



衛生福利部雙和醫院
(委託臺北醫學大學興建經營)
Taipei Medical University · Shuang Ho Hospital,
Ministry of Health and Welfare



雙和POCUS學苑 - CVC 工作坊

How to master needling & CVC

陳國智醫師 急診醫學科

陳國智 醫師



醫用超音波學會指導醫師
WINFOCUS director / instructor
急救加護醫學會重症超音波負責人

急診 / 重症 / 介入 / 急性疼痛

經歷

新光急診超音波訓練中心主任

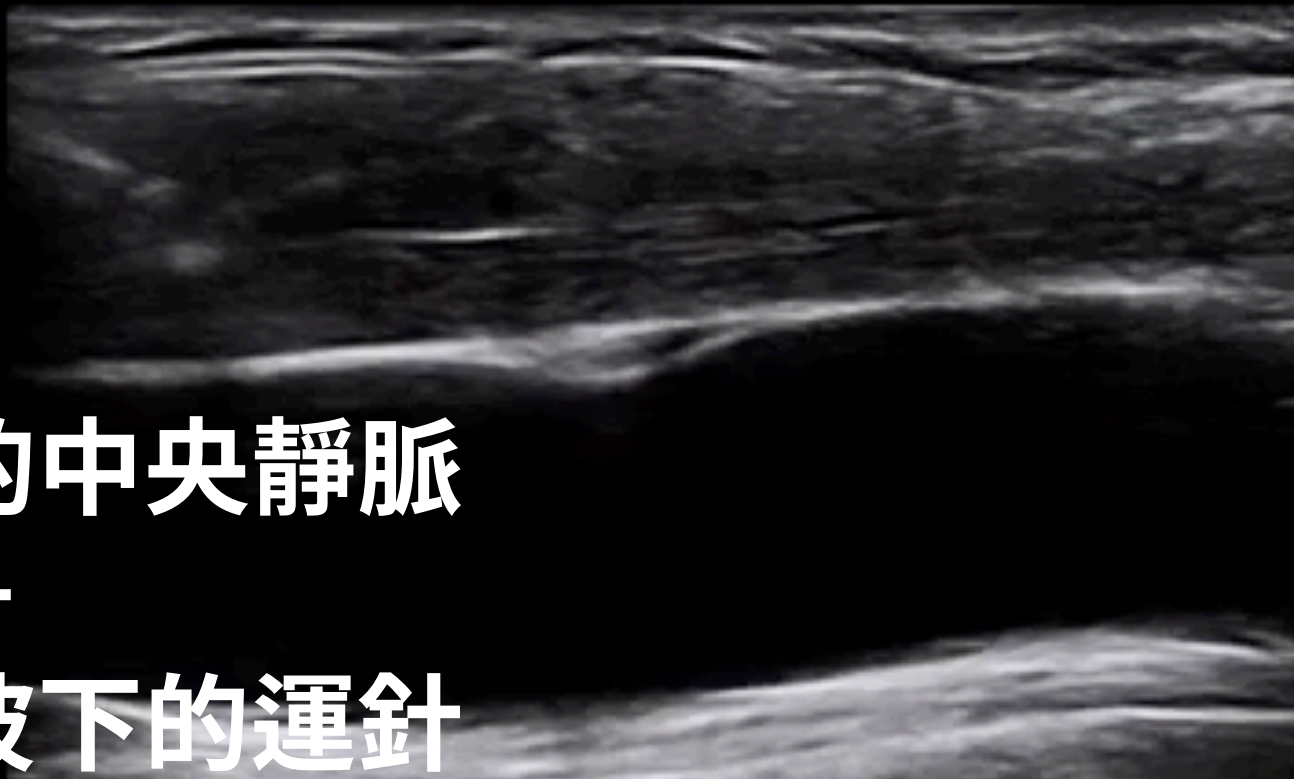
西園醫院急診醫學科主任

急診醫學會超音波委員會主委

台灣疼痛醫學會大體模擬手術講師

/D3.7
/FR43
/DR95

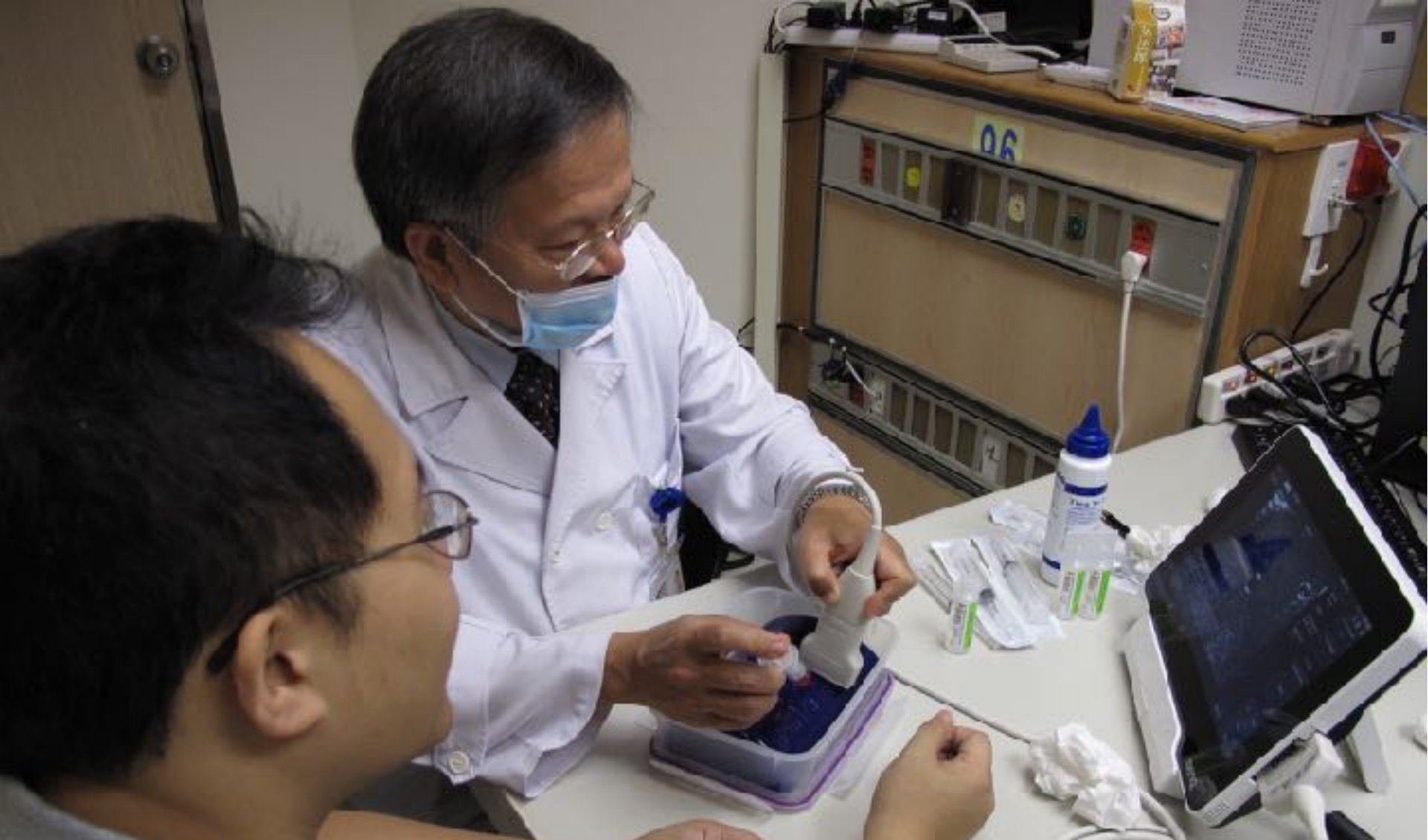
M



選擇合適的中央靜脈 + 熟練超音波下的運針

GOAL





Success rates ↑

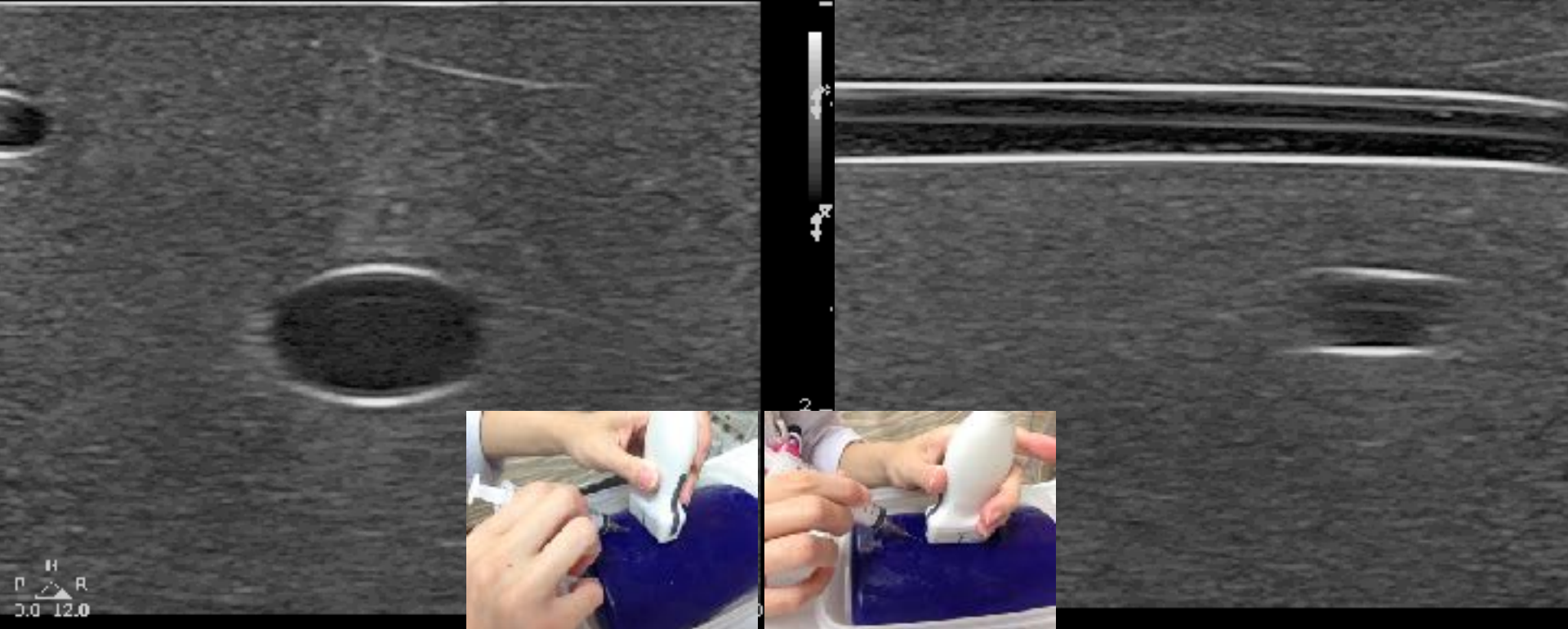
Mechanical complications ↓

Safe ↑

Risk ↓

Time ↓

Cochrane 2011. US for **HD catheters**
Cochrane 2015. US v.s. landmarks for **IJVC**
2015 ELSO guideline



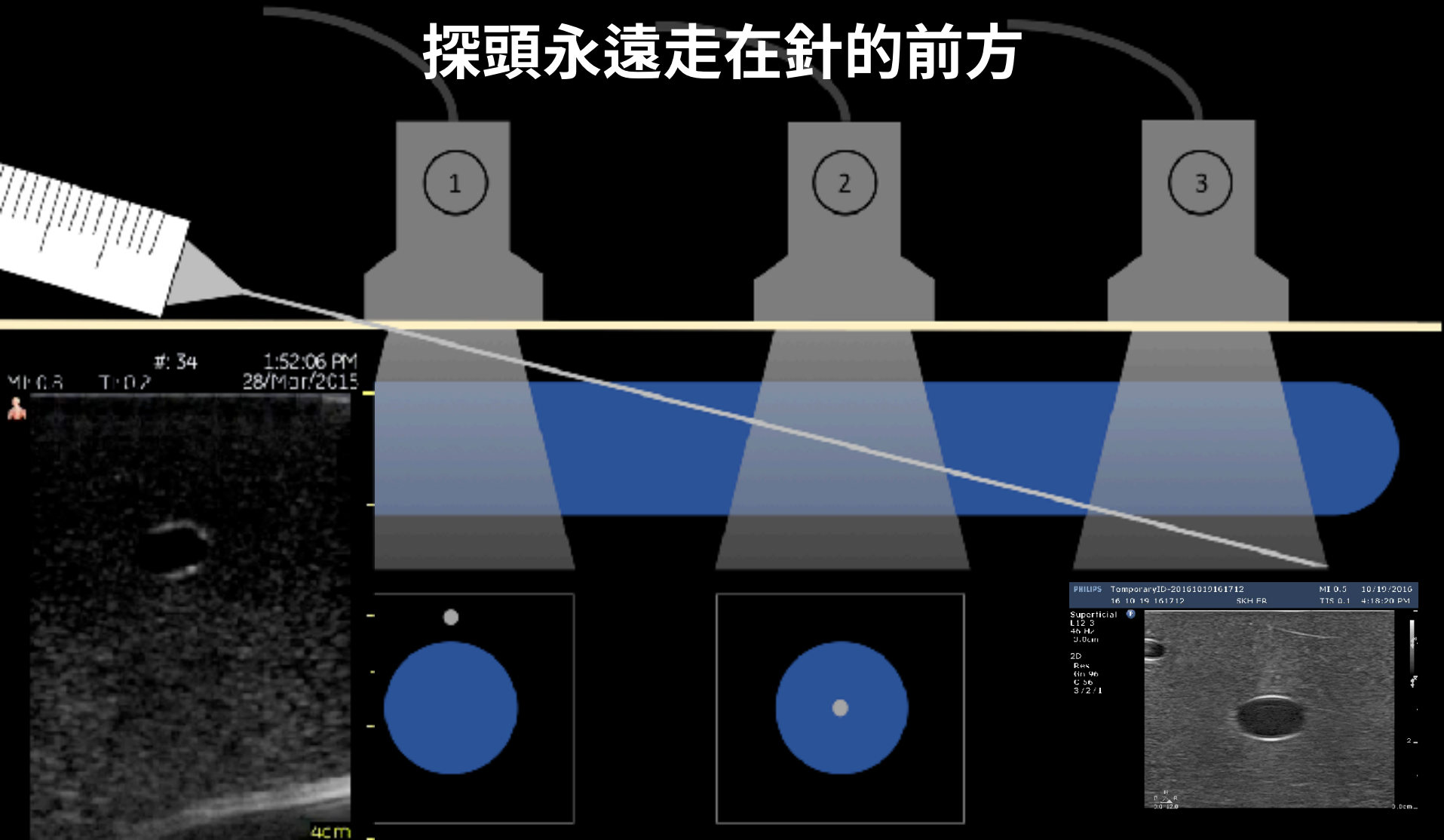
MASTER NEEDLING

Off-plane
追針尖

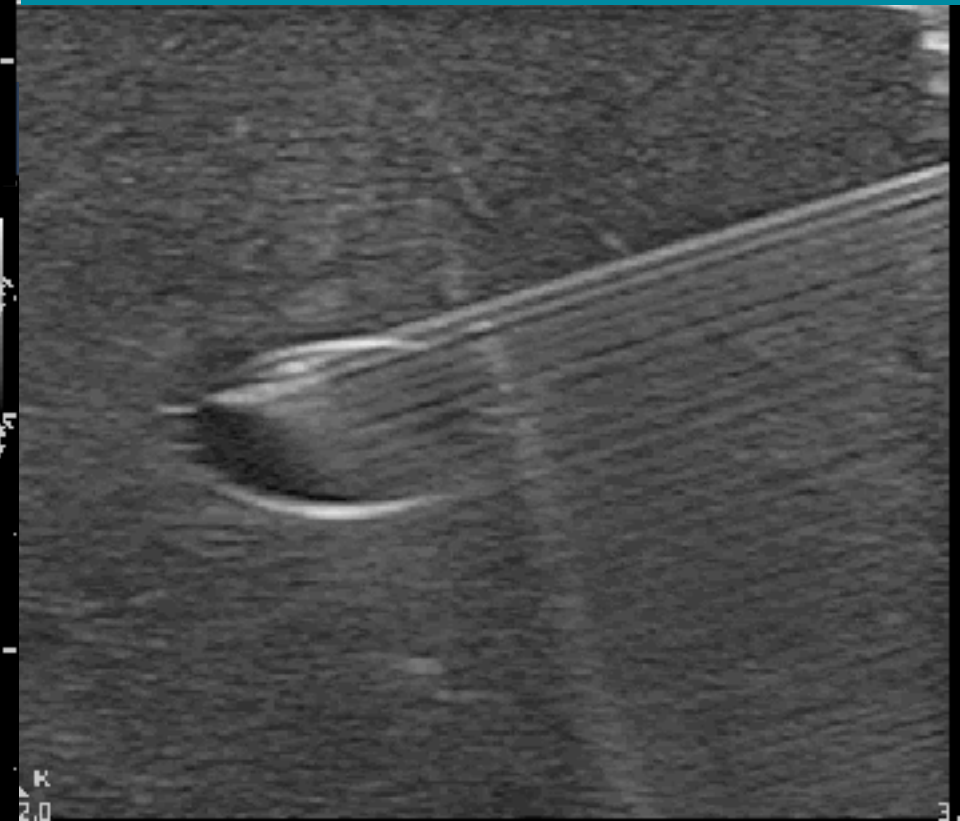
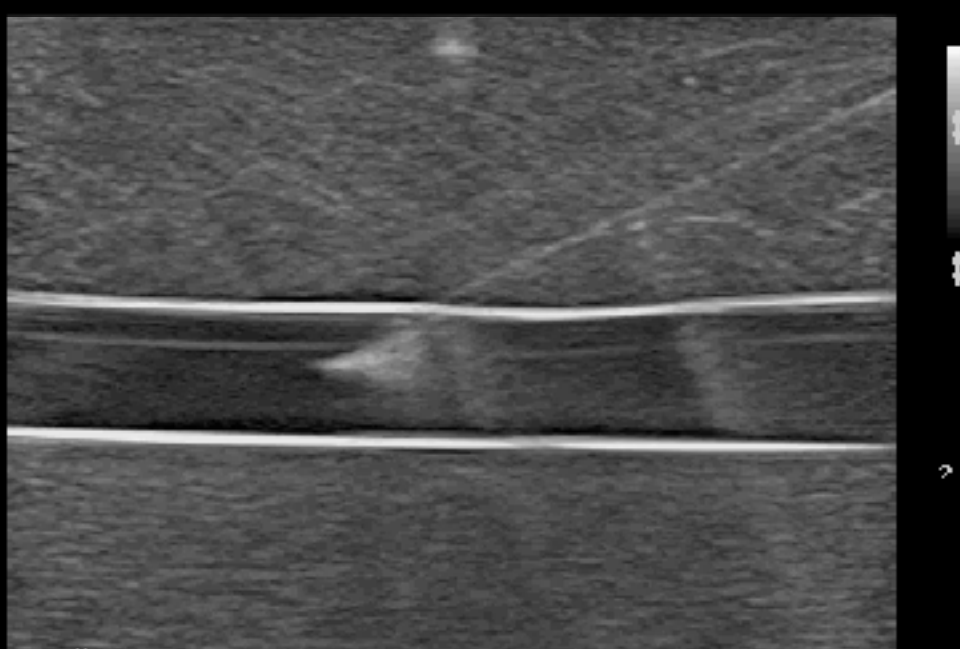
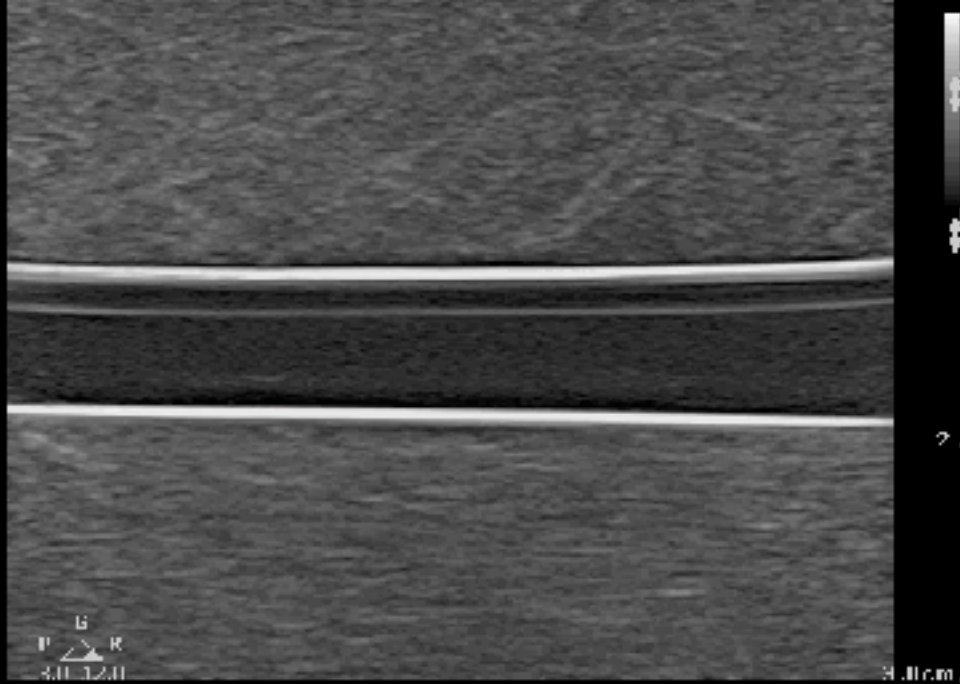
In-plane
看針身

OFF-PLANE首重針尖

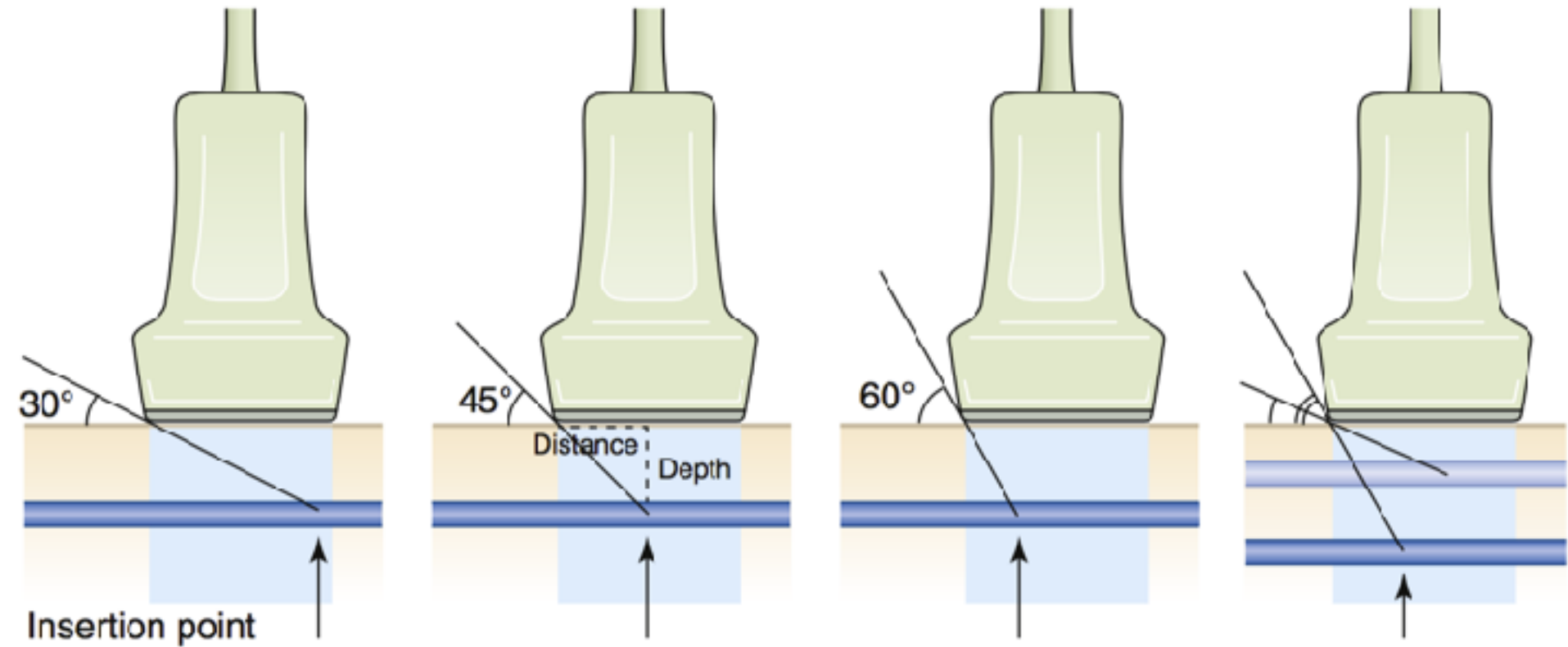
探頭永遠走在針的前方



NEEDLE OPTIMIZATION 探頭要垂直針身



淺 - IN PLANE ; 深 - OFF PLANE





保持軸線

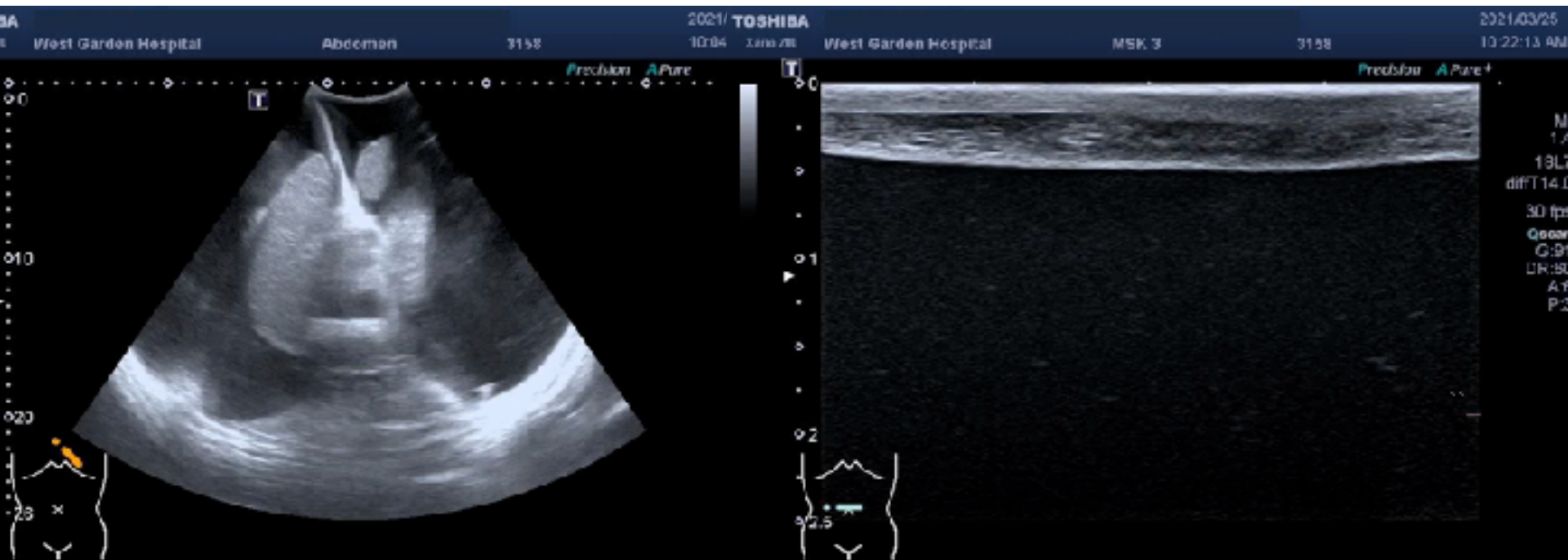
堅守切面

擬定路徑

61M, Cirrhosis & massive ascites

Find best location

Avoid bowel & vessels



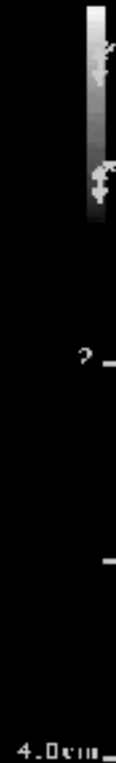
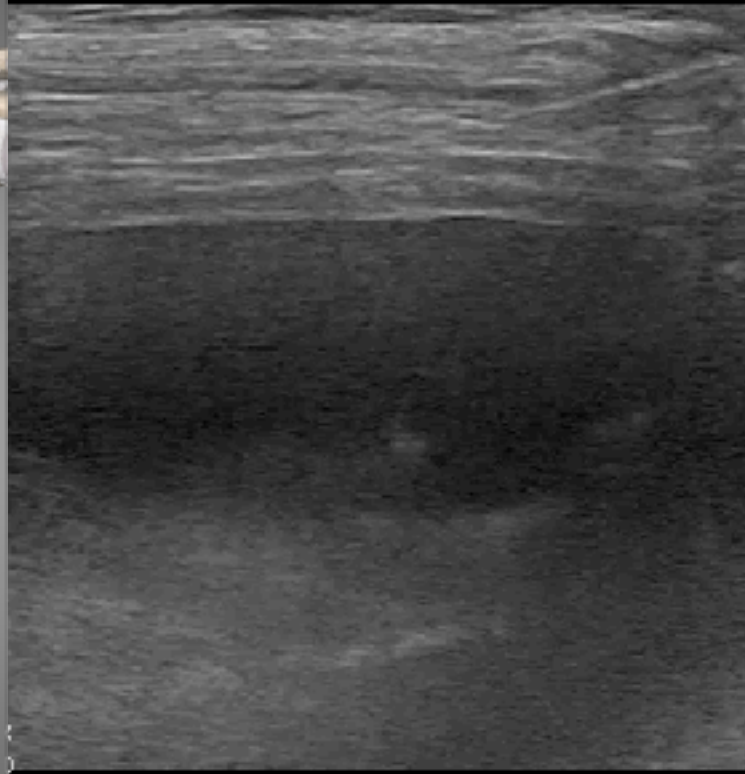
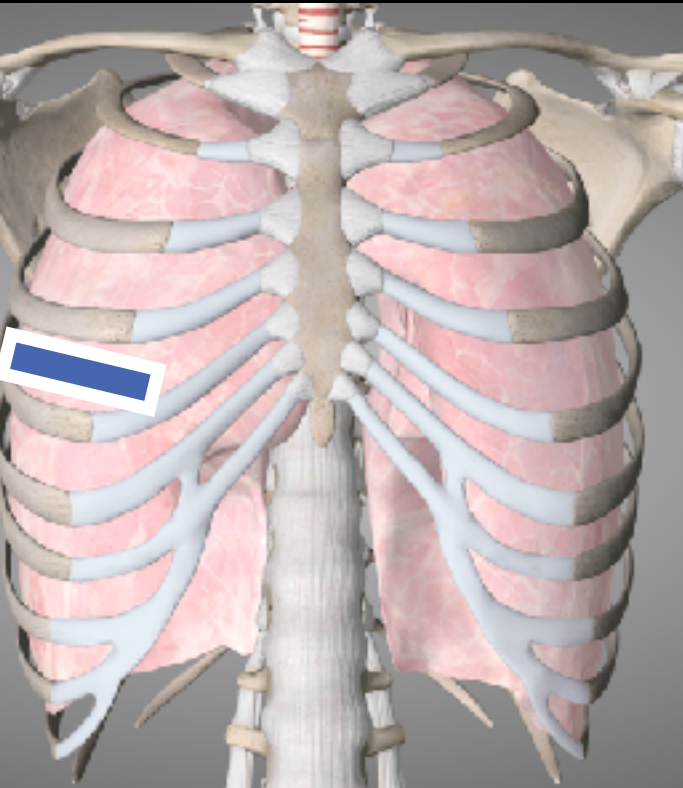
IEA: inferior epigastric artery

寬廣的空間適合【定位】 更是絕佳的【安全精進區】

In-plane drainage



SKH-EUTC©ChenKC



Catheter insertion

Off-plane drainage



Superficial

L 12-3

43 Hz

4.5cm

2D

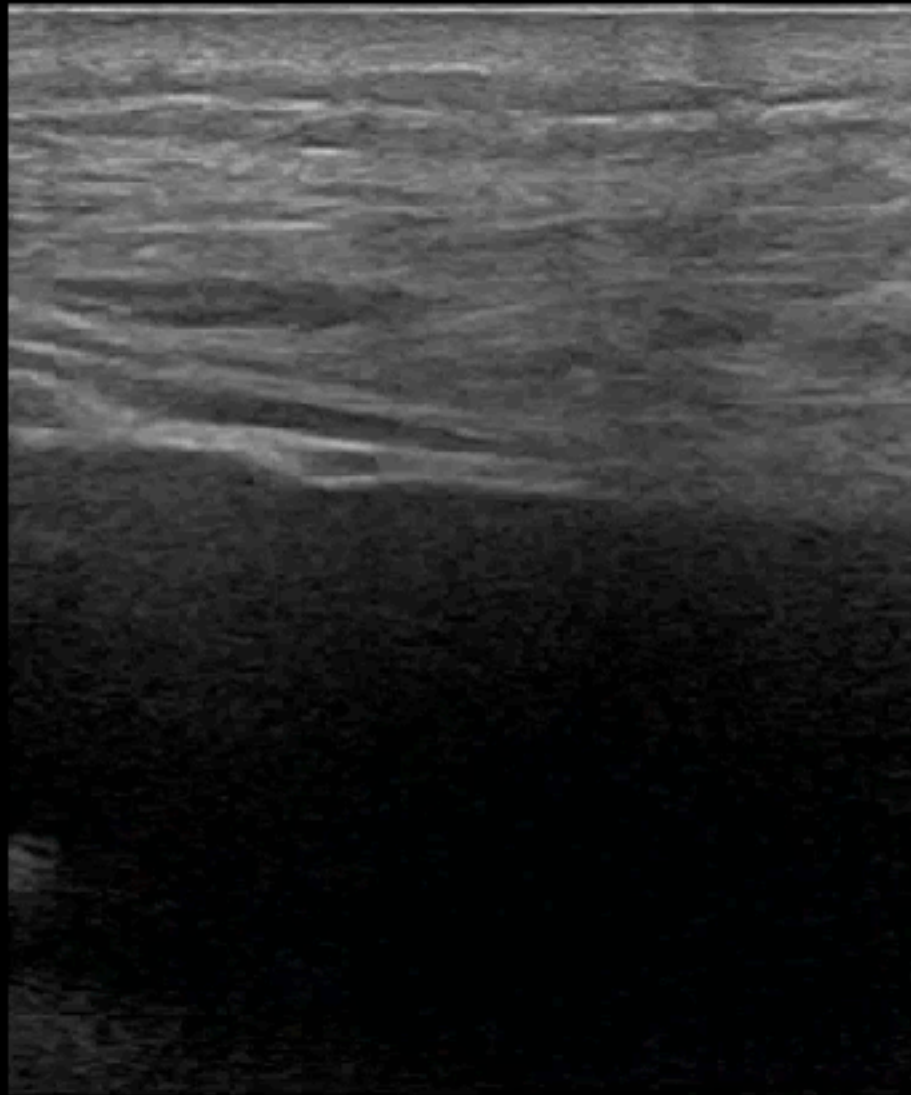
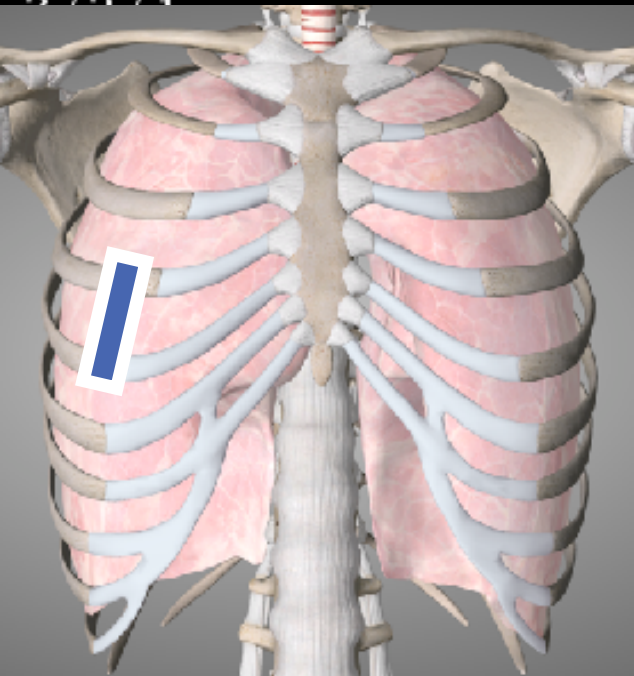
Res

Gn 100

C 56

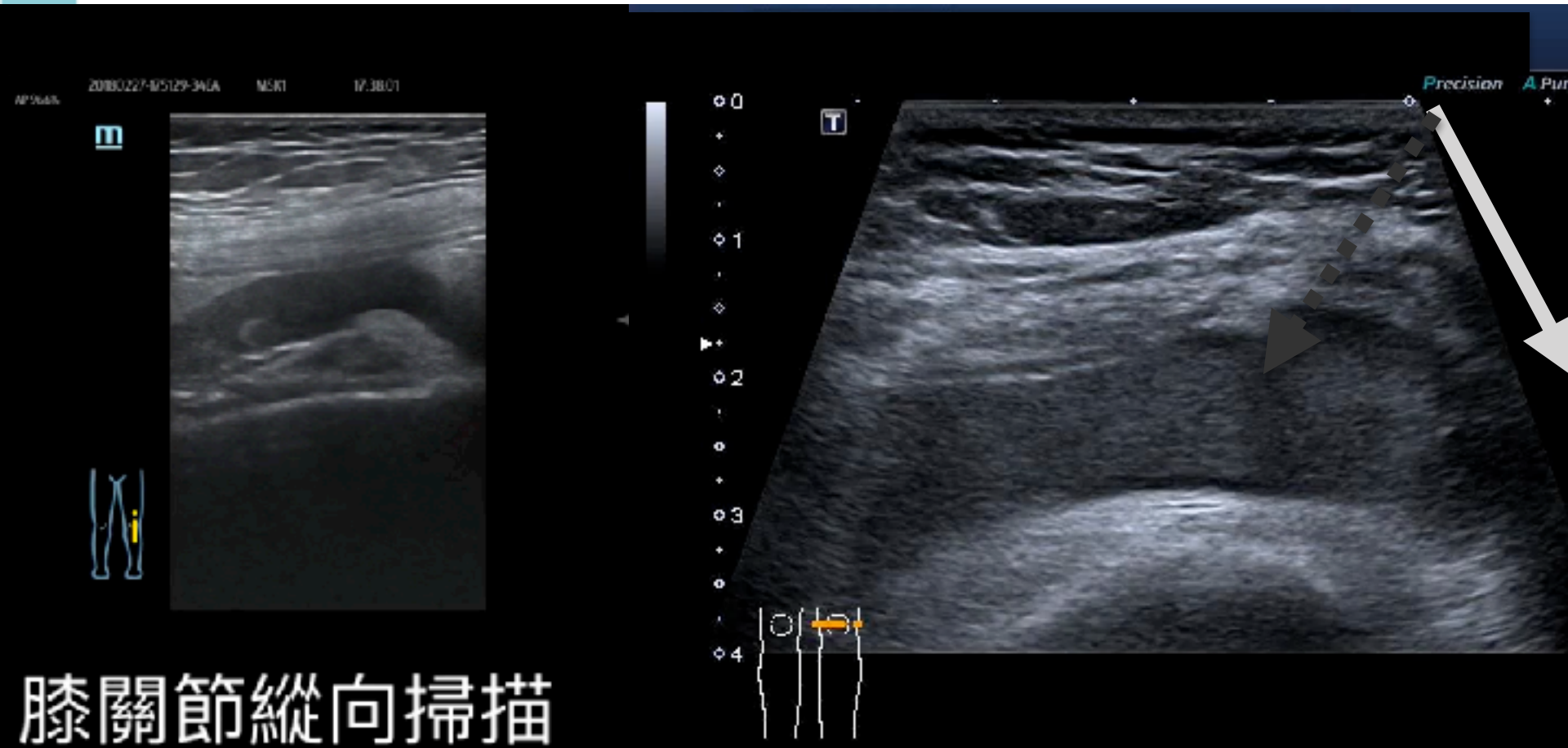
2 / 2 / 1

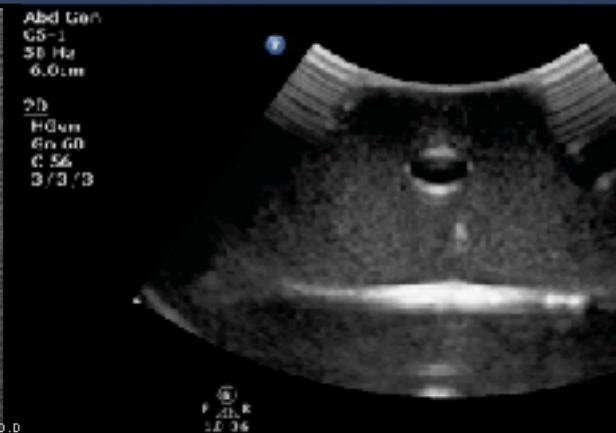
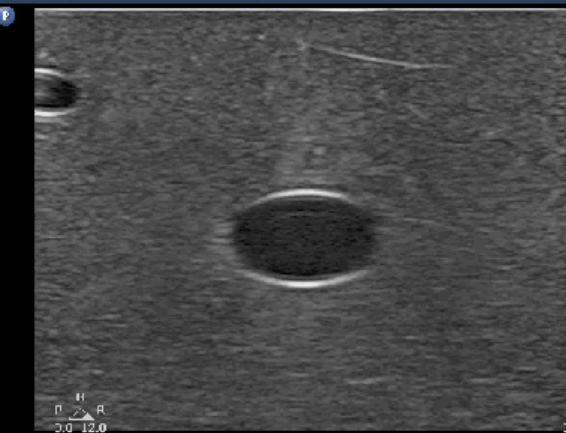
P



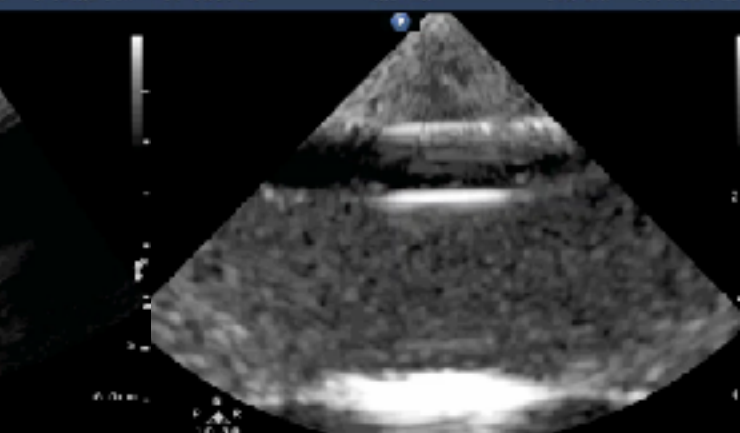
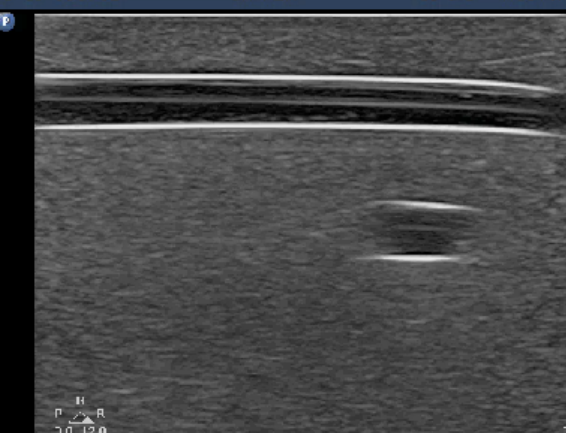
4.5cm

Joint effusion & aspiration

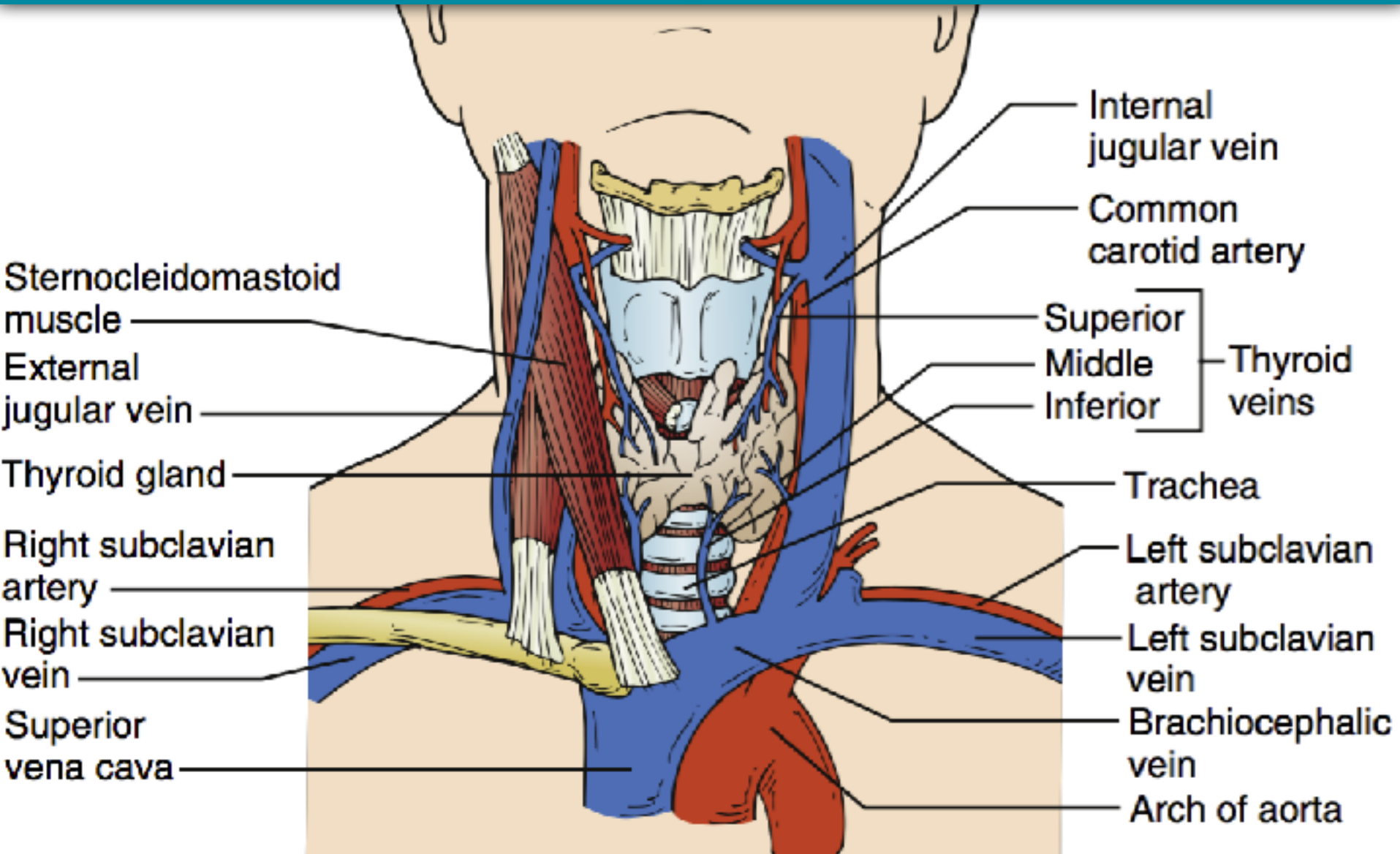




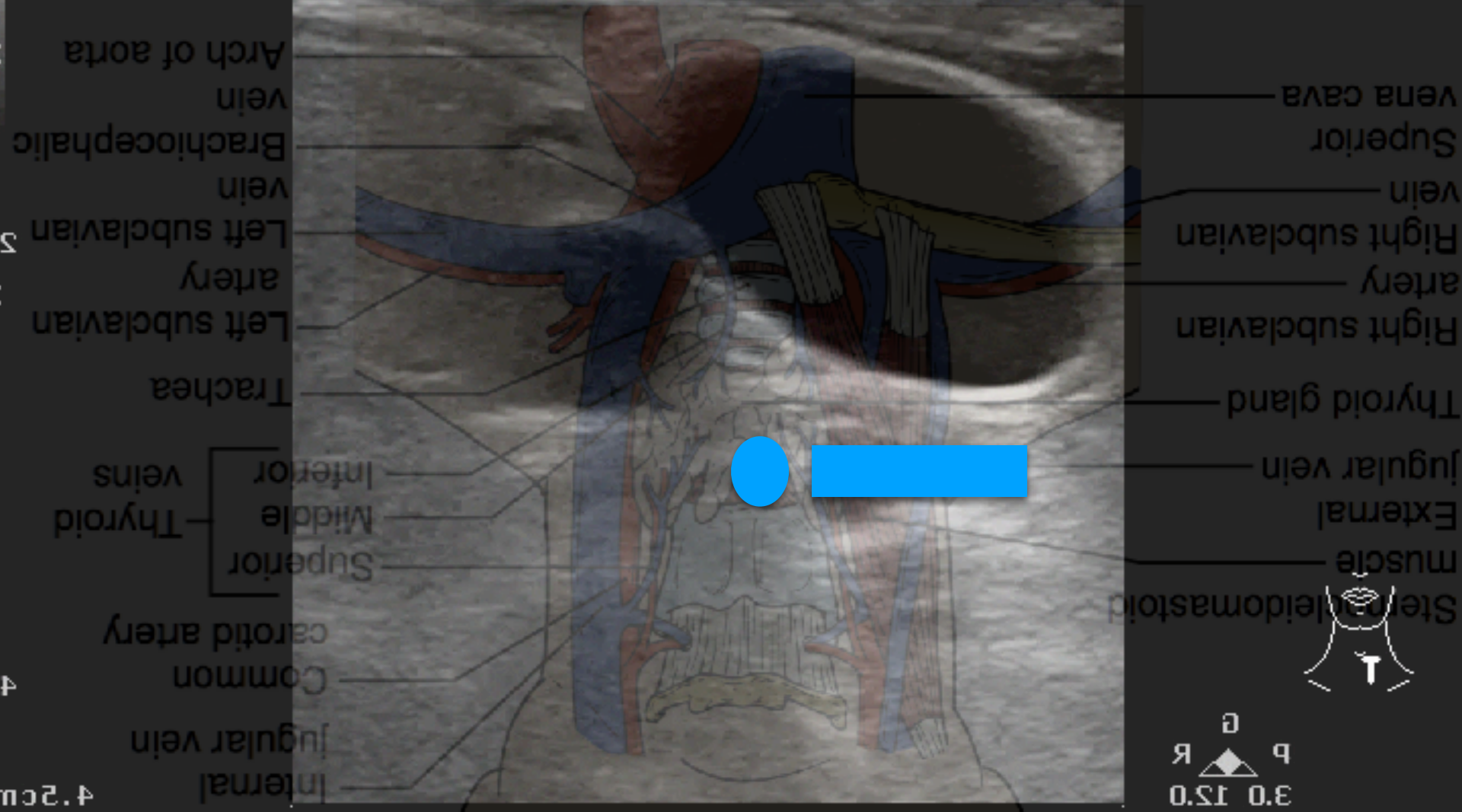
邁向運針大師的修鍊



Neck Vascular Structure



探頭的參考點和螢幕同方向

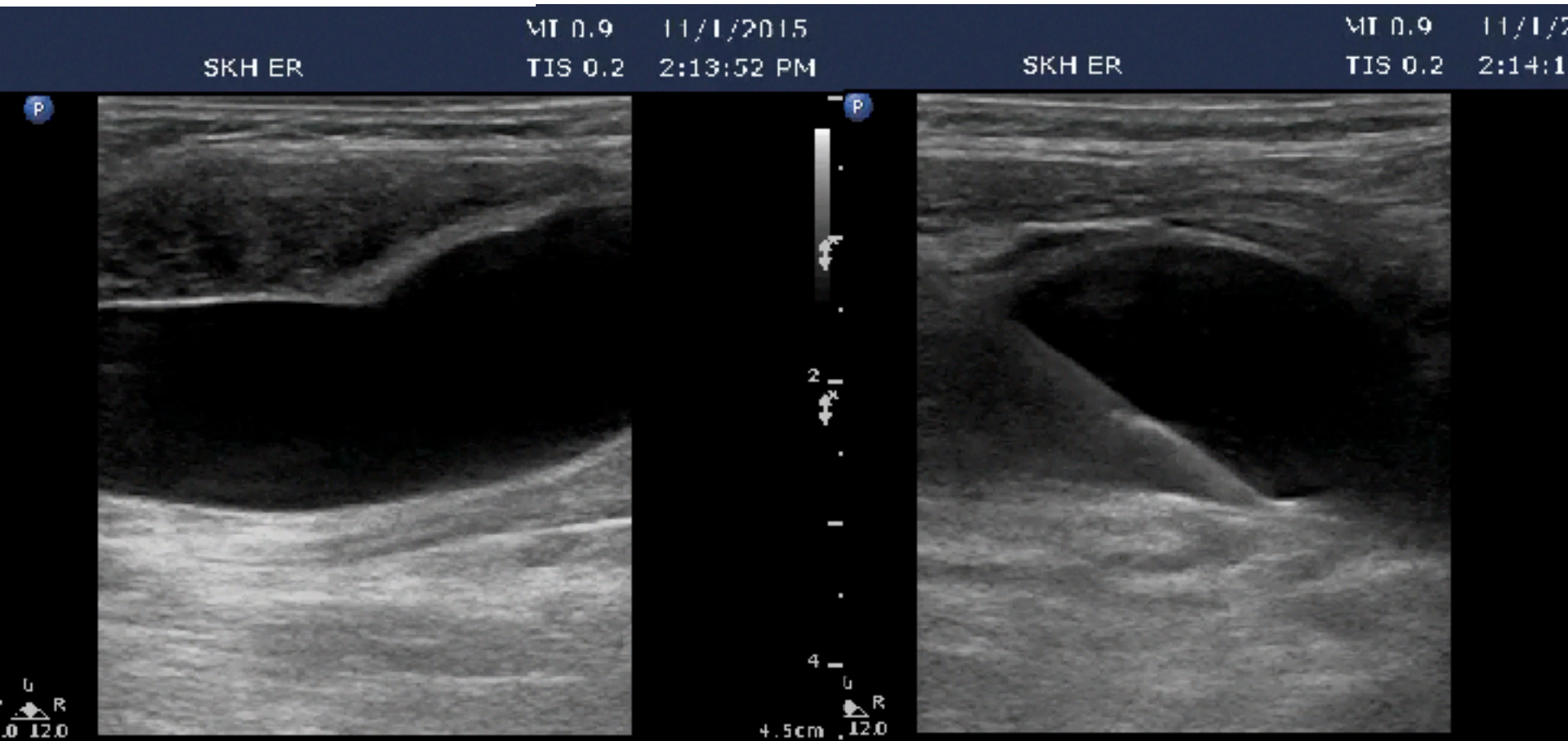


掃描者站頭側

In plane IJV CVC

Guiding needle

Send guidewire

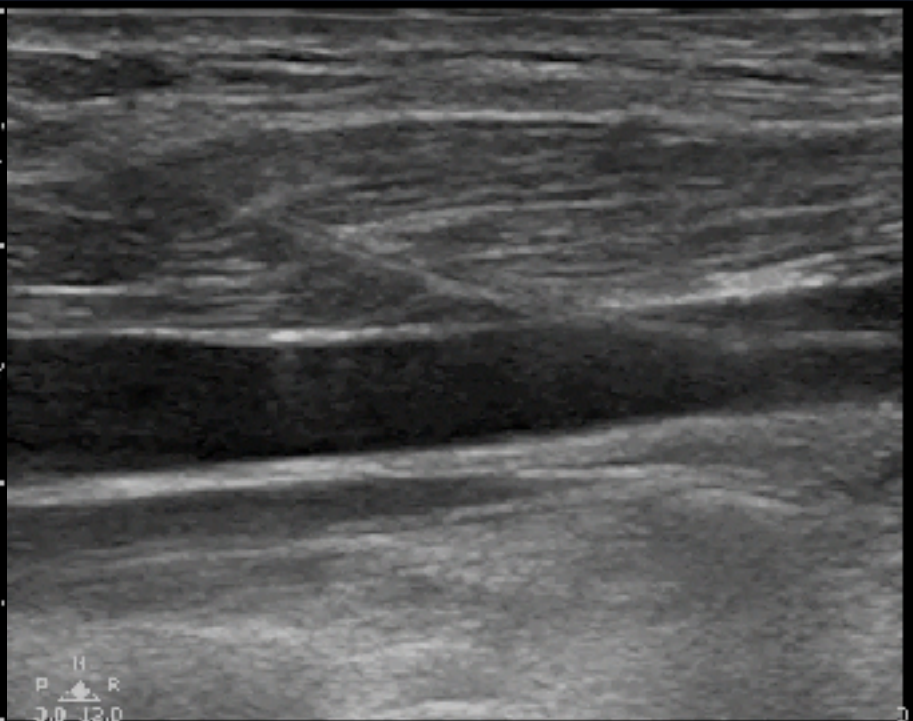
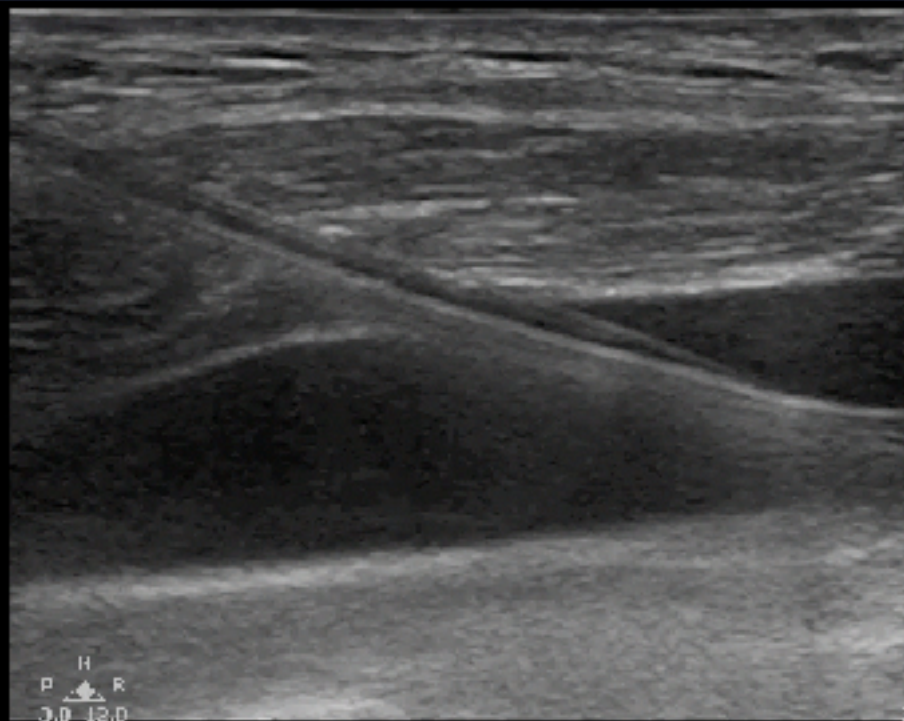


In plane IJV CVC

Remove needle

Send catheter

StudyID-20151102185608 MI 0.8 11/2/2015 StudyID-20151102185608 MI 0.8 11/2/2015
02-185609 SKI LR TIS 0.1 6:58:10 PM 2-185609 SKI LR TIS 0.1 6:58:40



In plane IJV CVC

Remove guidewire

CVC catheter

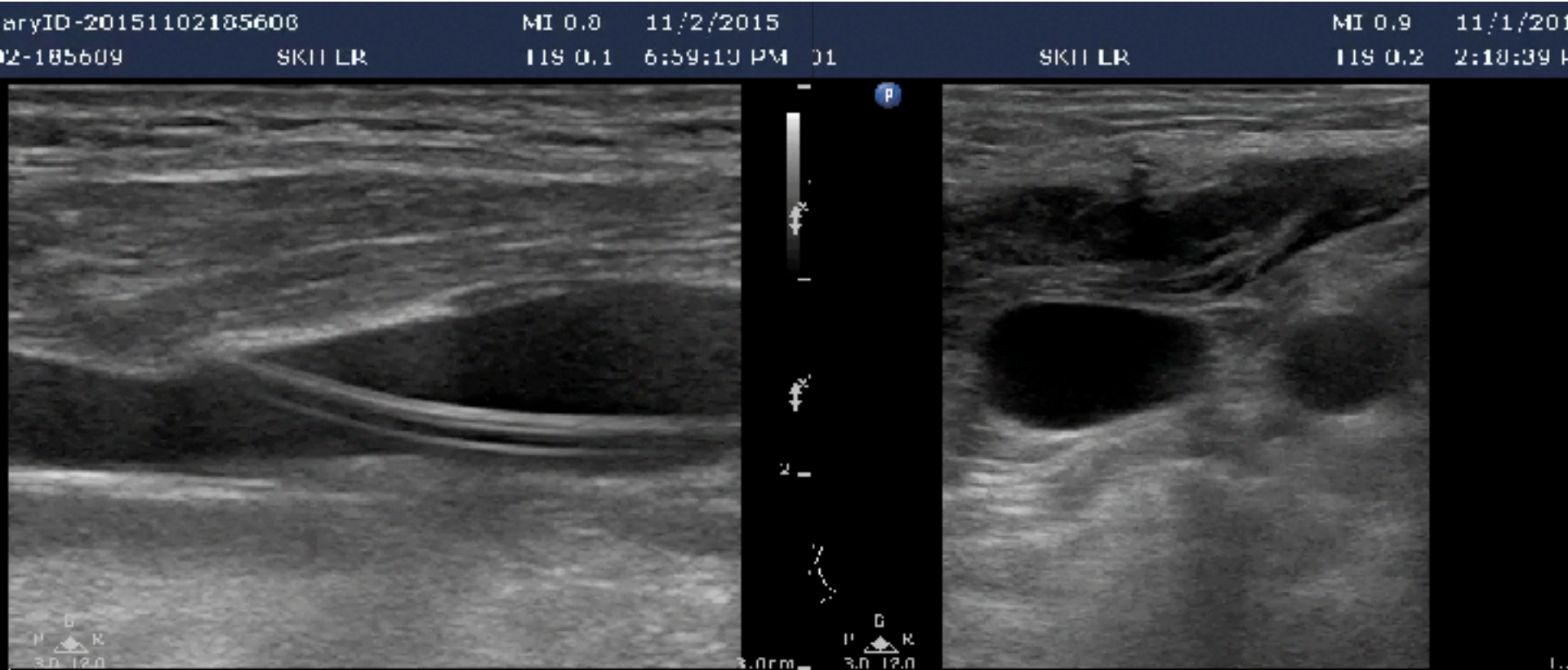
aryID-20151102185608 MI 0.0 11/2/2015 aryID-20151102185608 MI 0.0 11/2/2015
2-185609 SKI LR IIS 0.1 6:59:00 PM 2-185609 SKI LR IIS 0.1 6:59:10 PM



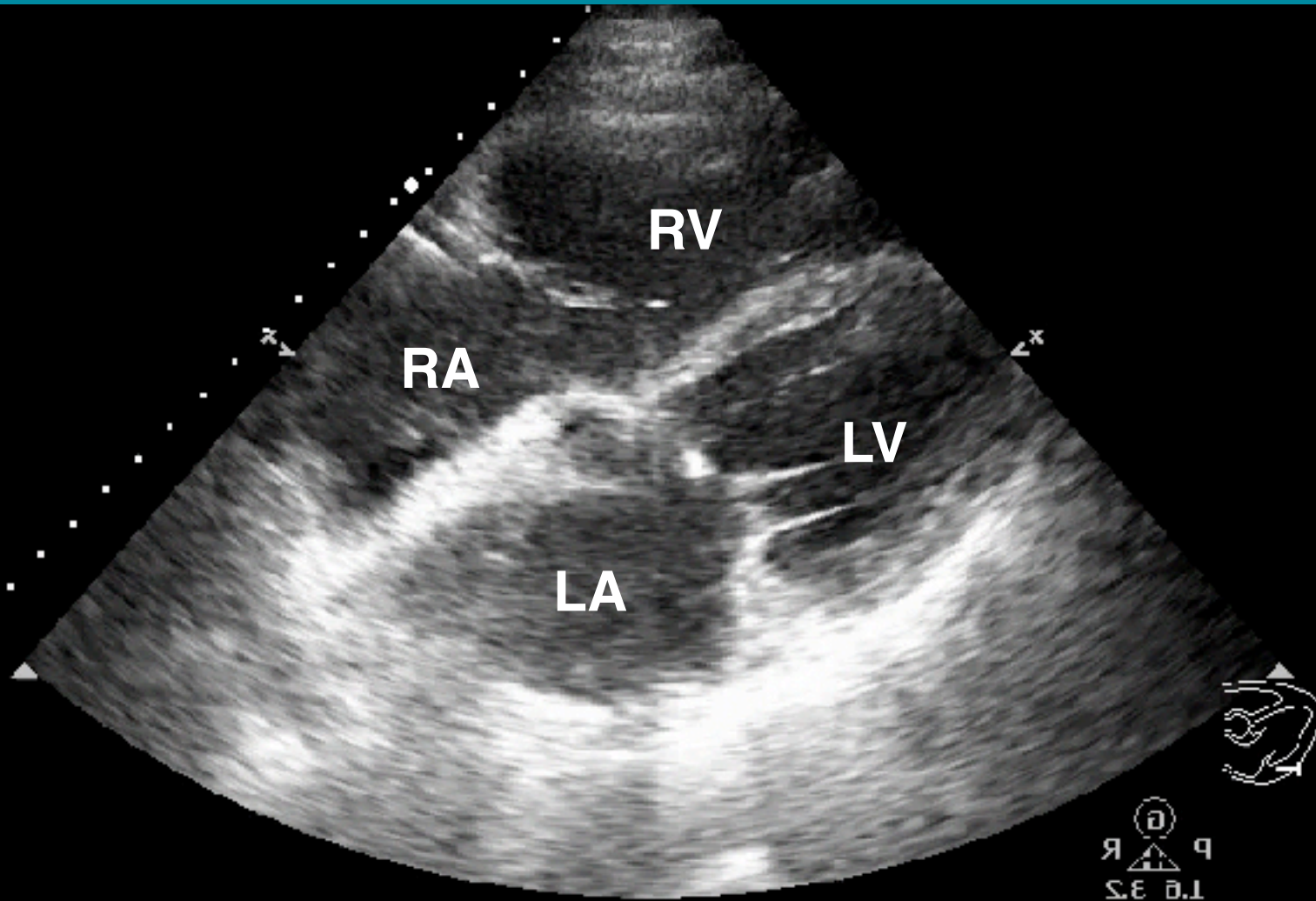
CVC confirmation

CVC (sagittal)

CVC (transverse)



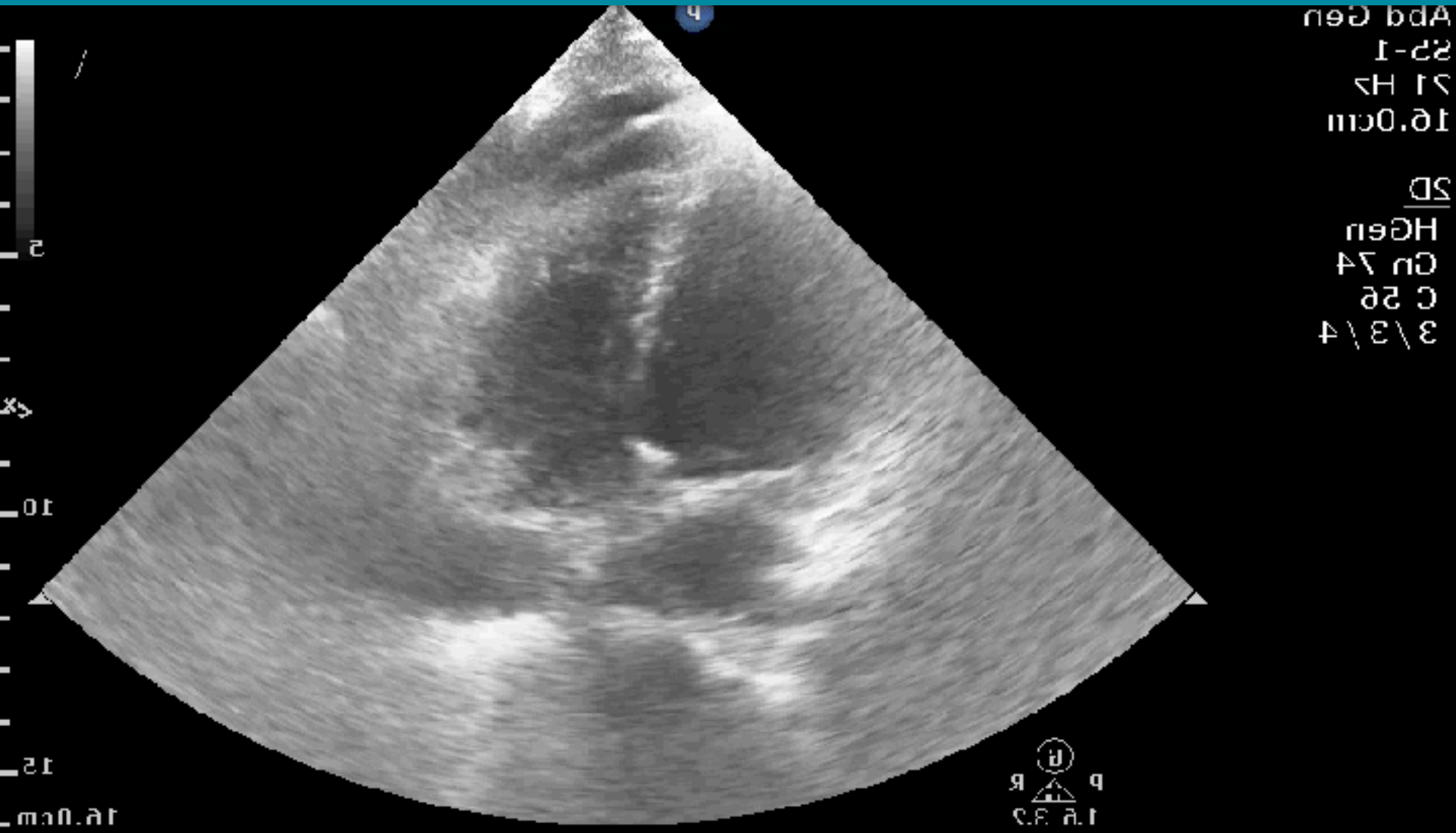
Bubble test / Subcostal 4



3 / 2 / 0
C 20
An 20
HGen
2D
21.0cm
20 Hz
1-0-1

1.0 3.2
R
p
⊕

Bubble test /Subcostal 4





練習定位和入針

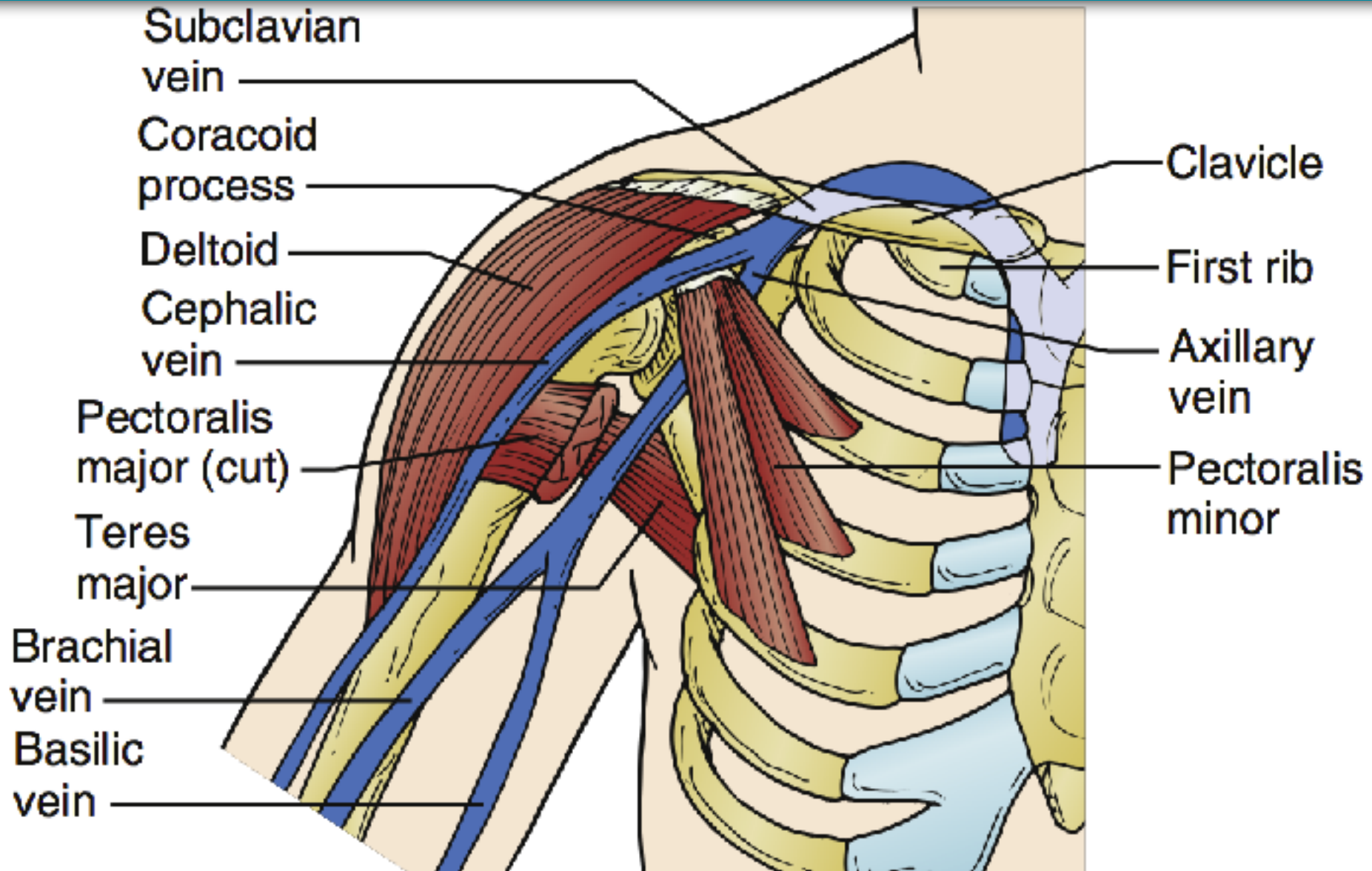


穩定的手要有良好的支撐²⁴

Sterile procedure



Subclavian & Axillary vein



Septic shock, renal abscess, AKI

mindray

sha ng 01498867

17/08/2022

10:15:20

AP 92.5% MI 1.4 TIS 0.1

112 4a Carotid



M7

B1

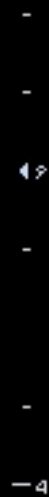
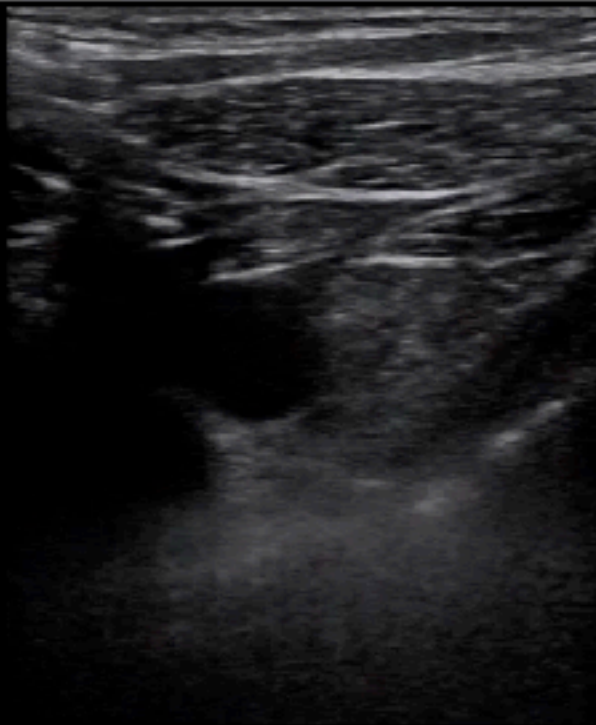
FH 11.0 / D4.6

G50 / FR42

H'5 / DR127



M



1/204



14:28

Septic shock, renal abscess, AKI

mindray

shang 01199867

17/08/2022

11:16:00

AP 92.5% MI 1.4 TIS 0.1

112 4a Coraid



M7

B1

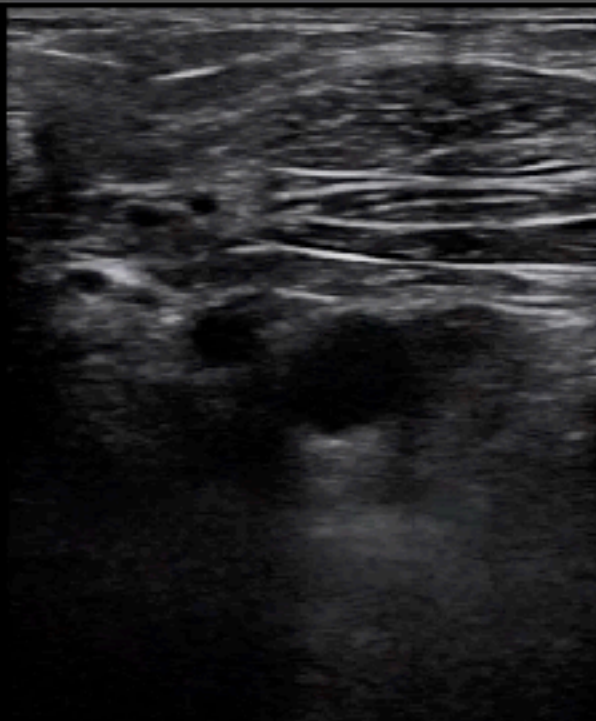
FR11.0 / D4.6

G50 / FR42

115 / DR127



M

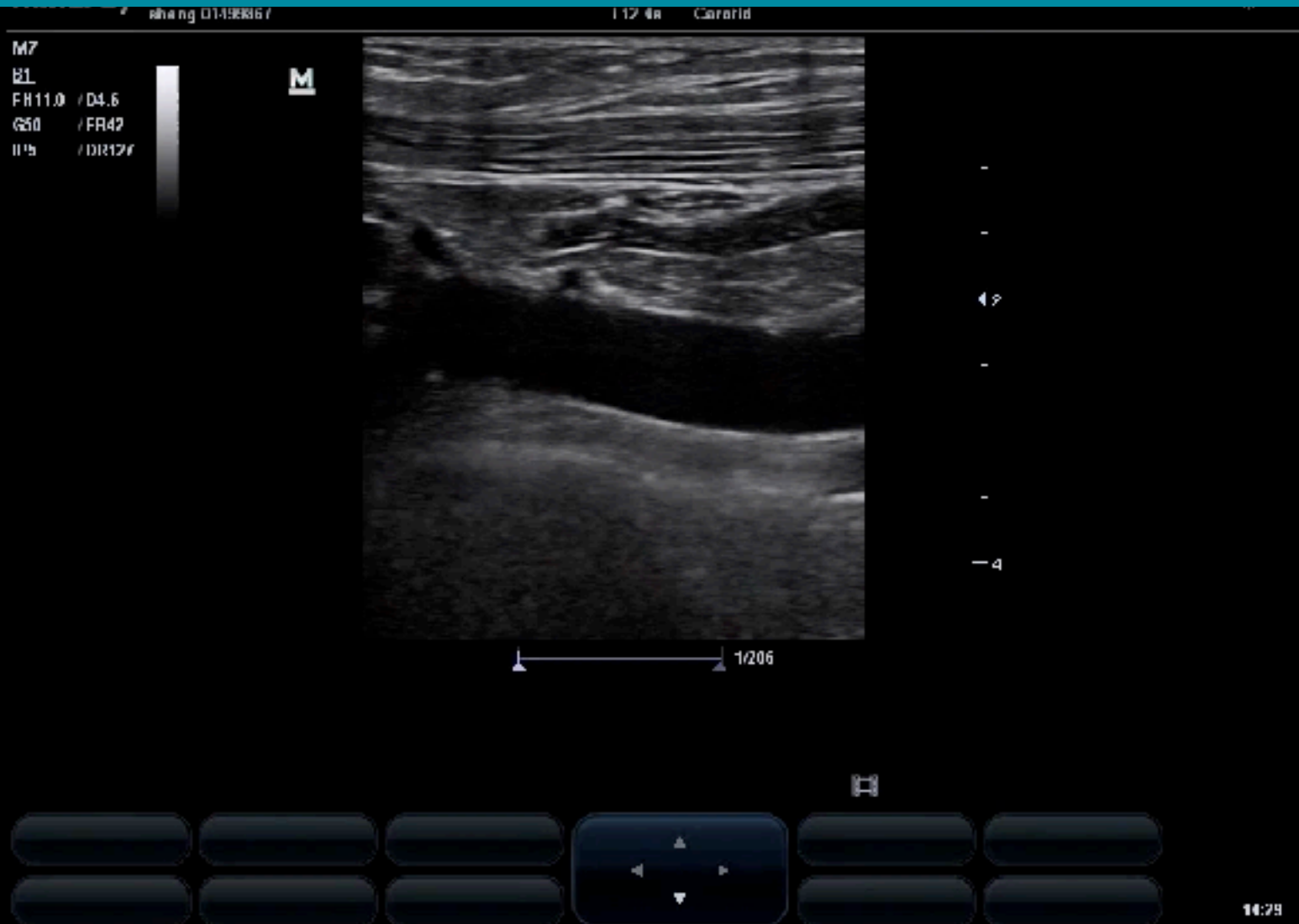


-
-
-4
-
-
-4

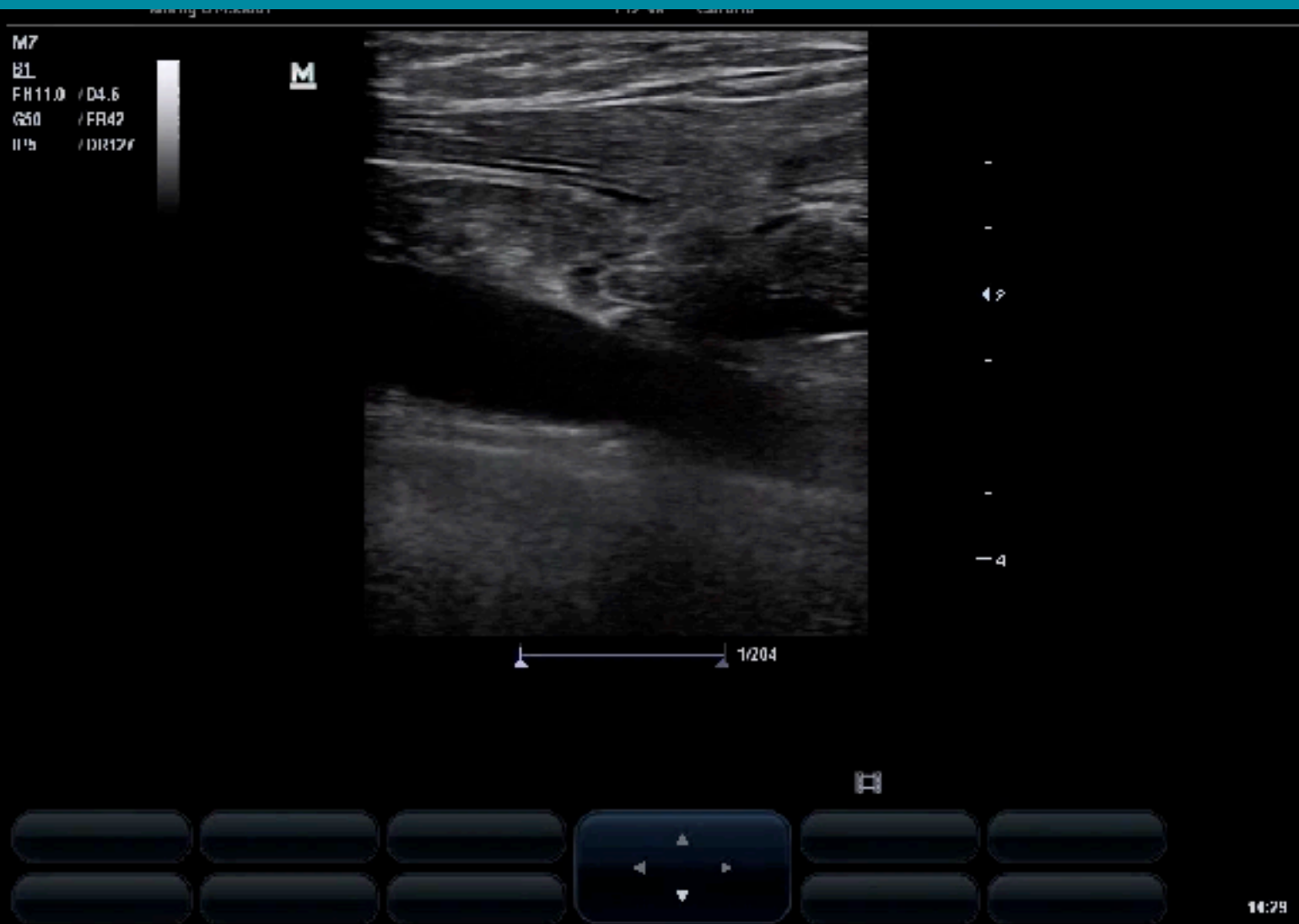
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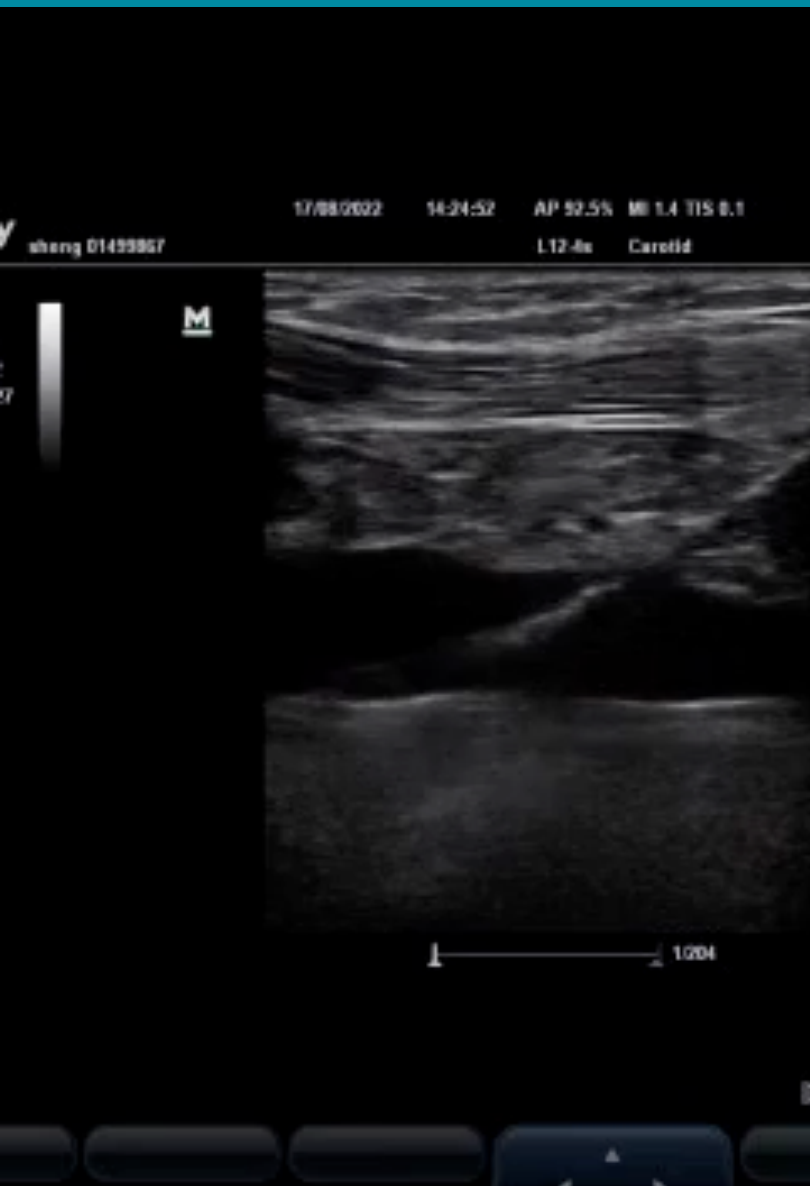
Septic shock, renal abscess, AKI



Septic shock, renal abscess, AKI

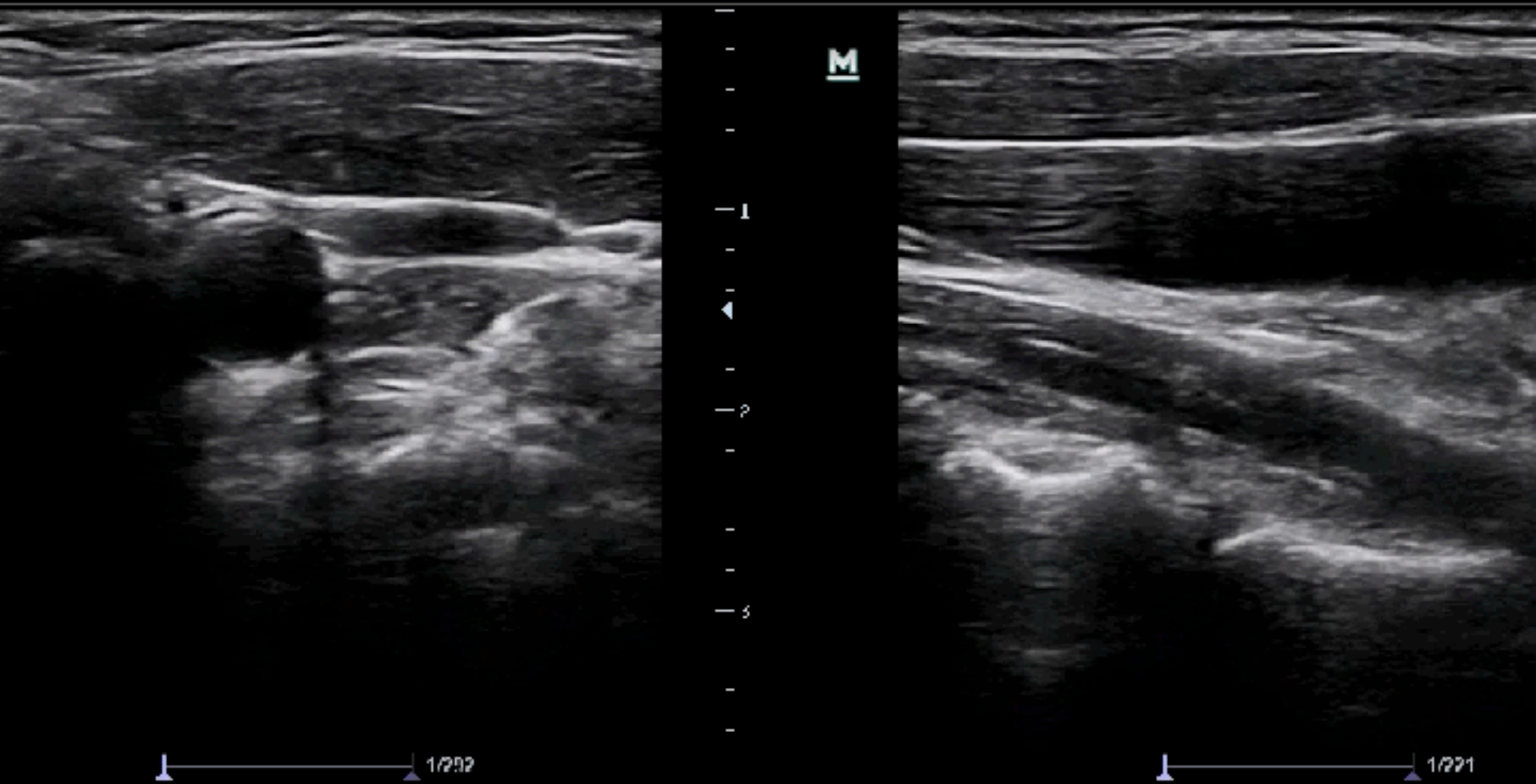


Septic shock, renal abscess, AKI



CVC for septic shock

09/08/2022 08:27:15 AP 91.2% MI 1.0 TIS 0.1 L12 4s CVC
SIDU CHLN 14951190
09/08/2022 08:27:55 AP 91.2% MI 1.0 TIS 0.1 L12 4s CVC



CVC for septic shock

mindray

YIAN SHU CHEN 14951190

09/08/2022

08:36:30

AP 91.2% MI 1.0 TIS 0.1

L12.4s

CVC

M7

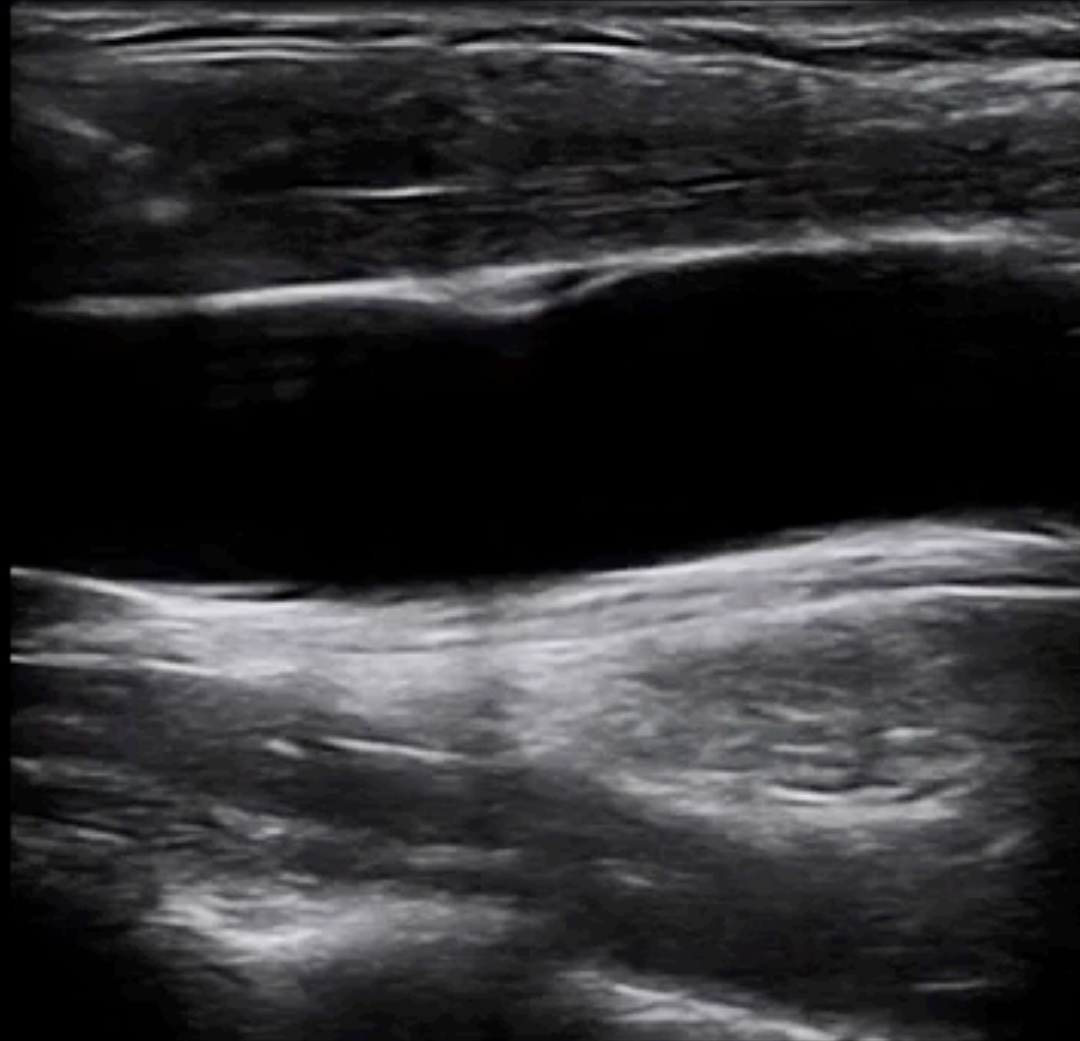
B1

F10 /D3.7

G52 /FR43

IP5 /DR95

M



1
2
3

CVC for septic shock

M7

B1

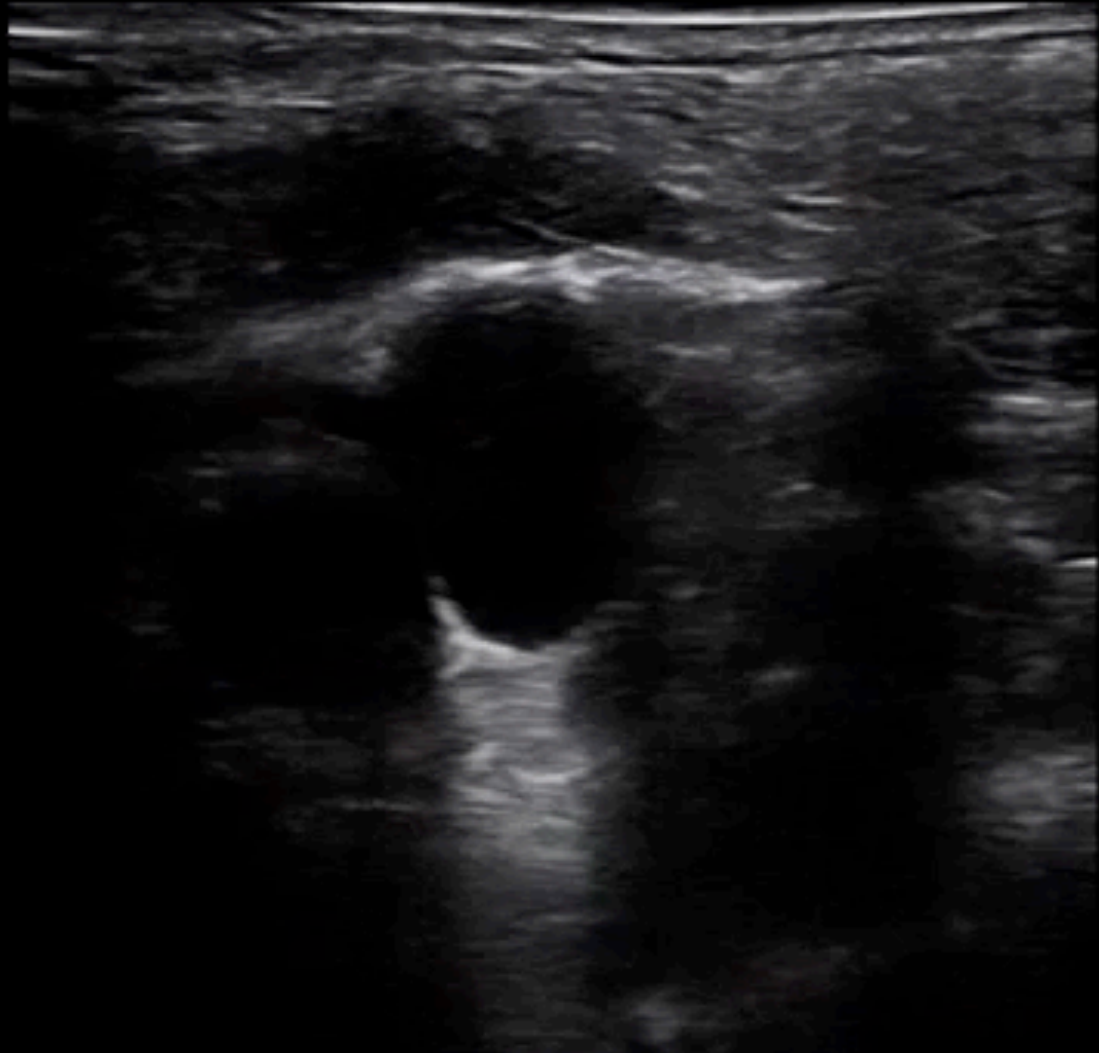
F10 /D3.7

G52 /FR43

IP5 /DR95



M



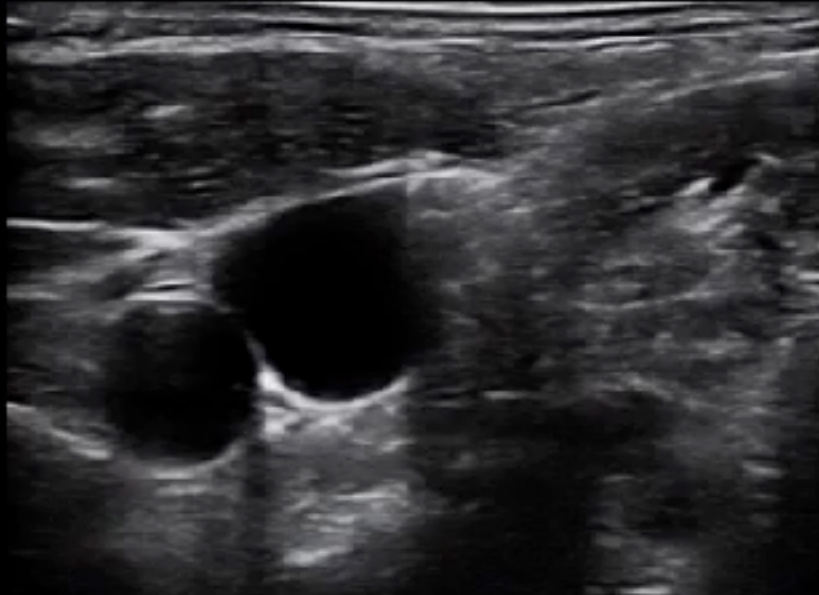
1
2
3

1/639

CVC for septic shock

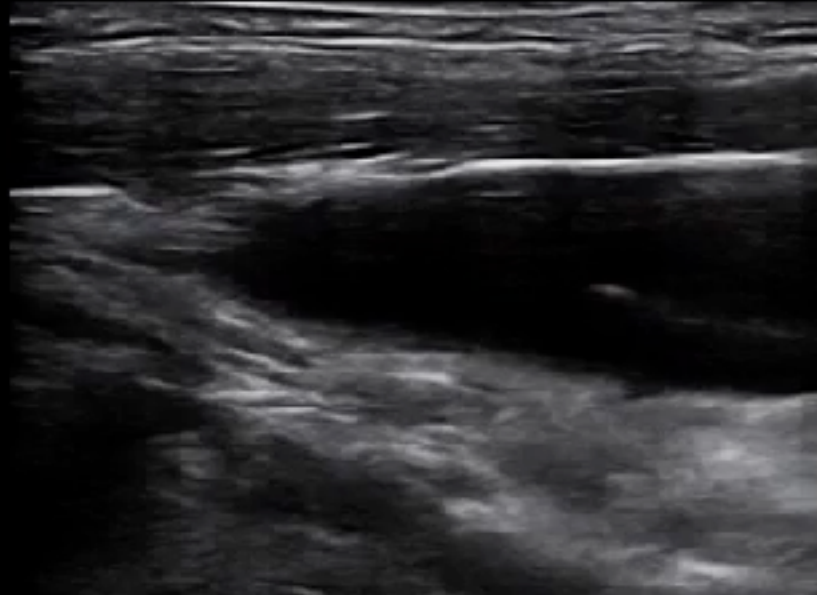
14951190

L12.4s CVC



EN 14951190

L12.4s CVC



mindray

YUAN SHI CF-EH 14951190

09/09/2022

10:11:35

AF 51.2% MI 1.3 TIS 0.1

L12.4s CVC

MF

RE

F10

G52

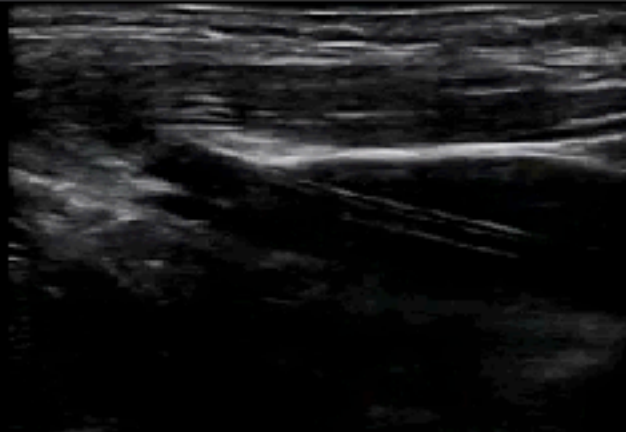
IPS

103.7

1.000

1.000

M





Needling (Off v.s. In) on phantom

Needling (Off v.s. In) on CVC

Internal jugular vein scan

Subclavian & axillary vein scan