Arterial lines & REBOA

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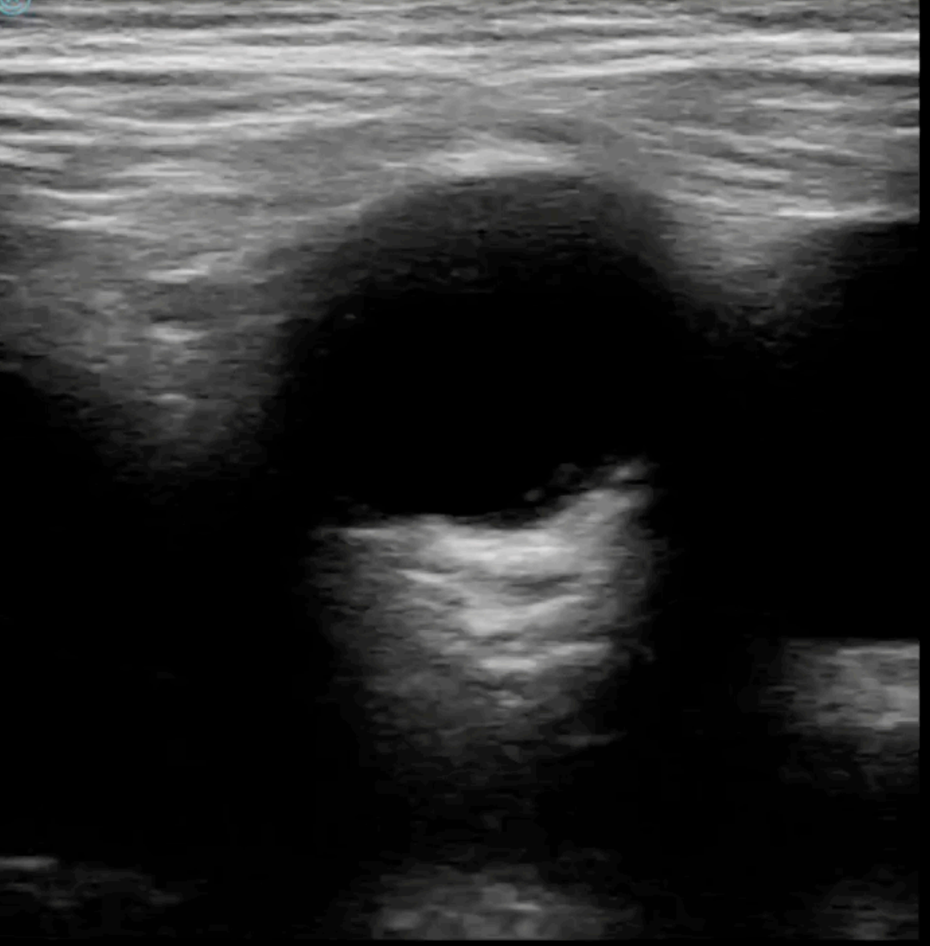
先進與革新急症技術中心 / Advanced & Revolutionary Technology center



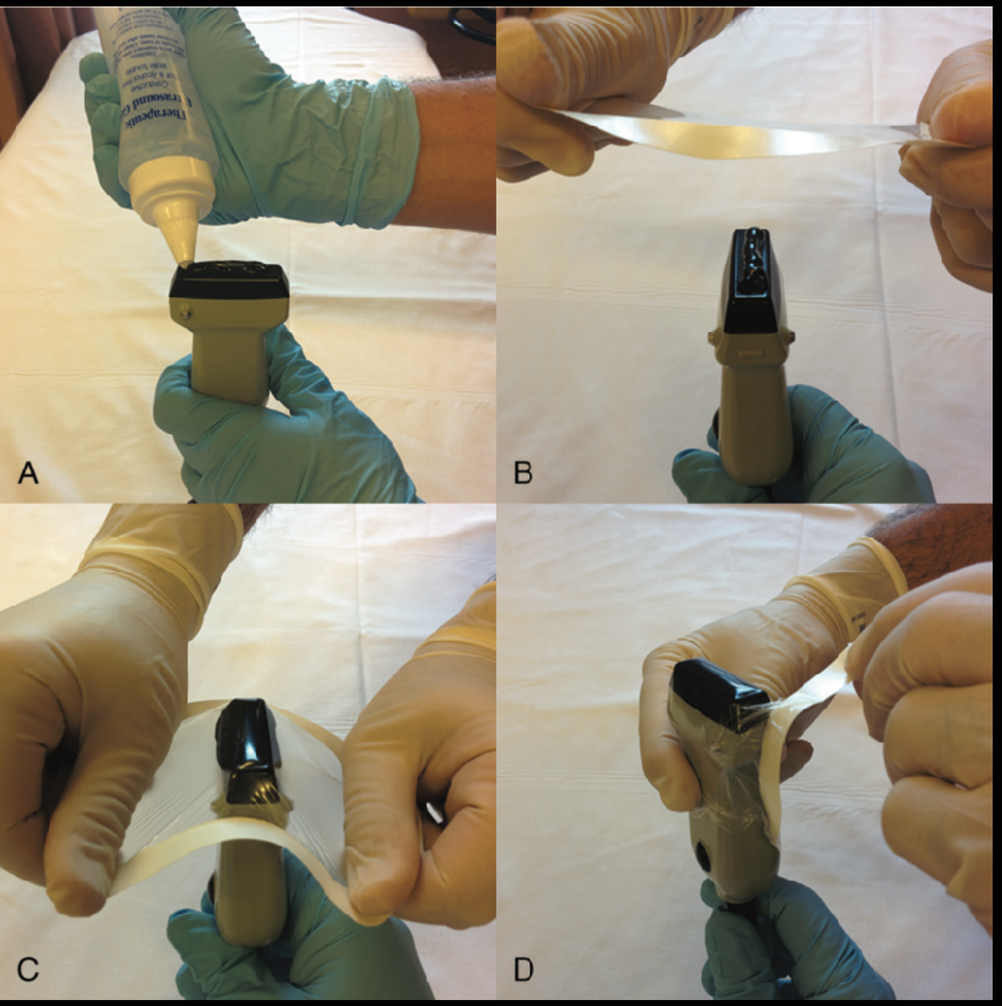
CPR Quality

BP monitoring

ECMO

REBOA

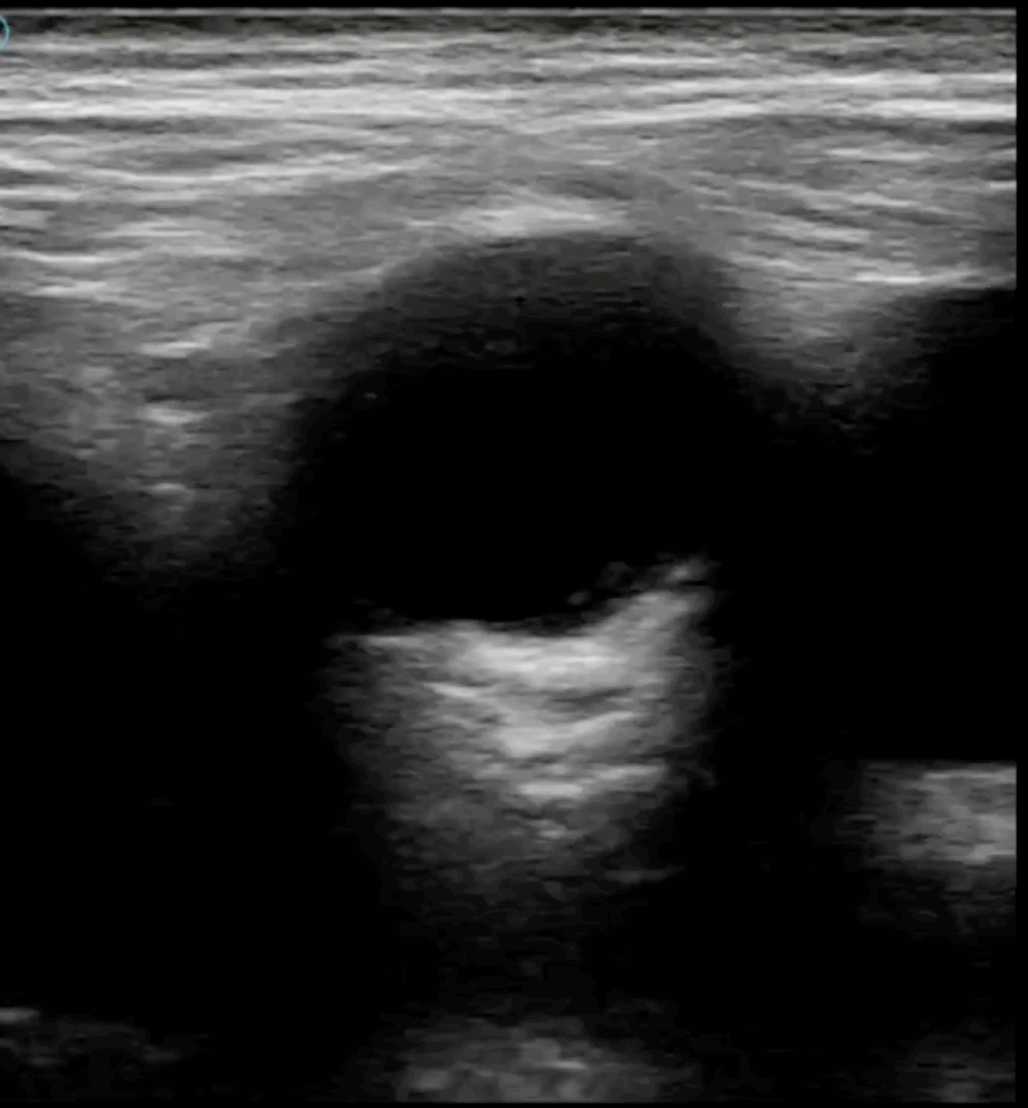
A lines in ER

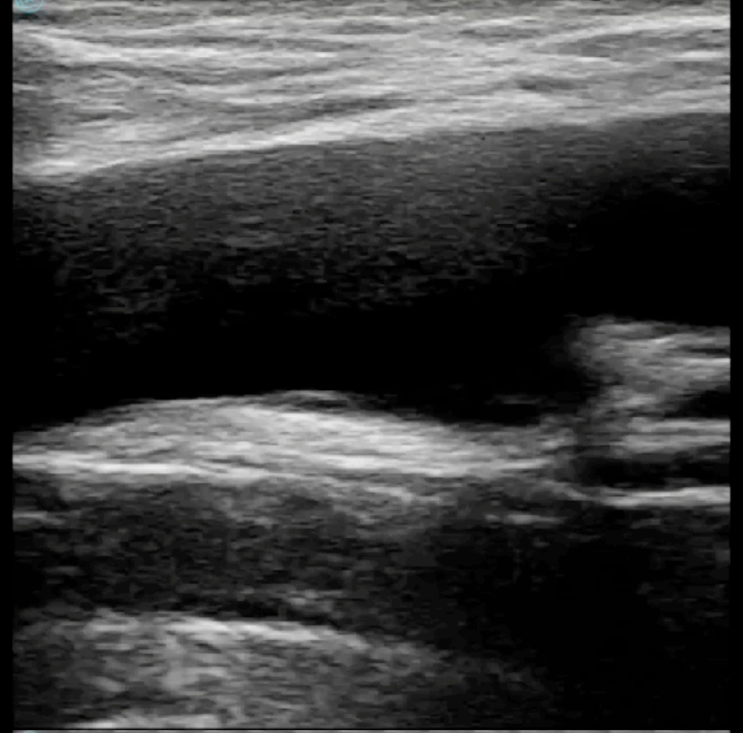


Reg Anesth Pain Med 2015;40: 82–84

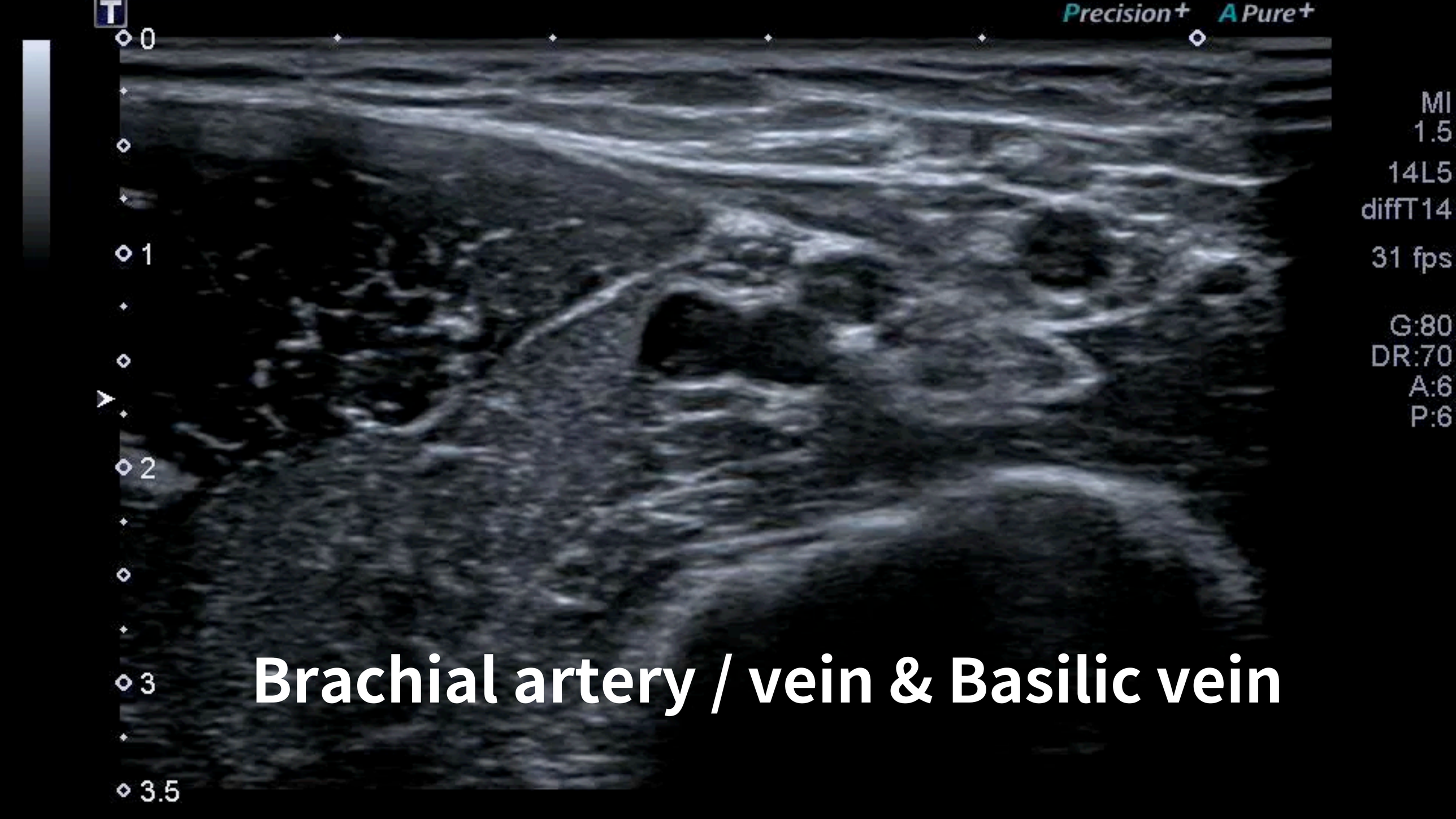
US - guided central lines

CFA / CFV

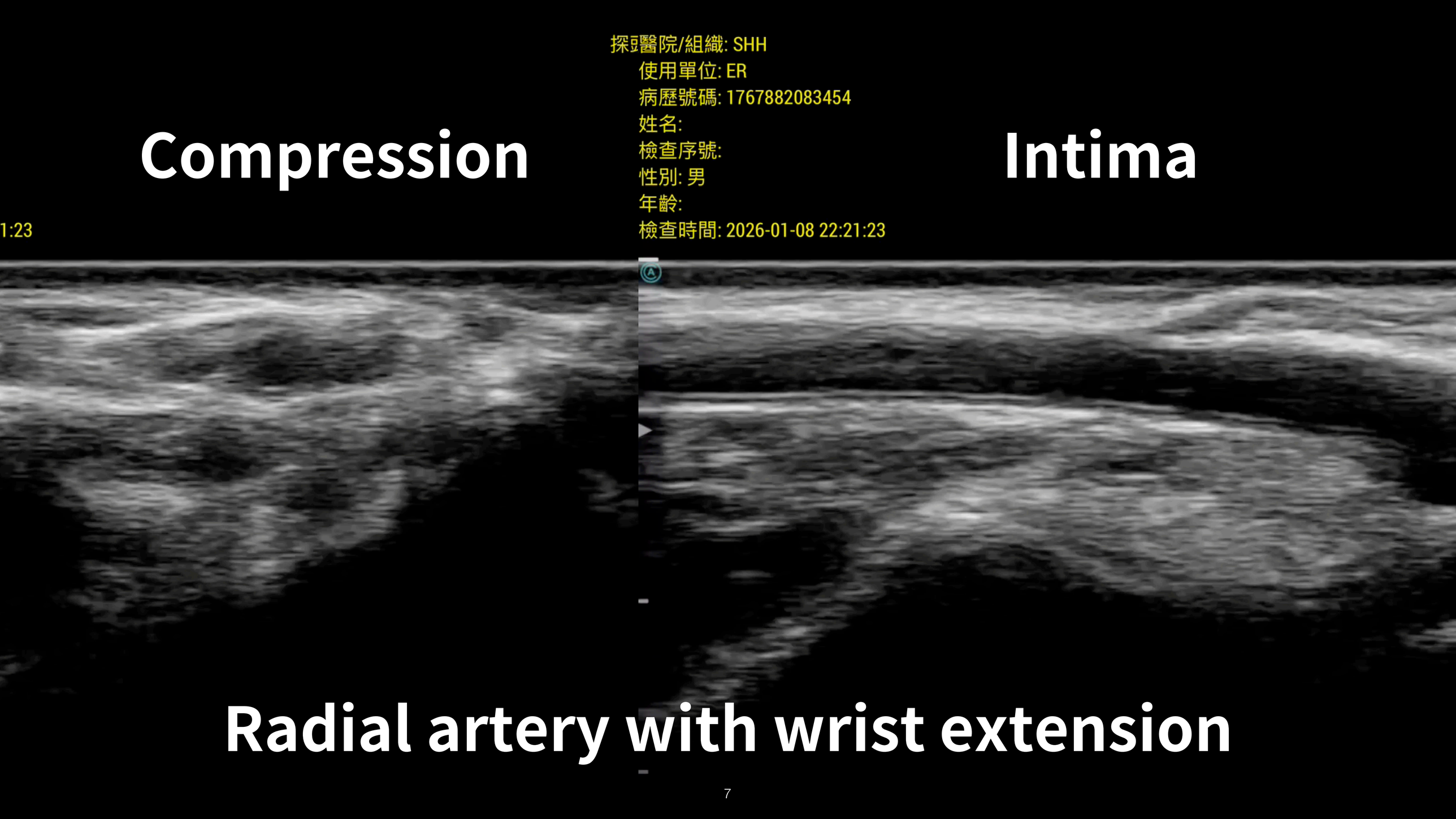




Brachial artery / vein & Basilic vein



Brachial artery / vein & Basilic vein


Compression
Intima
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姓名:
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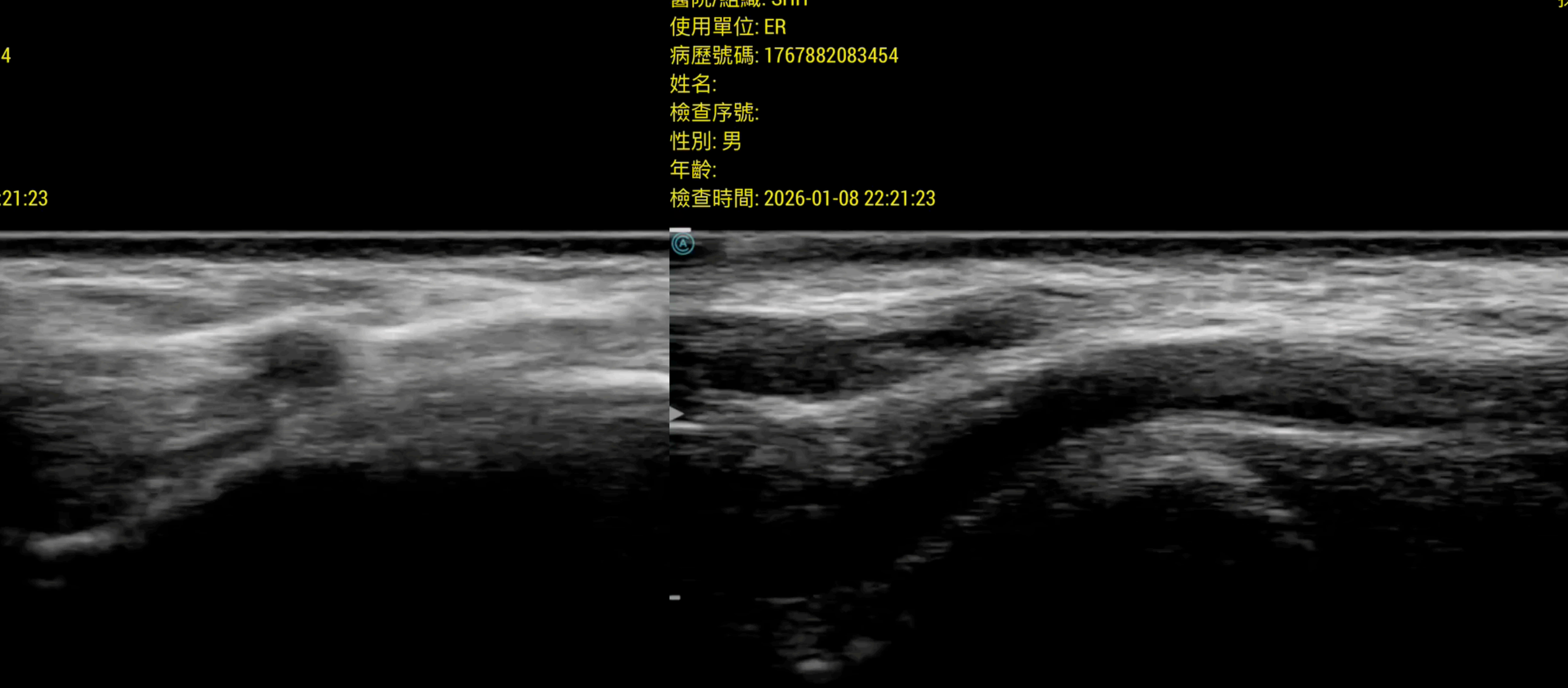
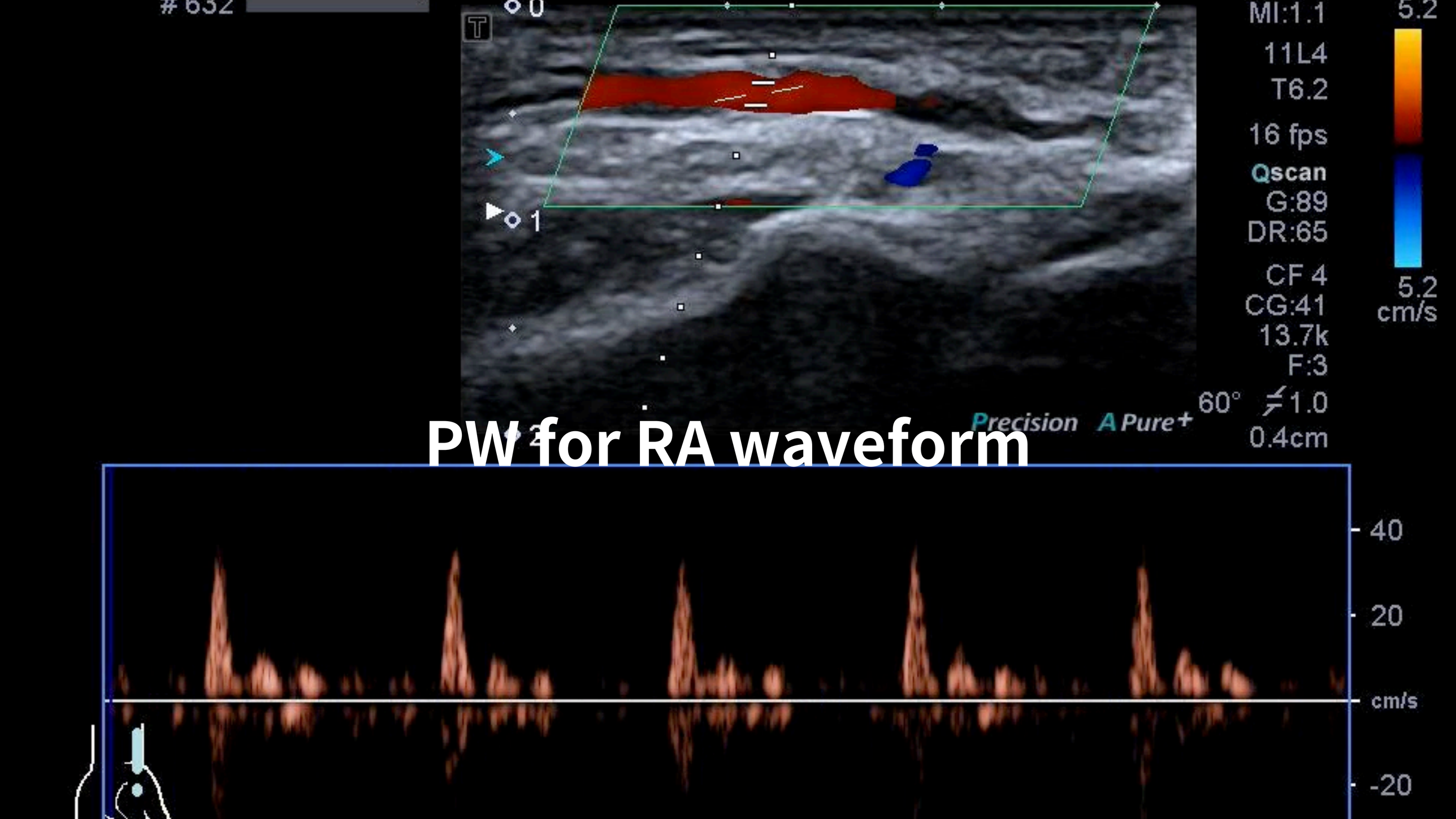
年齡:
檢查時間: 2026-01-08 22:21:23
Radial artery with wrist extension



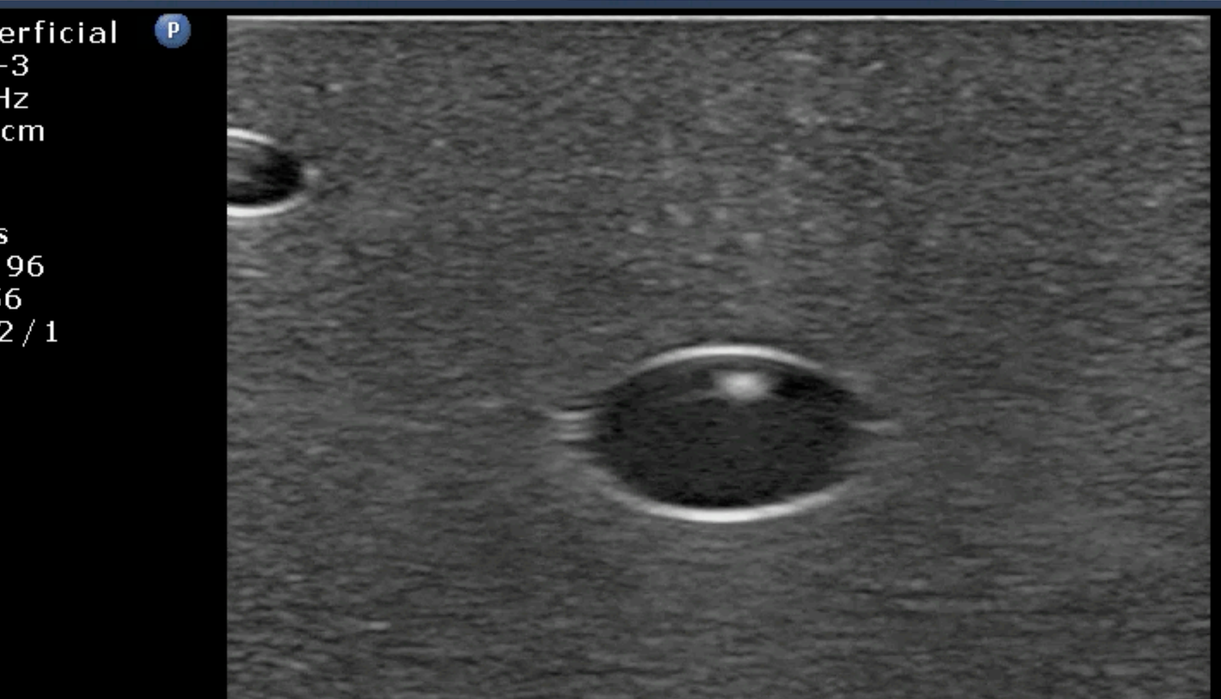
Radial artery for PCI

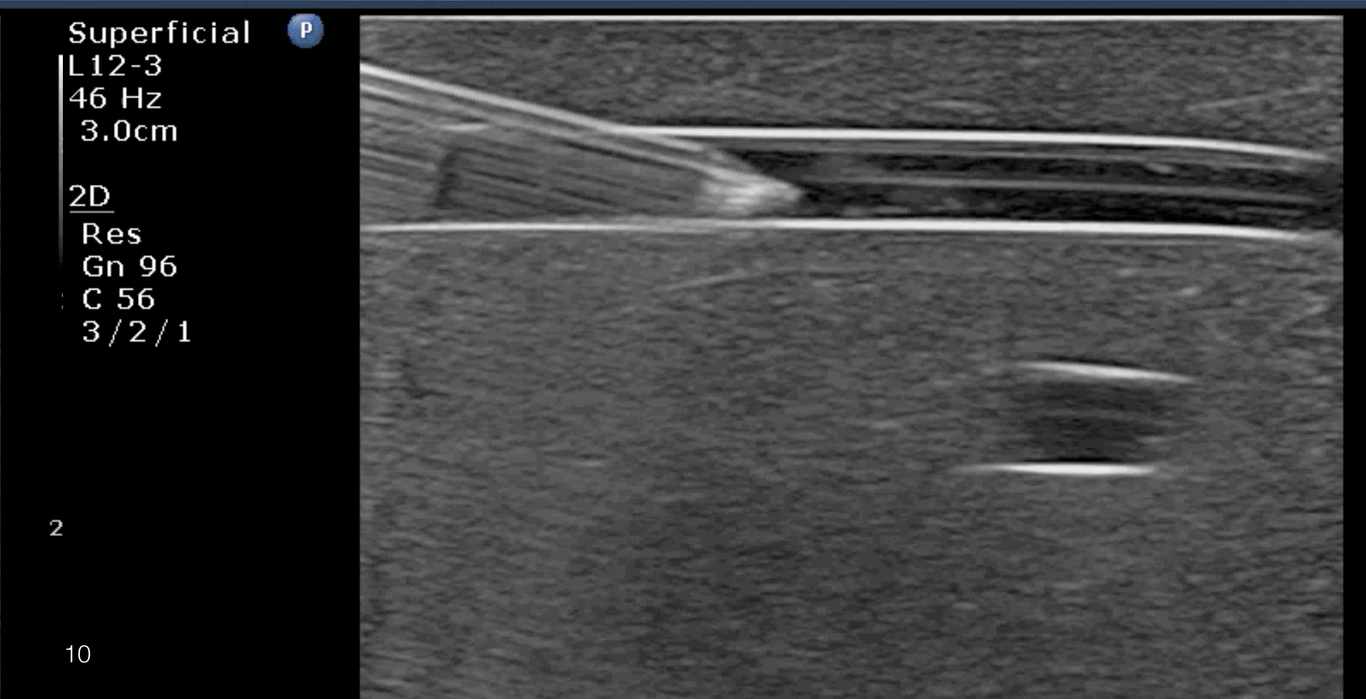
PW for RA waveform



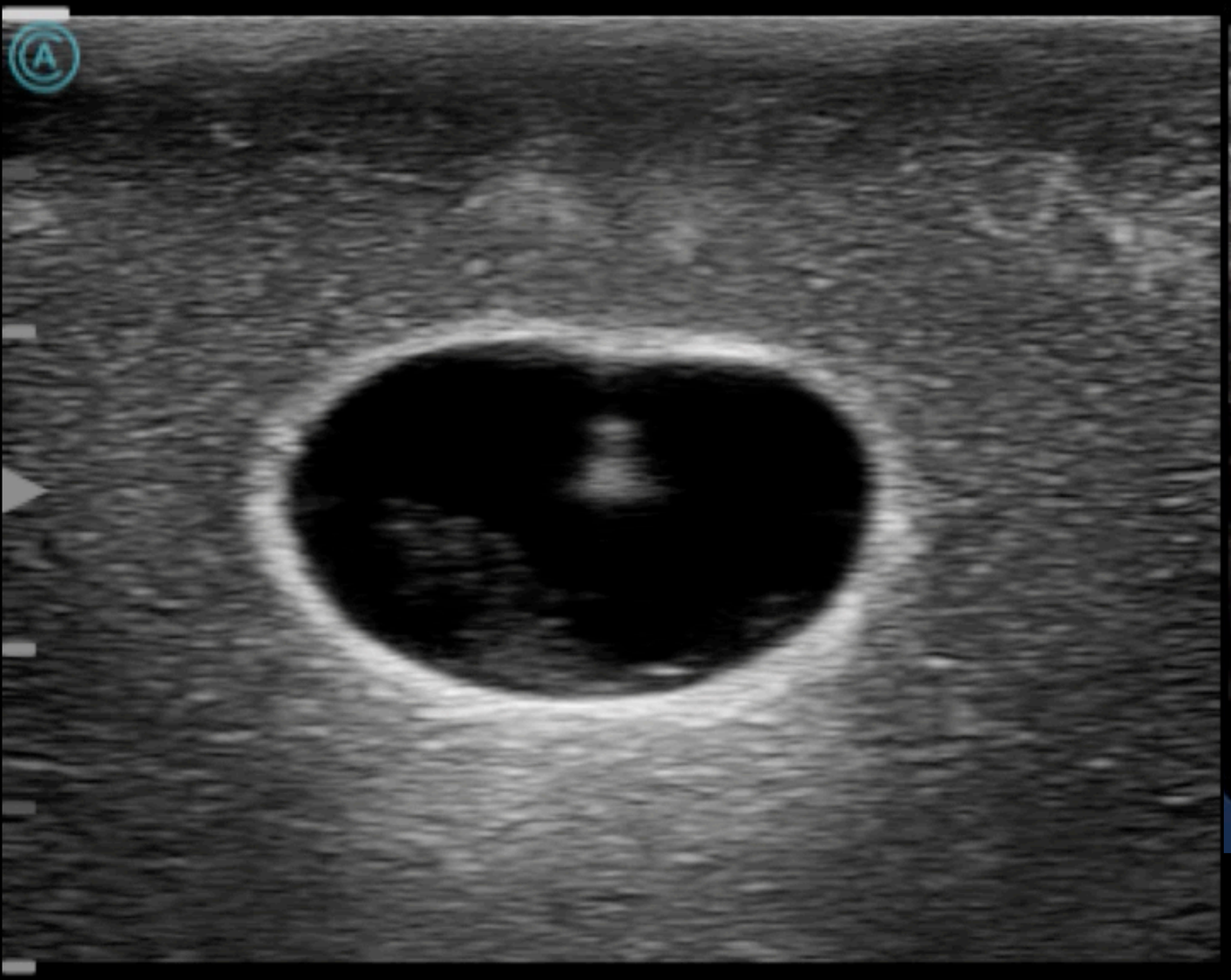

Off - plane


In - plane

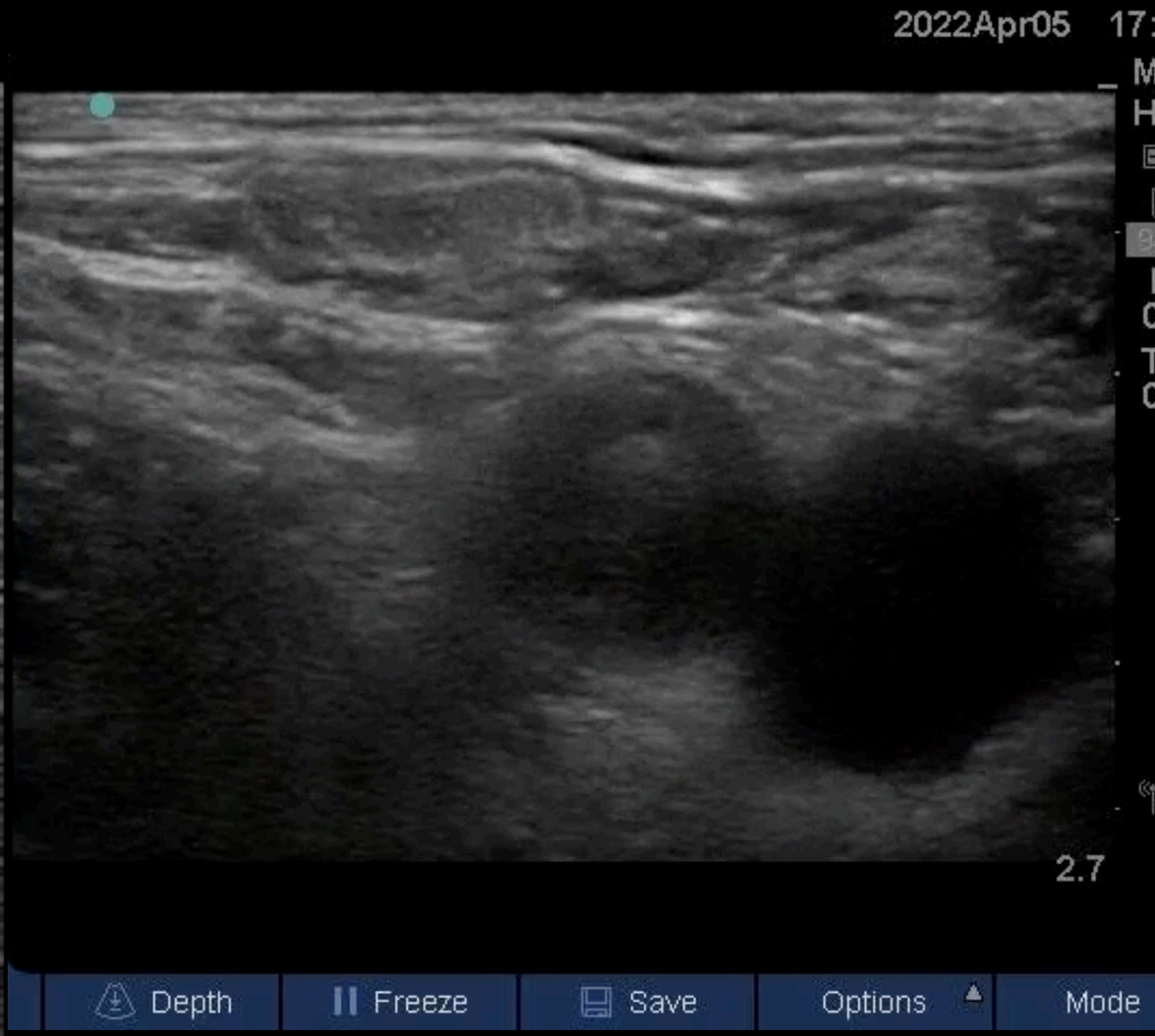

erficial
-3
Hz
cm
s
96
6
2/1

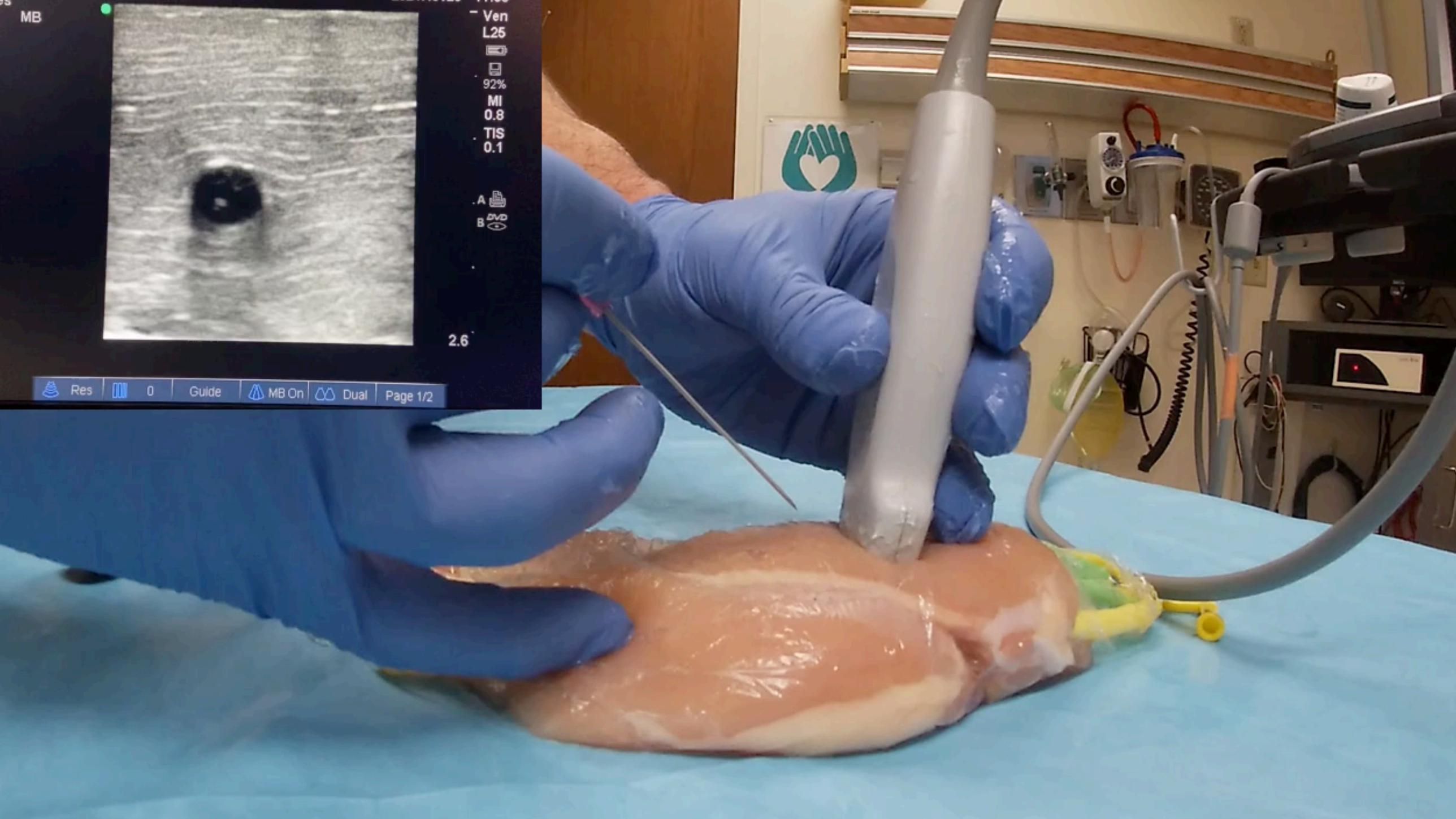

Superficial
L12-3
46 Hz
3.0cm
2D
Res
Gn 96
C 56
3/2/1
2

你想像的入針



你實際的入針




MB
Ven
L25
92%
MI
0.8
TIS
0.1
A
B
DVD
2.6
Res
0
Guide
MB On
Dual
Page 1/2

JVA | The Journal of Vascular Access

Editorial

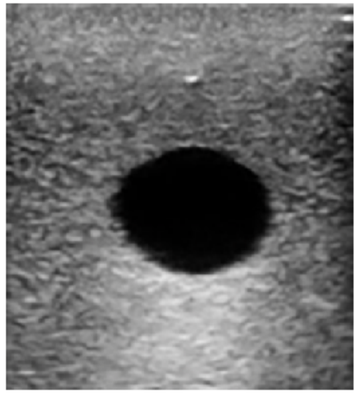
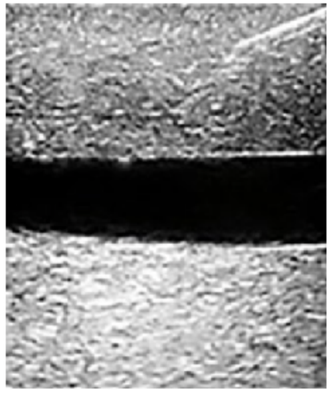
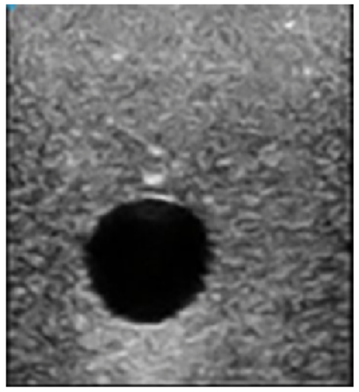
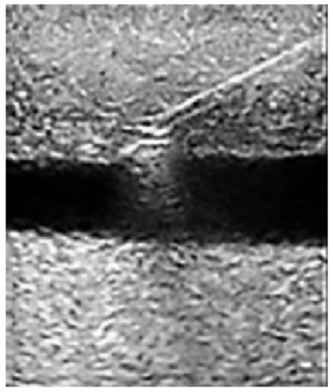
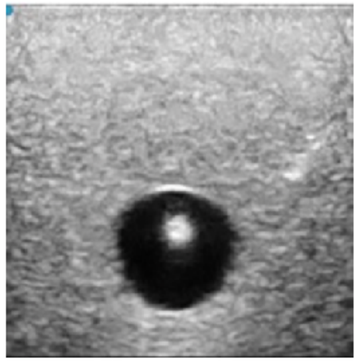
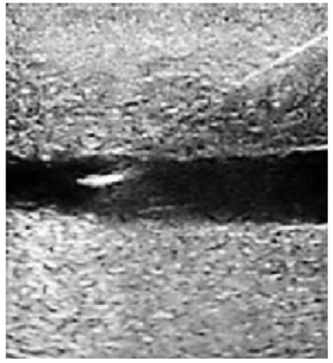
The Journal of Vascular Access
1–7

DOI: 10.1177/11297298251334888
journals.sagepub.com/home/jva
Sage

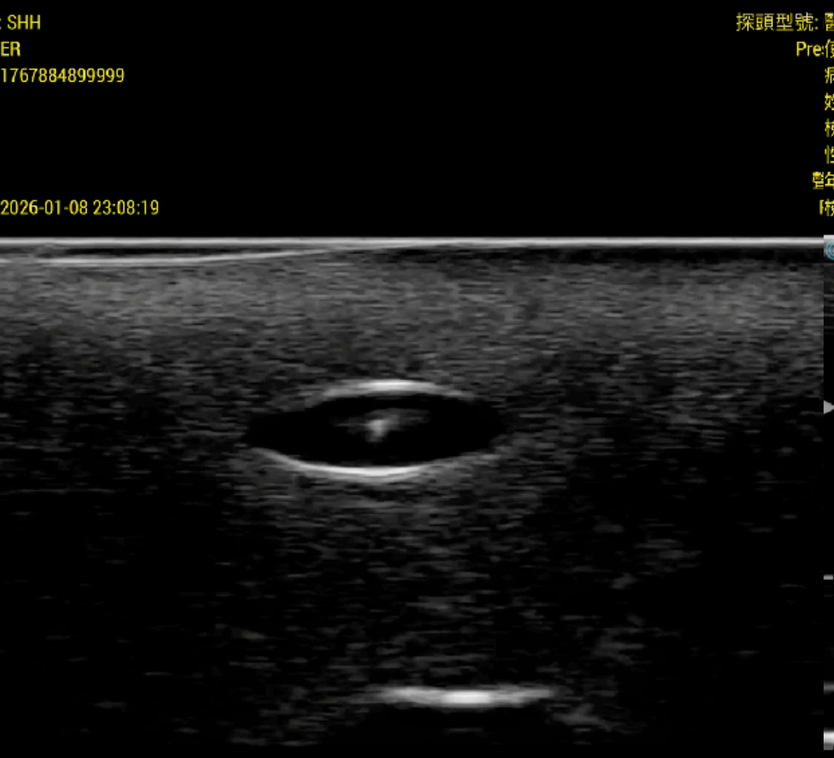
The 3 Stations of the Needle: A systematic approach for ultrasound guided venous and arterial puncture

Matthew Ostroff[1] and Nancy Moureau[2,3]

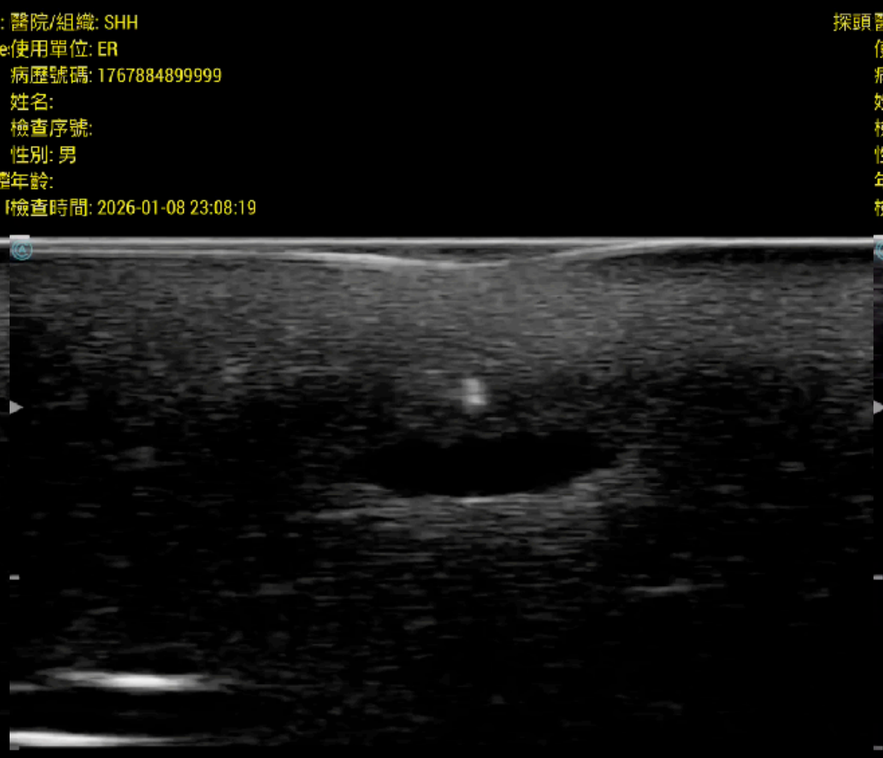
Table 1. 3-Stations of the Needle.

Stations of the needle	Transverse (Short axis)	Longitudinal (Long axis)	Description	Key points
1 淺入針			Identification of the needle tip upon skin entry to the subcutaneous tissue	Procedural time out confirming needle trajectory and depth of vessel before advancement of the needle
2 抬針尾			Navigation of needle tip from the subcutaneous tissue to outer wall of target vessel	Procedural time out for assessment of the surrounding structures of the intended target vessel for safe needle navigation using the PN-T
3 找針尖			Vessel confirmation (arterial or venous) and needle advancement through vessel walls	Procedural time out before vessel puncture and P-NT for vessel purchase

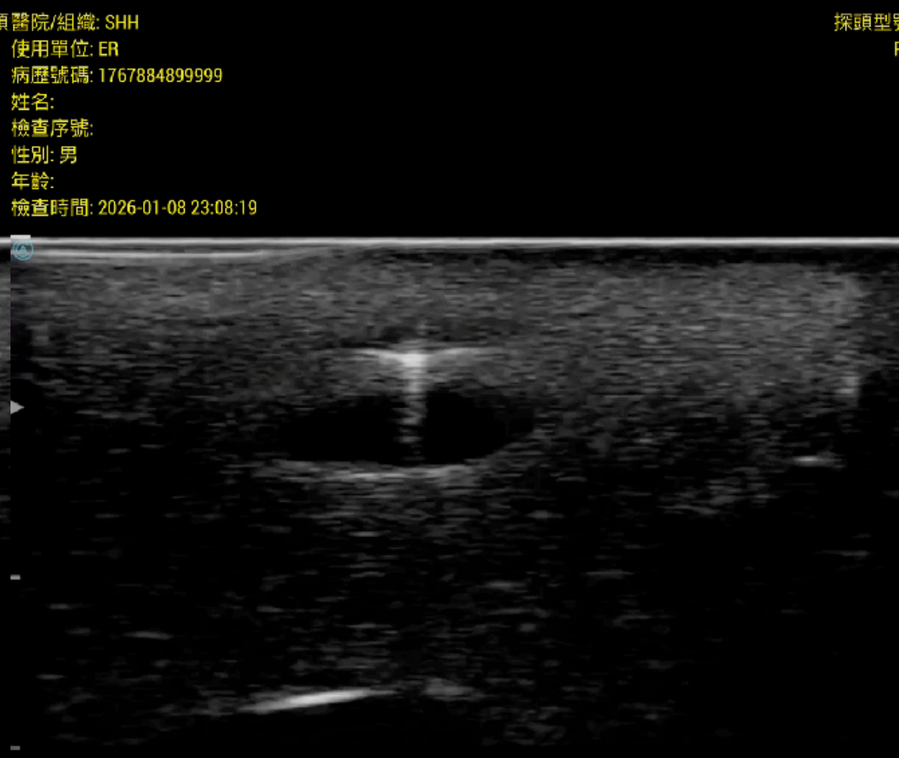
Station 3



Station 2



Station 1

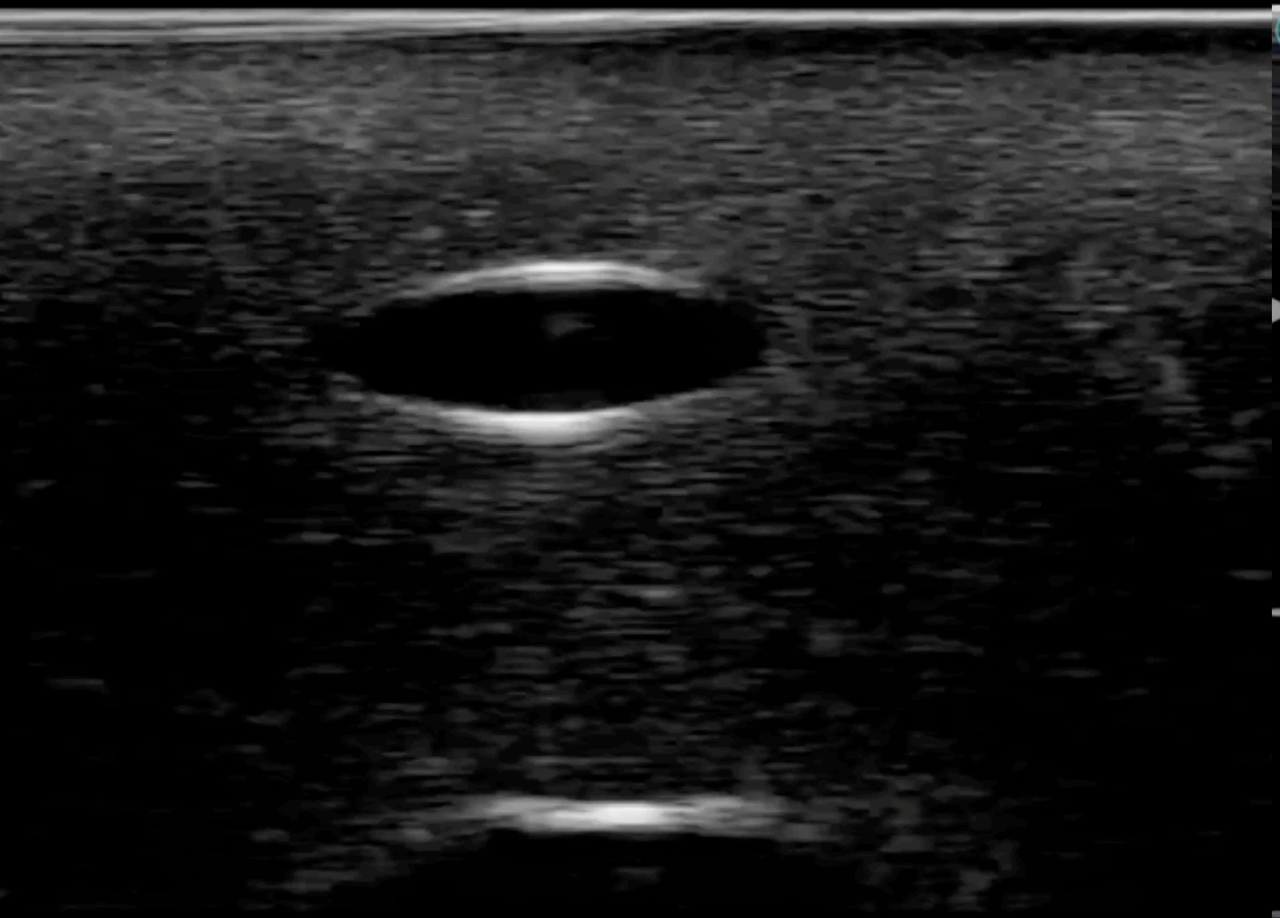


P-NT : probe needle technique

4899999

穿過皮膚的干擾

-08 23:08:19



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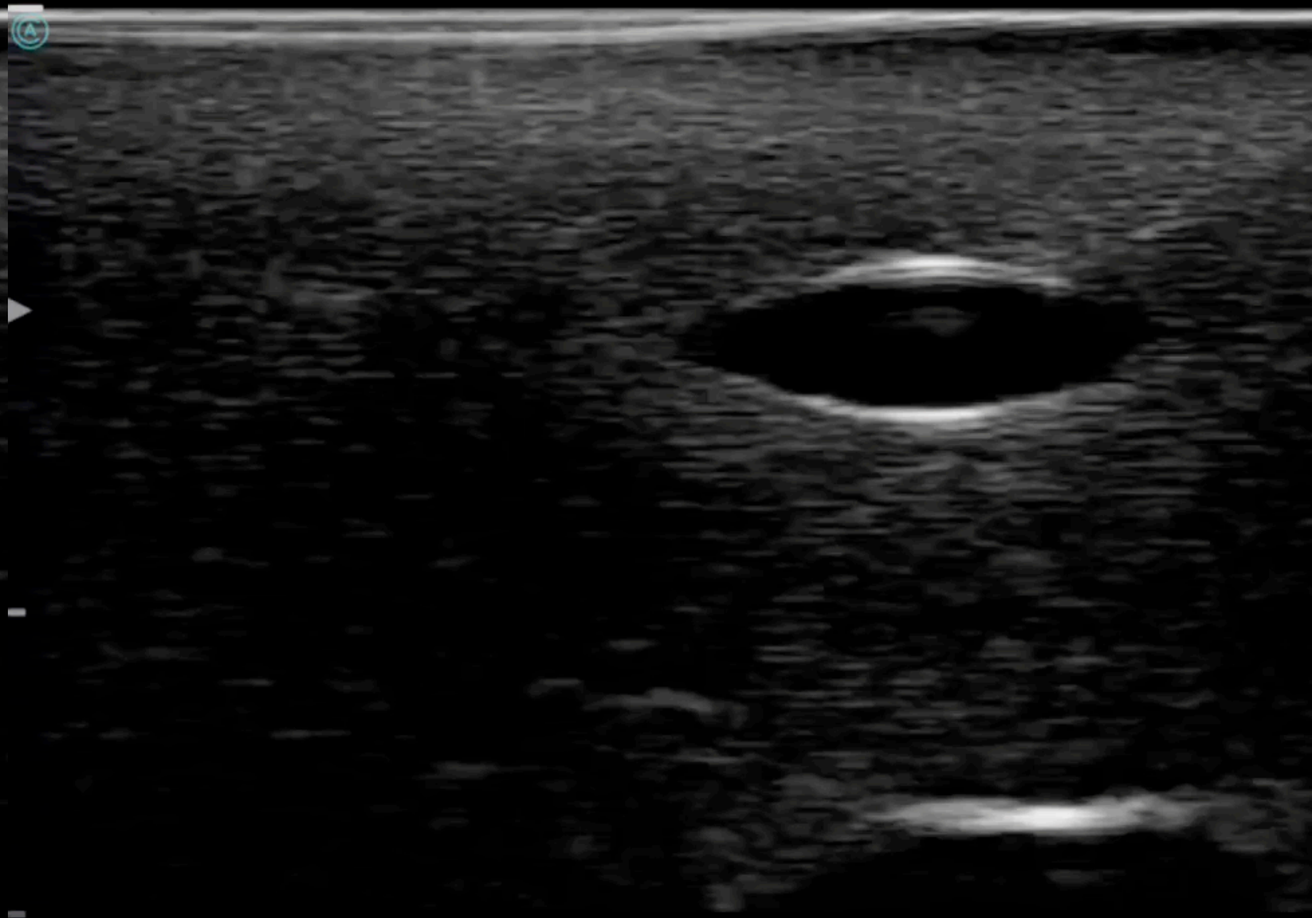
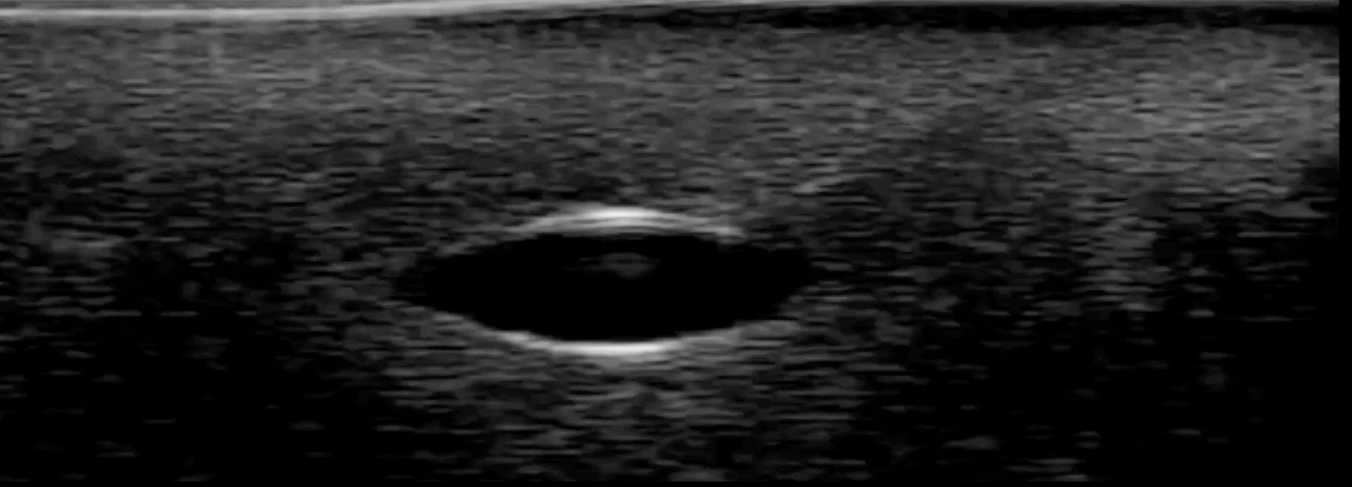
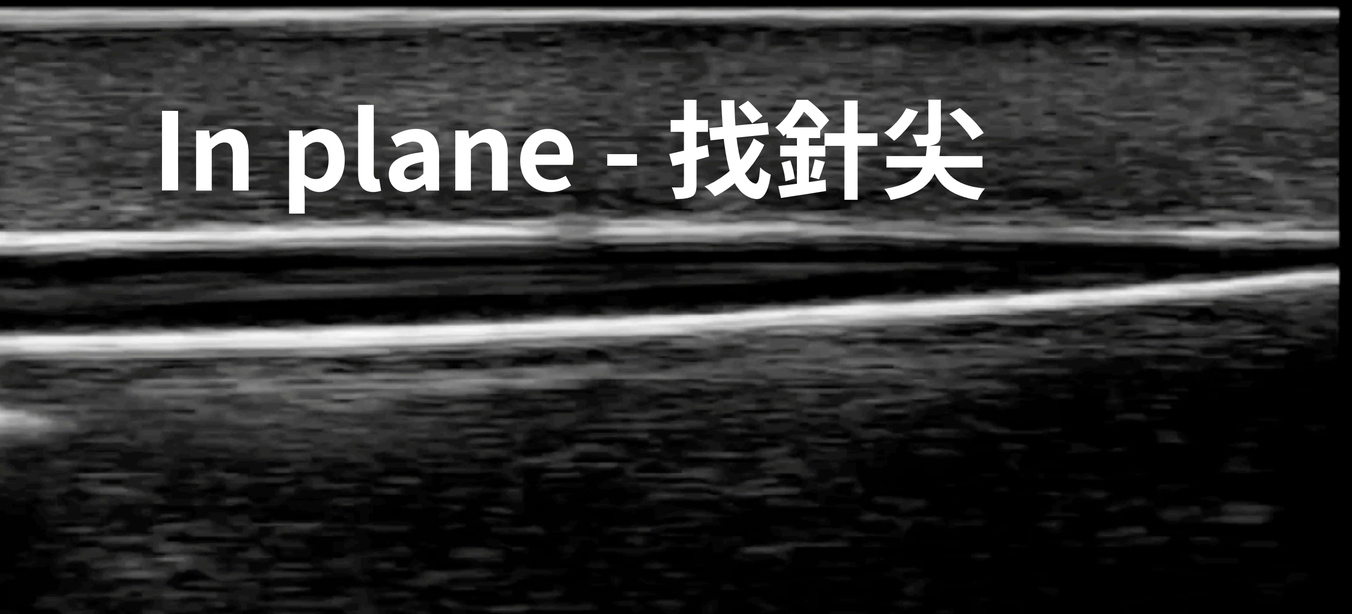
使用單位: ER
病歷號碼: 1767884899999
姓名:
檢查序號:
性別: 男
年齡:
檢查時間: 2026-01-08 23:08:19

送針太快

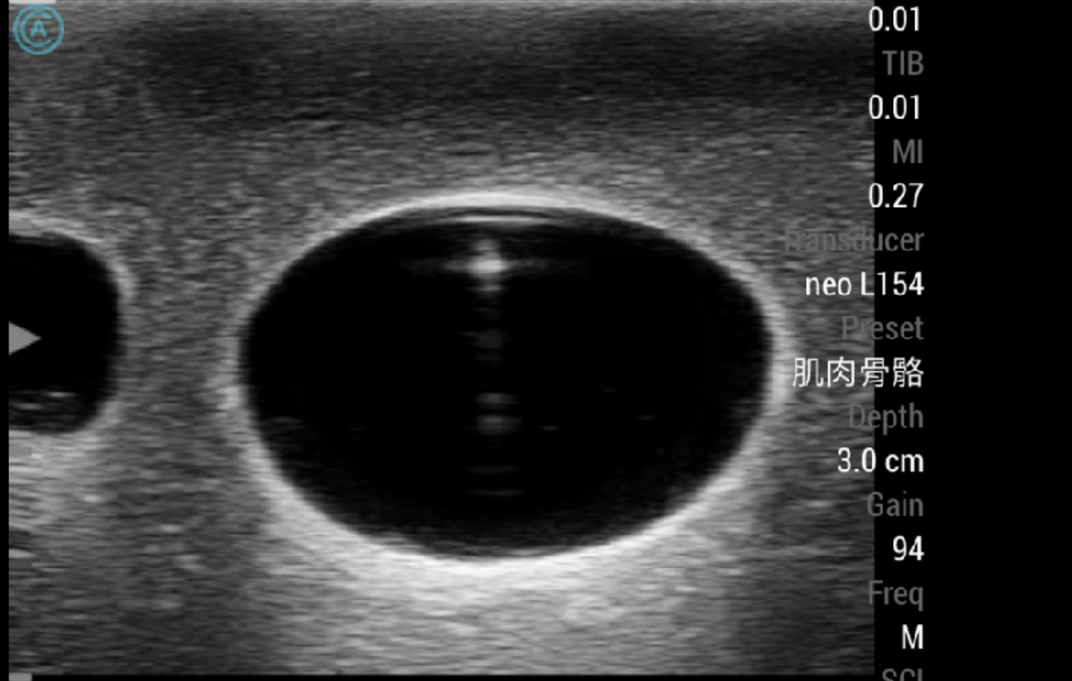


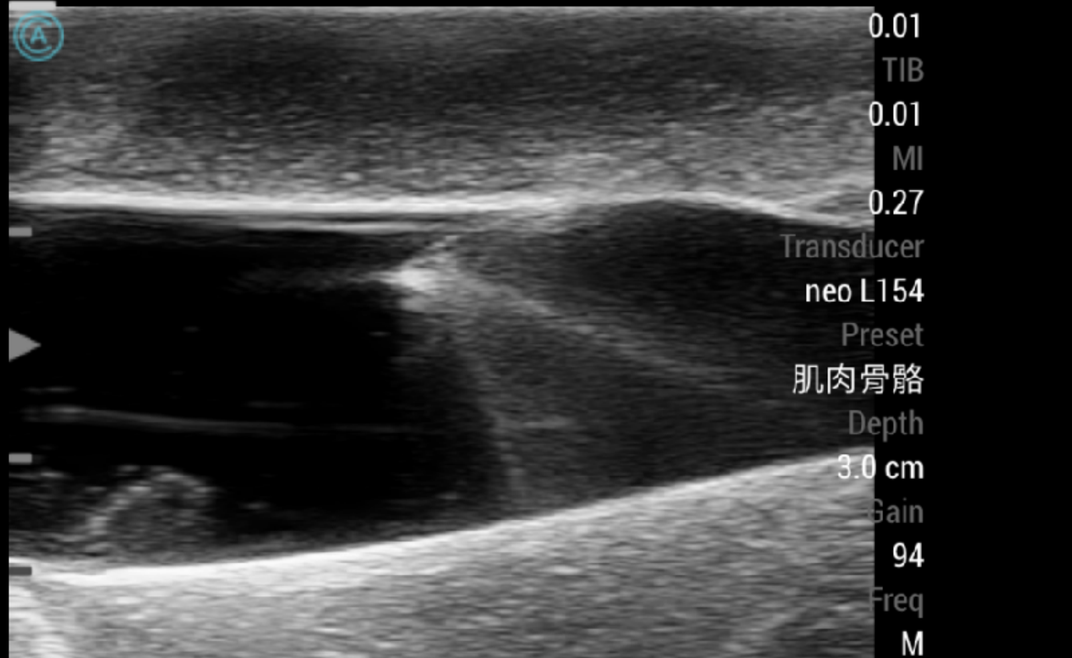


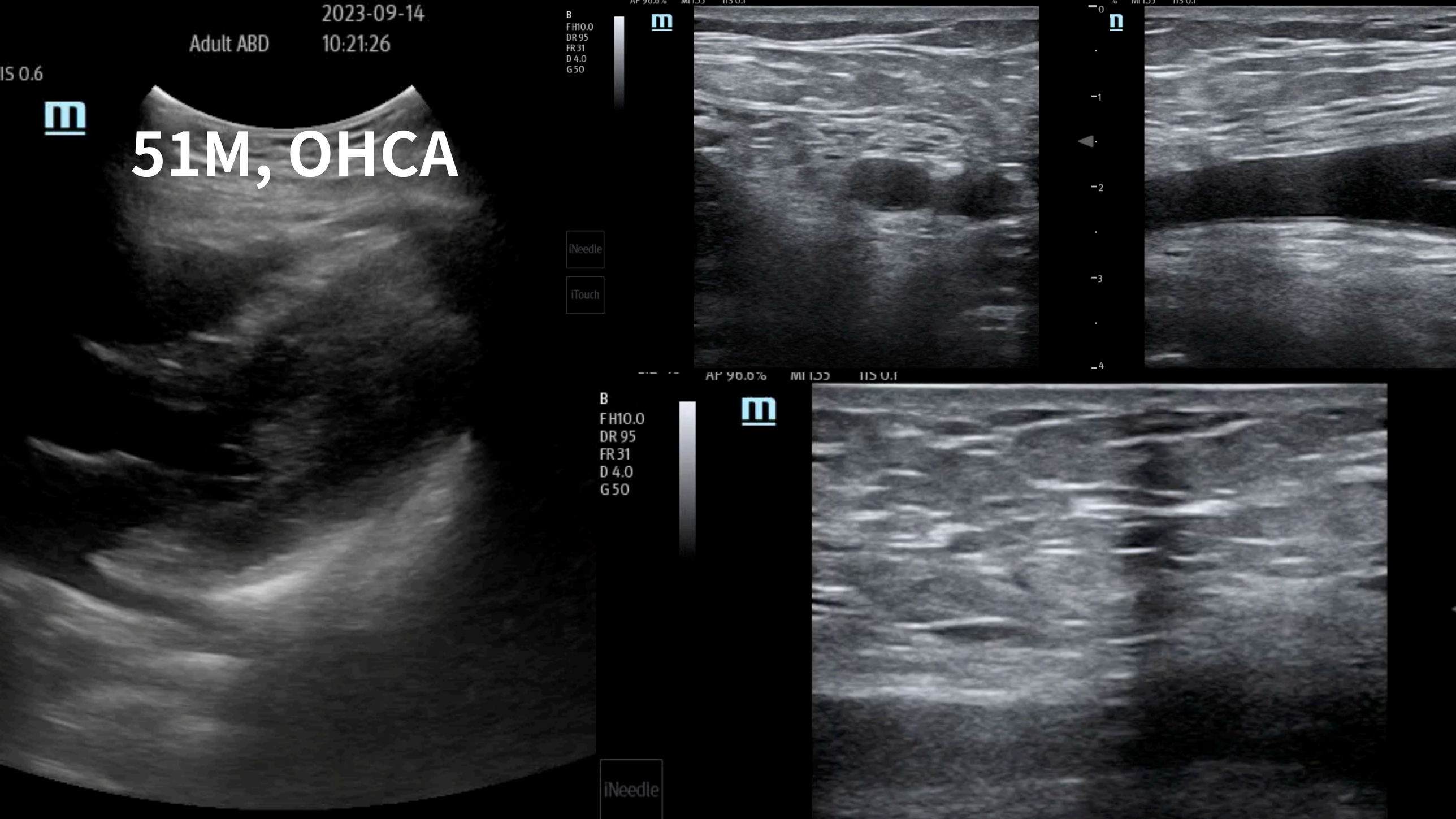
Off plane - 定中線

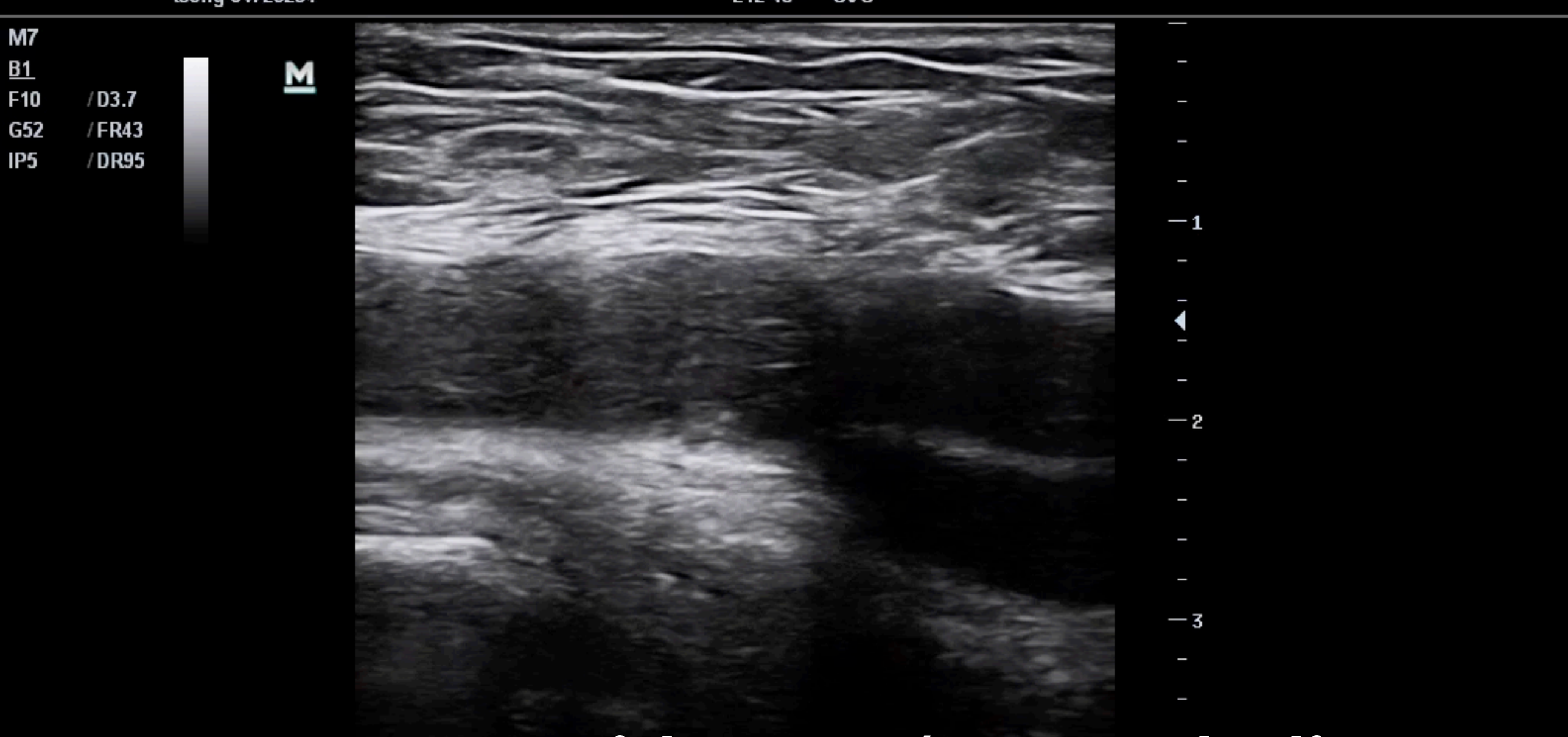


In plane - 找針尖

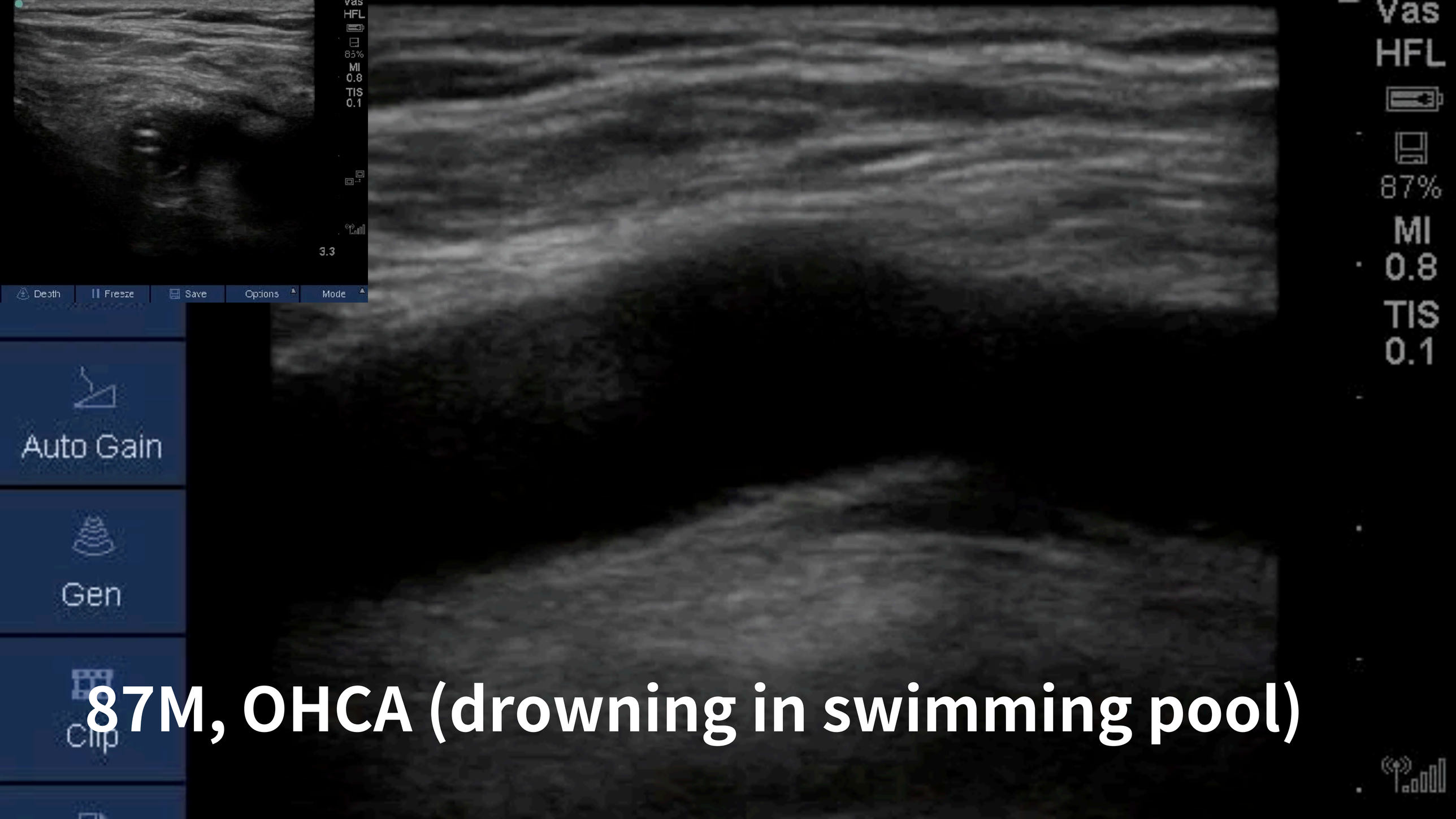





2023-09-14
Adult ABD
10:21:26
IS 0.6
51M, OHCA
B
FH10.0
DR 95
FR 31
D 4.0
G 50
iNeedle
iTouch
AP 96.8%
MI 1.3
TIS 0.1
B
FH10.0
DR 95
FR 31
D 4.0
G 50
iNeedle

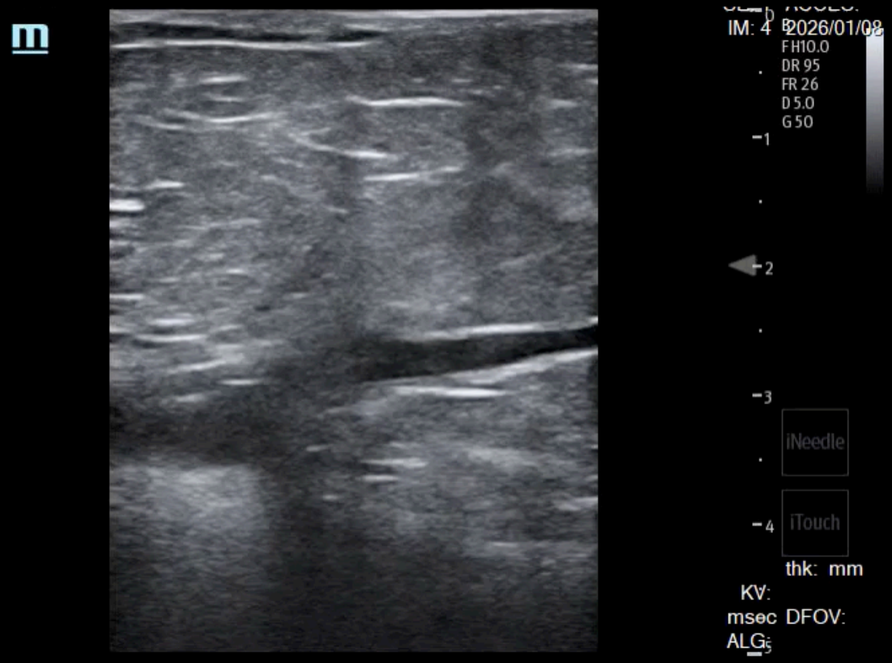


Trauma OHCA with ROSC / Femoral A line

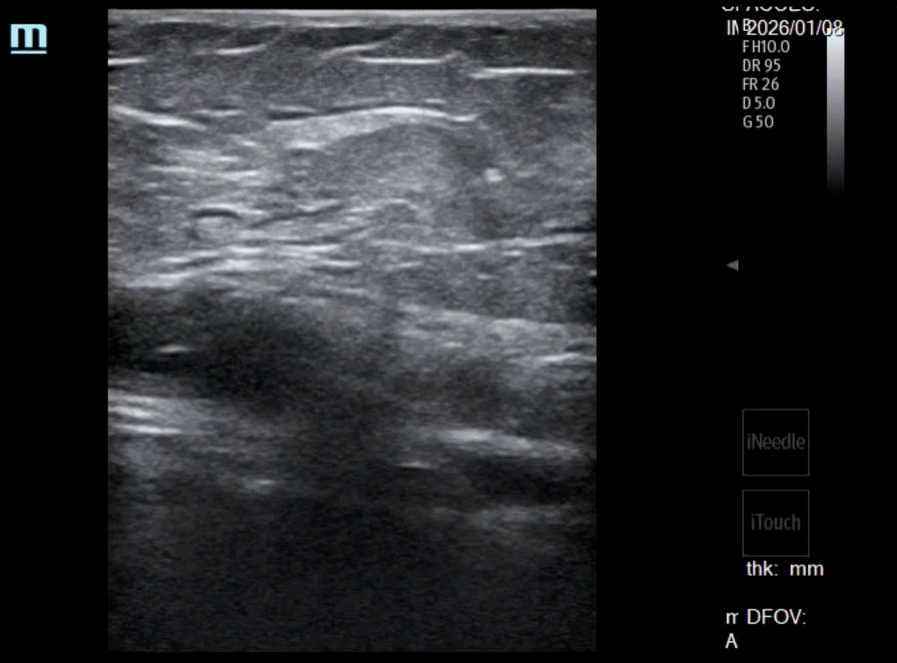


87M, OHCA (drowning in swimming pool)

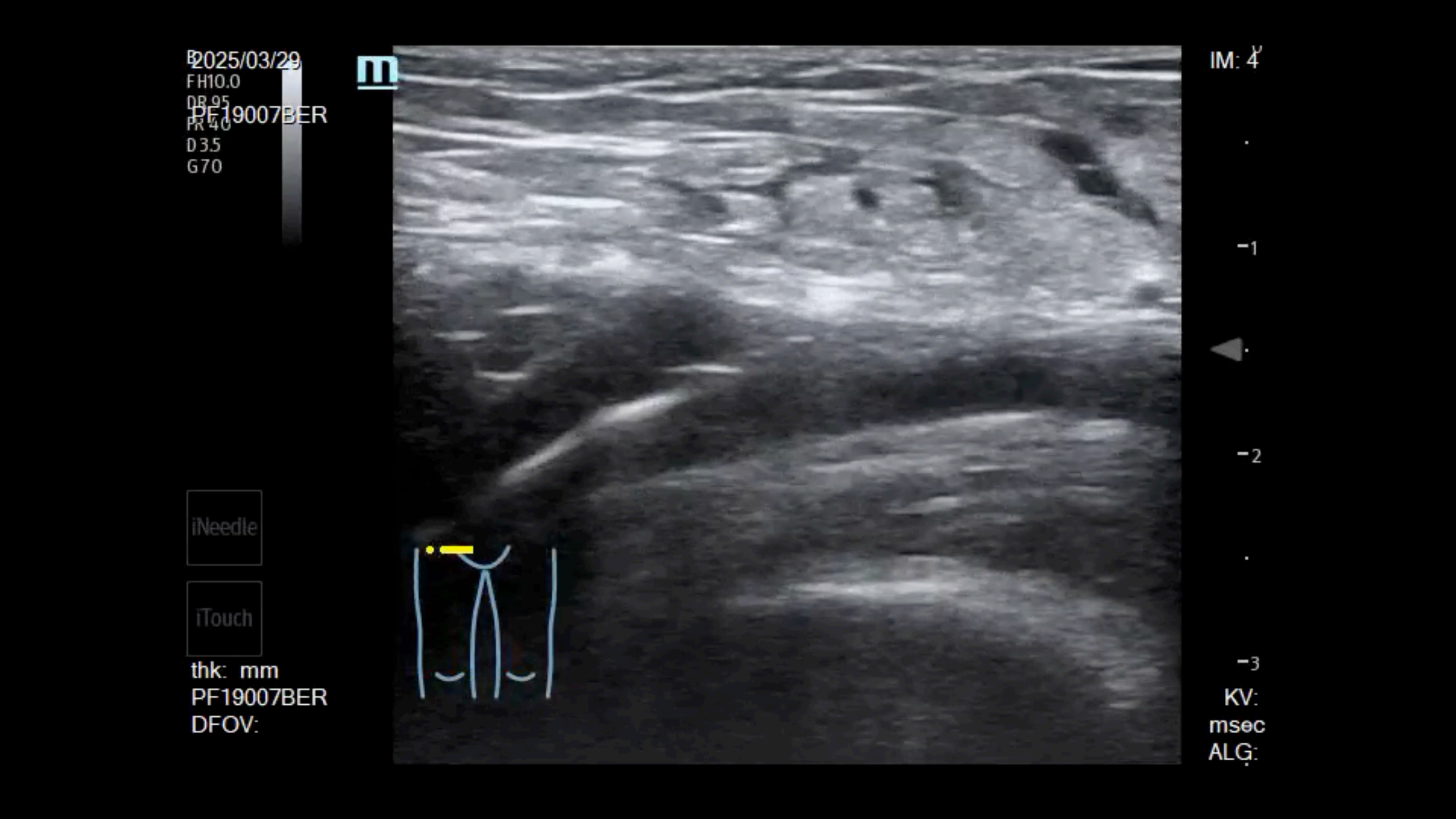
PCPS-V



PCPS-A



CVC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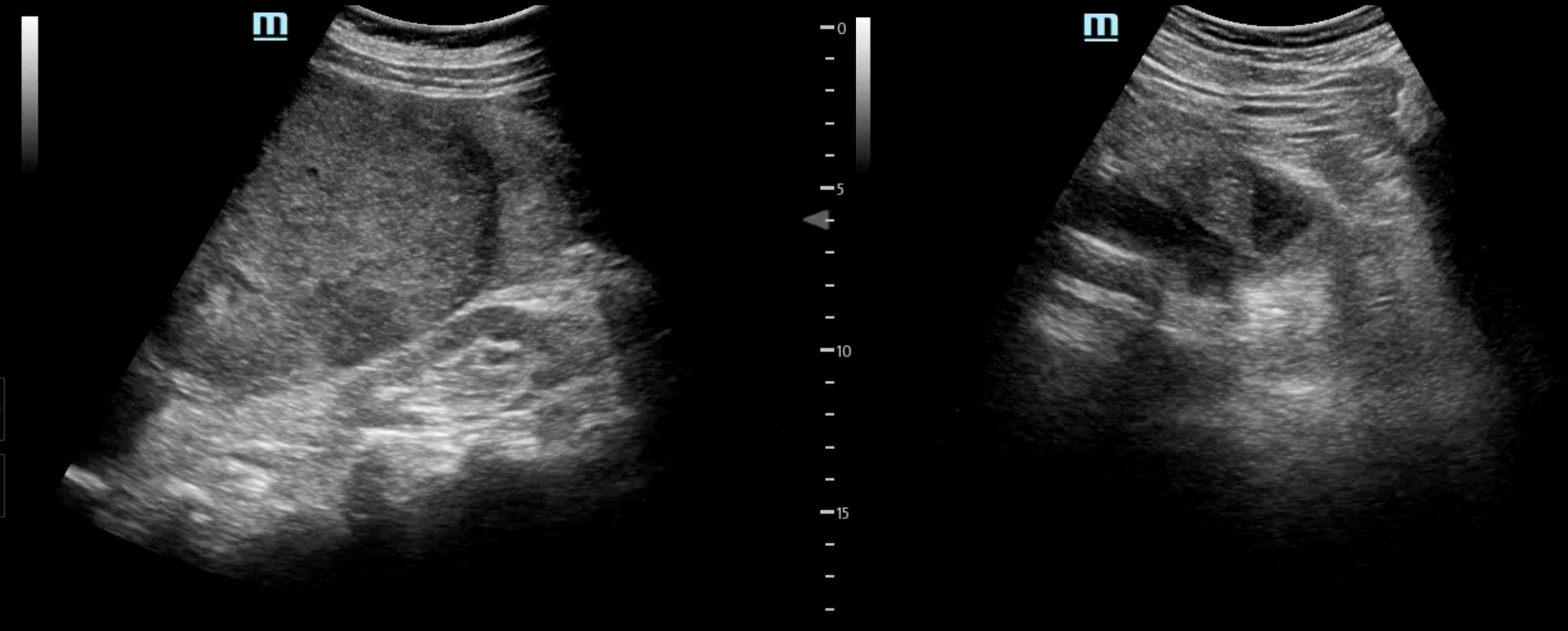
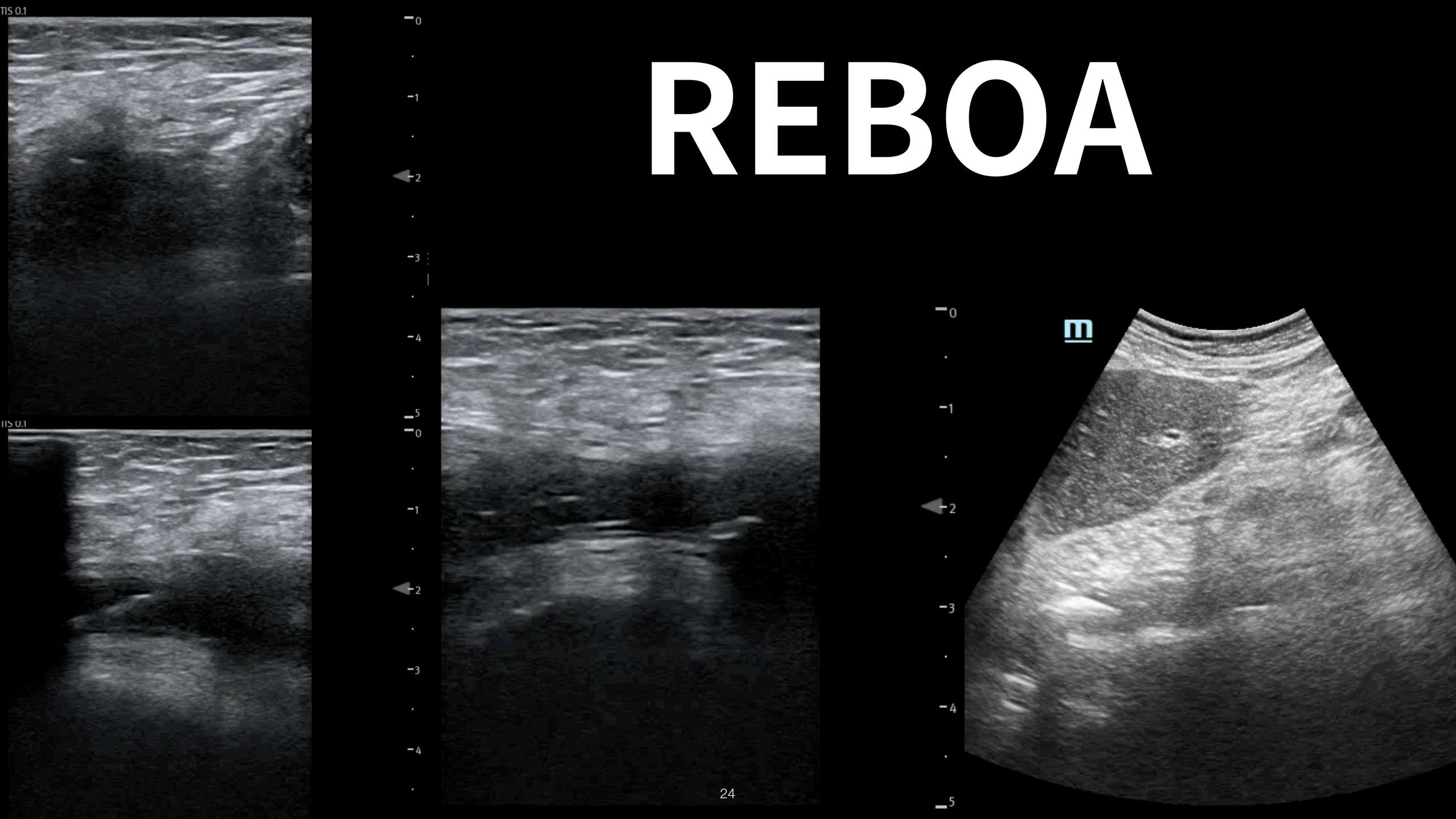
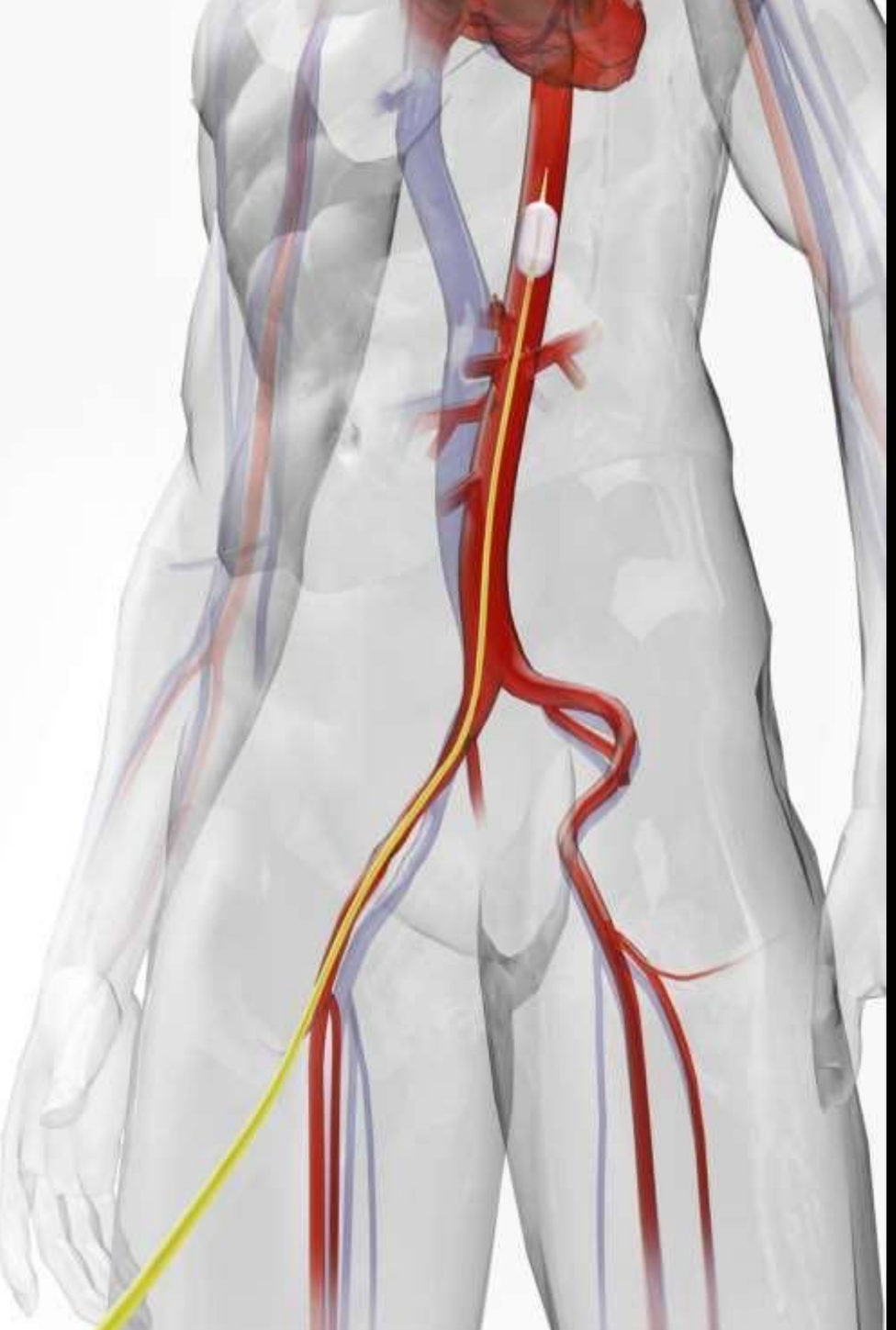
FH10.0
DR 95
PR 40
D 3.5
G 70
PF19007BER
IM: 4
-1
-2
-3
iNeedle
iTouch
thk: mm
PF19007BER
DFOV:
KV:
msec
ALG:

71M, Altered consciousness at home




TIS 0.1
TIS 0.1
REBOA



REBOA

Resuscitative
Endovascular
Balloon
Occlusion of the
Aorta

Indication for REBOA

Traumatic life-threatening hemorrhage below the diaphragm in patients in hemorrhage shock who are unresponsive or transiently responsive to resuscitation

Brenner M, et al . Joint statement from the American College of Surgeons Committee on Trauma (ACS COT) and the American College of Emergency Physicians (ACEP) regarding the clinical use of Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA)

Trauma Surg Acute Care Open 2018; 3: 1-3. doi:10.1136/tsaco-2017-000154

Intra-abdominal/pelvic hemorrhage

+

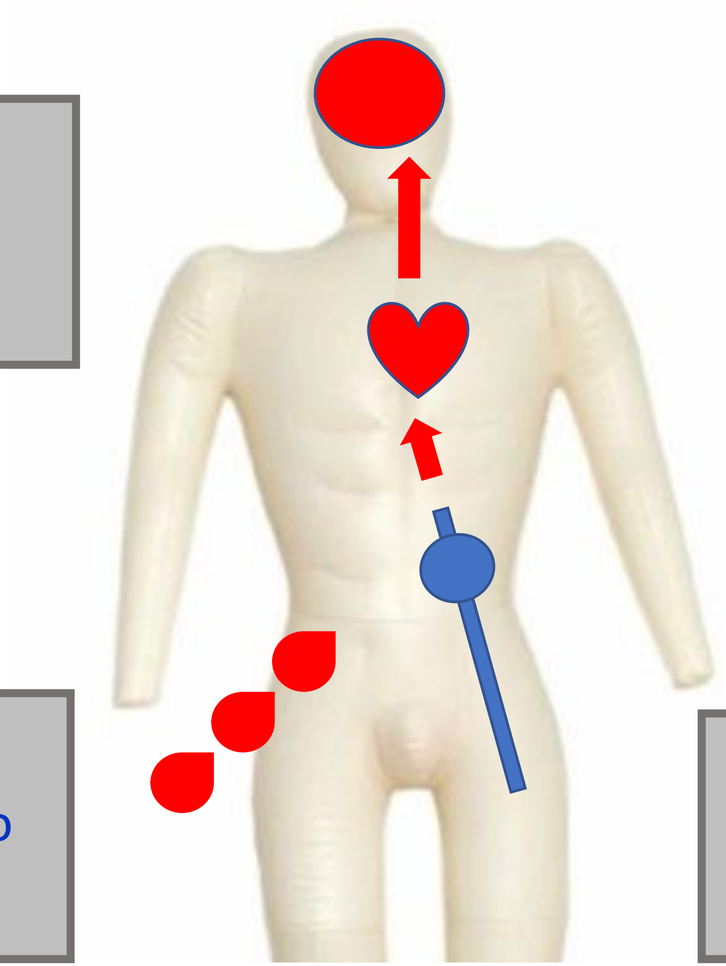
Pulsatile

+

SBP<80 mm-Hg

Mechanism of REBOA

Maintain perfusion to brain and heart until hemostasis achieved

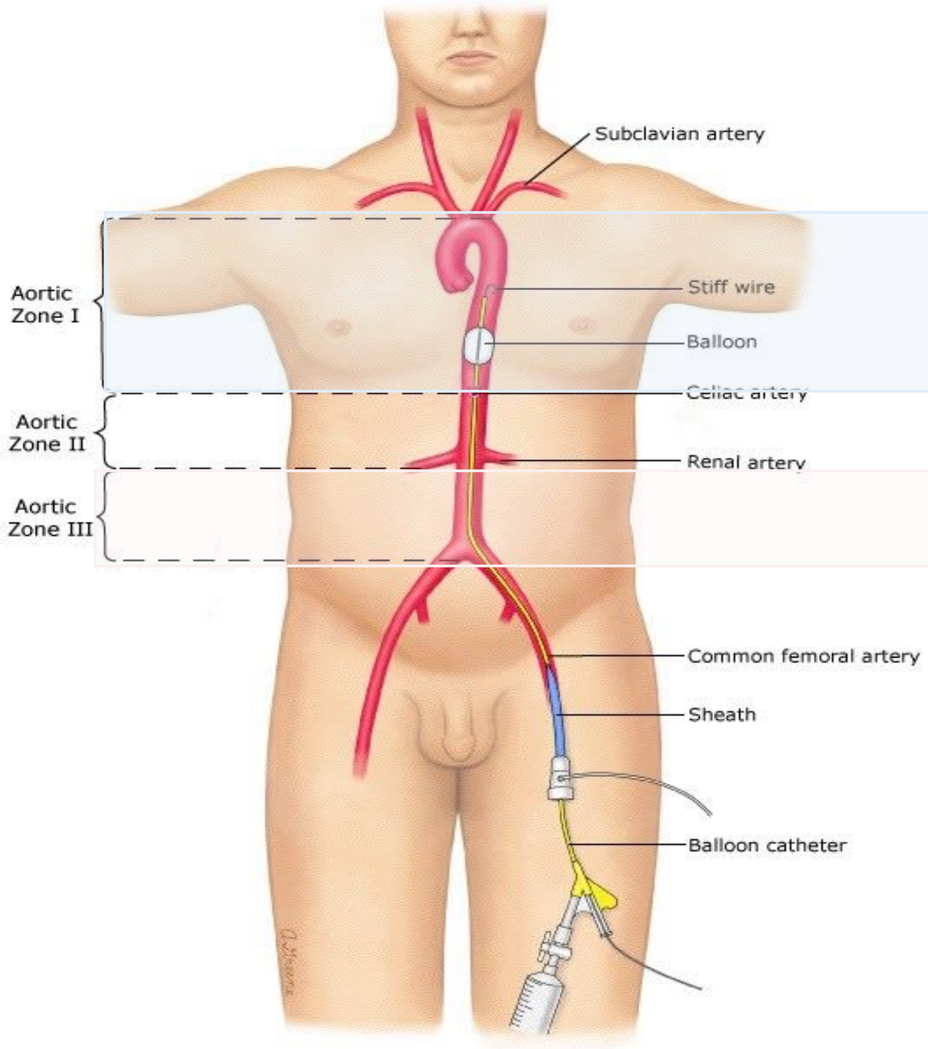


Survival rate UP

Life threatening and non-compressible torso hemorrhage(NTCH)

Insert a balloon into aorta to stop blood flow temporarily

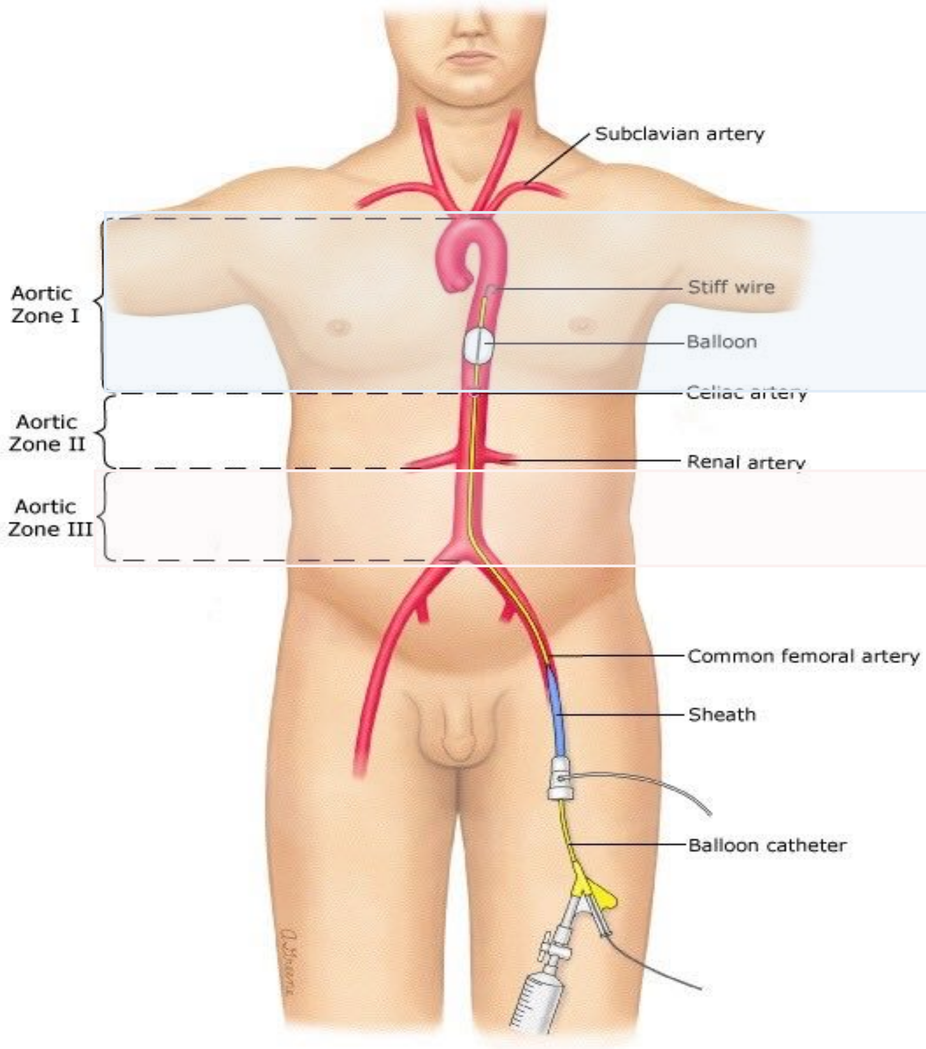
Aortic Zone



Intra-abdominal hemorrhage

Intra-pelvic hemorrhage

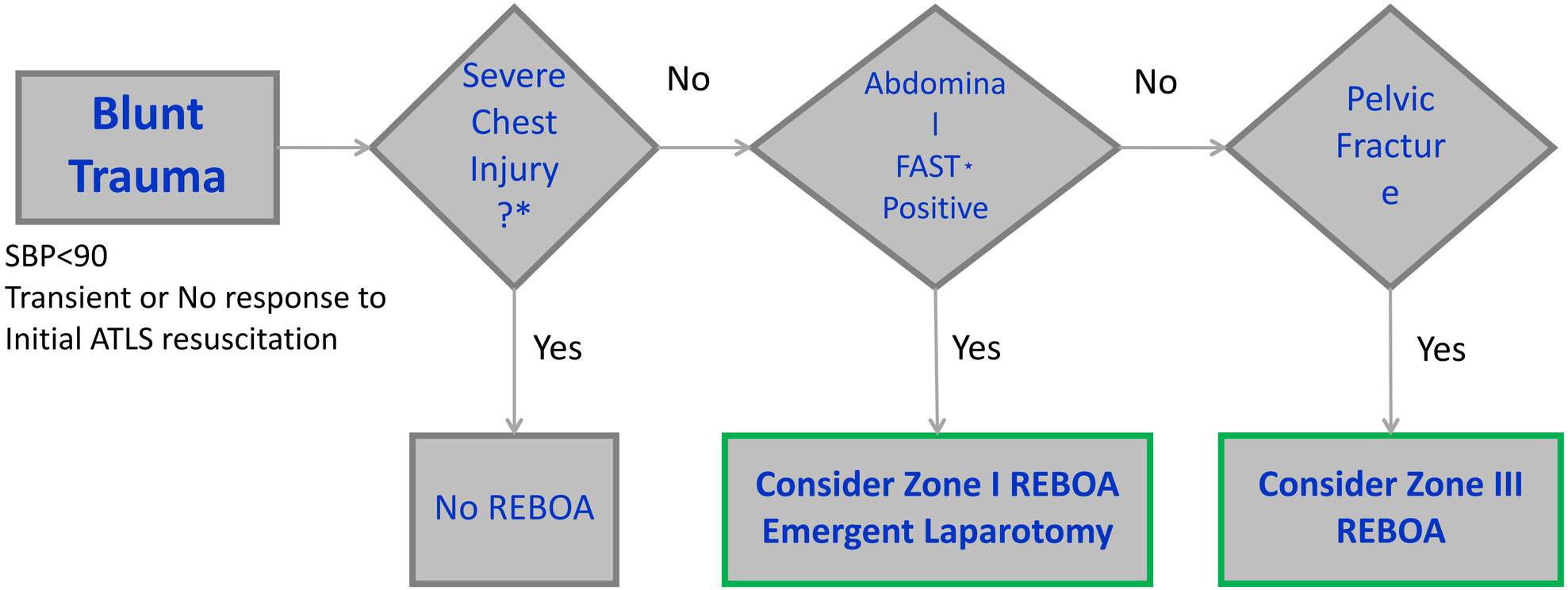
Duration of REBOA



Zone 1: less than 30 min

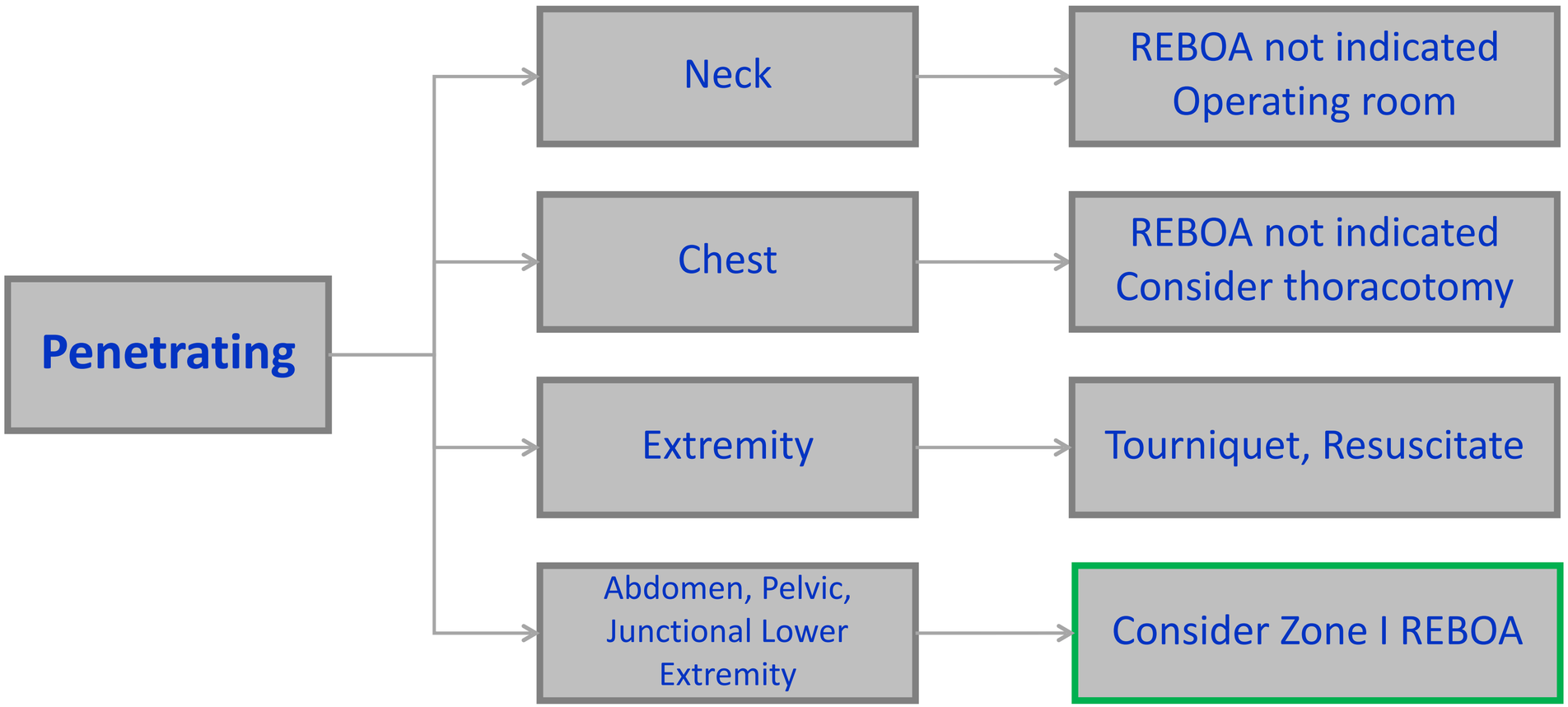
Zone 3: 60~90 min

Algorithm, REBOA for profound shock



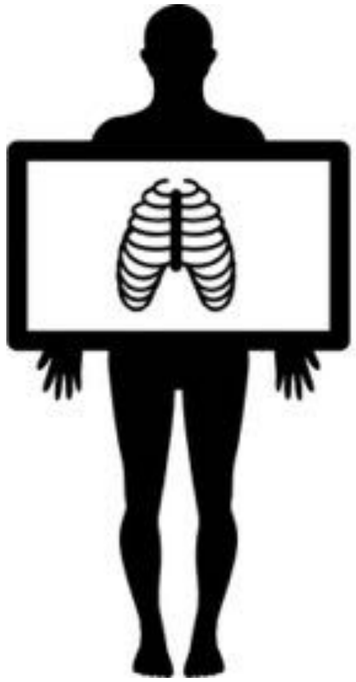
Jeremy Cannnon et al. Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) for Hemorrhagic Shock, MILITARY MEDICINE, vol. 183, September/October Supplement 2018

Algorithm, REBOA for profound shock



Jeremy Cannnon et al. Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) for Hemorrhagic Shock, MILITARY MEDICINE, vol. 183, September/October Supplement 2018

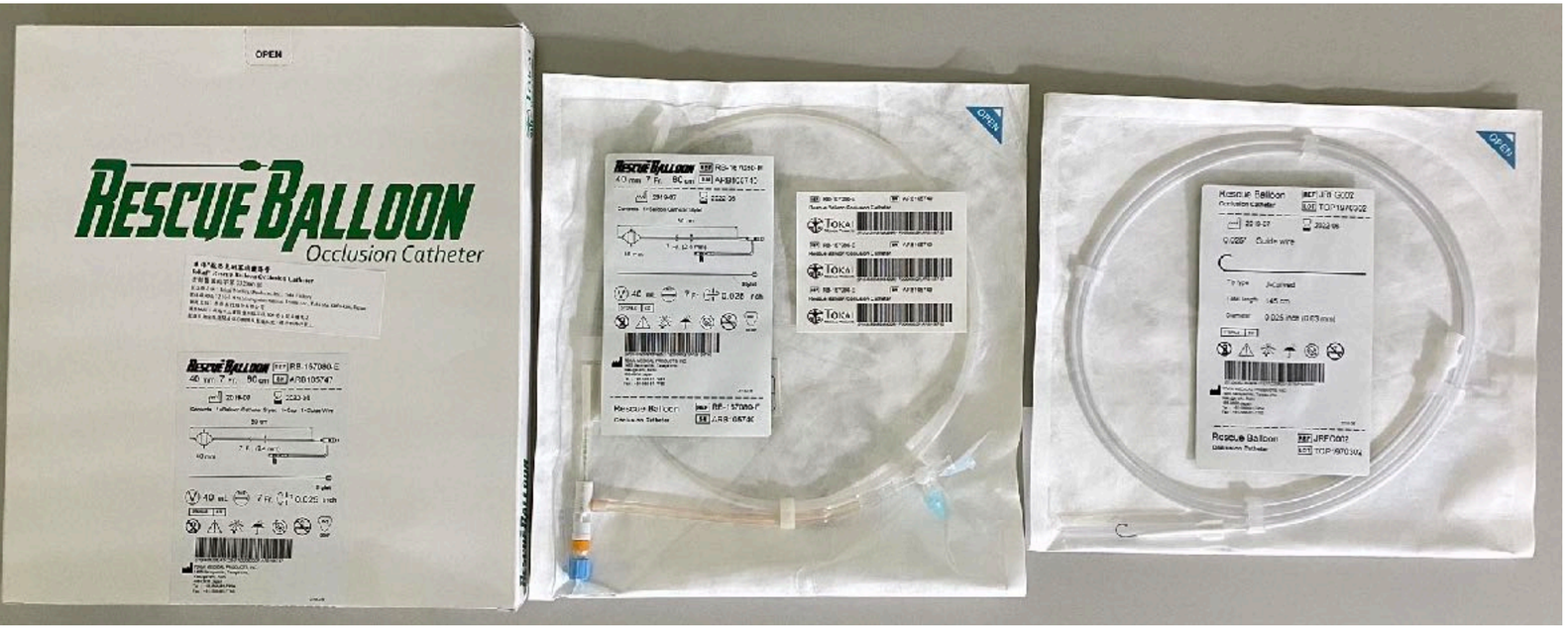
Before placing REBOA, you need…



Chest X ray

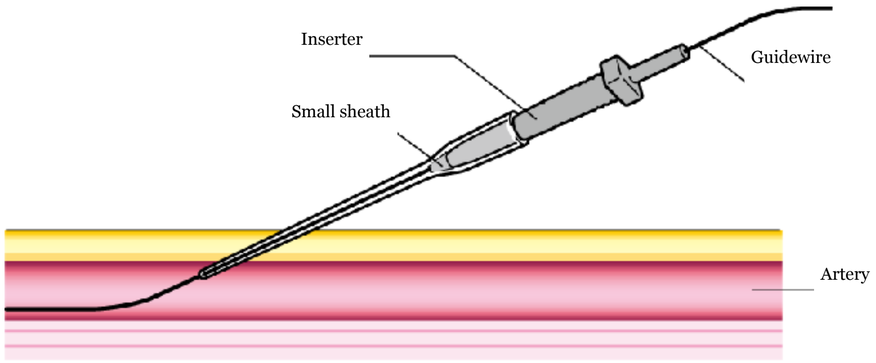
FAST

Pelvic X ray

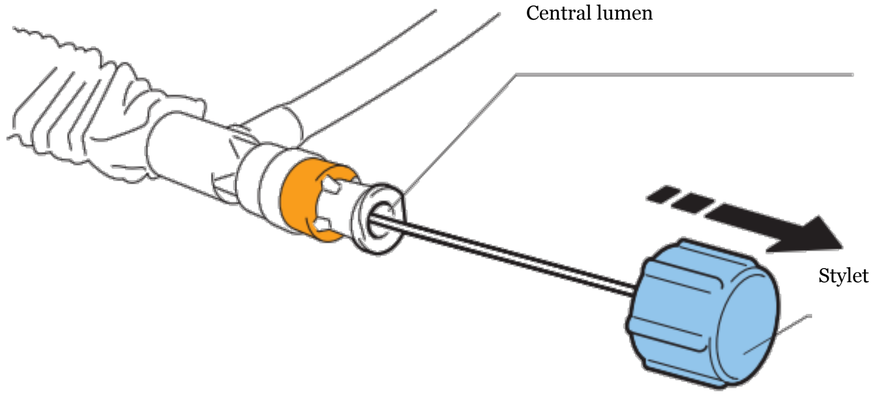


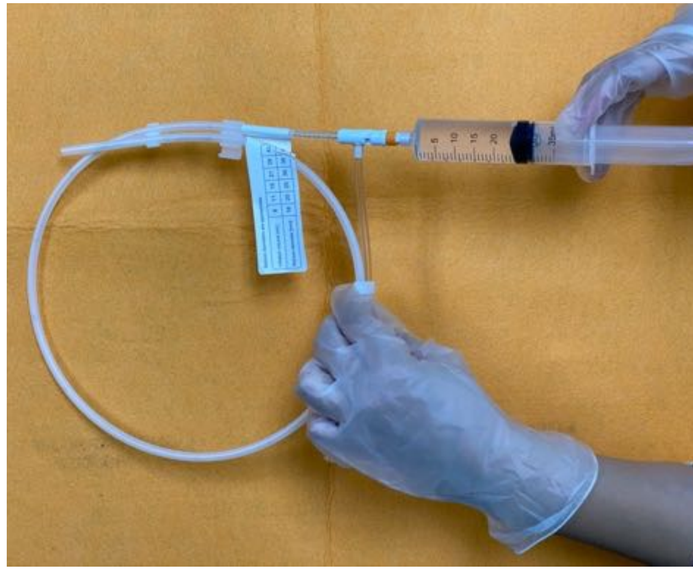
Catalog No.	Usable Length	Shaft Diameter	Balloon Length	Maximum Inflation Diameter (Volume)	Minimum Sheath	Maximum Guidewire
RB167080-E	80cm	7Fr.	60mm	40mm (40mL)	7Fr.	0.025inch

≧ 7Fr A sheath

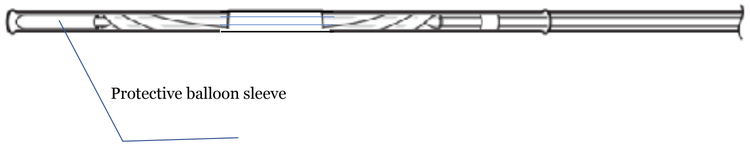


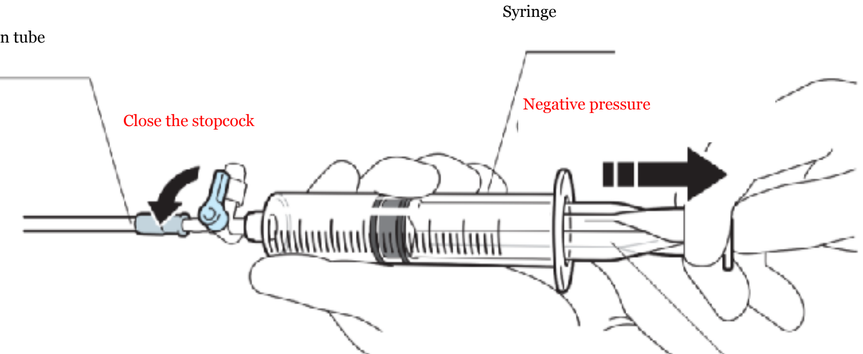
Flush lumen





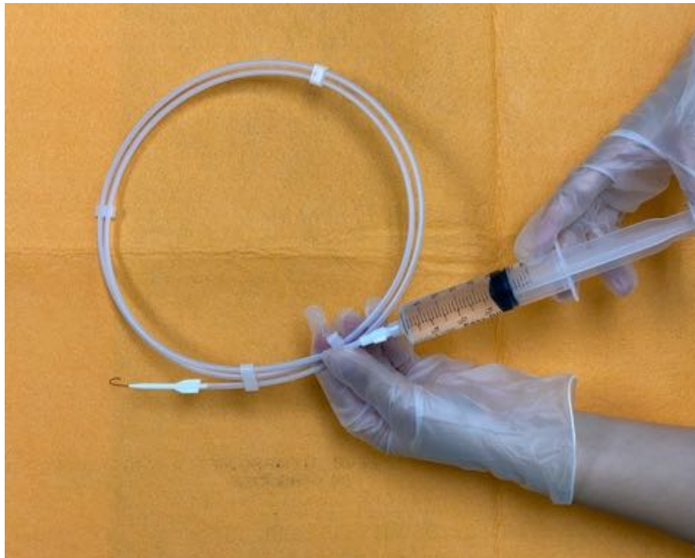
X balloon test





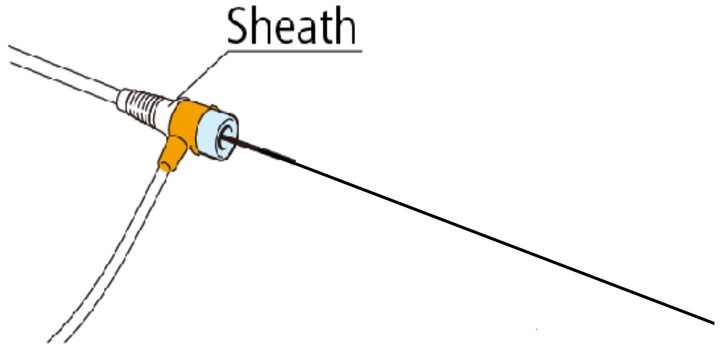
Keep sterile for Reinsertion

Flush wire



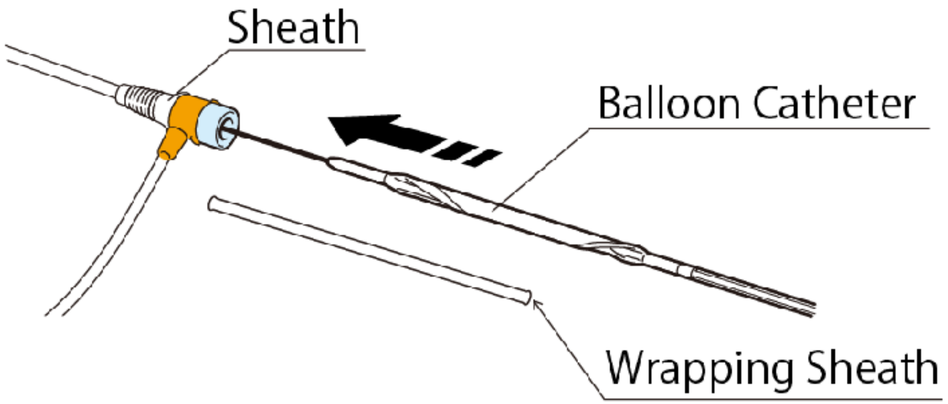
RESCUE BALLOON
Occlusion Catheter

Advance guidewire

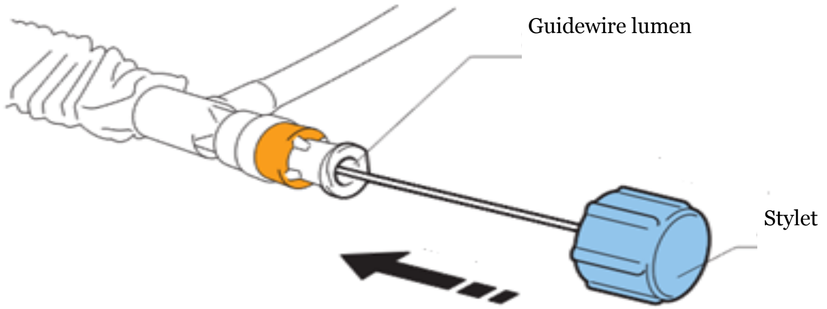


J-tip Guidewire length: 145 cm

Introduce Catheter



Insert Stylet



Check

Mark

Check / Inflate

16mm

(8mL)

26mm

(16mL)

35mm

(28mL)

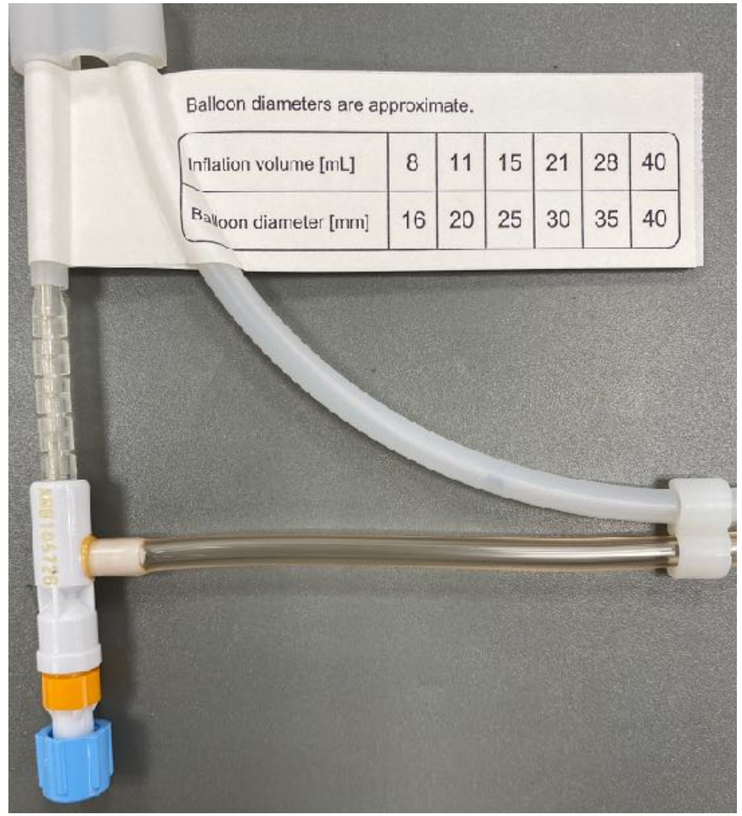
40mm

(40mL)

Recommended Inflation Solution:

1. Normal Saline
2. The 3:1 mixture of Normal Saline and Contrast

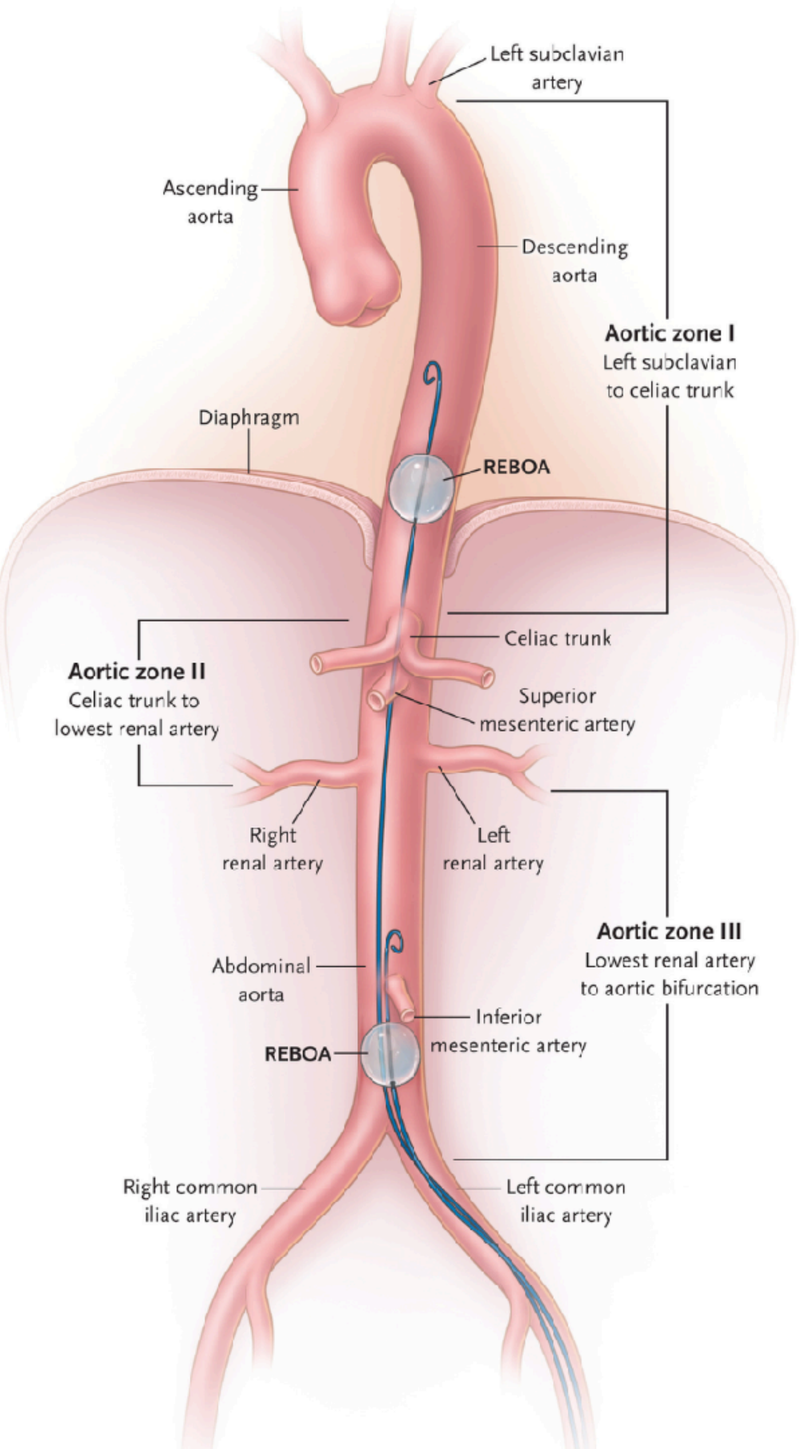
Recommended Inflation Volumes:

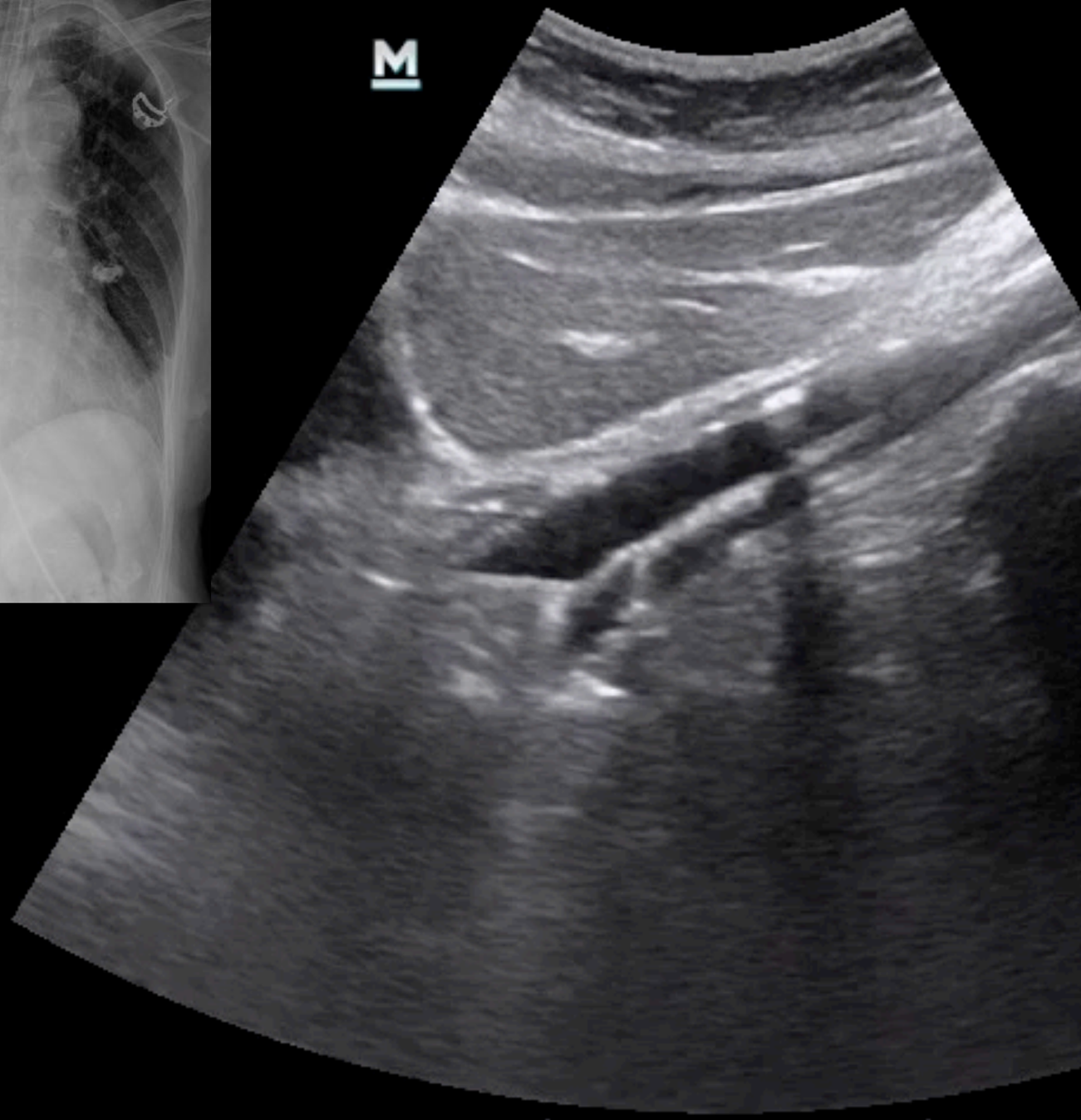


Removal

Step 1: While holding the sheath to prevent it from moving, pull the balloon catheter from the body. When the balloon base arrives at the sheath tip, stop pulling the balloon catheter.

Step 2: Remove the balloon catheter and sheath as a unit in principle.


Left subclavian artery
Ascending aorta
Descending aorta
Aortic zone I
Left subclavian to celiac trunk
Diaphragm
REBOA
Celiac trunk
Aortic zone II
Celiac trunk to lowest renal artery
Superior mesenteric artery
Right renal artery
Left renal artery
Aortic zone III
Lowest renal artery to aortic bifurcation
Abdominal aorta
Inferior mesenteric artery
REBOA
Right common iliac artery
Left common iliac artery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JAMA

QUESTION Does the addition of resuscitative endovascular balloon occlusion of the aorta (REBOA) to standard care reduce mortality in trauma patients with exsanguinating hemorrhage?

CONCLUSION In trauma patients with exsanguinating hemorrhage, a strategy that includes REBOA, when used in the emergency department, does not reduce, and may increase, mortality compared with standard care.

POPULATION

62 Men 28 Women

Trauma patients aged ≥16 years with exsanguinating hemorrhage

Median age: 41 years

LOCATIONS

16
Major trauma centers in the UK

INTERVENTION

90 Patients randomized
89 Patients analyzed

46

REBOA intervention + standard care
Technique of endovascular aortic occlusion for the purpose of resuscitation as part of overall resuscitation strategy

44

Standard care
Intubation, balanced blood product transfusion, tourniquet application, and interventions for hemorrhage control

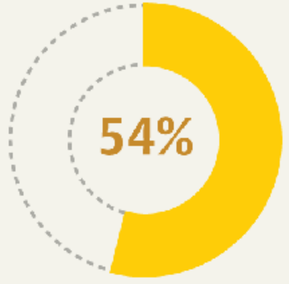
PRIMARY OUTCOME

All-cause mortality at 90 days

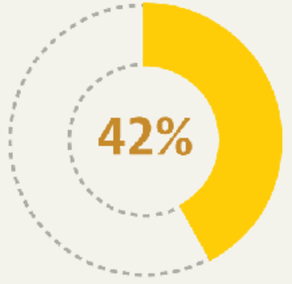
FINDINGS

All-cause mortality at 90 days

REBOA intervention + standard care
25 of 46 patients



Standard care
18 of 43 patients



Prespecified stopping rule for harm was met and study was terminated:

Odds ratio, 1.58 (95% credible interval, 0.72 to 3.52);
Posterior probability of odds ratio >1 (harm) = 86.9%

Jansen JO, Hudson J, Cochran C, et al. Emergency department resuscitative endovascular balloon occlusion of the aorta in trauma patients with exsanguinating hemorrhage: the UK-REBOA randomized clinical trial. *JAMA*. Published online October 12, 2023. doi:10.1001/jama.2023.20850