

# POCUS-guided procedures - Basic

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先進與革新急症技術中心 / Advanced & Revolutionary Technology center



Core Applications (2023 ACEP Emergency Ultrasound Guidelines)  
15項急診超音波核心應用

陳國智醫師

Aorta

DVT

Trauma

Thoracic/Airway

Cardia/HD assessment

Procedural Guidance

US-guided NB

Testicular

Ocular

Skin & Soft tissue

Hepatobiliary

Urinary tract

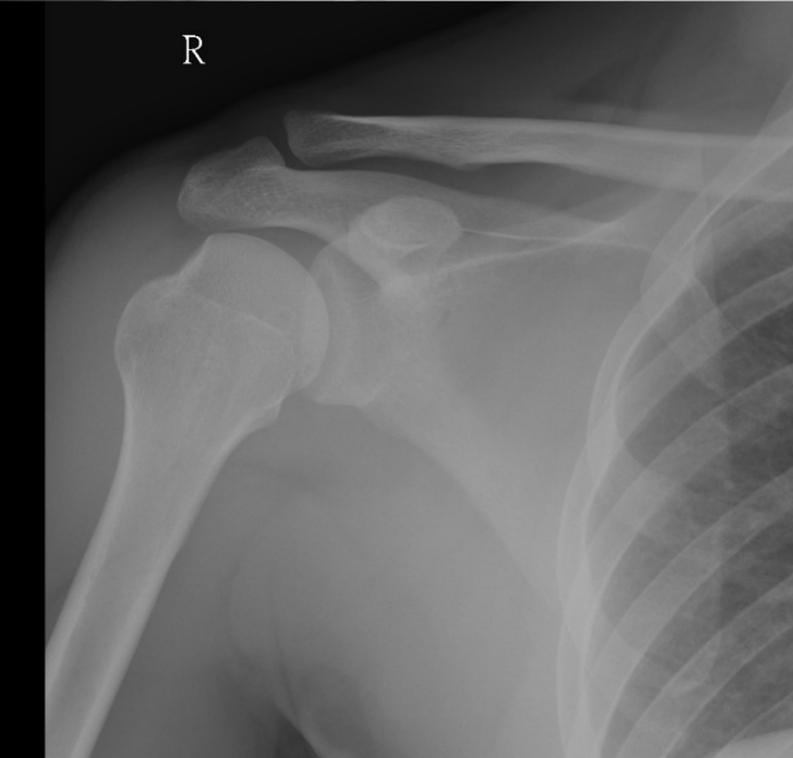
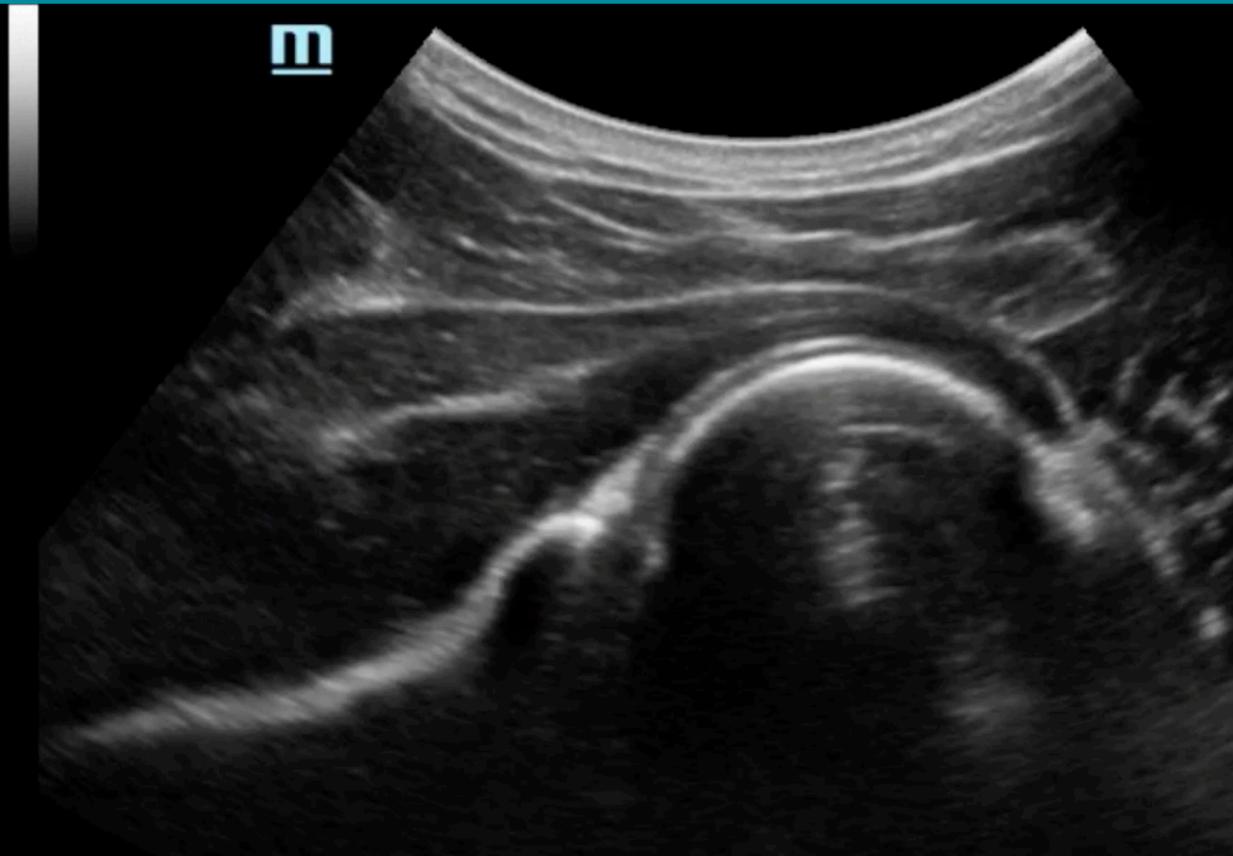
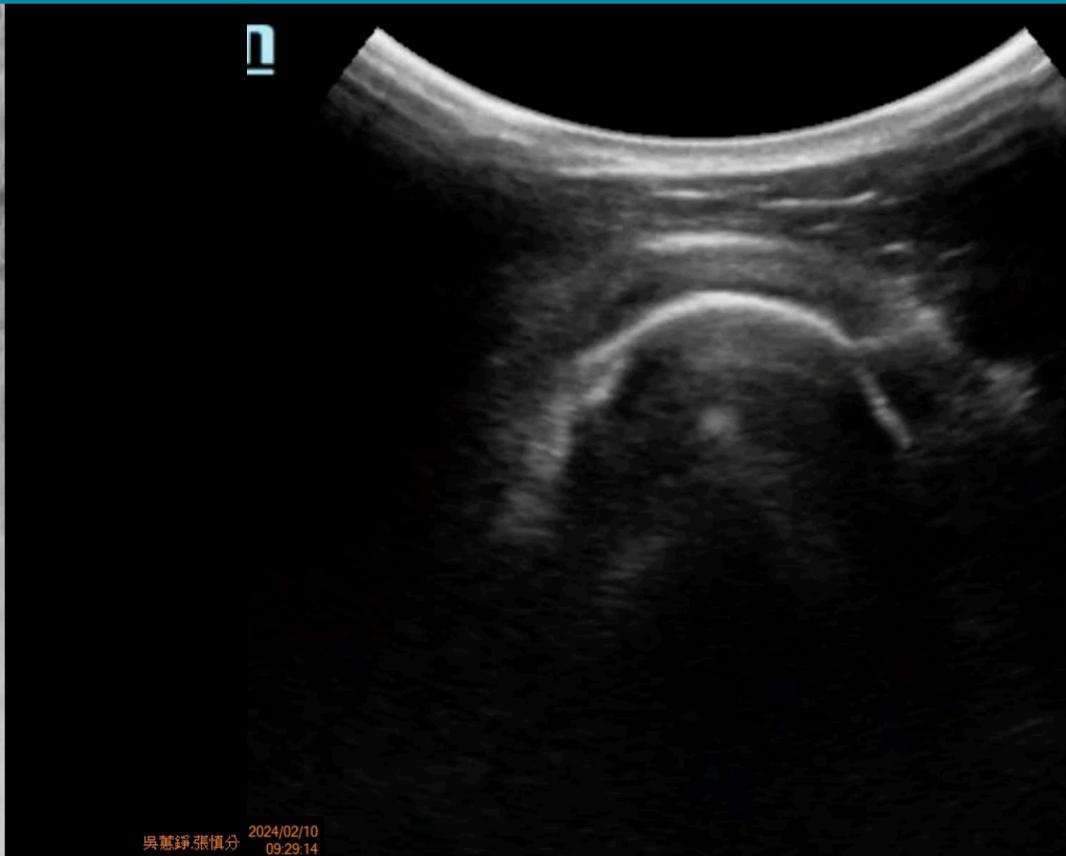
Pregnancy

Bowel

MSK



# Ultrasound assisted shoulder reduction



吳憲鋒 張慎分 2024/02/10 09:29:14

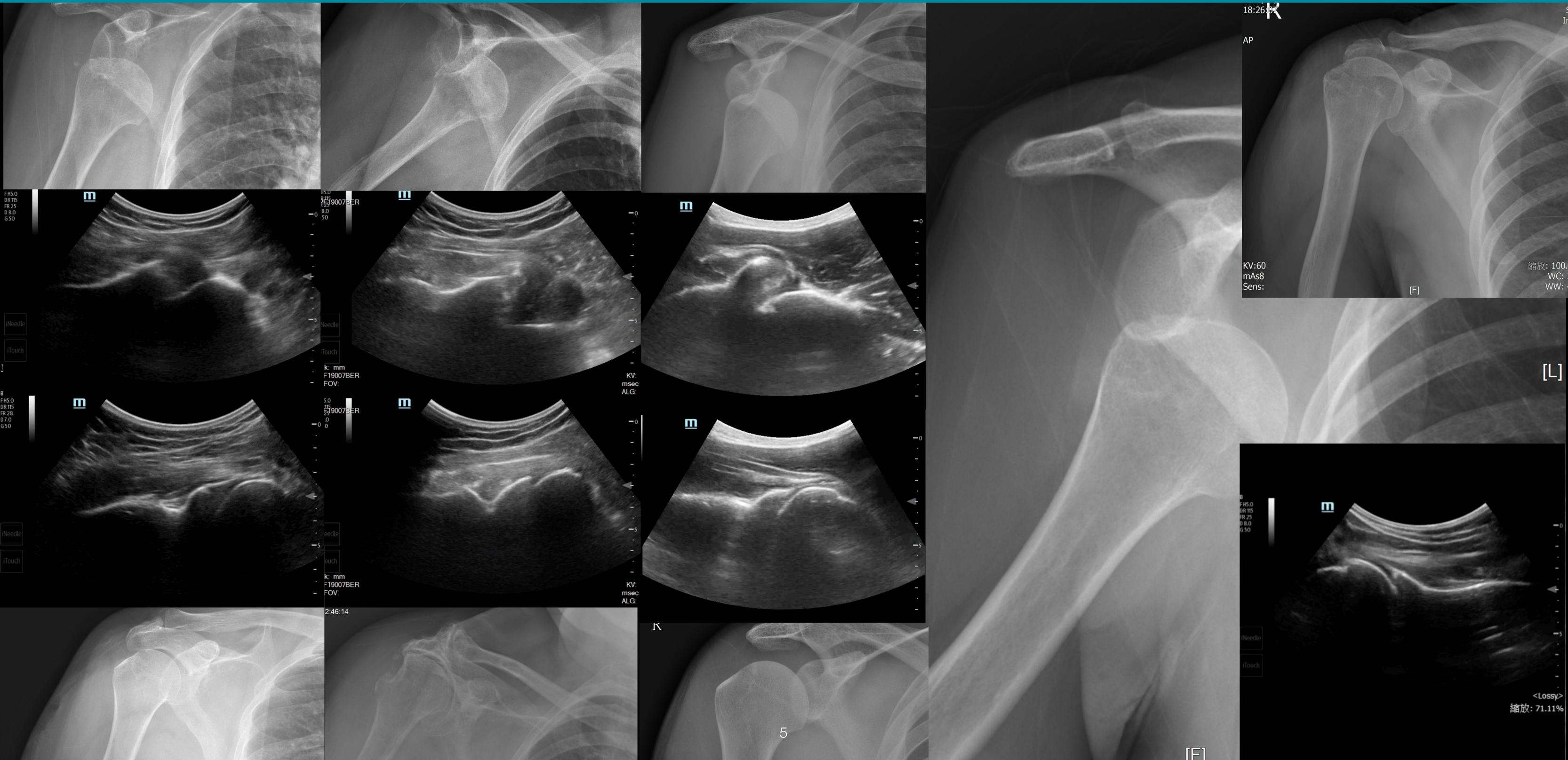
**Curved probe**

**Posterior approach**

**Below scapula spine**

**Scapula -humeral alignment**

# Ultrasound assisted shoulder reduction

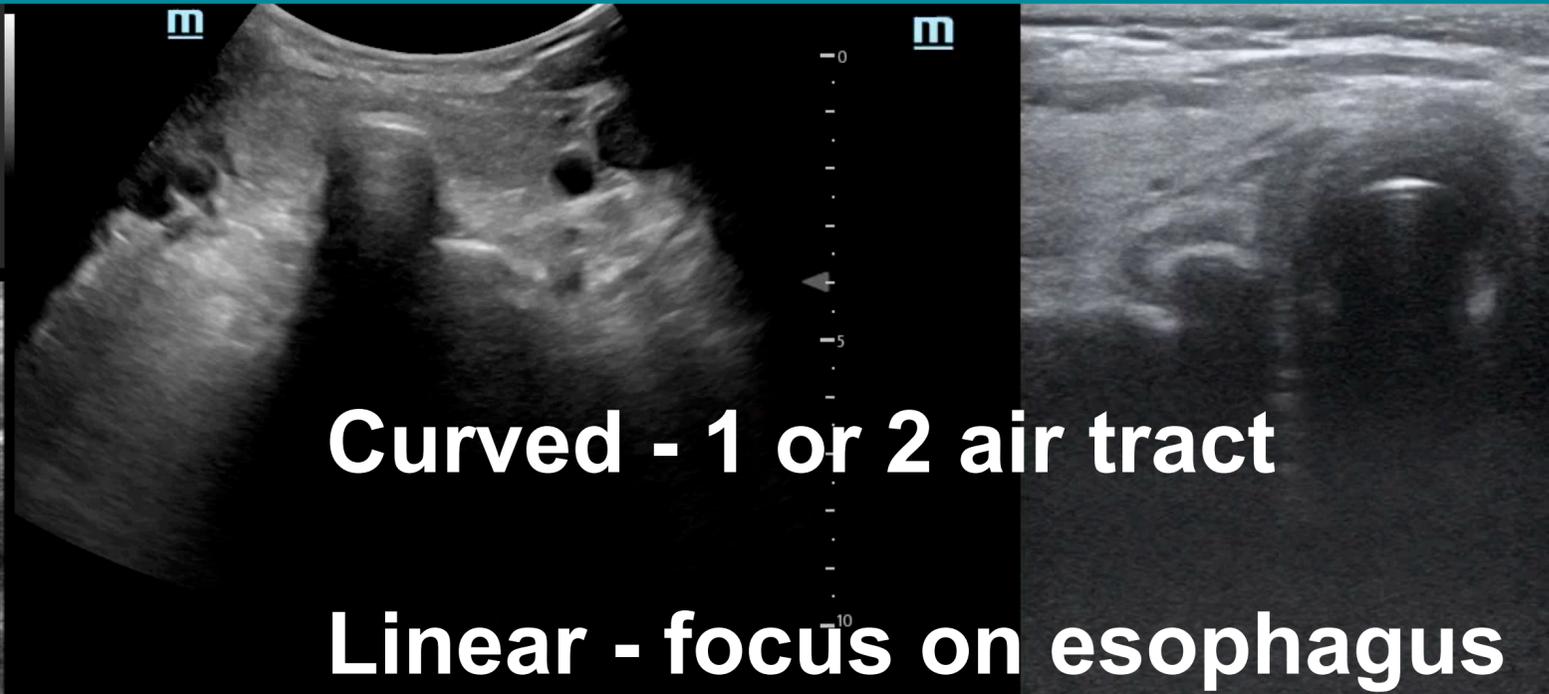
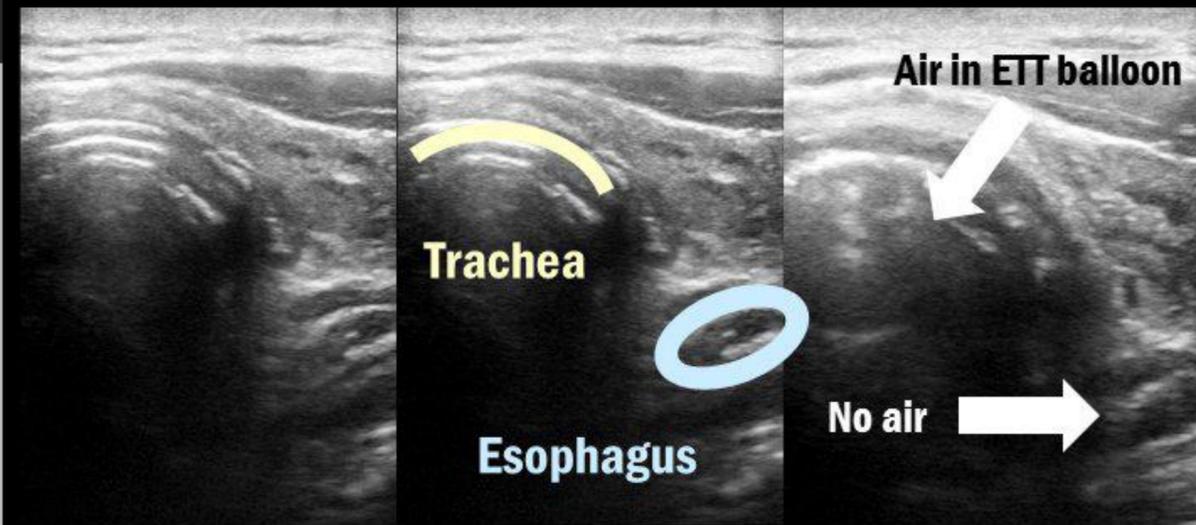


# Ultrasound assisted ETT confirmation

G.E.L.



## TRACHEAL INTUBATION



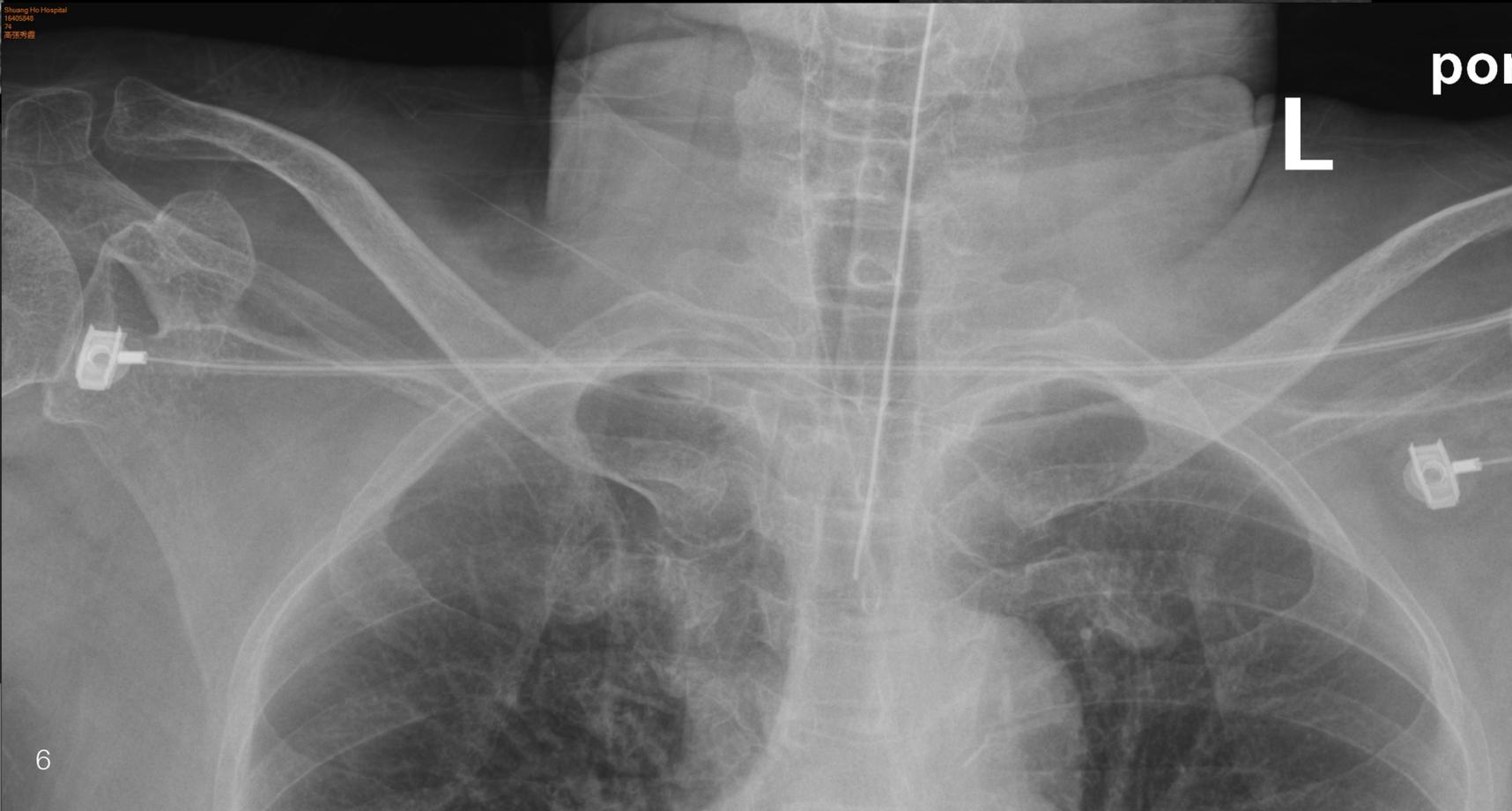
**Question:**  
Is POCUS accurate for confirming endotracheal intubation in the emergency department?

**Study:**  
Prospective observational convenience sample. Patients undergoing intubation received tracheal rapid US exam (TRUE) directly after tube placement to determine tracheal vs esophageal. Compared to quantitative waveform capnography.

### Results

	Sens (%)	Spec (%)
<b>TRUE</b>	<b>98.9</b>	<b>100</b>

**n = 100**



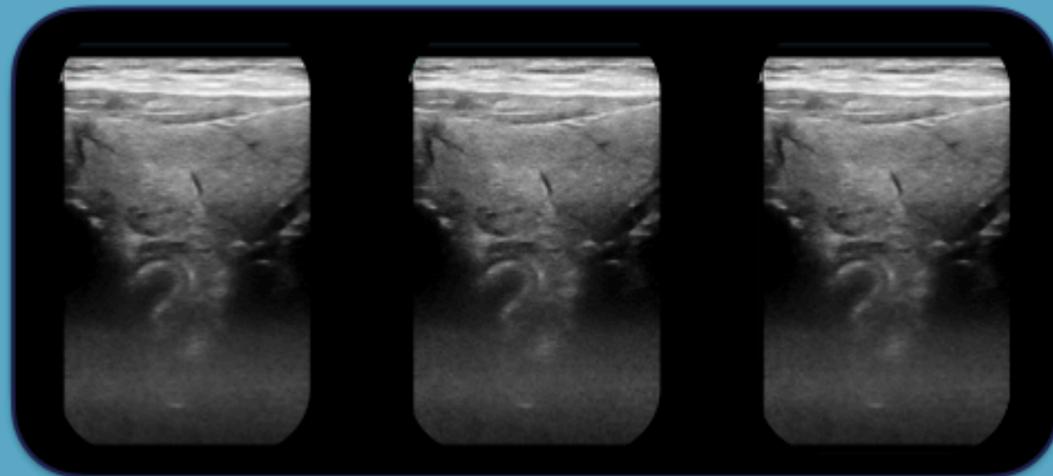
Masoumi B, Azizkhani R, Emam GH, Asgarzadeh M, Kharazi BZ. Predictive Value of Tracheal Rapid Ultrasound Exam Performed in the Emergency Department for Verification of Tracheal Intubation. Open access Macedonian journal of medical sciences. 2017; 5(5):618-623.

# Ultrasound assisted NG tube confirmation



1  
3  
4

## NASOGASTRIC TUBE PLACEMENT



### Question:

Does POCUS guidance during NG tube insertion improve accuracy or reduce complications compared to conventional methods?

### Methods:

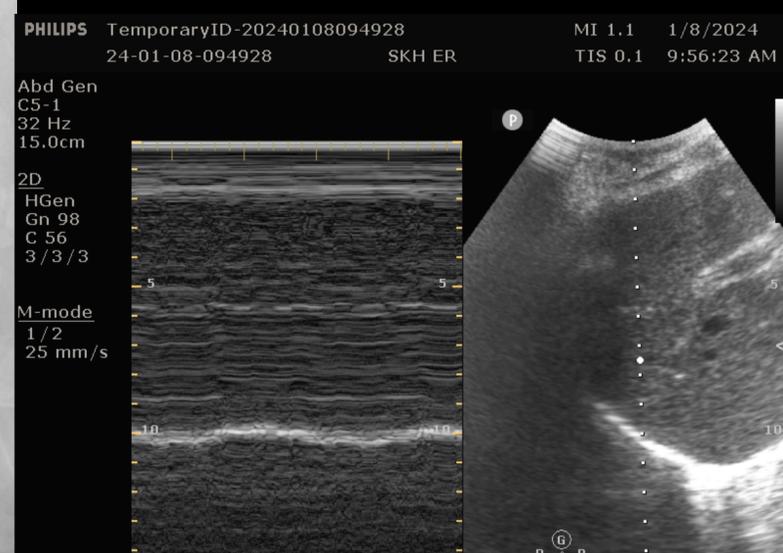
Prospective, open-label, randomized controlled trial. Primary outcome compared accuracy of POCUS of esophagus at cricoid to CXR for NG tube confirmation.

**n = 118**

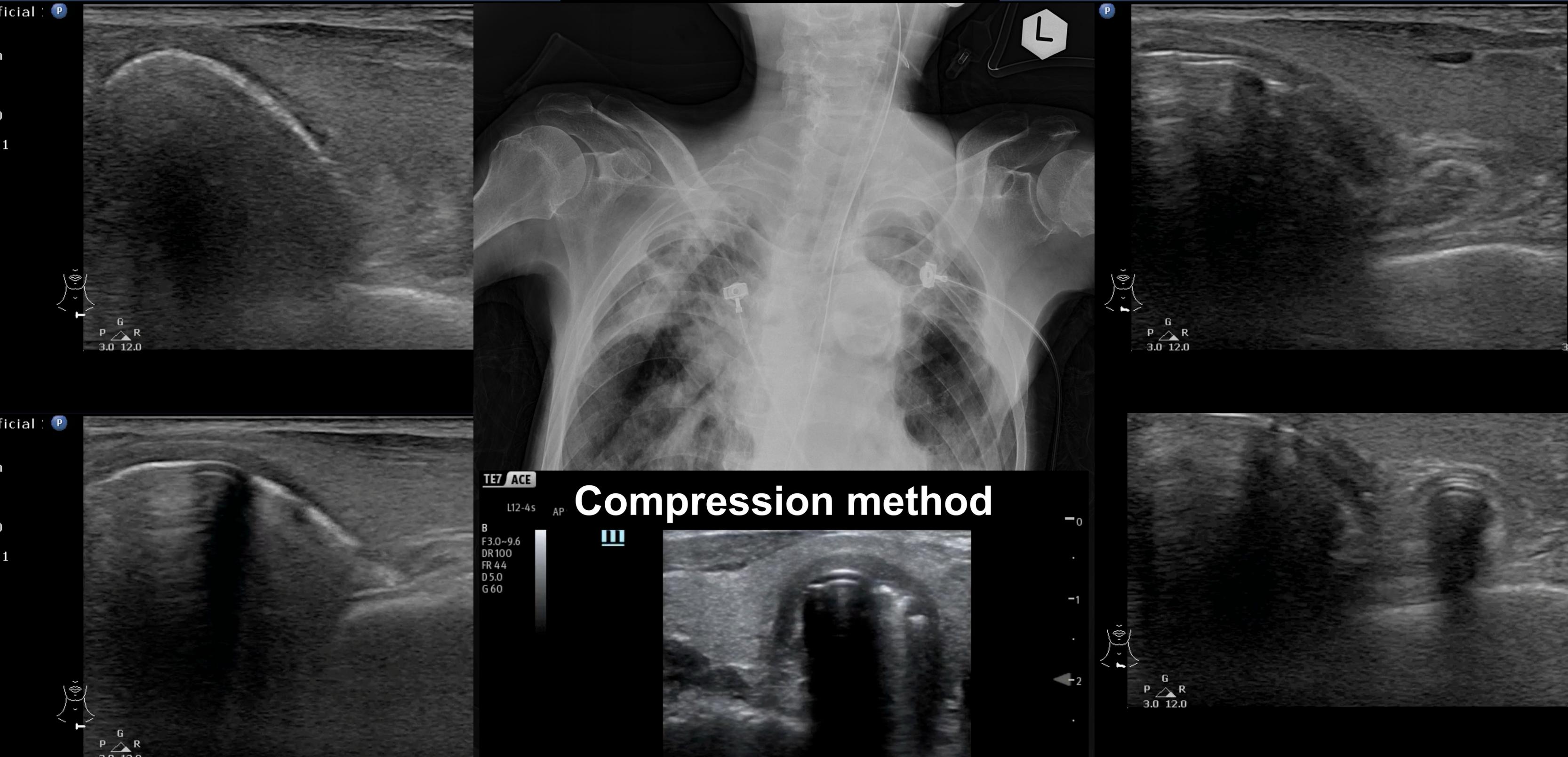
## Results

	POCUS	Control
Accuracy	94.3%	86%
Attempts	1.19	1.8
Insertion time	4.3 min	228 min

Esophagus was seen in 96.8% of the POCUS group and 87% were on the left.



# Ultrasound assisted tube confirmation



# 2 month boy , NG dislodgement

B  
F3.0~9.6  
DR100  
FR34  
D7.0  
G50

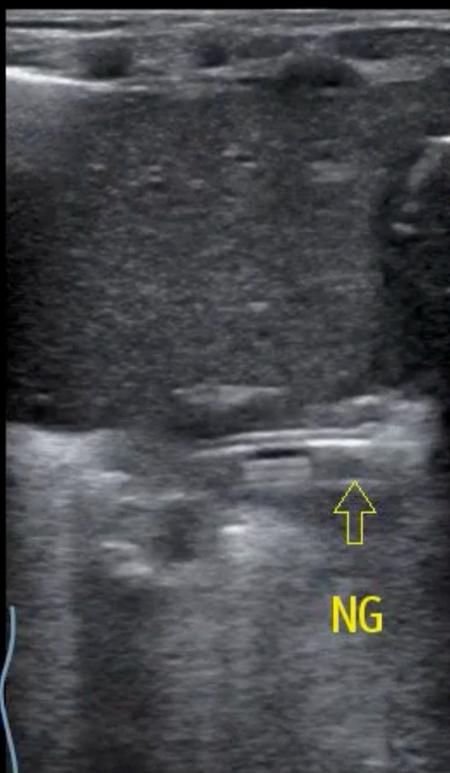


iNeedle

iTouch



B  
F3.0~9.6  
DR100  
FR34  
D7.0  
G50



iNeedle

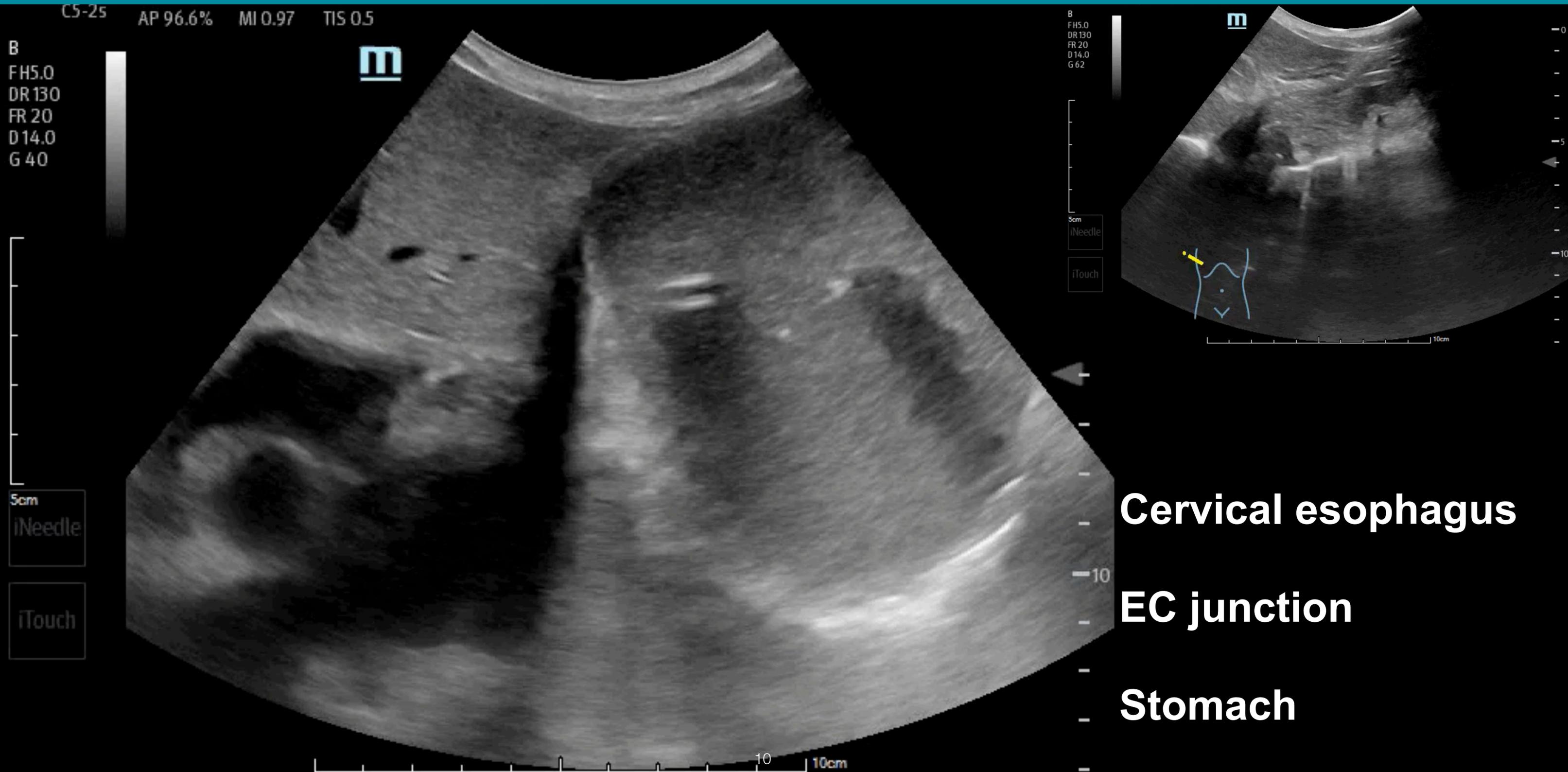
iTouch



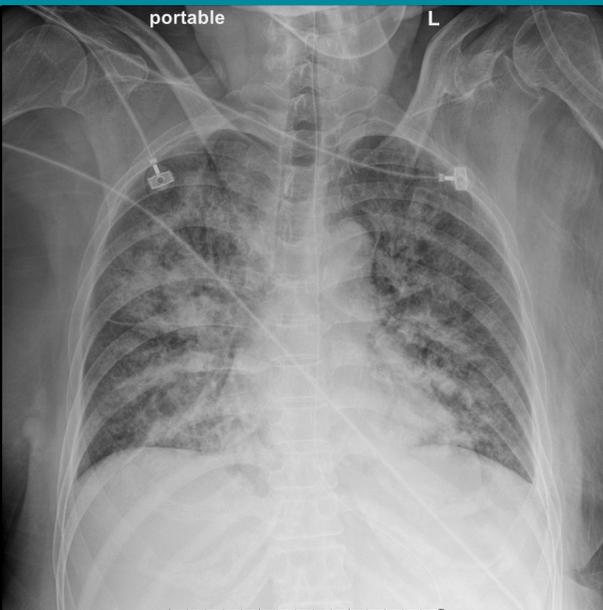
By order



# Ultrasound assisted NG tube confirmation



# Ultrasound assisted Foley confirmation



PN / Septic shock  
Foley position ?



No Urine



AUR due to  
Foley obstruction



No Urine



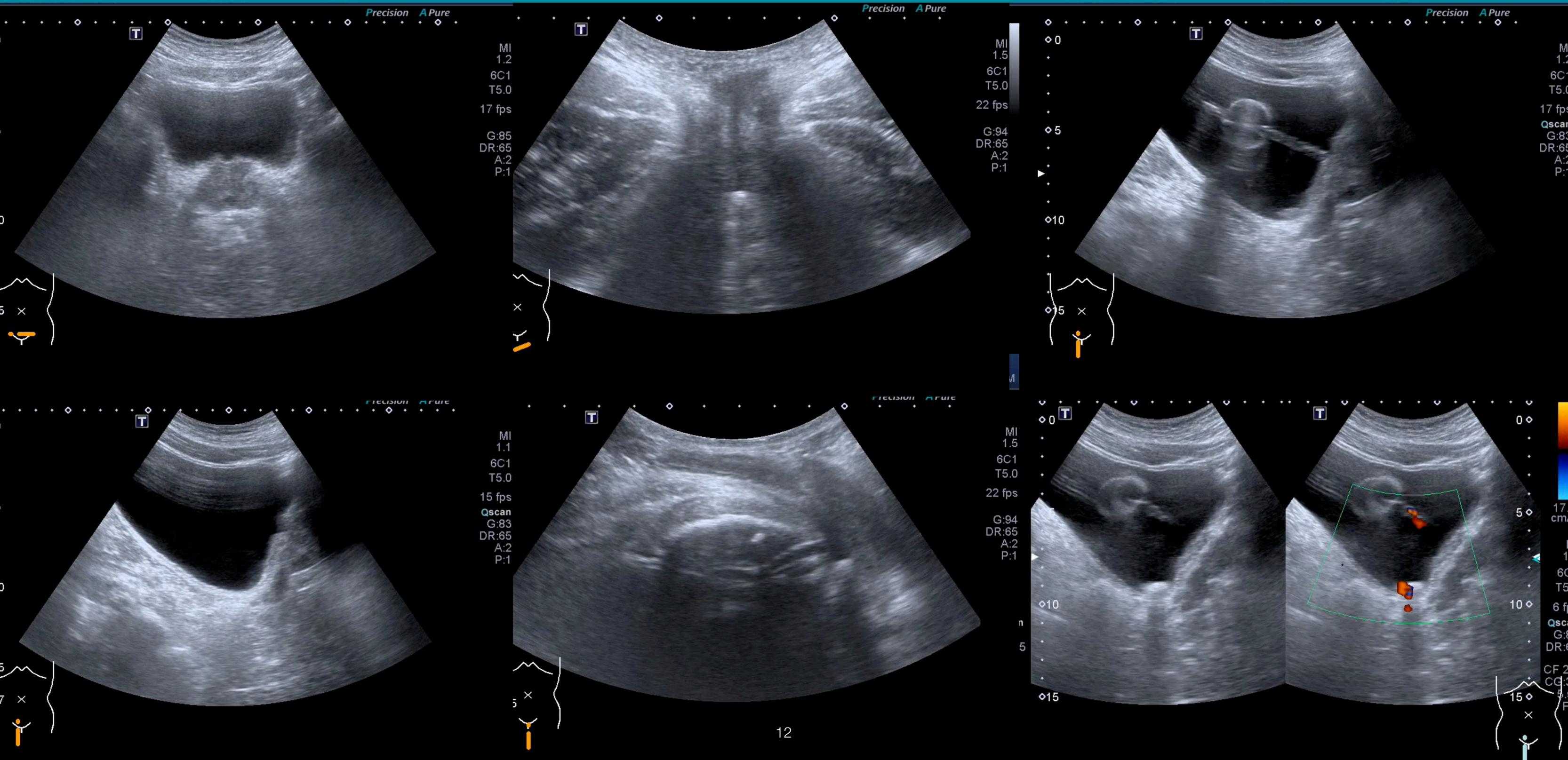
ACE  
2024-03-12 17:24:05  
Adult ABD  
AP 96.6% MI 0.91 TIS 0.6

TOSHIBA  
Xario 200 West Garden Hospital Abdomen 3158 2018/07/28 3:21:08 PM

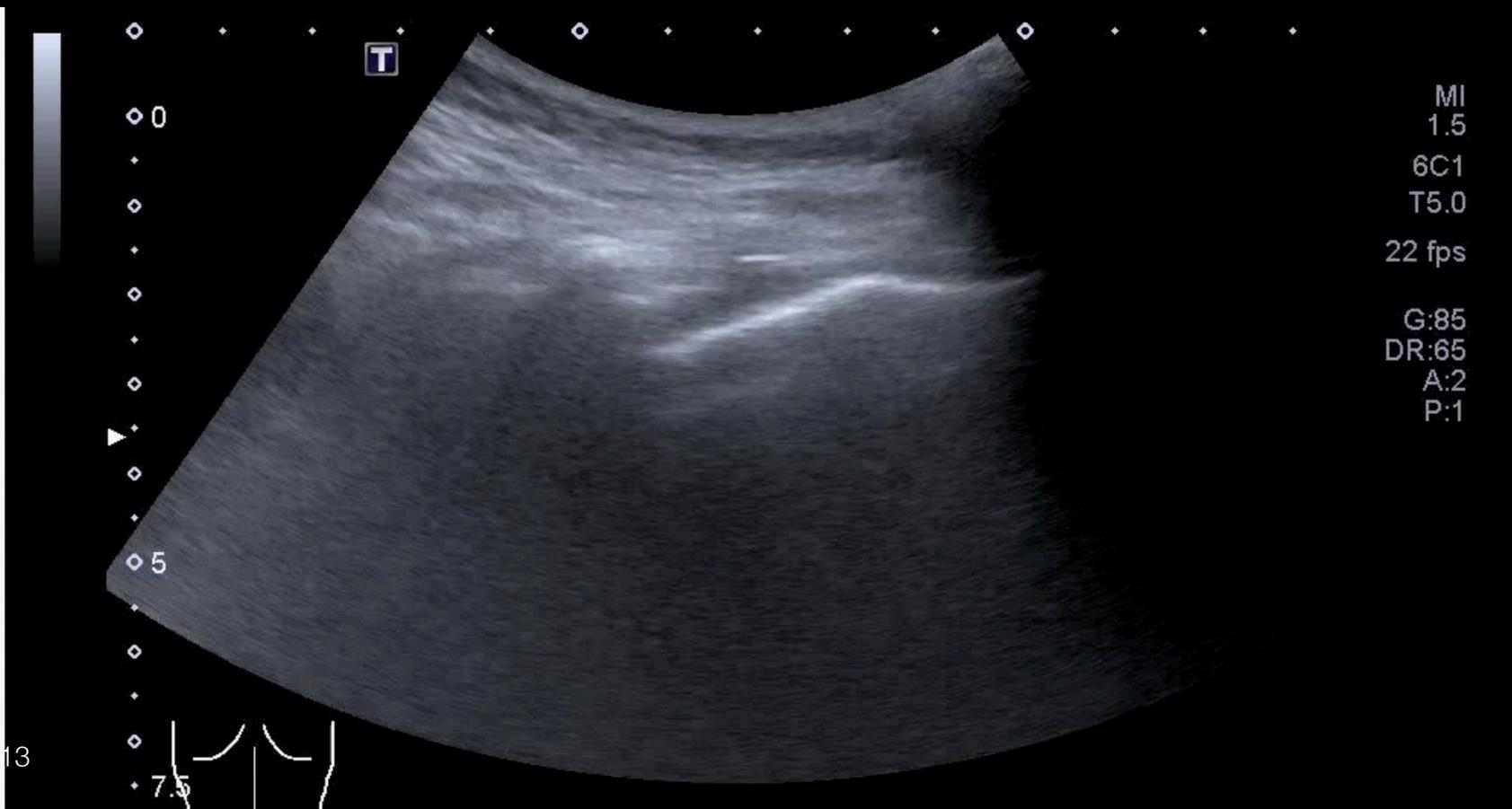
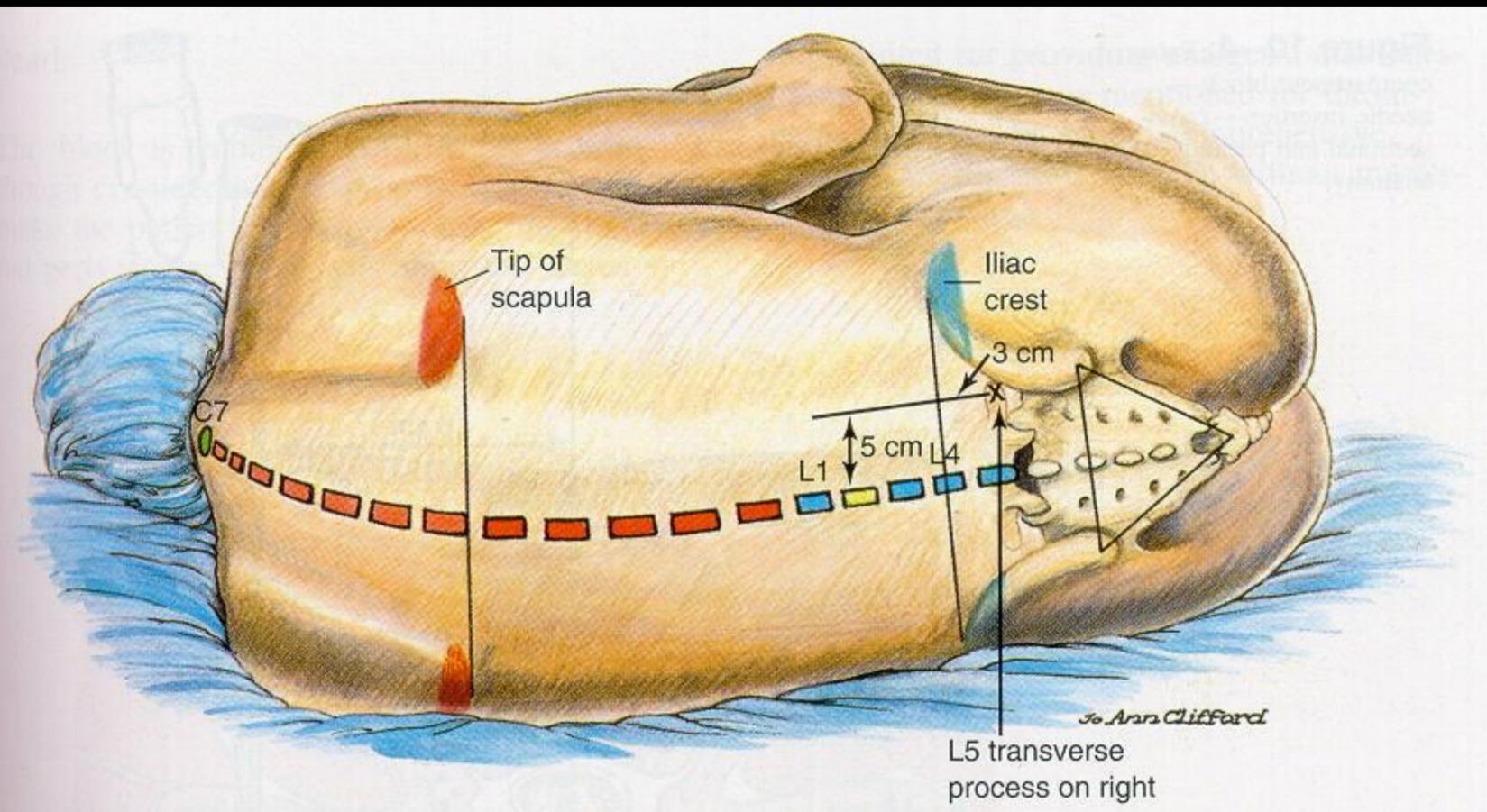
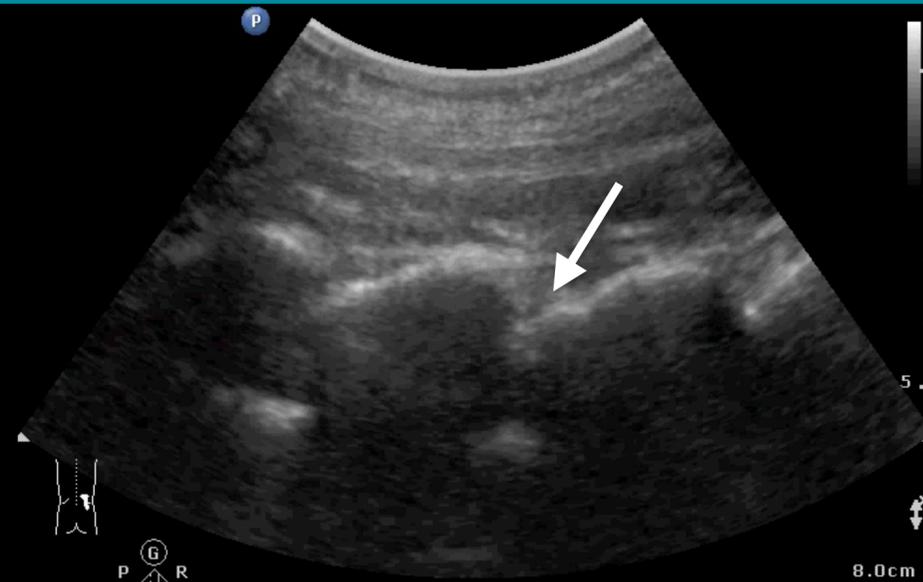
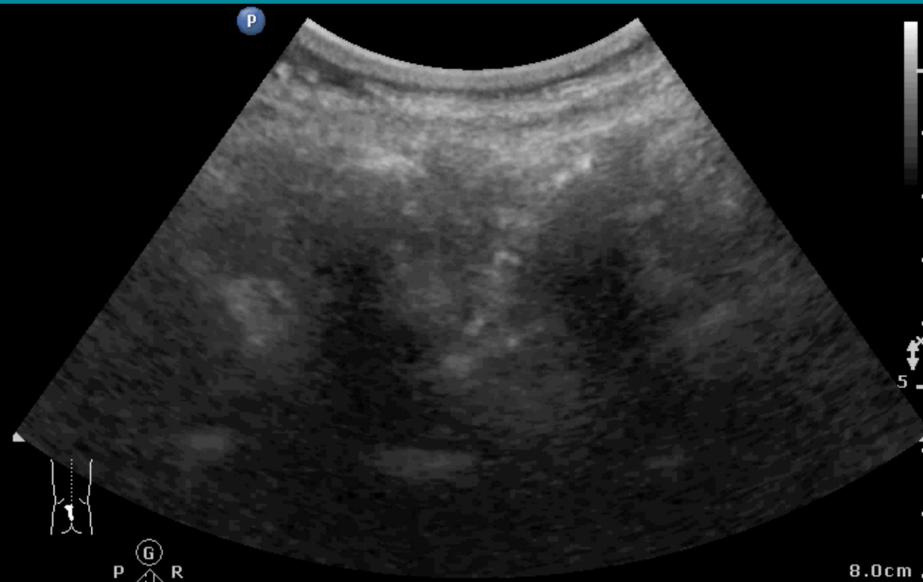
C5-1  
34 Hz  
15.0cm  
2D  
HGen  
Gn 58  
C 56  
3 / 3 / 3

MI 1.5  
6C1 T5.0  
20 fps  
Qscan  
G:84 DR:65 A:2 P:1

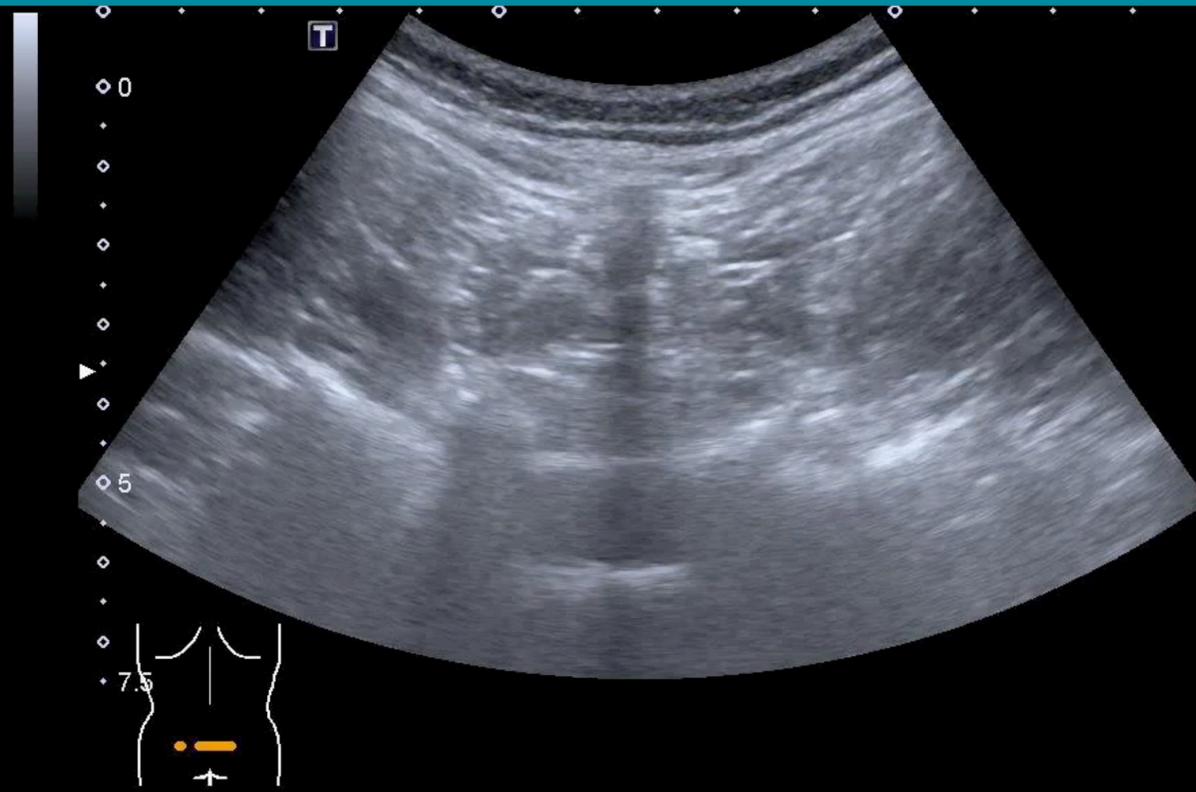
# 38M, sudden onset dysuria & AUR



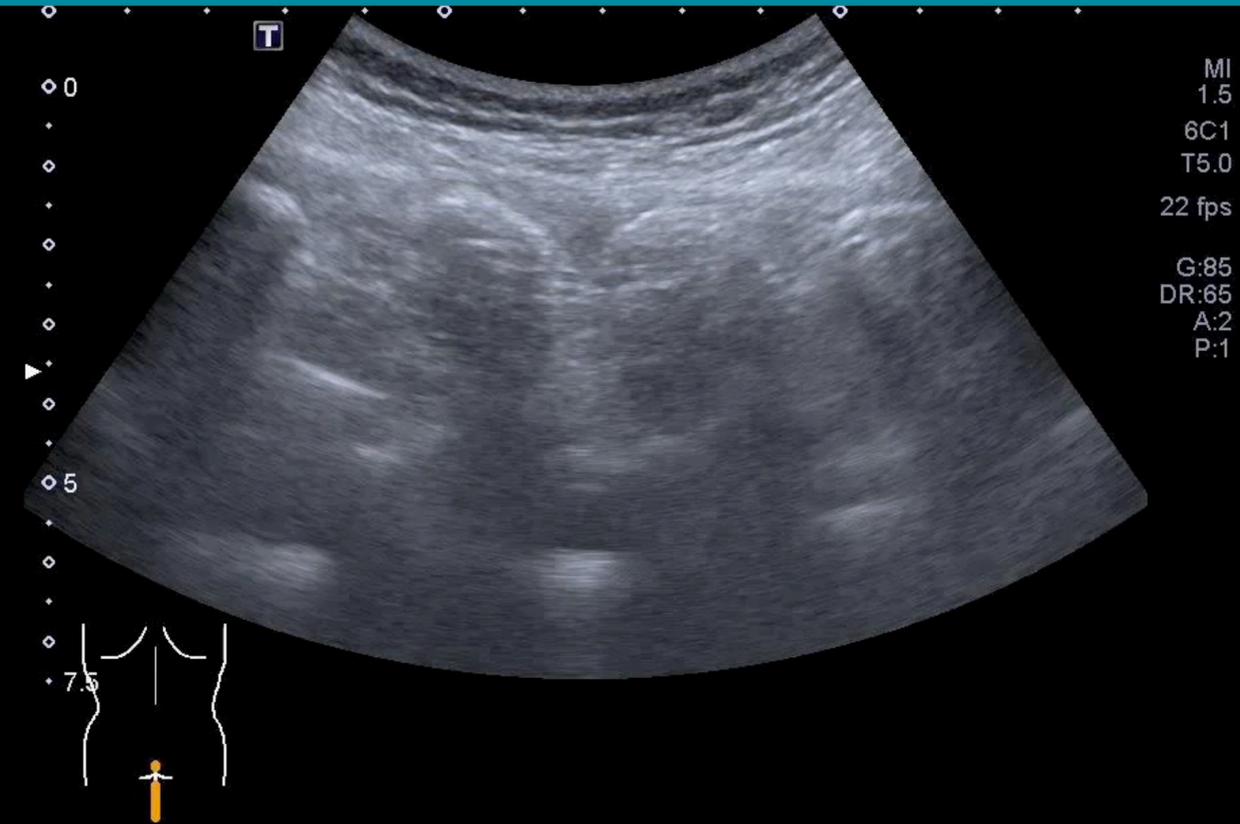
# Lumbar puncture



# Lumbar puncture

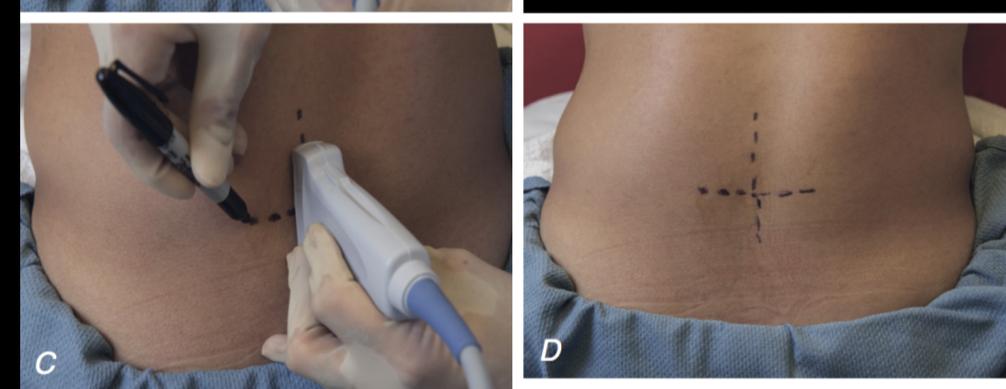
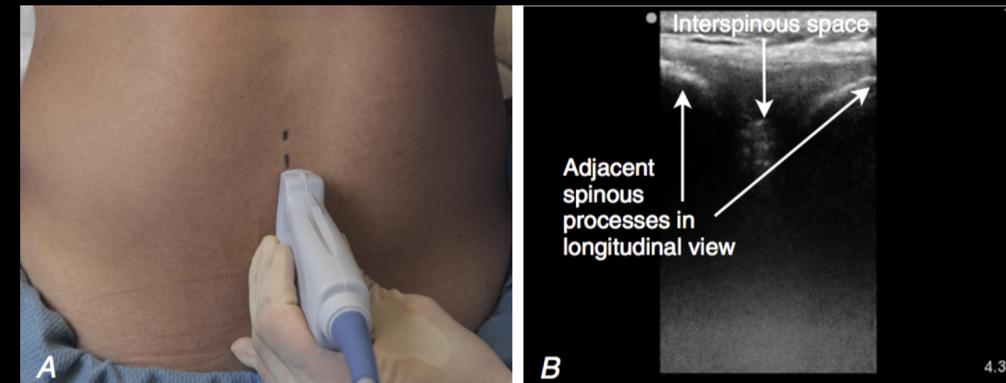
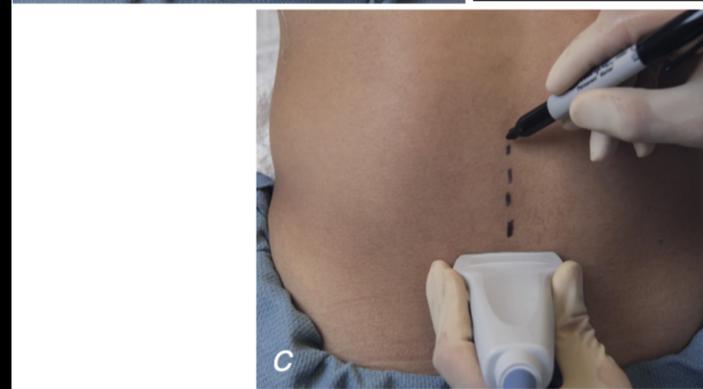
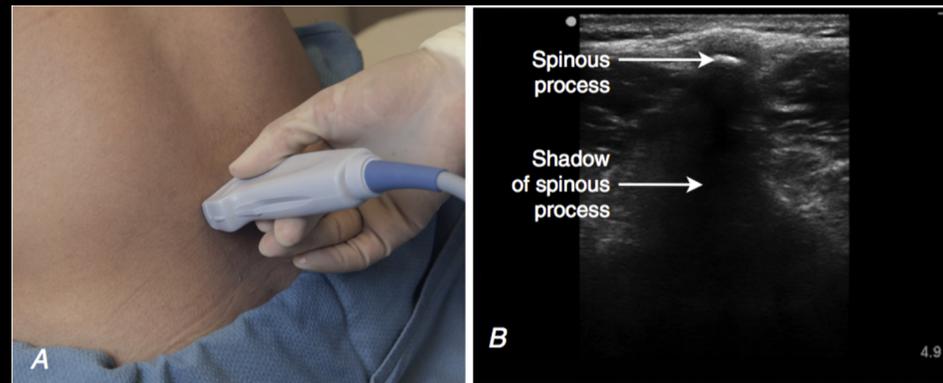


Curve

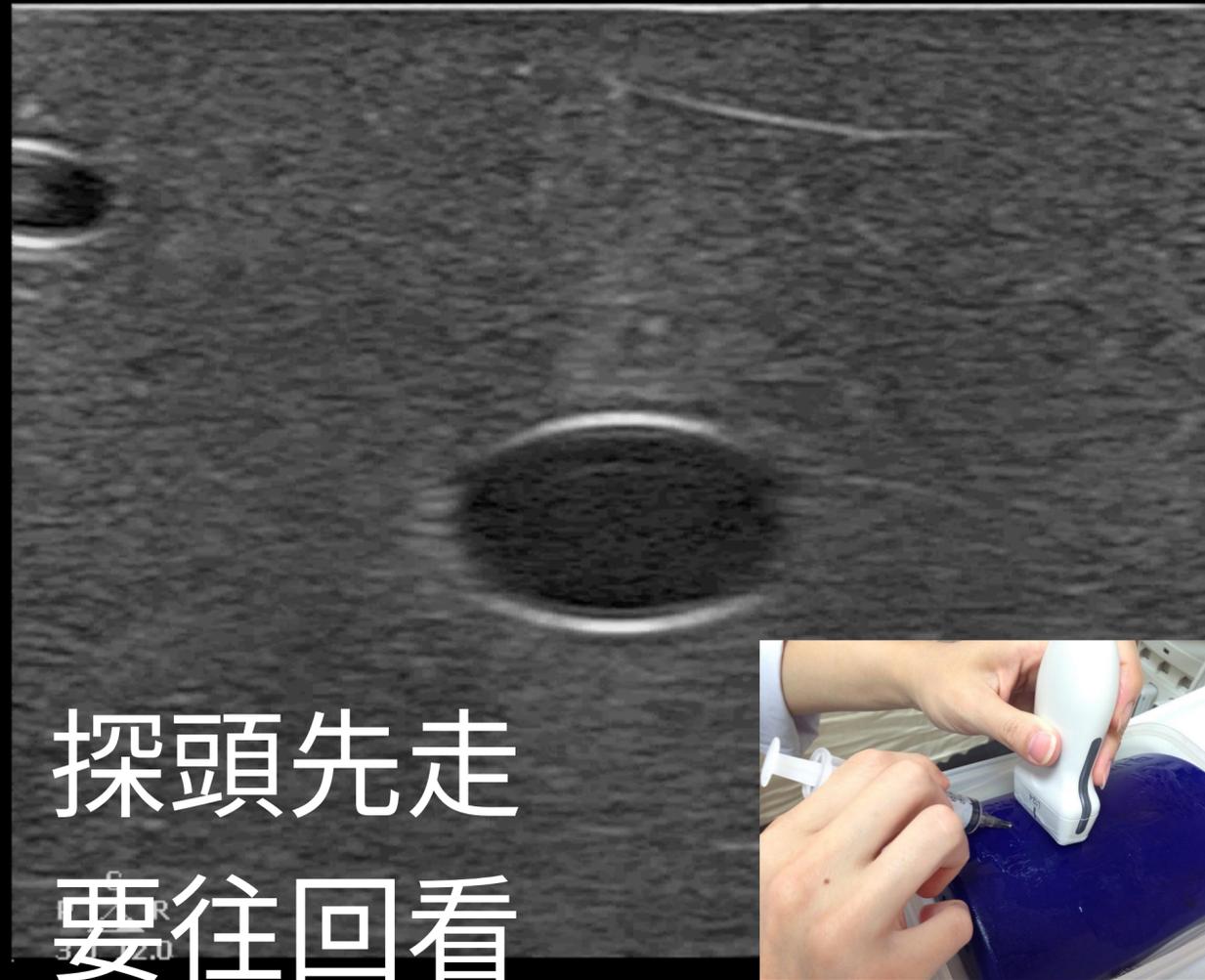


Center

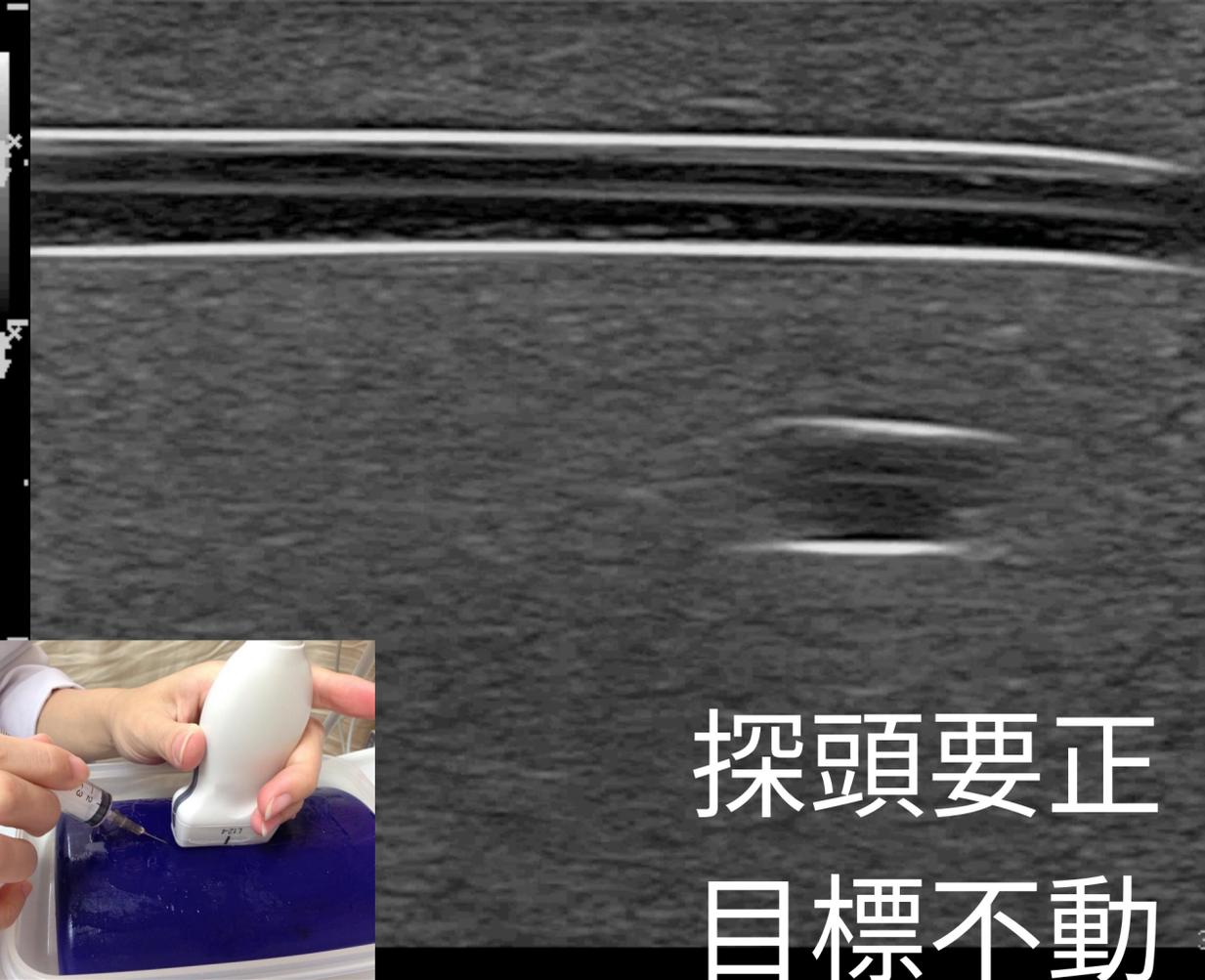
Level



Superficial P  
L12-3  
46 Hz  
3.0cm  
2D  
Res  
Gn 96  
C 56  
3 / 2 / 1



探頭先走  
要往回看



探頭要正  
目標不動

緊盯針尖

淺淺入針

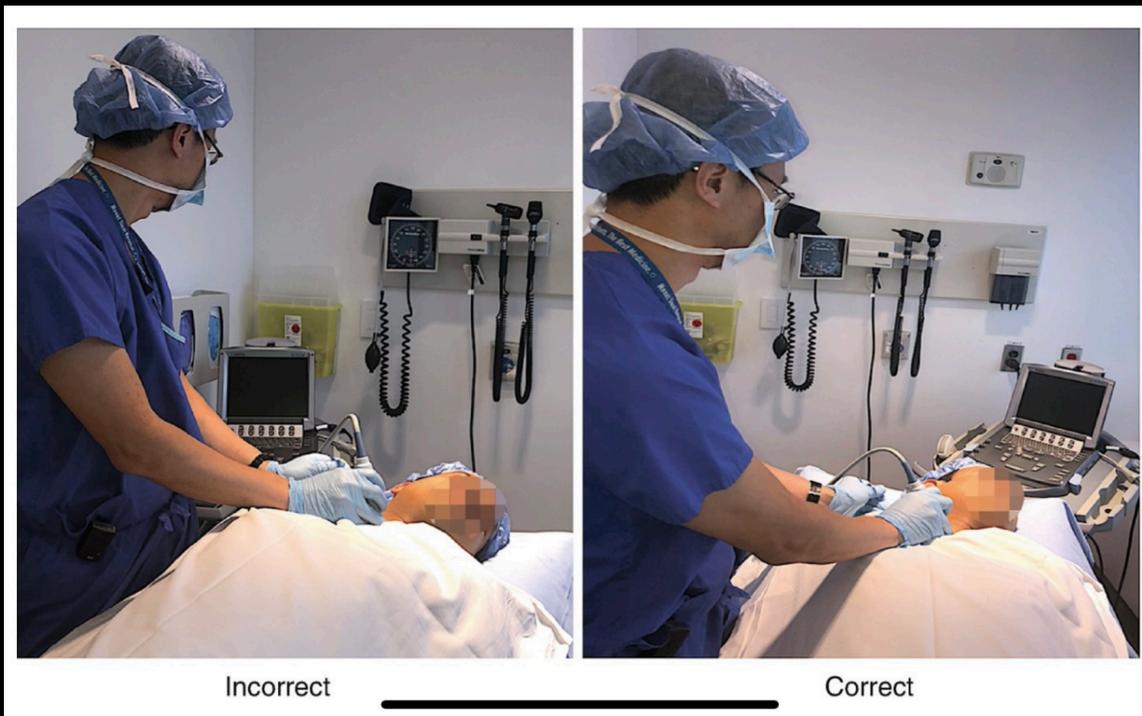
# MASTER NEEDLING

## Off-plane

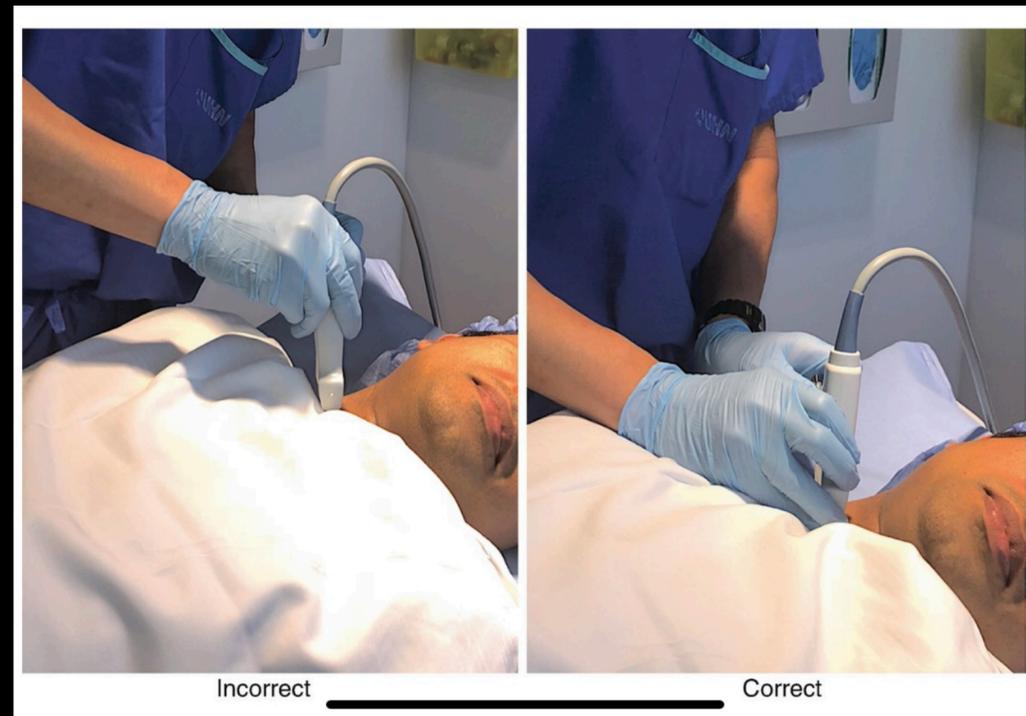
## In-plane

# Pearls & Pitfalls

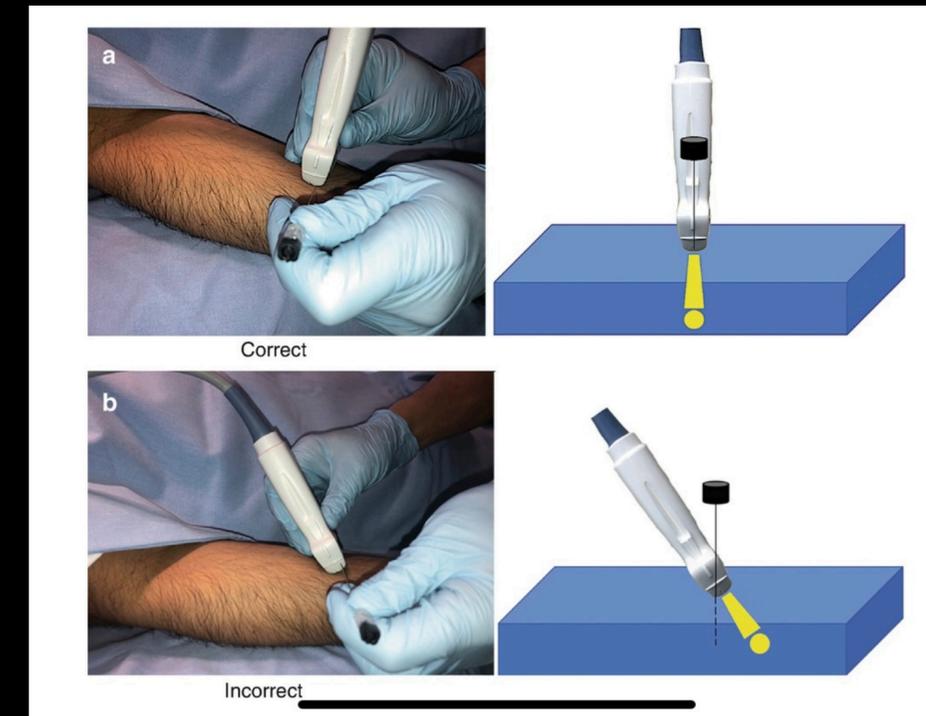
## Ergonomics



## Stability



## Axis



# Arthrocentesis

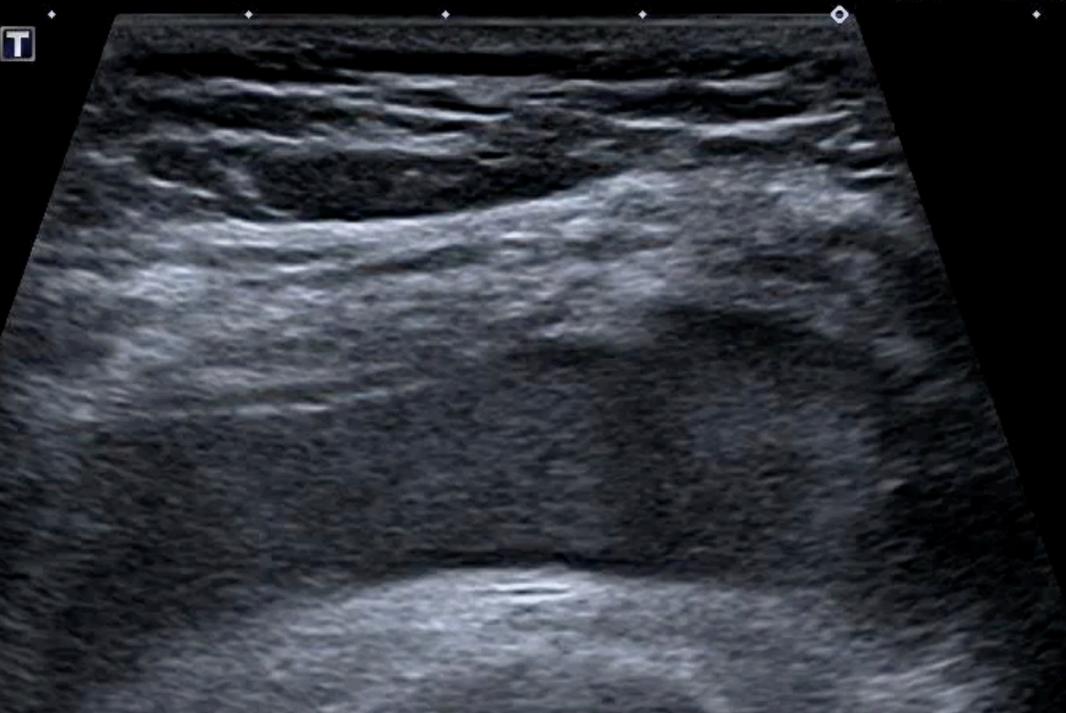
TE7 Ultrasound System  
20180227-175129-34EA MSK1 27-02-2018 17:38:01

L14-6Hz  
MI 0.5  
TI 0.1  
AP 96.6%

B  
F 7.6-16.2  
DR 110  
FR 61  
D 6.0  
G 46



膝關節縱向掃描



MI  
1.5  
11L4  
diffT 9.0  
30 fps  
Qscan  
G:84  
DR:60  
A:6  
P:3

AP 96.6% MI 0.2 TI 0.2  
2024/10/16  
F 6.6-13.0  
DR 115  
PF19005CER  
D 3.5  
G 71

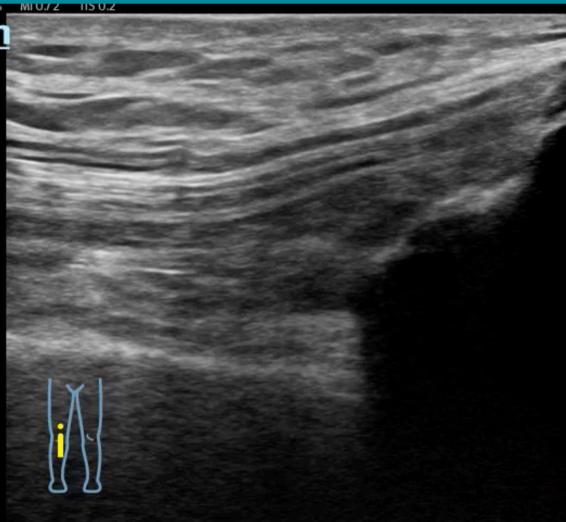
iNeedle  
iTouch  
thk: mm  
PF19005CER  
DFOV:

2024/10/16  
F 6.6-13.0  
DR 115  
PF19005CER  
D 3.5  
G 71

iNeedle  
iTouch  
thk: mm  
PF19005CER  
DFOV:

AP 96.6% MI 0.72 TI 0.2  
2024/10/16  
F 6.6-13.0  
DR 115  
PF19007BER  
D 3.5  
G 69

iNeedle  
iTouch  
thk: mm  
PF19007BER  
DFOV:

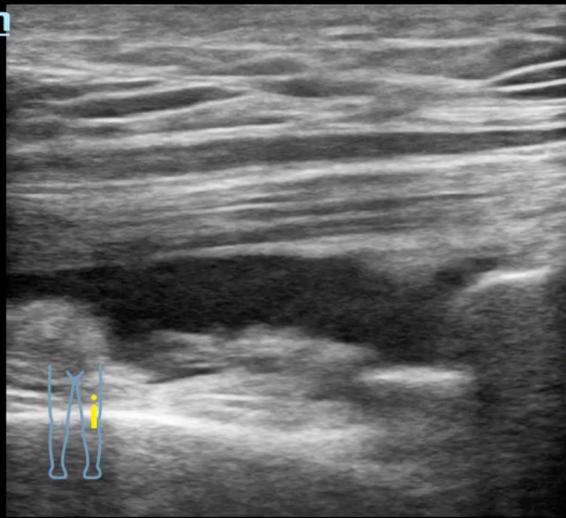


Arterial  
L12-3  
42 Hz  
3.5cm

2D  
HGen  
Gn 78  
C 41  
3/3/2

KV:  
msec  
ALG:

2cm



Arterial  
L12-3  
42 Hz  
3.5cm

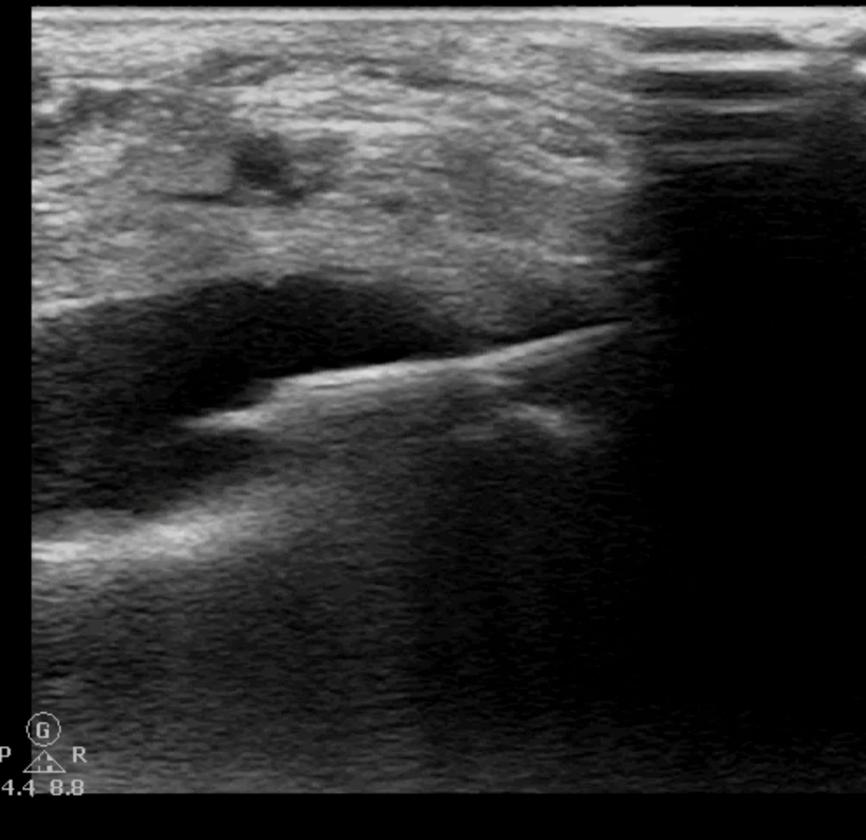
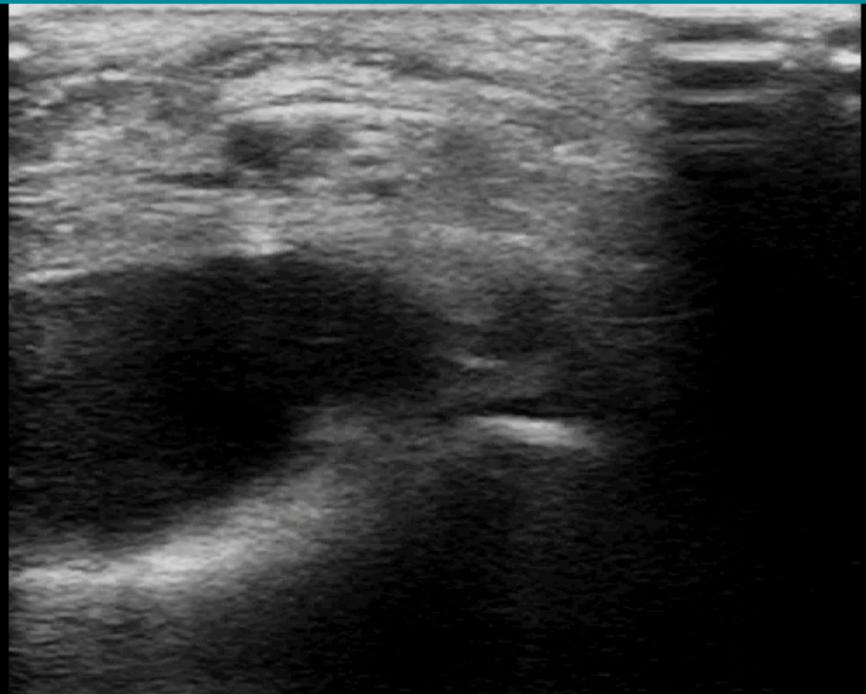
2D  
HGen  
Gn 78  
C 41  
3/3/2

KV:  
msec  
ALG:

2cm



KV:  
msec  
ALG:



G  
P R  
4.4 8.8

# 14M, left knee injury with joint swelling



Linear probe  
In-plane  
Lat-med approach



# Ovarian ca with carcinomatosis



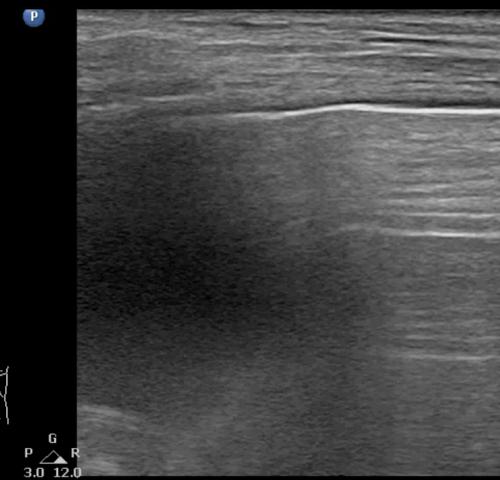
Abd Gen  
C5-1  
36 Hz  
14.0cm  
2D  
HGen  
Gn 100  
C 56  
3/3/3



Superficial  
L12-3  
43 Hz  
4.0cm  
2D  
Res  
Gn 98  
C 56  
3/2/1



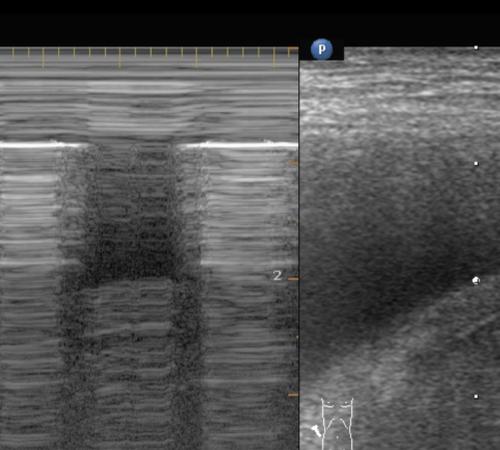
Abd Gen  
C5-1  
42 Hz  
11.0cm  
2D  
HGen  
Gn 100  
C 56  
3/3/3



Superficial  
L12-3  
43 Hz  
4.0cm  
2D  
Res  
Gn 98  
C 56  
3/2/1



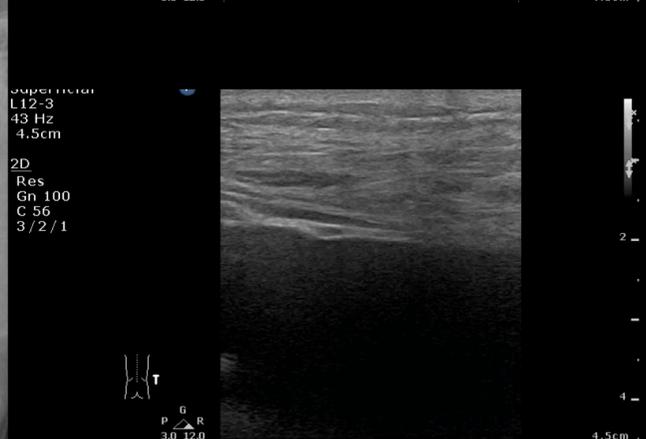
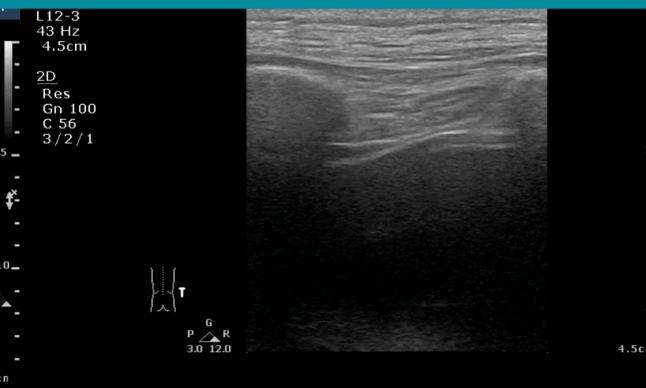
42 Hz  
11.0cm  
2D  
HGen  
Gn 100  
C 56  
3/3/3



43 Hz  
4.0cm  
2D  
Res  
Gn 98  
C 56  
3/2/1



# Bilateral pleural effusion



**Linear /Curved**  
**Localization**  
**Depth**  
**Static / Dynamic**

# Paracentesis



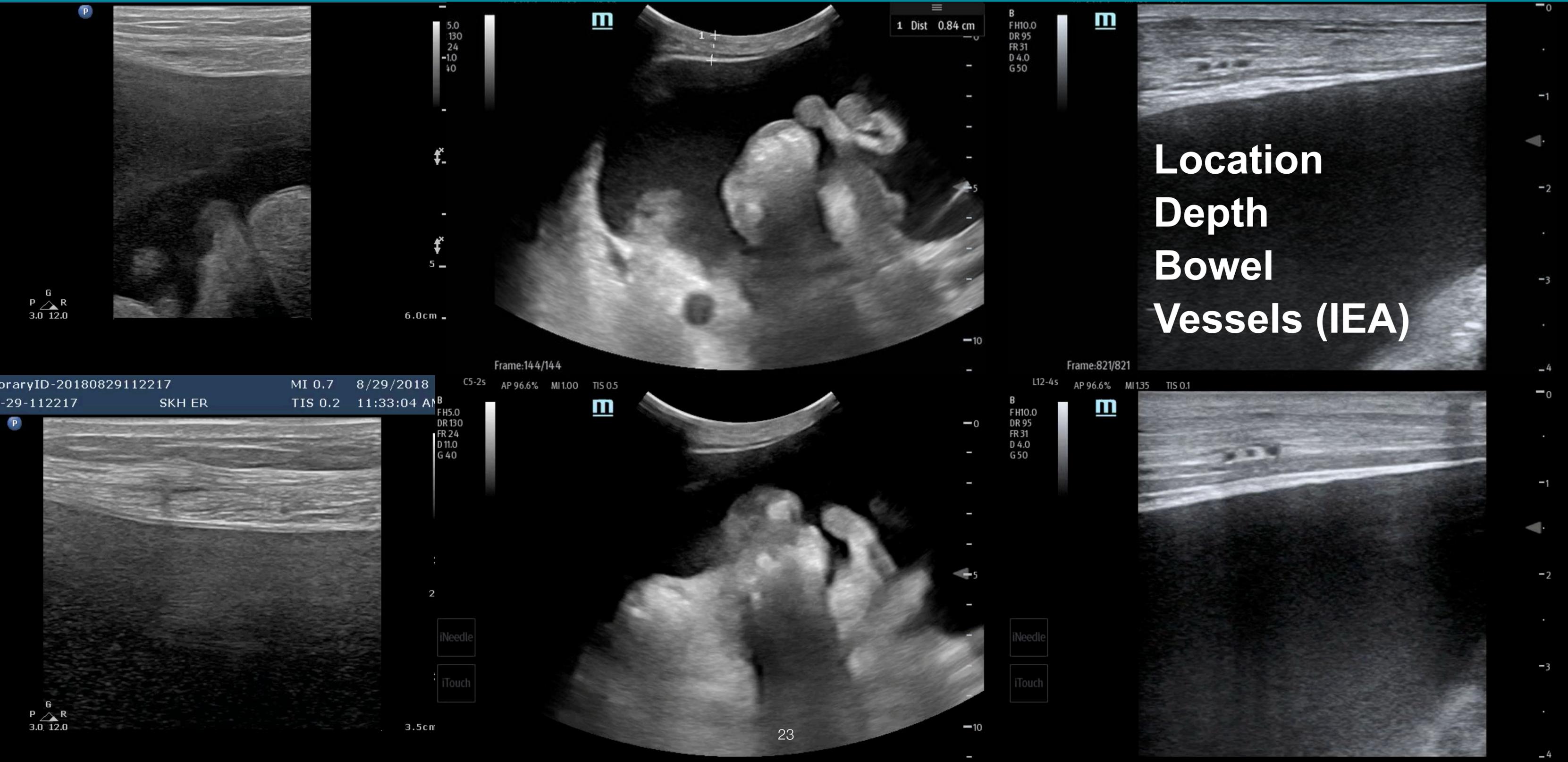
SKH-EUTC©ChenKC

Abd Gen  
C5-1  
27 Hz  
21.0cm

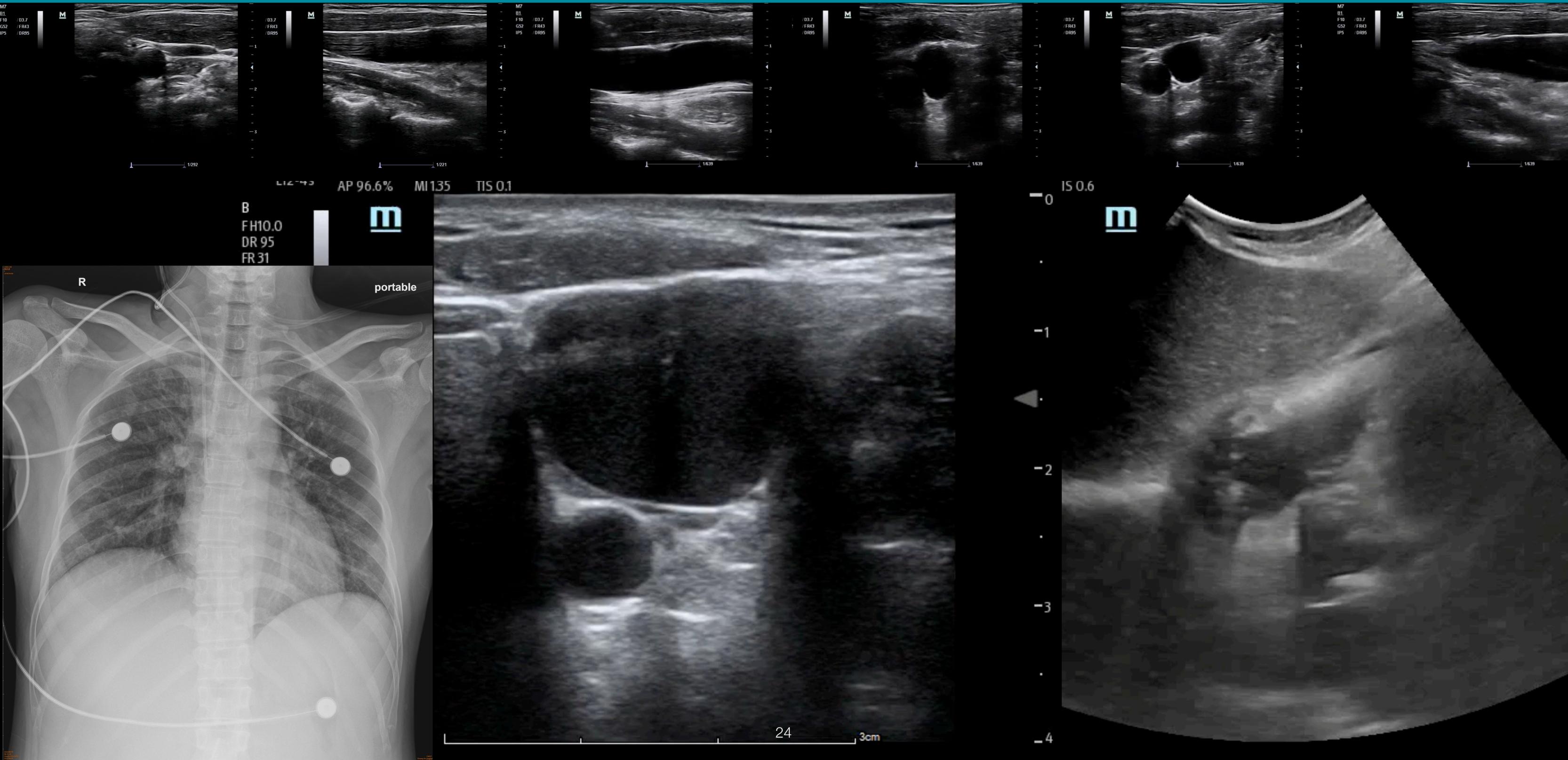
2D  
HGen  
Gn 84  
C 56  
3/3/3



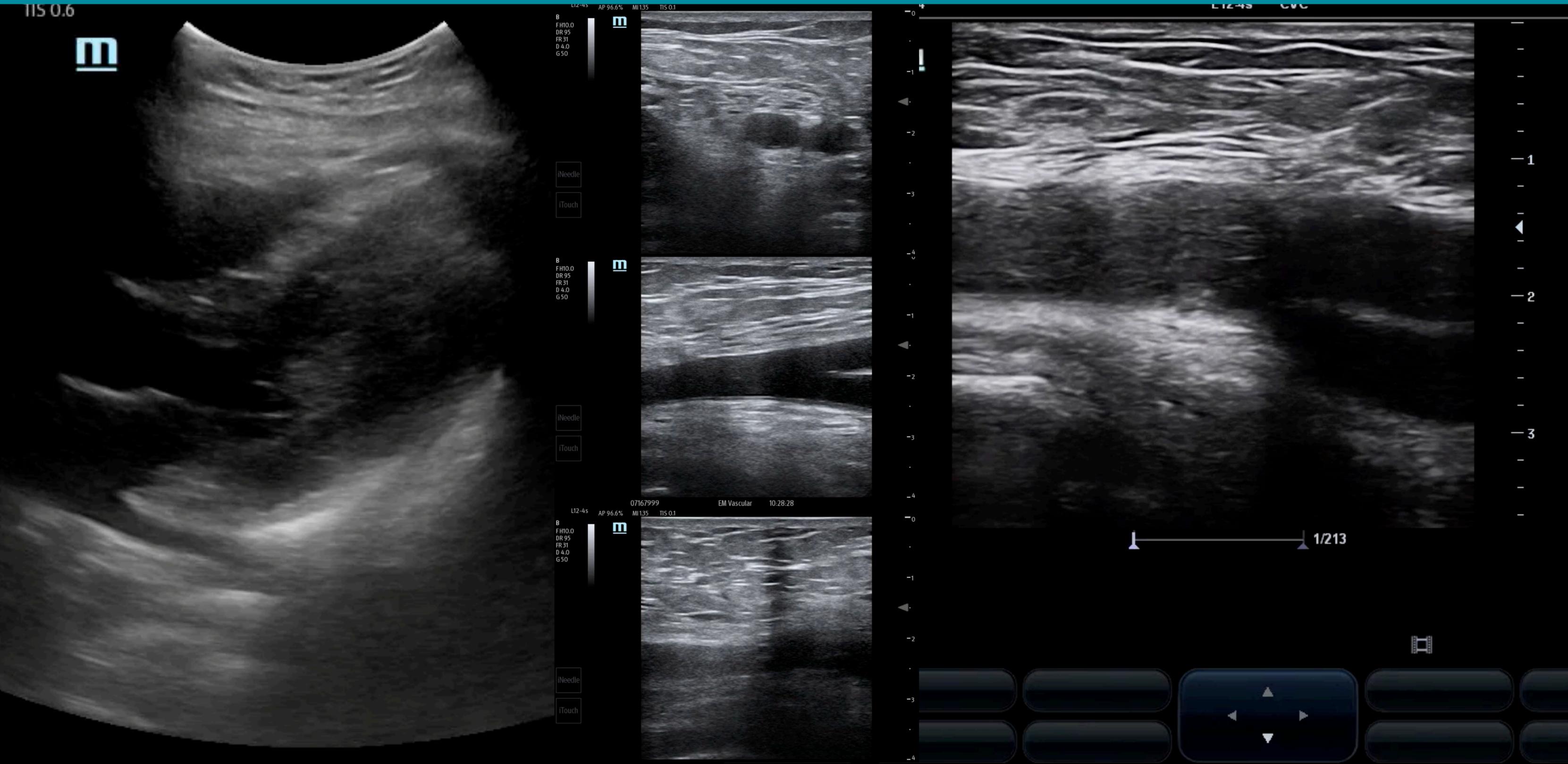
# Paracentesis



# Vascular access

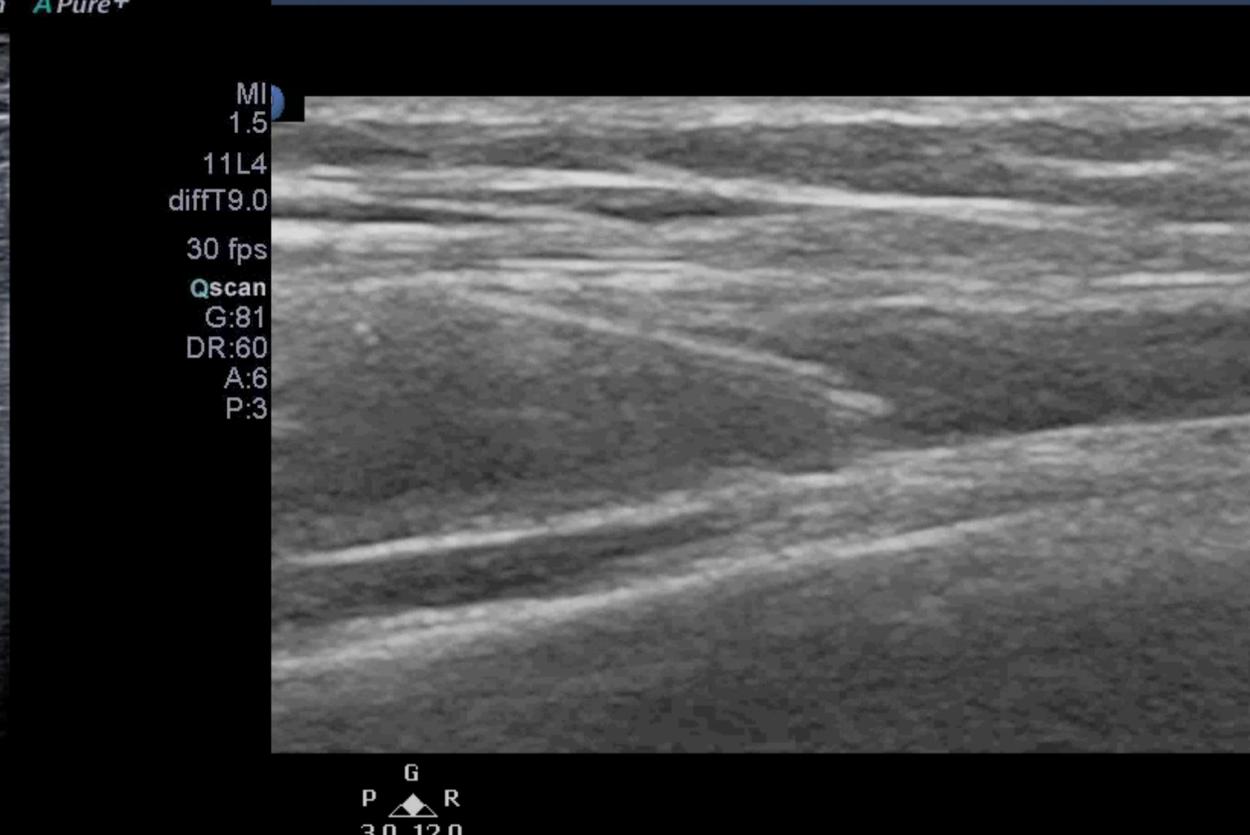
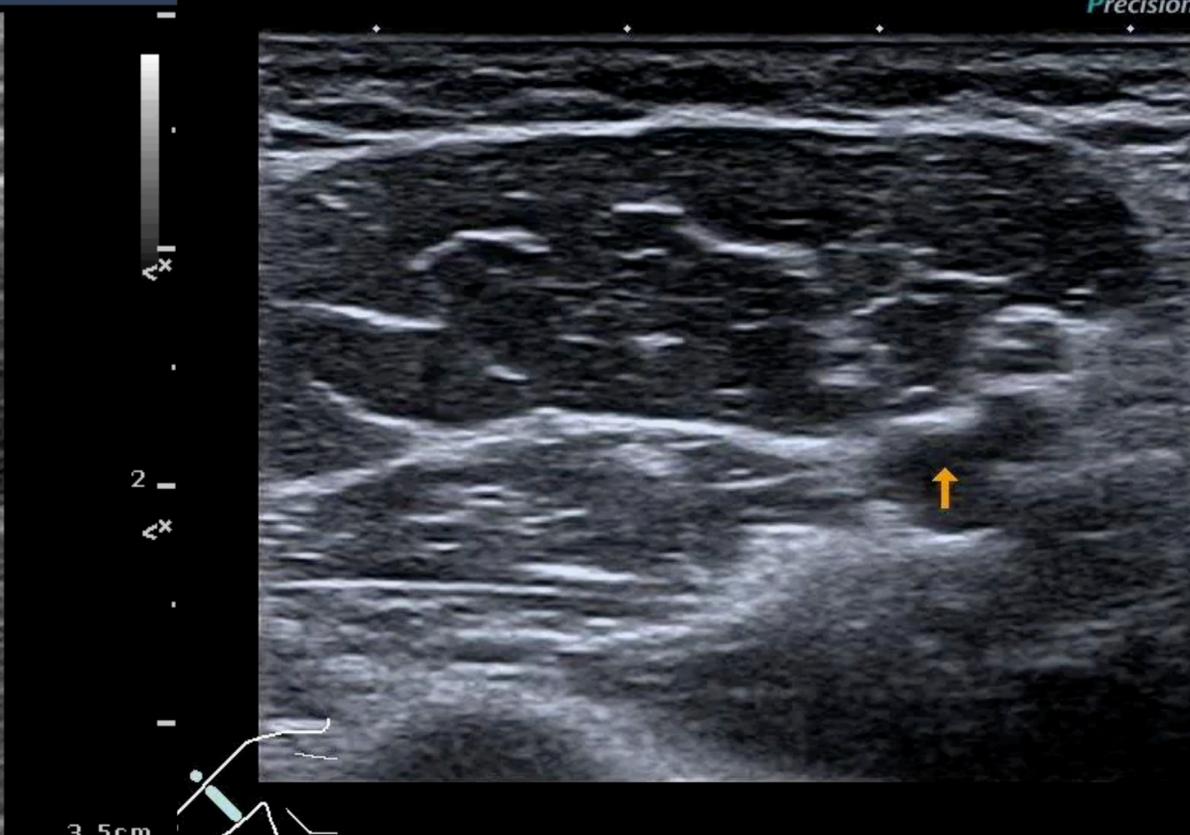


# Vascular access

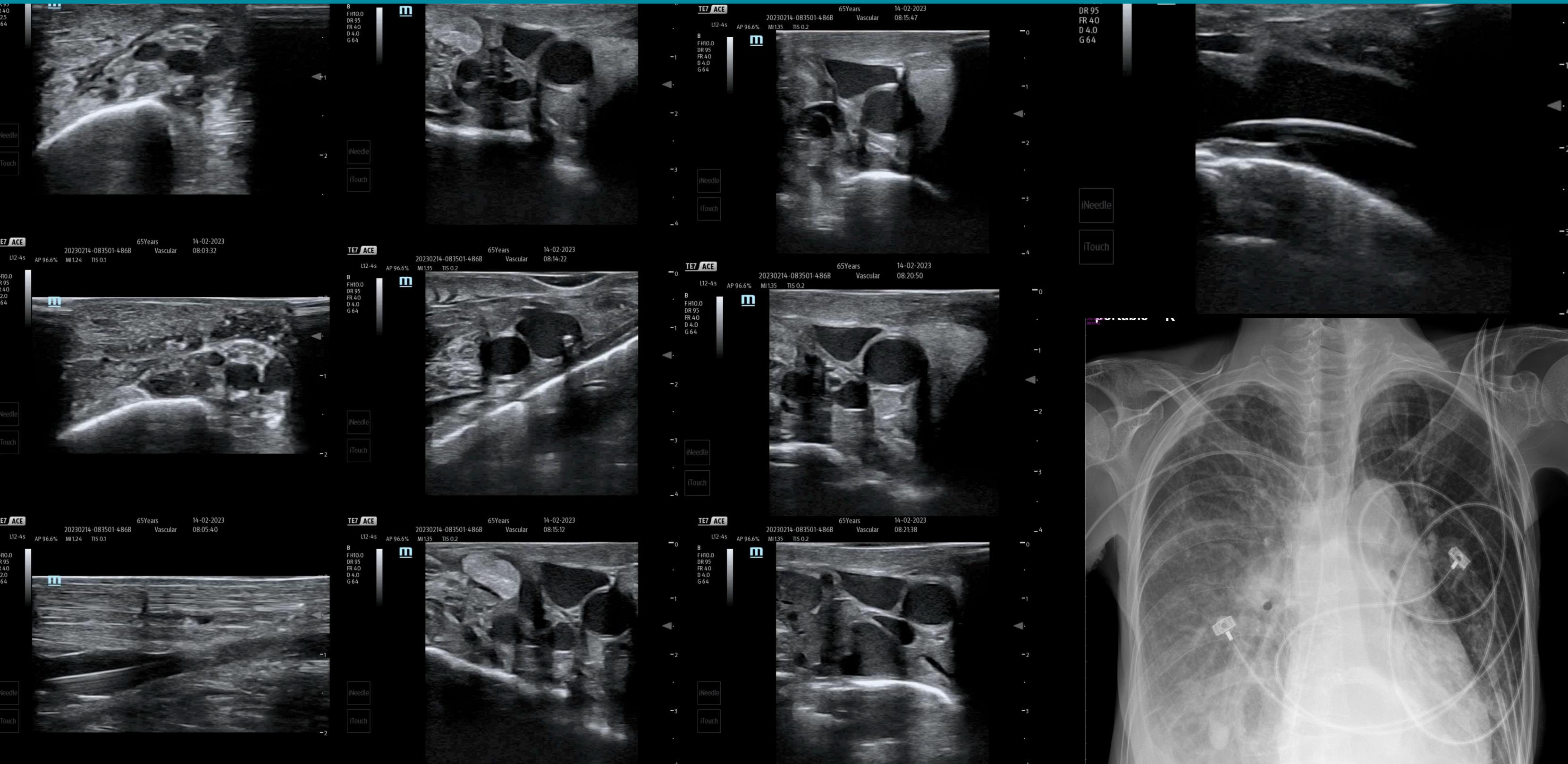


# Vascular access

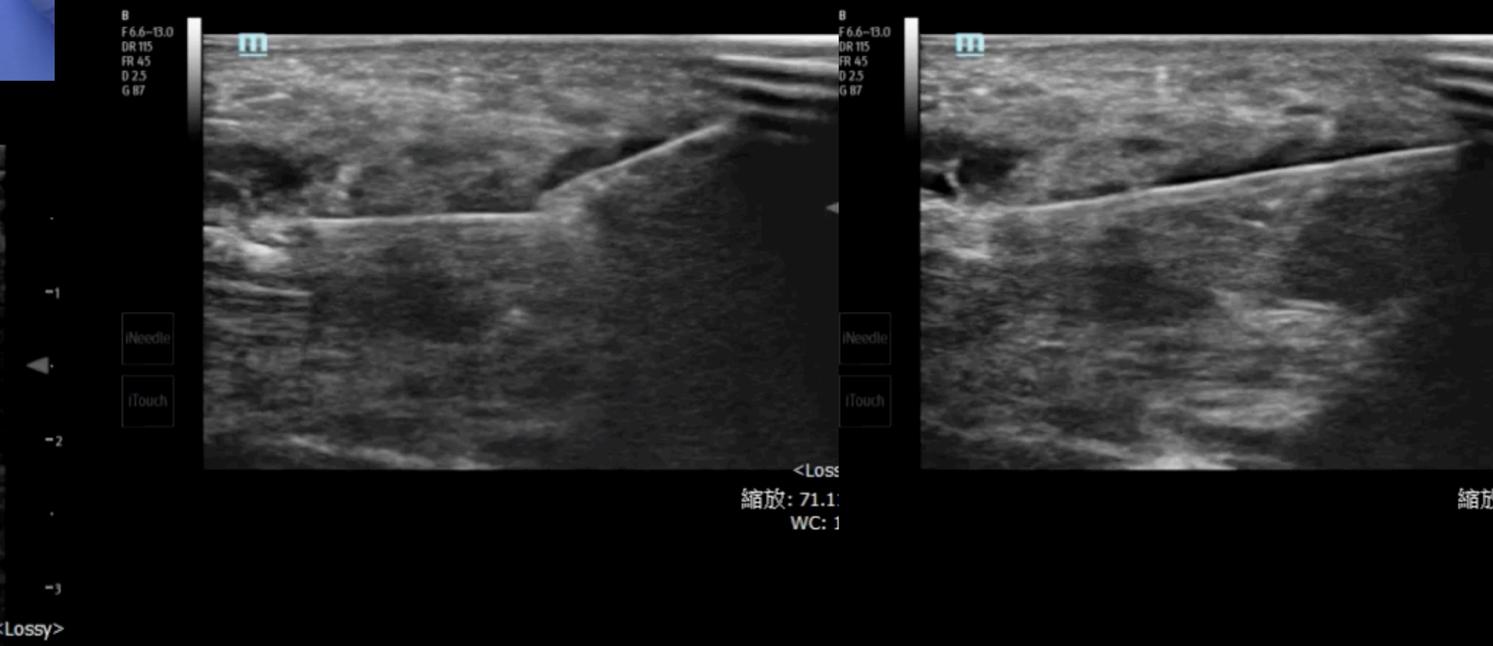
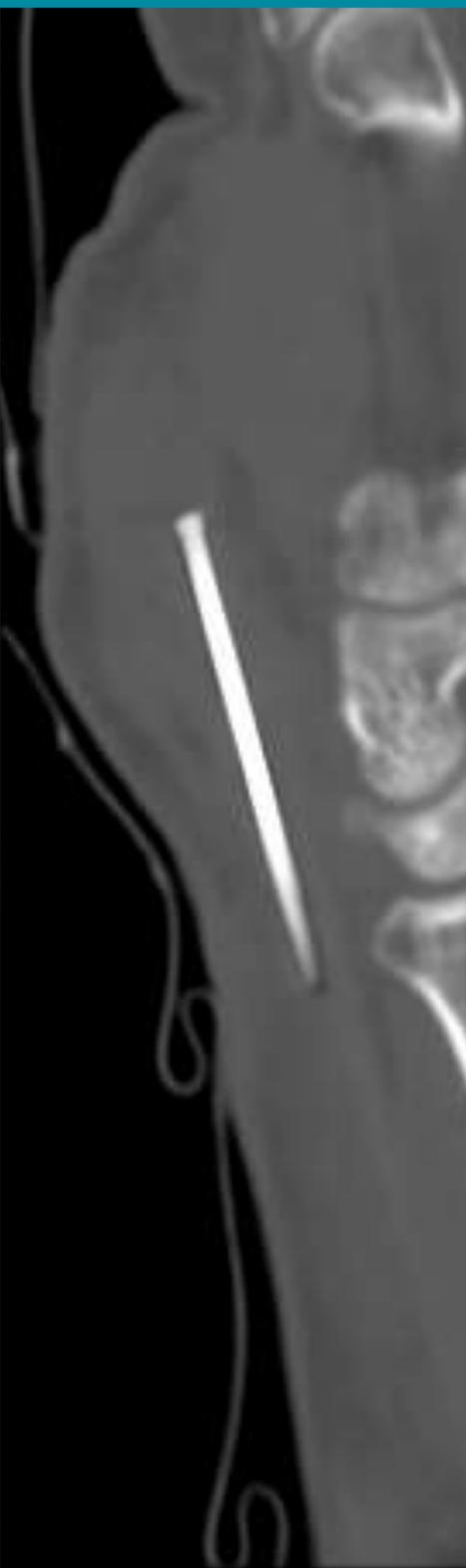
D-20170705165331 MI 1.1 7/5/2017 2017/07/20 TemporaryID-20150912204658 MI 0.7 9  
5331 SKH ER TIS 0.1 5:29:12 PM Nest Garden Hospital MSK 3 3085 1:12:16 PM 12-204658 SKH ER TIS 0.1 8



# Vascular access



# FB removal





**Diagnostician**



**Interventionist**