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Complicated IUS examinations
Tips and tricks

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Disclosure

Advisory function

Abbvie, Alfasigma, Biogen, Galapagos, Gilead, Janssen, MSD Sharp & Dome GmbH, Pfizer, Roche, Samsung, TakedaPharmaGmbH

Lectures

Abbvie, Alfasigma, Biogen, Dr. Falk PharmaGmbH, Ferring Arzneimittel GmbH, Janssen, Lilly, MSD Sharp & Dome GmbH, Pfizer, Takeda PharmaGmbH, Vifor Pharma

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Intended Learning Outcome

This lecture does not currently have assigned ILOs, but the Educational Committee suggests that by the end of this session, the learner should ideally be able to:

1. **Recognize patient-related and disease-related challenges that may hinder optimal IUS evaluation**, such as obesity, overlying bowel gas, altered anatomy due to surgery or congenital variations, and deep pelvic positioning of bowel segments.

2. **Apply targeted scanning strategies and modified probe techniques** (e.g., graded compression, intercostal approach, bladder-filling techniques) specifically suited to overcome limitations in technically difficult cases.

3. **Optimize transducer selection and tailored adjustments of machine parameters** (e.g., depth, gain, focal zones) when standard settings do not yield adequate visualization, especially in low-contrast or deep-tissue situations.

4. **Interpret complex and ambiguous findings with caution**, integrating clinical history and other available imaging or lab data to avoid misinterpretation (e.g., mistaking normal lymphoid hyperplasia or surgical clips for active inflammation).

5. **Identify when IUS has reached its diagnostic limits in a given case** and outline clear indications for escalation to cross-sectional imaging (e.g., MRI, CT) or endoscopy.

6. **Incorporate advanced user-dependent refinements**, such as adjusting patient positioning or respiration-guided scanning, to increase diagnostic yield in anatomically challenging areas (e.g., sigmoid colon, terminal ileum, deep rectum).

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1 Mio thanks to
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The difficult IUS

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Overview

- What is the problem?
- Scanning strategies
  - Avoiding the problem
  - Solving the problem
  - Accepting defeat

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Avoid suboptimal set-up

Suboptimal room setup

+

Suboptimal machine

=

„Difficult“ IUS

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Prepare yourself

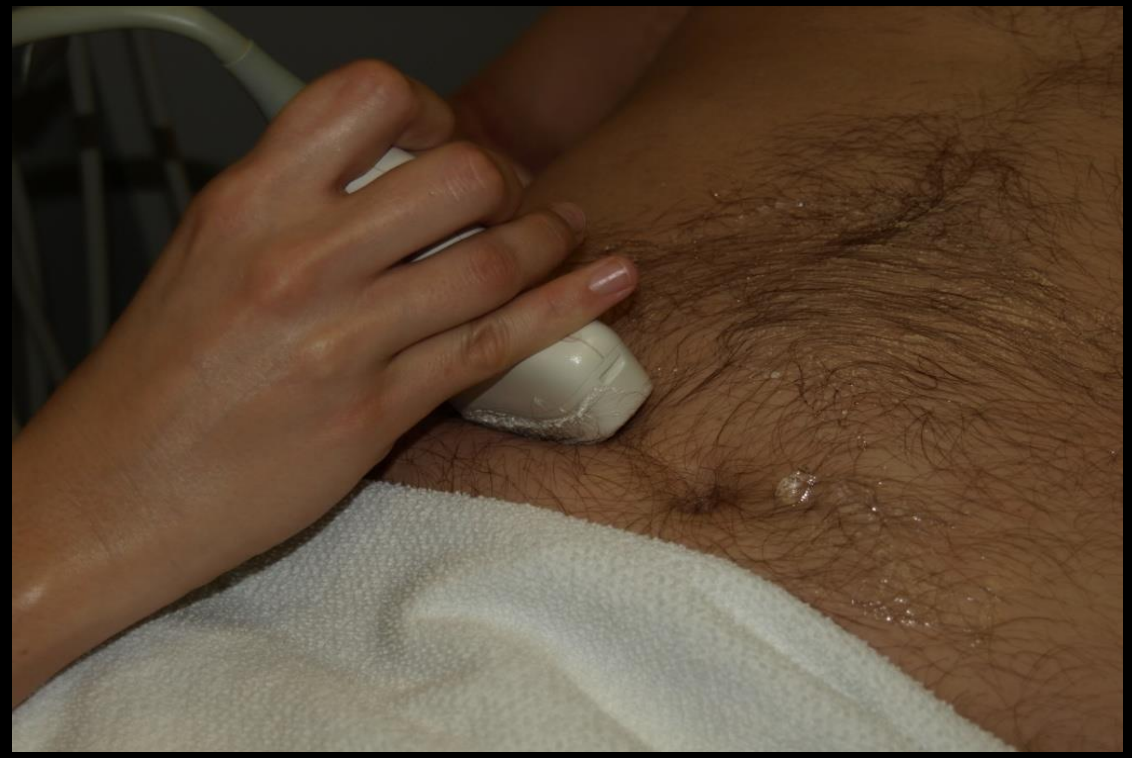
Read referral properly

Look at previous examinations

Look at descriptions of previous surgery

What is the purpose of the exam?

Very important: a perfect start



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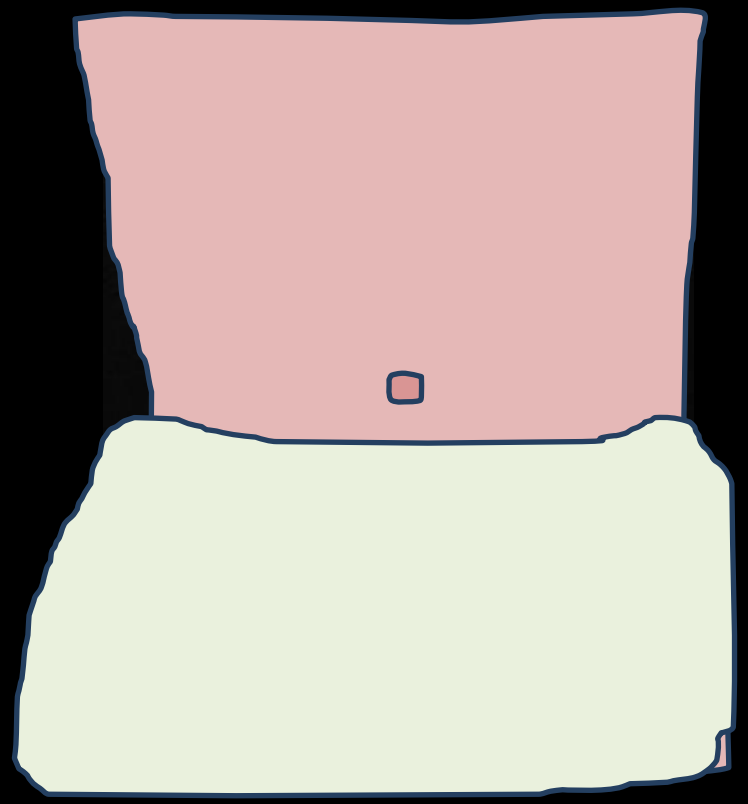
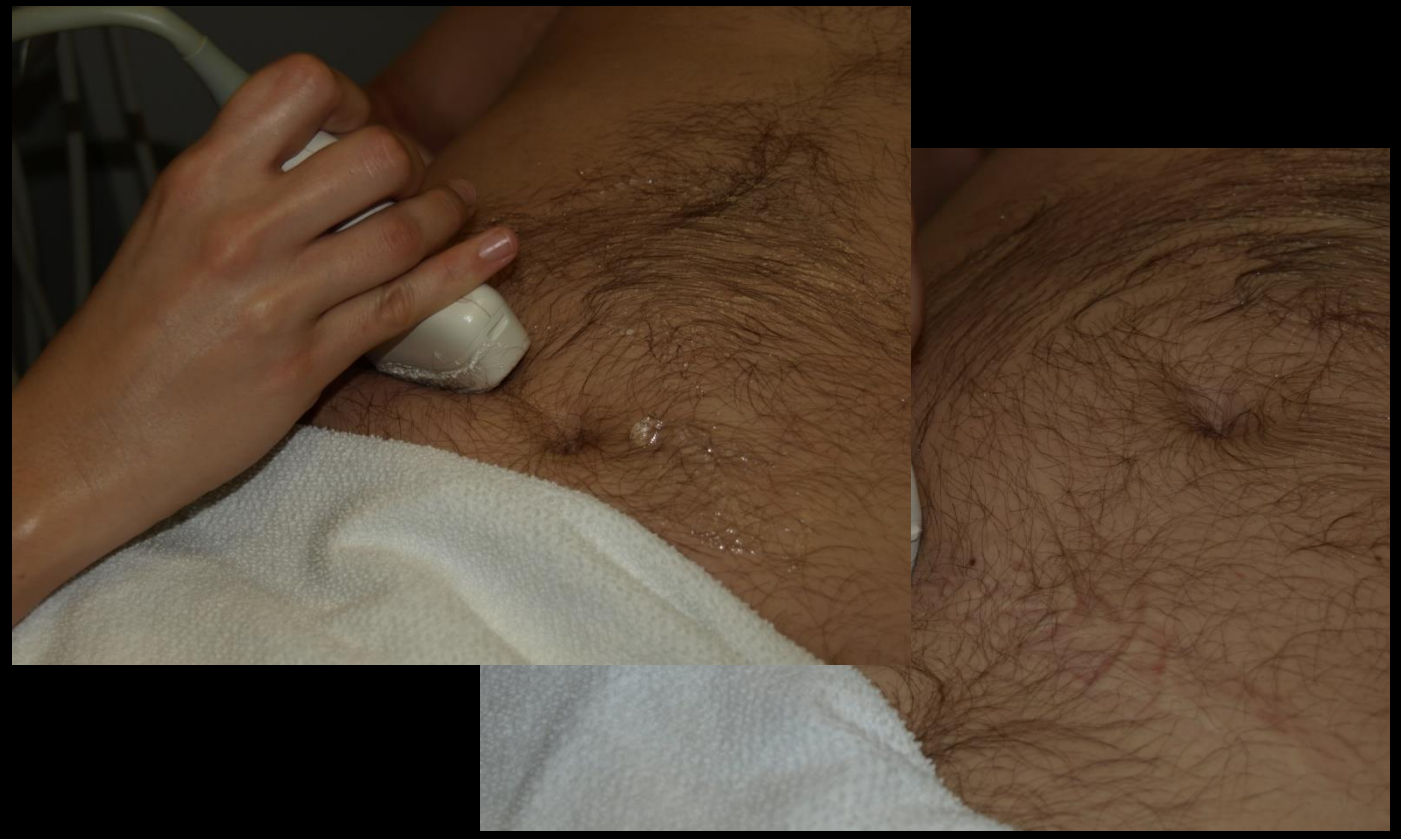
Where are the crucial zones?



Corrected position



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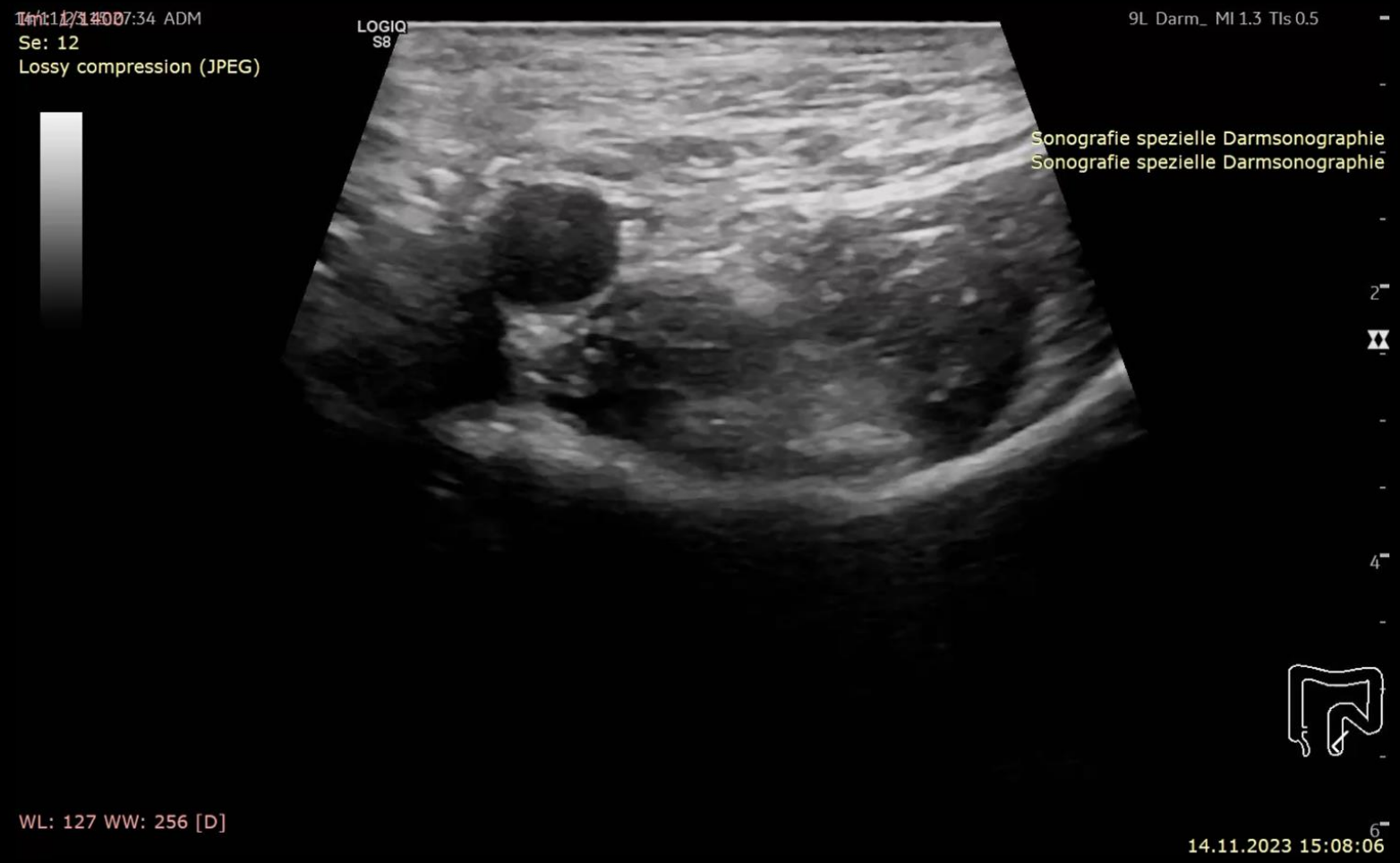
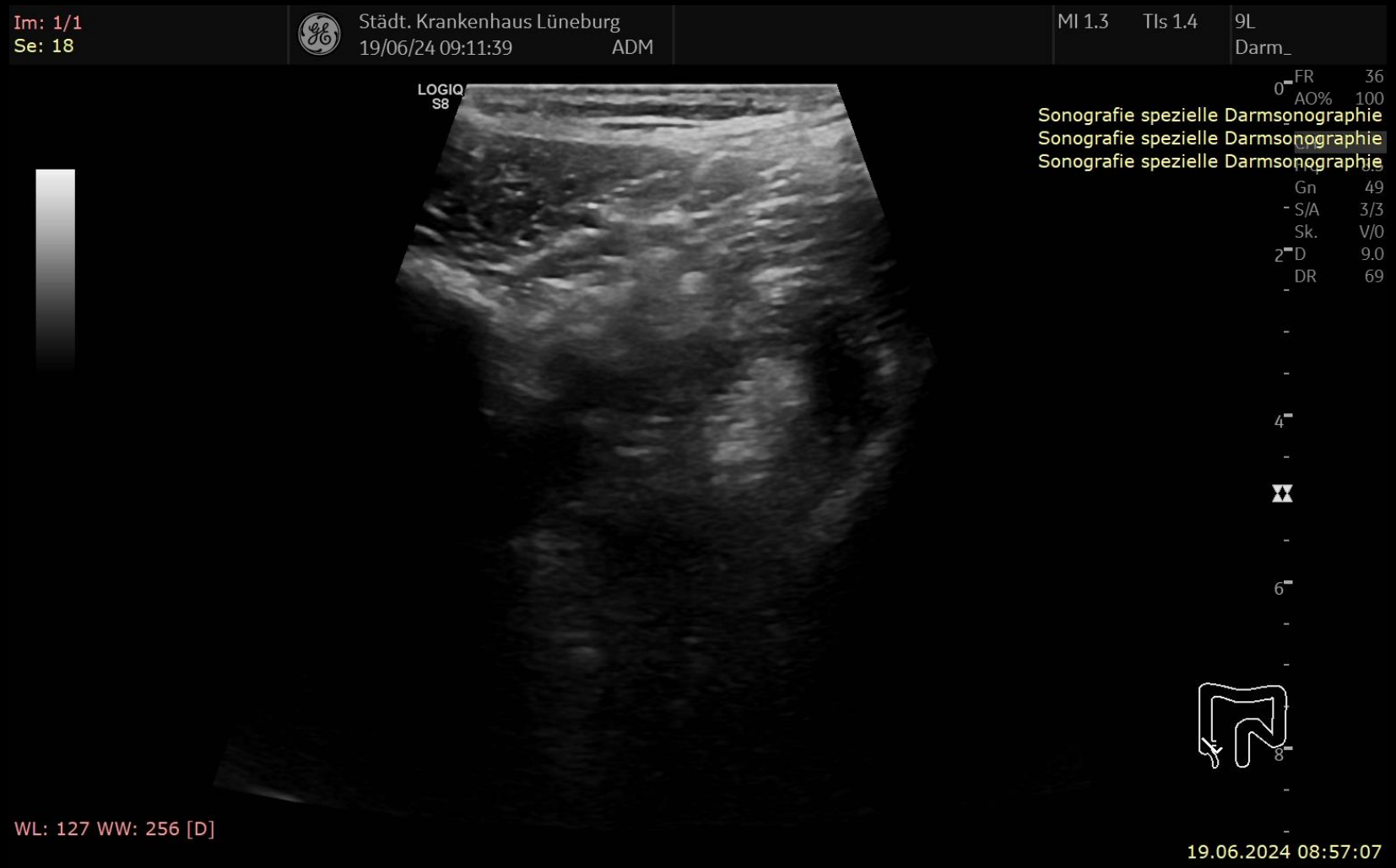
Always start at the inguinal ligament → identify anatomic landmarks



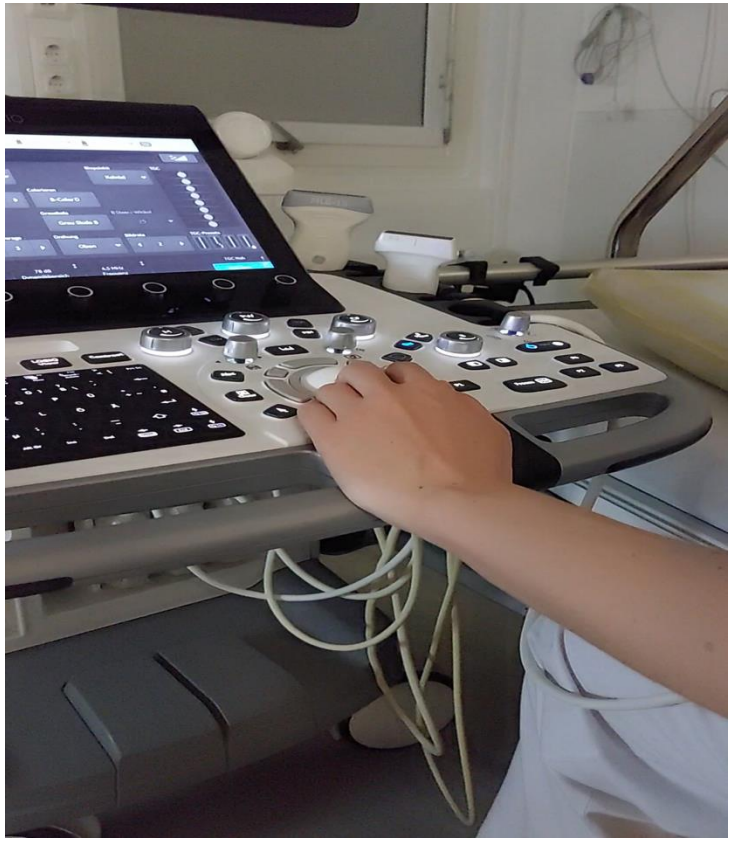
What is wrong?



Are you driving your car in 3rd gear only all the time?

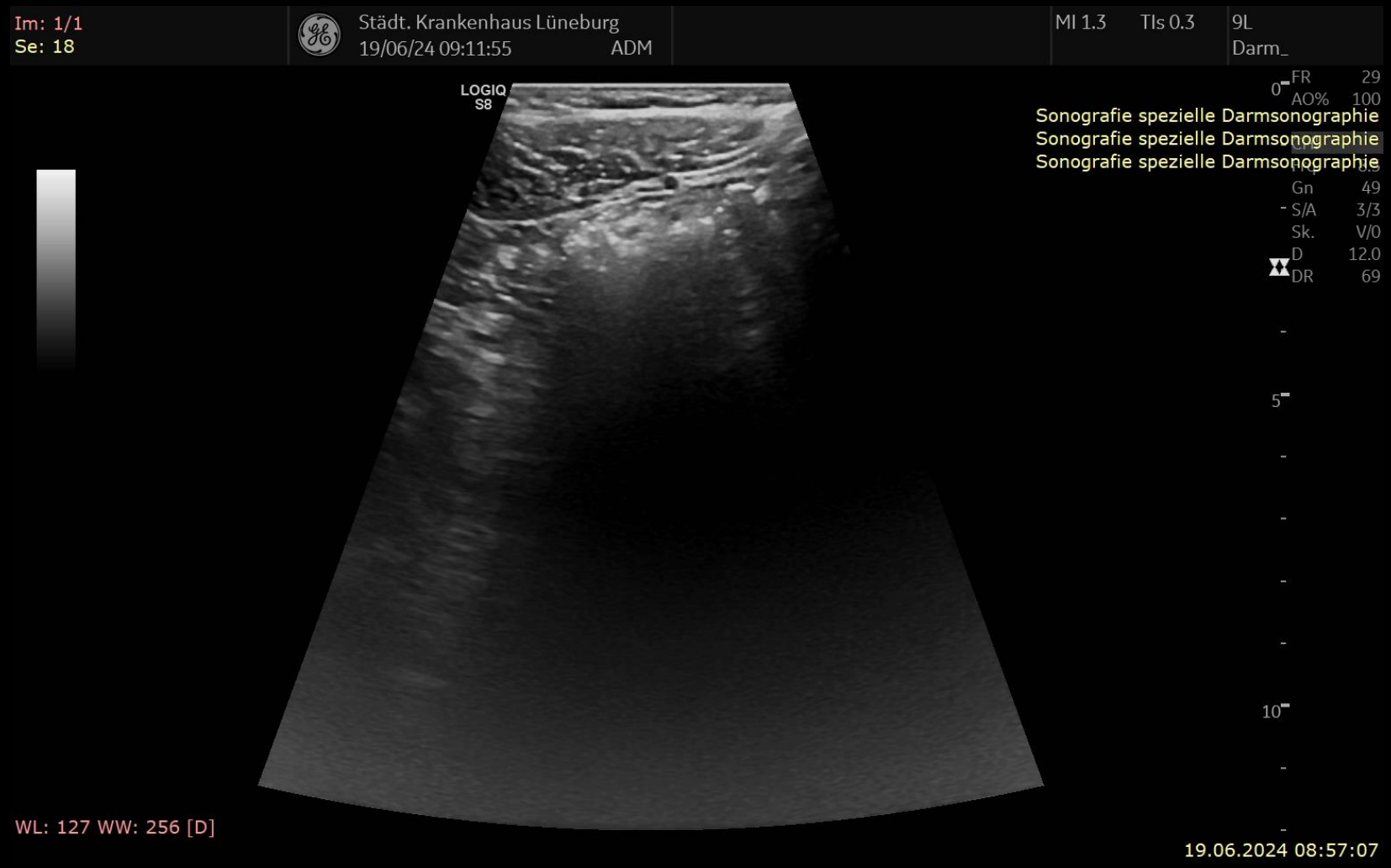
→ IUS image needs constant optimization

→ left hand belongs on the buttons



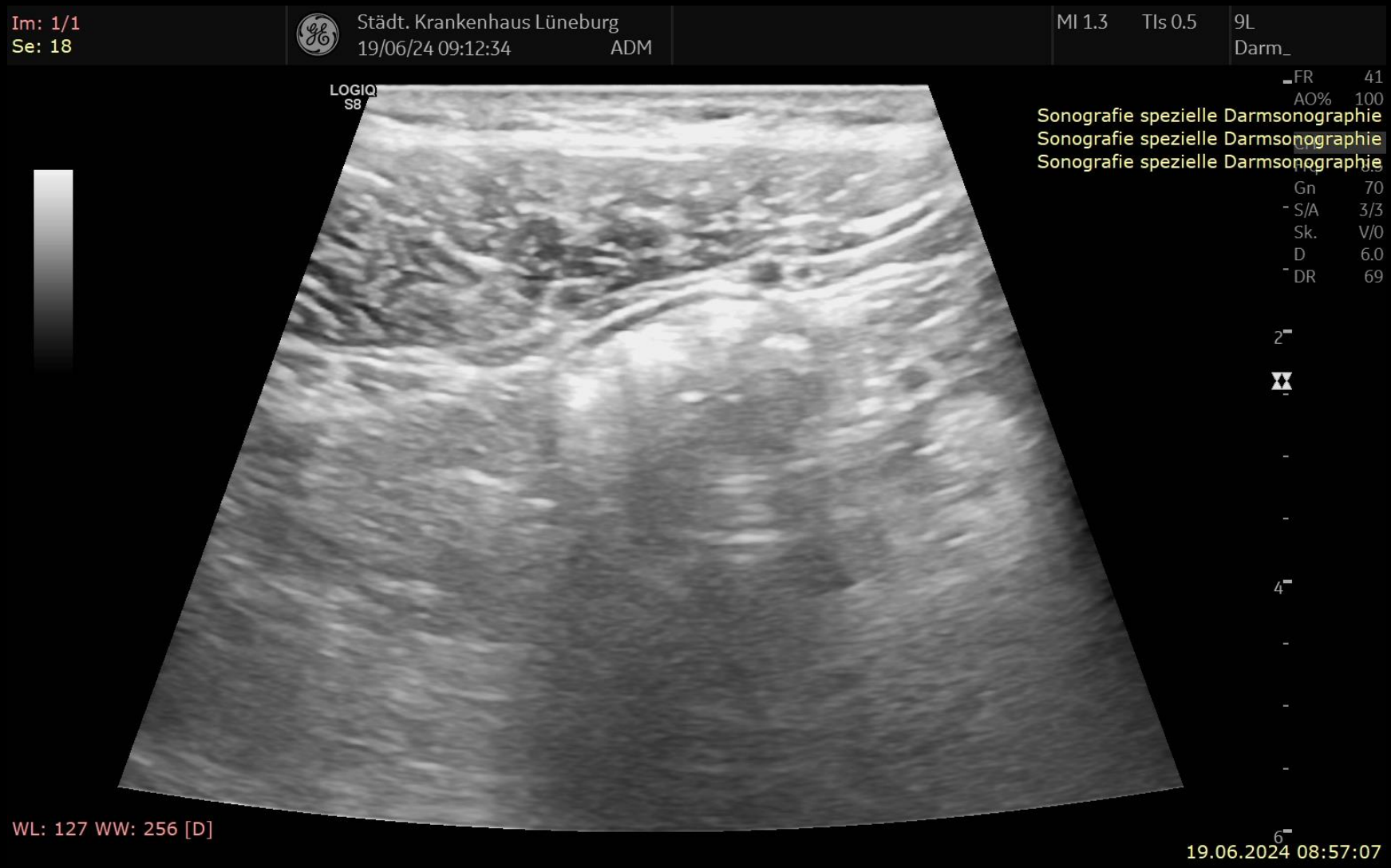
- **Gain**
- **Depth**
- **Focus**

What needs to be optimized?



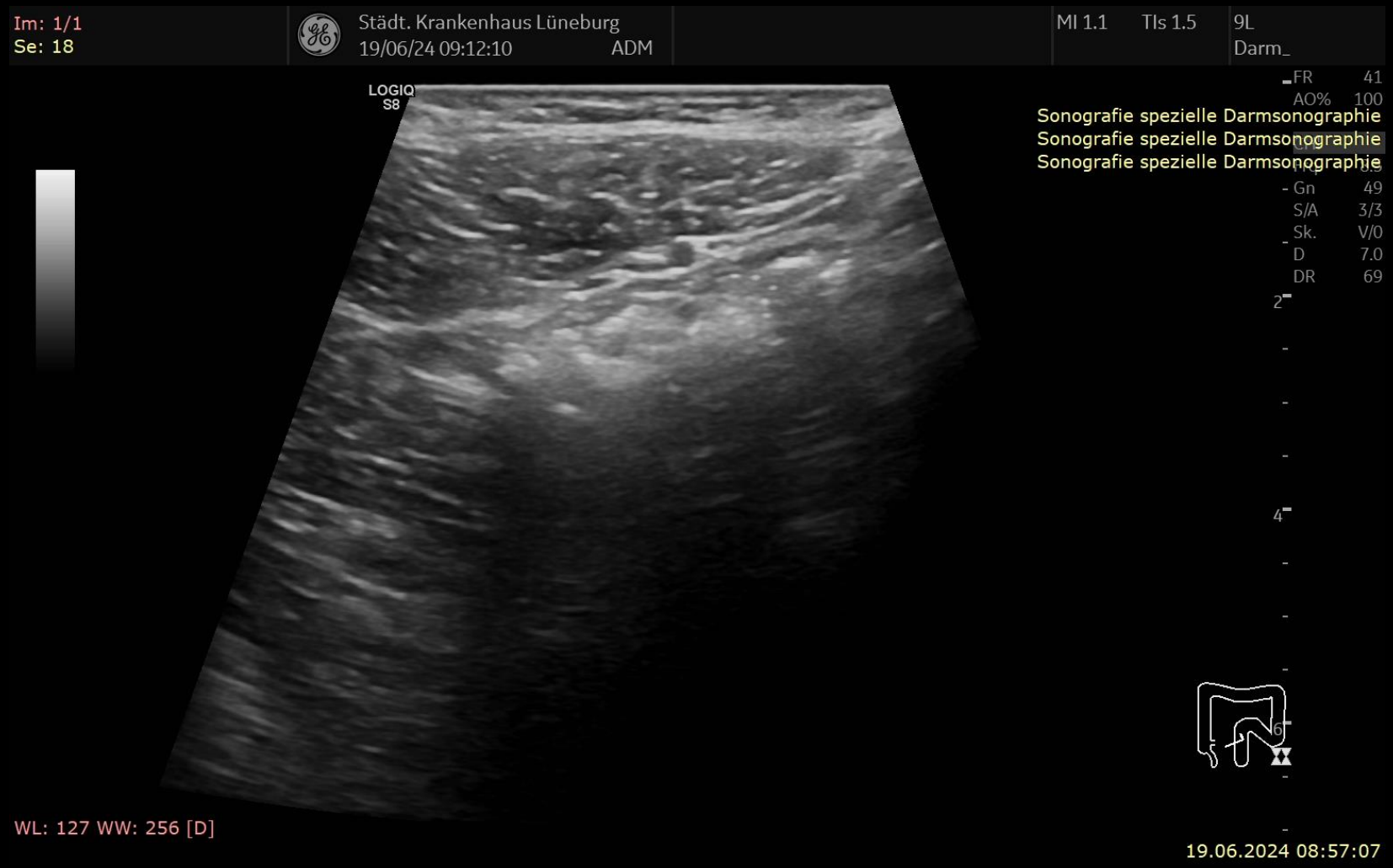
- Depth

What needs to be optimized?



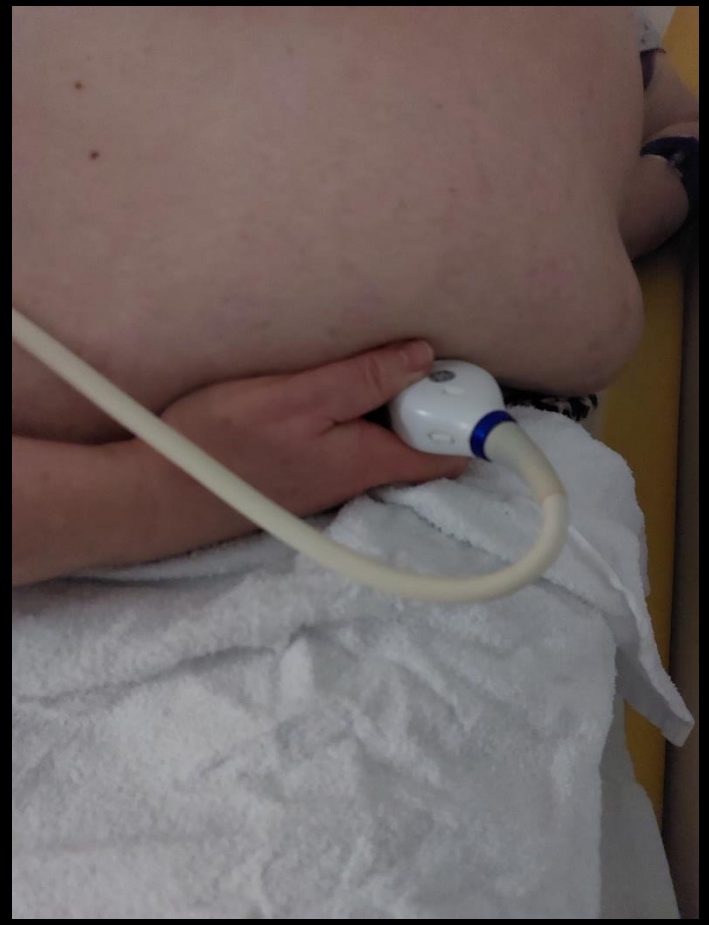
- Gain

What needs to be optimized?



- **Focus**

IUS in the obese patient



- The inguinal ligament: entrance gate in the obese
- Stay underneath the bowel wall, fat and air
- Tilt the probe instead of swiping

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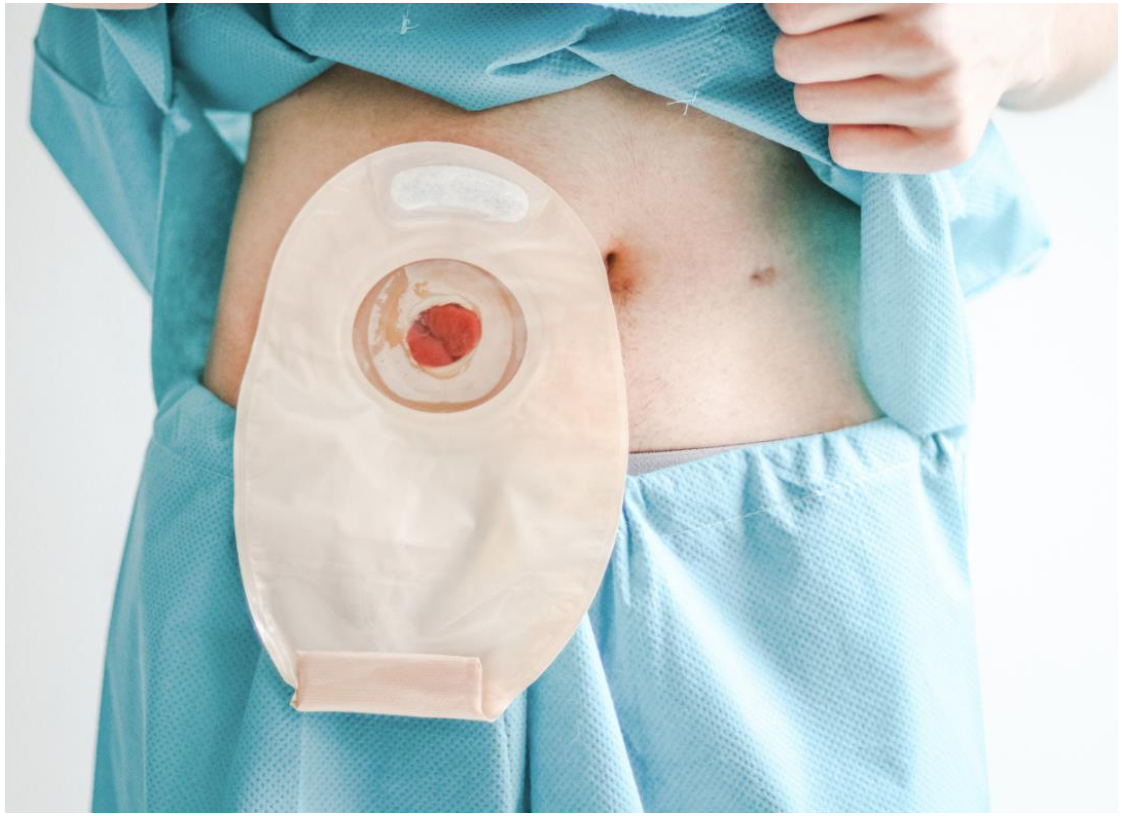
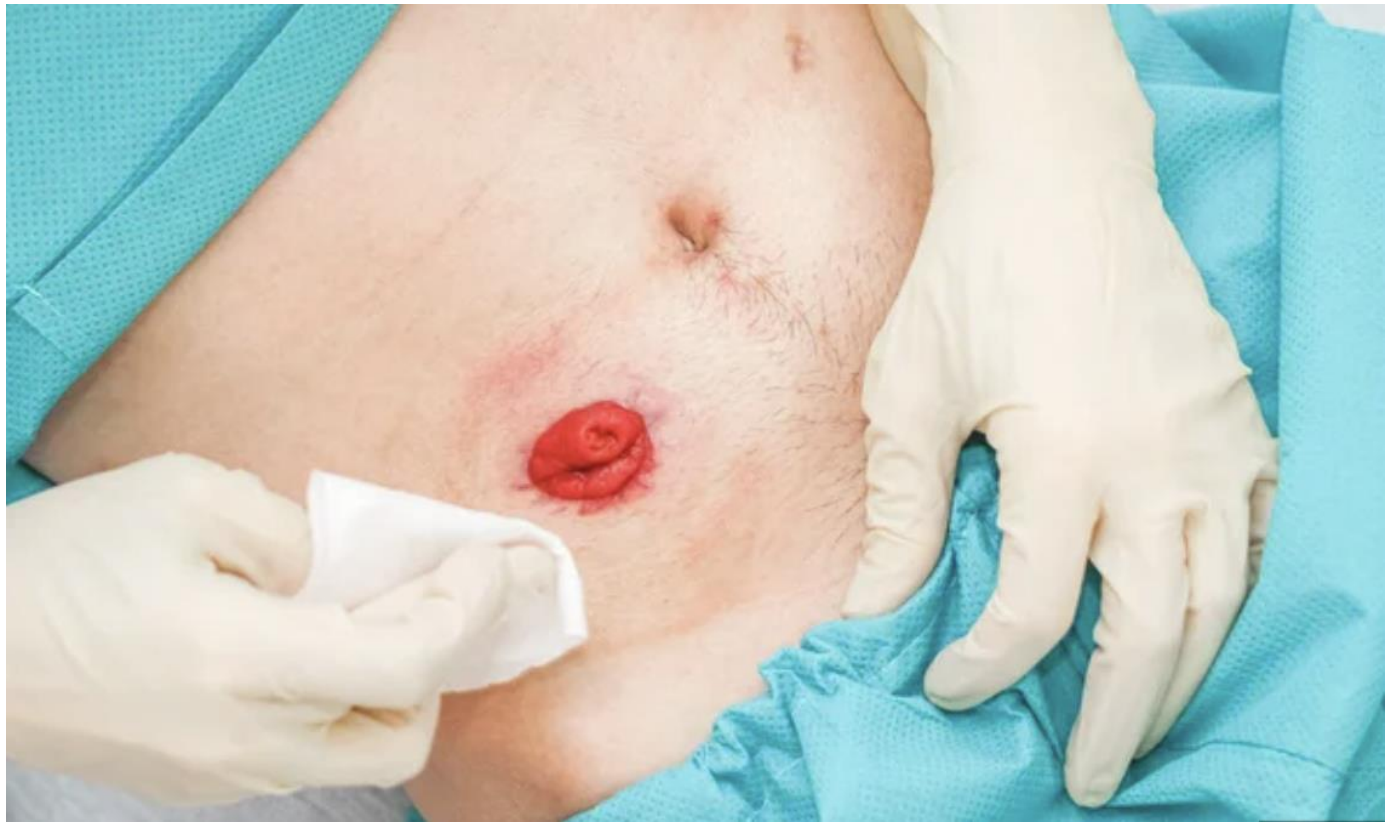
Stoma

Problem: takes more time!





Have patient bring extra stoma equipment; gel on probe → glove over probe (and hands ☺) → gel on glove

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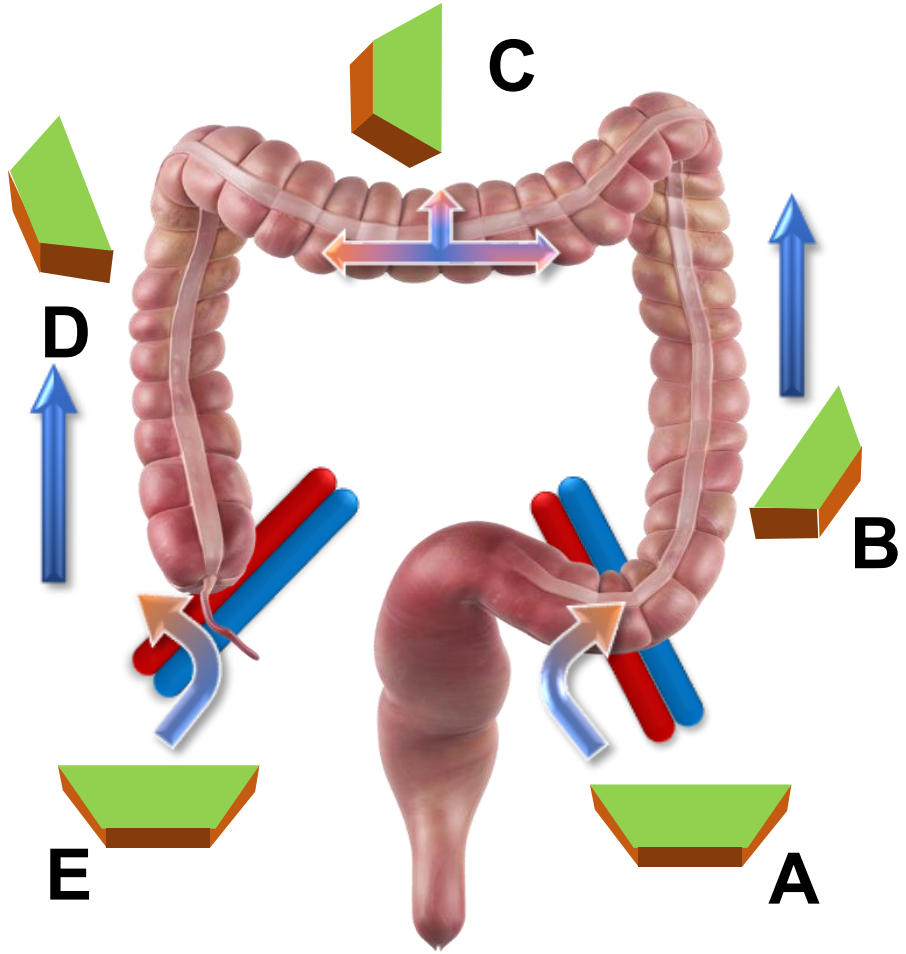
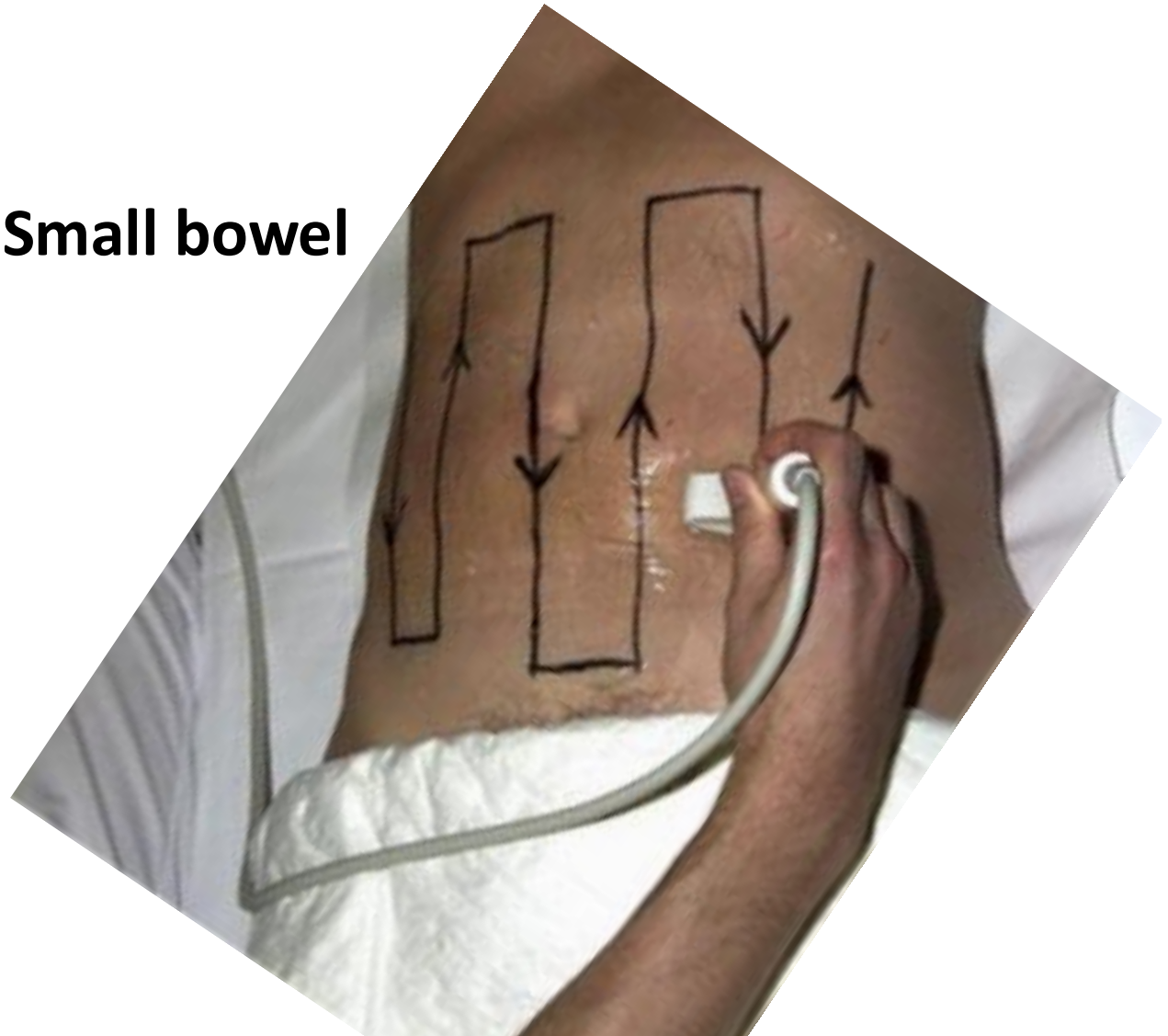
Examination technique – always (!!!) systematic approach

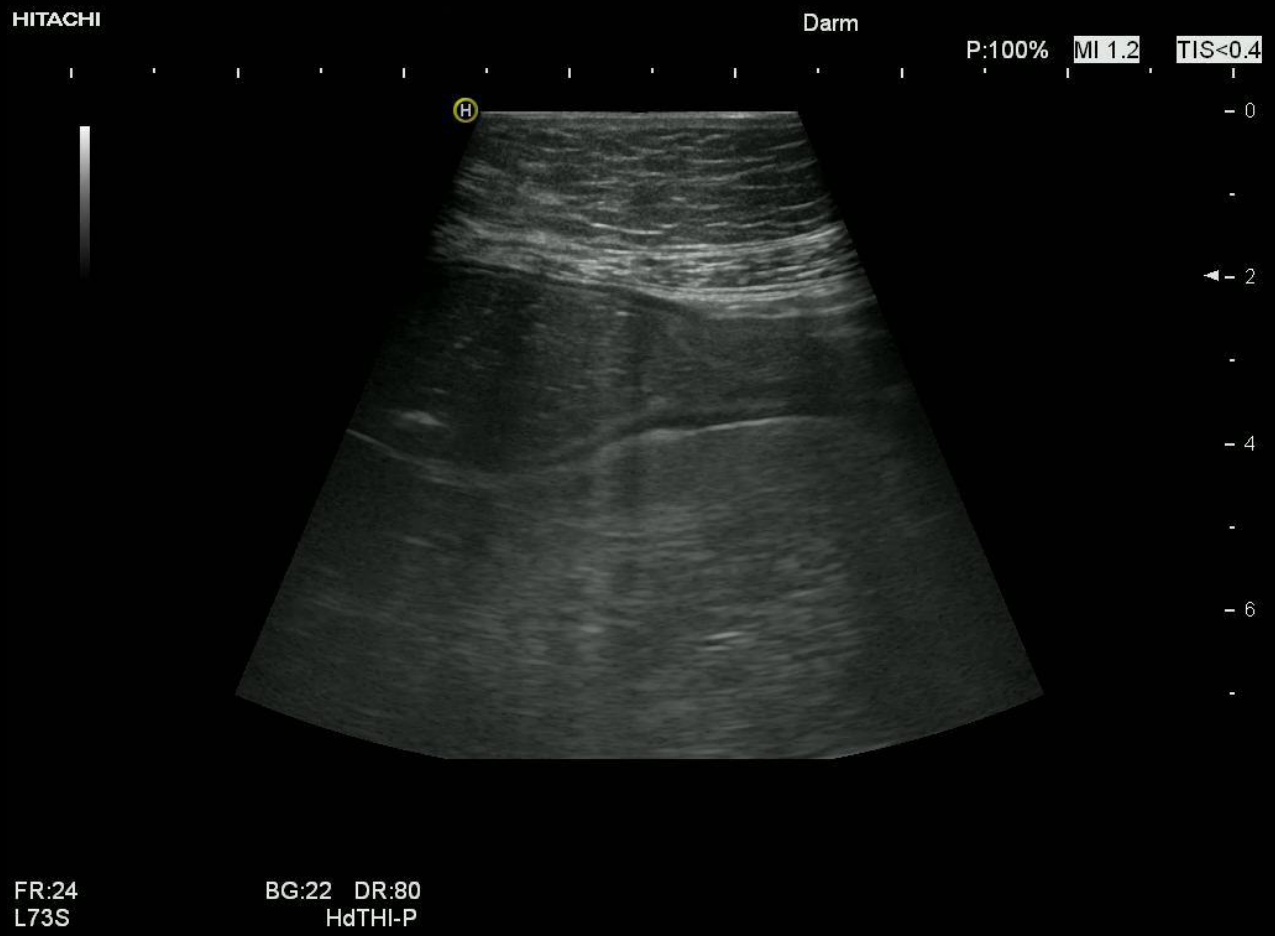
Colon



Small bowel



Mistake: Choice of the probe



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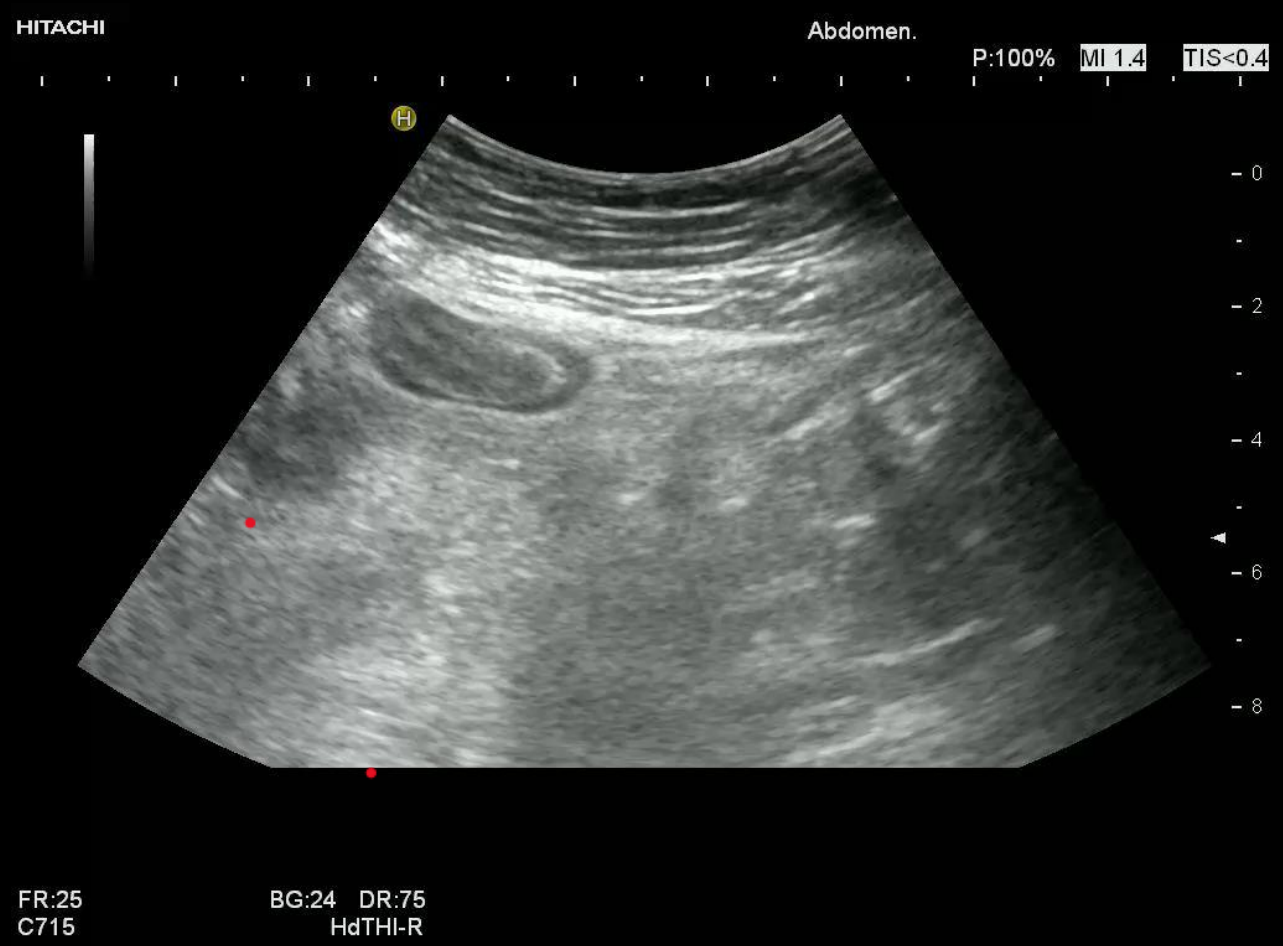
Deep fistula can be missed by the high resolution probe



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How to avoid mistakes

- (in adults)

- Always use both probes → in the long-term will save time
- Better start with the curved array to have fast identification of the problem and make your closed-up evaluation afterwards

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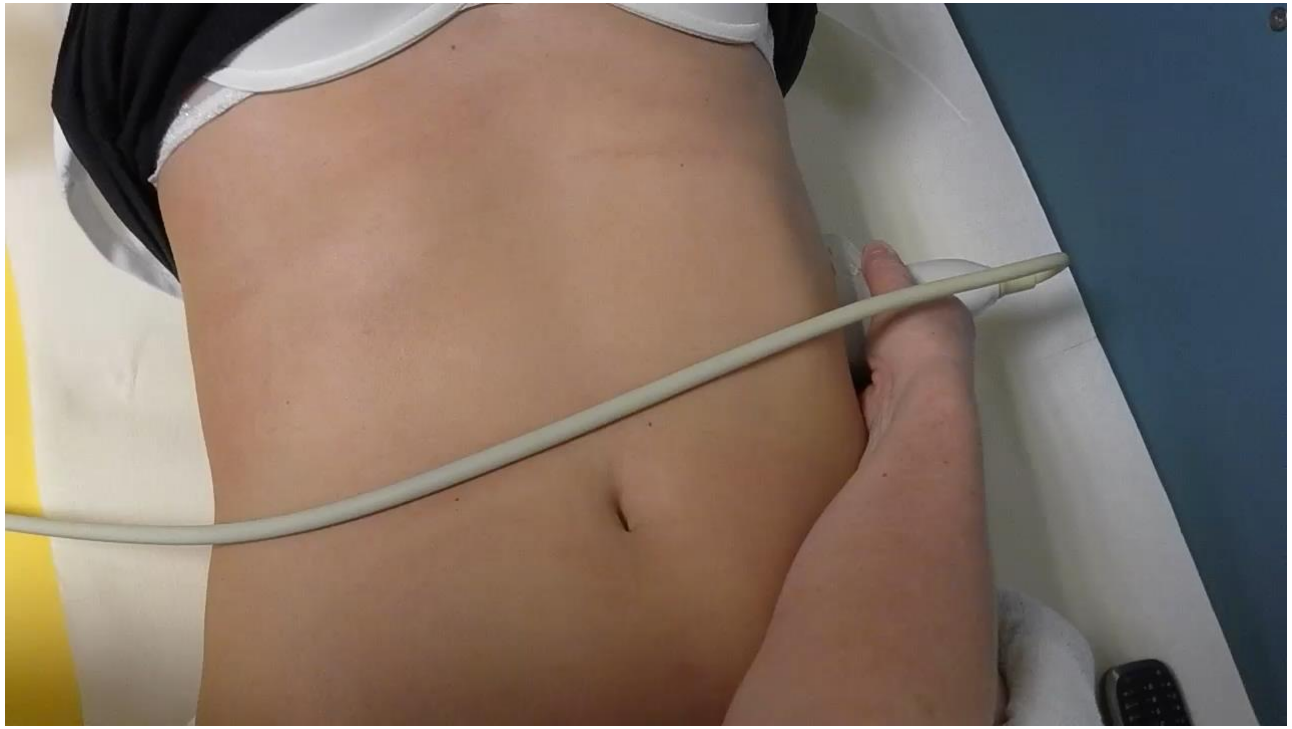
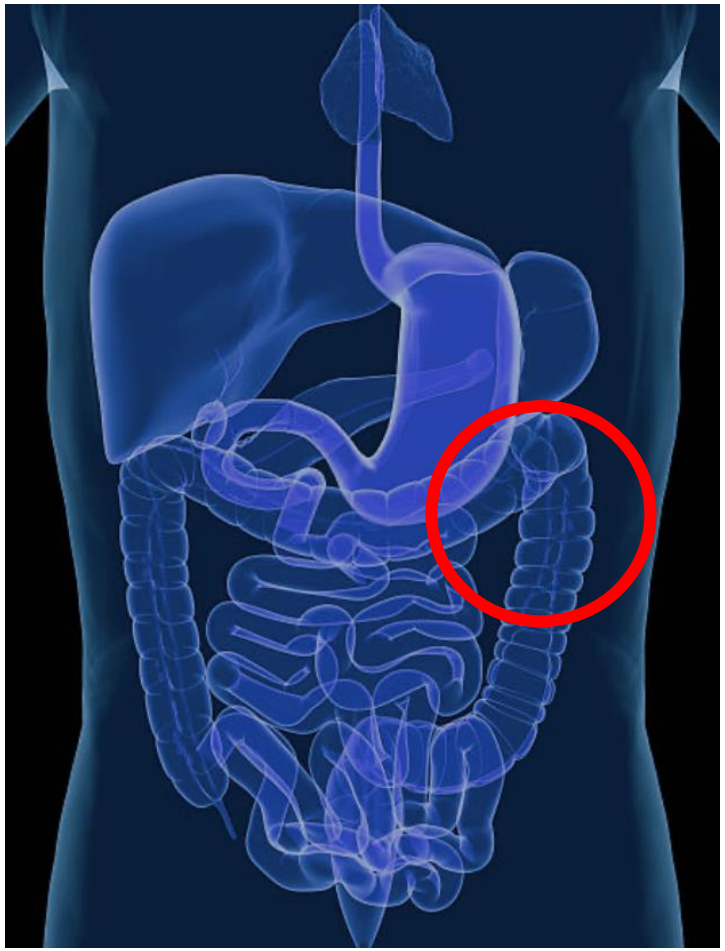
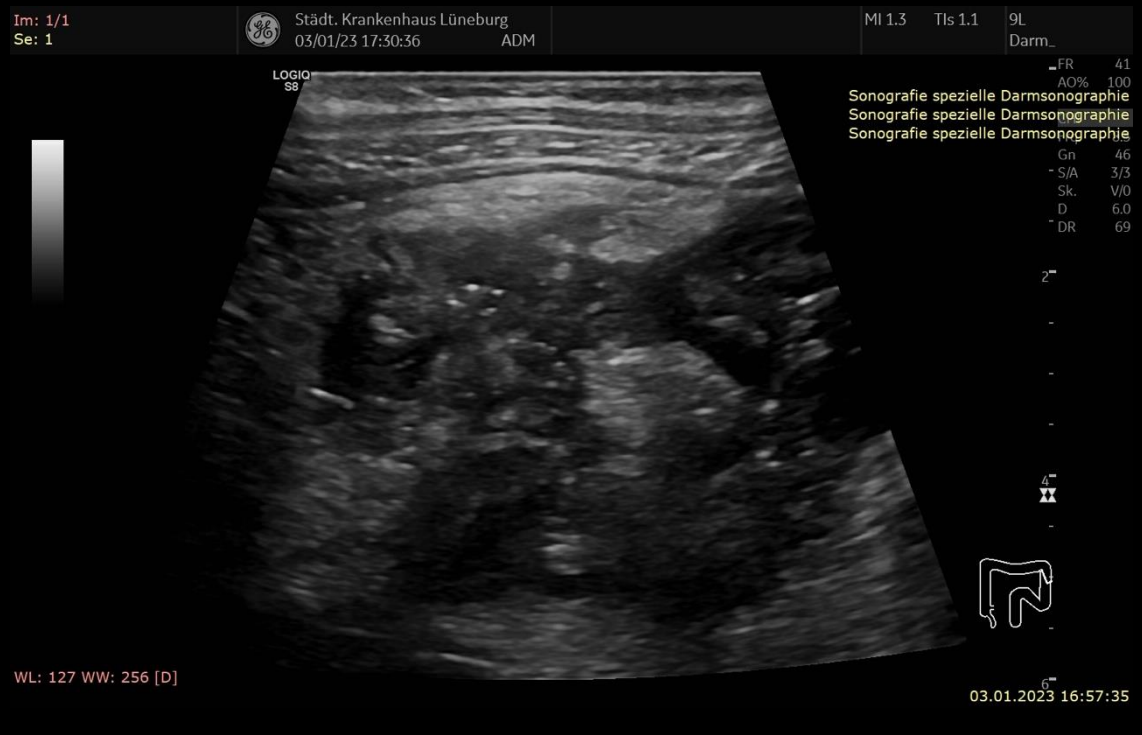
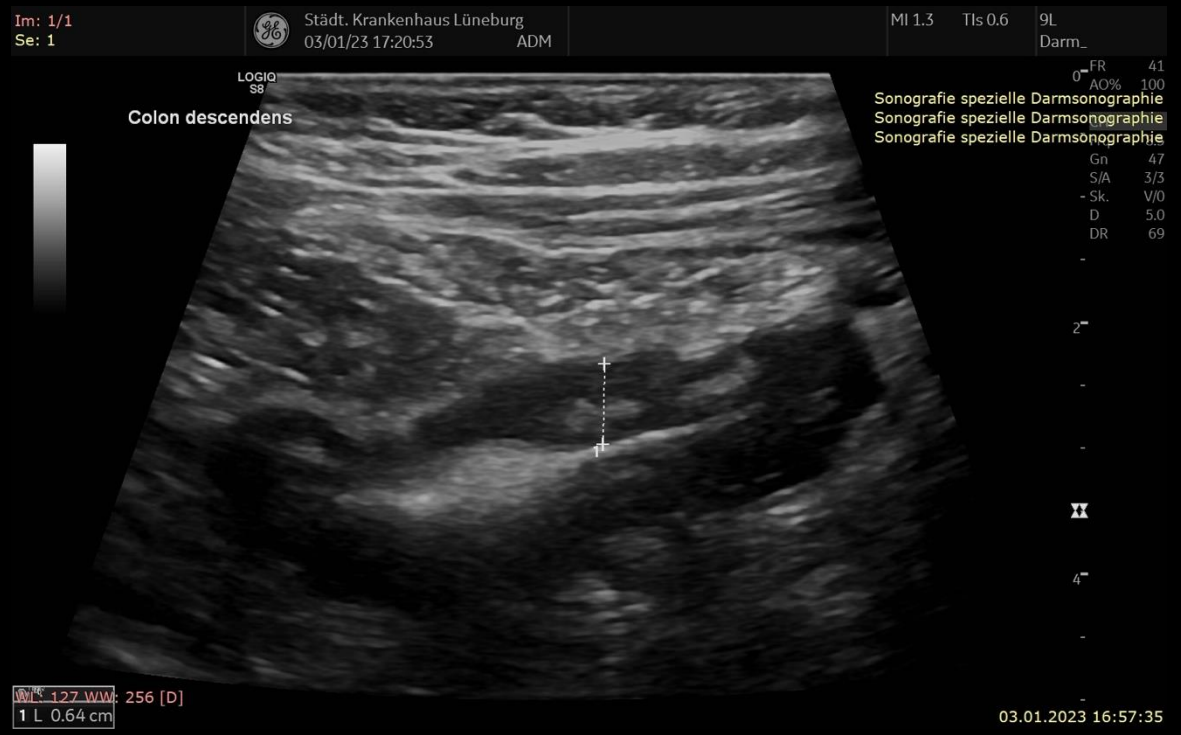
How to perform intestinal ultrasound: Descending colon





Intestinal ultrasound of the descending colon





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To keep in mind

- Variants of bowel position
- Structures mimicking bowel
- Postoperative challenges

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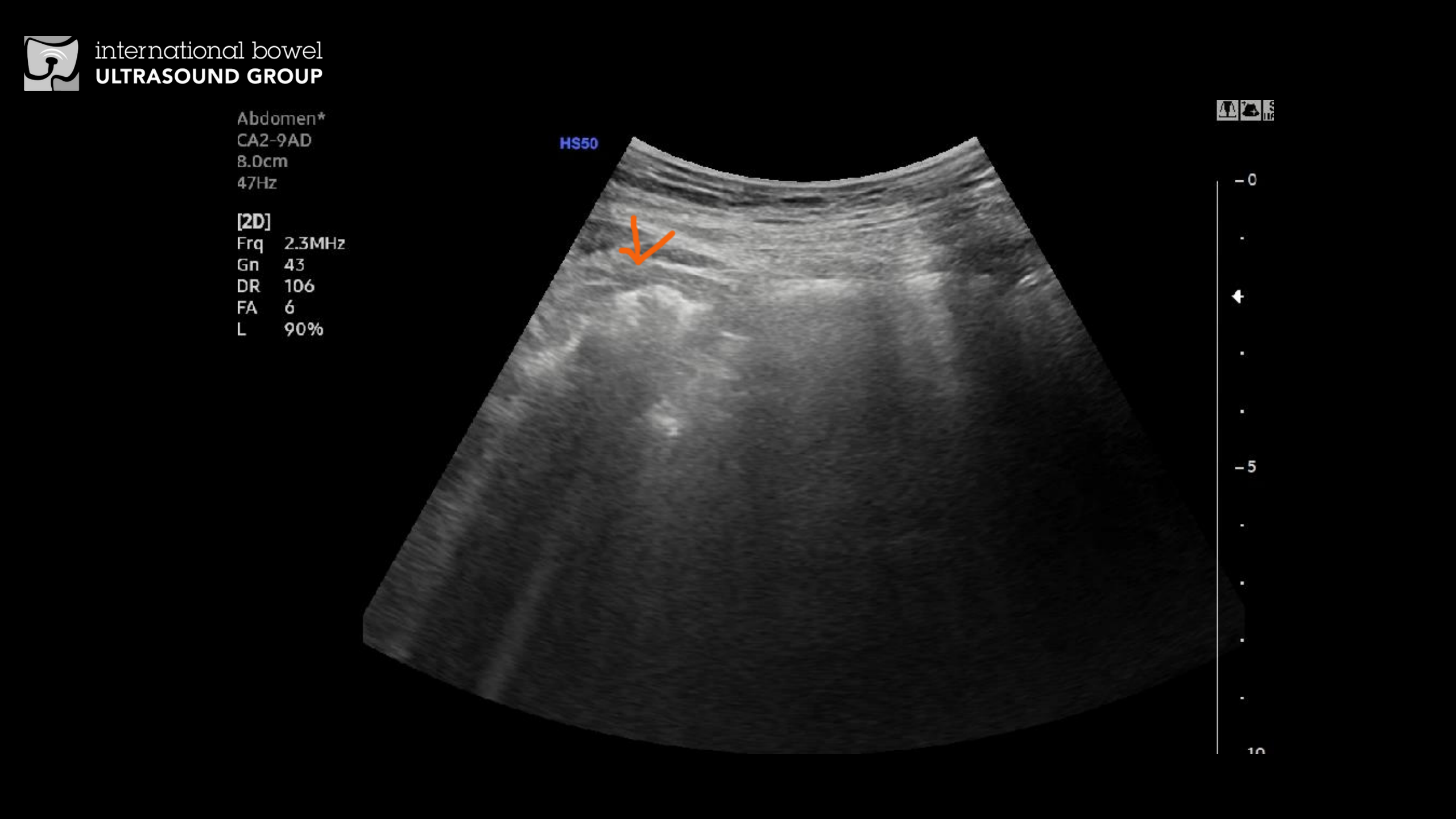
Mistaking the small bowel for the sigmoid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Abdomen*
CA2-9AD
8.0cm
47Hz
[2D]
Frq 2.3MHz
Gn 43
DR 106
FA 6
L 90%
HS50
0
5
10

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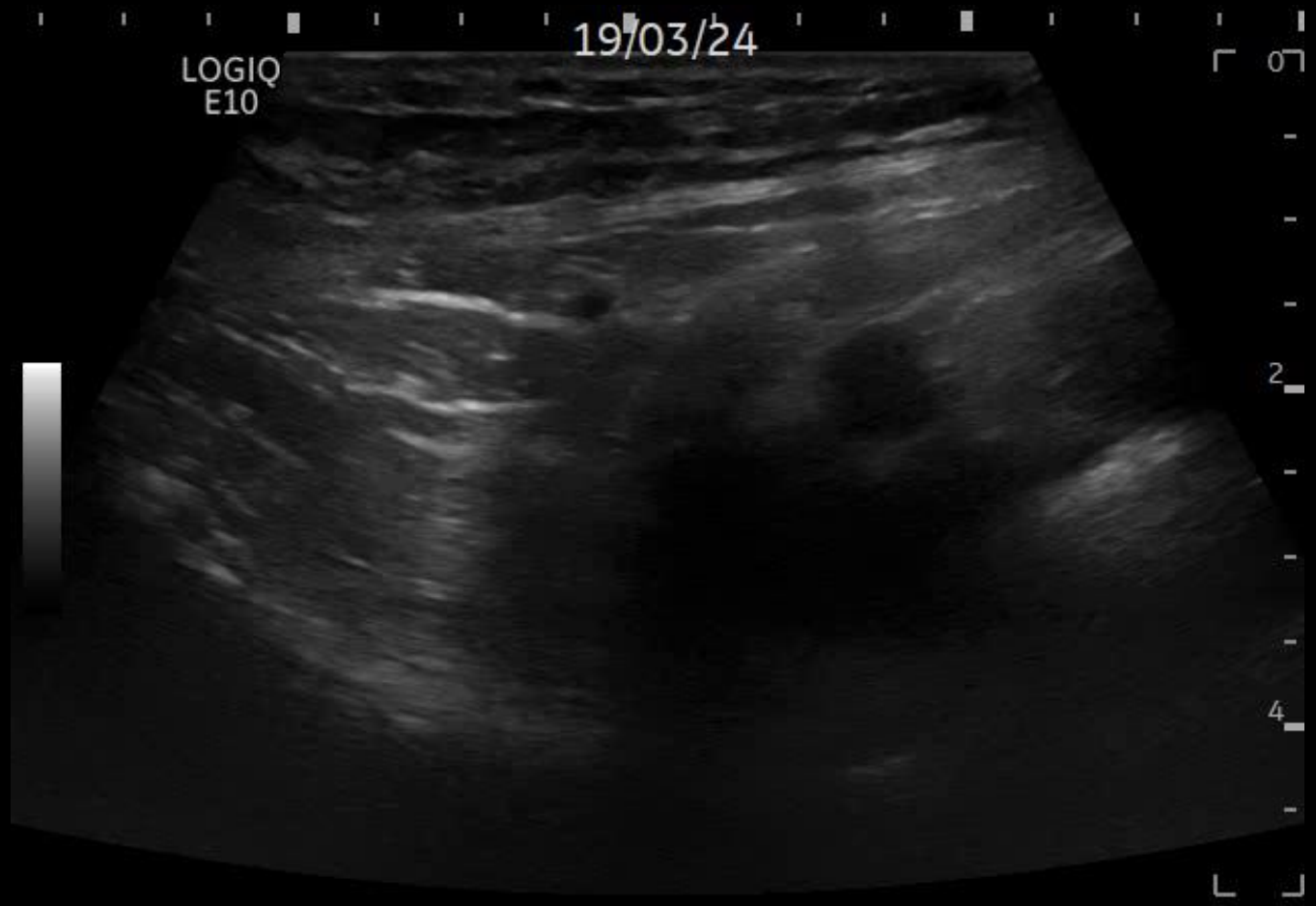
Small bowel ventral part of the sigmoid



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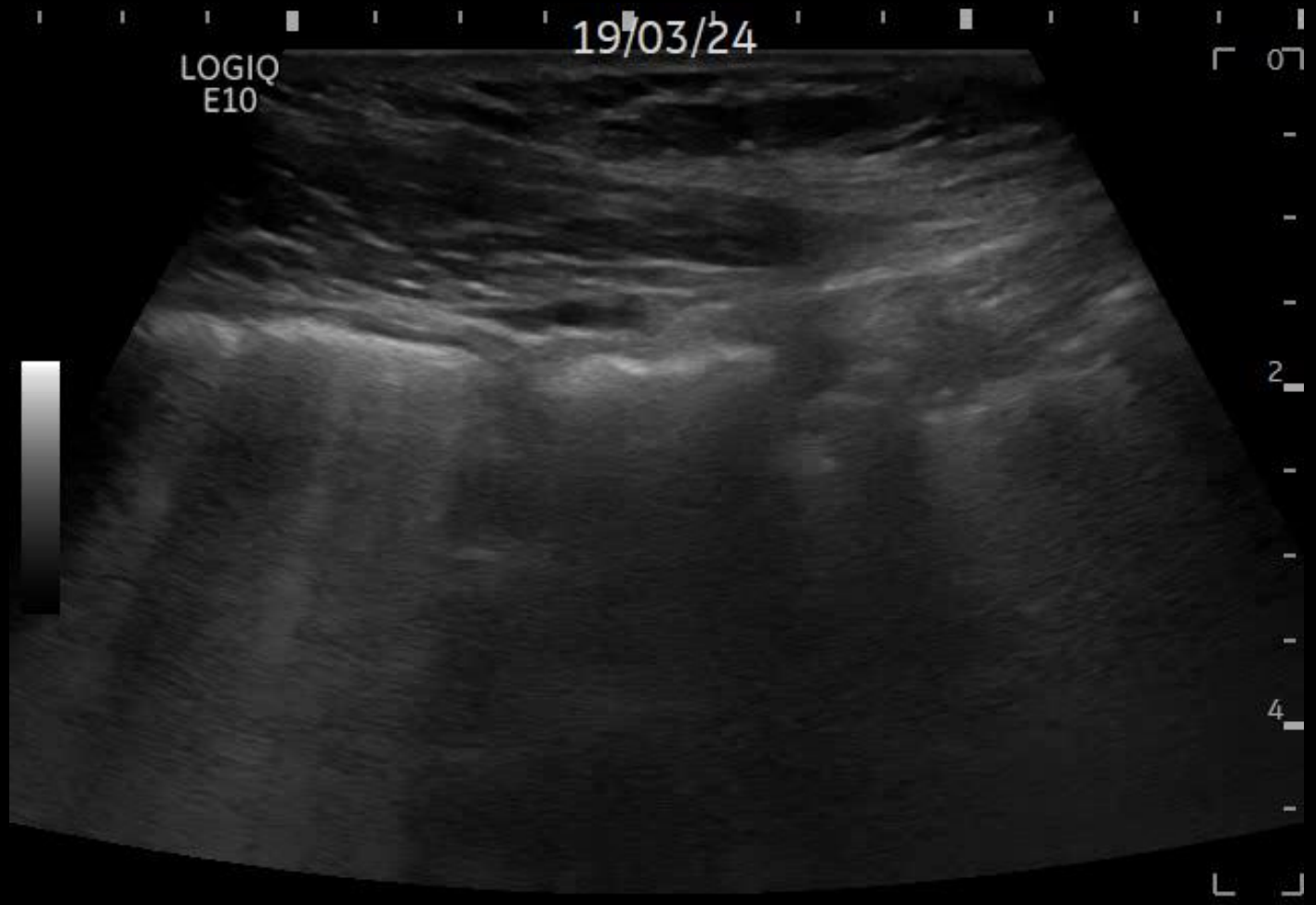
Same patient with graded compression



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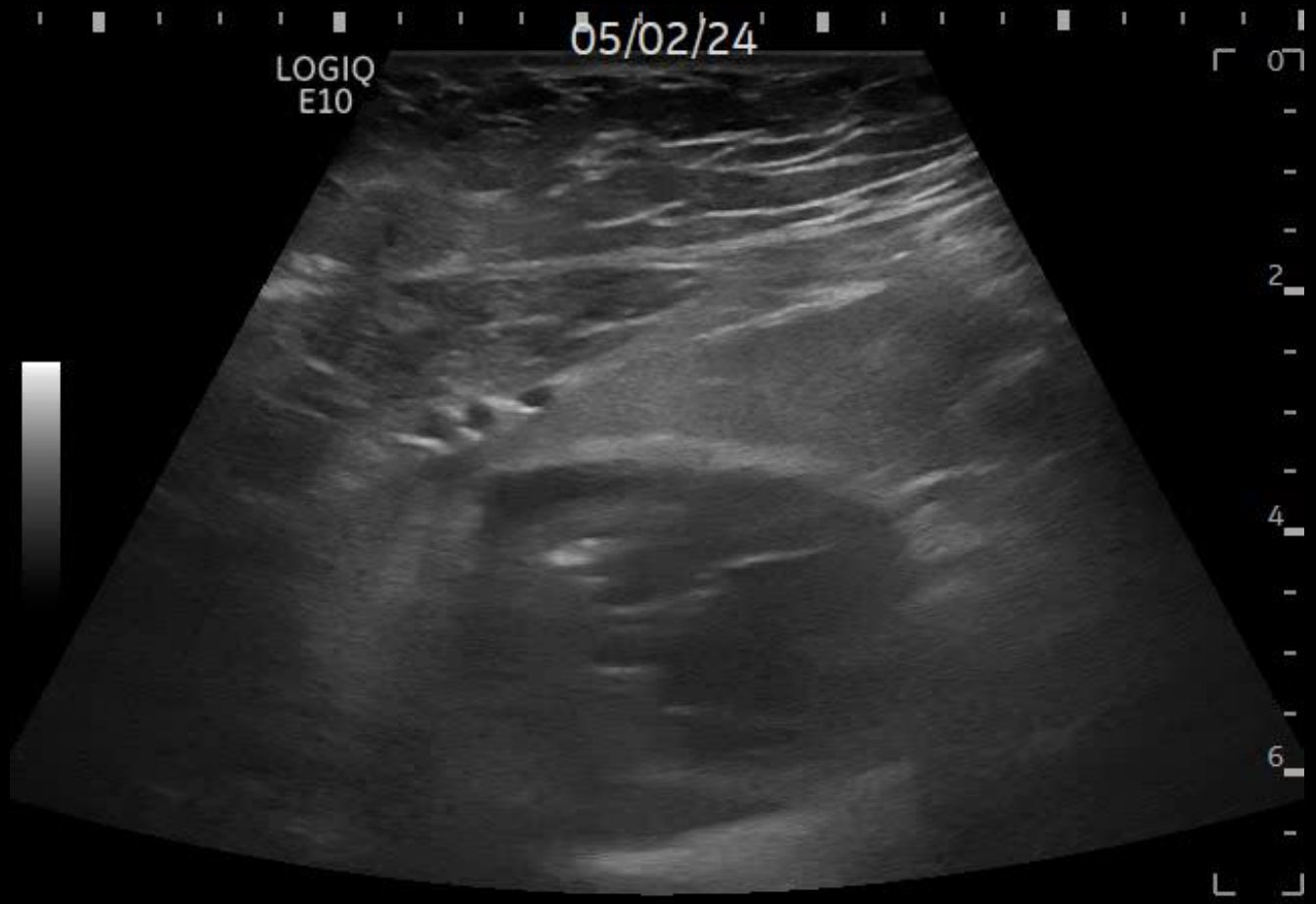
What is what in the right lower quadrant?



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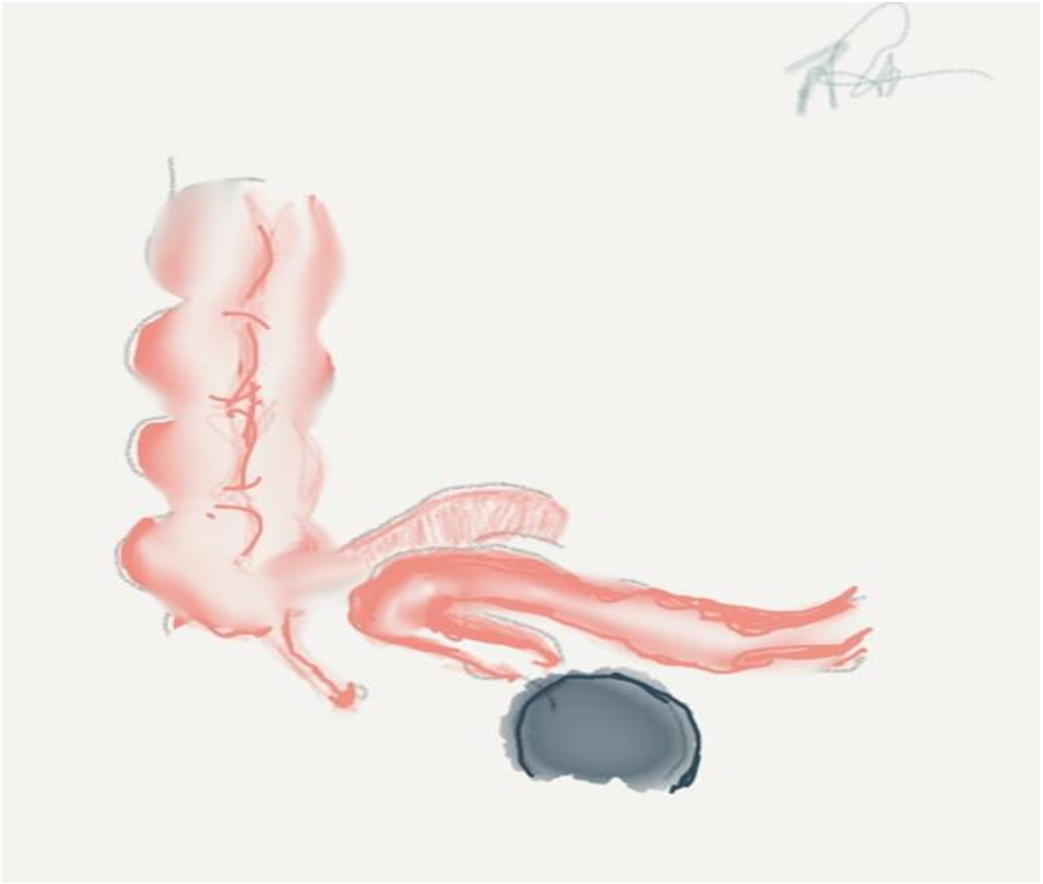
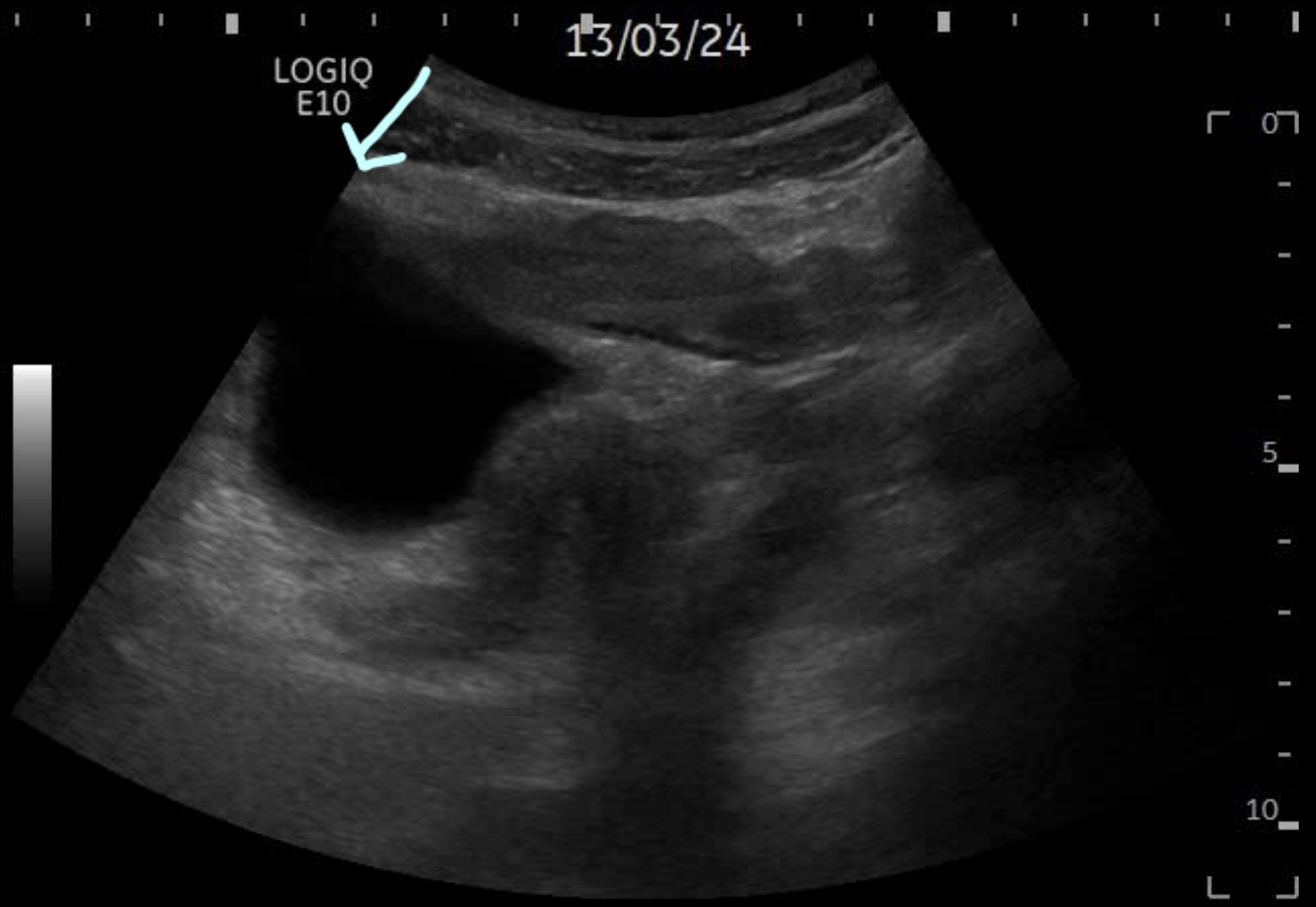
Mistaking the sigmoid for the TI

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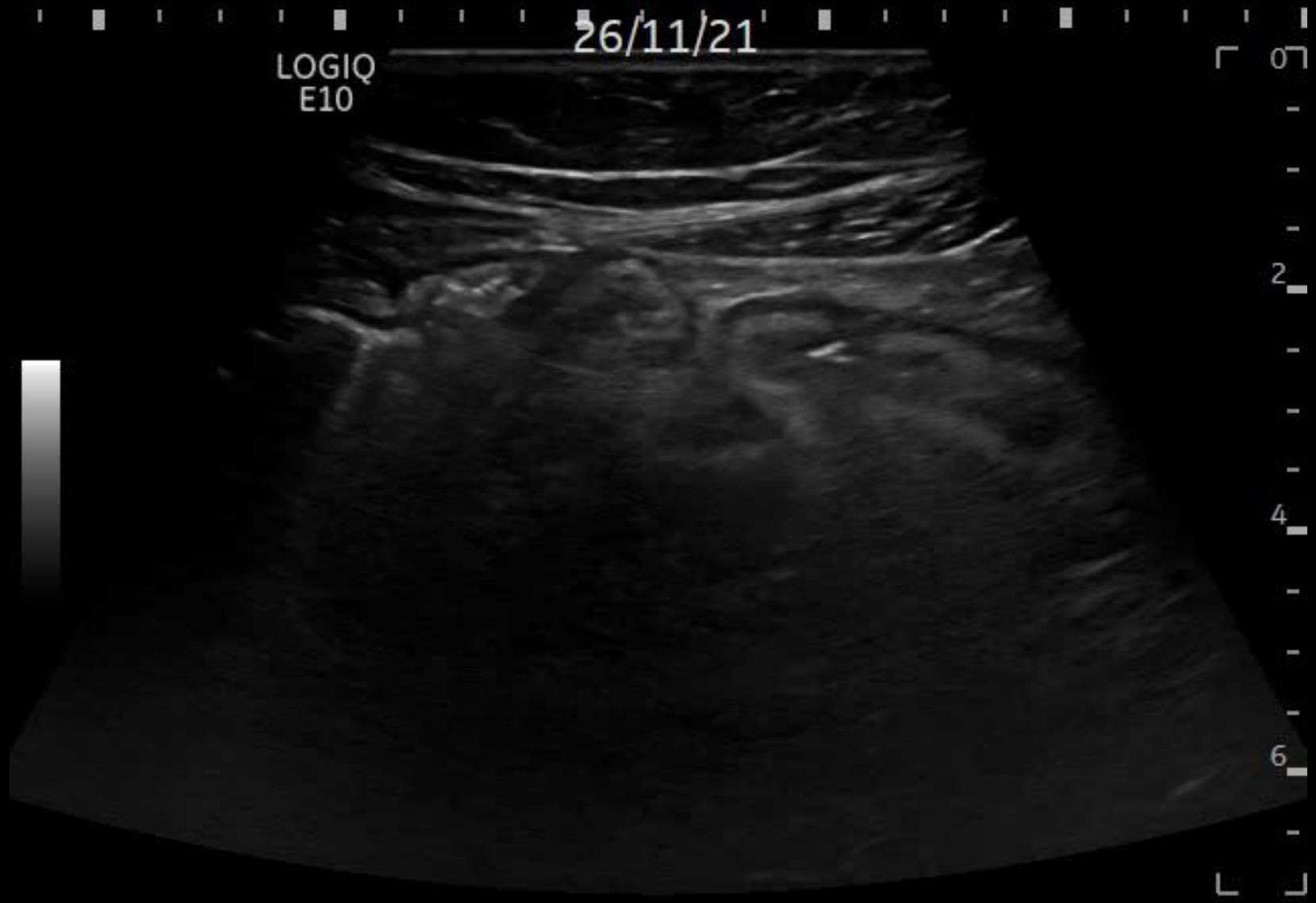

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Variants of the transverse colon position

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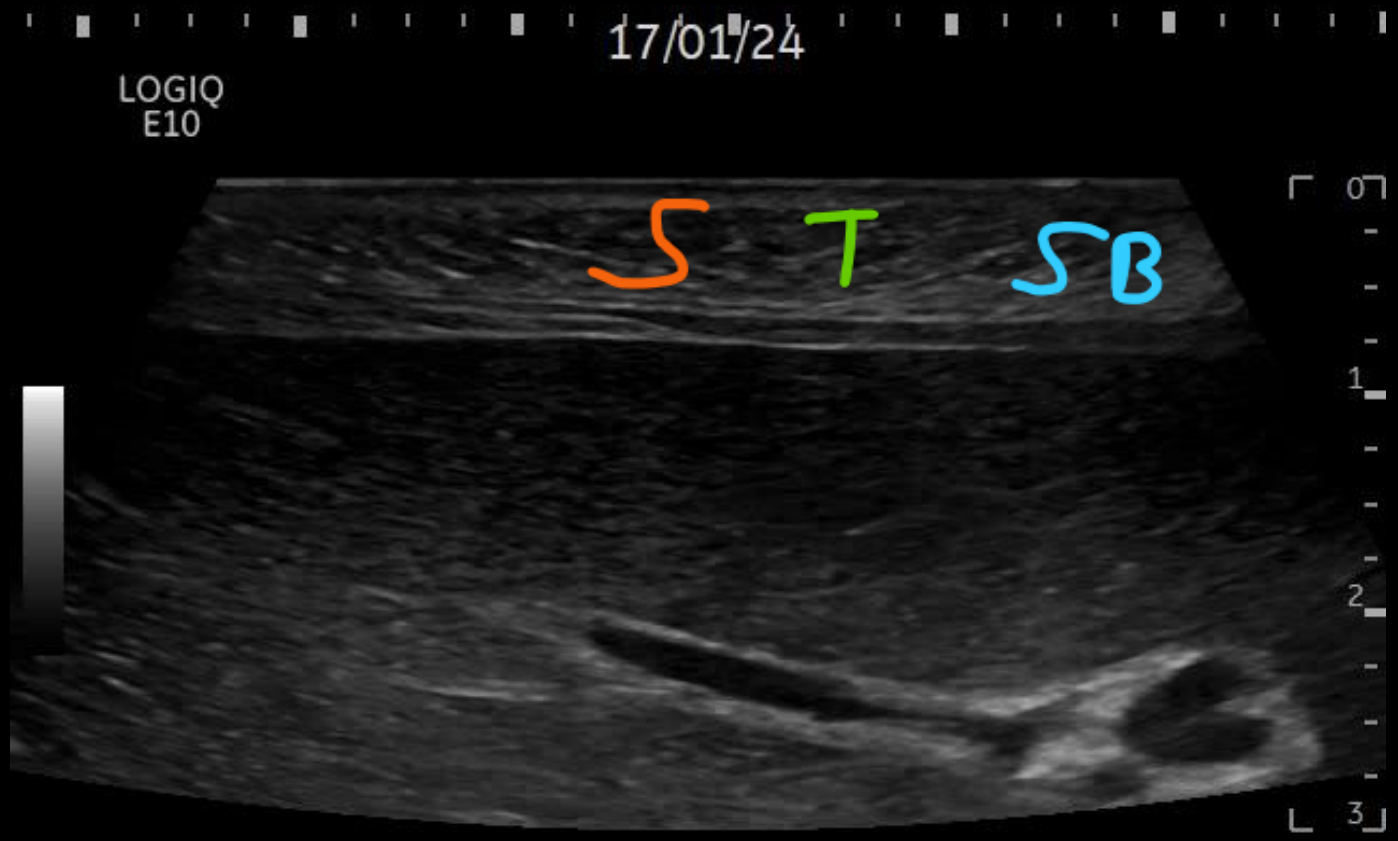
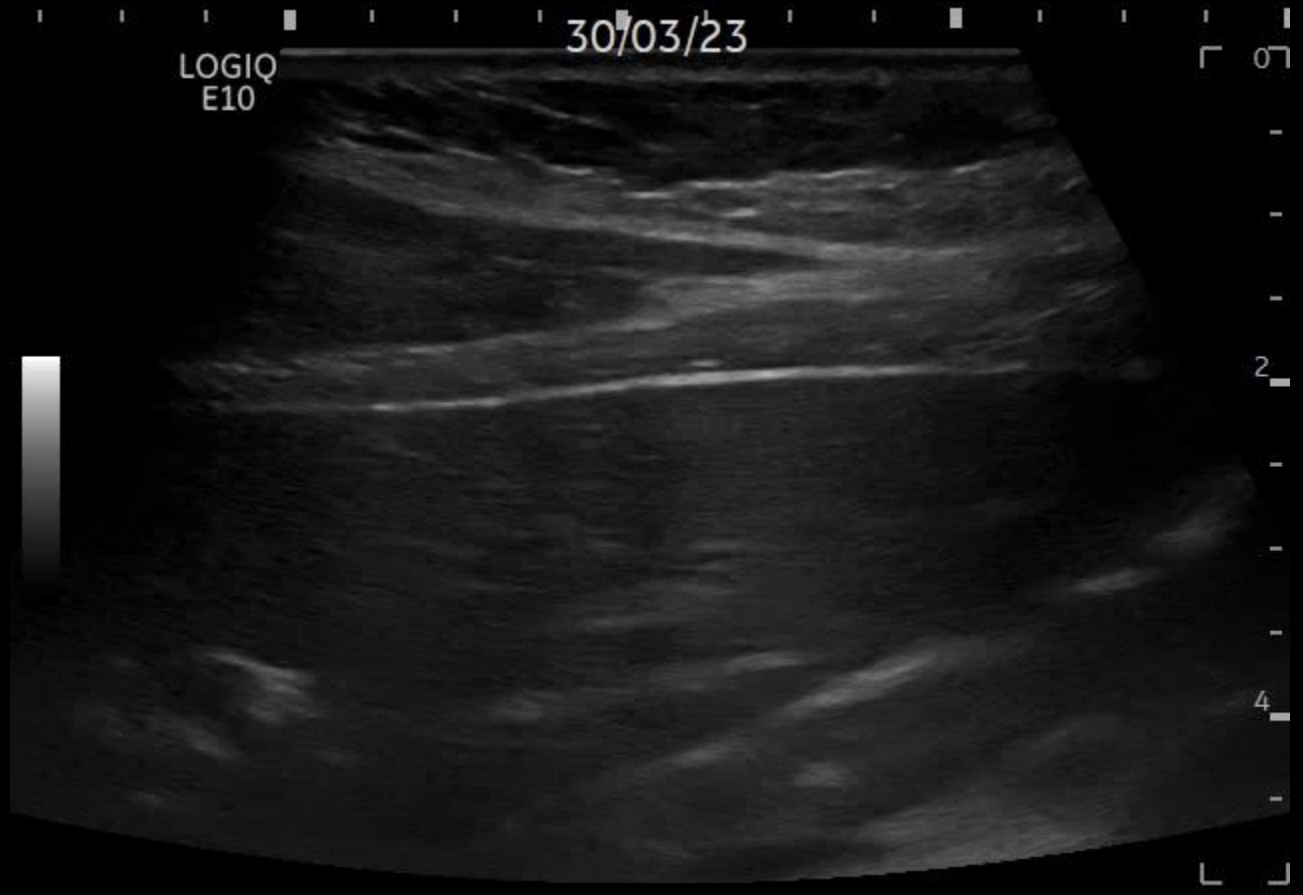


Finding the transverse colon, starting at the liver



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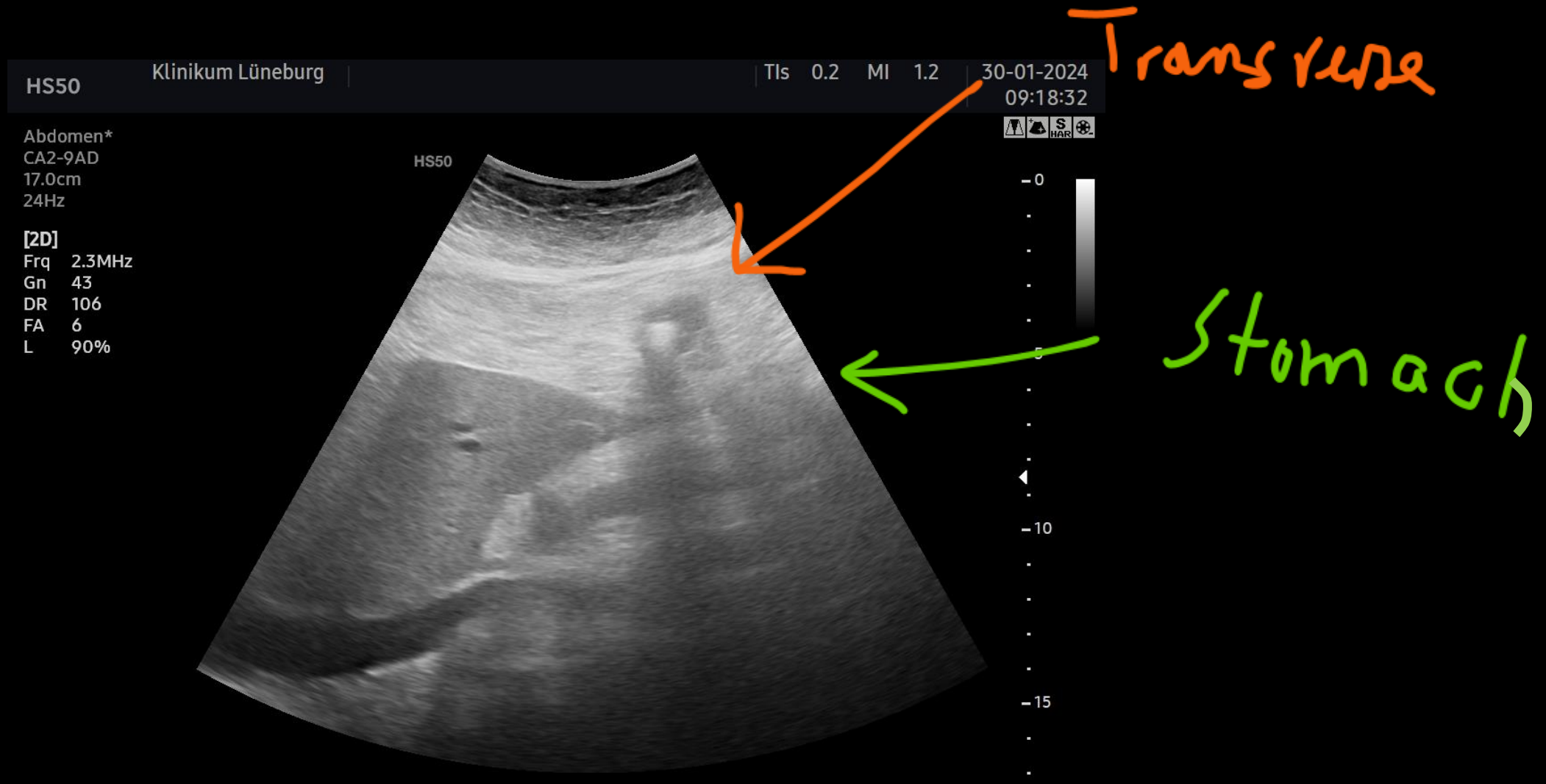
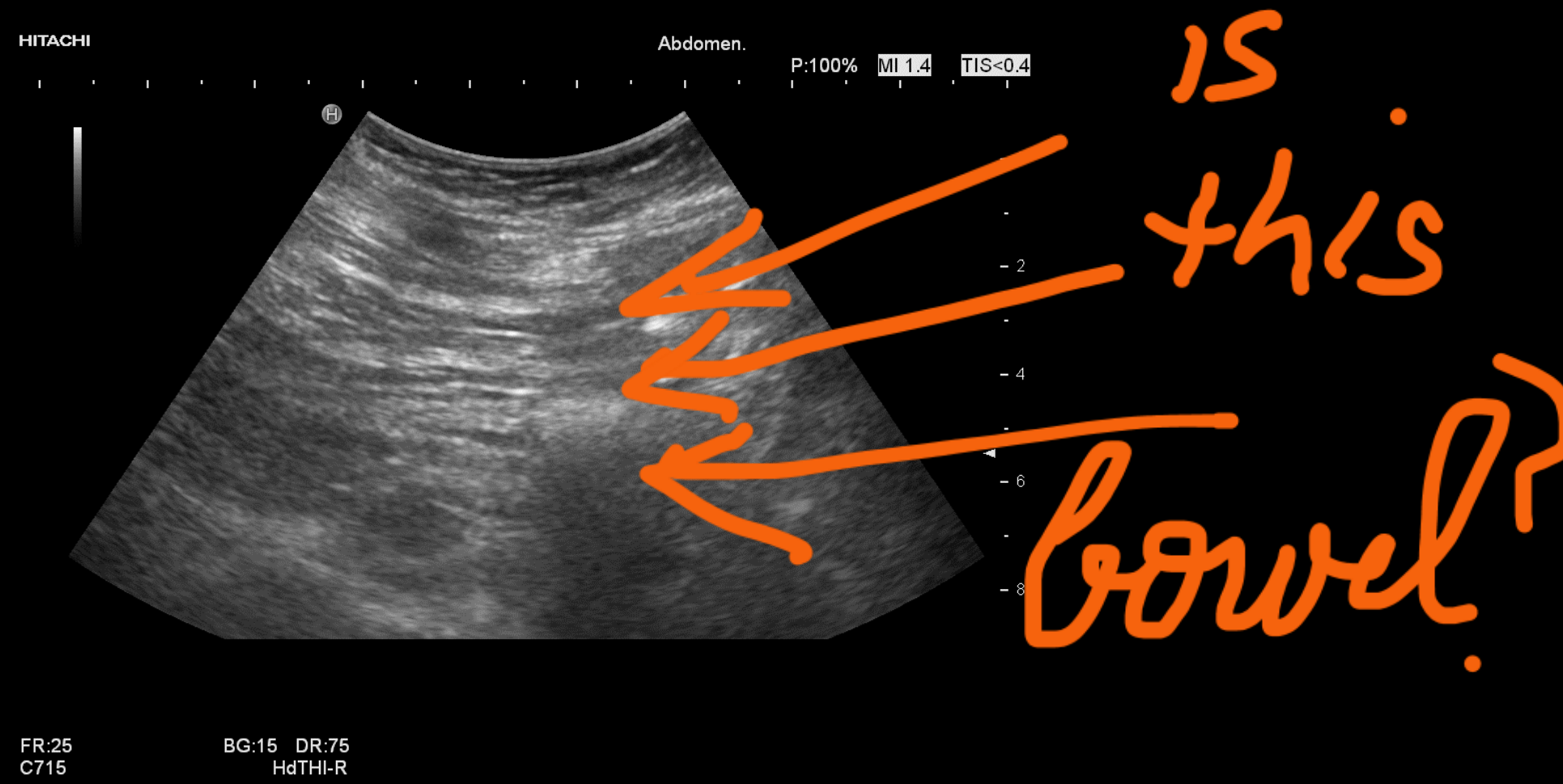
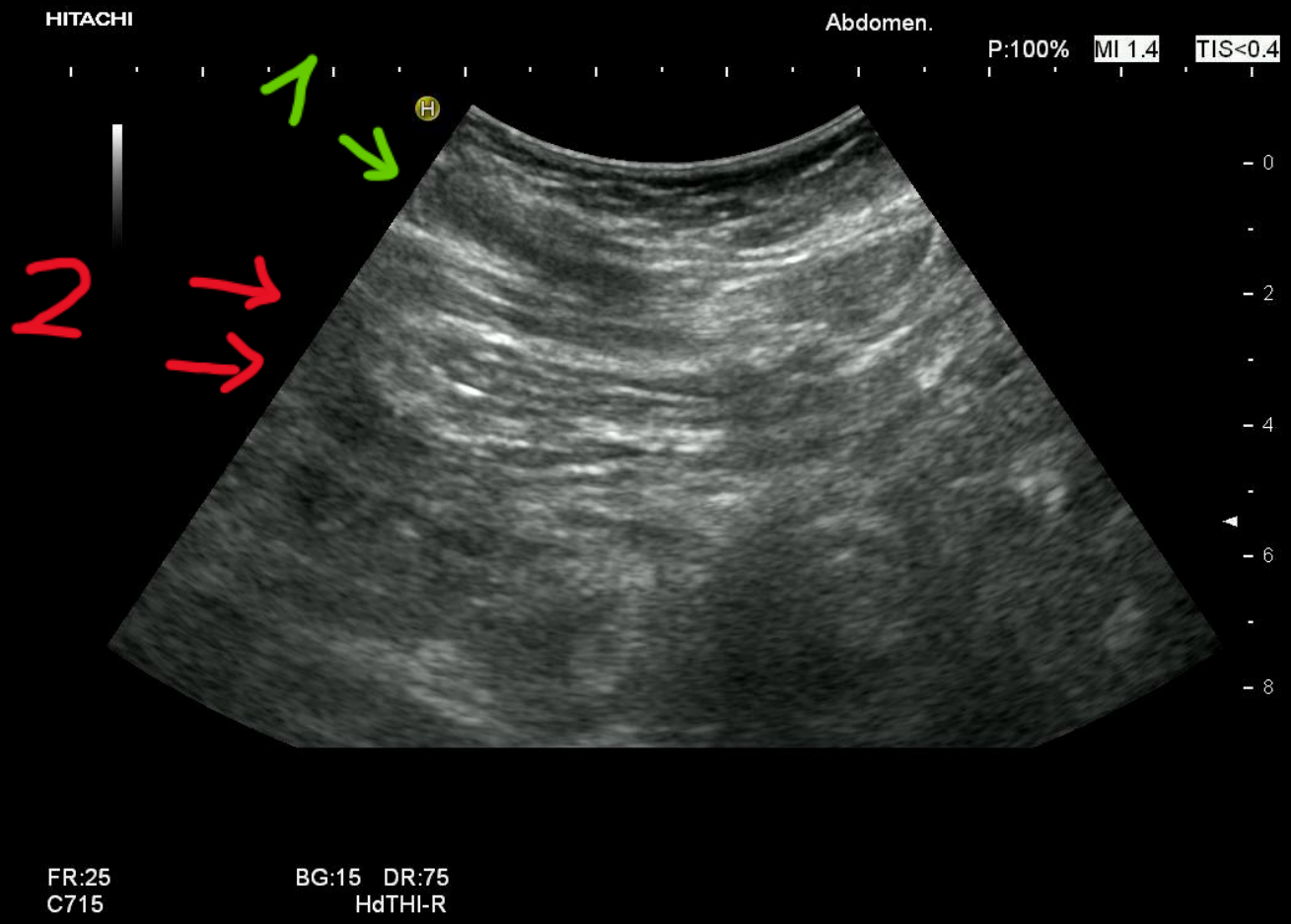


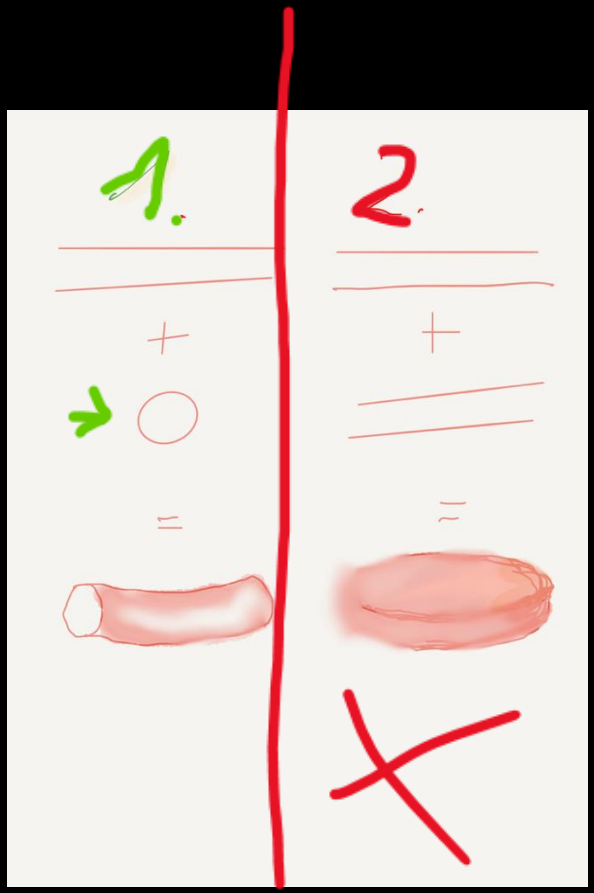
Always check on motility!
Follow the structures
Never judge a still image alone

False interpretation



How to avoid this : turn the probe!





How to avoid this

- Always turn the probe for proper identification of the bowel!
- Bowel has to be round in one dimension

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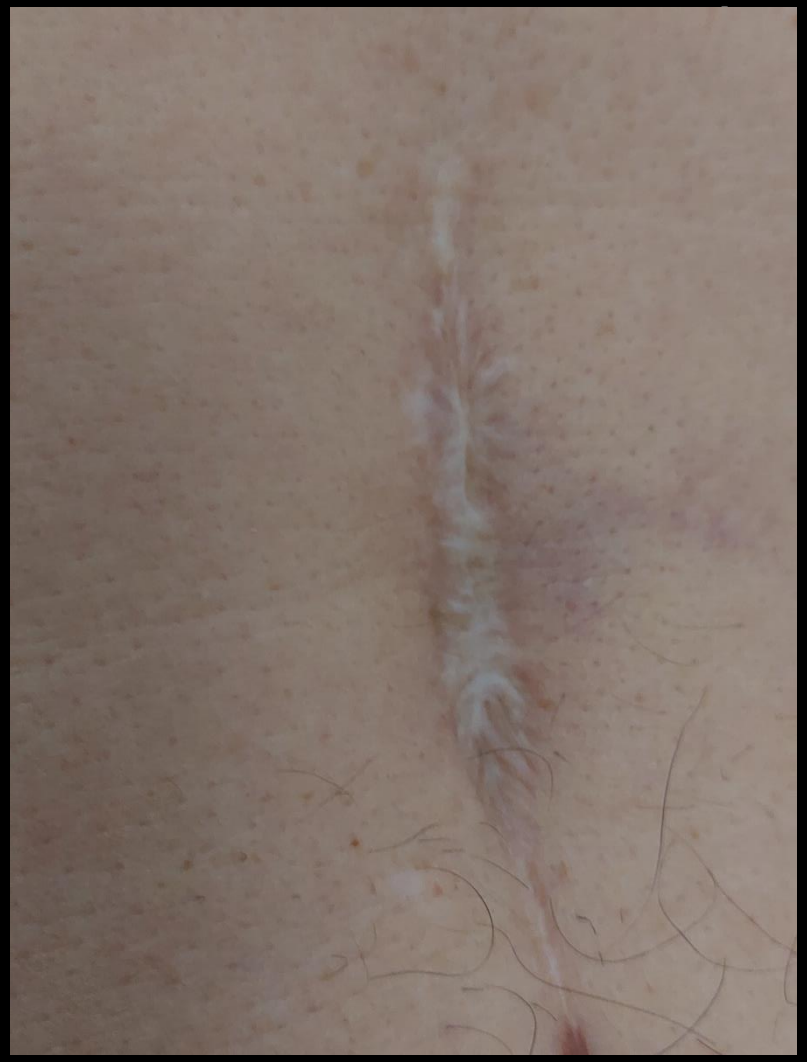
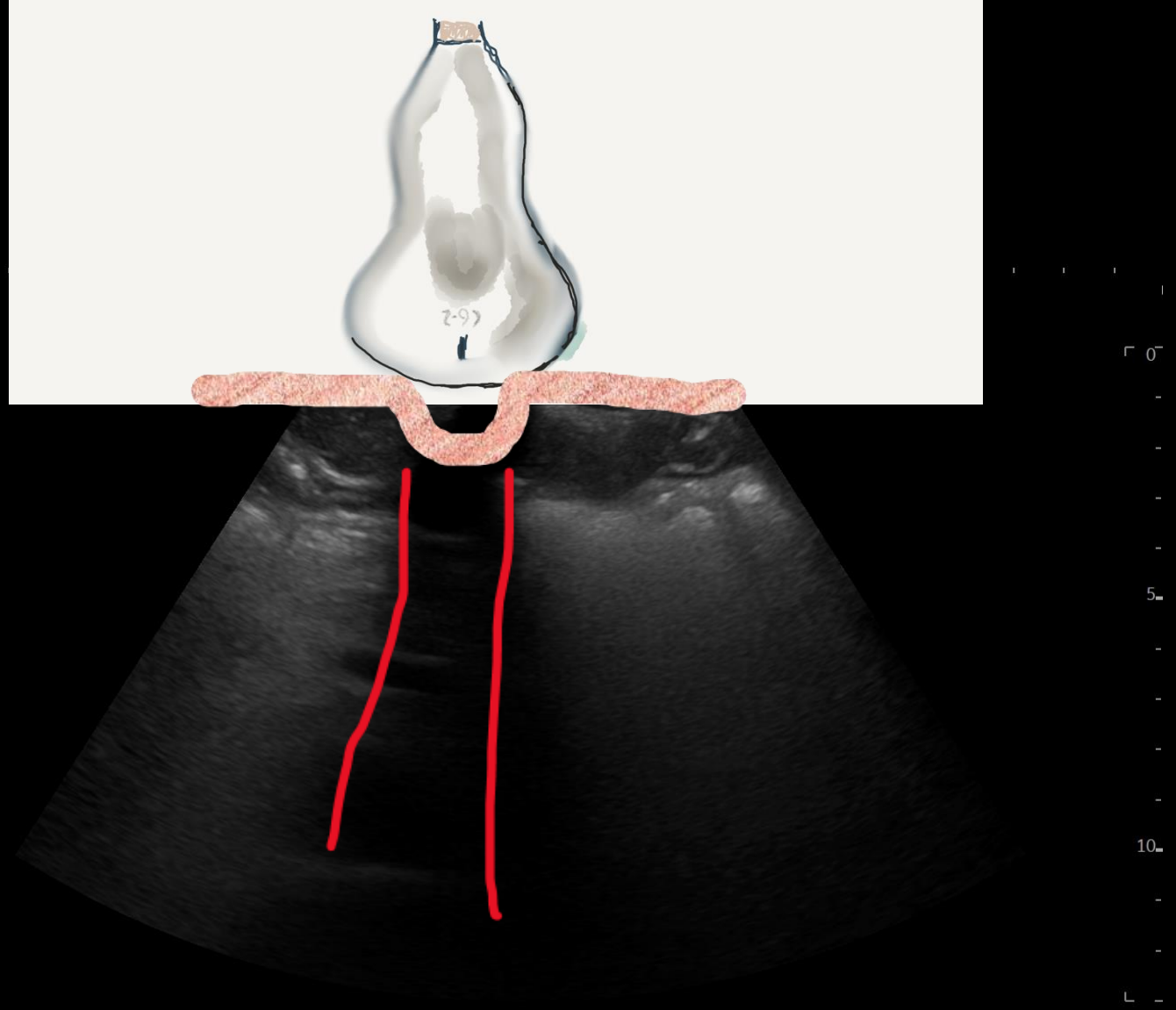
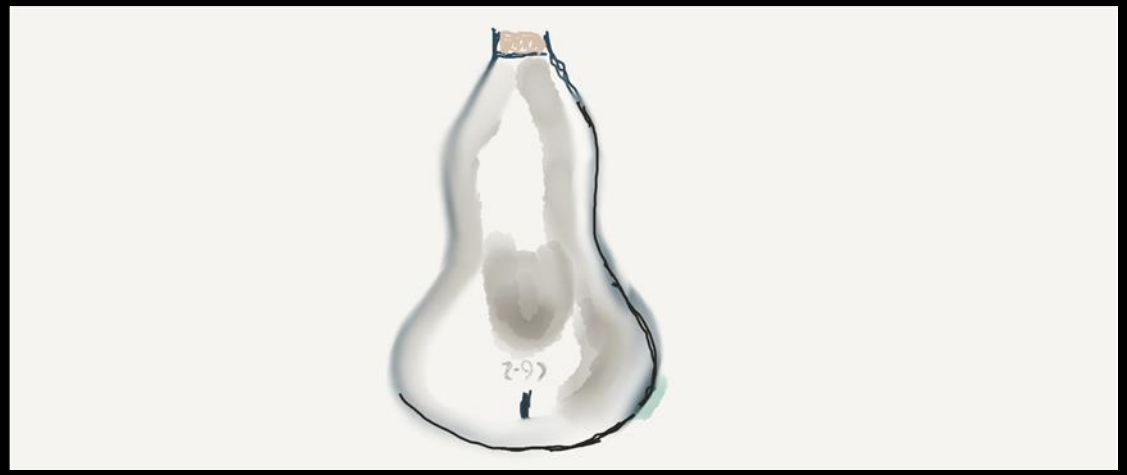
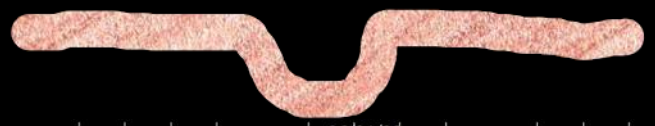
Postoperative anatomical changes: just 2 examples

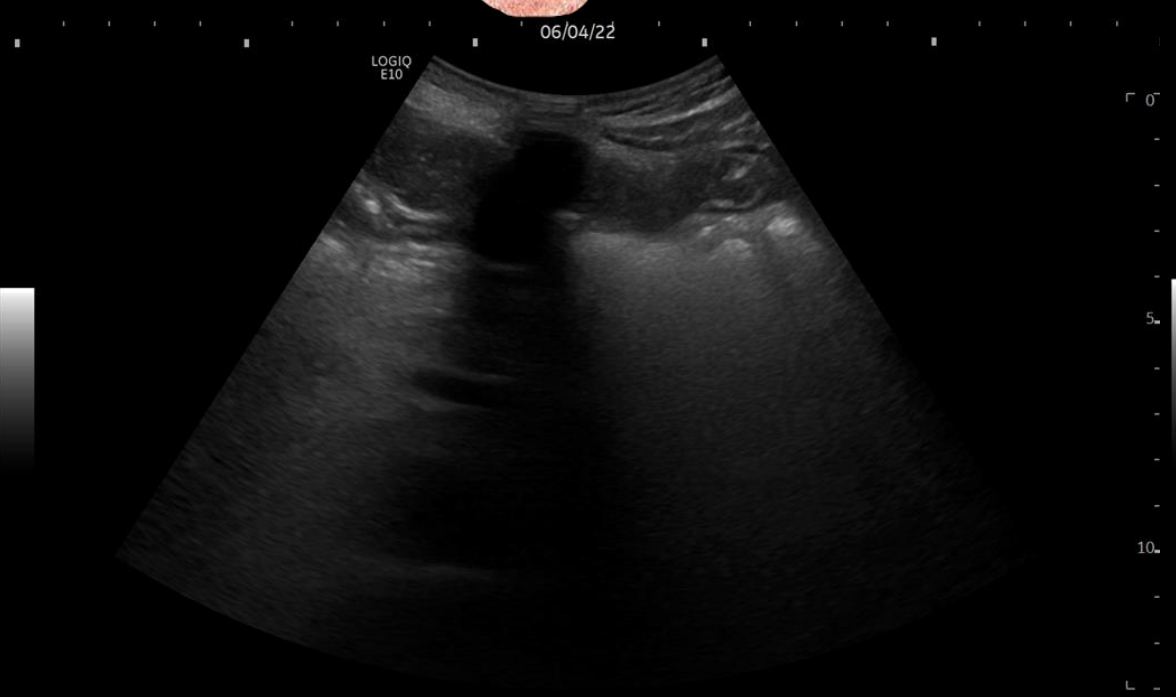
Avoid problem „air“







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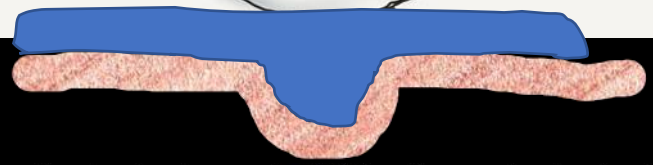

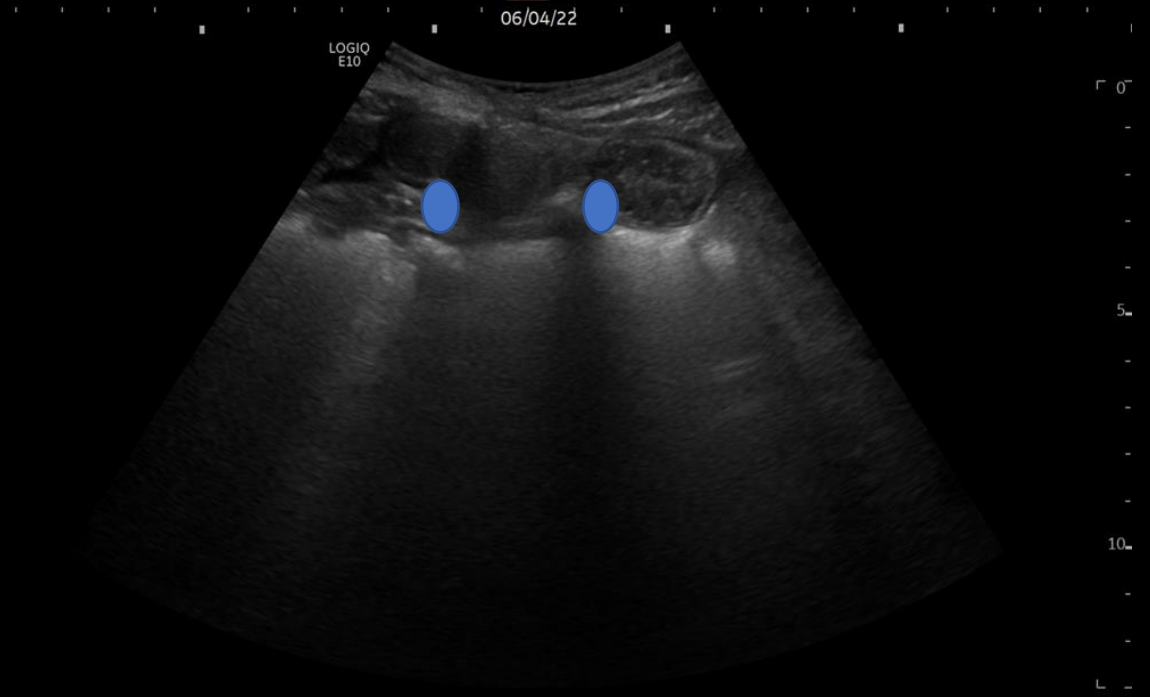
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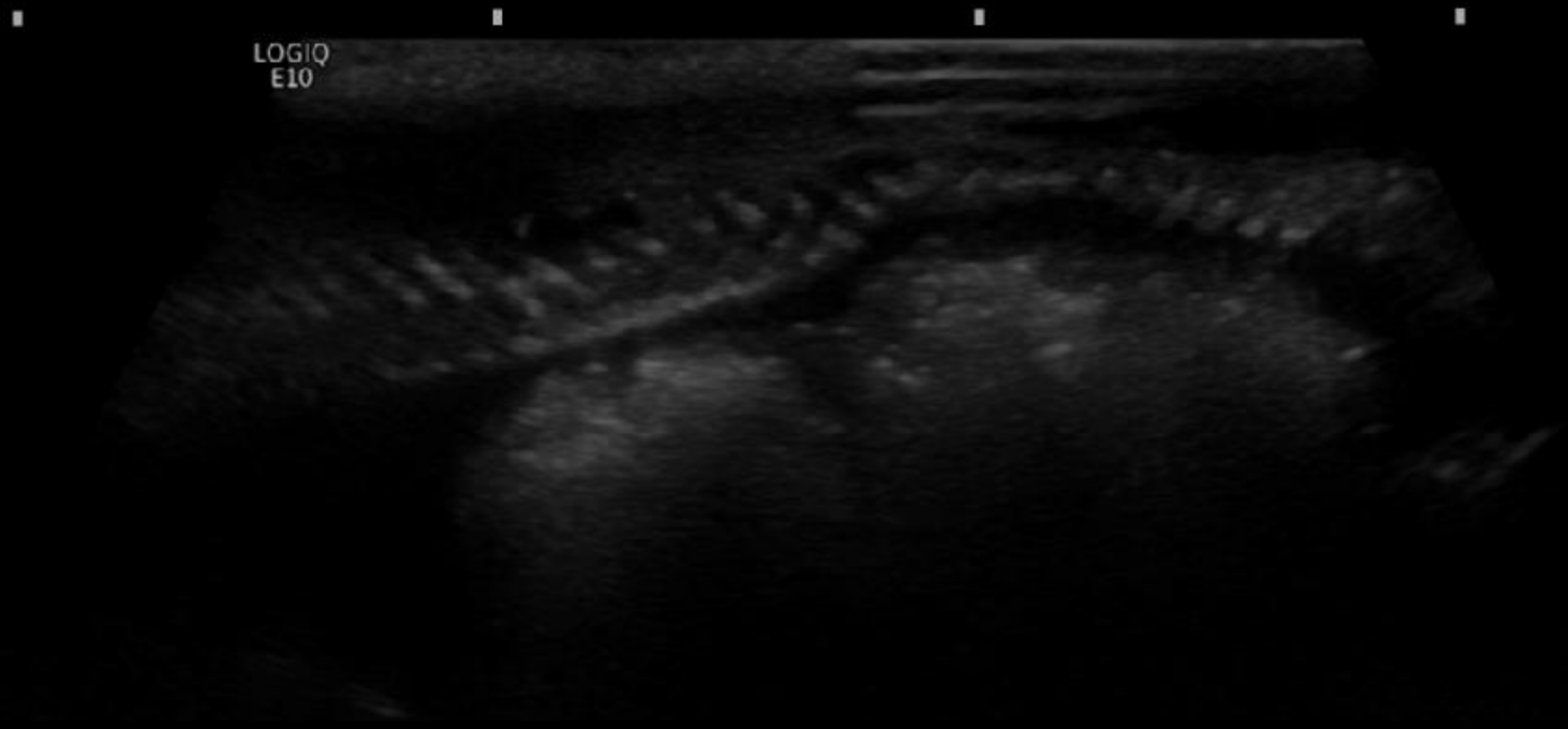
Funny shape of the sigmoid in the left lower abdomen?



Sublay-mesh after surgical hernia procedure

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General advice

- Before the exam
  - Prepare
  - Proper referral
  - Read referral and relevant information
- During the exam
  - Know your equipment
  - Systematic examination
  - Develop you scanning skills
  - Ask experience colleague if in doubt – their is no shame in giving up
- After the exam
  - Write a relevant report

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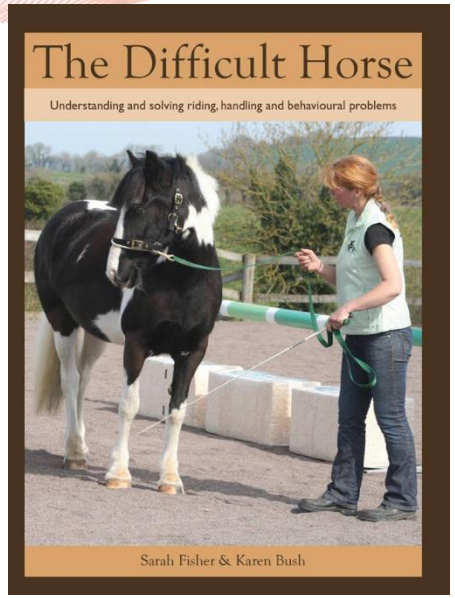
Writing a balanced report

- Describe areas *not* seen
- Describe *confidence* in exam
- Describe *relevance* of exam
- Suggest alternative diagnostics if necessary

The difficult IUS



- A difficult horse is of course an extremely relative term. This is impossible to define because it **depends on the rider's ability**. The tolerance on the part of the rider varies. What is one person's rocking horse is another person's fire seat

hippothesen.de
https://blog.hippothesen.de/ein-faible-fuer-schwierige-pferde

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