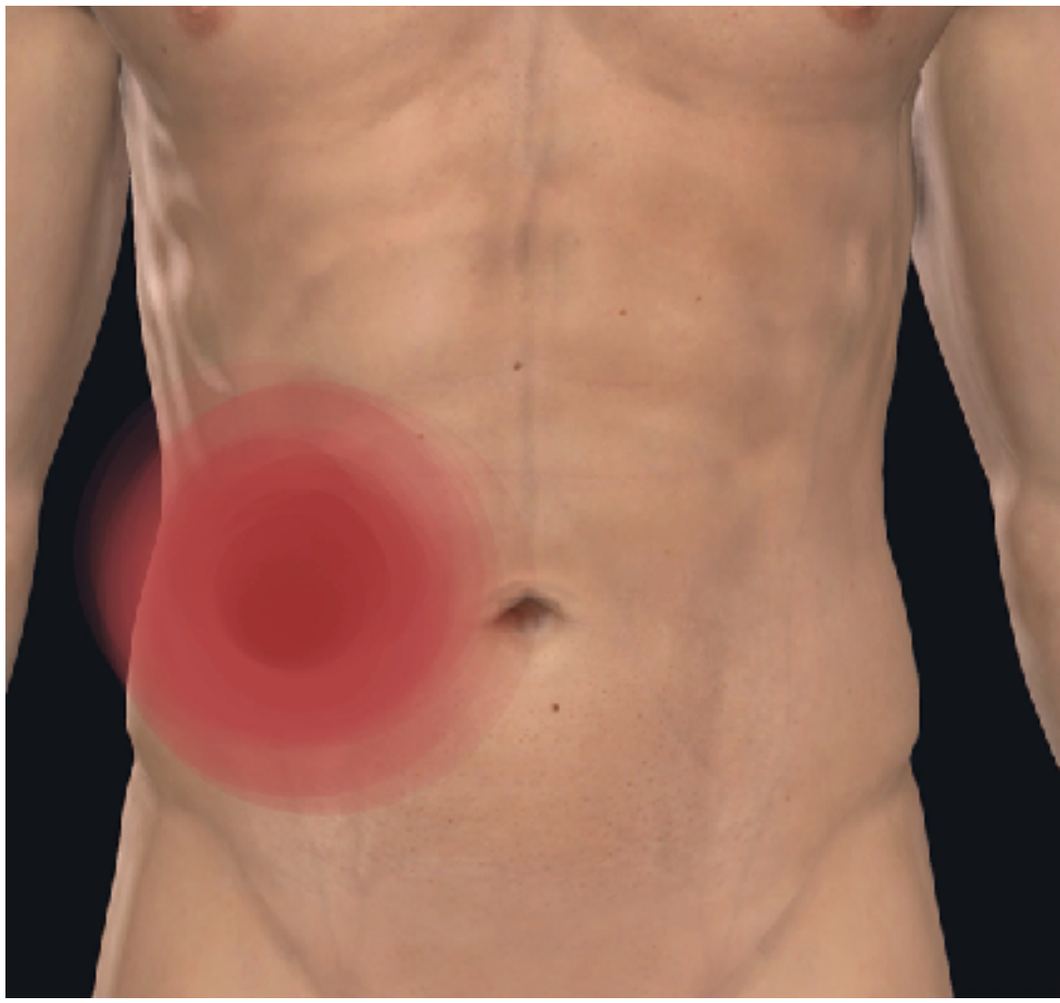
臺中榮民總醫院
Taichung Veterans General Hospital

臺中榮民總醫院

POCUS 訓練工作坊

急性腹痛超音波介紹

ULTRASOUND
PROGRAM



POCUS
在急性腹痛的應用

陳國智醫師 西園醫院急診

Taipei Medical University Center for Education in Medical Simulation

ULTRASOUND
PROGRAM

POCUS

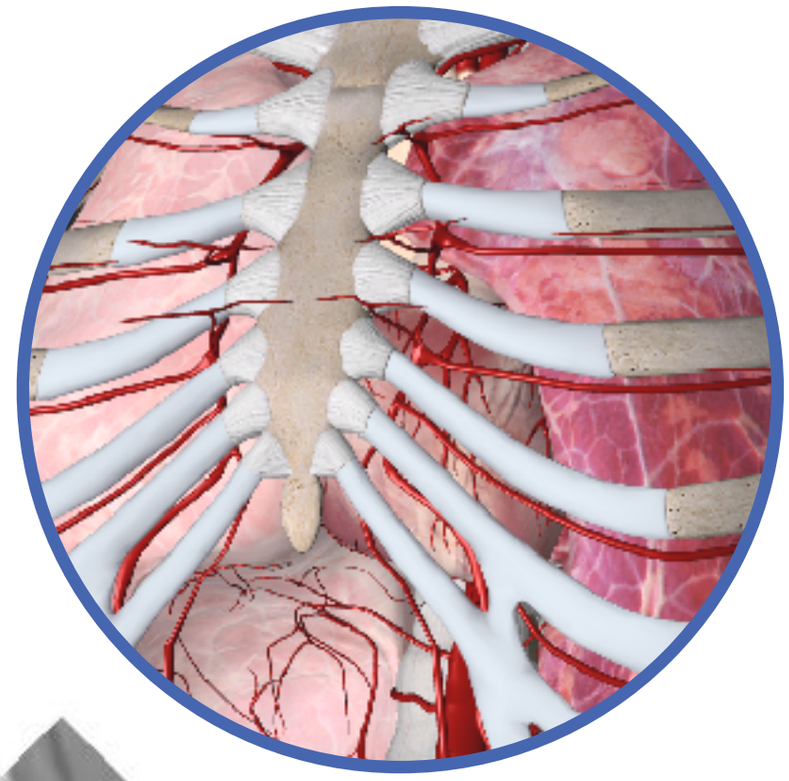
Point-of-Care Ultrasound

"ultrasonography brought to the patient and performed by the provider in real time"

Moore, C. L., & Copel, J. A. NEJM 2011

ULTRASOUND
PROGRAM

POCUS



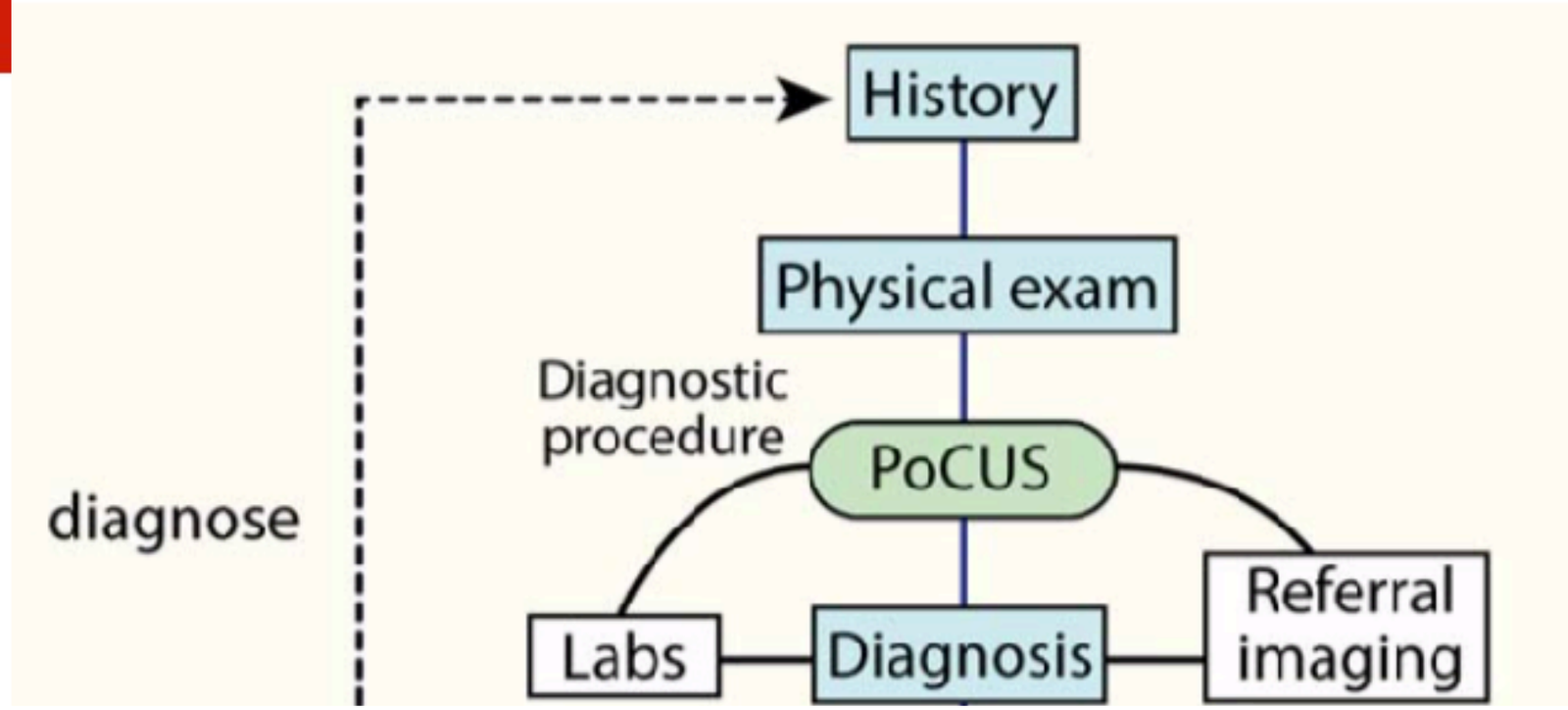
Taipei Medical University Center for Education in Medical Simulation

ULTRASOUND
PROGRAM

POCUS–急診緣由

症狀	線索	診斷
問題	時間	治療
雜	少	快

ULTRASOUND
PROGRAM



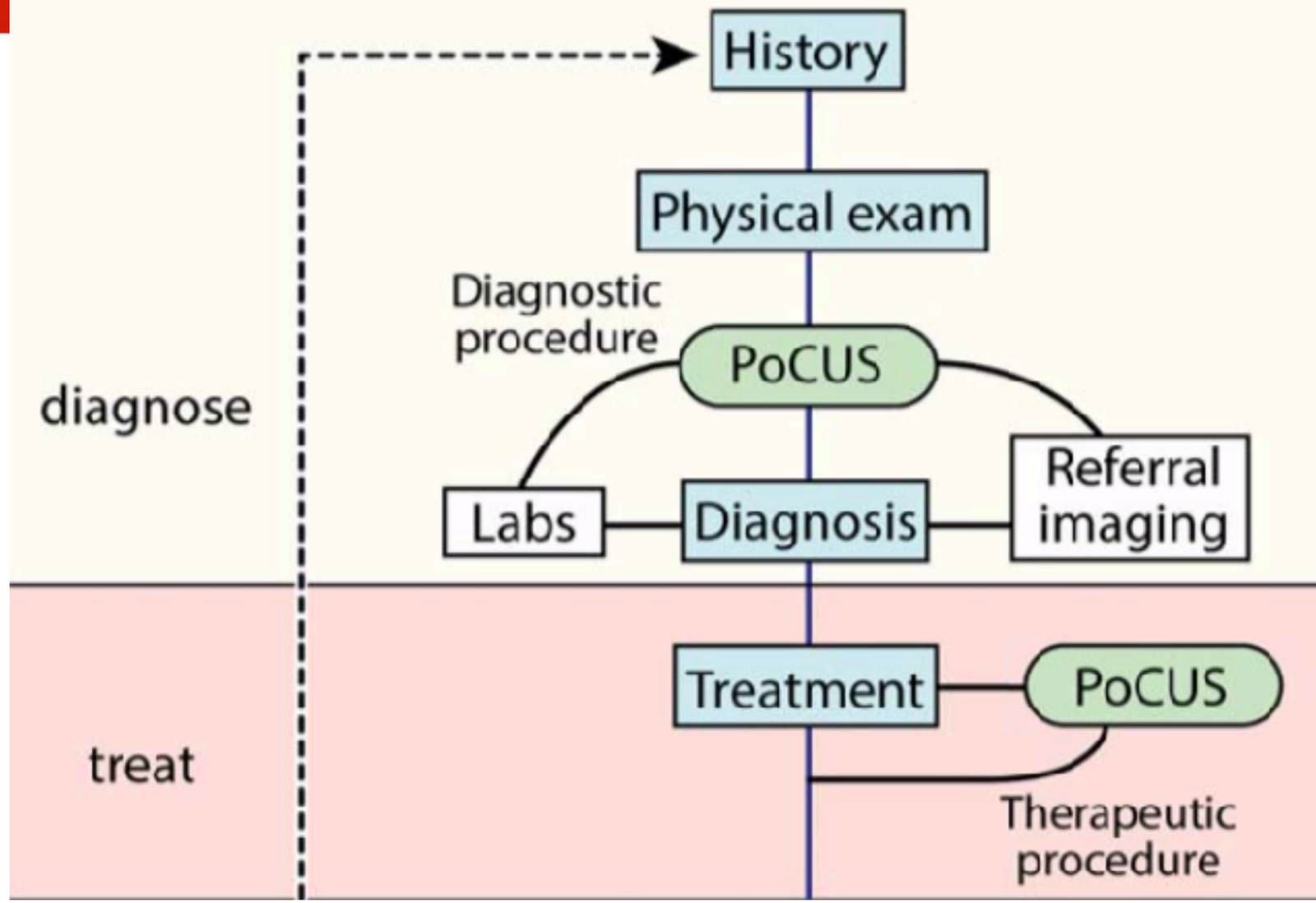
POCUS

住院病人

Taipei Medical University C

ULTRASOUND
PROGRAM

POCUS
住院病人

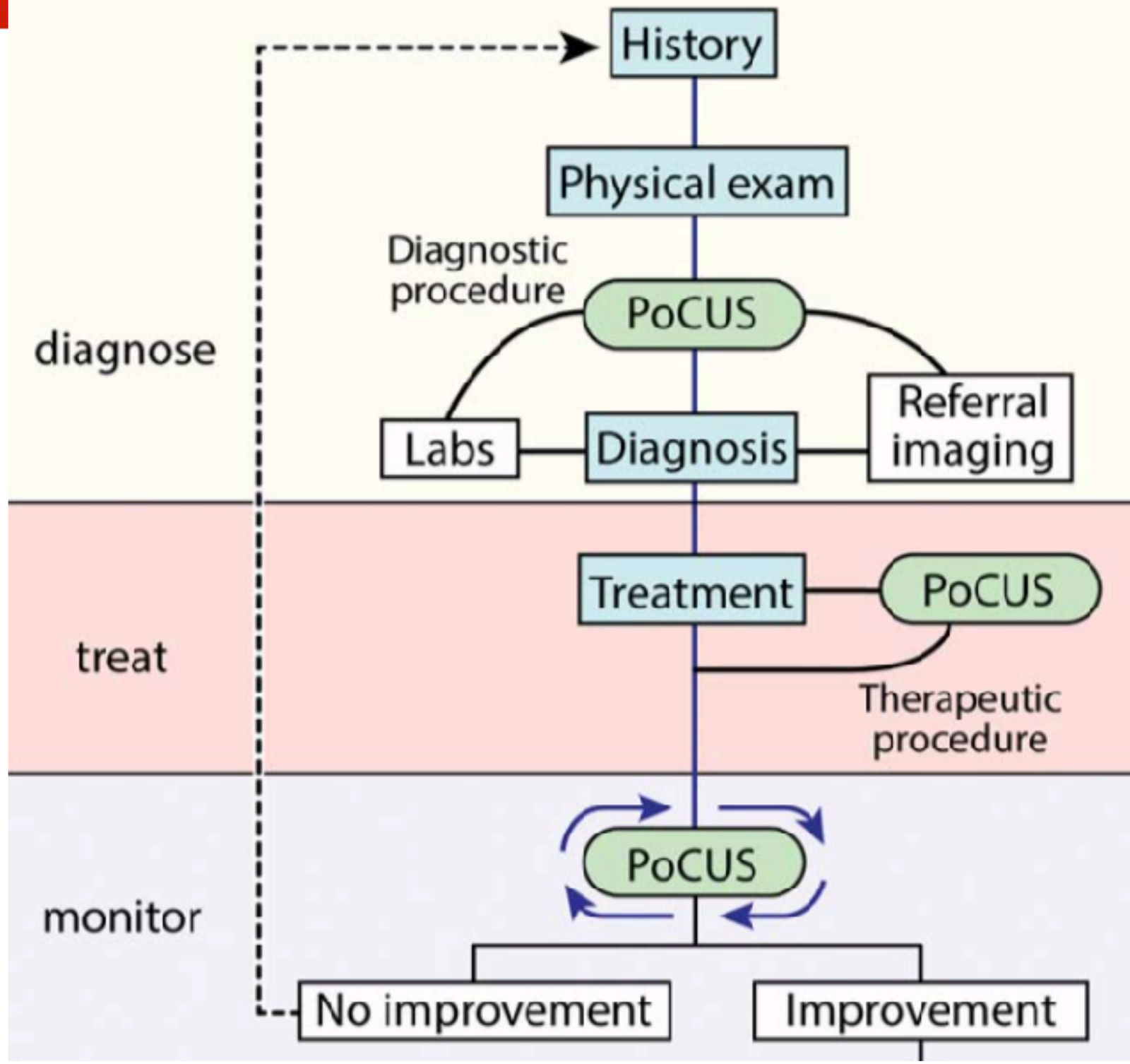


ULTRASOUND
PROGRAM

POCUS

住院病人

Taipei Medical University C

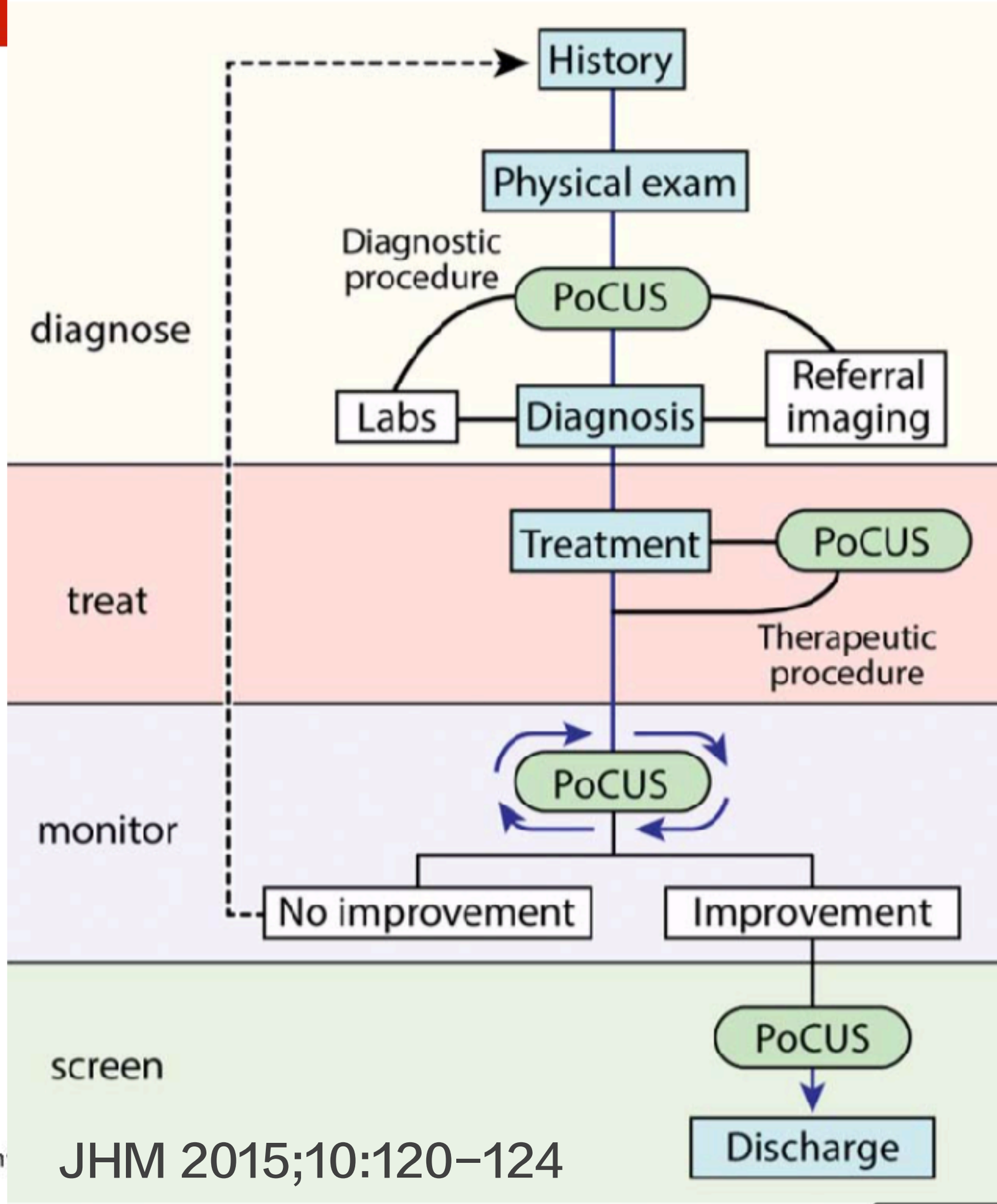


ULTRASOUND
PROGRAM

POCUS

住院病人

Taipei Medical University Cen



JHM 2015;10:120–124

ULTRASOUND
PROGRAM

I-AIM

Indication

Acquire **Interpret** **Make decision**

Bahner DP, et al. J Ultrasound Med 2012

ULTRASOUND
PROGRAM

常用的探頭

弧　　線　　扇

探頭操控 6 大技巧

X	Y	Z
Sweep	Slide	Rotate
Fan/ Tilt	Rock	Compress

探頭操控 6 大技巧

X	Y	Z
掃	滑	轉
傾	搖	壓

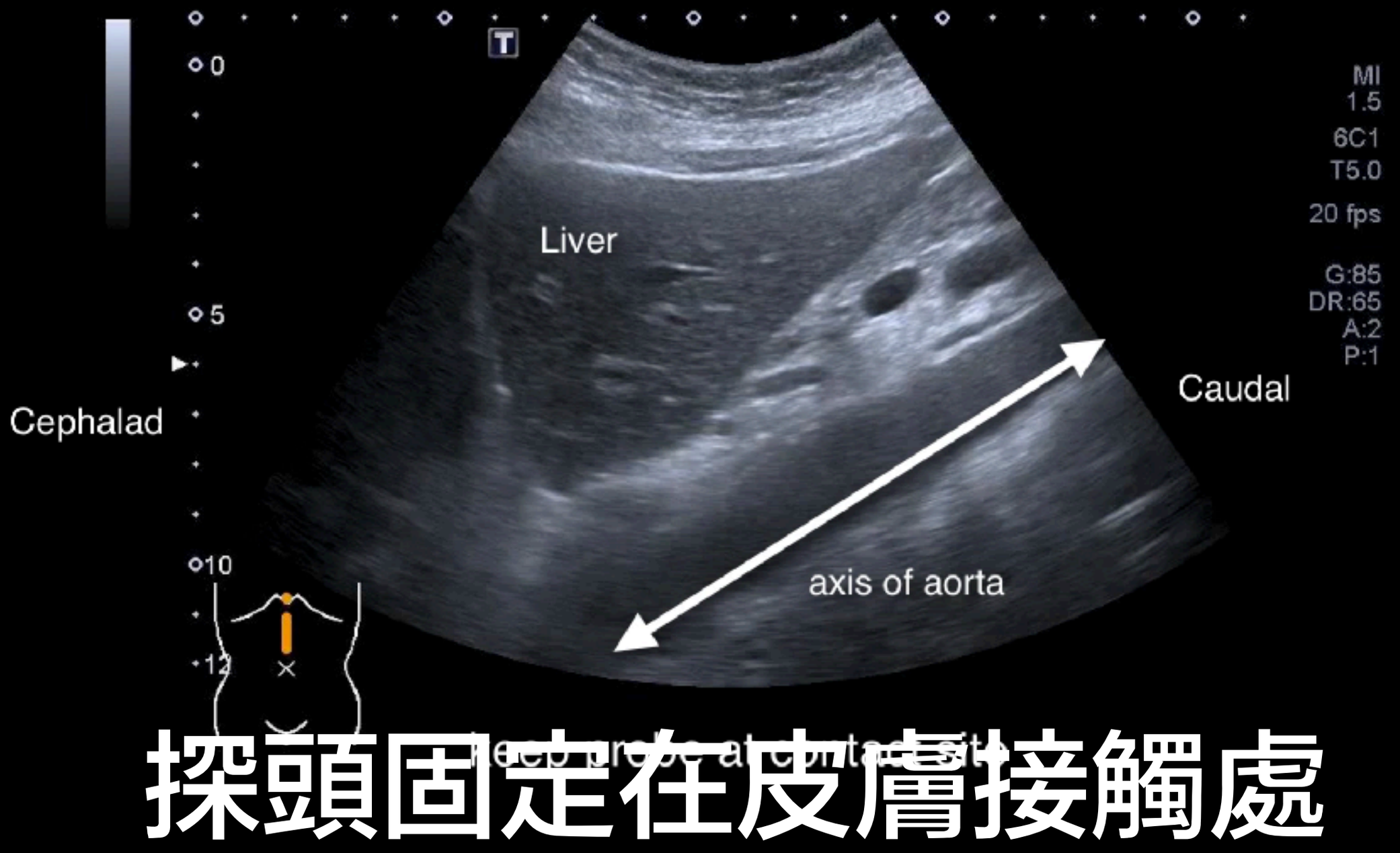
這是那一種探頭操作手法 ??

這是那一種探頭操作手法 ??

探頭固定在皮膚接觸處

這是那一種探頭操作手法 ??

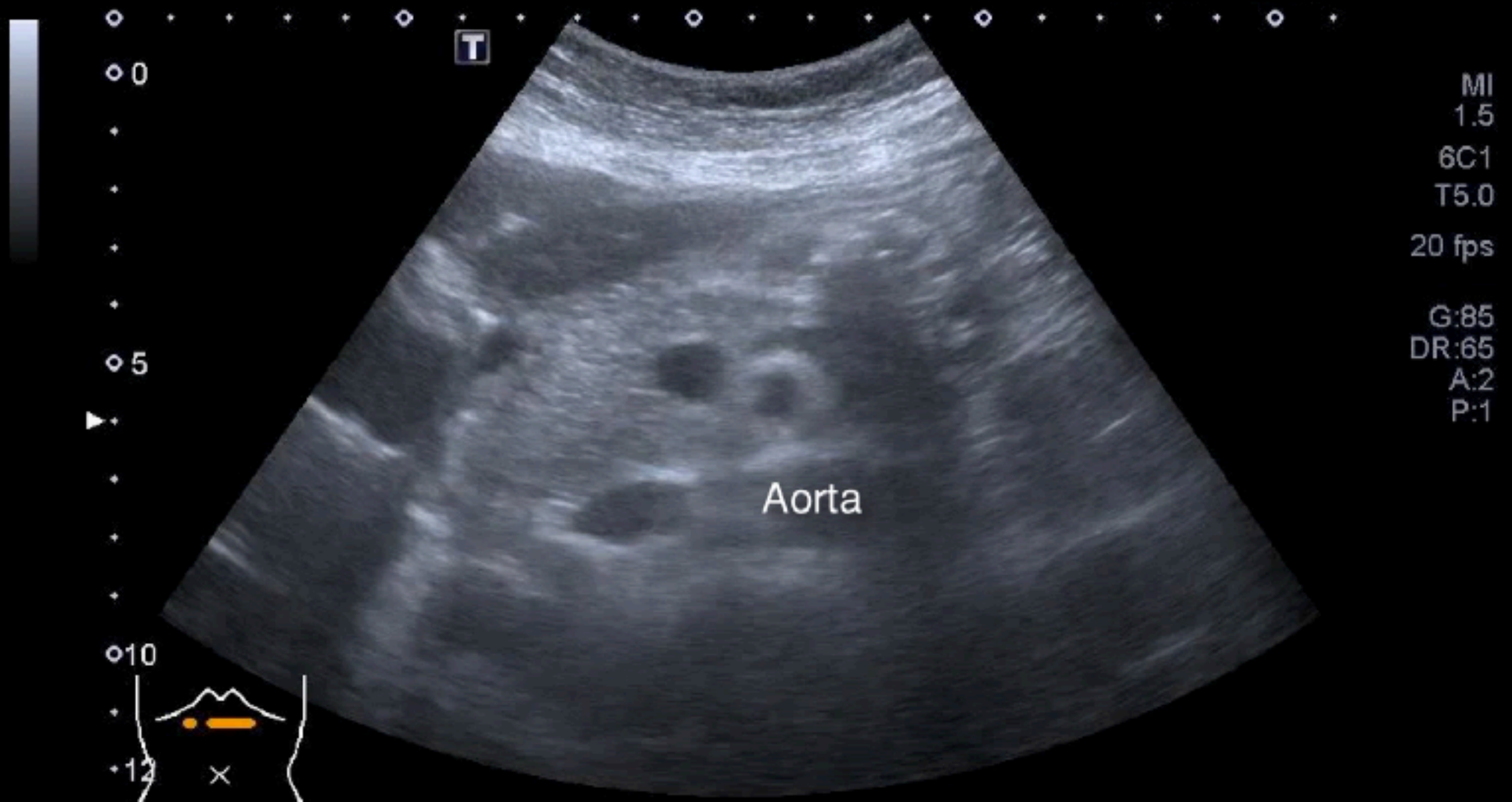
這是那一種探頭操作手法 ??



探頭固定在皮膚接觸處

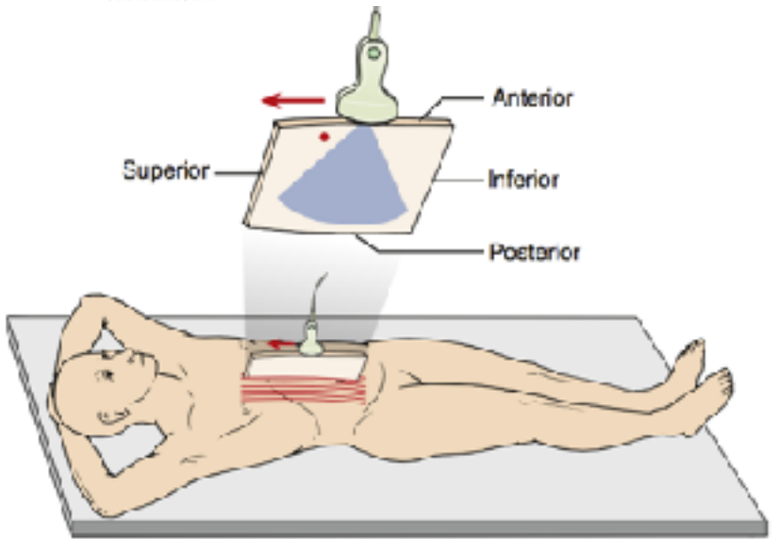
這是那一種探頭操作手法 ??

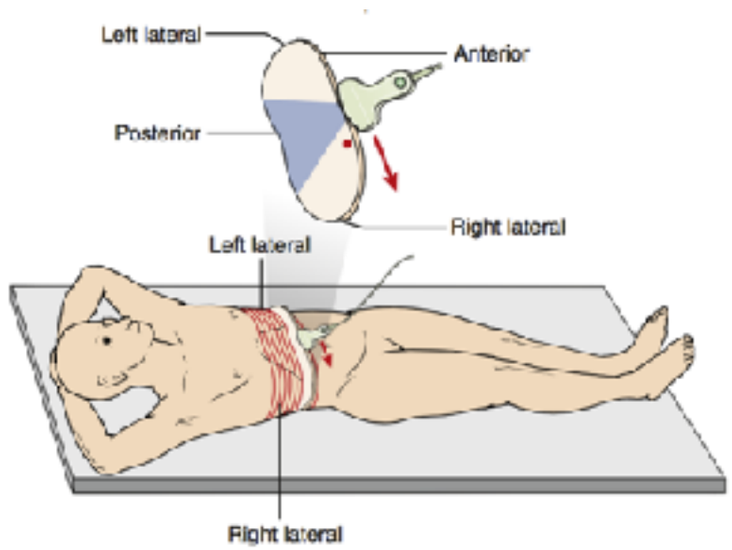
這是那一種探頭操作手法 ??

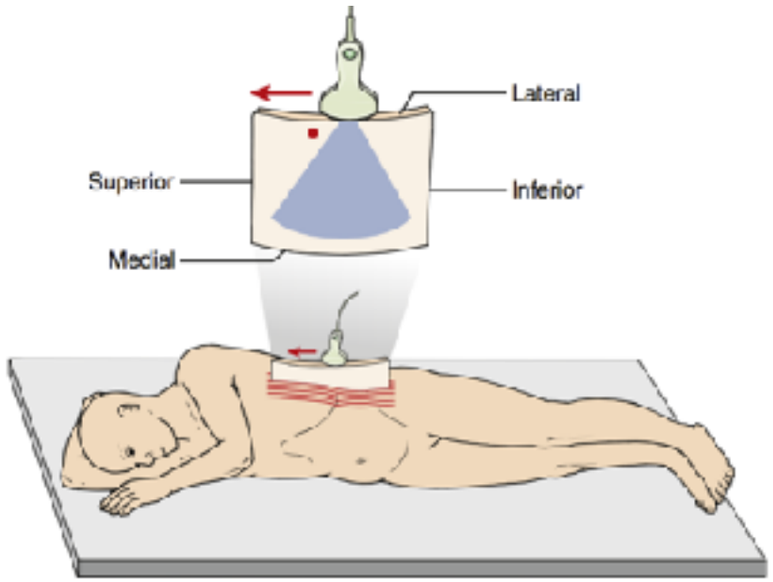


探頭固定在皮膚接觸處

ULTRASOUND
PROGRAM



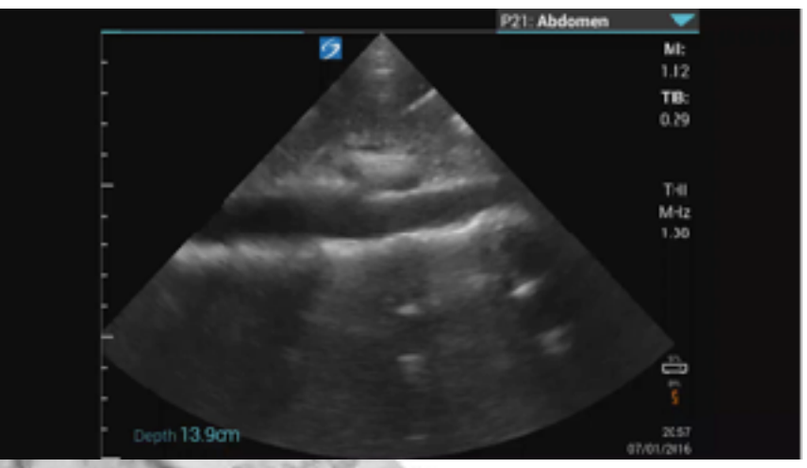


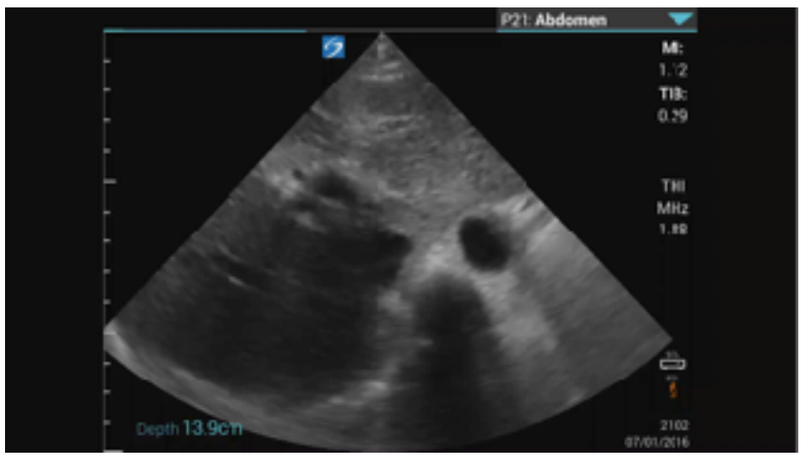


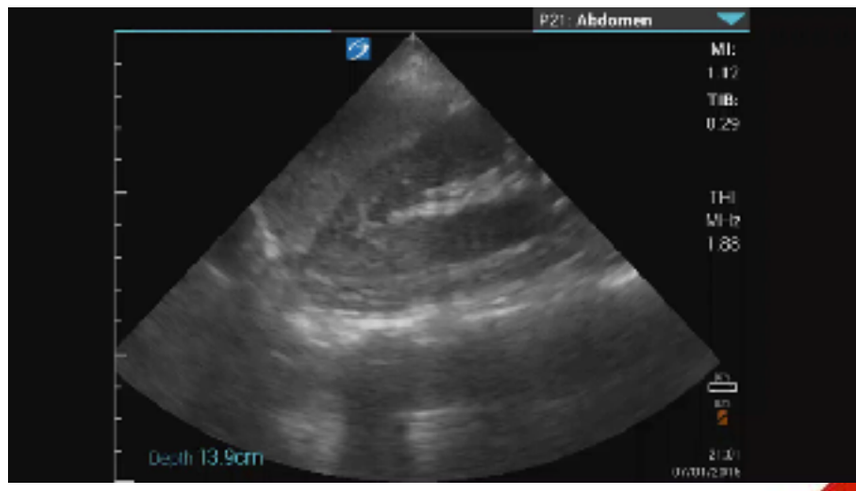
Sagittal

Transverse

Coronal

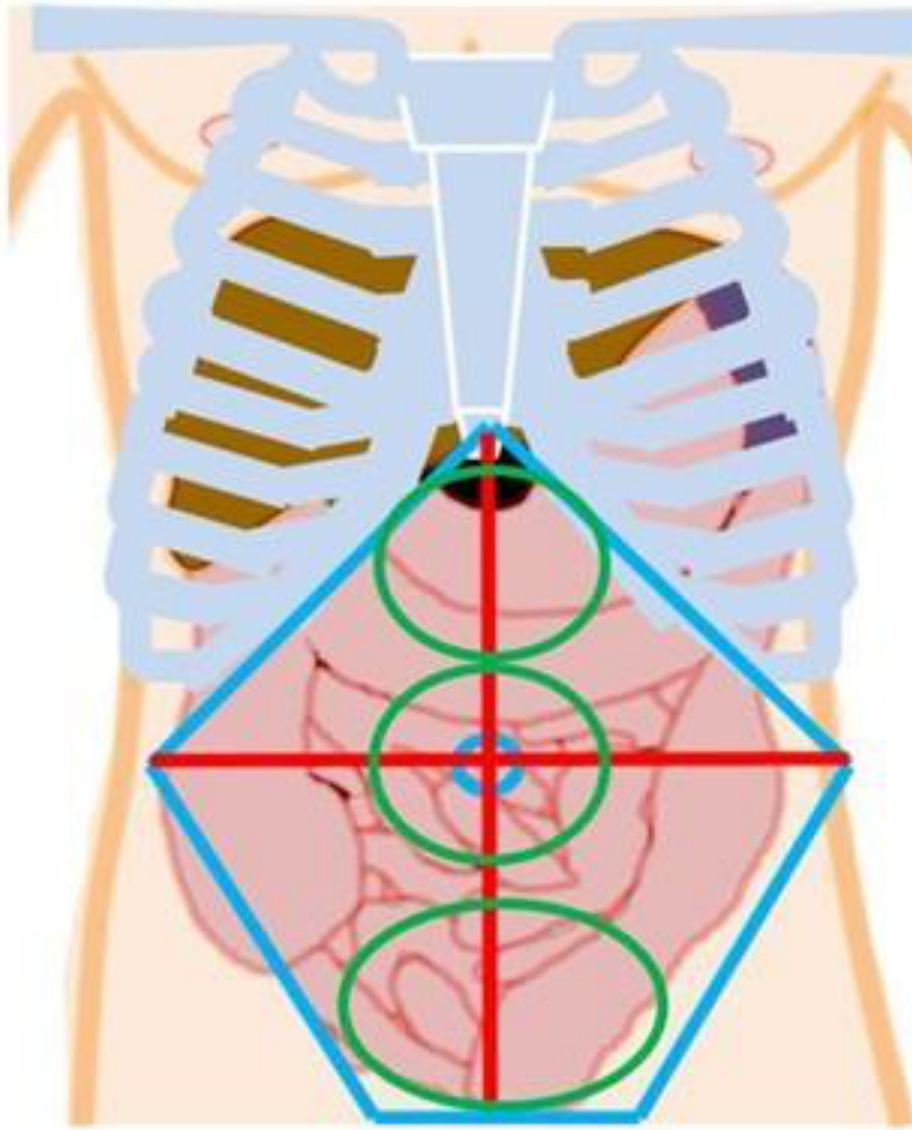






Approach to Abdominal Pain

Location
Onset
Type
Severity

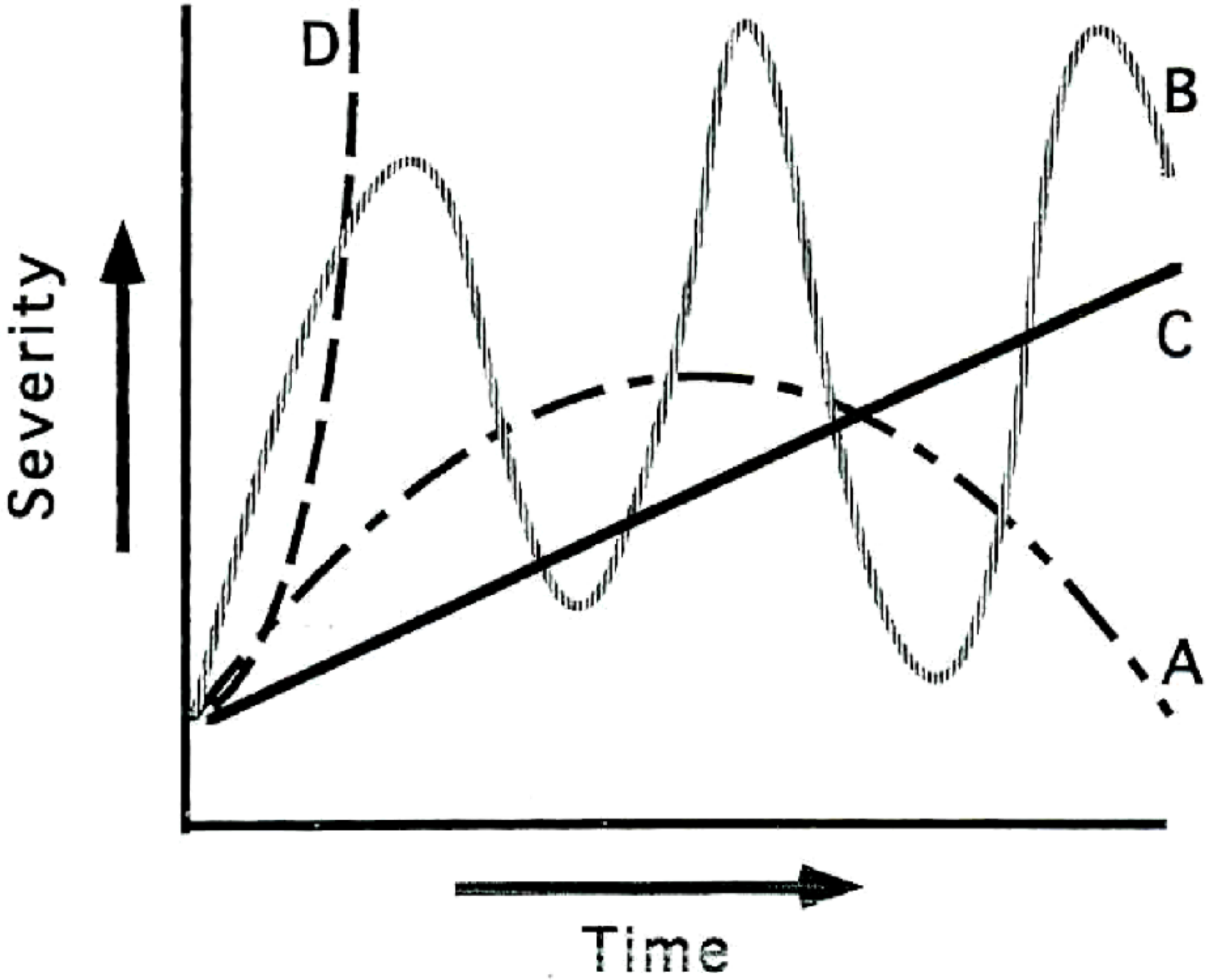


Other locations (radiation)
Factors (aggravating / alleviating)

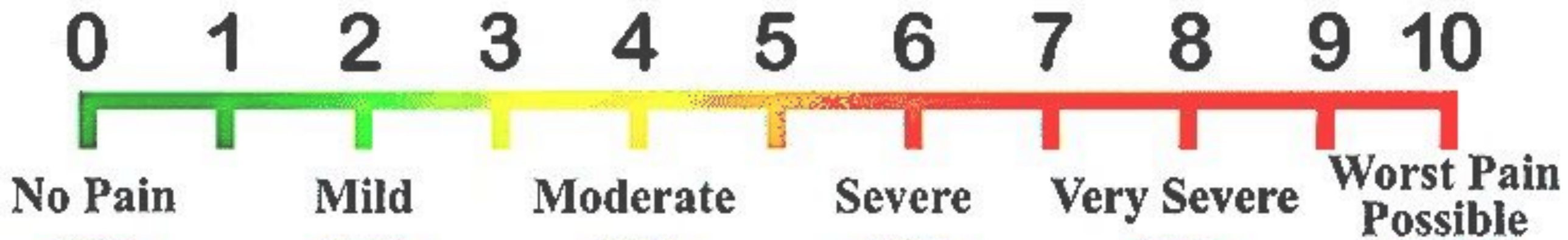
Progression
Associated symptoms
Insight (what do they think it is)
Need relief (what have they taken)

@kwburak

該如何下手 ??


D
B
C
A
Severity
Time

ULTRASOUND
PROGRAM



ULTRASOUND
PROGRAM

病史詢問

理學檢查

Y POCUS N

Taipei Medical University Center for Education in Medical Simulation

病史詢問

理學檢查

POCUS

ULTRASOUND PROGRAM

POCUS for Acute ABDOMEN

A for aorta

B for biliary

D for diaphragm

O for obstruction

M for moving fluid or gas

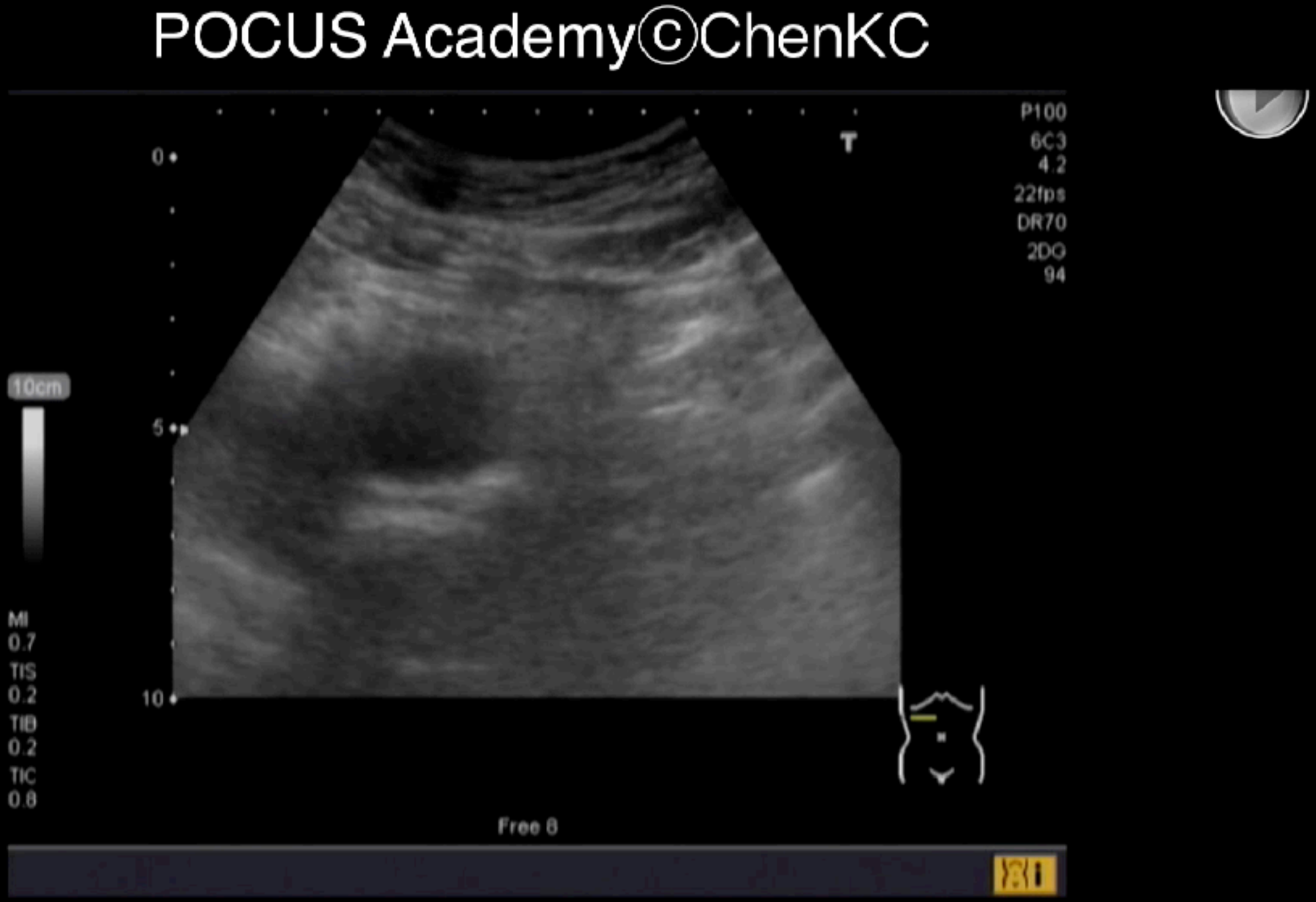
E for ectopic pregnancy

N for nephropathy

Taipei Medical University Center for Education in Medical Simulation

59M, Abd pain & hematuria

59M, Abd pain & hematuria



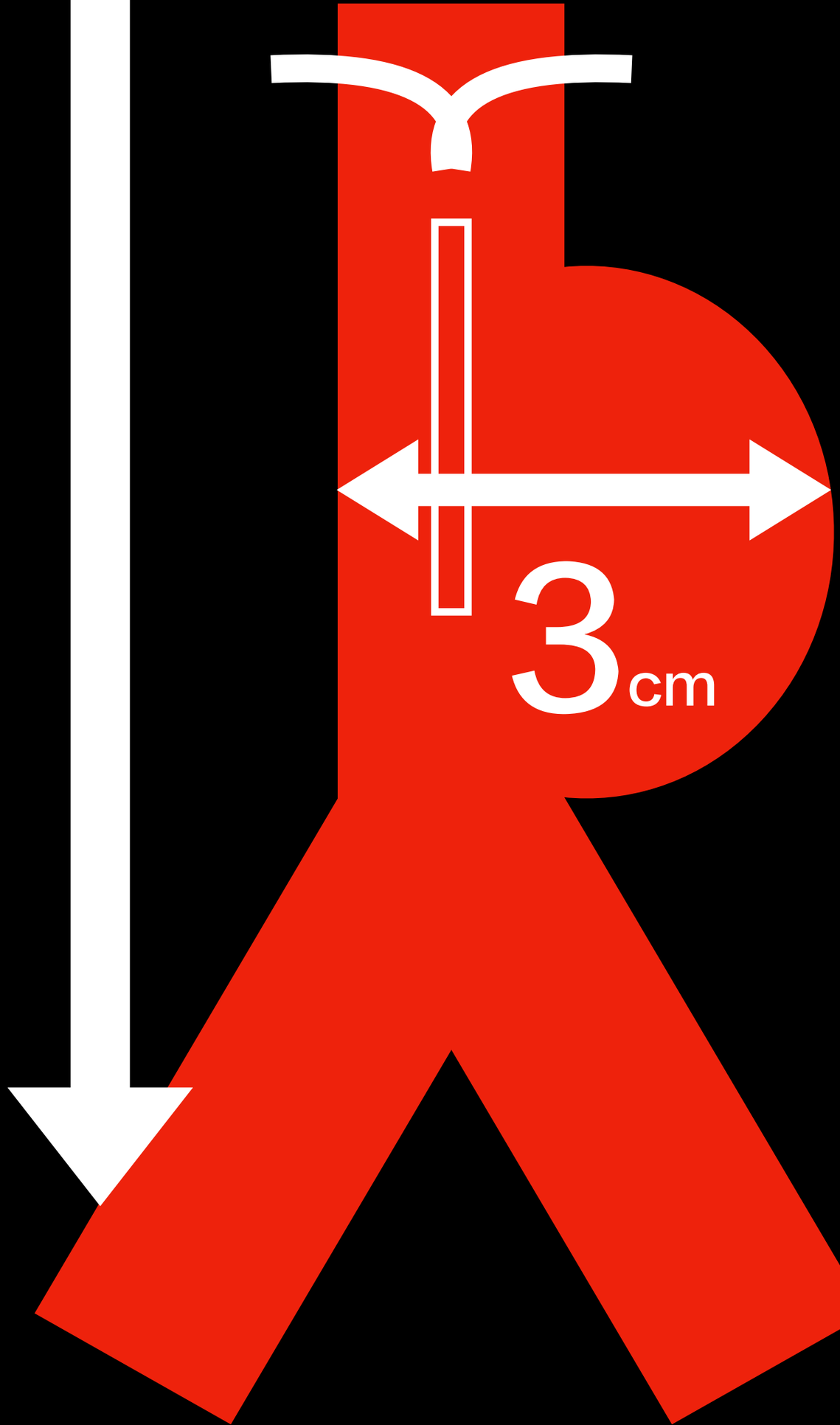
ULTRASOUND
PROGRAM

ABDOMEN

A for AAA & AD

3 cm

Taipei Medical University Center for Education in Medical Simulation



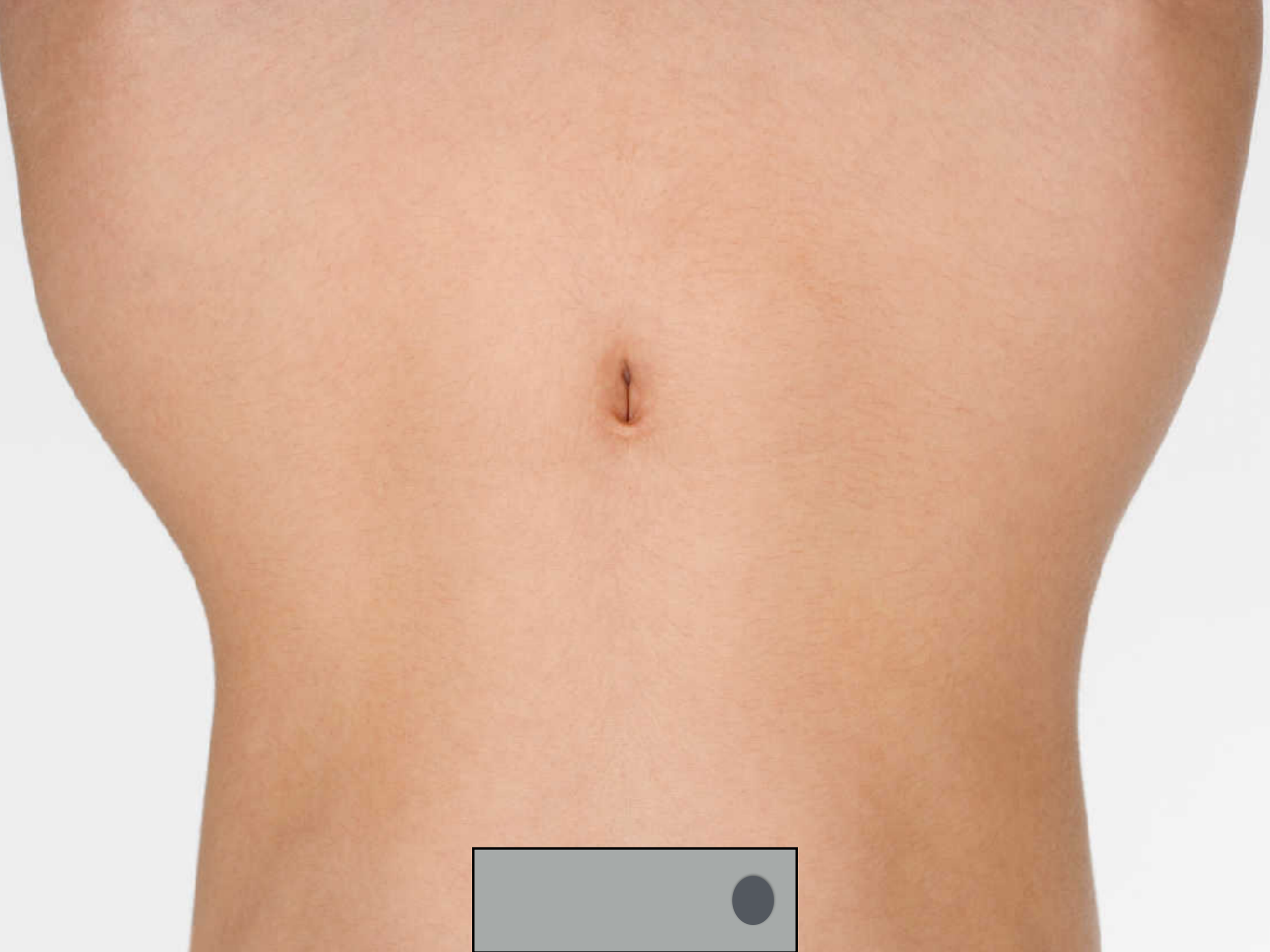
AAA

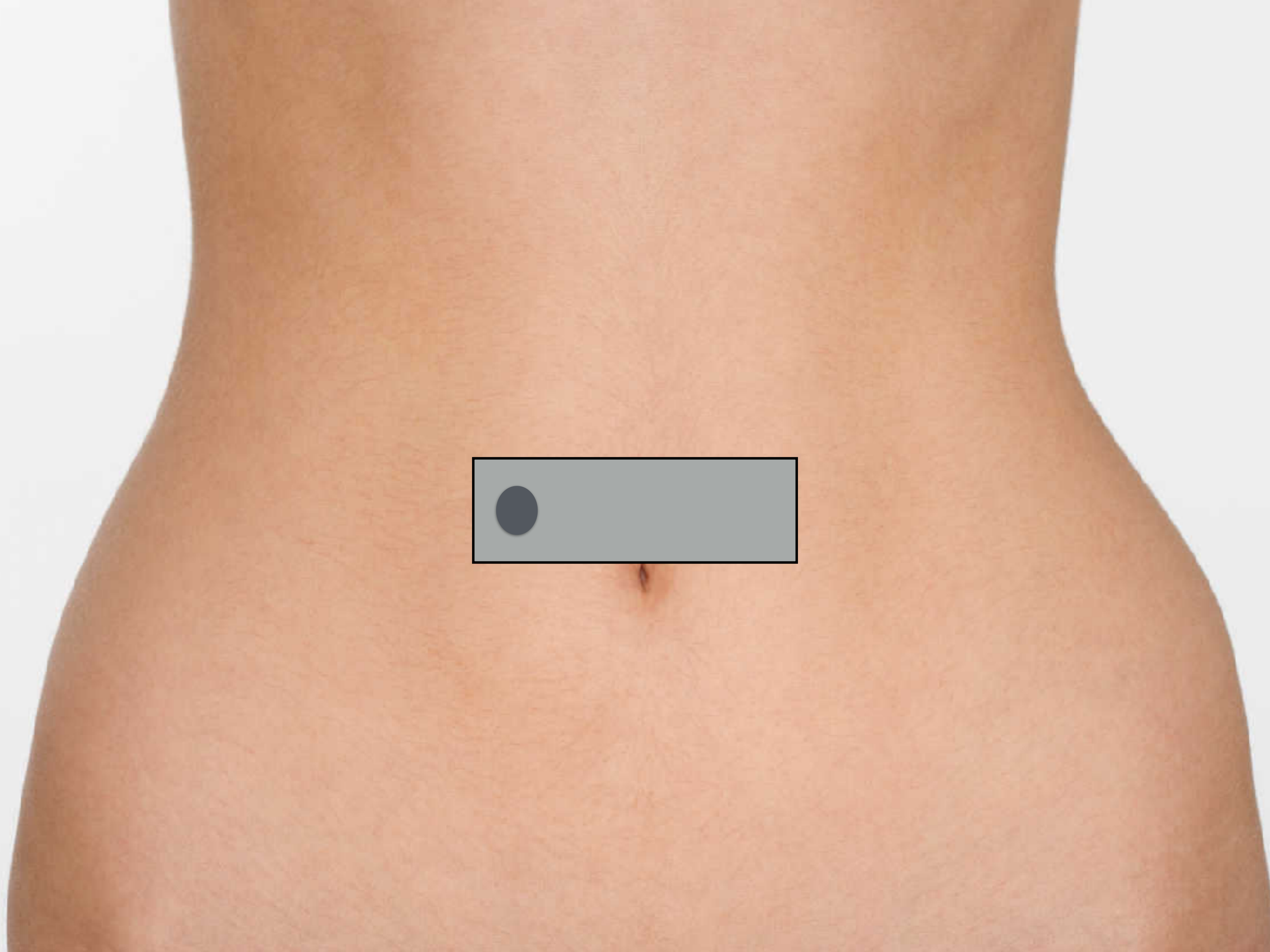
> 50 y/o

Syncope

Hypotension

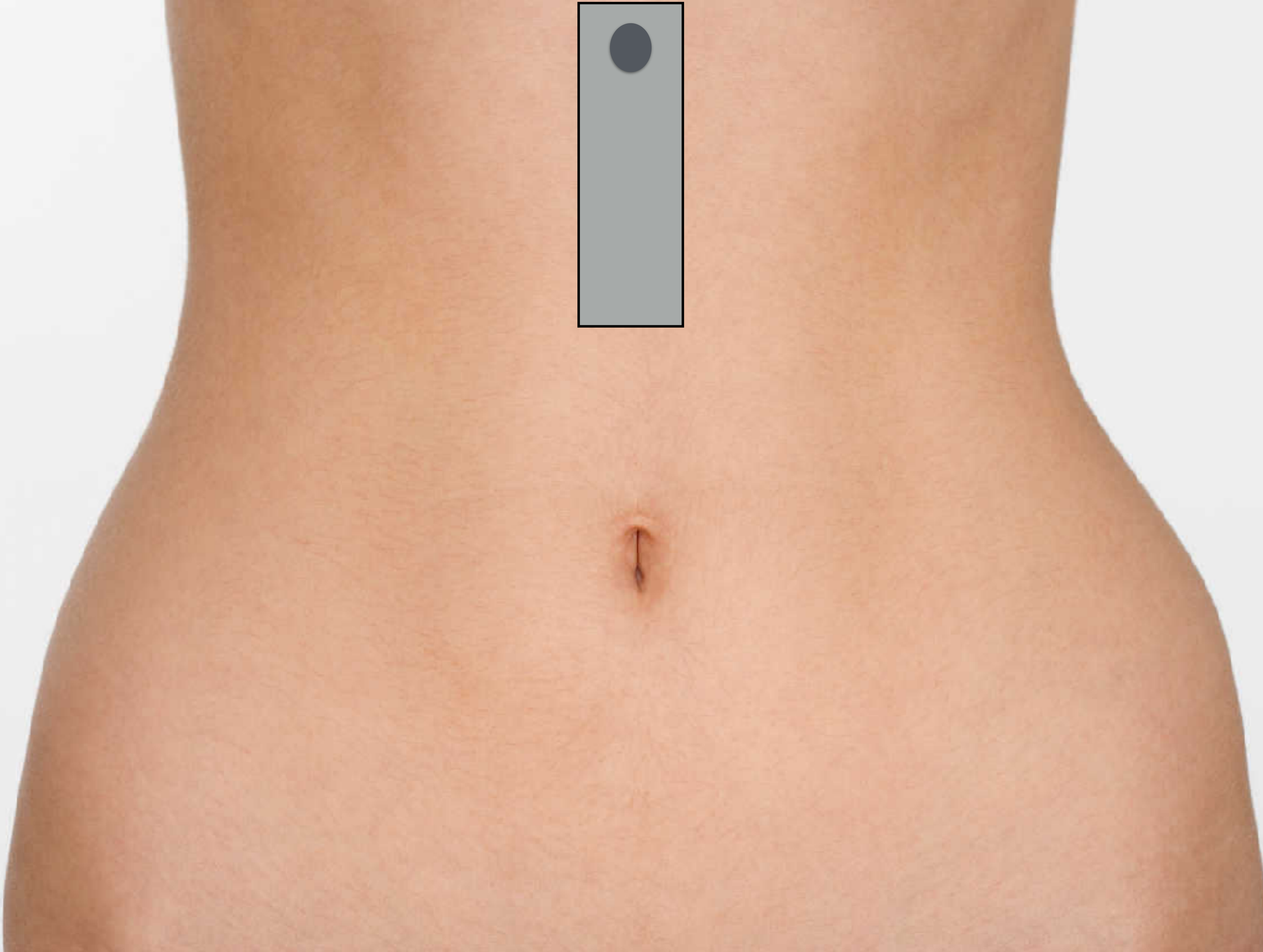
ABD/Flank/Back/Groin

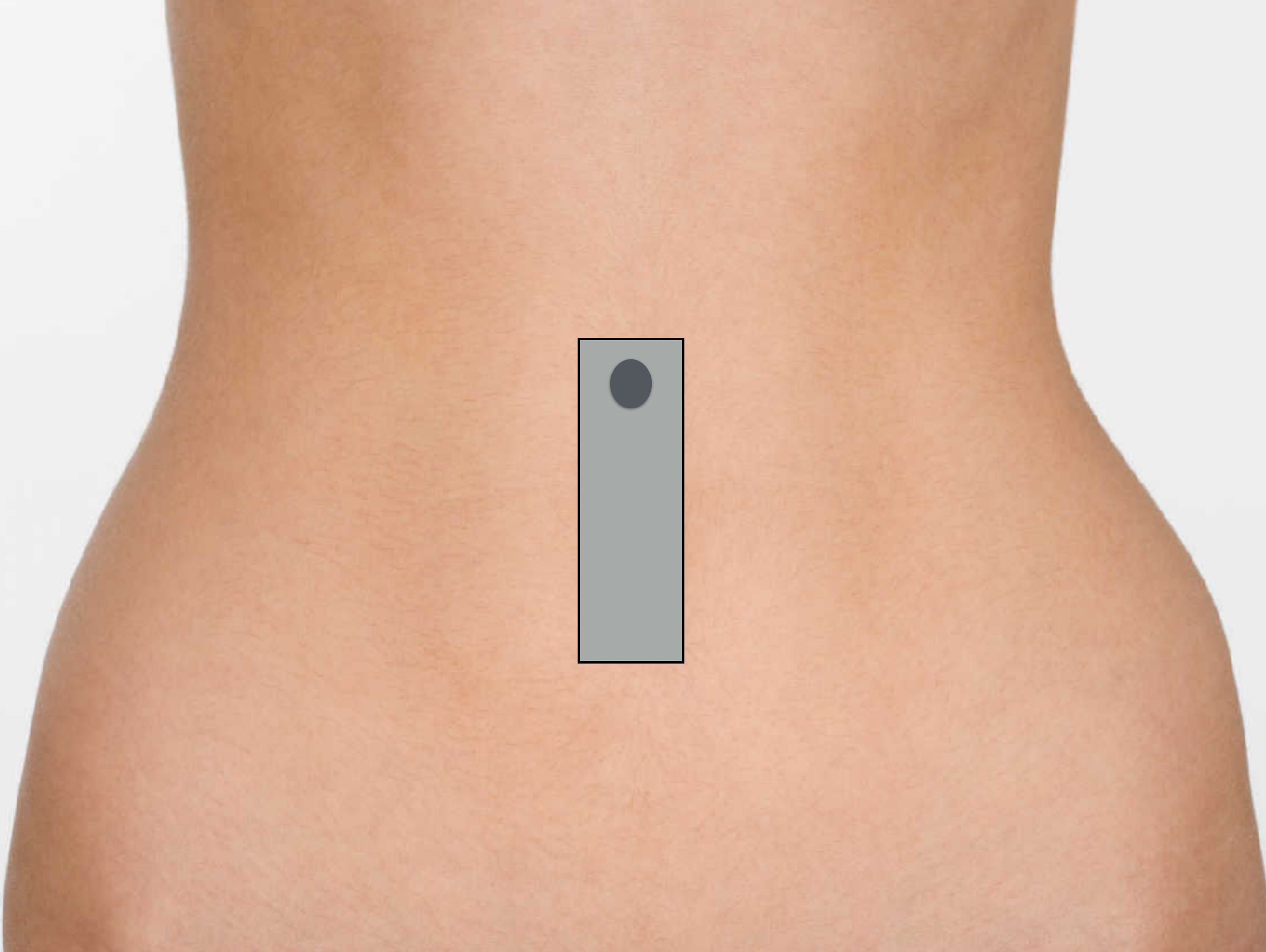




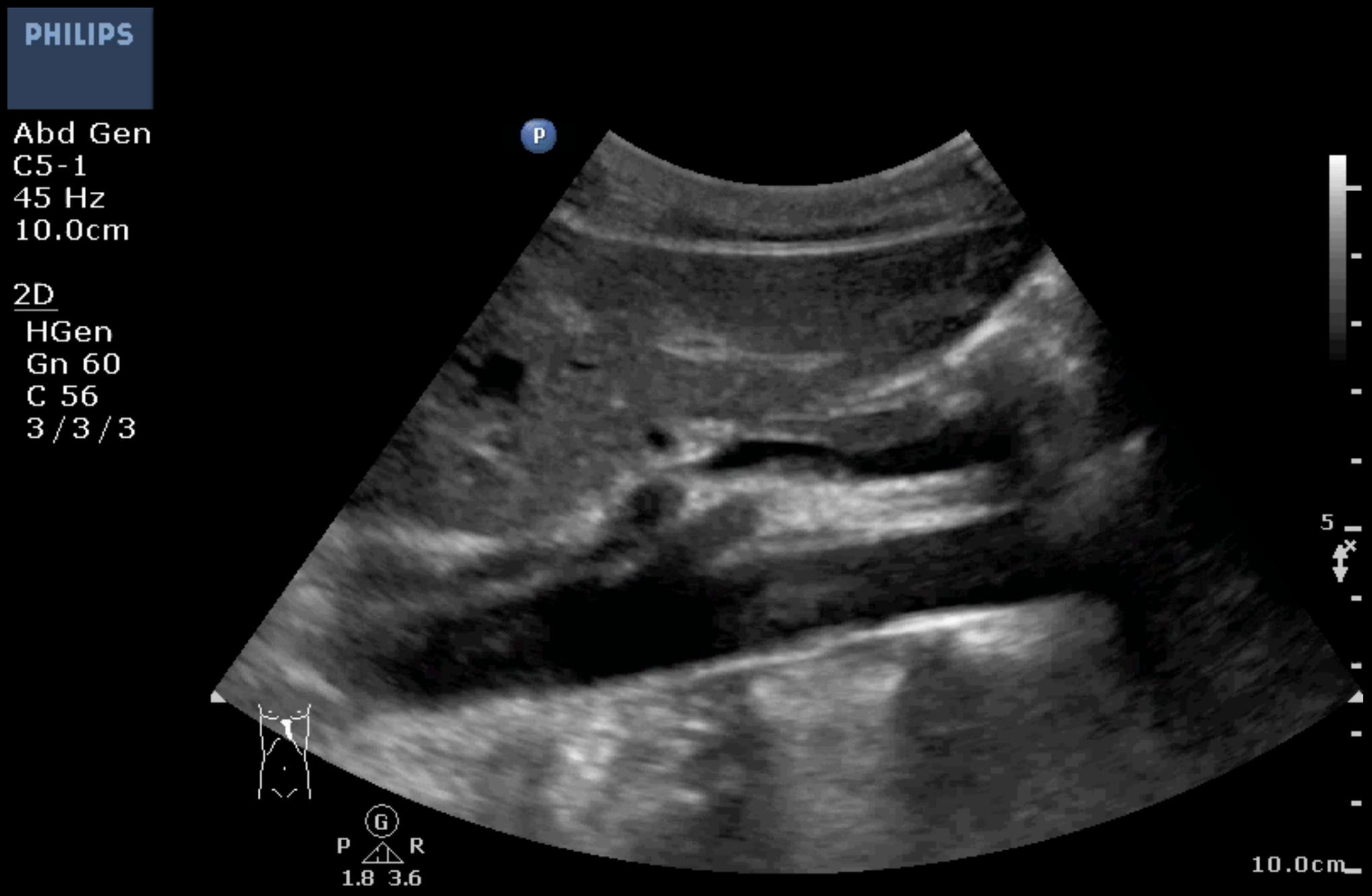
ABDOMEN

PHILIPS
Abd Gen
C5-1
42 Hz
11.0cm
2D
HGen
Gn 66
C 56
3/3/3
P
5
10
11.0cm
G
P
R
1.8 3.6



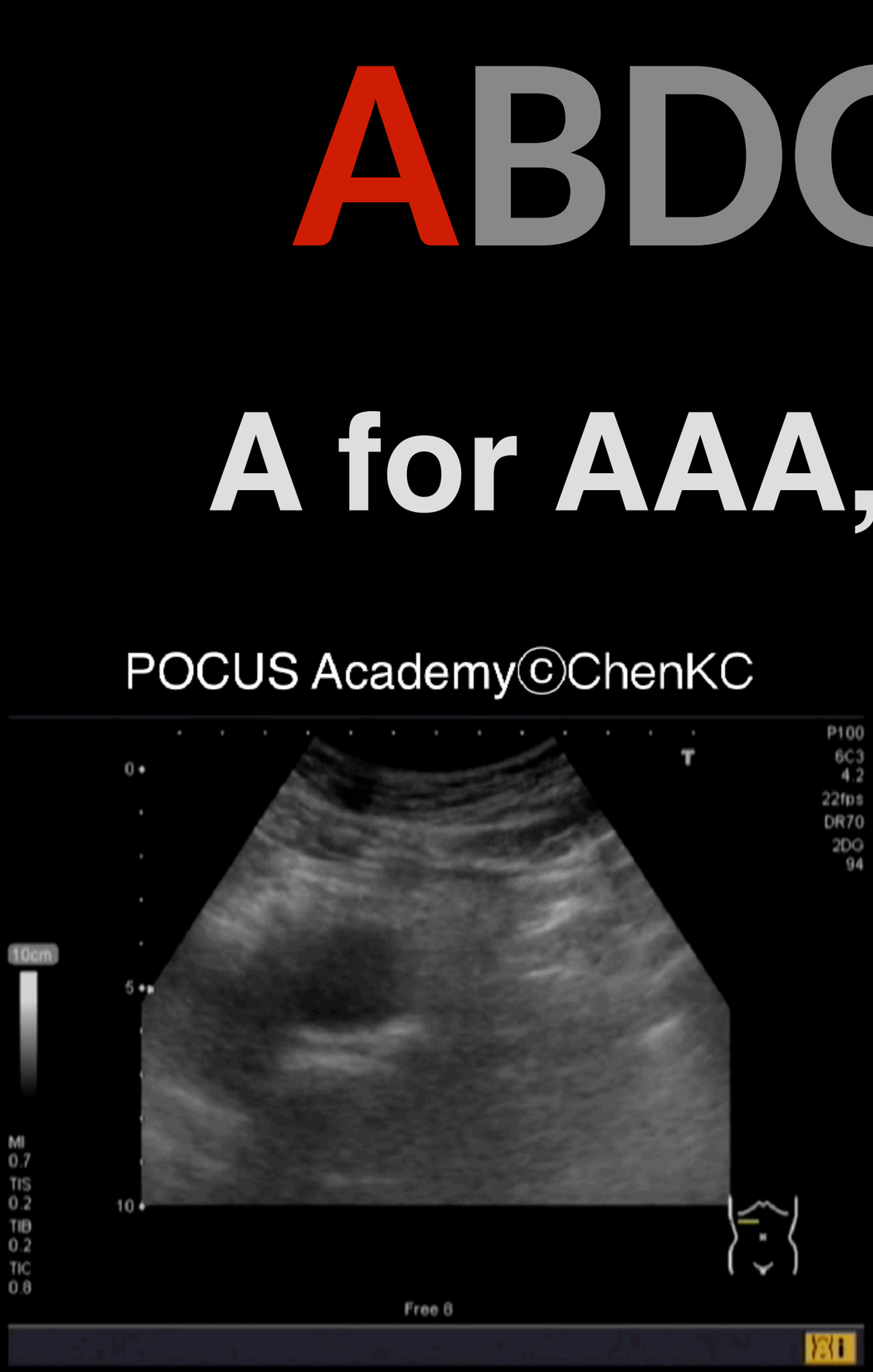


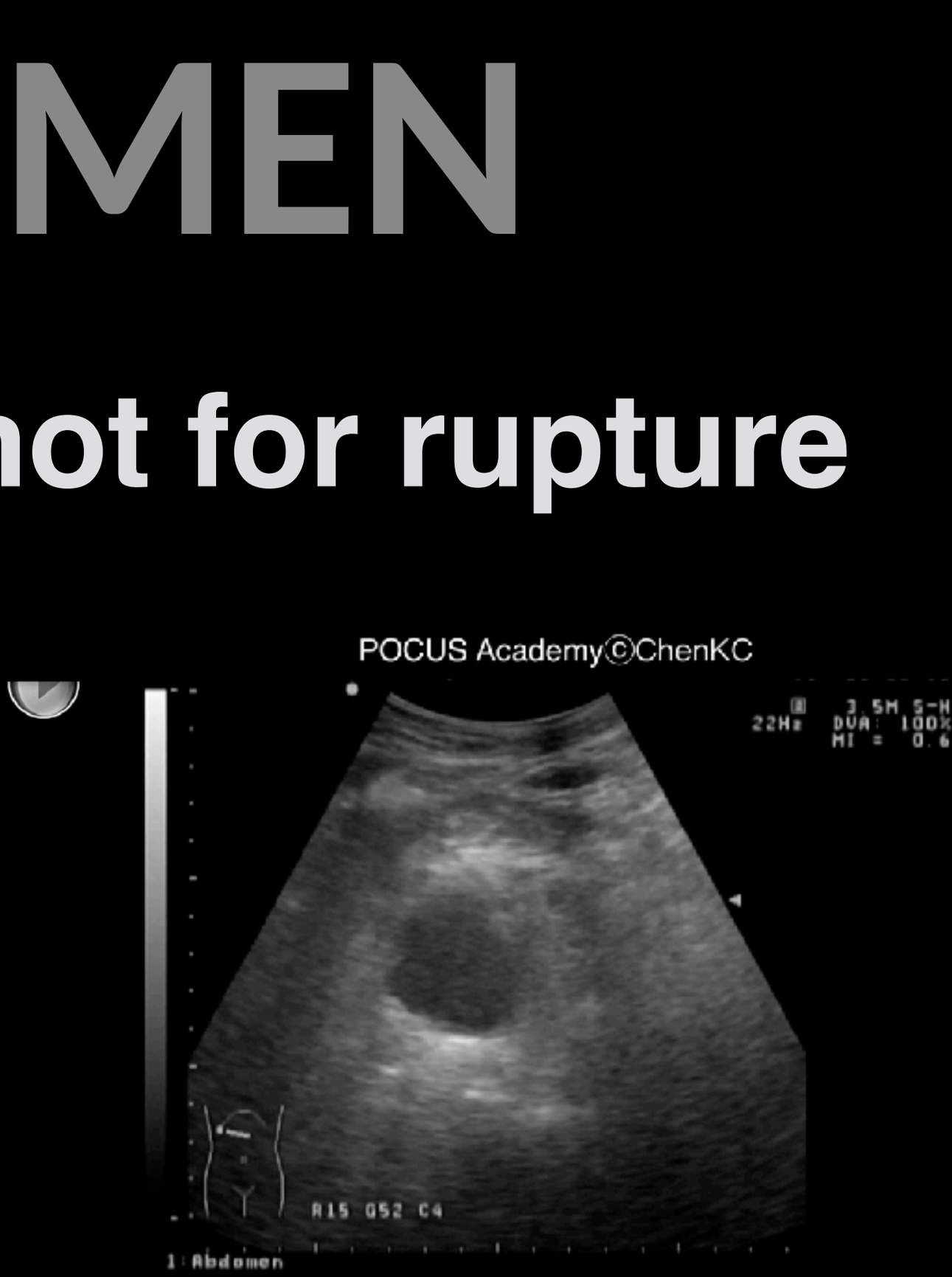
ABDOMEN


PHILIPS
Abd Gen
C5-1
45 Hz
10.0cm
2D
HGen
Gn 60
C 56
3/3/3
P
G
P
R
1.8 3.6
5
10.0cm

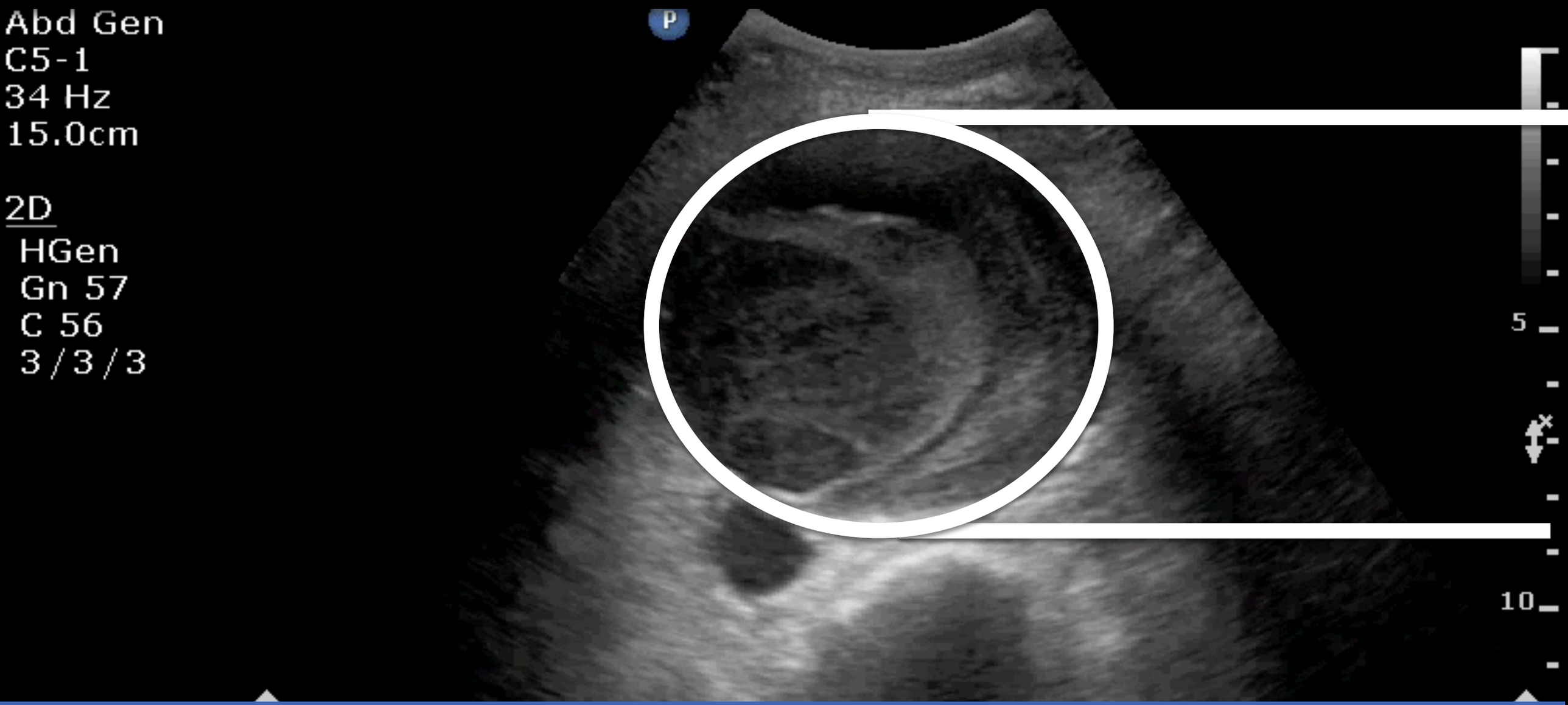
ABDOMEN

A for AAA, not for rupture



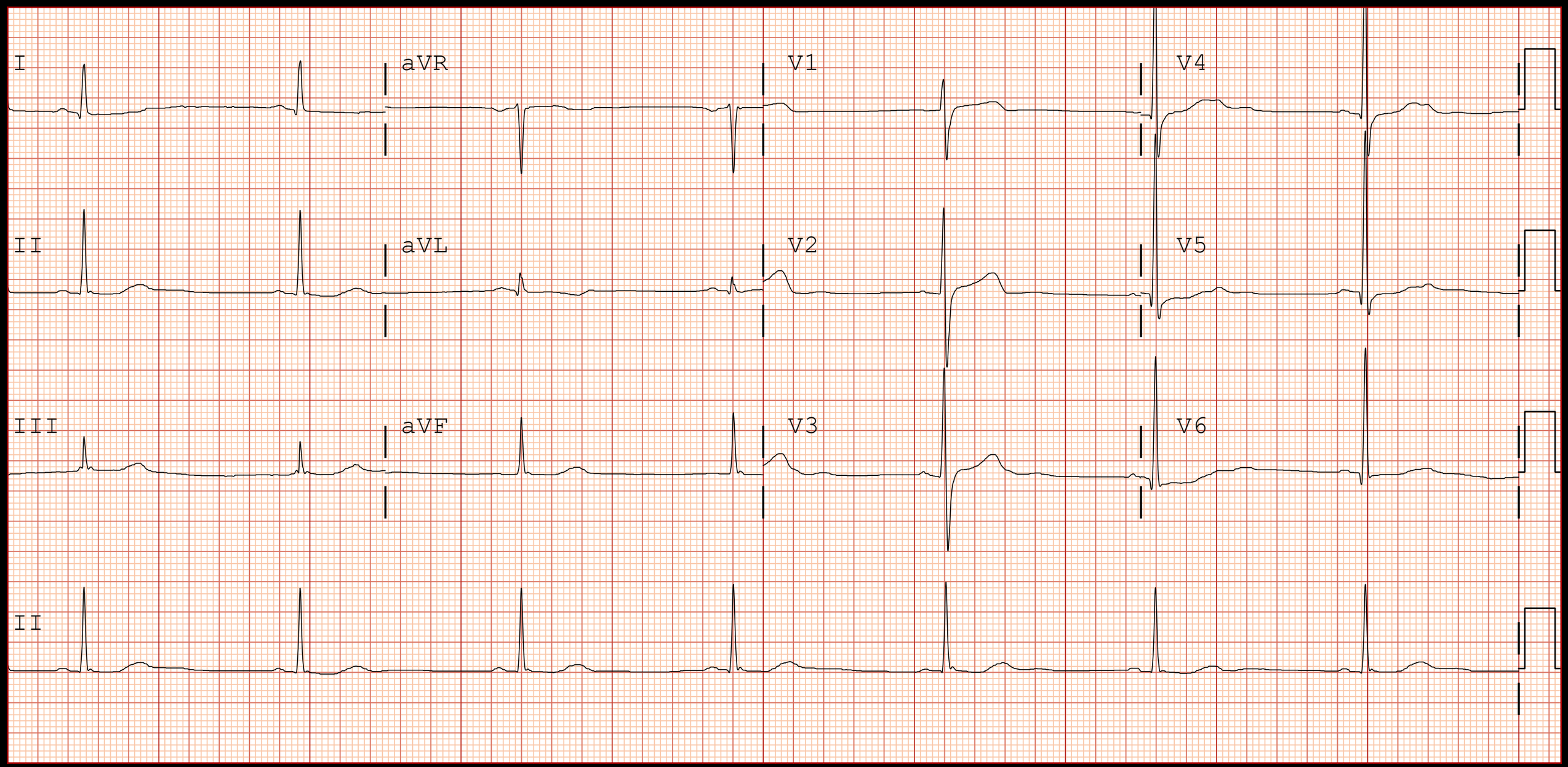


ABDOMEN



Eyeballing

63M, chest/abd pain & low BP

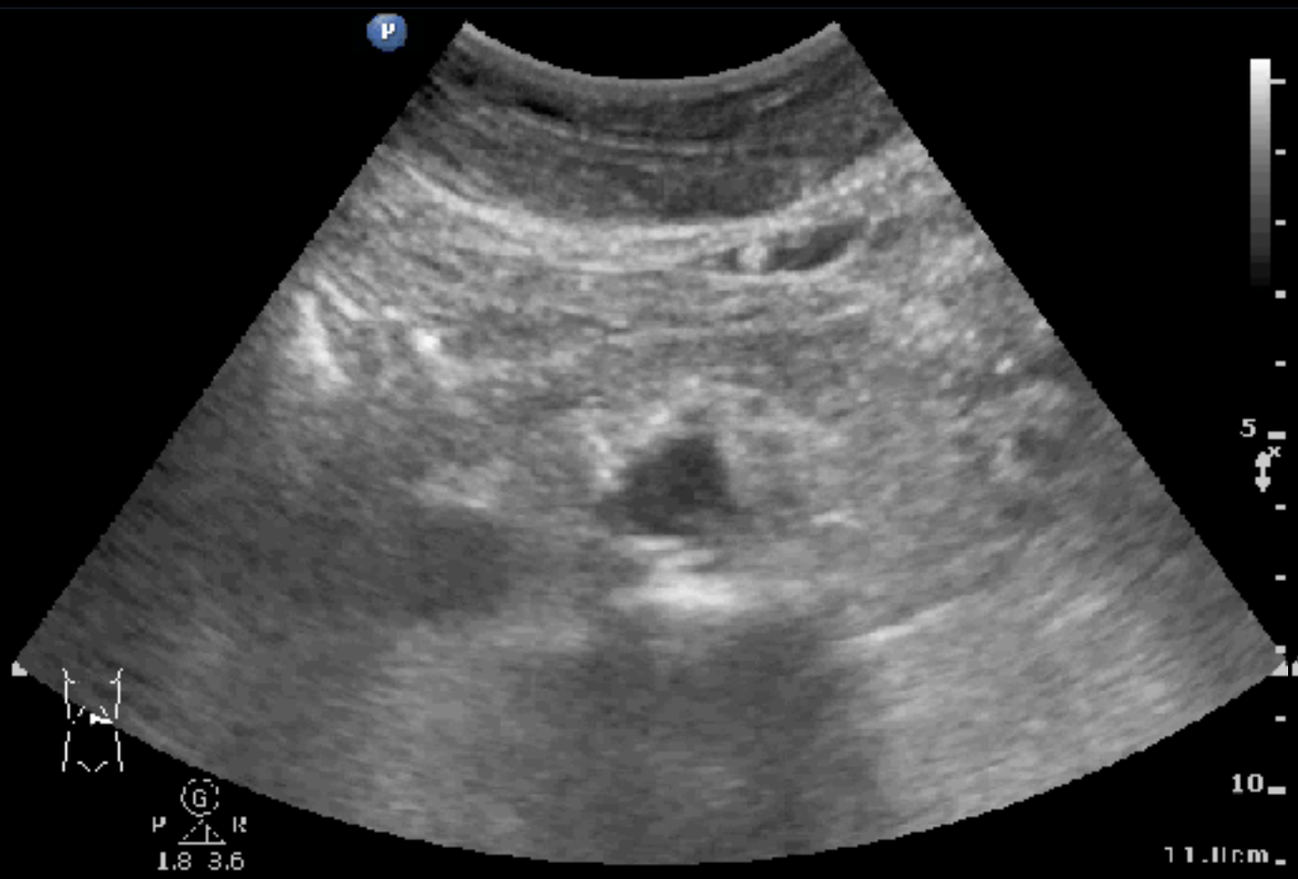


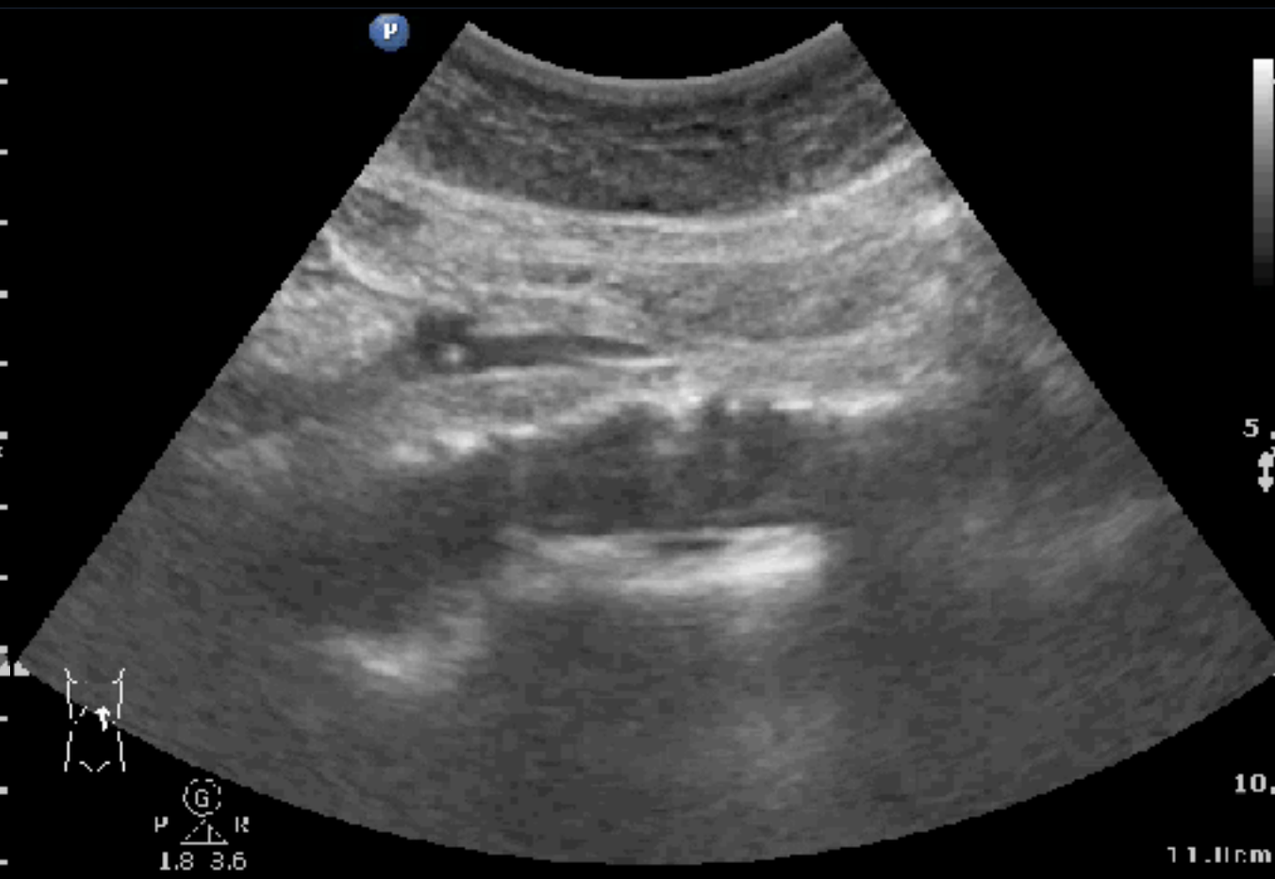
63M, chest/abd pain & low BP

63M, chest/abd pain & low BP

ABDOMEN

Aortic dissection





59M, epigastric pain at midnight

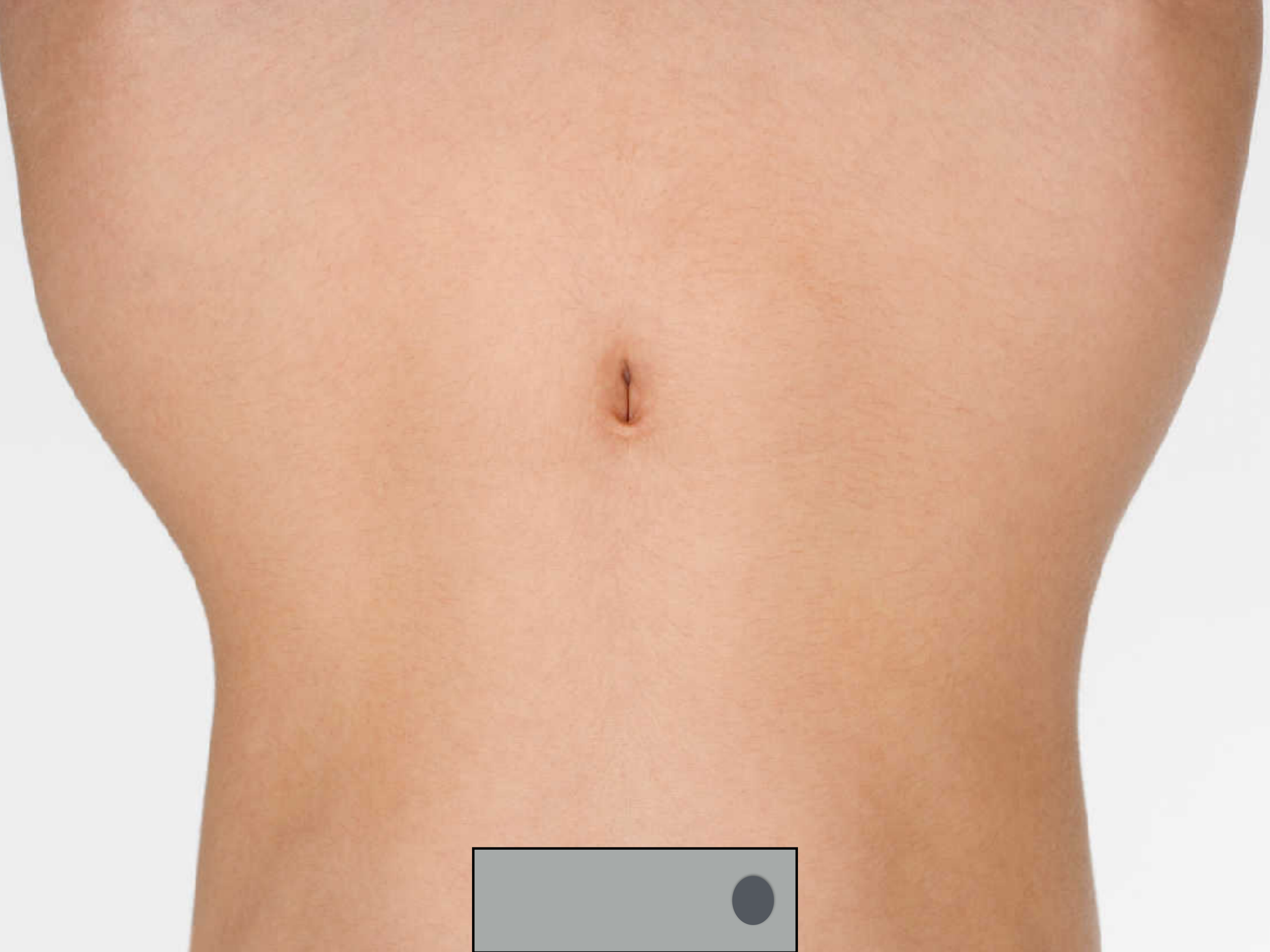
ULTRASOUND
PROGRAM

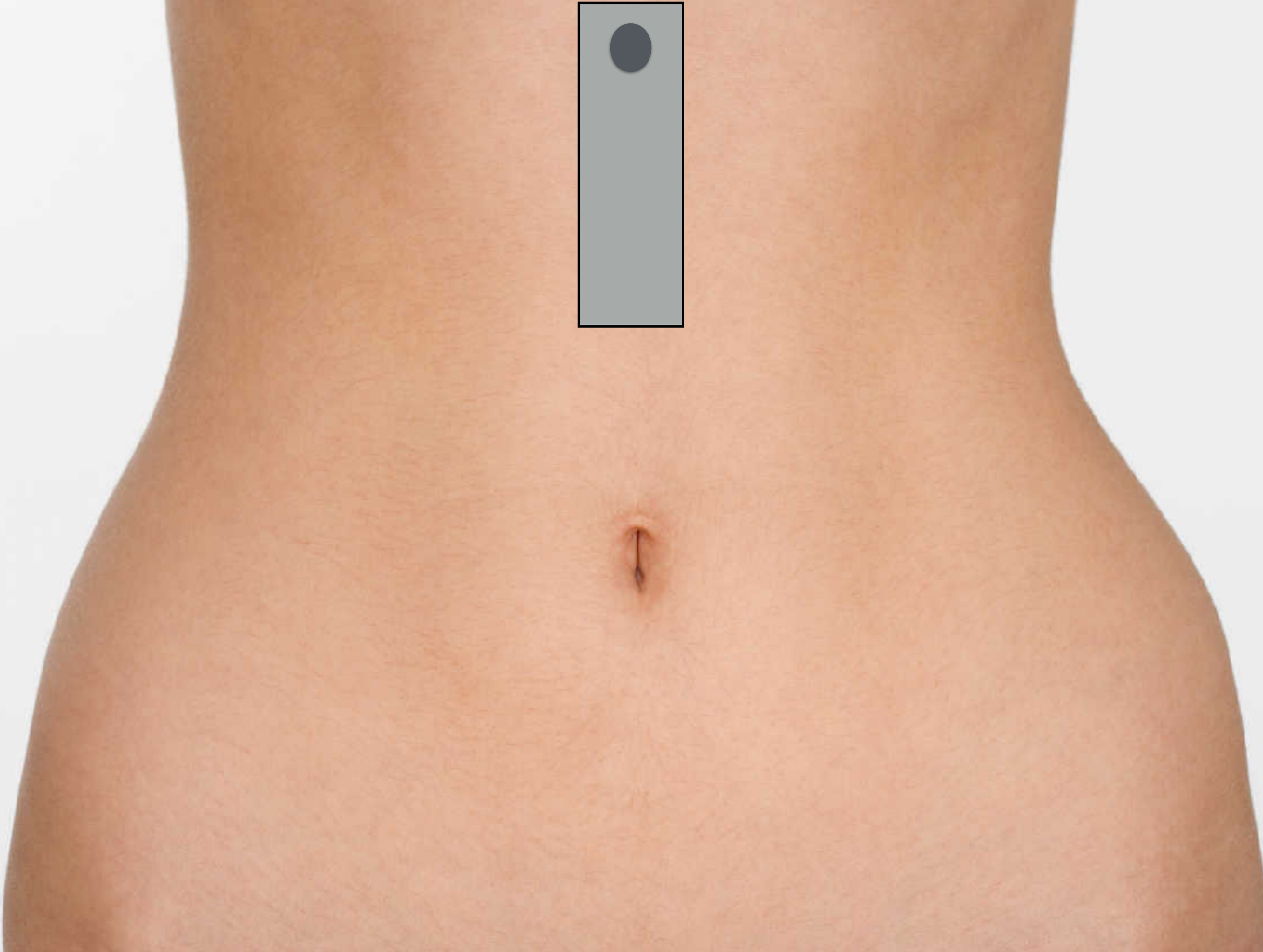
ABDOMEN

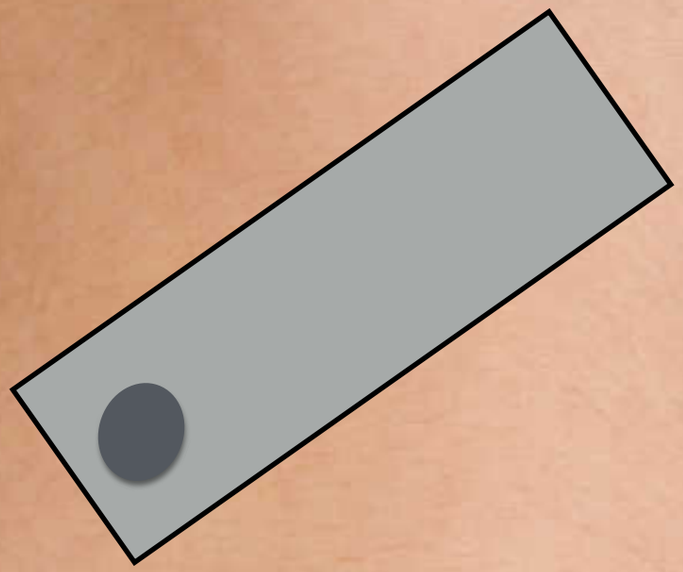
B for GB stone & dilatation

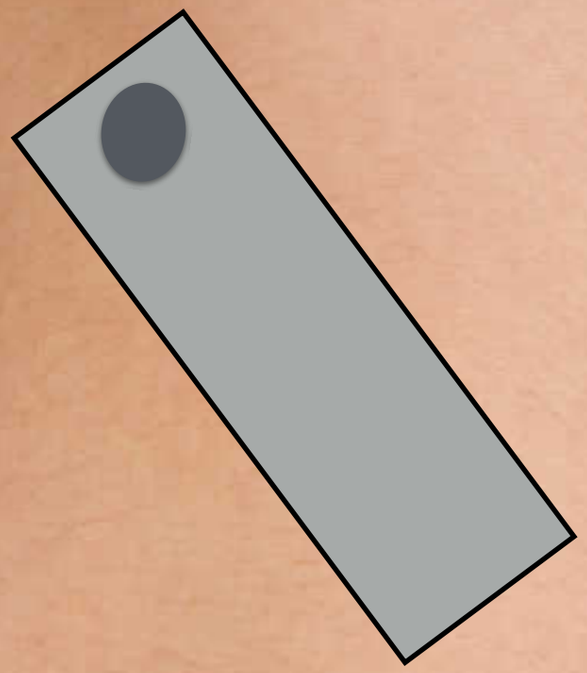
3 mm 7 mm 11 mm

Taipei Medical University Center for Education in Medical Simulation







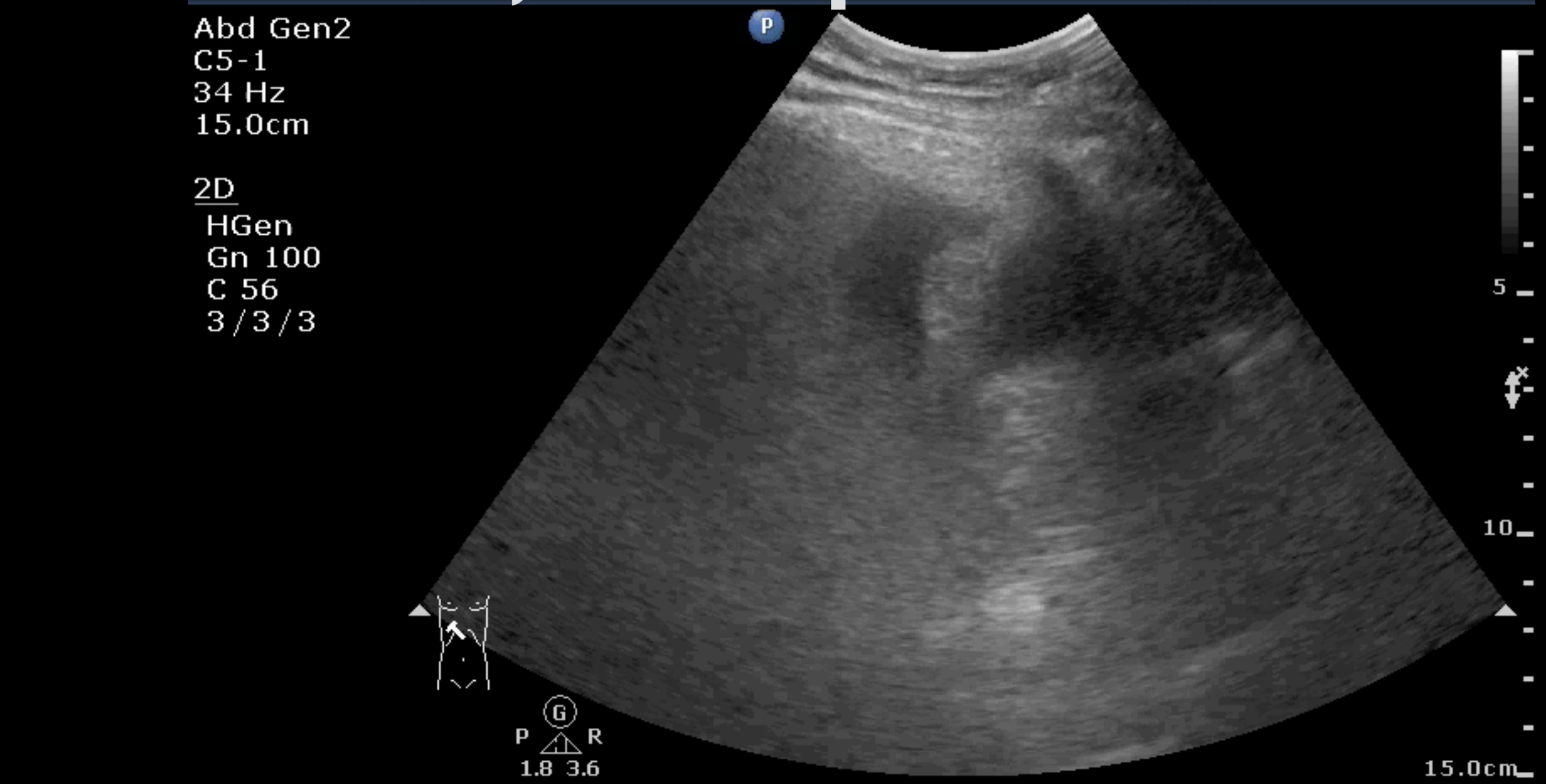


ABDOMEN

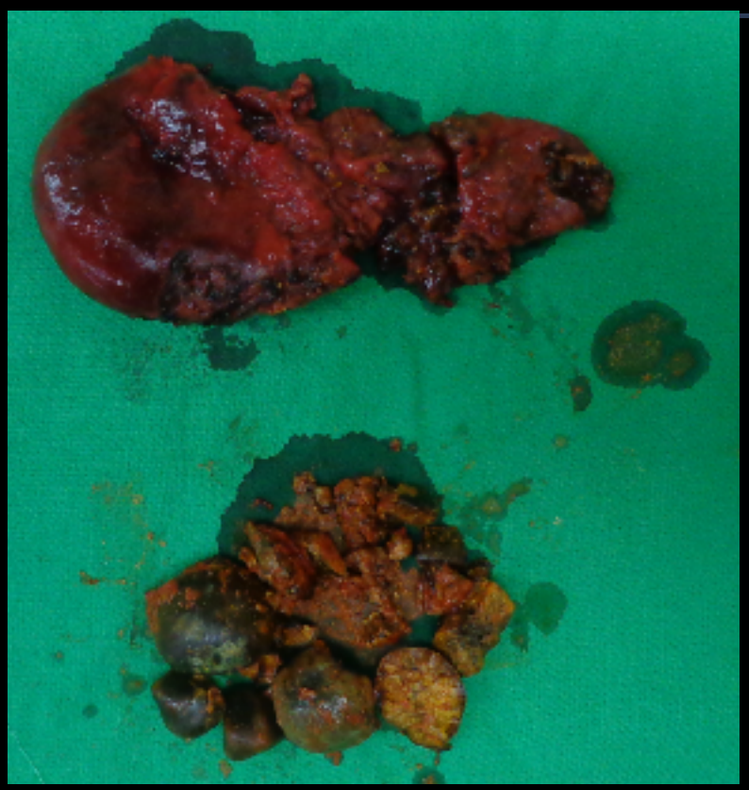
40F, RUQ pain

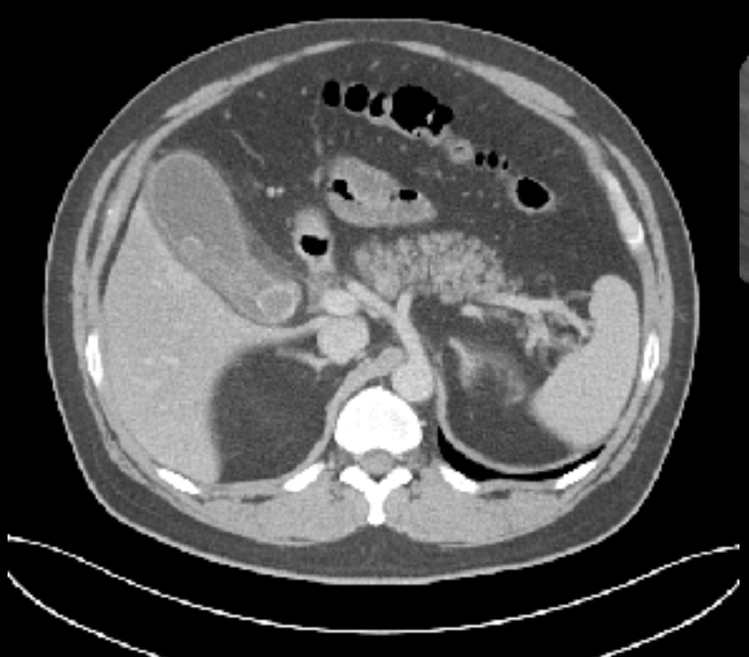
ABDOMEN

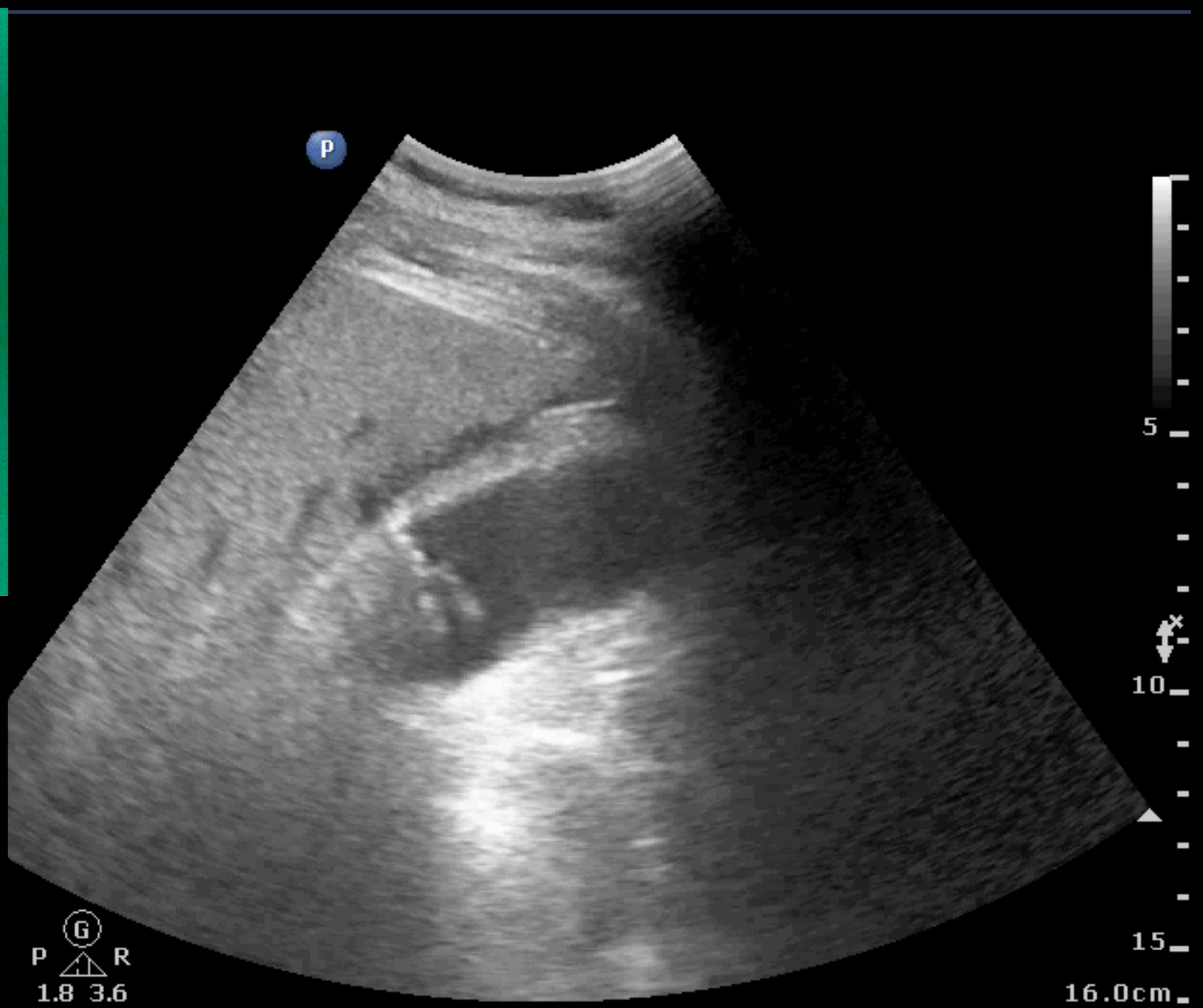
45M, RUQ pain & fever



Acute calculous cholecystitis







ABDOMEN

76F, Fever & Chills

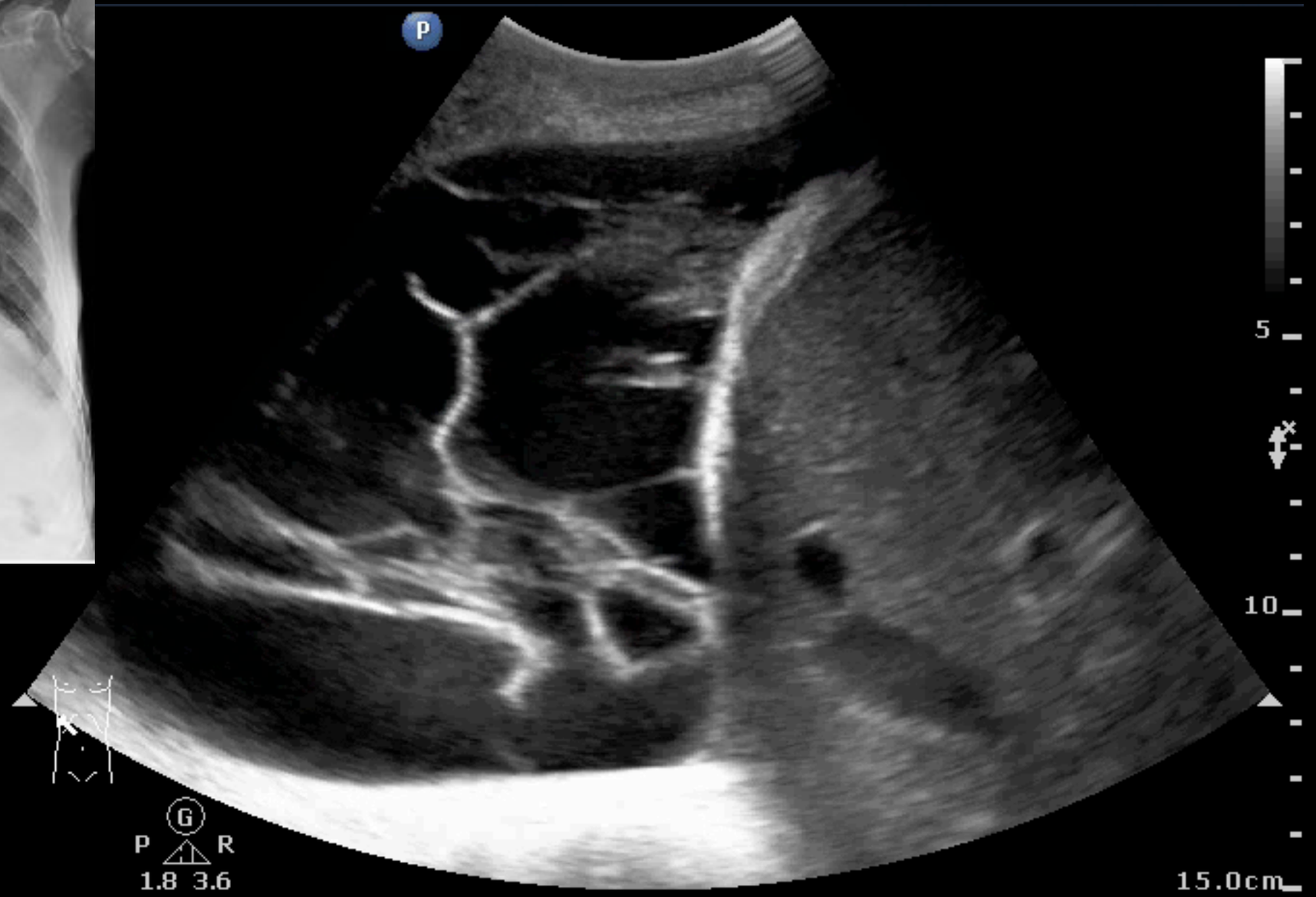
ABDOMEN

76F, Fever & Chills

ABDOMEN

CBD dilatation & stone

73M, chest/abd pain & SOB



ULTRASOUND
PROGRAM

ABDOMEN

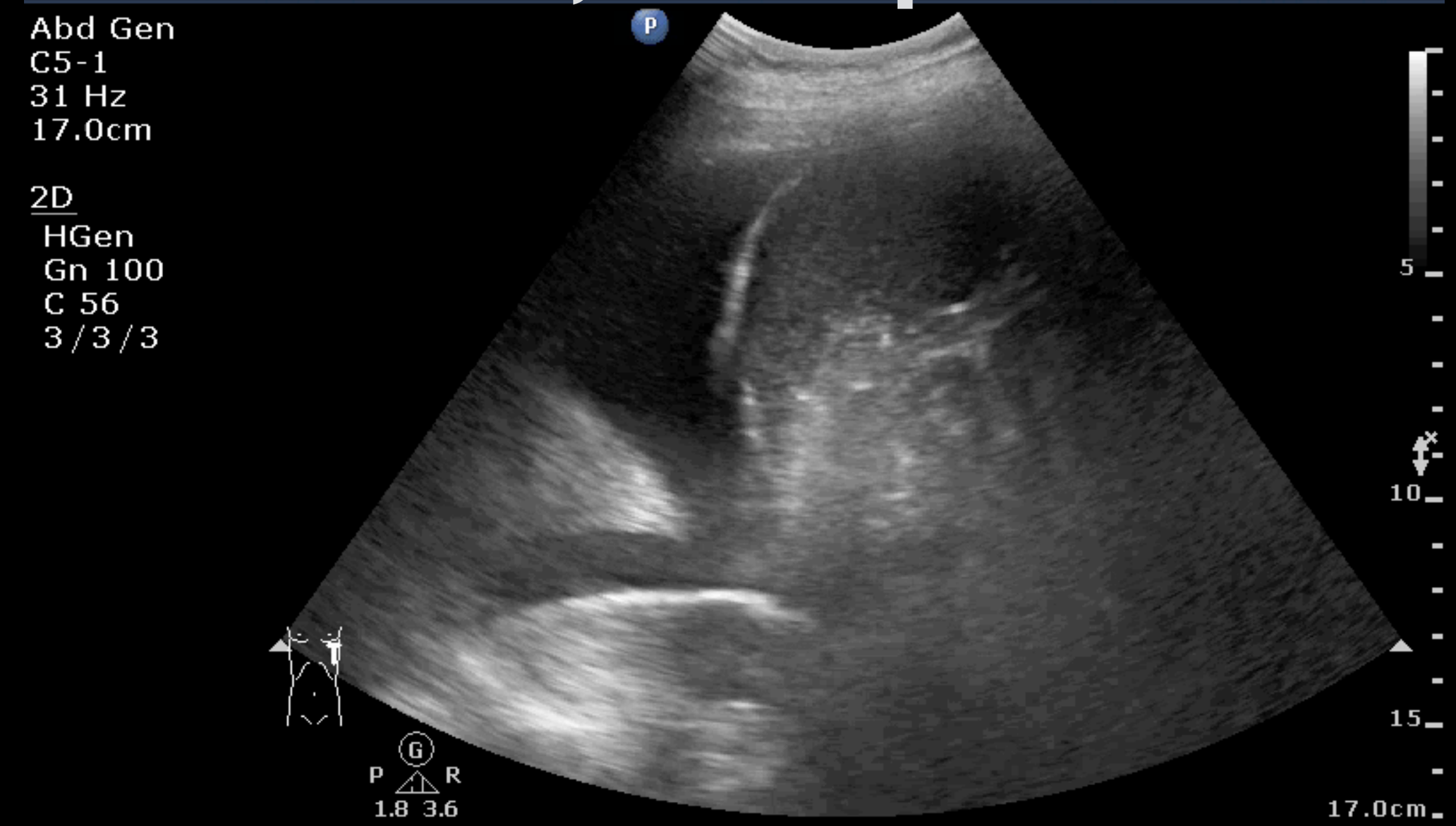
D for diaphragm

Outsider

Taipei Medical University Center for Education in Medical Simulation

ABDOMEN

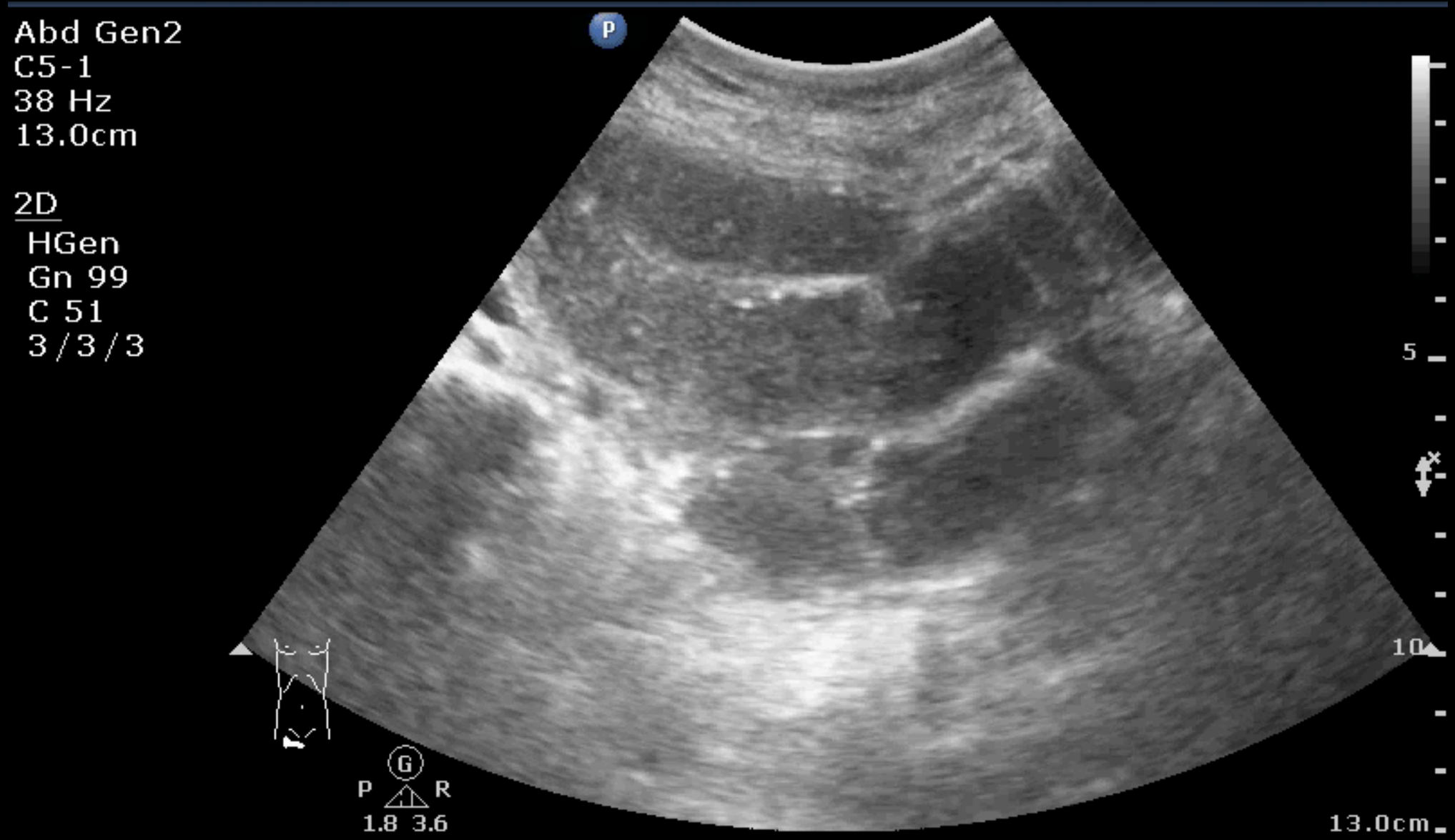
45M, LUQ pain



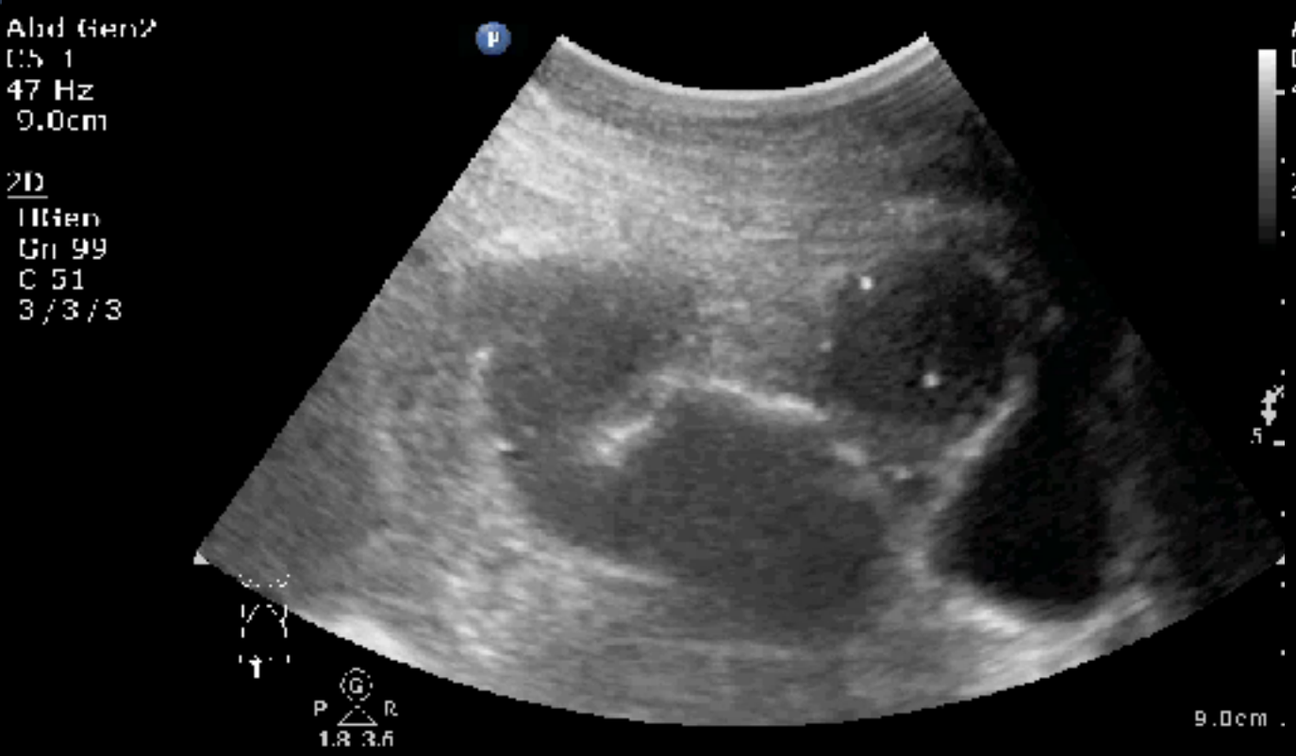
PN & parapneumonic effusion

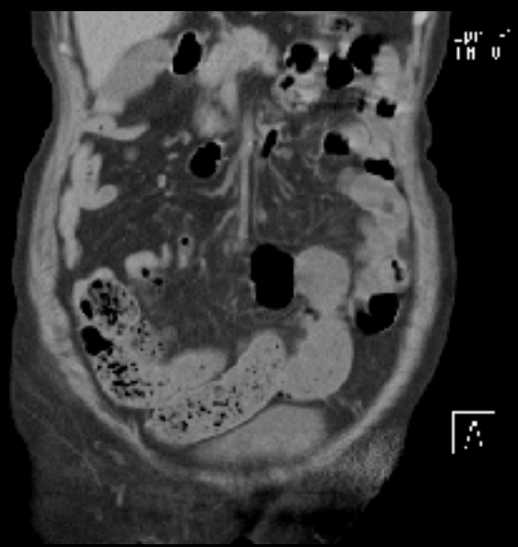
88F, diffuse abdominal pain

88F, diffuse abdominal pain



Small Bowel Obstruction





ULTRASOUND
PROGRAM

ABDOMEN

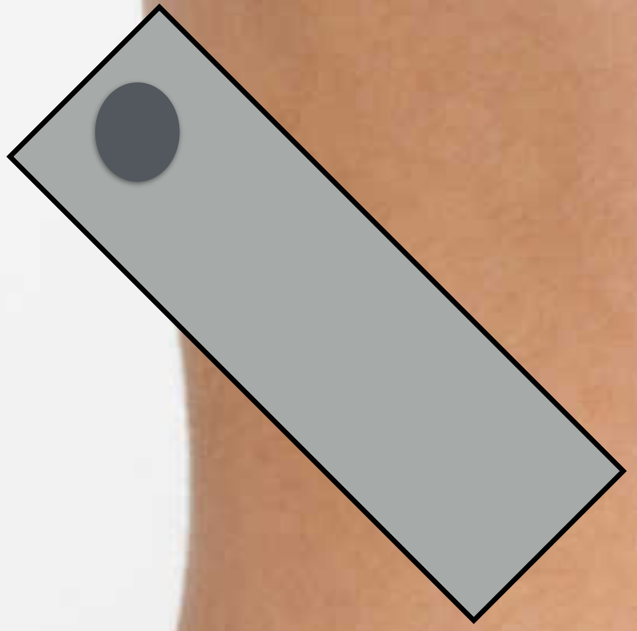
O for obstruction

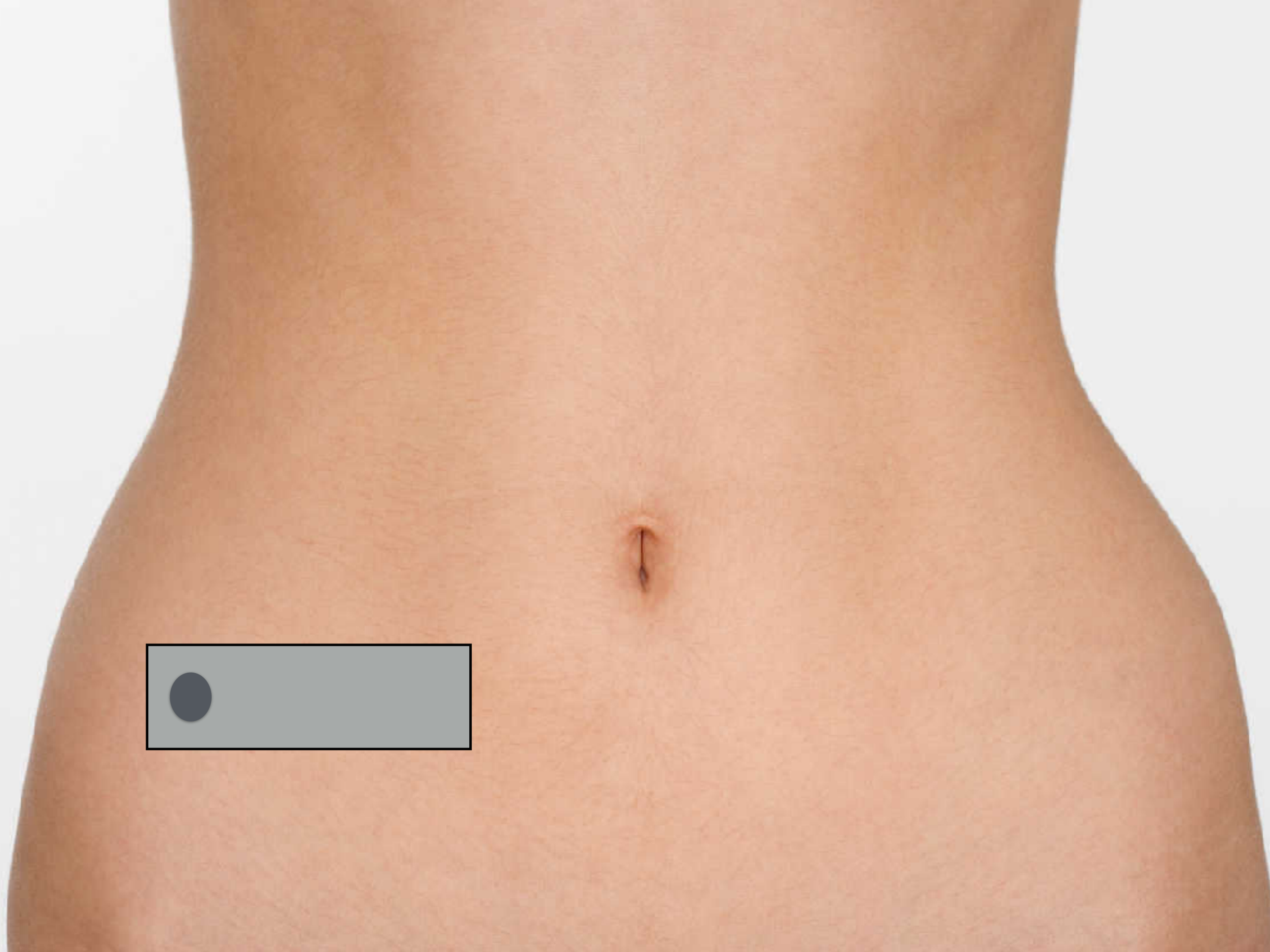
(SBO & Intussusception)

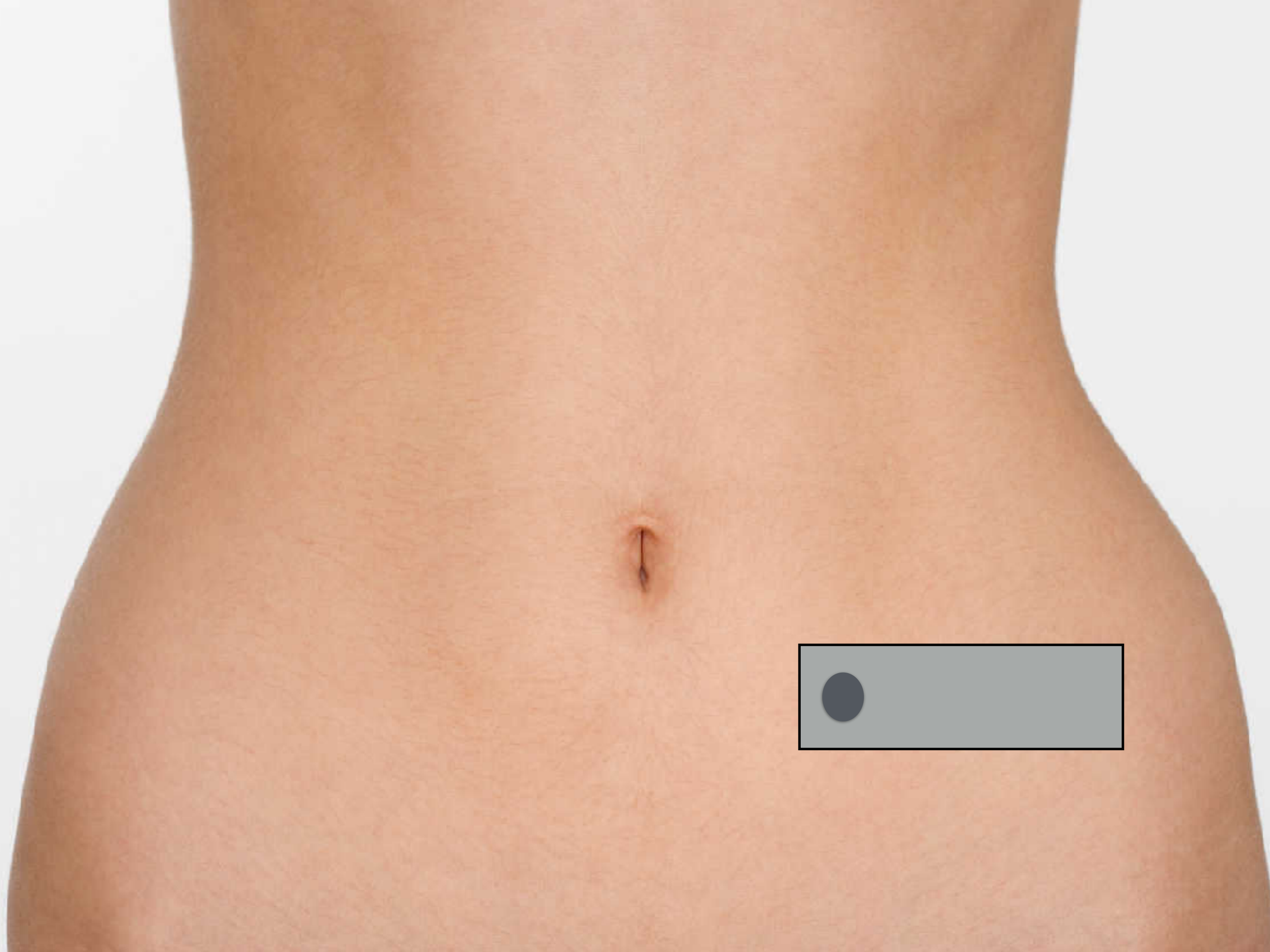
3 cm

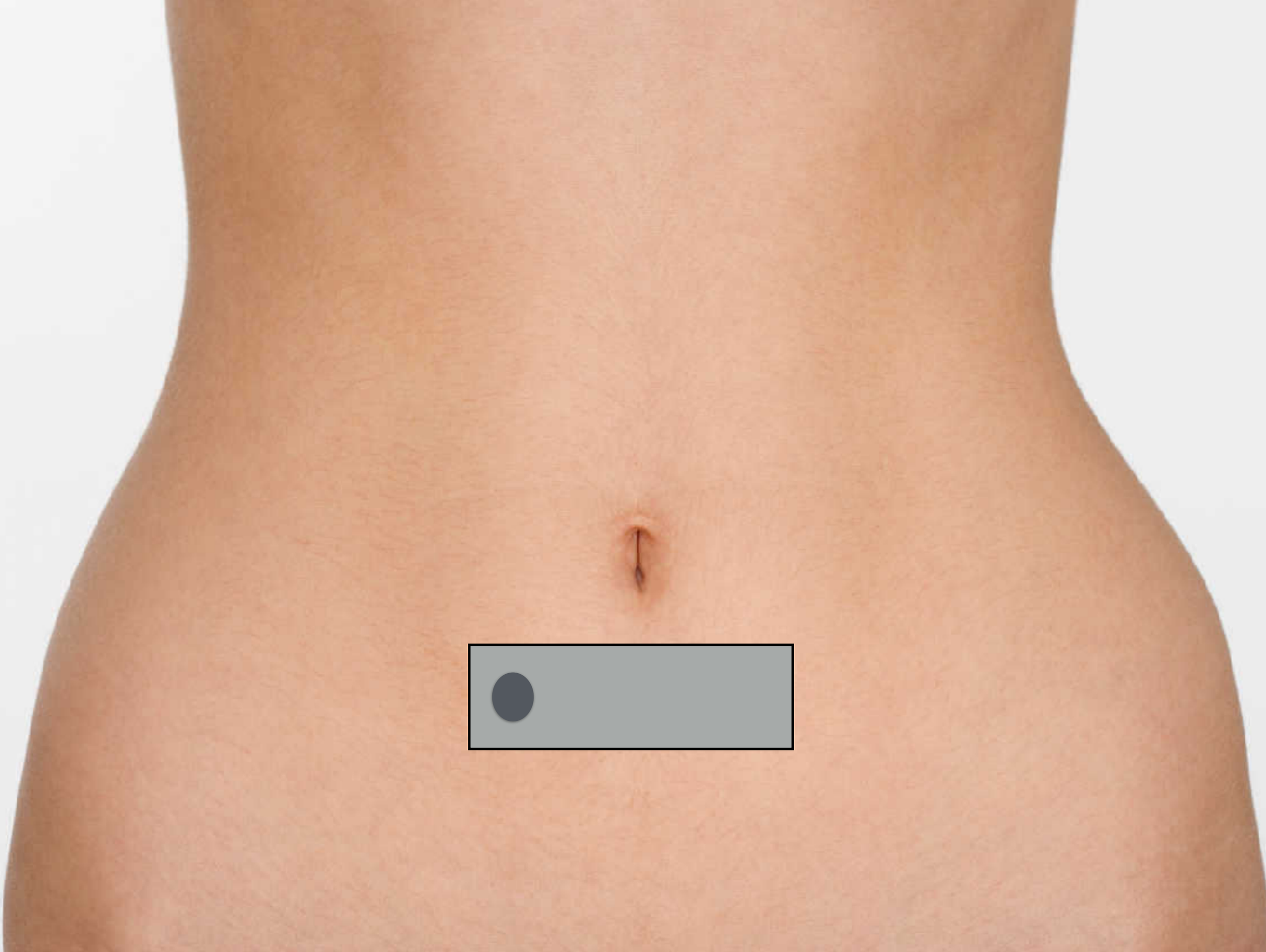
5 cm

Taipei Medical University Center for Education in Medical Simulation

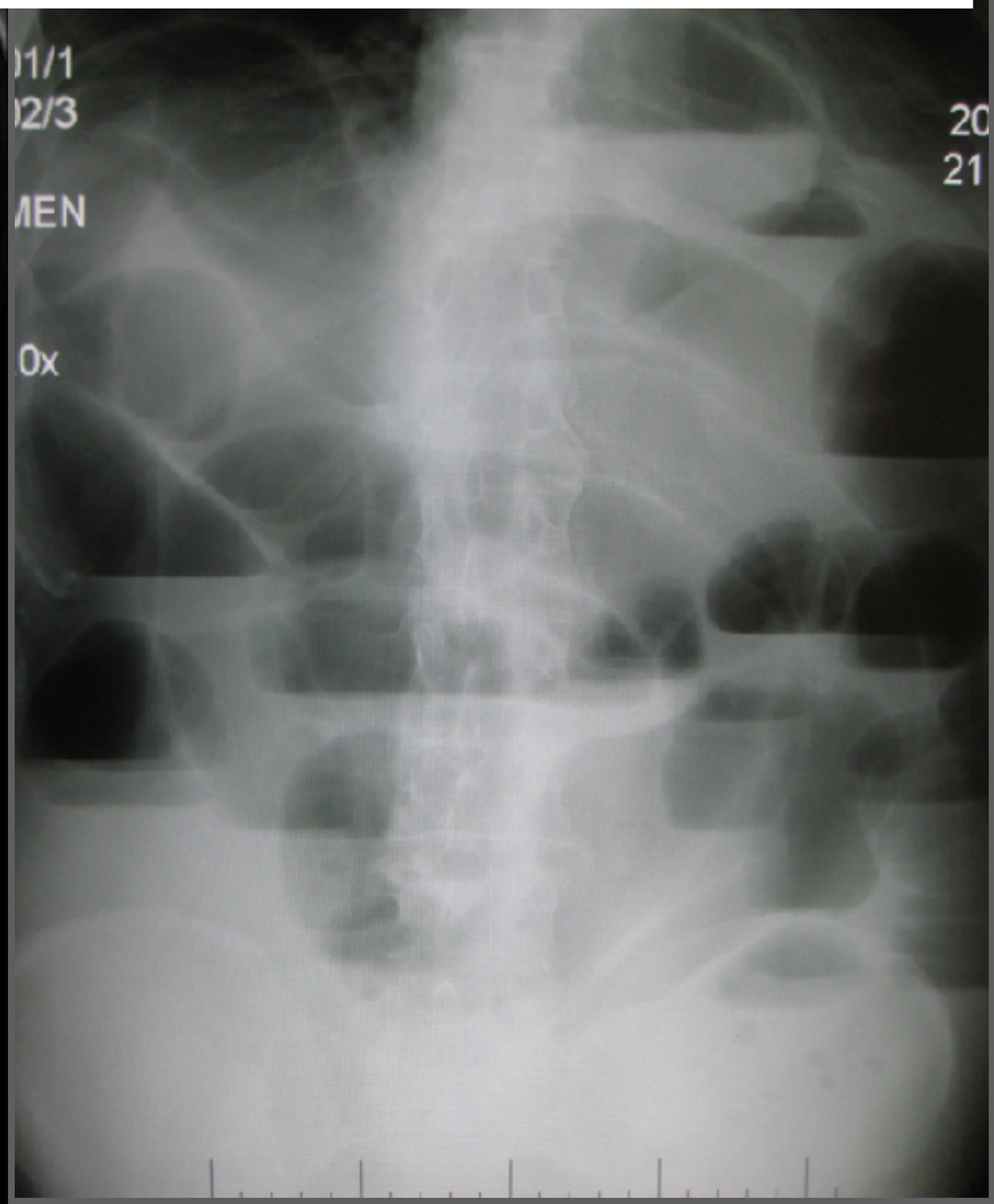




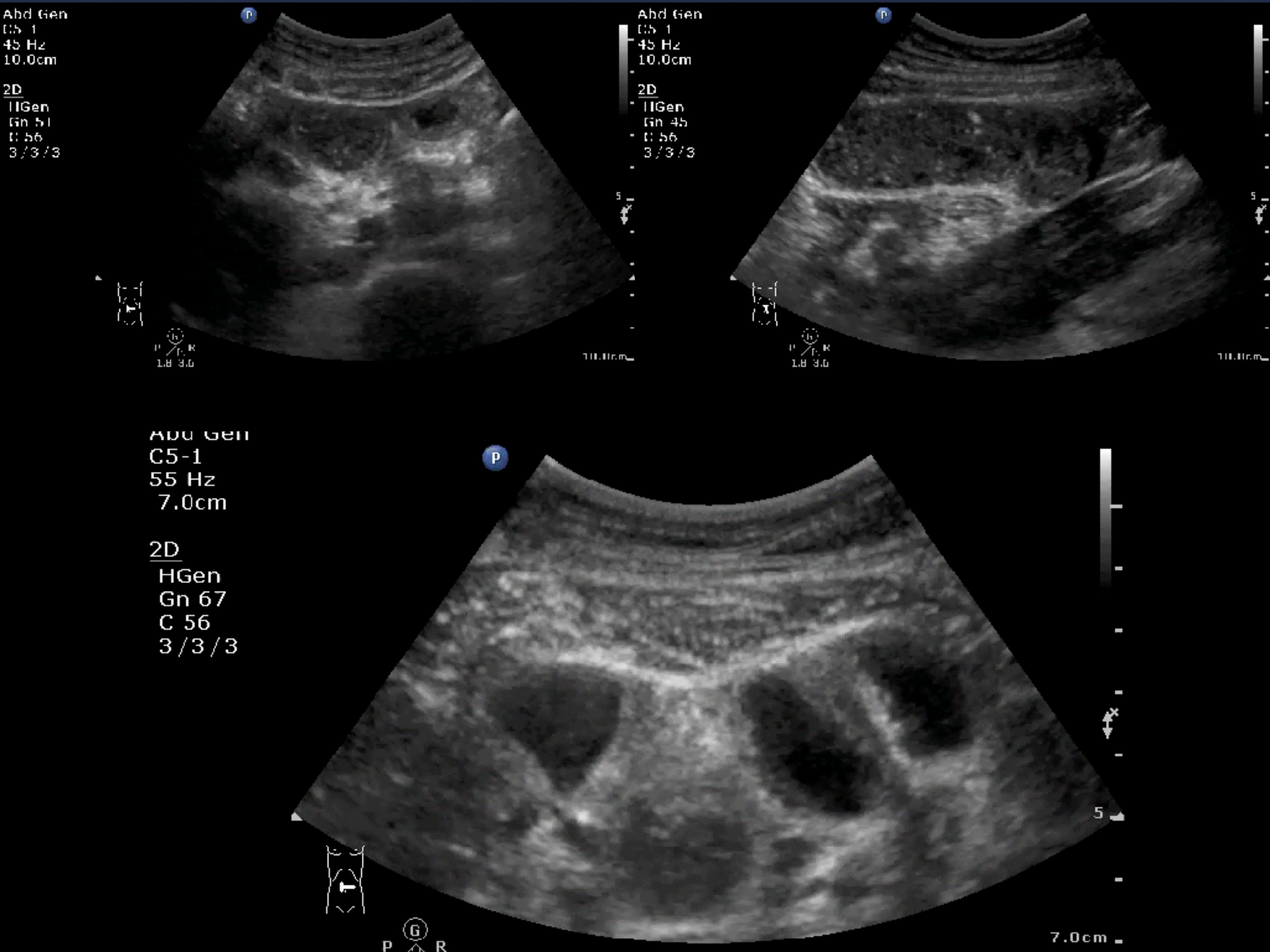




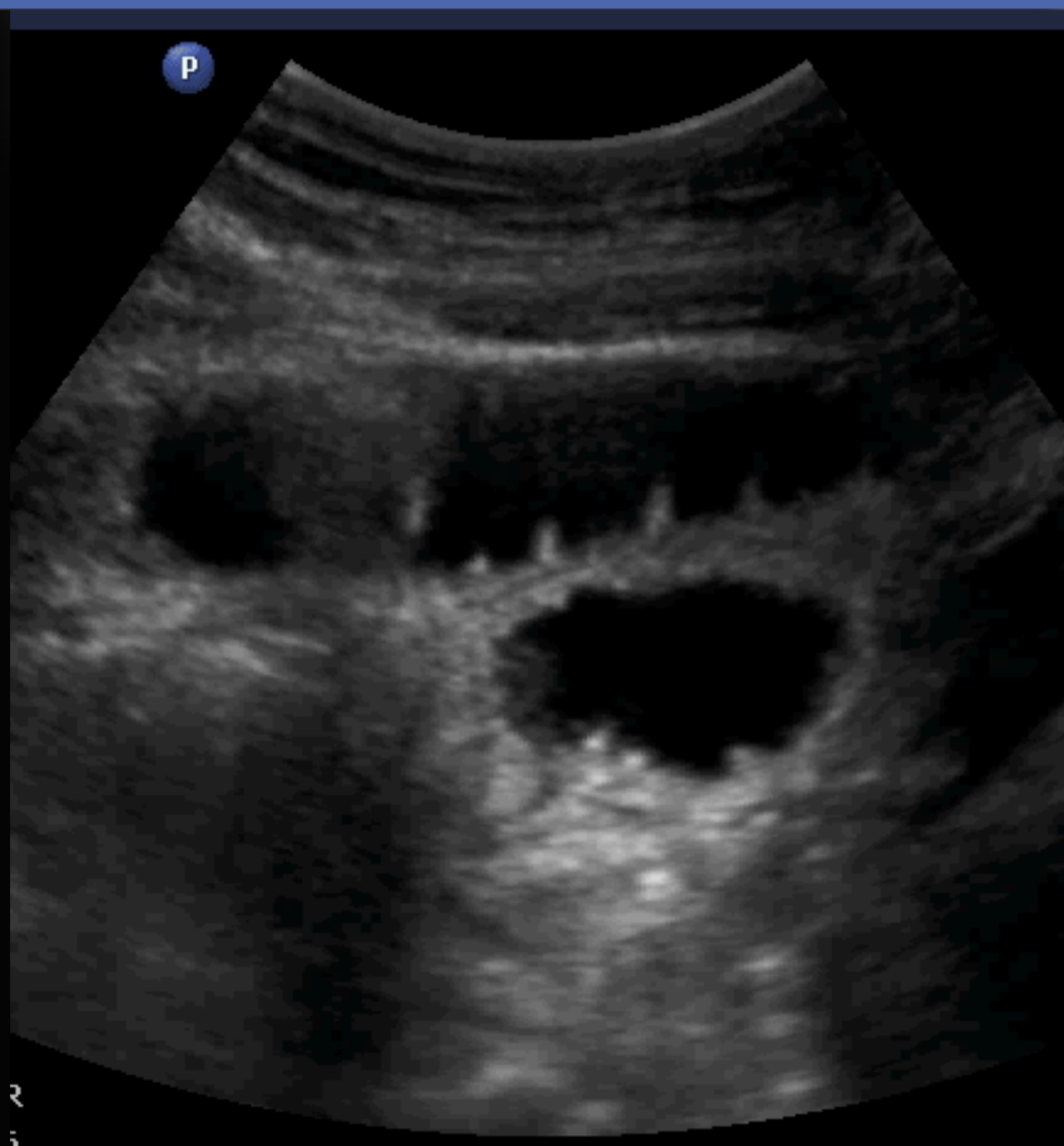
Bowel Obstruction



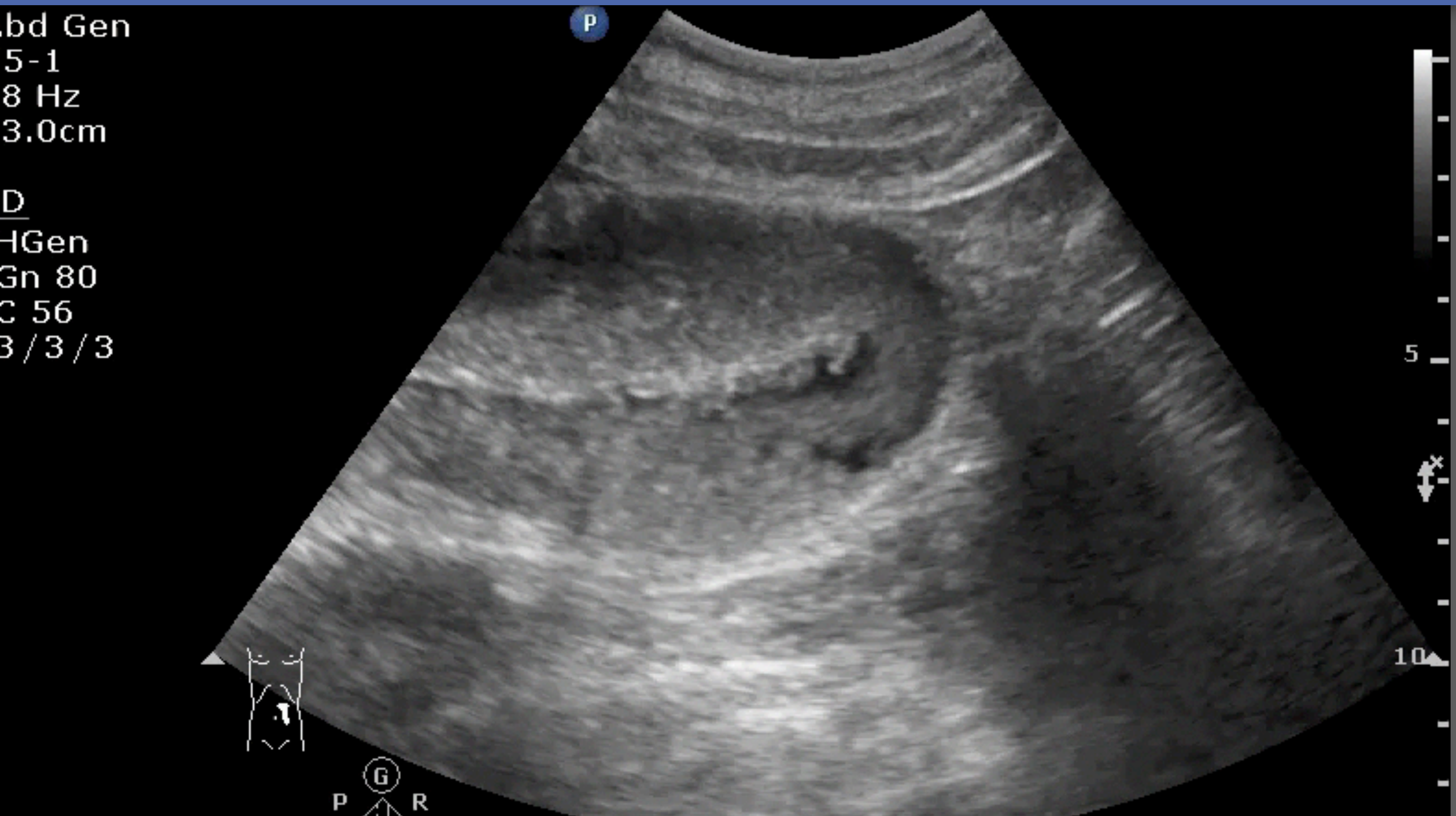
31F with abdominal pain & vomiting for 2 days


Abd Gen
C5-1
45 Hz
10.0cm
2D
HGen
Gn 51
C 56
3/3/3
Abd Gen
C5-1
45 Hz
10.0cm
2D
HGen
Gn 45
C 56
3/3/3
Abd Gen
C5-1
55 Hz
7.0cm
2D
HGen
Gn 67
C 56
3/3/3
7.0cm

POCUS is useful for gasless ileus detection



To-and-fro movement
Keyboard sign / Tanga sign



Normal

Large Intestine (Colon)

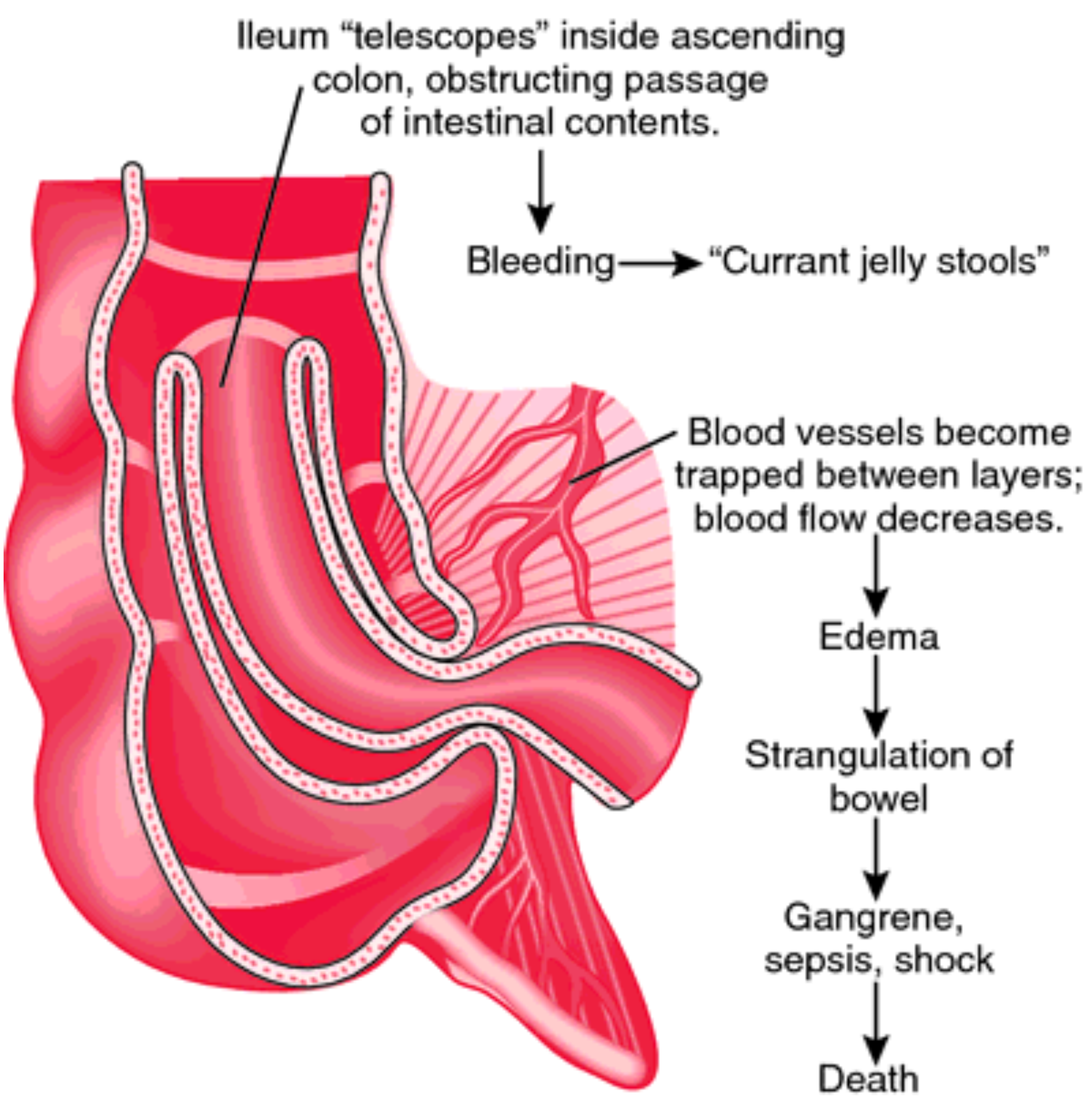
Small Intestine (Ileum)

Appendix

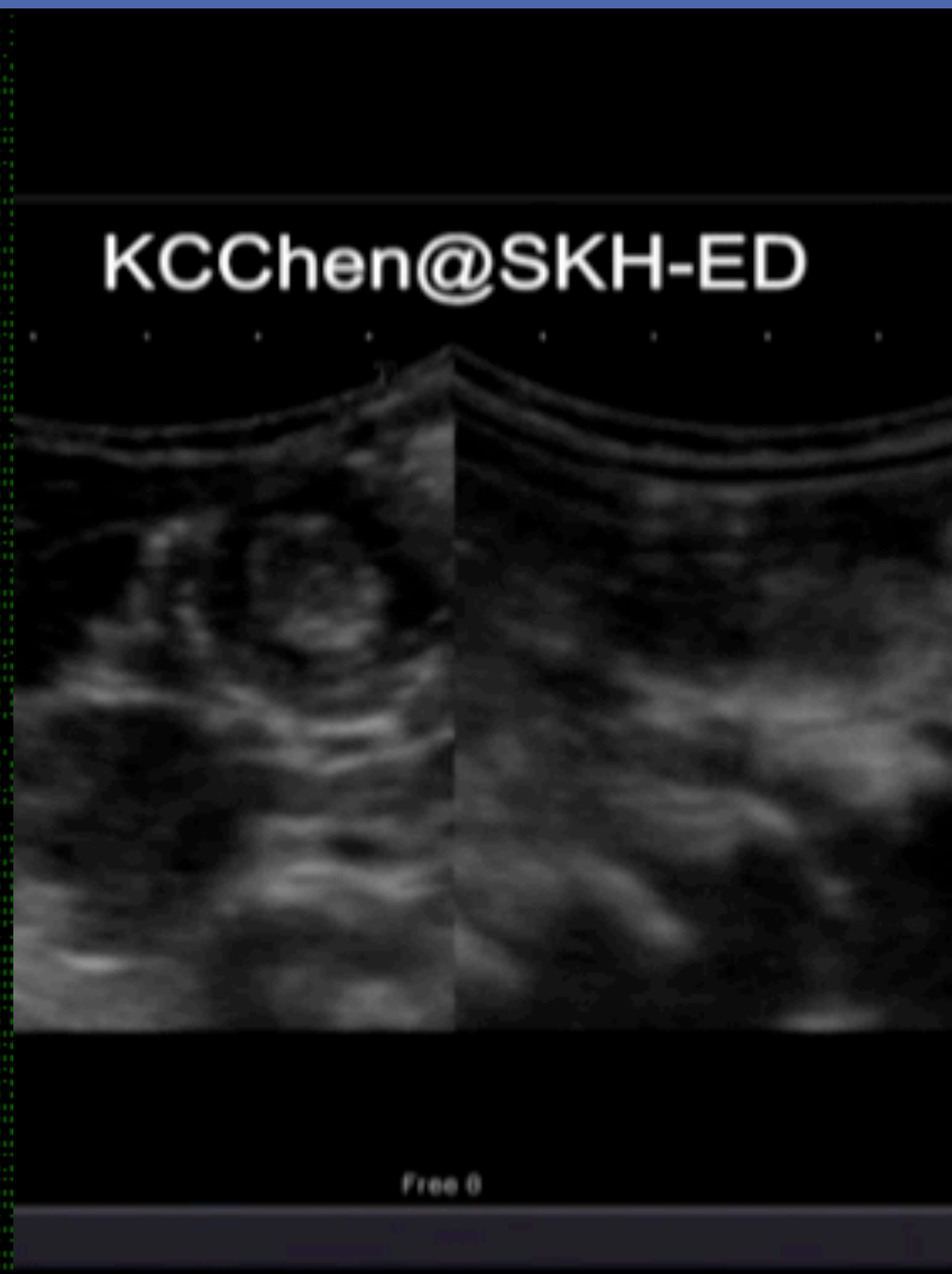
Cecum

Intussusception

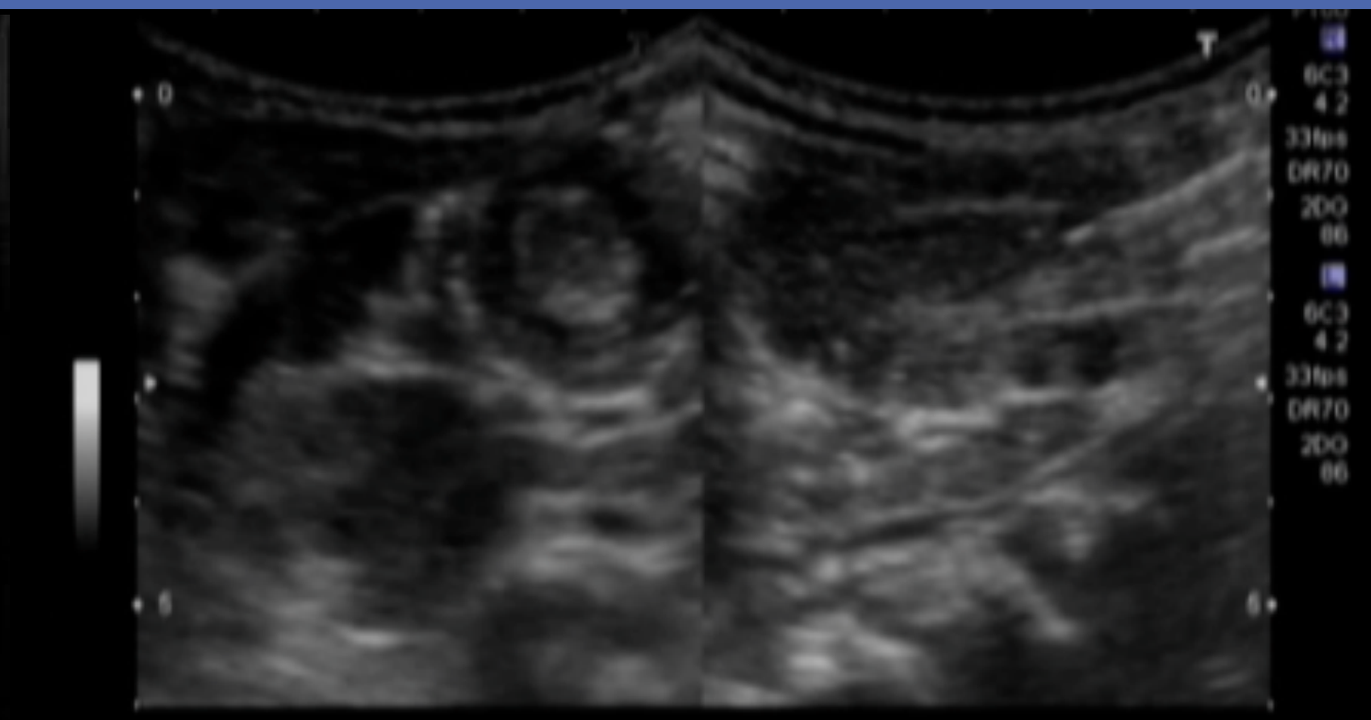
Intussusception


Ileum "telescopes" inside ascending colon, obstructing passage of intestinal contents.
Bleeding
"Currant jelly stools"
Blood vessels become trapped between layers; blood flow decreases.
Edema
Strangulation of bowel
Gangrene, sepsis, shock
Death

1F, irritable crying

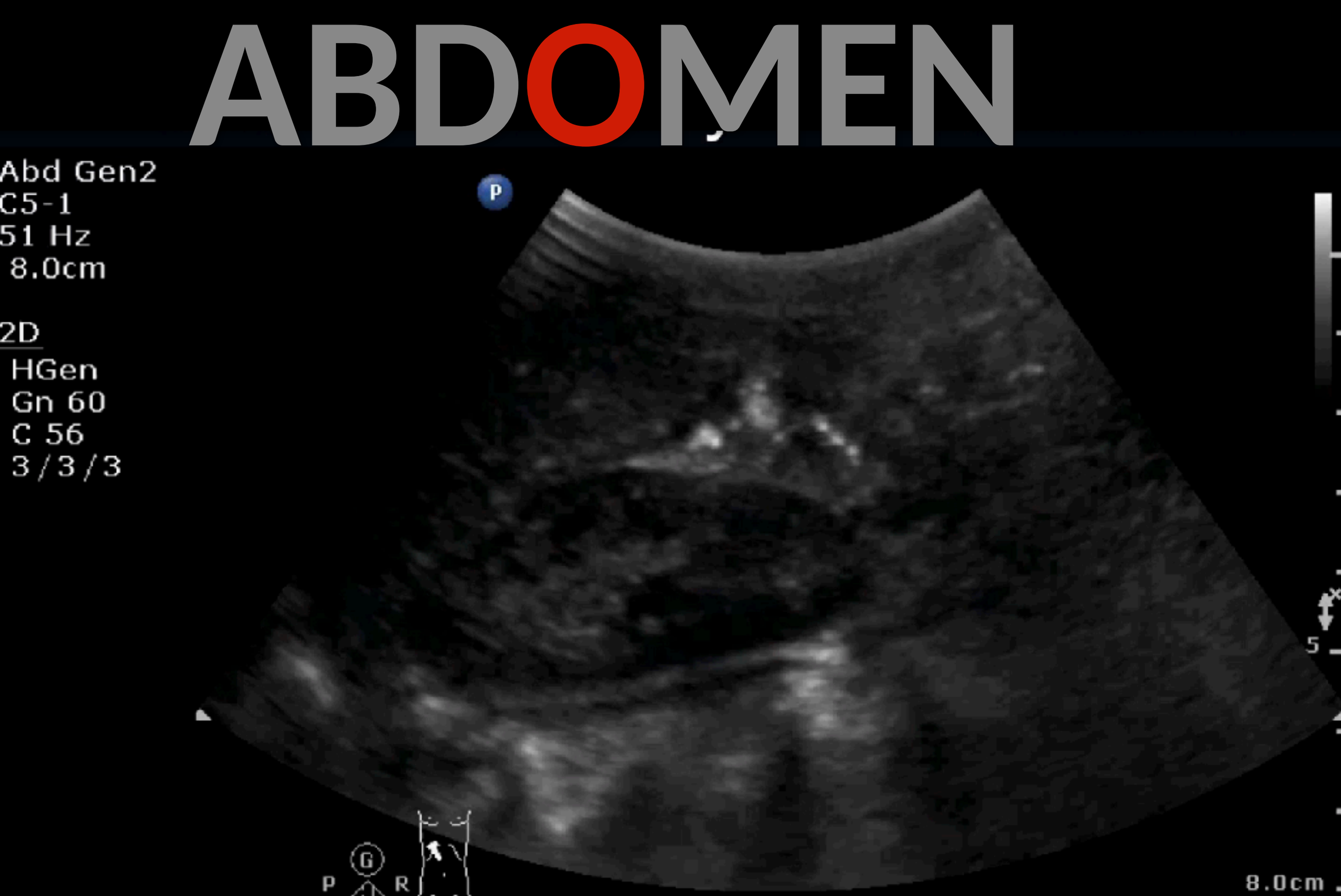


Intussusception



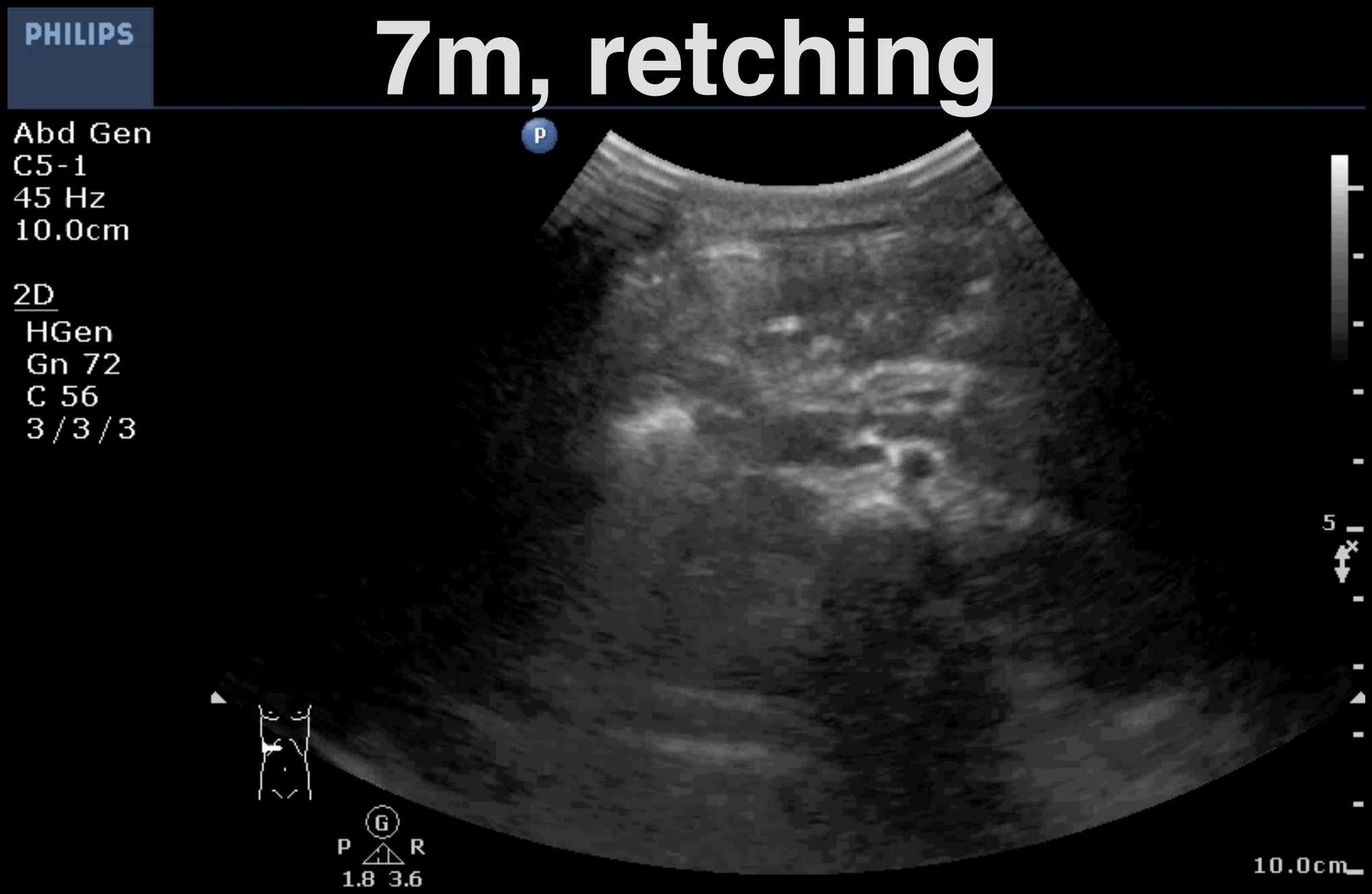
Target sign
Pseudokidney sign
Sandwich sign
Hayfork sign

ABDOMEN



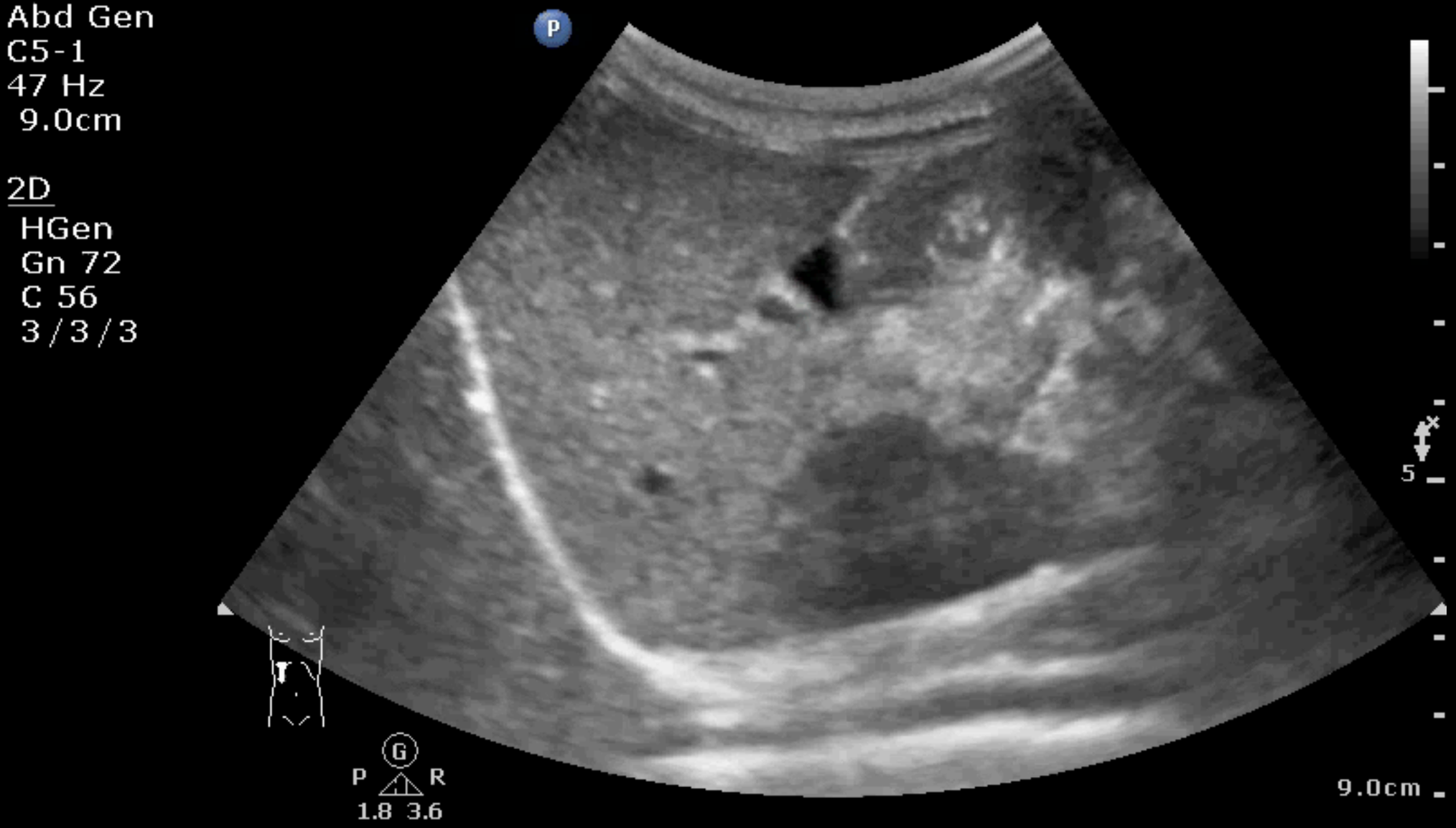
ABDOMEN

7m, retching



ABDOMEN

Intussusception

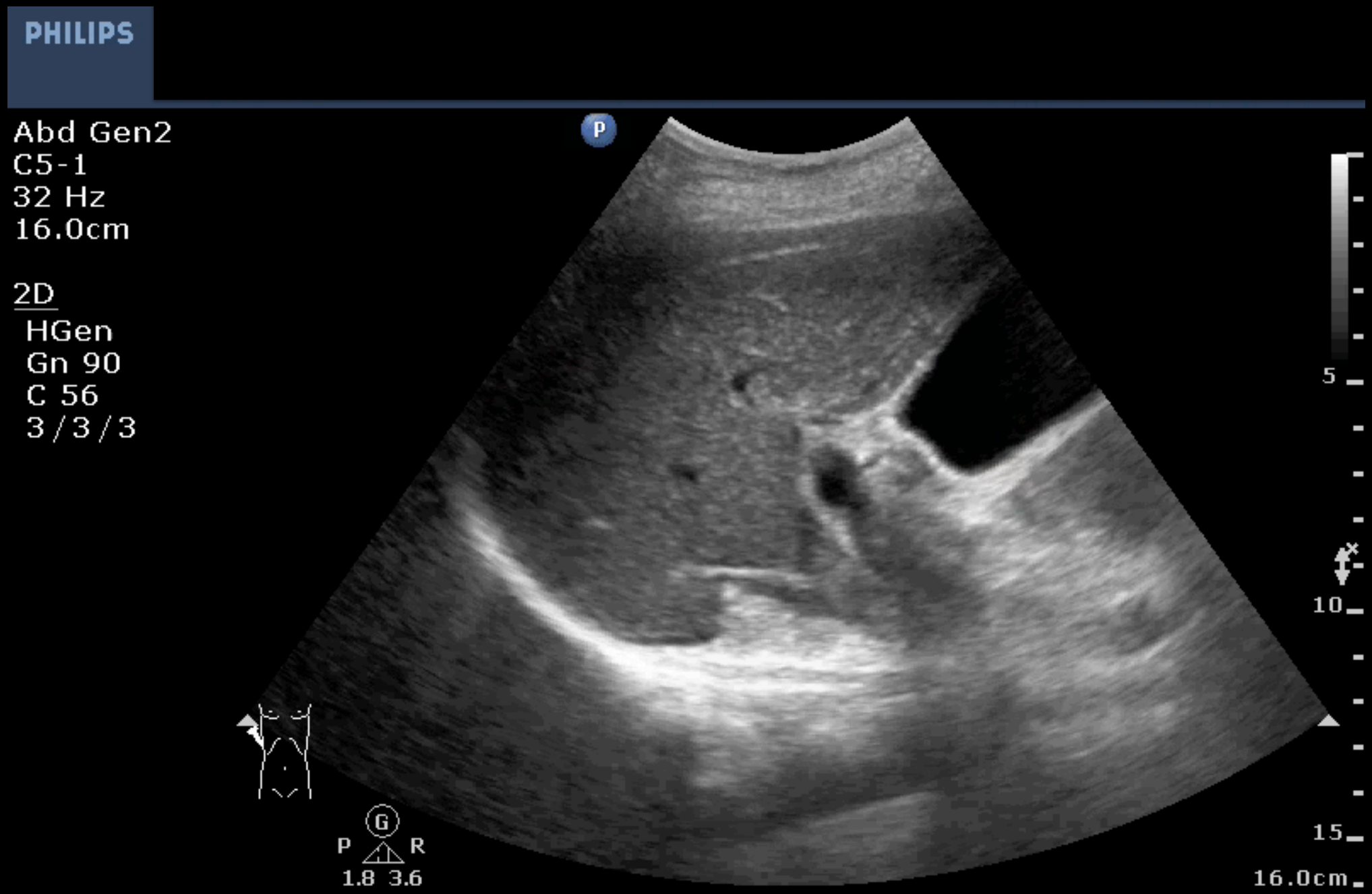


ABDOMEN

Intussusception

80F, diffuse abdominal pain

80F, diffuse abdominal pain



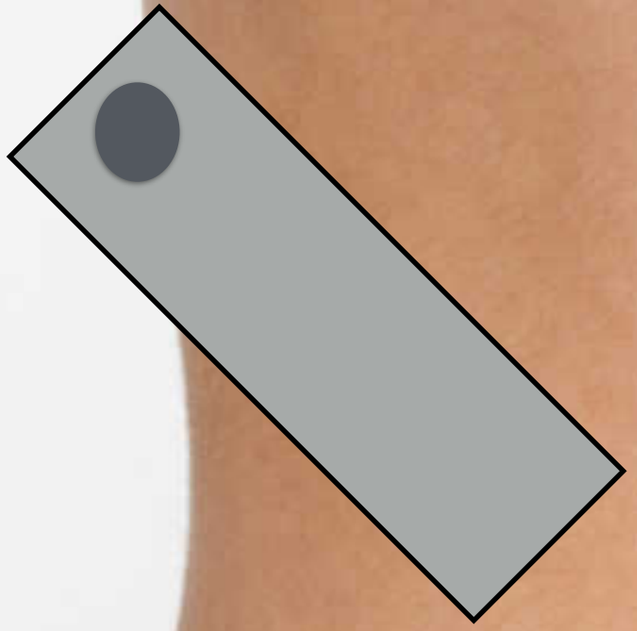
ULTRASOUND
PROGRAM

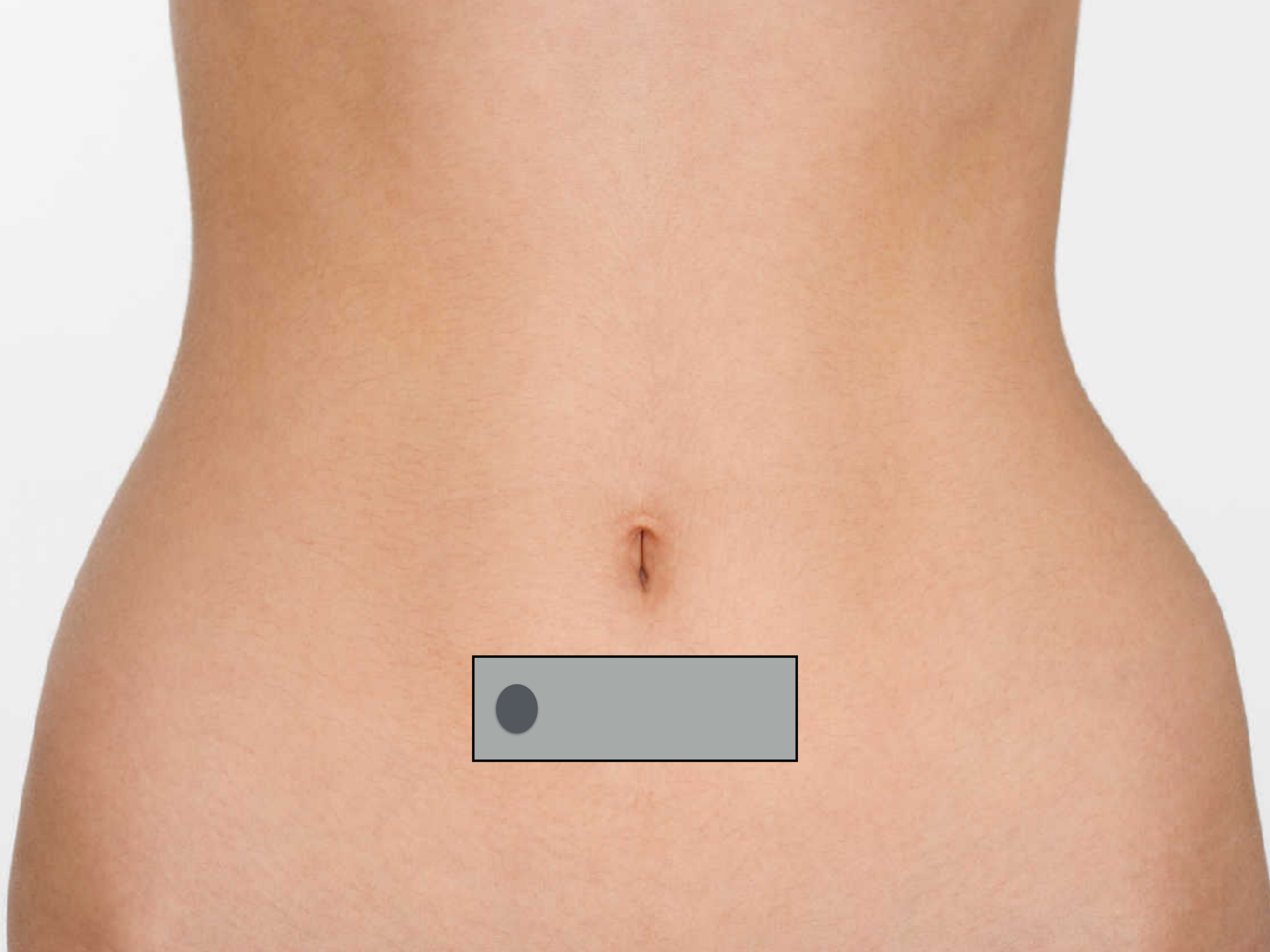
ABDOMEN

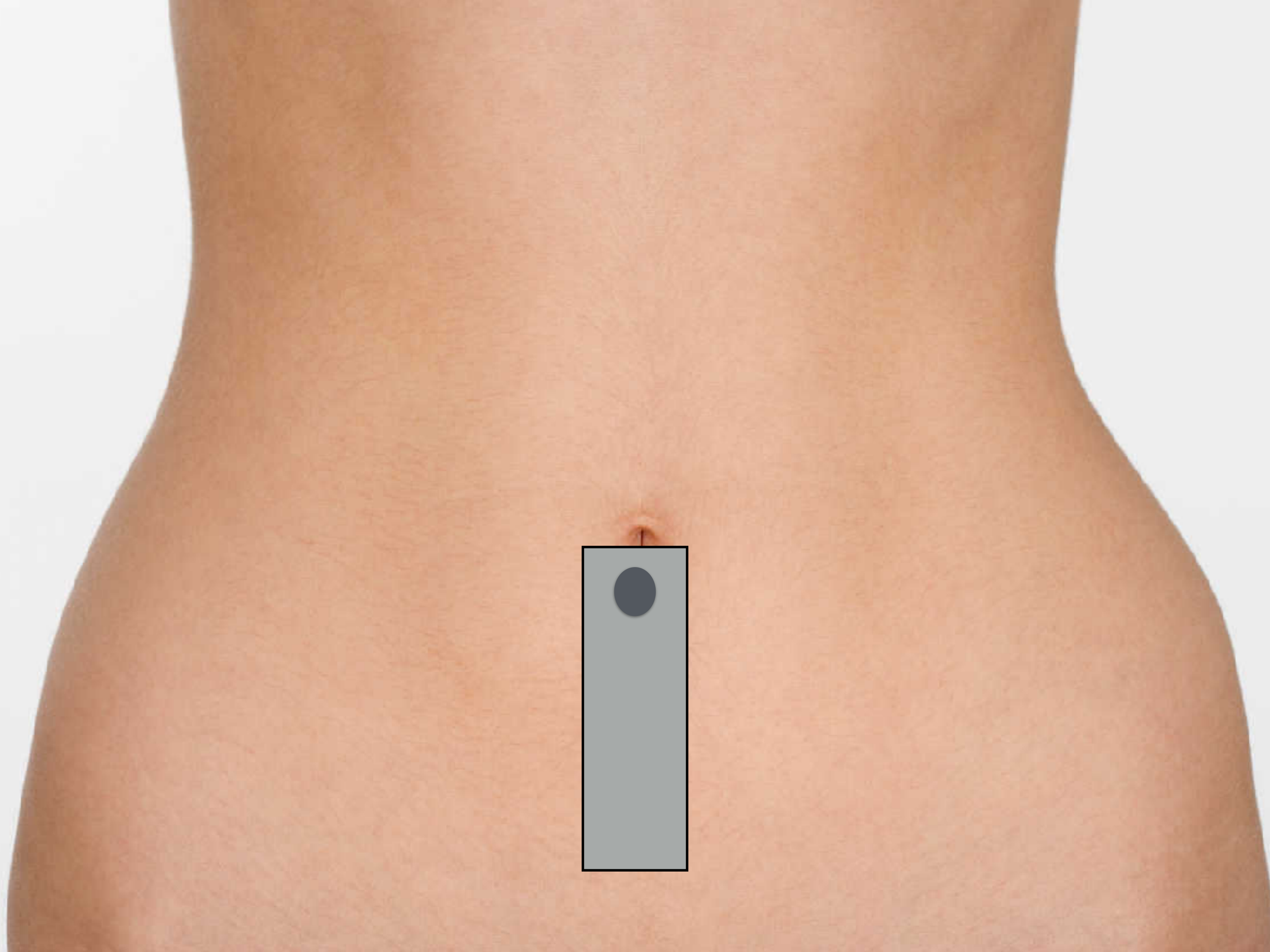
M for moving fluid or air

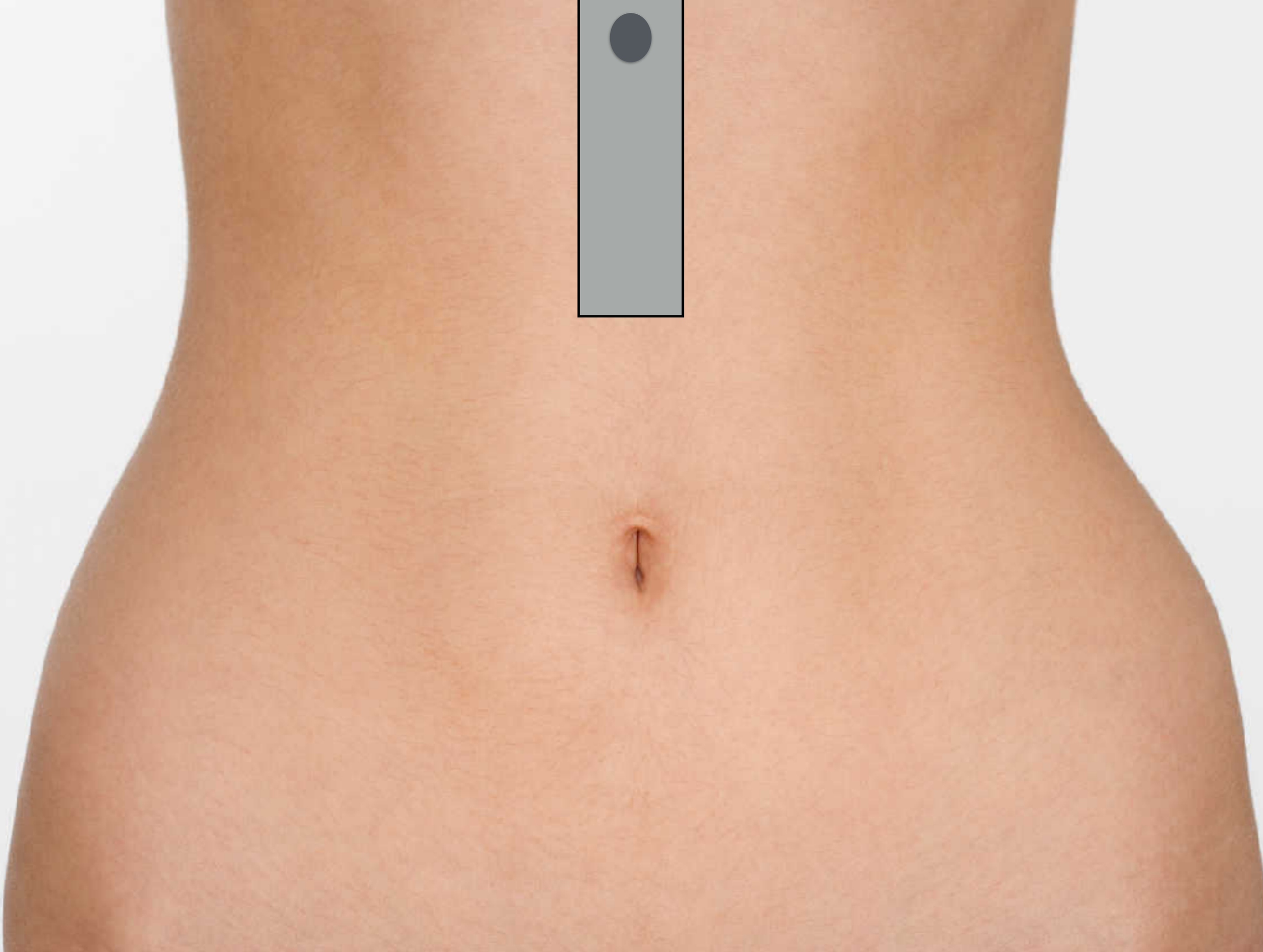
FAST / Liver surface

Taipei Medical University Center for Education in Medical Simulation



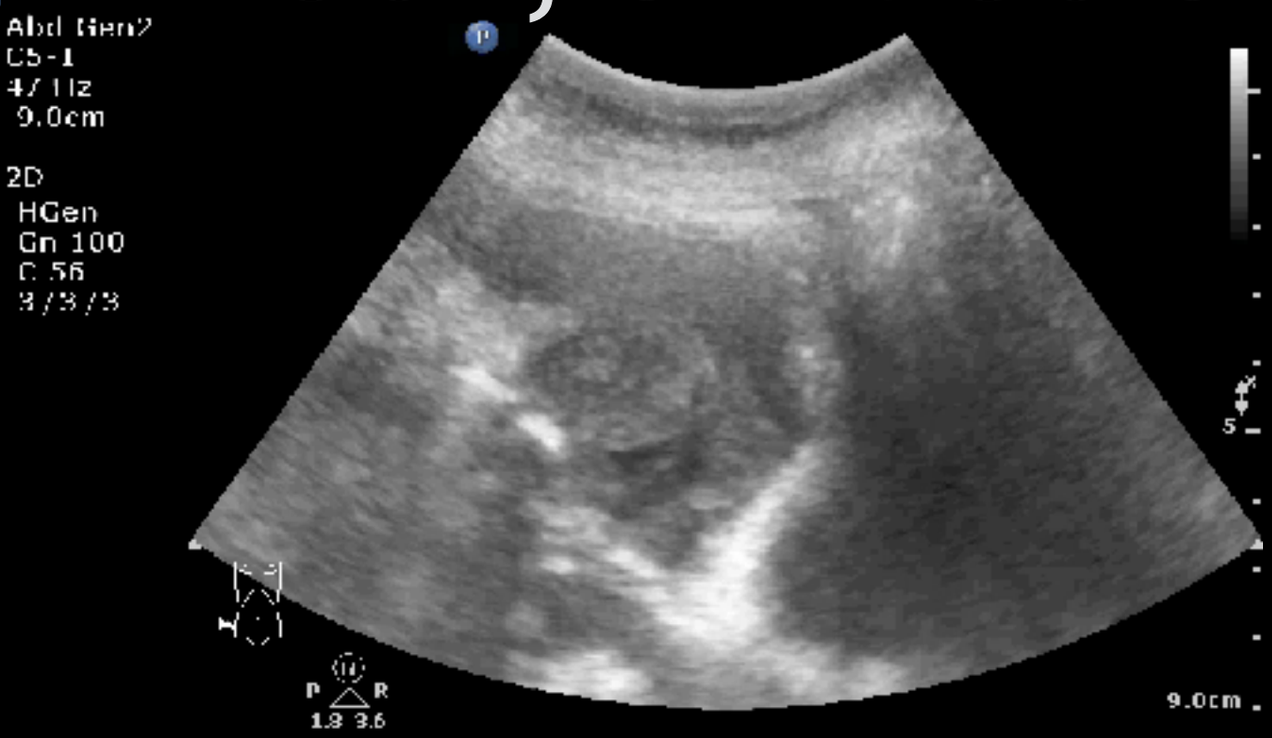


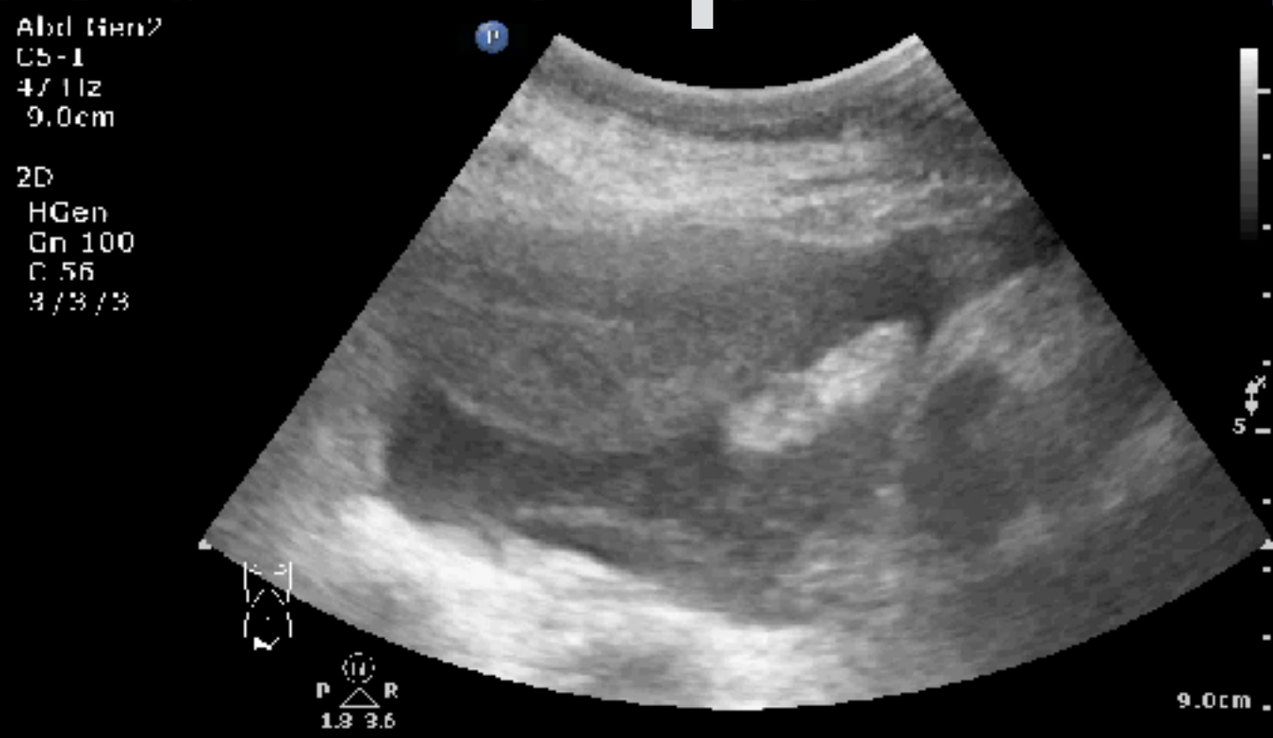




ABDOMEN

80F, diffuse abdominal pain



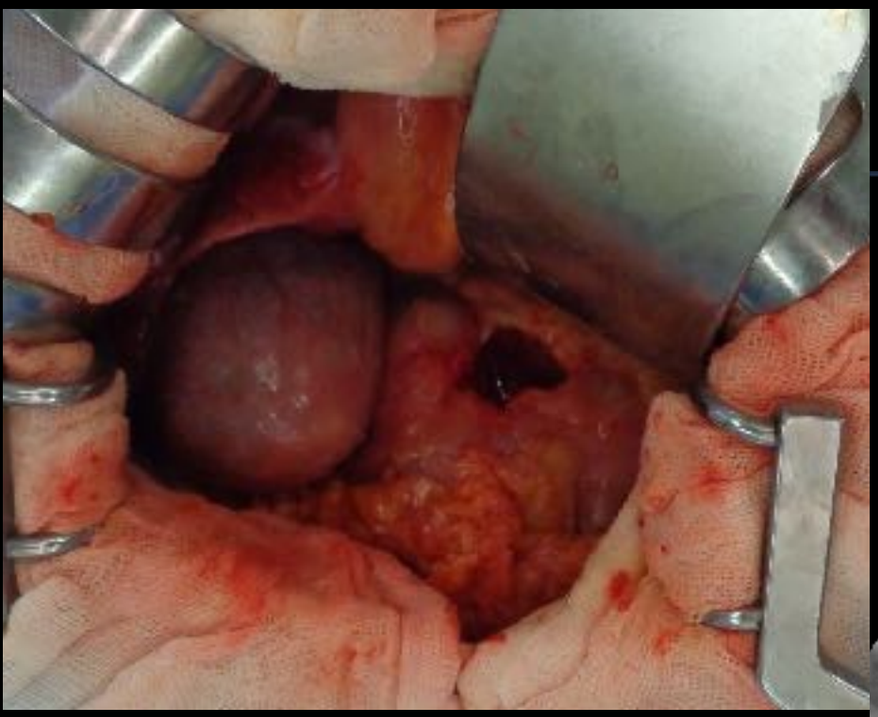


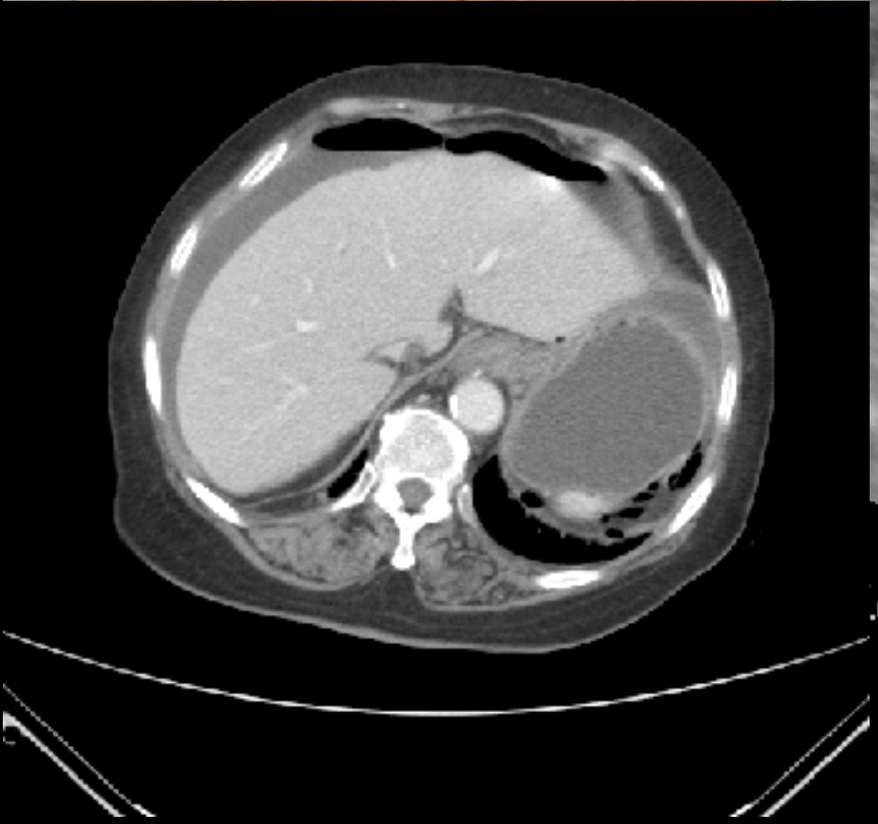
ABDOMEN

80F, diffuse abdominal pain

ABDOMEN

PPU





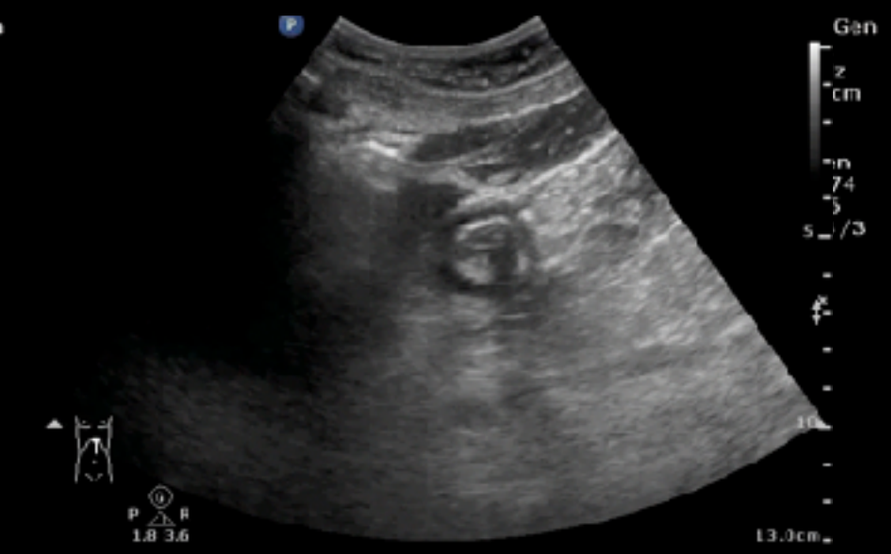
ABDOMEN

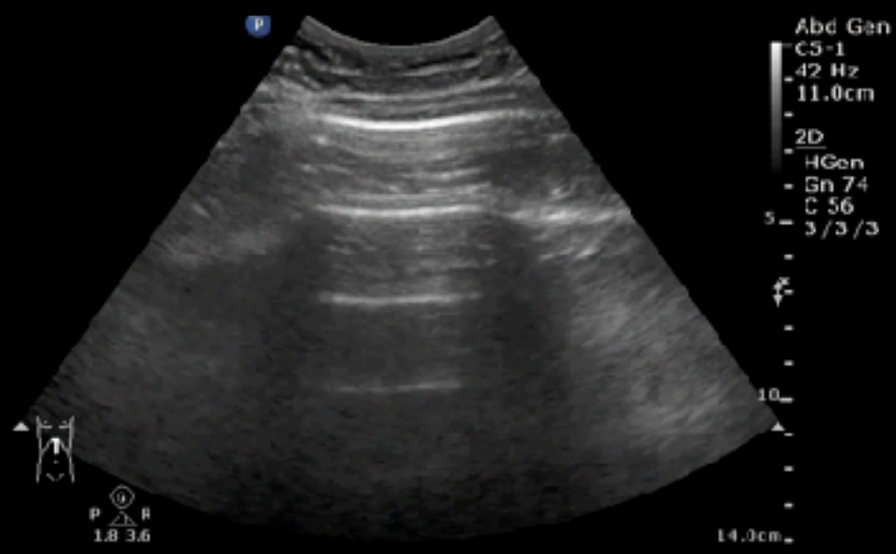
Free air: 往上找

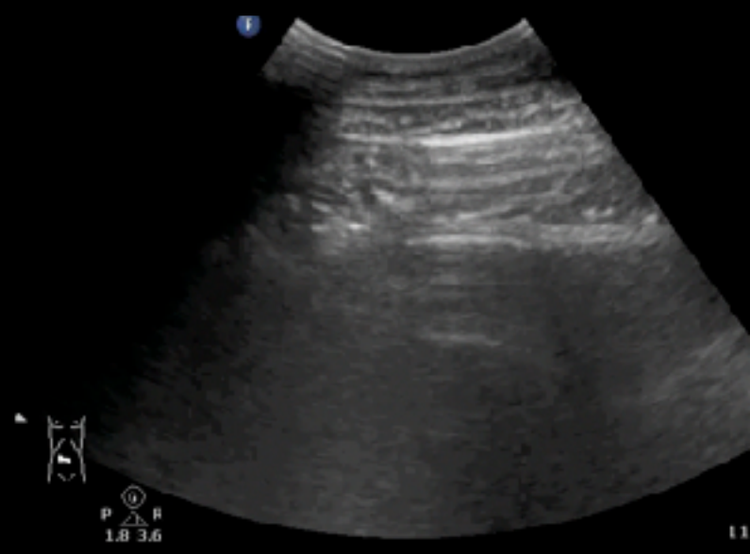
Liver surface

Curtain sign

EPSS





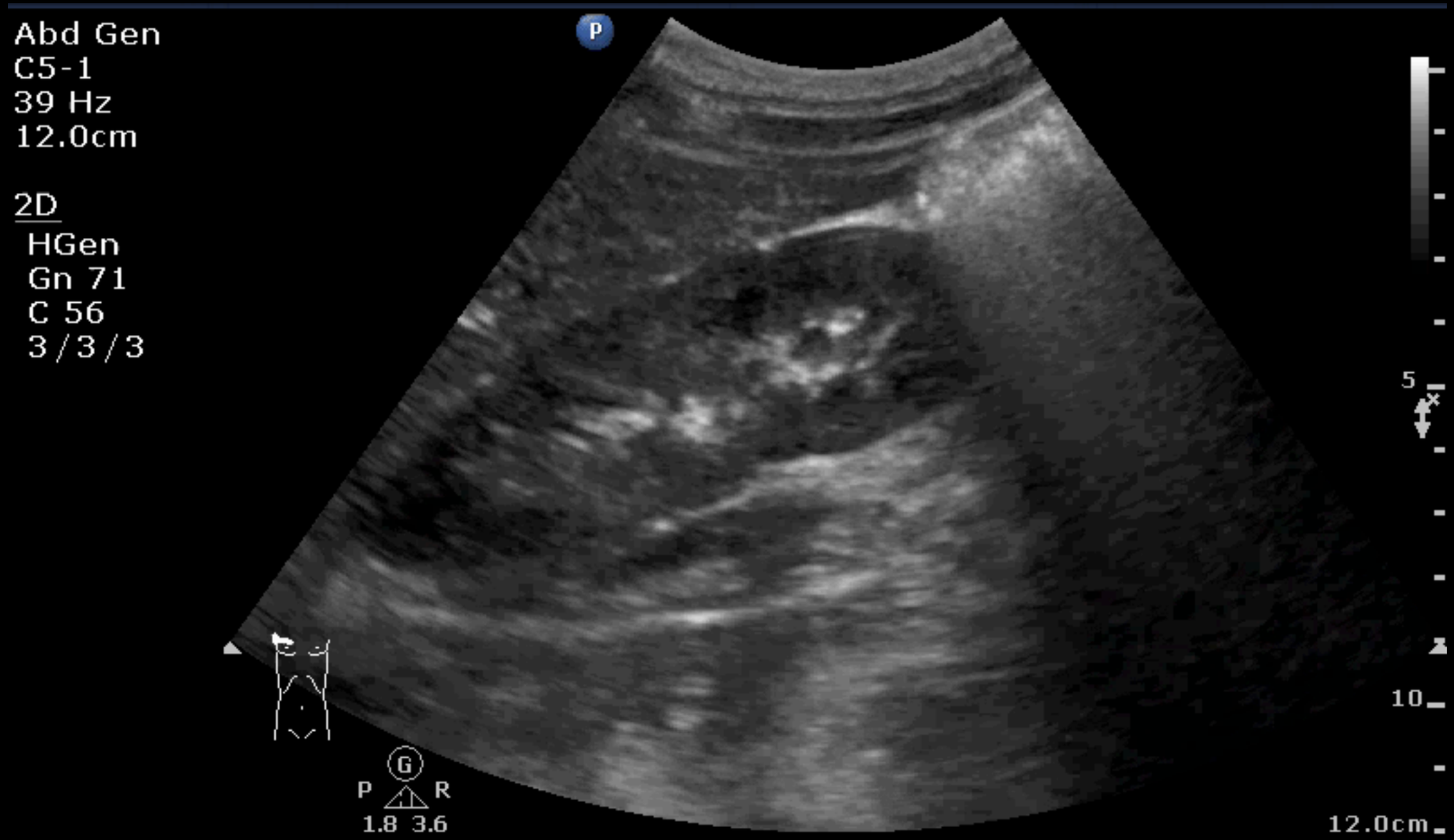


EPSS: Enhanced peritoneal strip sign

ABDOMEN

Dirty ascites: 往下流

33F, low abdominal pain & shock



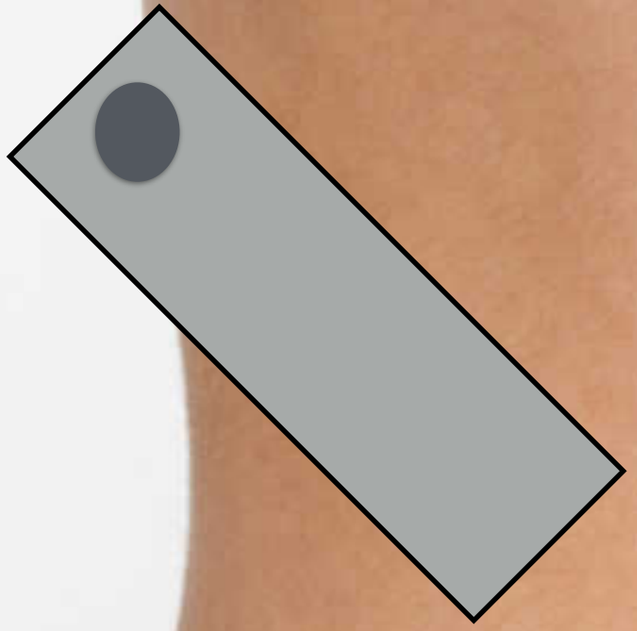
ULTRASOUND
PROGRAM

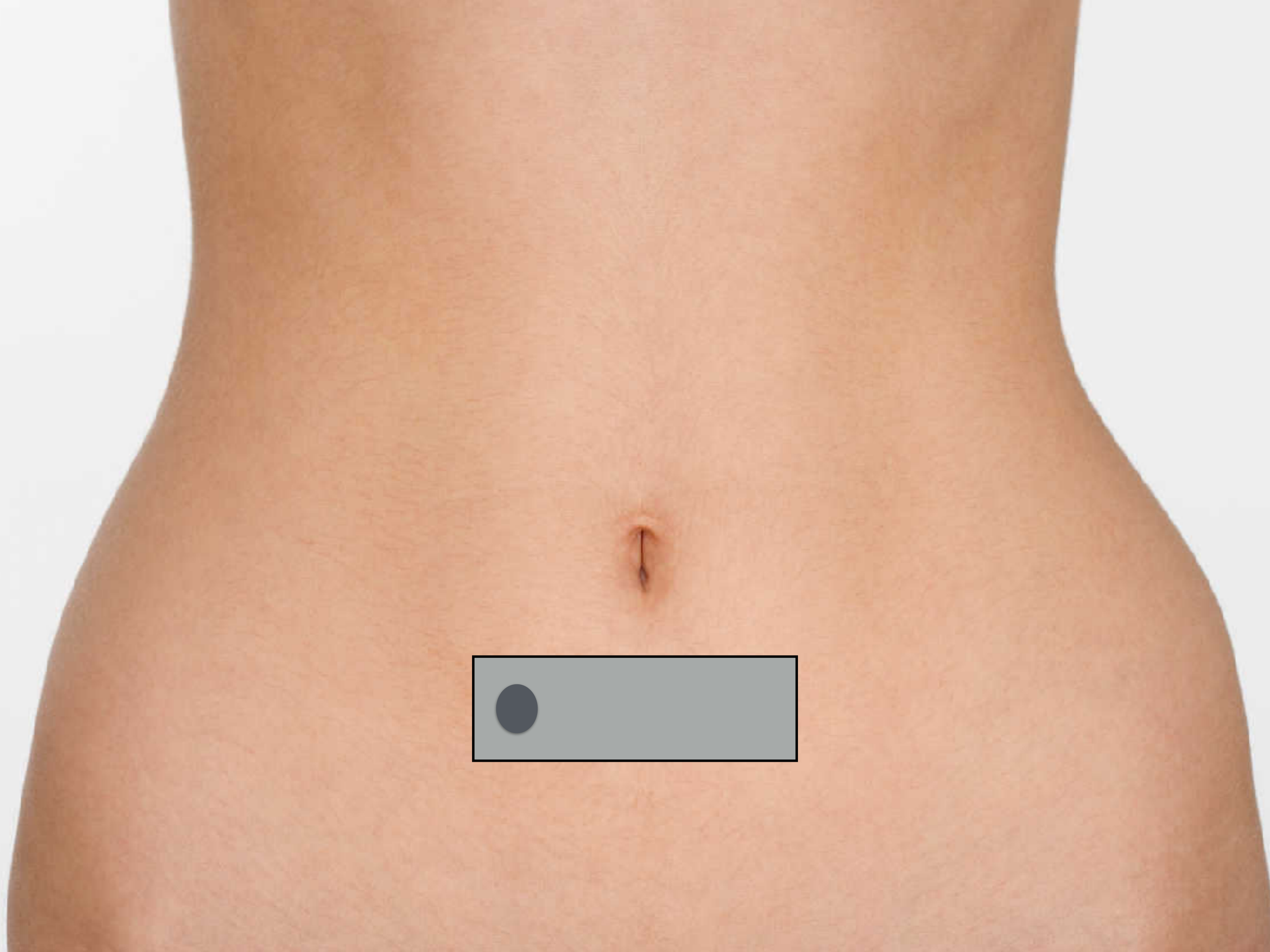
ABDOMEN

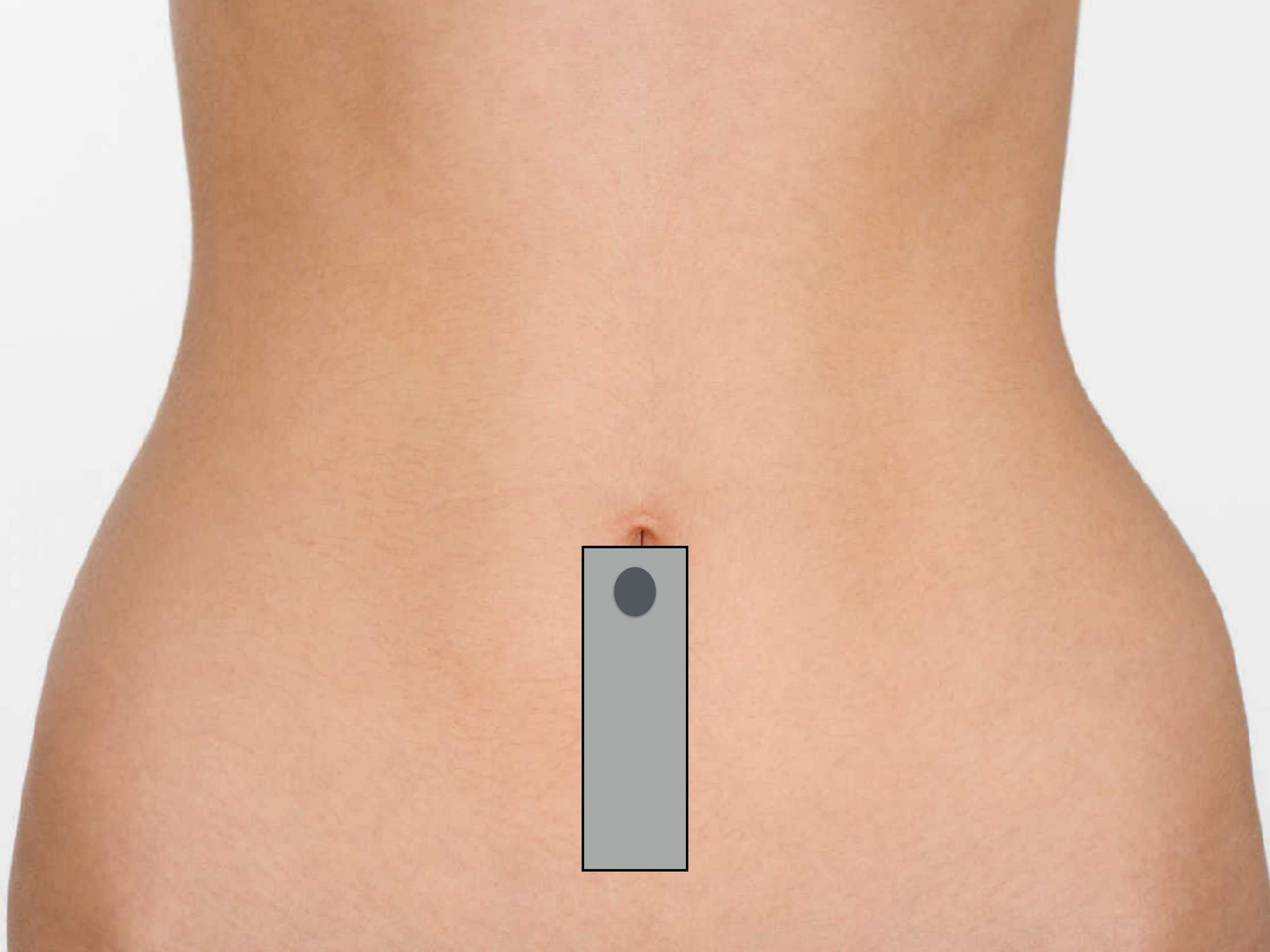
E for ectopic pregnancy

Ascites & IUP

Taipei Medical University Center for Education in Medical Simulation

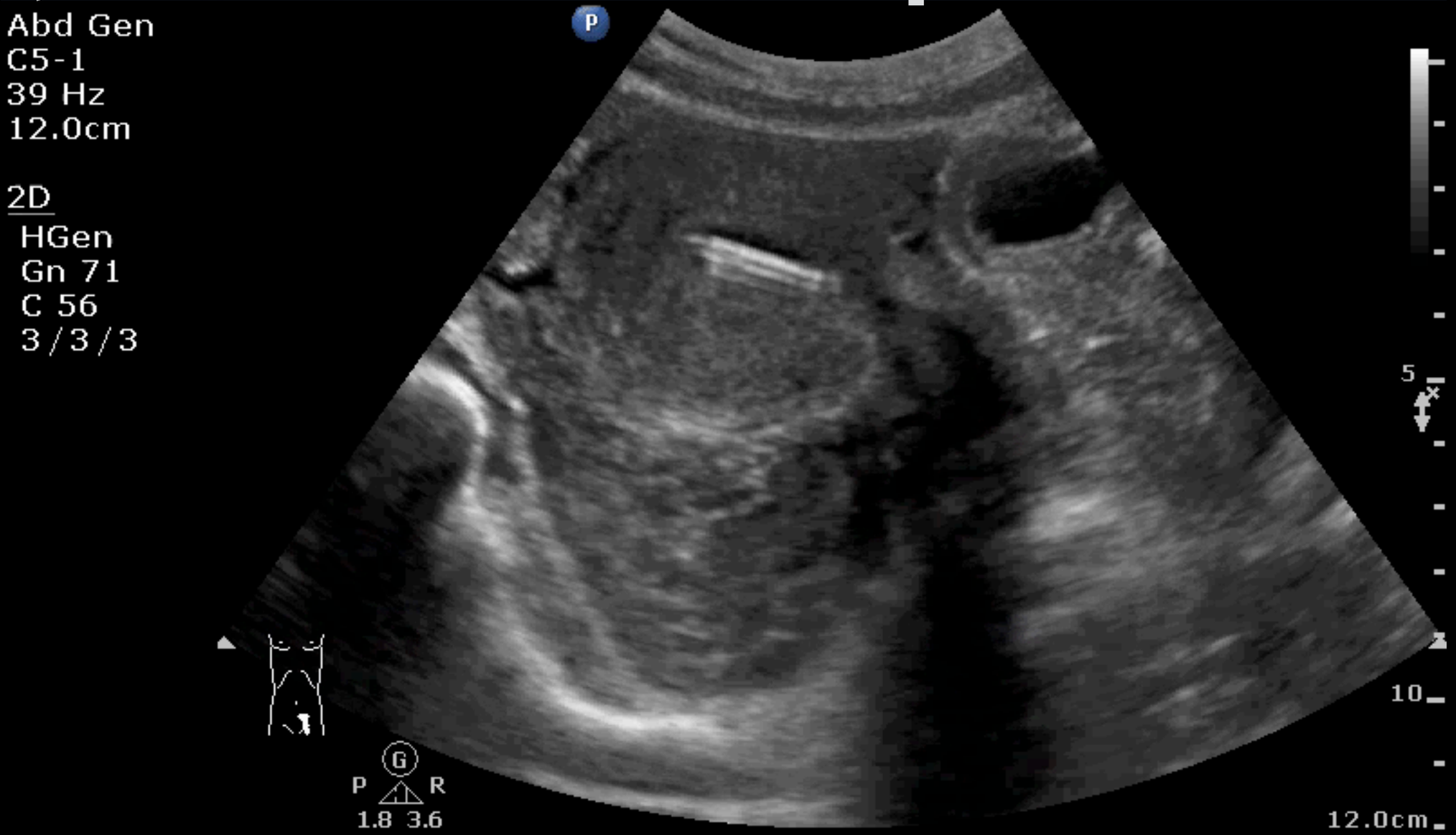






ABDOMEN

33F, low abdominal pain & shock



ABDOMEN

Ectopic pregnancy

ABDOMEN

25F, abdominal pain

ABDOMEN

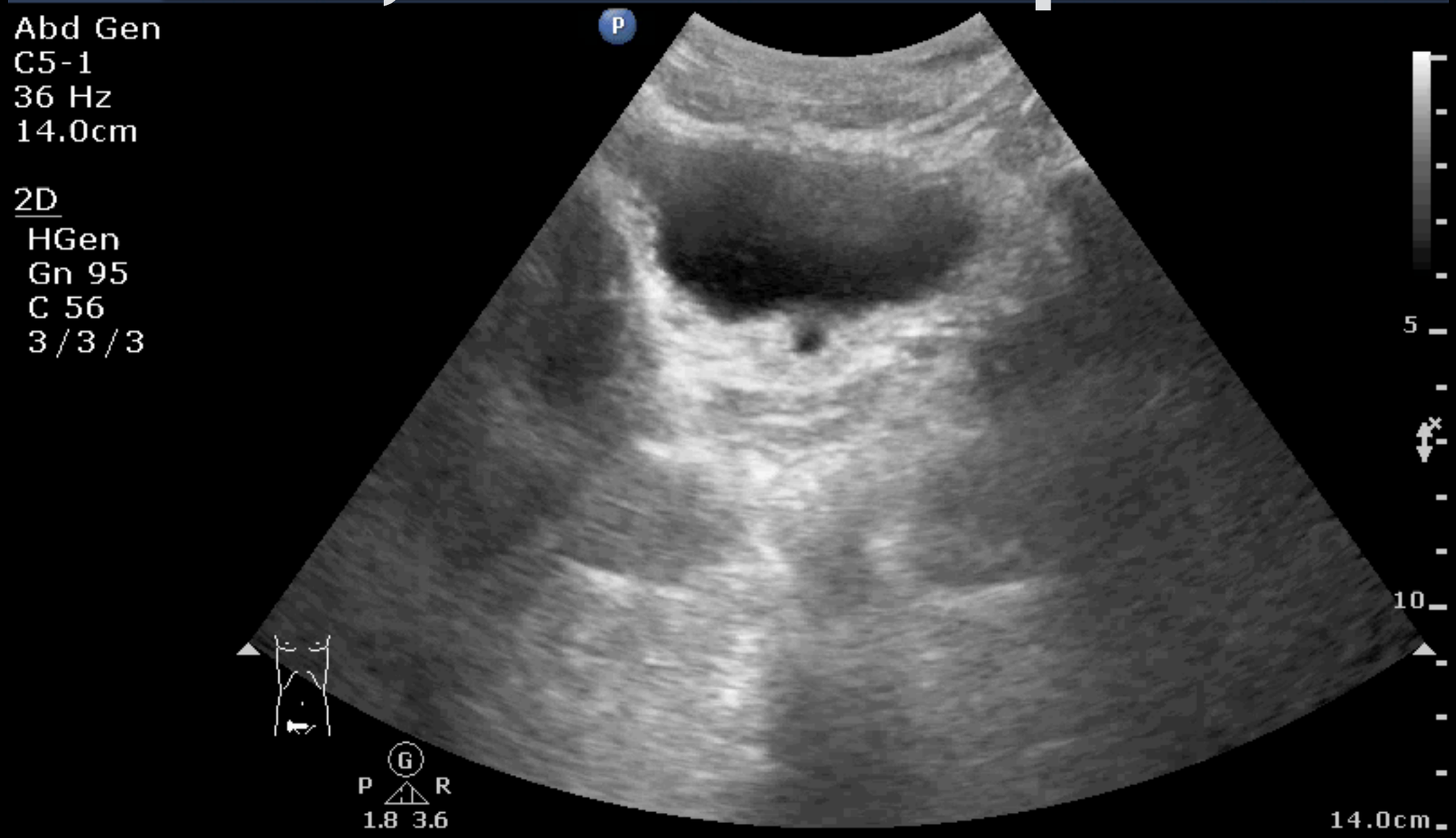
25F, abdominal pain

ABDOMEN

25F, abdominal pain

ABDOMEN

25F, abdominal pain



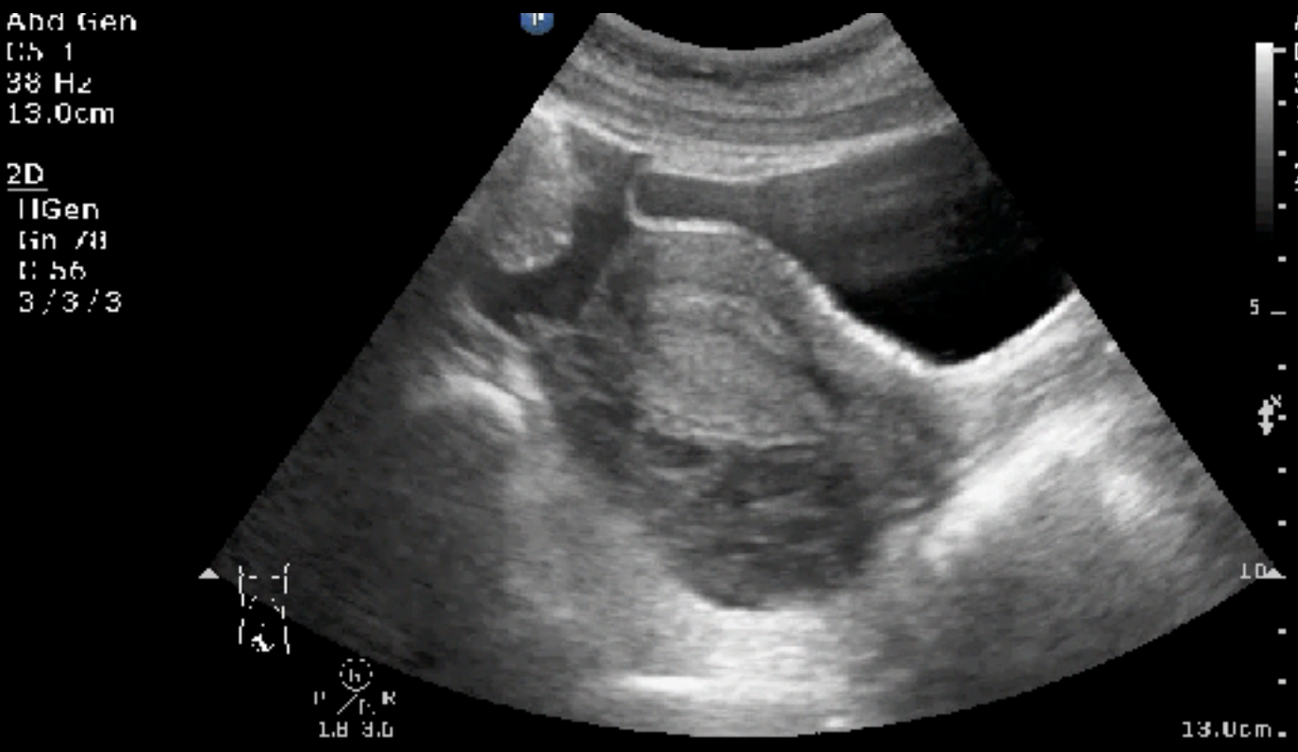
ABDOMEN

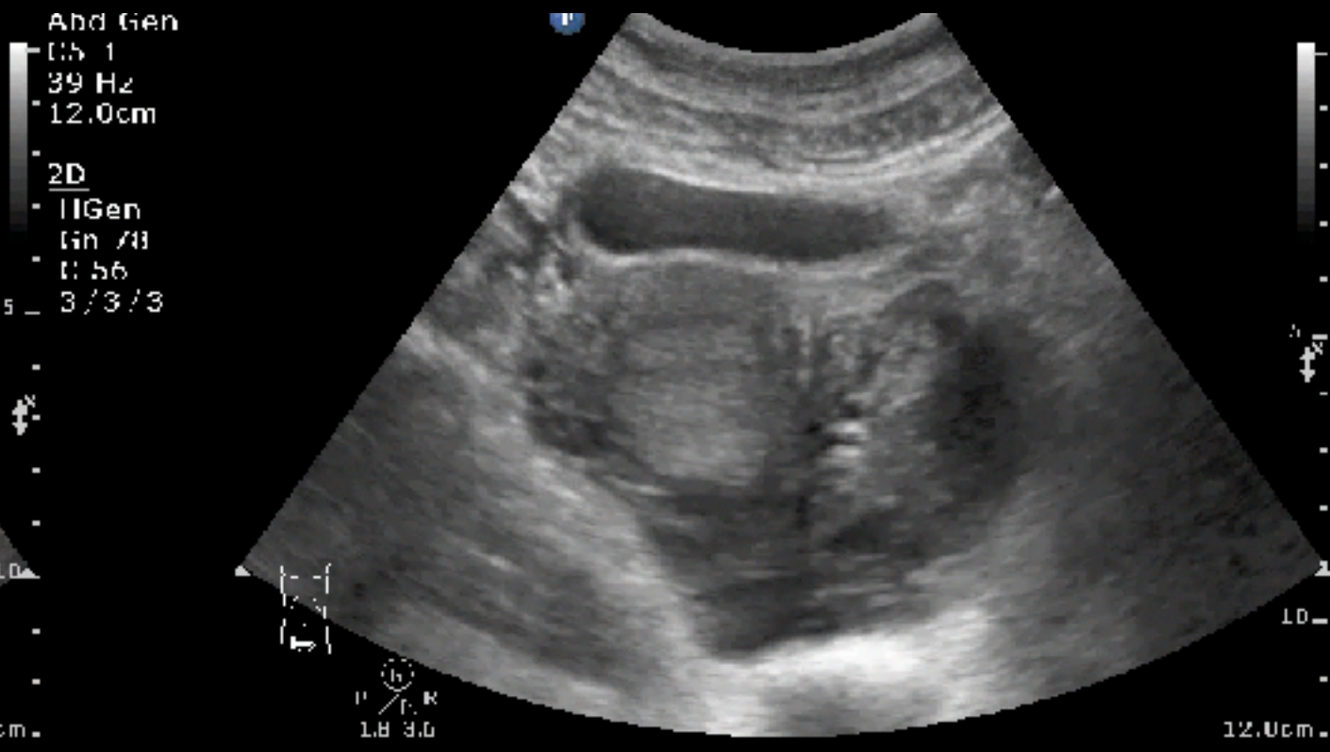
25F, abdominal pain

Ectopic fetus

14F, acute lower abdominal pain with cold sweating

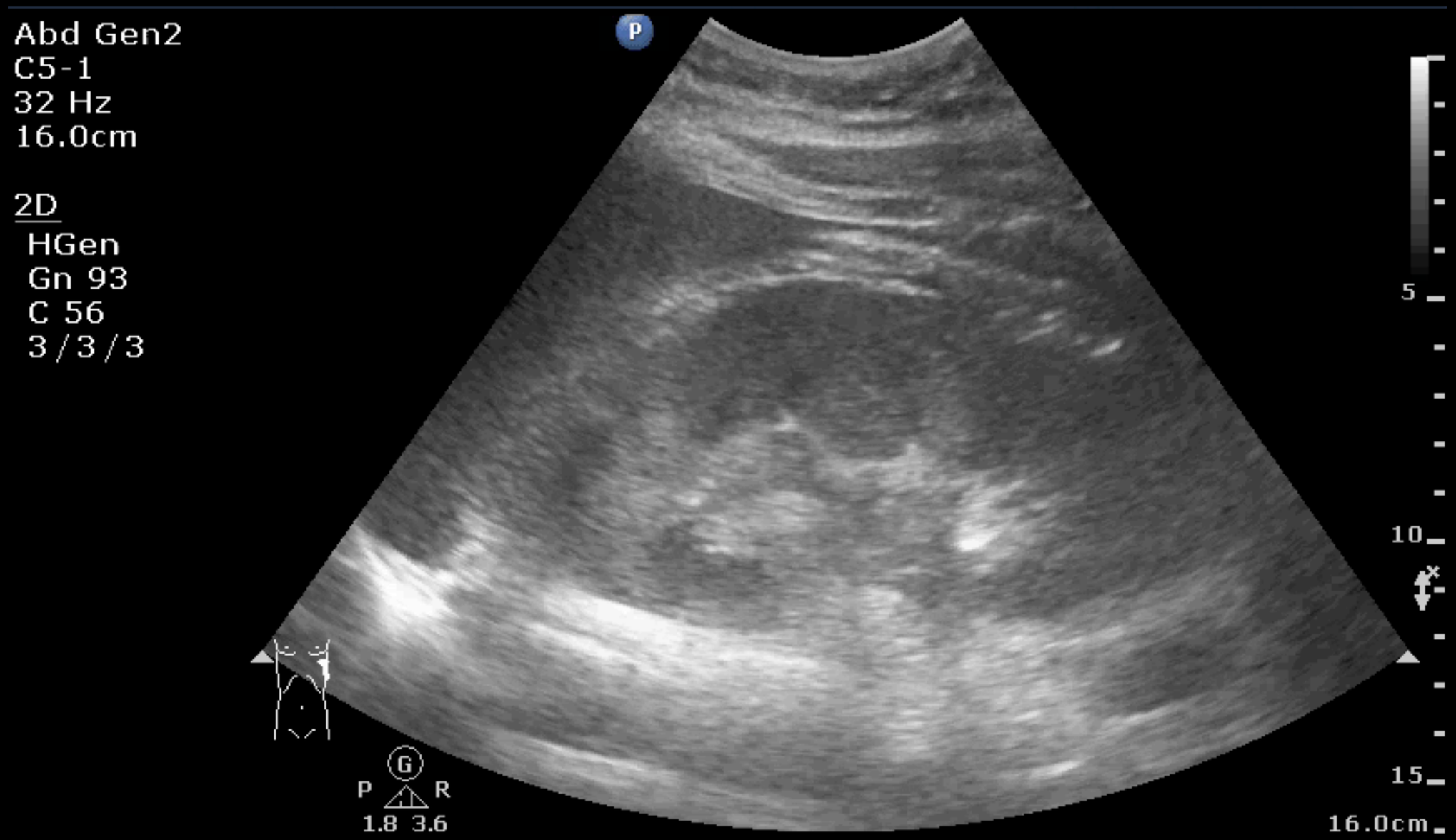
Female acute abdomen or shock cosider **ovarian cyst rupture**



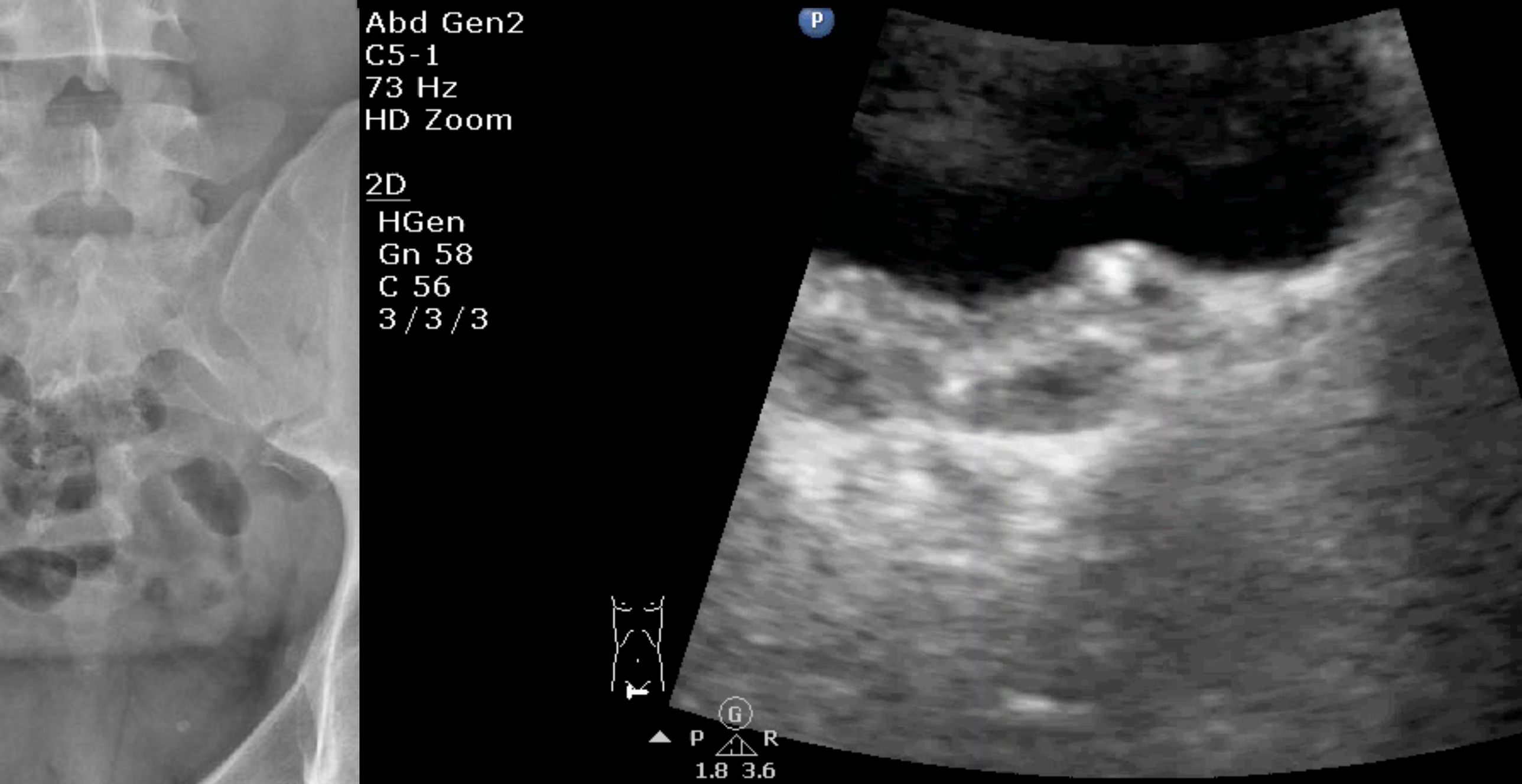


Echo first then Urine pregnancy test

25M, left flank pain



L UJV stone



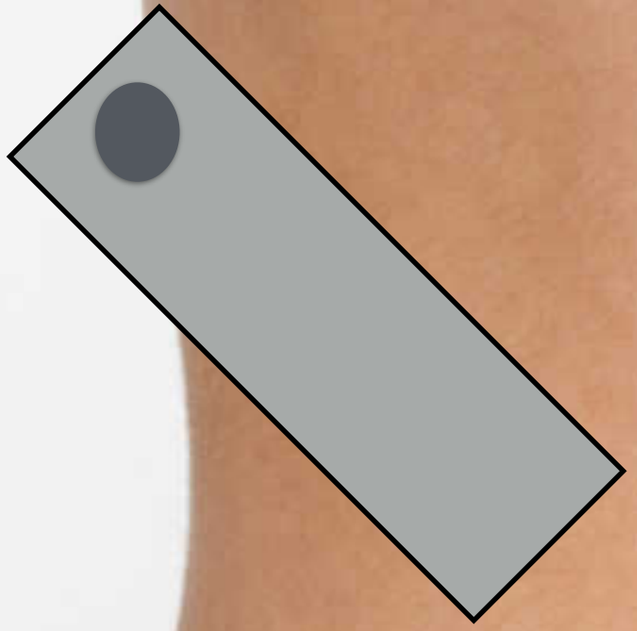
ULTRASOUND
PROGRAM

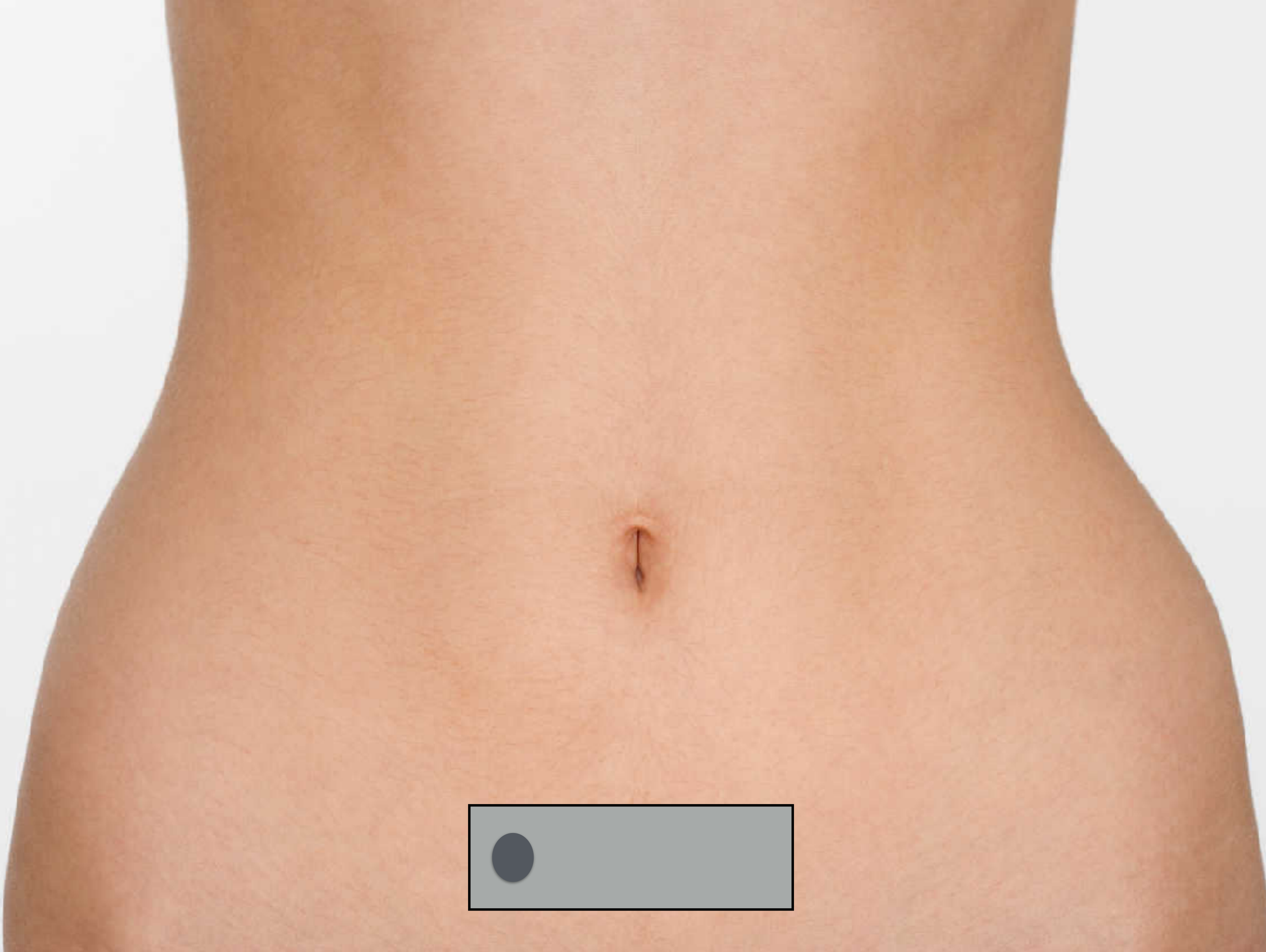
ABDOMEN

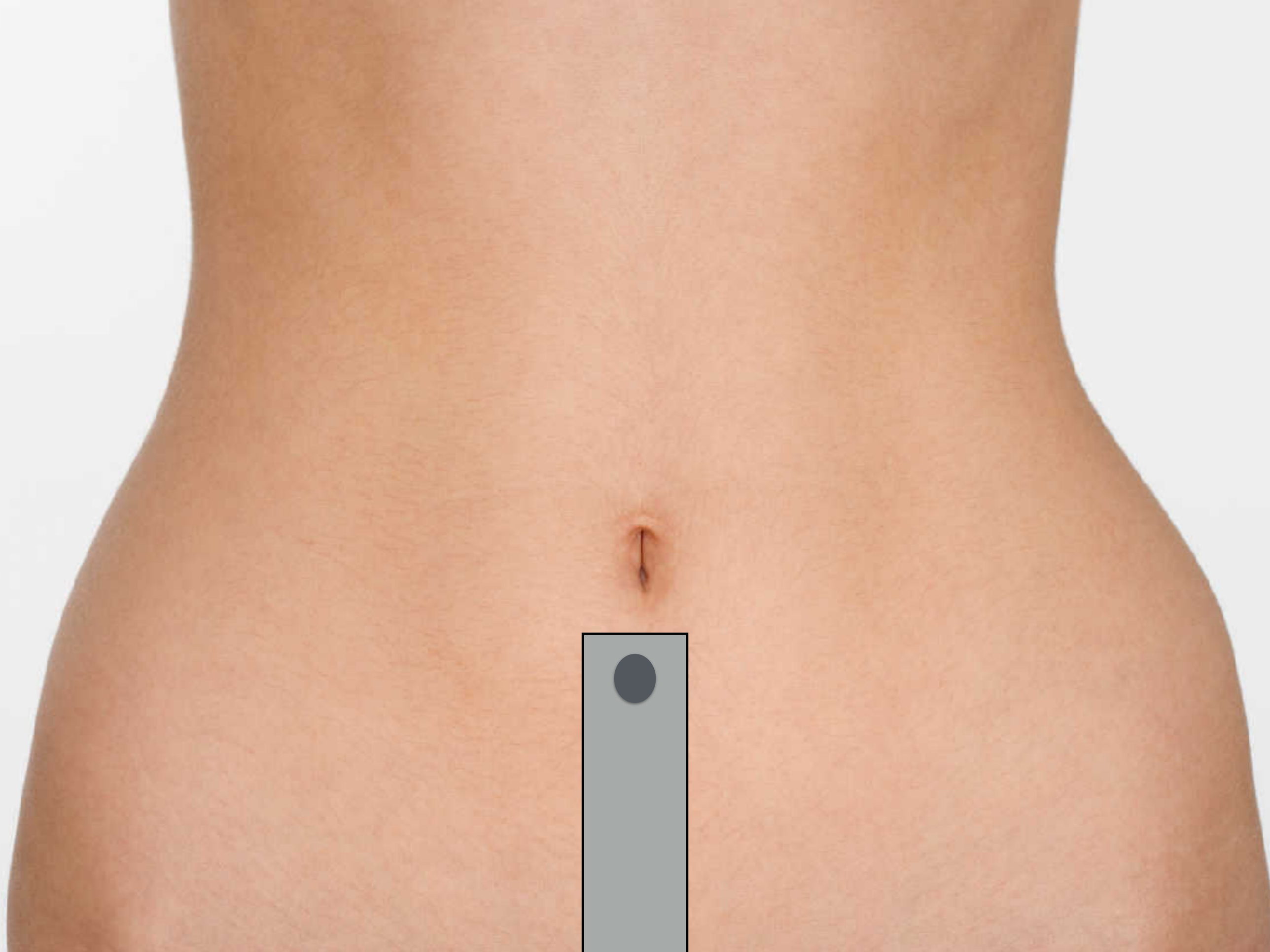
N for nephropathy

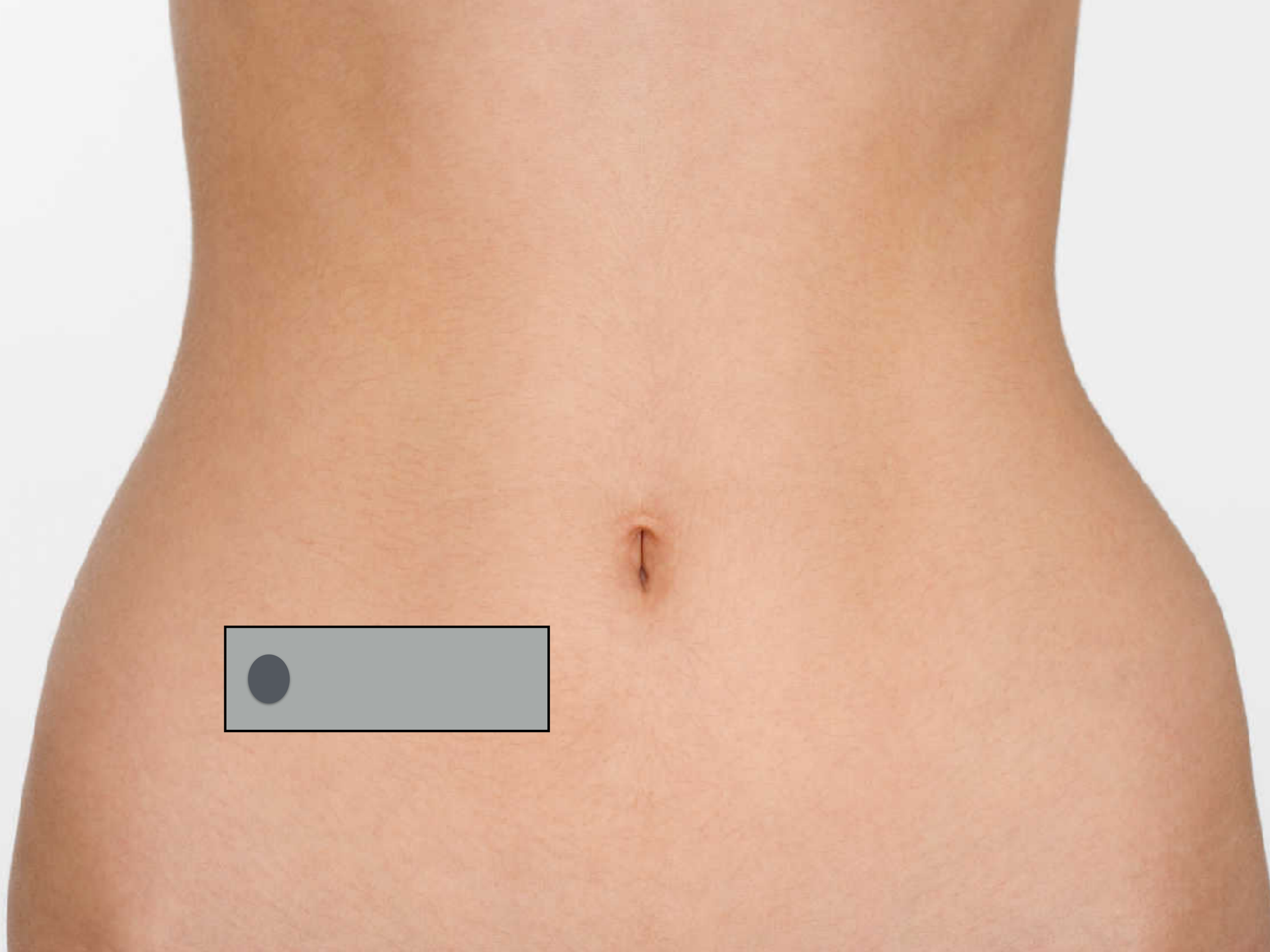
Hydronephrosis & KuB

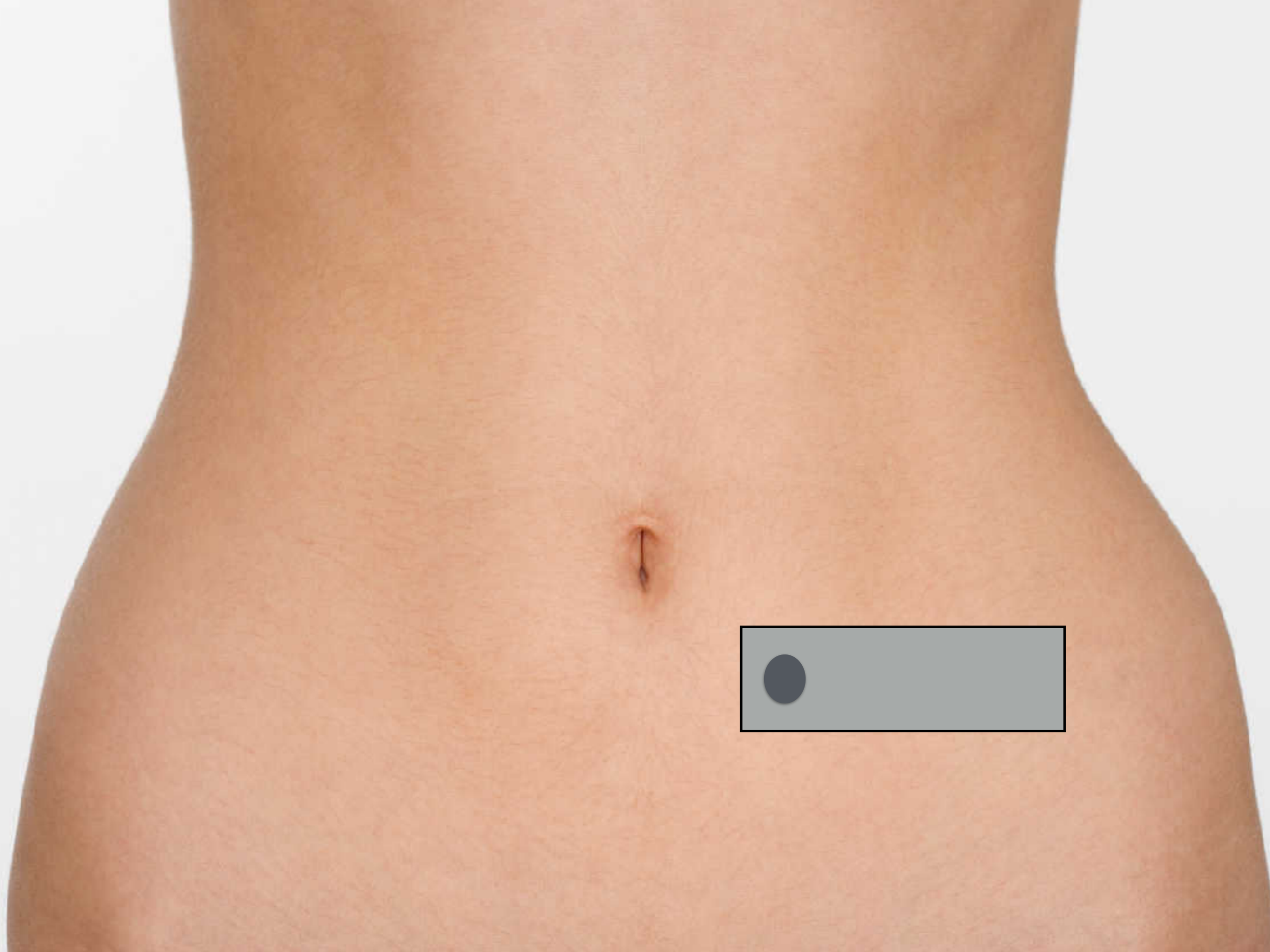
Taipei Medical University Center for Education in Medical Simulation

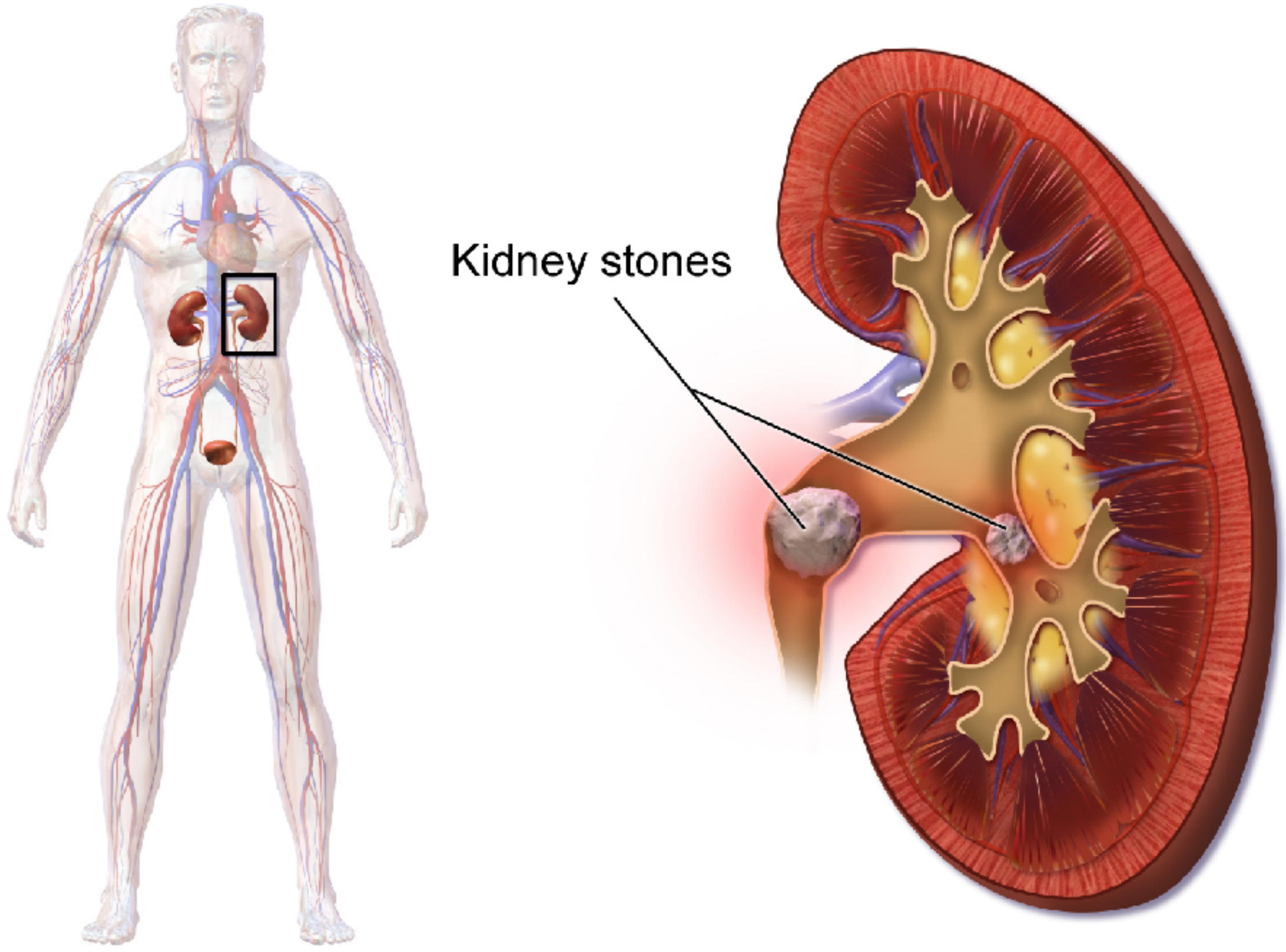




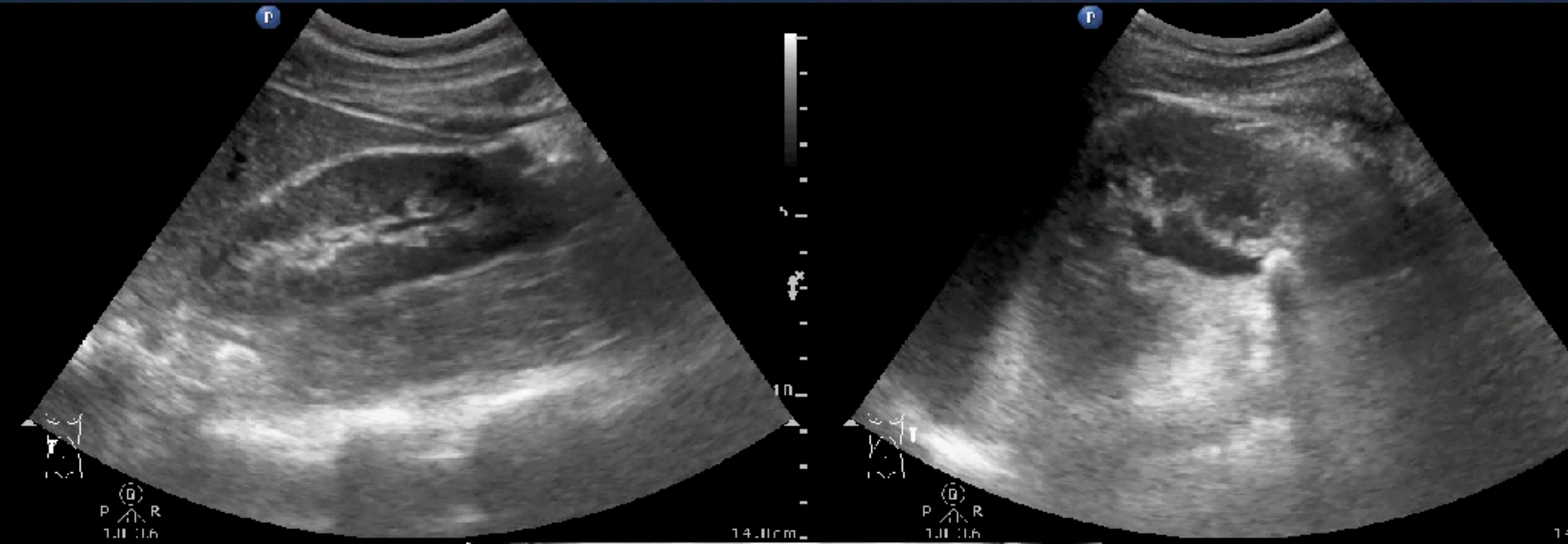








Kidney Stones

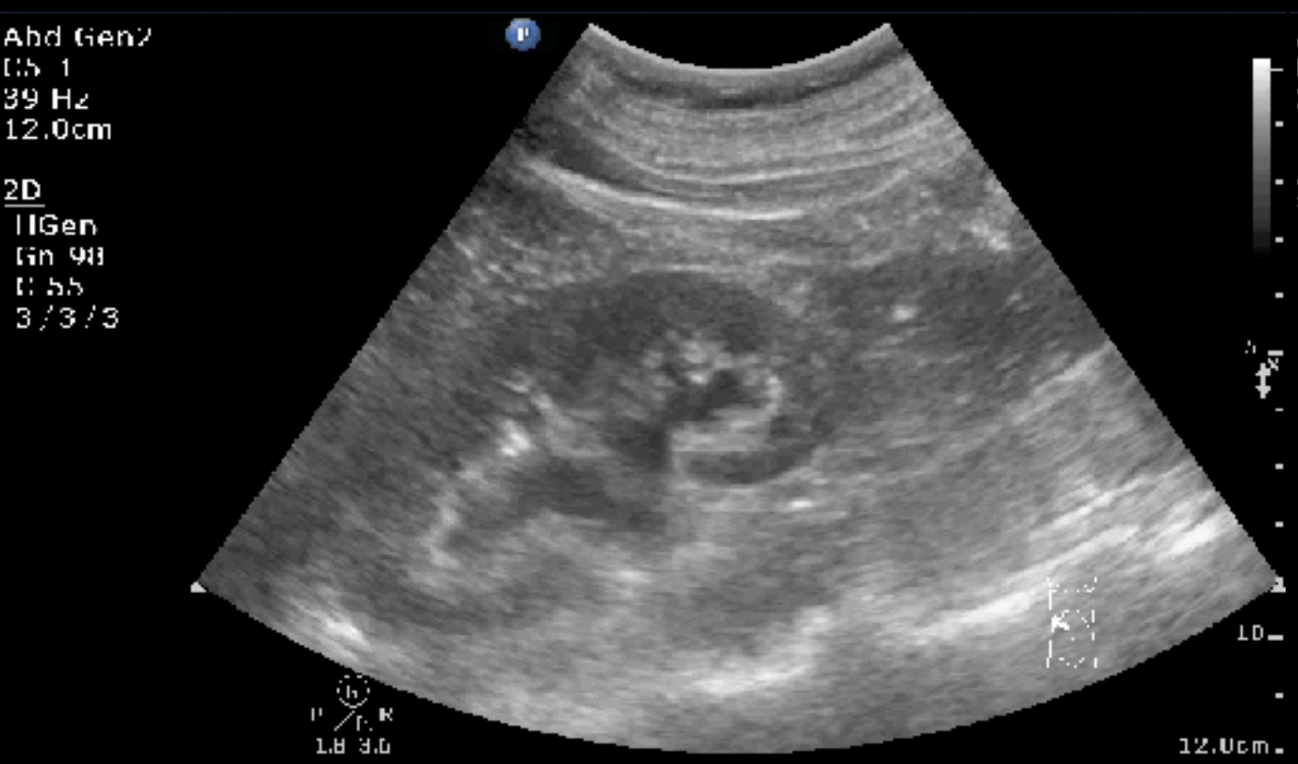


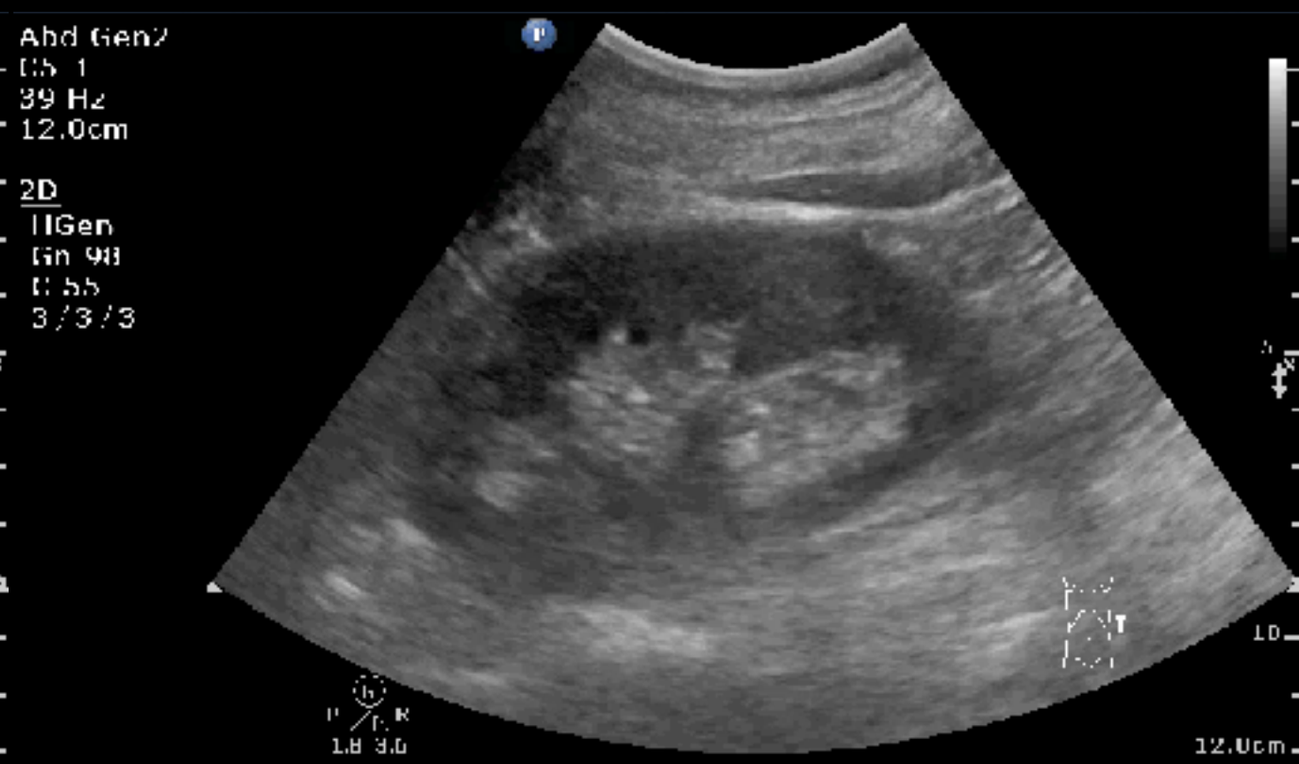
R

54M, right flank/abd pain

ABDOMEN

54M, right flank/abd pain



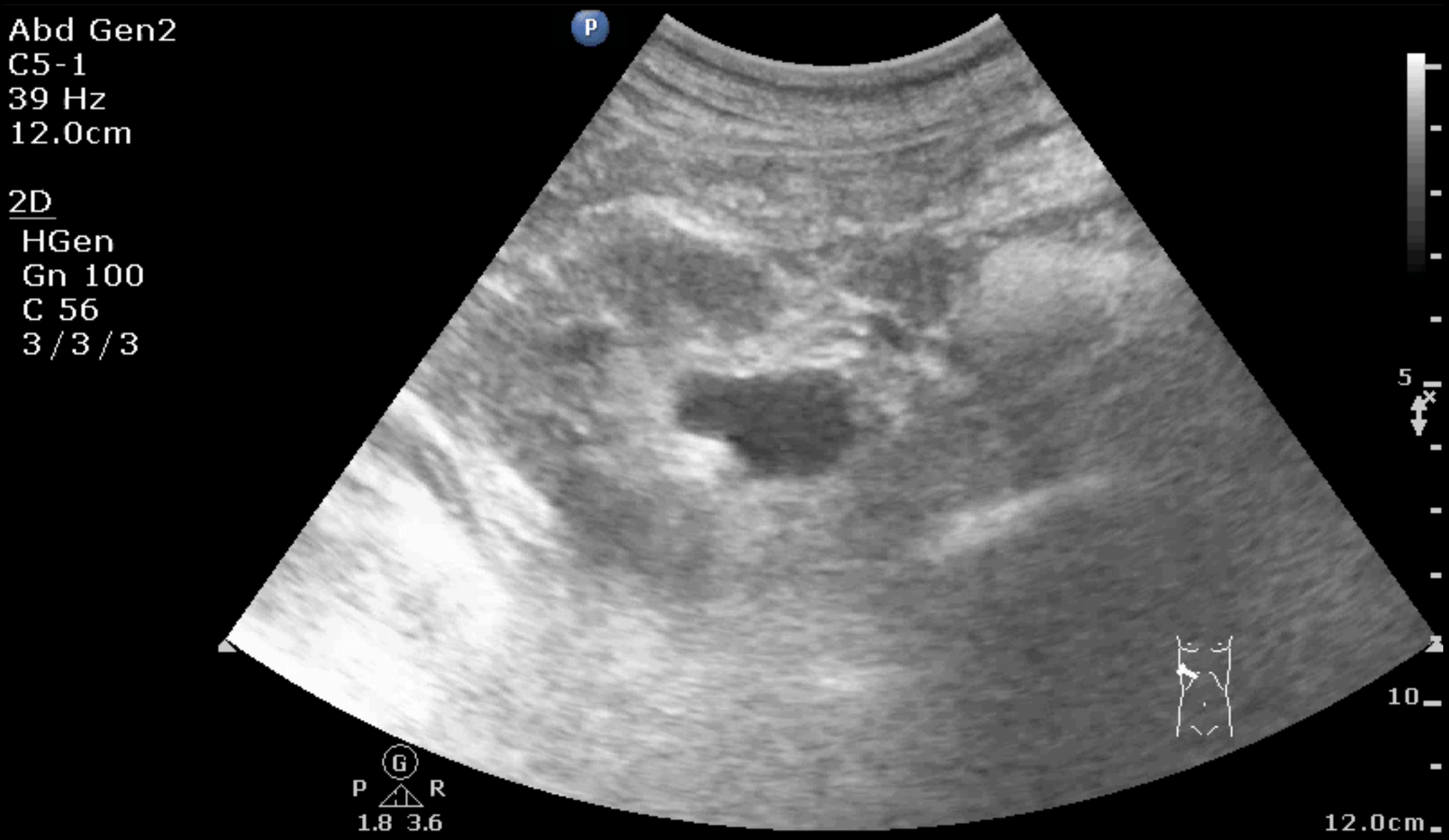


ABDOMEN

54M, right flank/abd pain

ABDOMEN

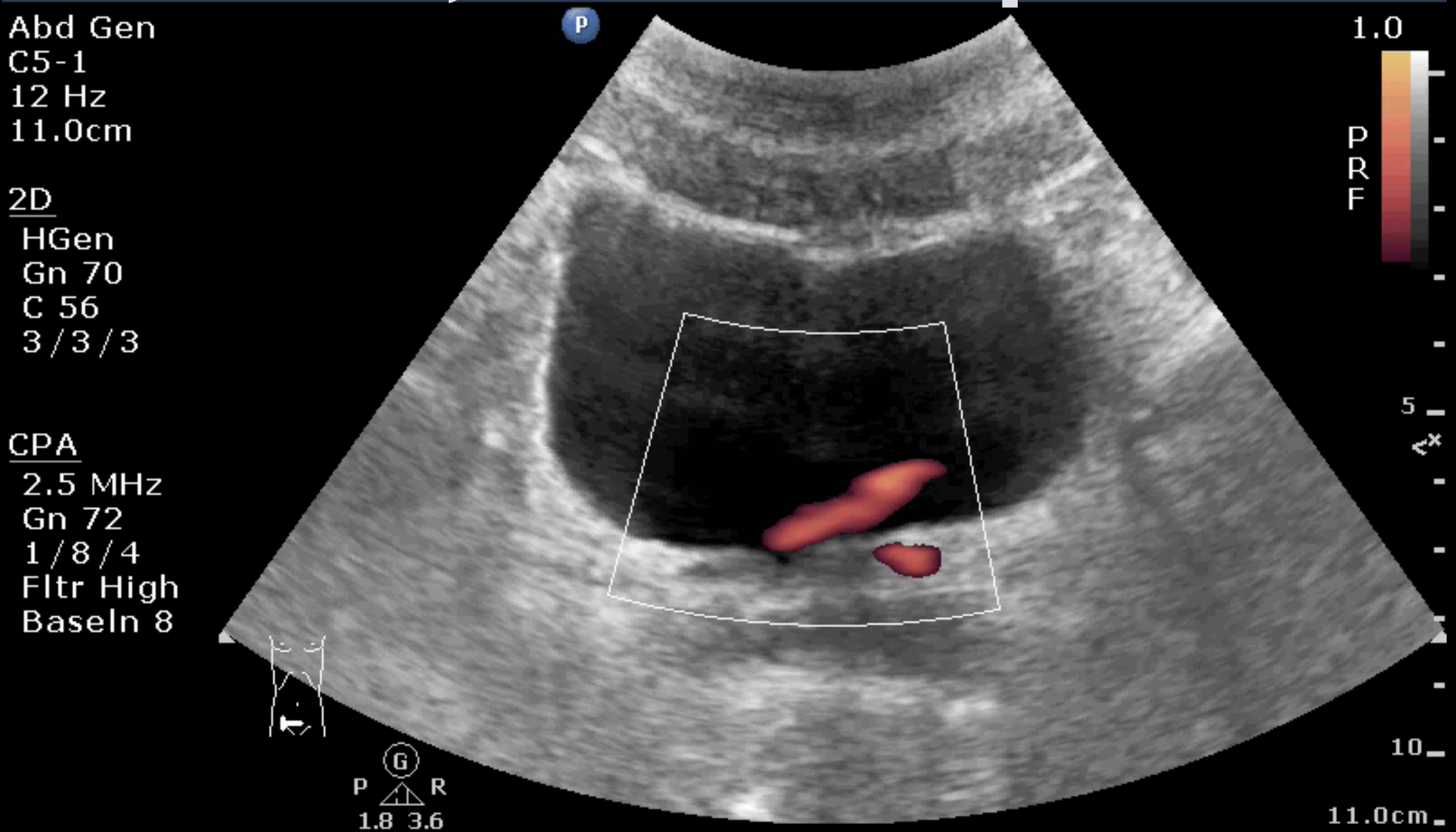
Ureteral stone



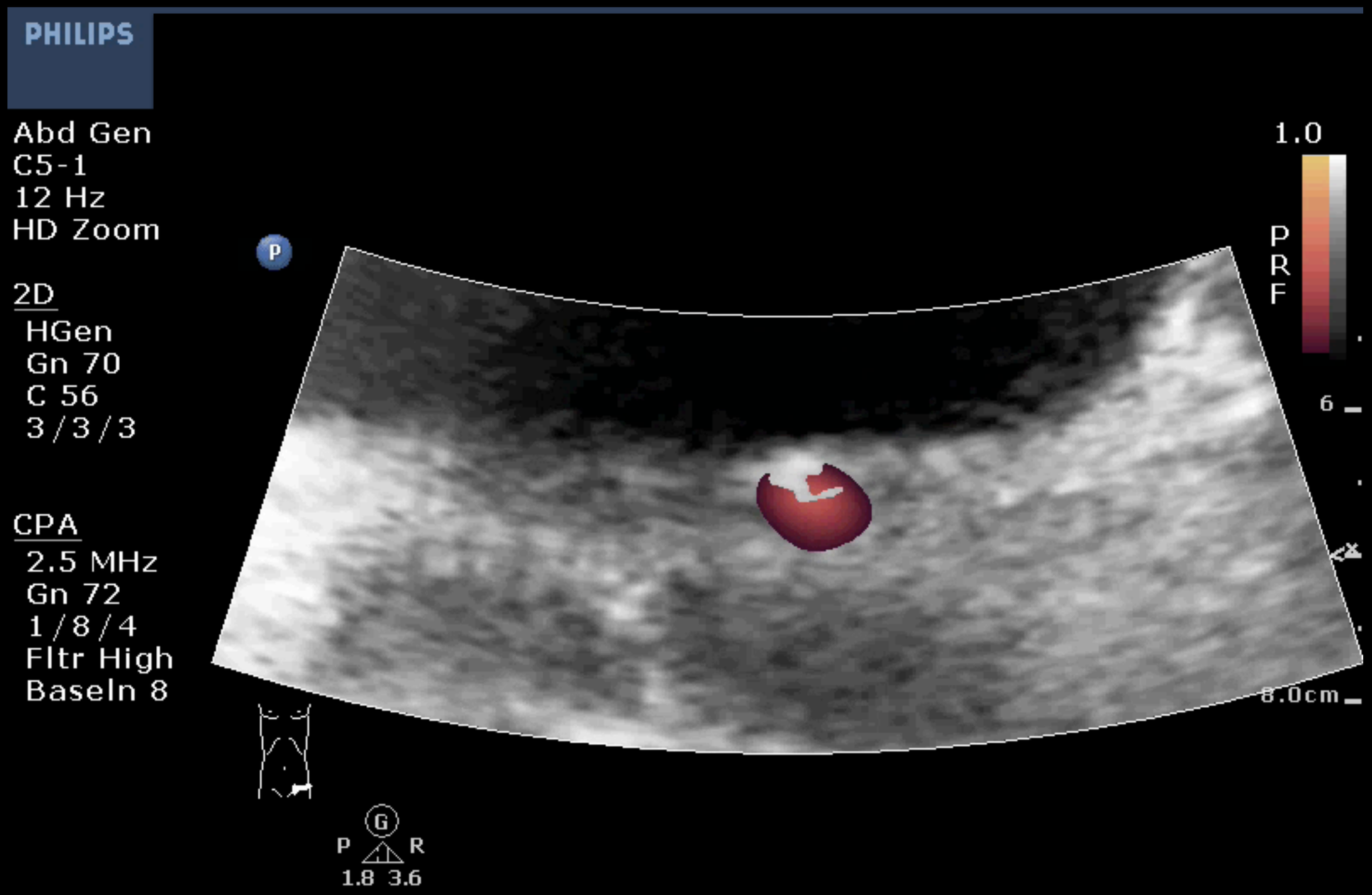
63M, left flank pain

ABDOMEN

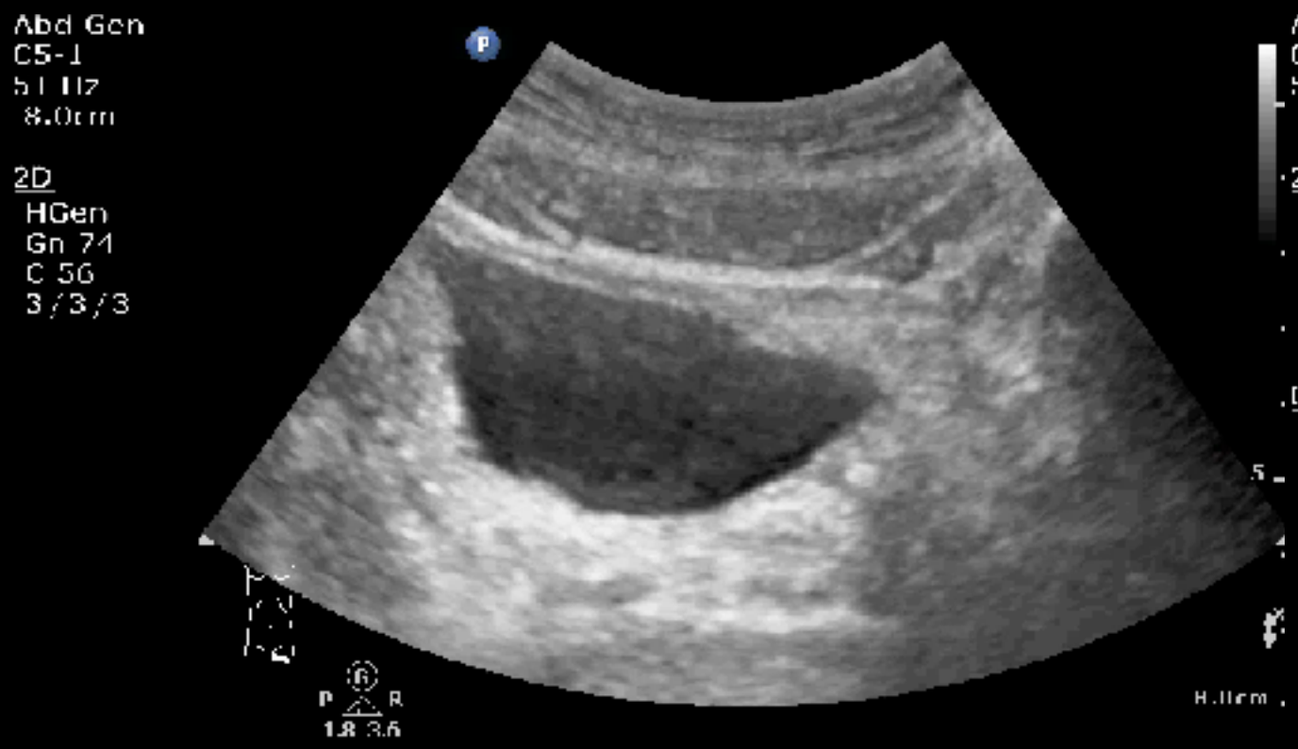
63M, left flank pain

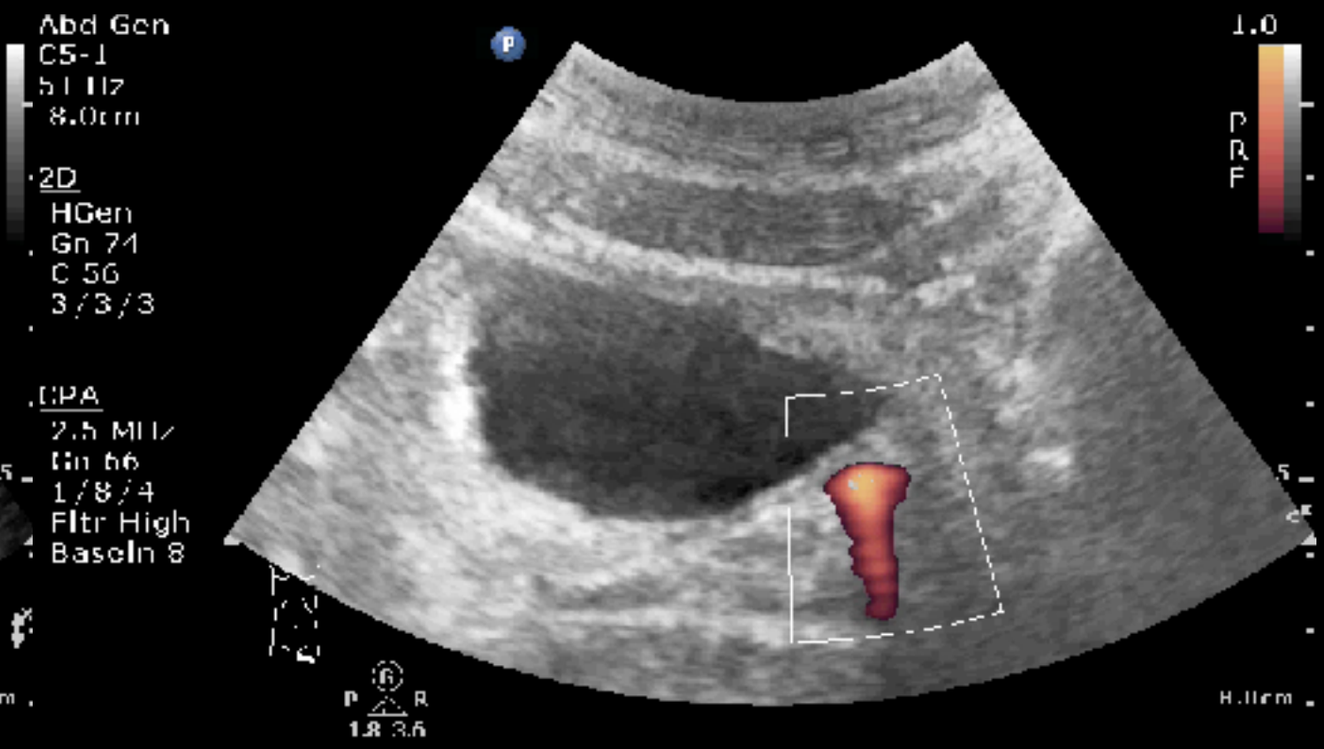


Twinkling artifact



Twinkling artifact



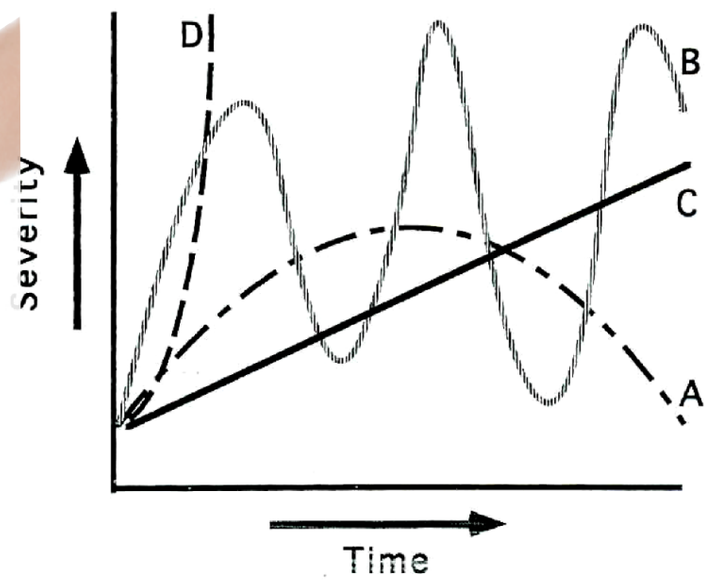


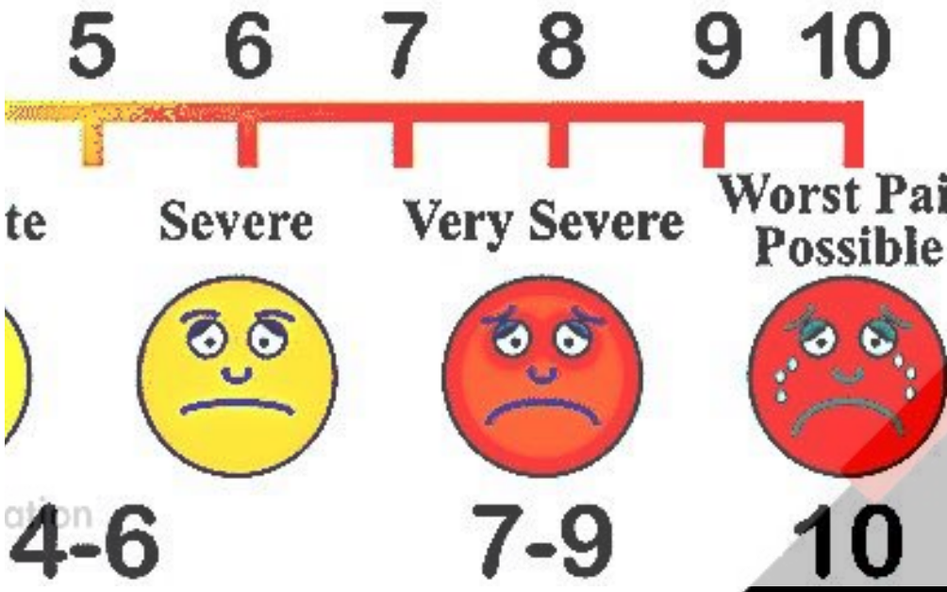
ULTRASOUND
PROGRAM

病史詢問

POCUS

理學檢查





ULTRASOUND PROGRAM

POCUS for Acute ABDOMEN

A for aorta

B for biliary

D for diaphragm

O for obstruction

M for moving fluid or gas

E for ectopic pregnancy

N for nephropathy

Taipei Medical University Center for Education in Medical Simulation

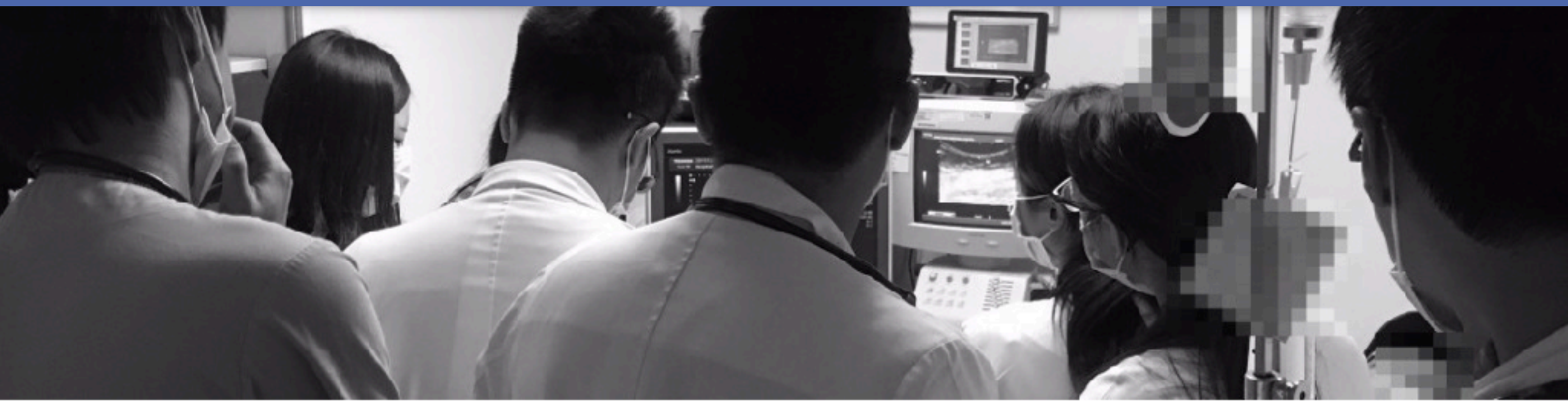
POCUS幫你【透視】急性腹痛

ULTRASOUND
PROGRAM

POCUS Academy

Point-of-care ultrasound is the visual stethoscope in the 21st century

Password: 20200104



juice119@gmail.com

FB: Emergency Ultrasound Training Center

Taipei Medical University Center for Education in Medical Simulation

51M, RUQ pain

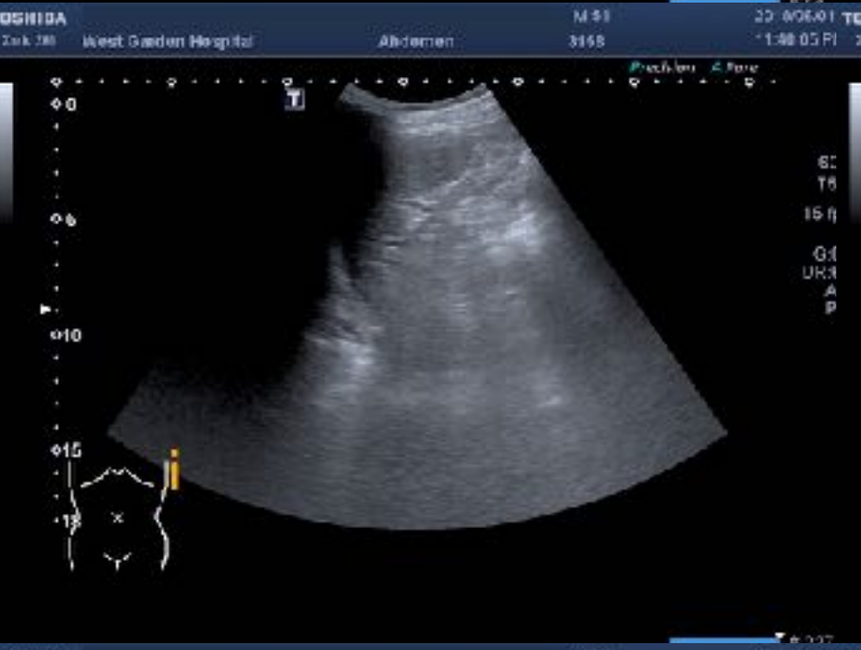
WBC 13000; CRP 8.5

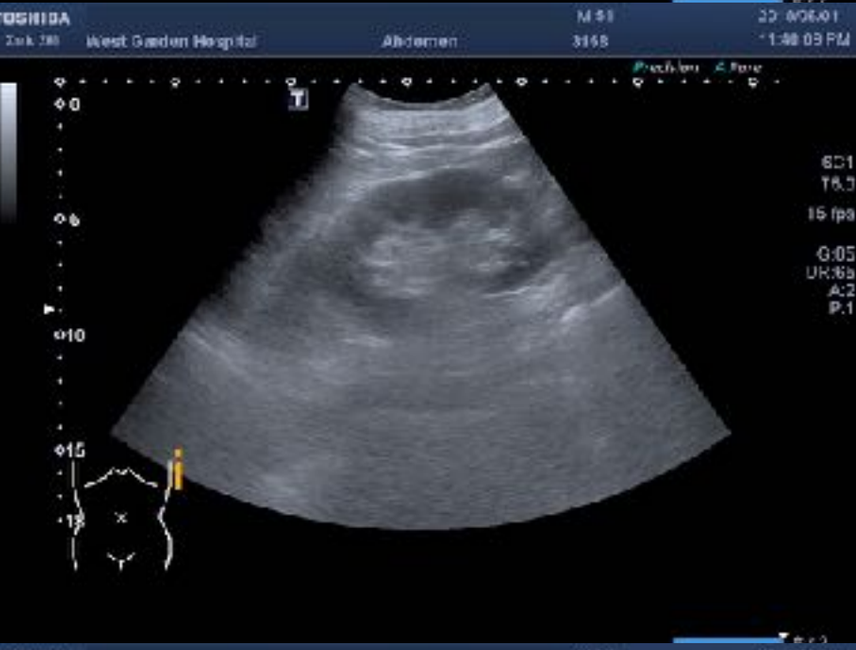
TOSHIBA
West Garden Hospital
Abdomen

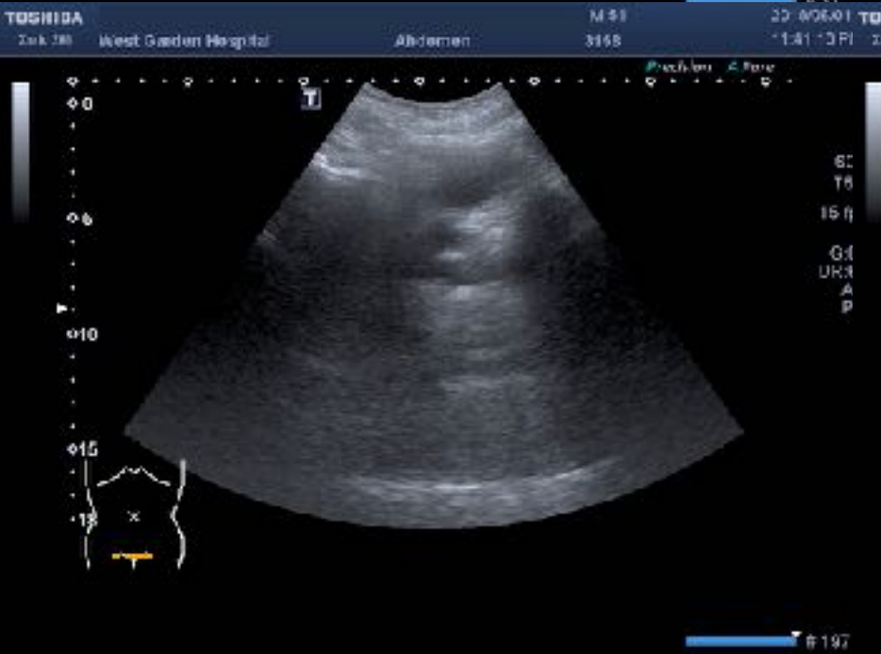
TOSHIBA
West Garden Hospital
Abdomen

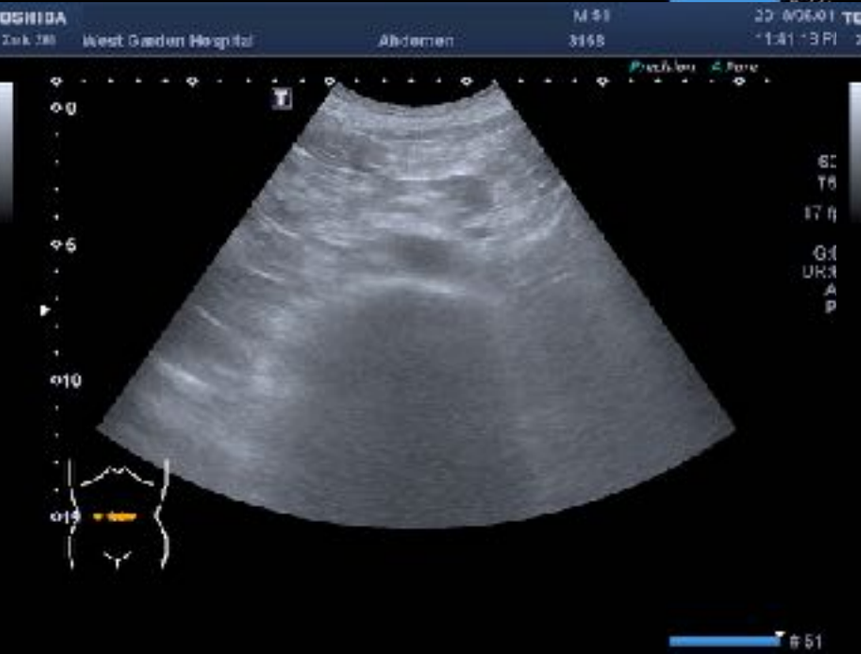
West Garden Hospital
Abdomen

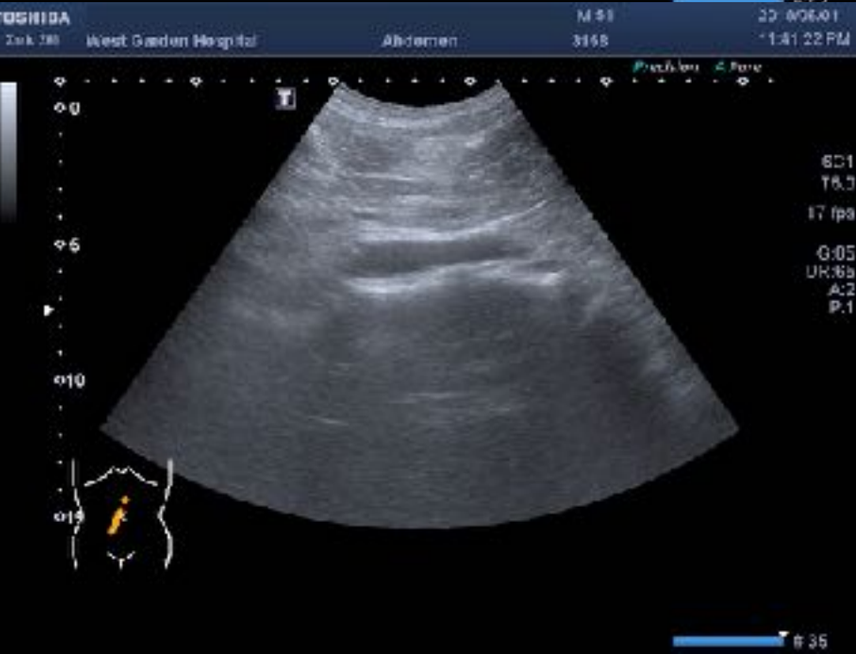
TOSHIBA
West Garden Hospital
Abdomen

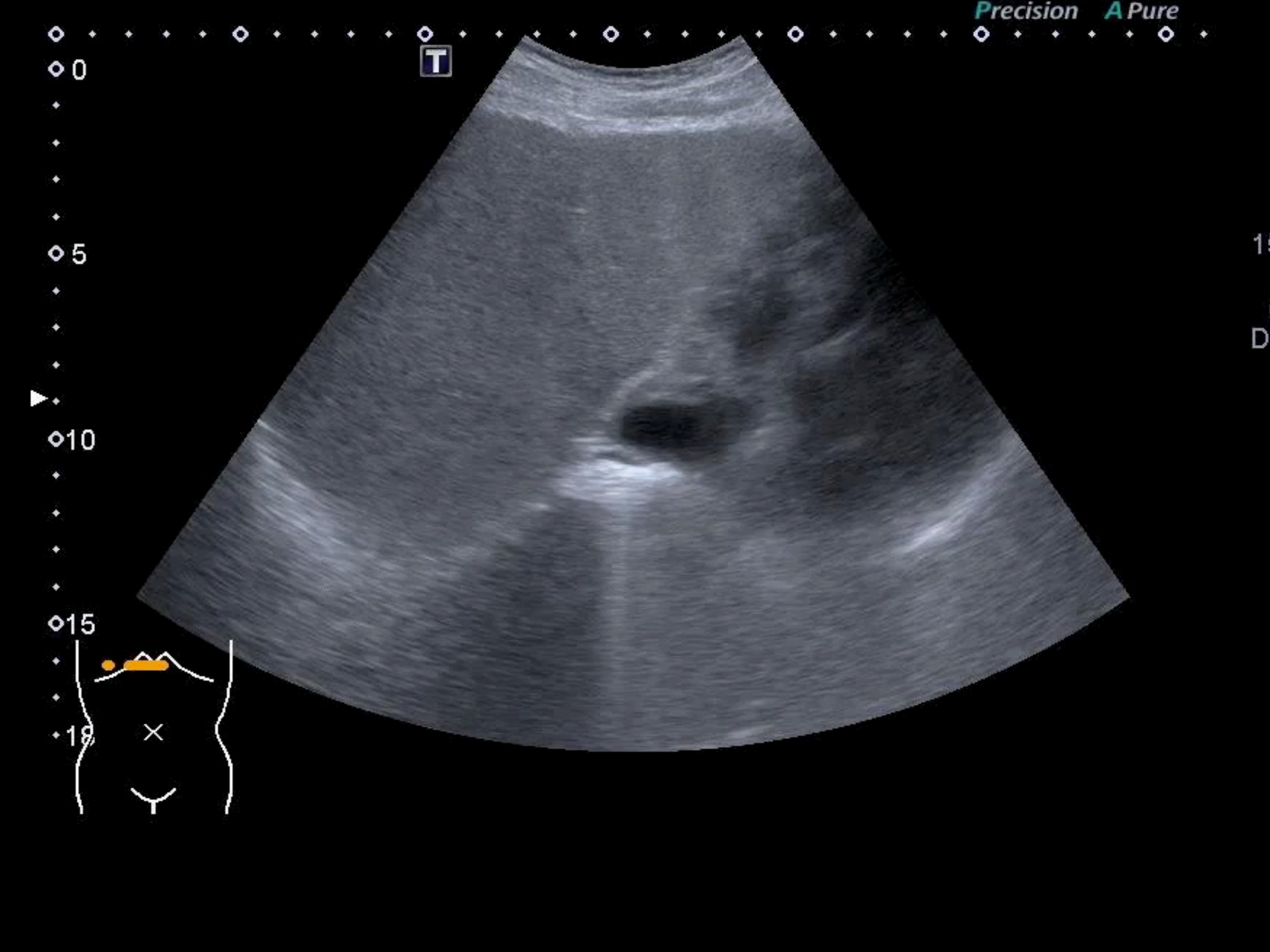

TOSHIBA
West Garden Hospital
Abdomen


West Garden Hospital
Abdomen


TOSHIBA
West Garden Hospital
Abdomen

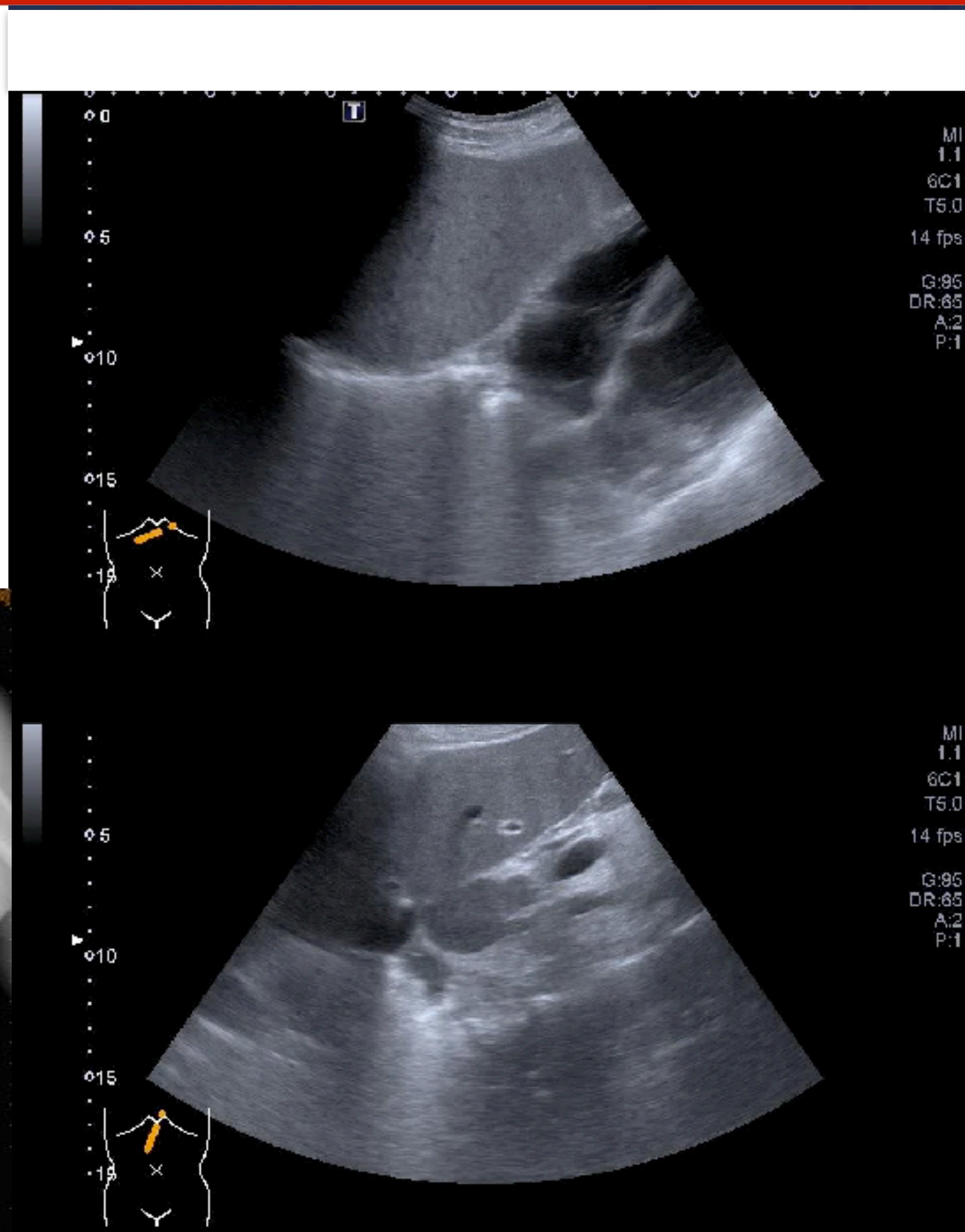

TOSHIBA
West Garden Hospital
Abdomen


West Garden Hospital
Abdomen


Precision
A Pure
0
5
10
15
18

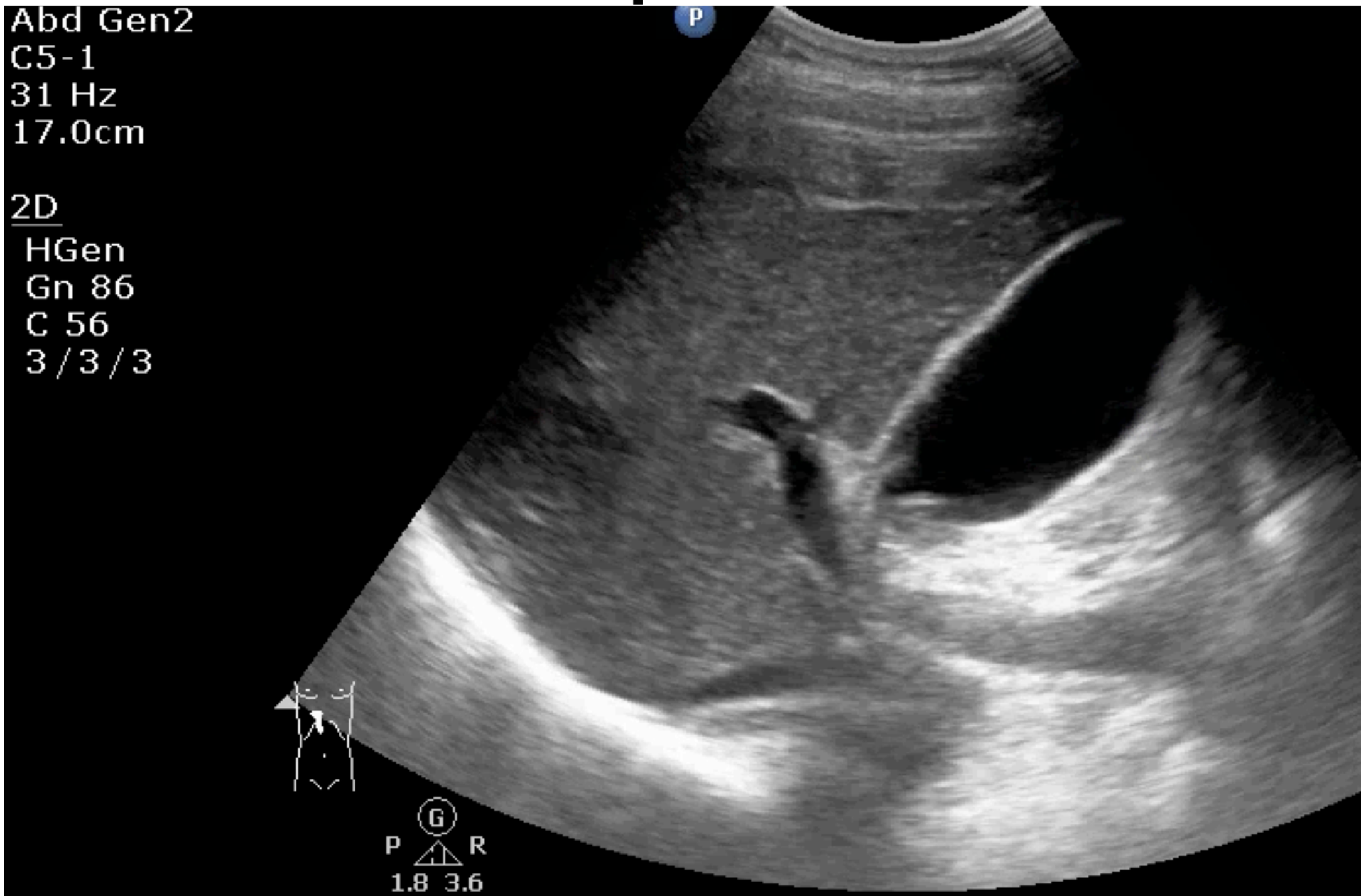
ULTRASOUND
PROGRAM

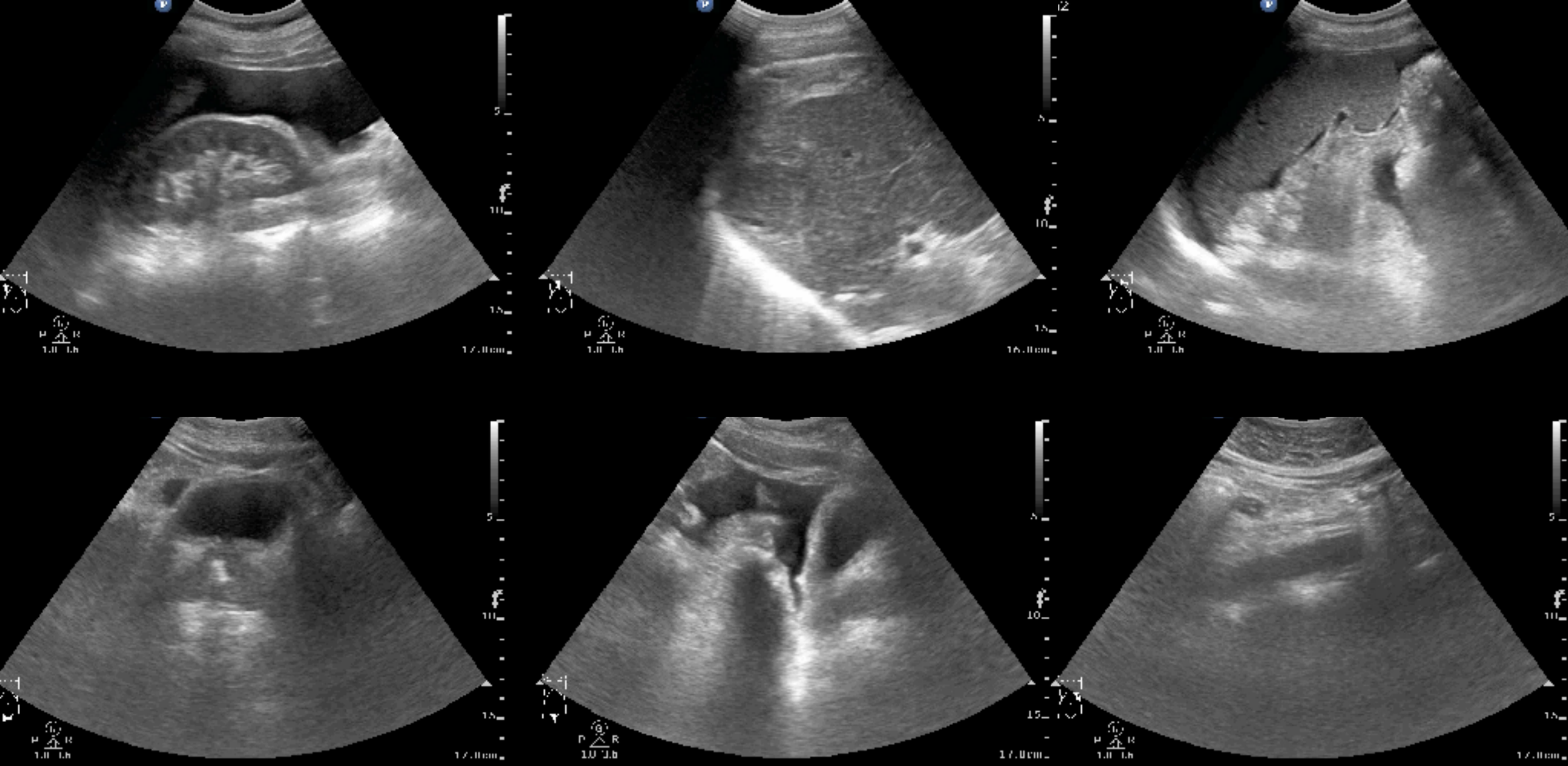
2nd WINDOW
(肝 & 背)

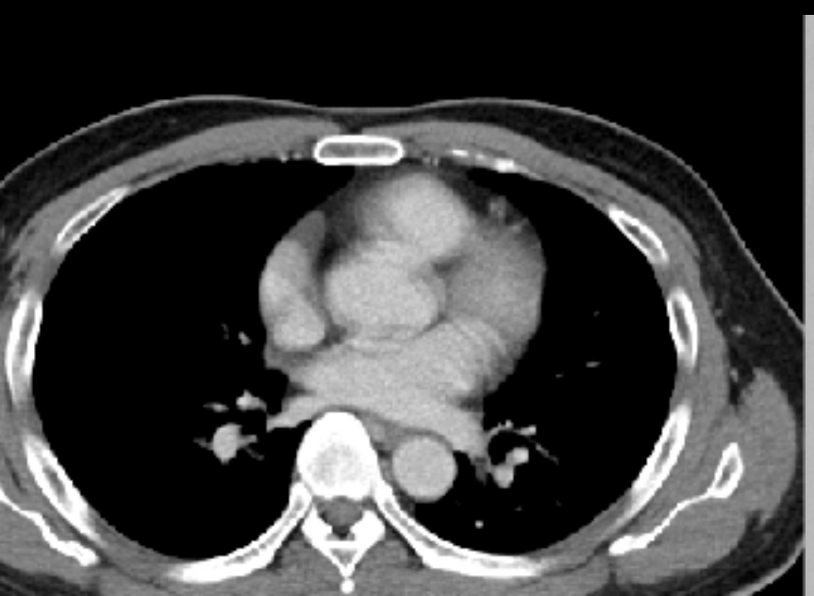


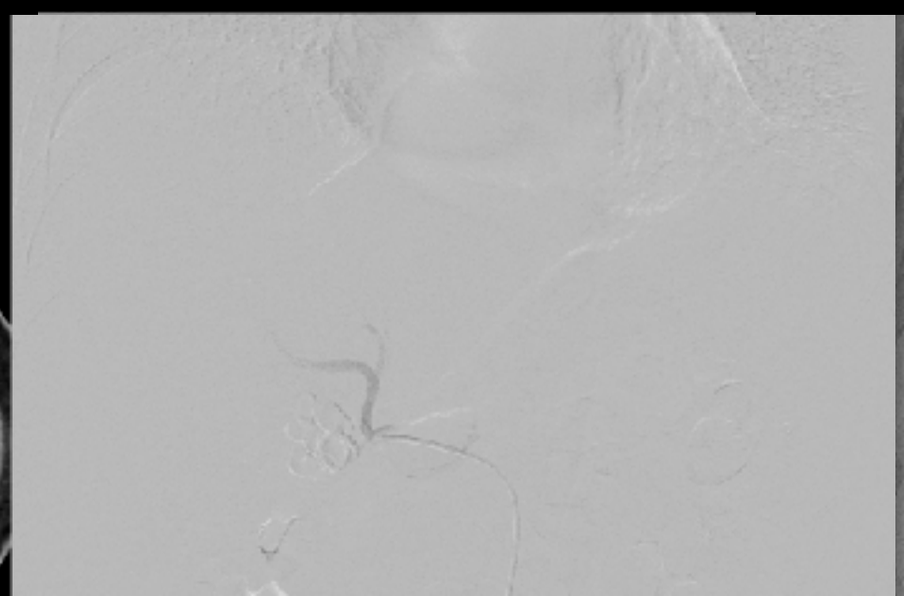
ULTRASOUND PROGRAM

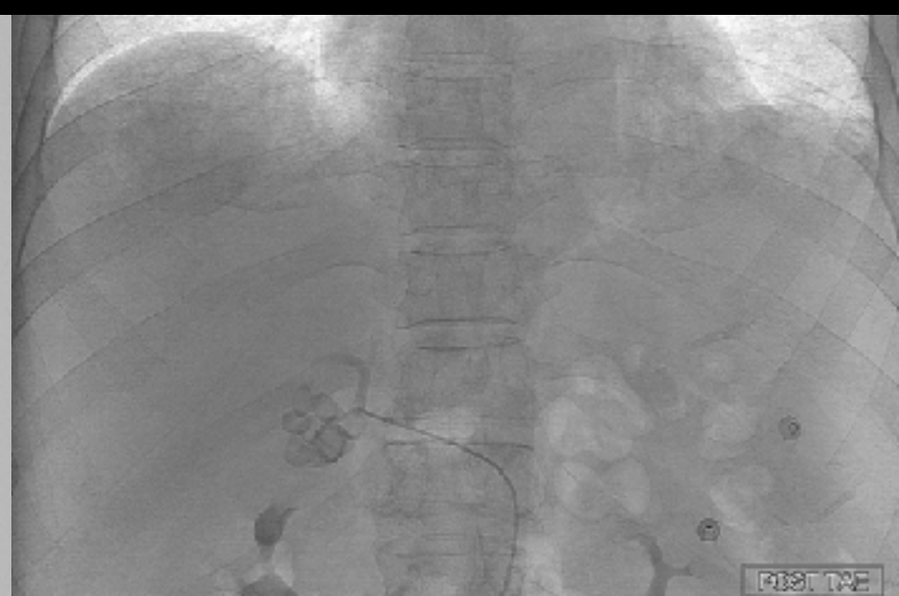
52M, RUQ pain










POST TAE

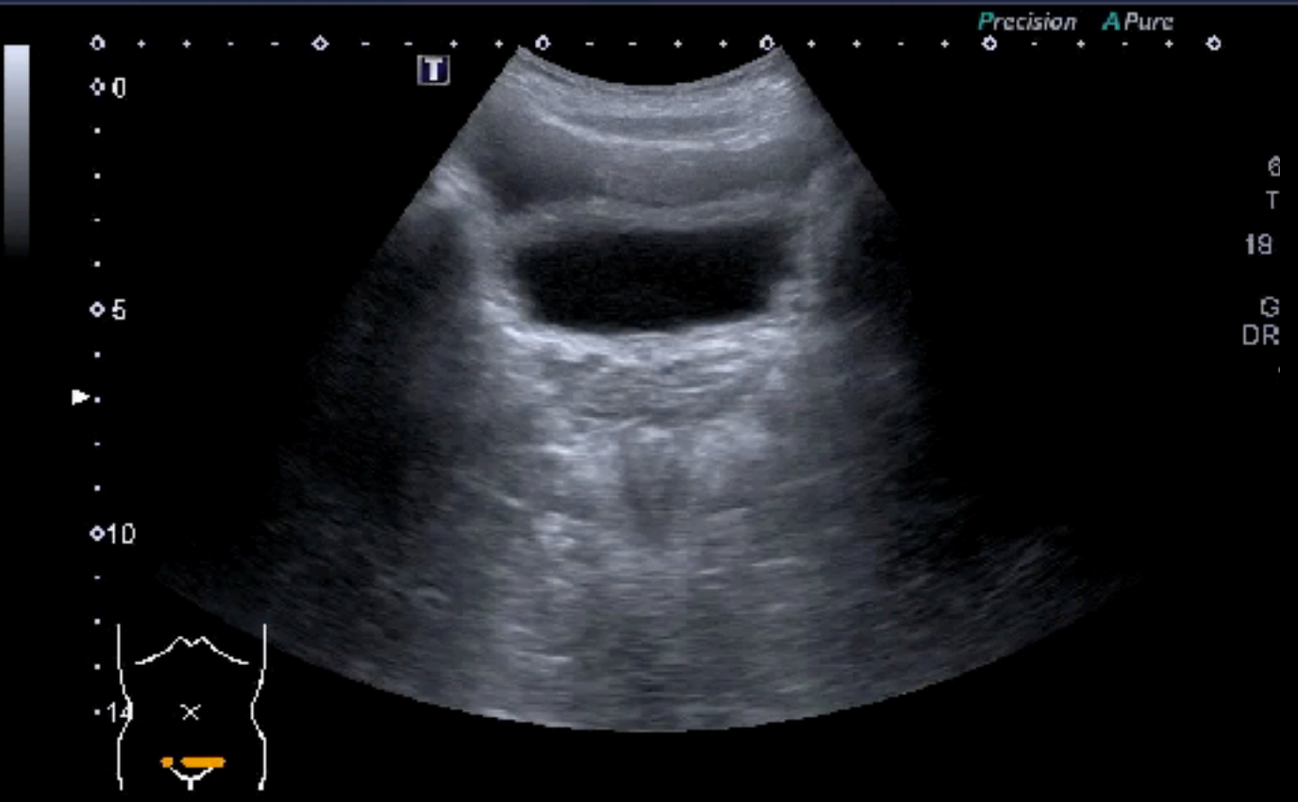
ULTRASOUND PROGRAM

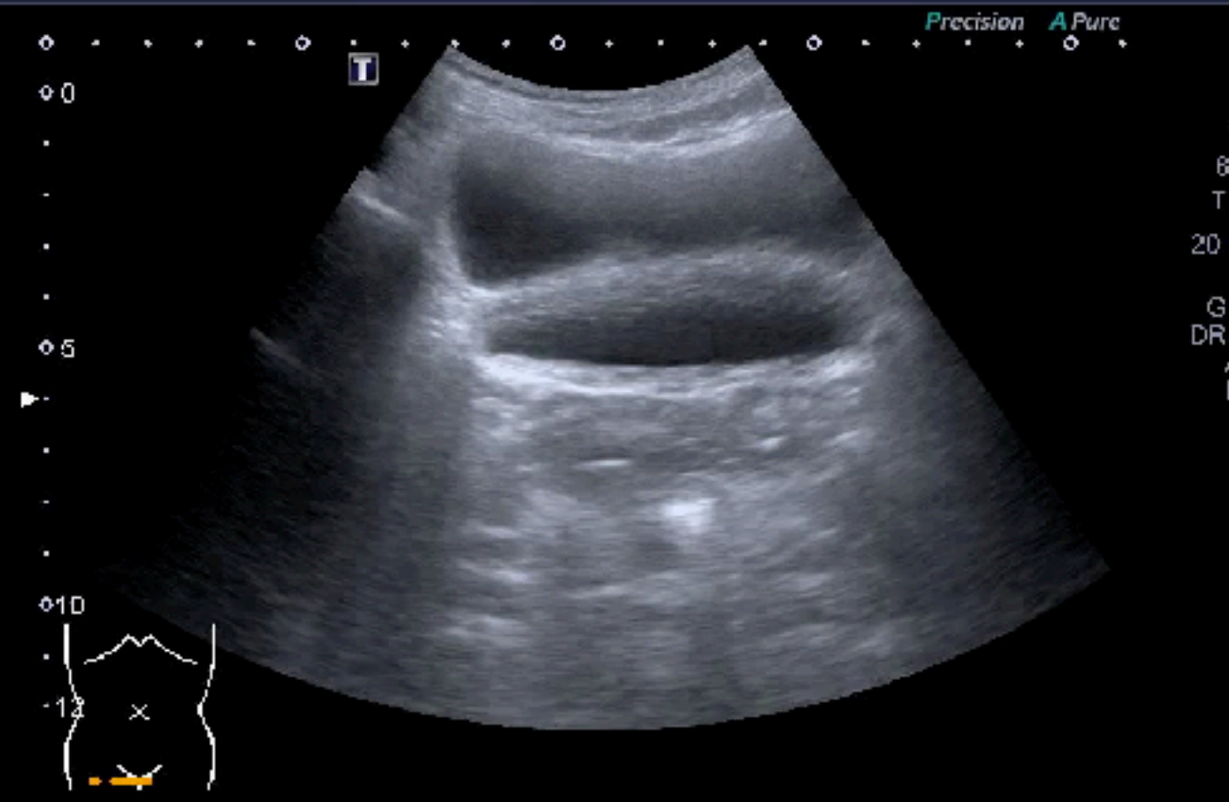
What else ?

25F，AGE s/s

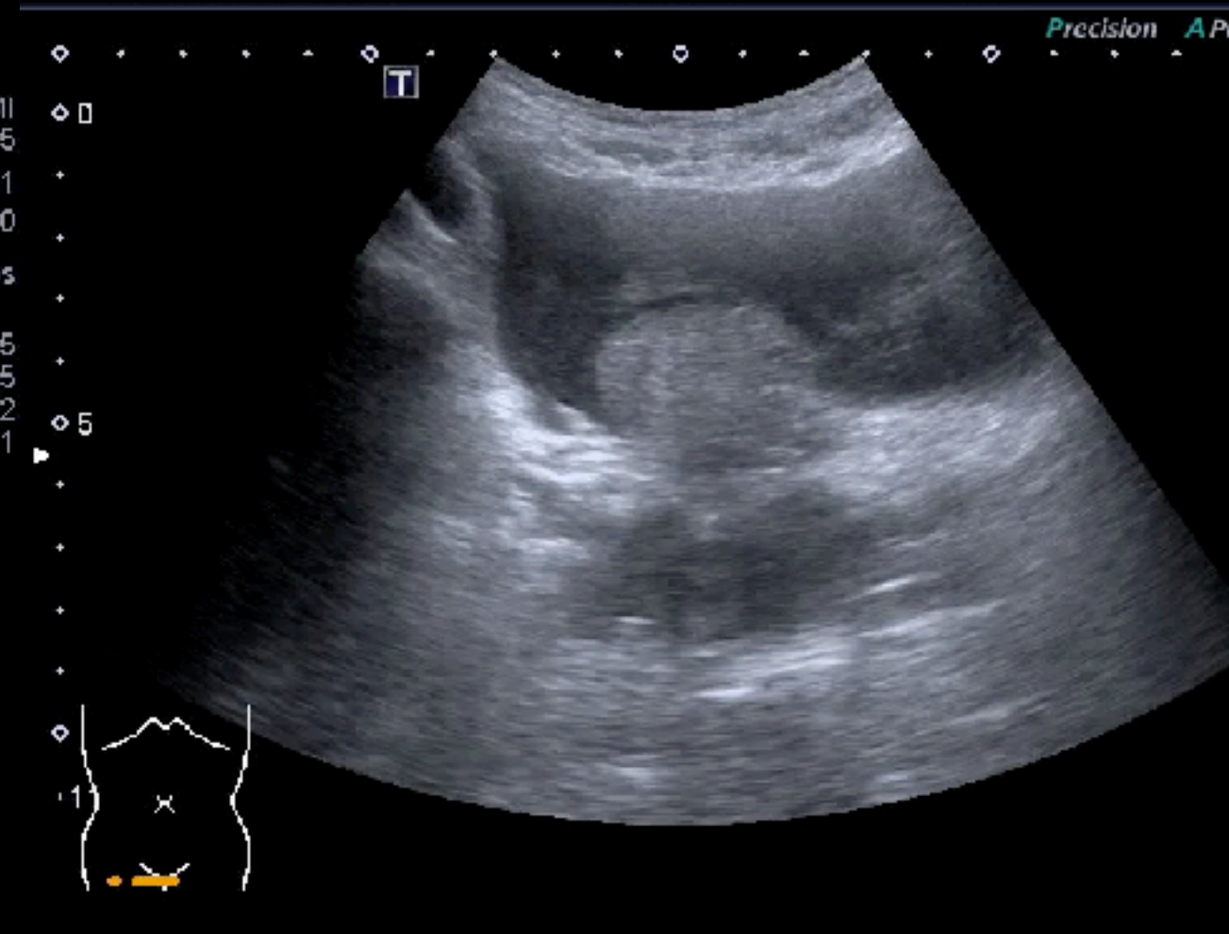
腹痛三天、水瀉完後改善，
今天覺得想解便解不出、
腹部絞痛

PE: lower ABD tenderness


Precision A Pure
T
0
5
10
15
6
T
19
G
DR


Precision A Pure
T
0
5
10
15
6
T
20
G
DR

Precision A Pure
T


Precision A P
T
MI
1.5
6C1
T5.0
22 fps
G:85
DR:65
A:2
P:1
0
5
1

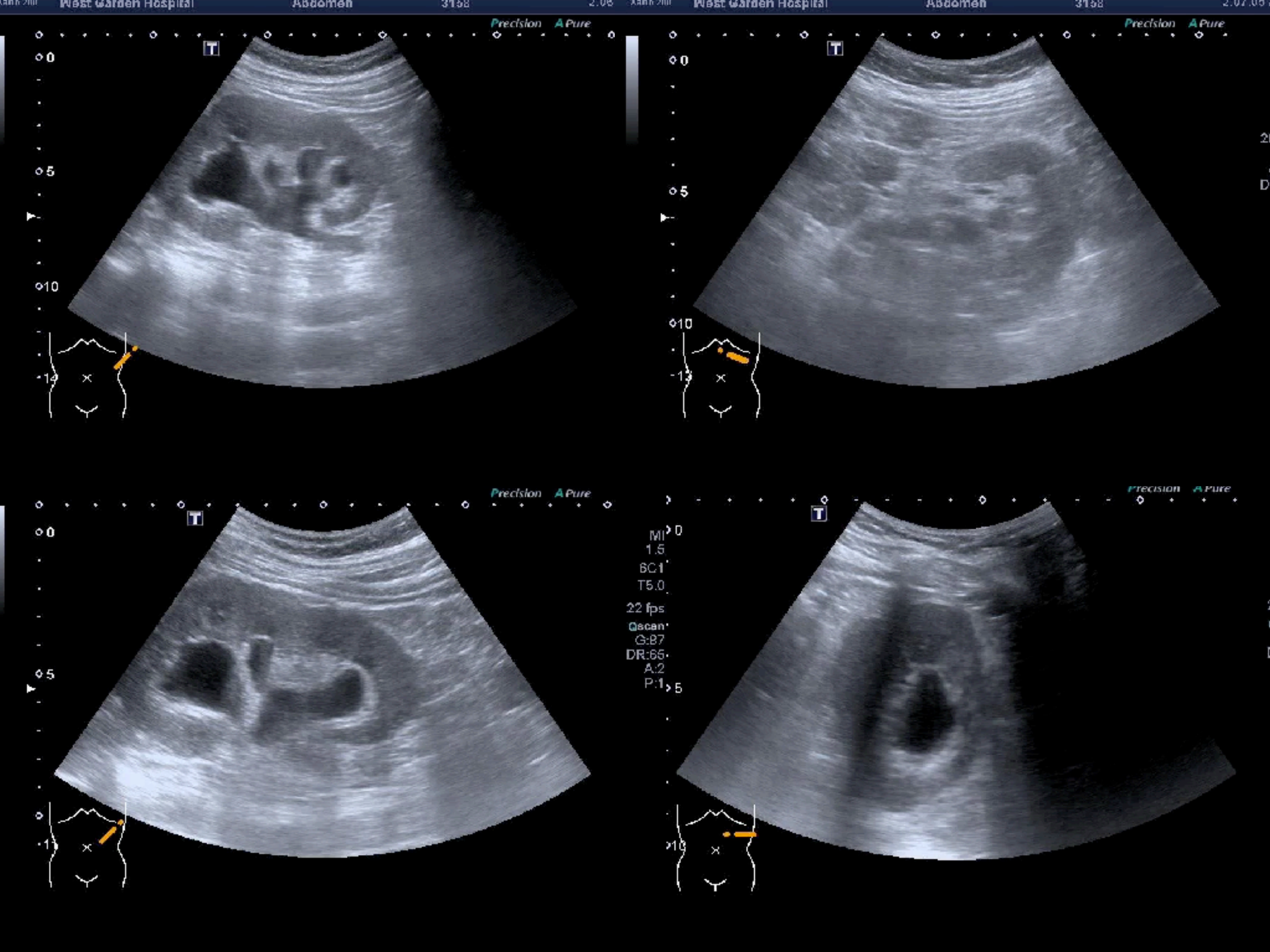
ULTRASOUND PROGRAM

58F, 左腰腹痛併發燒2天

20160726

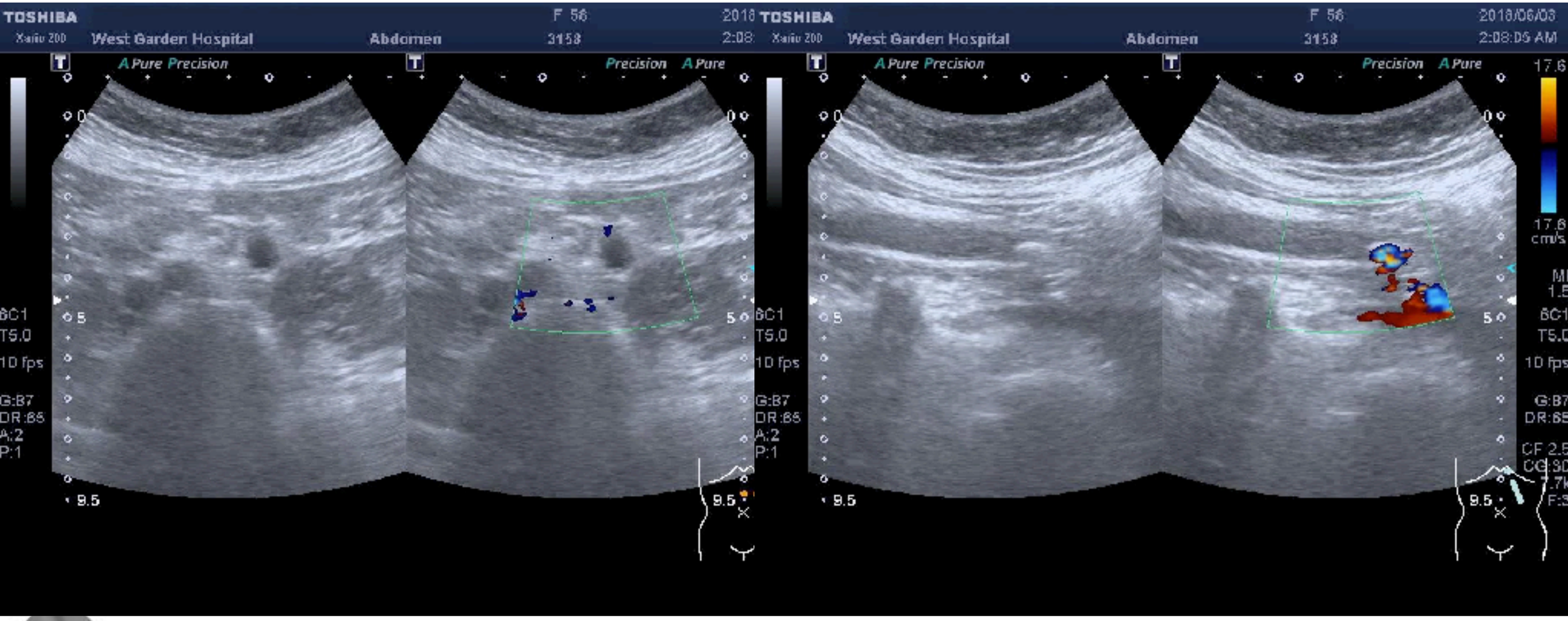
20180603

TOSHIBA
Abdomen
West Garden Hospital
Prediction
Diff A 90.0mm
Dist B 39.9mm


West Garden Hospital
Abdomen
3158
Precision
A Pure
MI
1.5
6C1
T5.0
22 fps
Qscan
G:87
DR:65
A:2
P:1

ULTRASOUND
PROGRAM

Hydro is a good guide



Taipei Medical University Center for Education in Medical Simulation

ULTRASOUND
PROGRAM

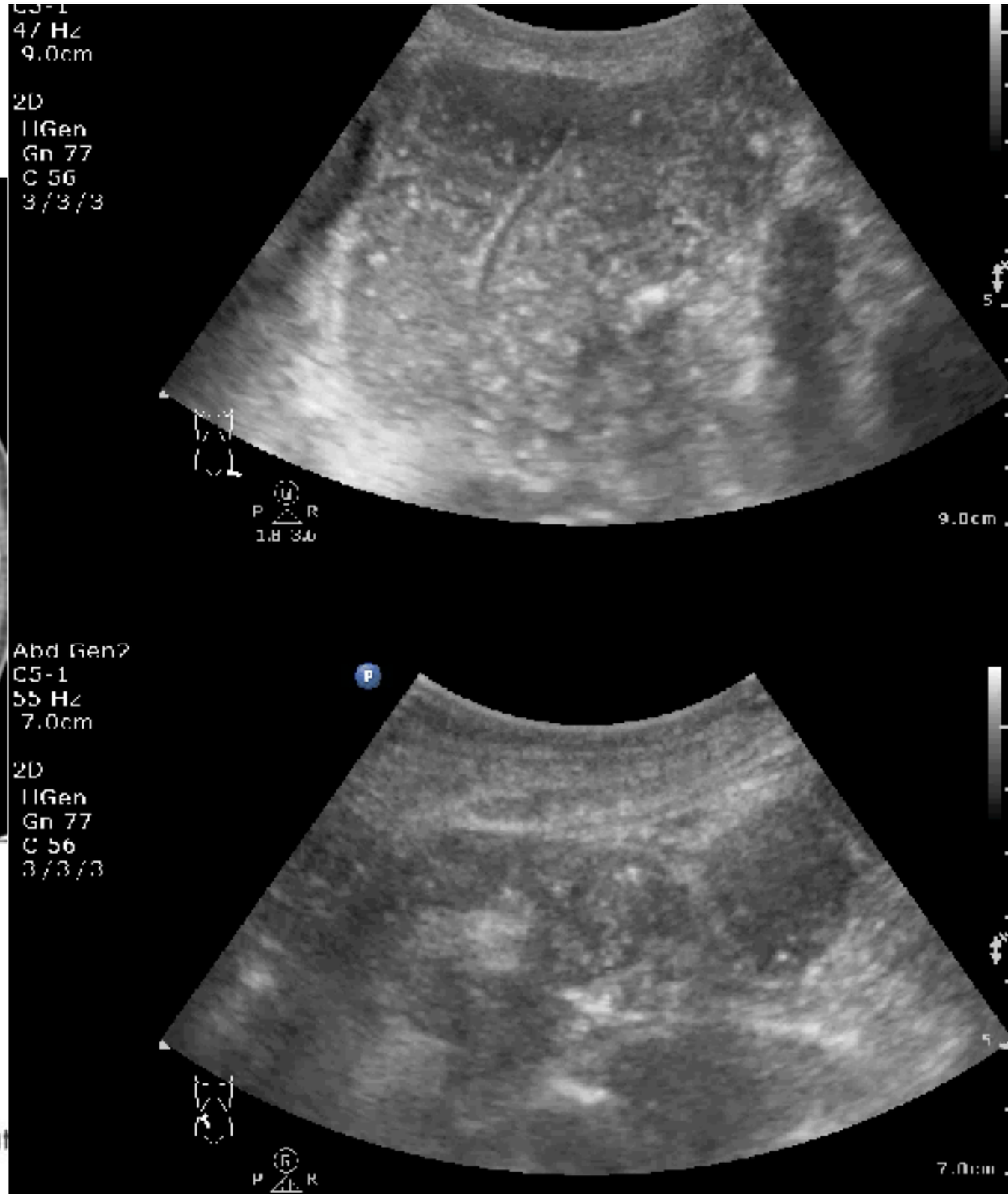
90M, RLQ pain * 2days

Need POCUS ??

Where to star?

Why ?

Gen2
lz
cm
en
97
6
3/3
P
G
P
R
1.8 3.6
14

ULTRASOUND
PROGRAM

Mechanical obstruction