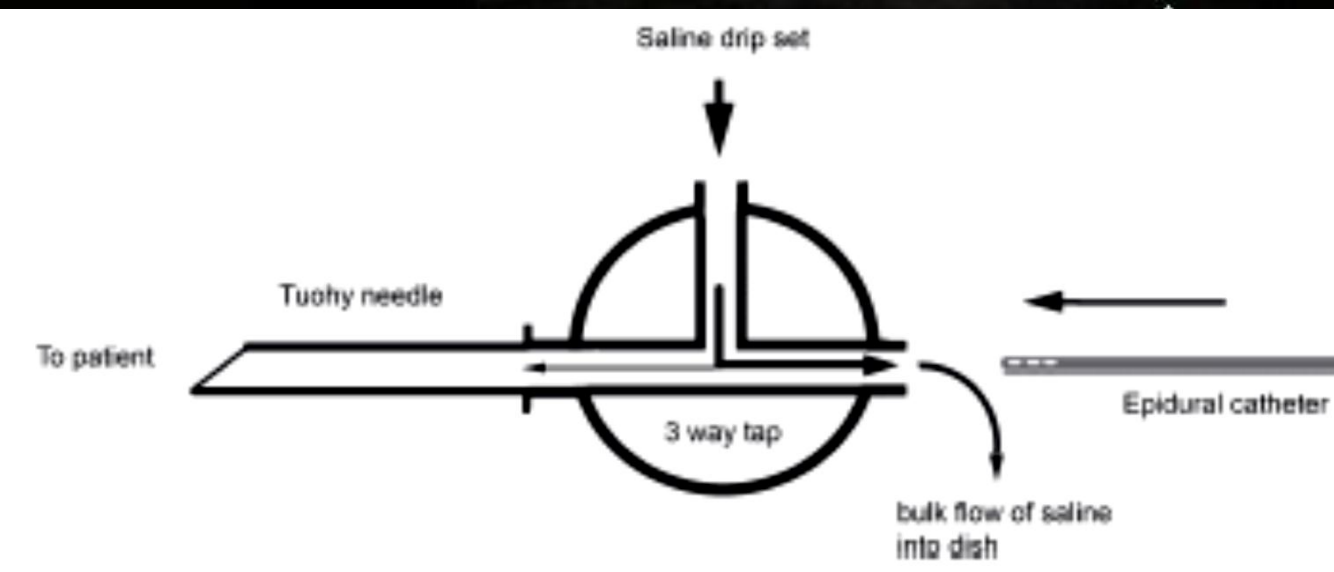
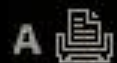
97%

MI

1.1

TIS

0.2



4.0

	Case 1	Case 2	Case 3	Case 4
Age	85	67	43	48
Mech of injury	Fall from standing height	Fall onto concrete	RTC 50mph, motorcycle	Fall from ladder
Rib fractures	(R) 3/4/5/6	(R) 8x2, 9x3, 10x2, 11x2, 12	(L) 3/4/6	(R) 4-10
Other injuries	# (R) hip	nil	# (L) scapula, # (L) clavicle	# (R) T12-L3 transverse processes
Morphine 24hrs <u>prior</u> to i-p catheter	70mg oral	60mg oral	20mg iv	10mg iv, 60mg oral
Morphine 0-24hrs <u>after</u> i-p catheter	30mg oral	20mg oral	80mg oral	10mg iv, 90mg oral
Pain score <u>pre</u> -i-p catheter (deep breathing)	-	2	3	3
Pain score 24hr <u>post</u> -i-p catheter (deep breathing)	0	Walking around!	2	1

REAL-TIME IN-PLANE ULTRASOUND

- The real-time in-plane approach may reduce the risk of intercostal neurovascular bundle damage
- The British Thoracic Society recommends US for interpleural procedures³
- NICE suggested US can improve efficacy & safety in regional nerve blockade⁴
- This technique satisfies all of the above and was developed prior to the NPSA signal¹

¹www.nrls.npsa.nhs.uk/resources/type/signals/?entryid45=130182.

³Davies HE, Davies RJO, Davies CWH. Management of pleural infection in adults: British Thoracic Society pleural disease guideline 2010. *Thorax* 2010; **65**: ii41-53.

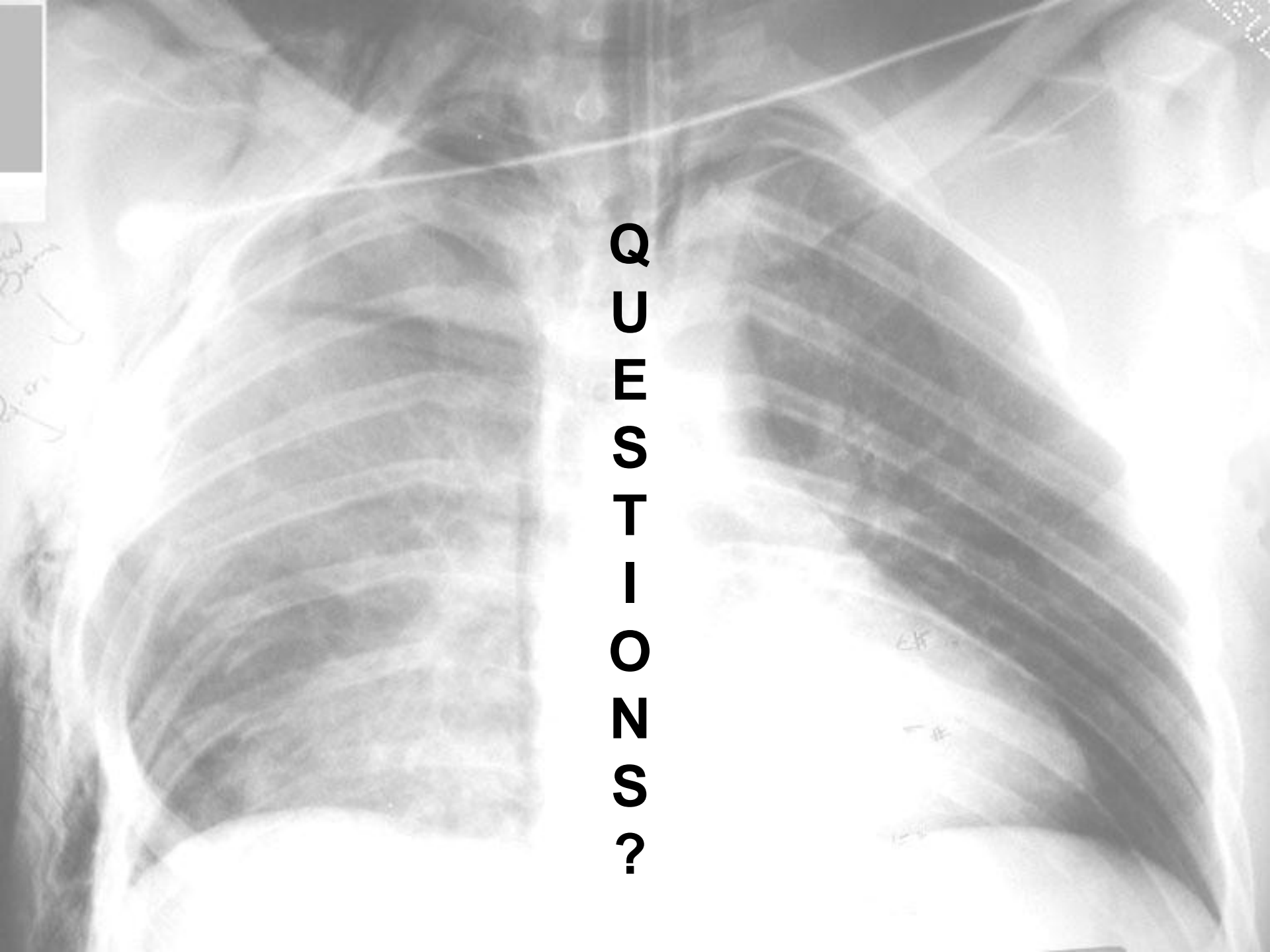
⁴NICE. Interventional procedure guidance 285. London: NICE, 2009. www.nice.org.uk/IP661.

CONCLUSION

- Interpleural local anaesthesia provides effective analgesia for rib fractures
- Interpleural analgesia improves mobility
- This ultrasound guided technique sets the standard
 - optimal analgesia
 - patient safety
 - best practice



THANK YOU



QUESTIONS?