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KUWAIT GASTROENTEROLOGY ASSOCIATION
رابطة الجهاز الهضمي والكبد الكويتية

Complicated IUS examinations with 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

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).

1 Mio thanks to Dr. Frauke Petersen

The difficult IUS

Overview

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

Avoid suboptimal set-up

+

=

„Difficult“ IUS

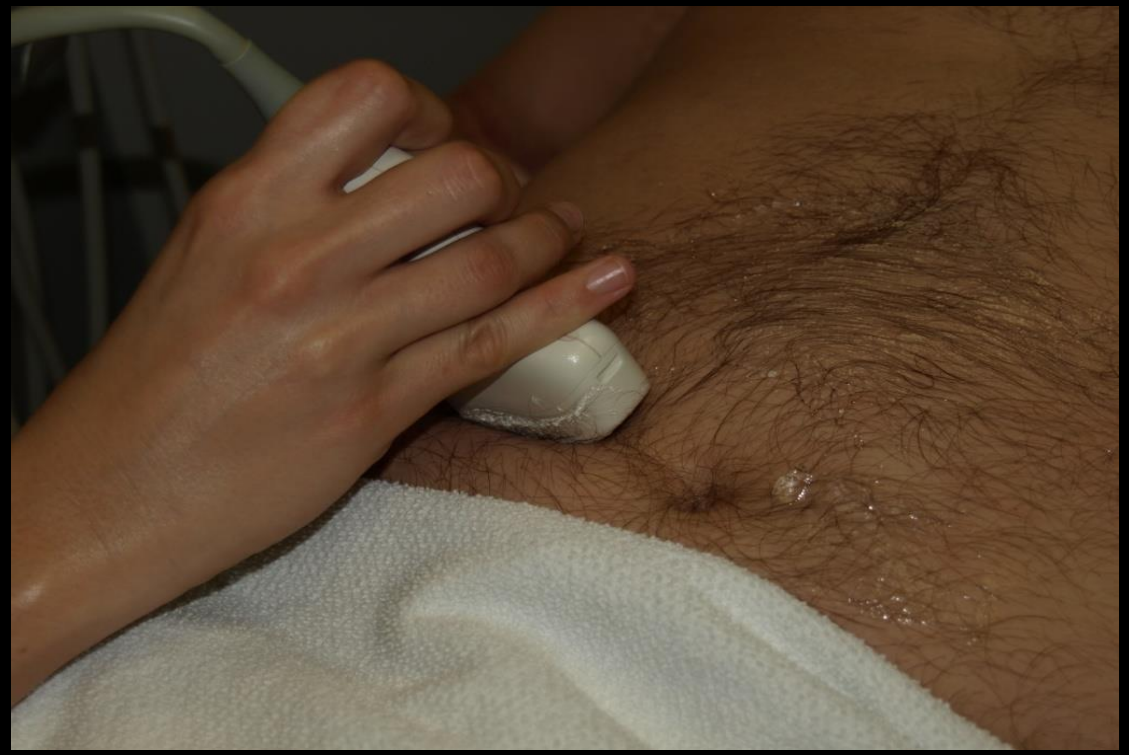
Suboptimal room setup

Suboptimal machine

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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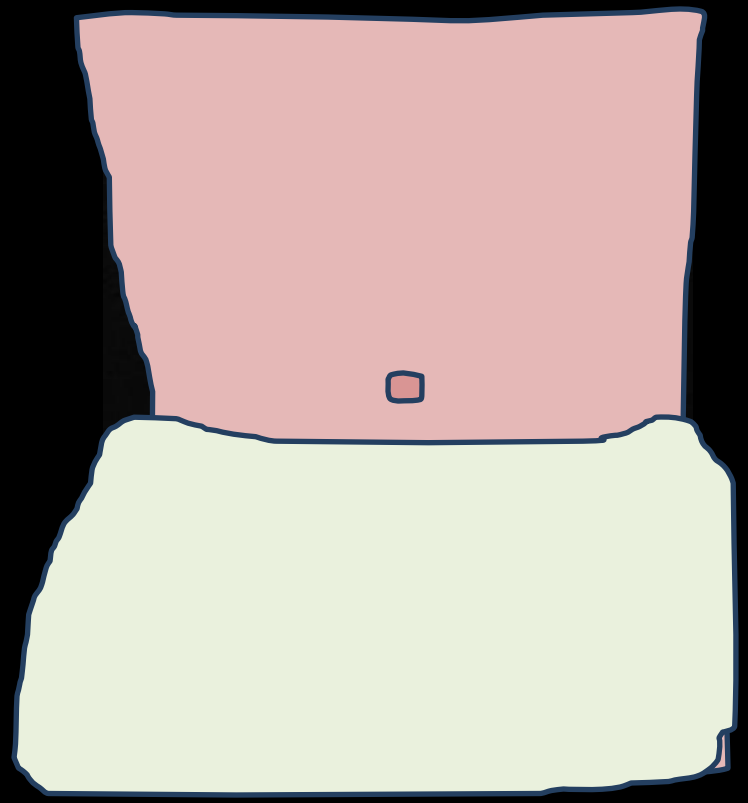
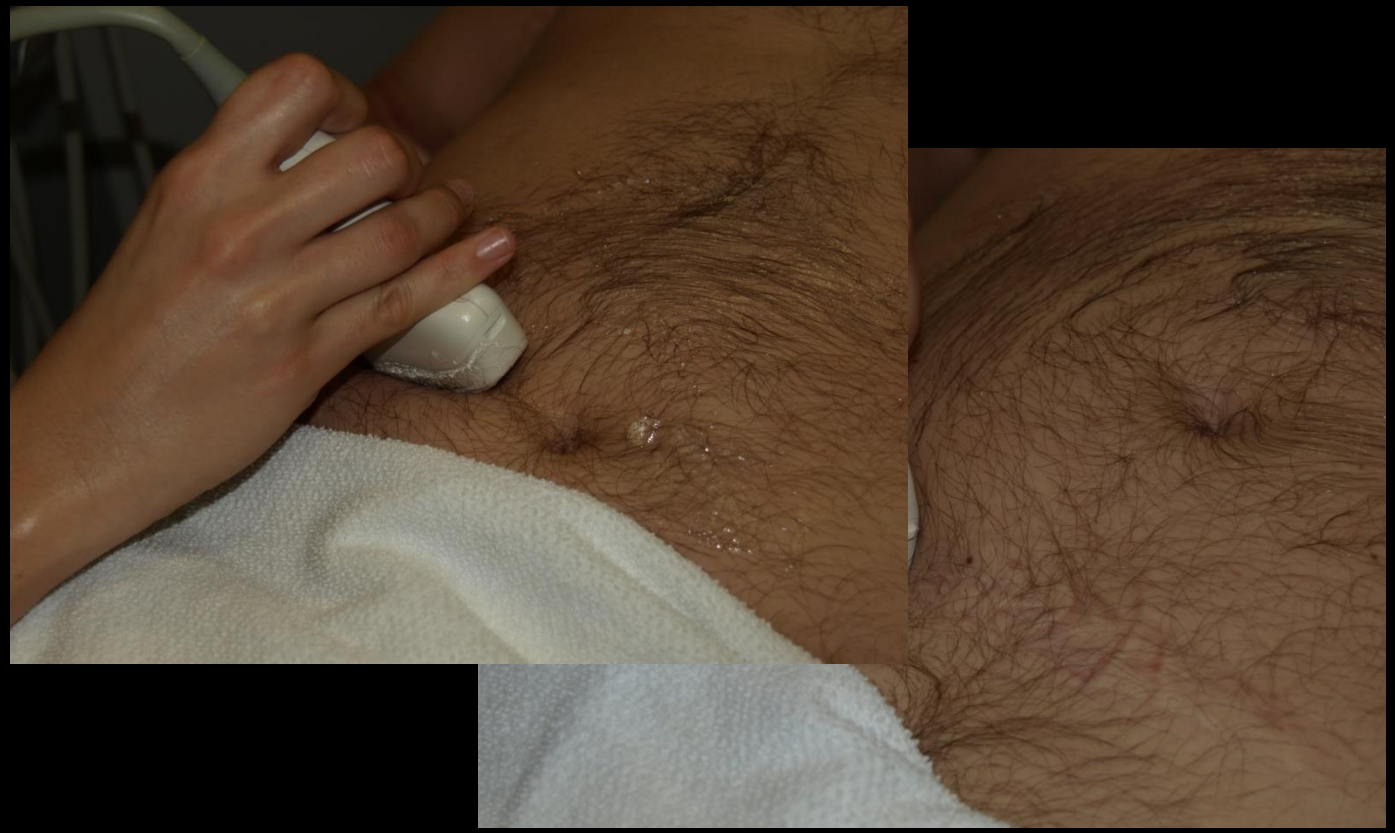
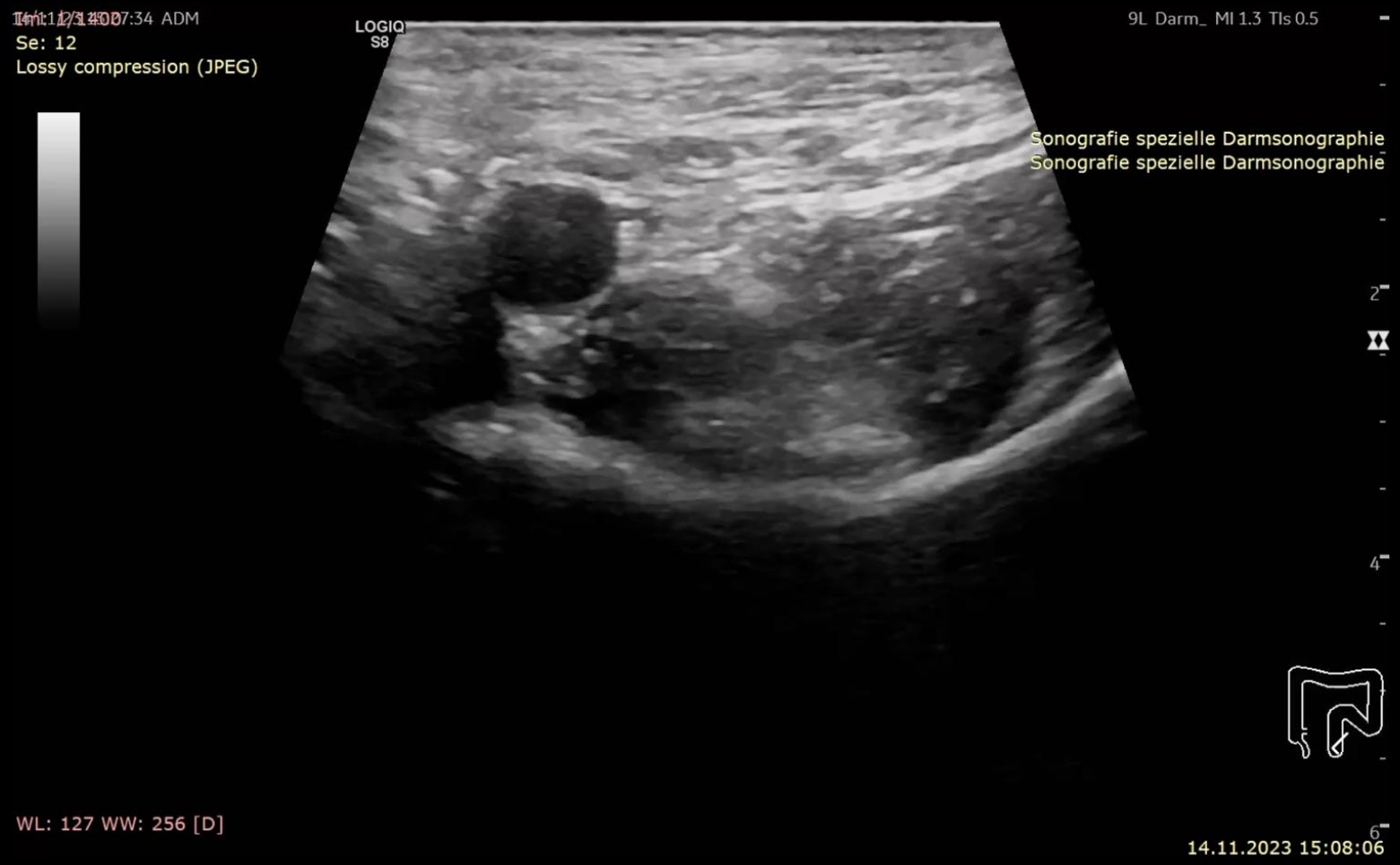
Where are the crucial zones?



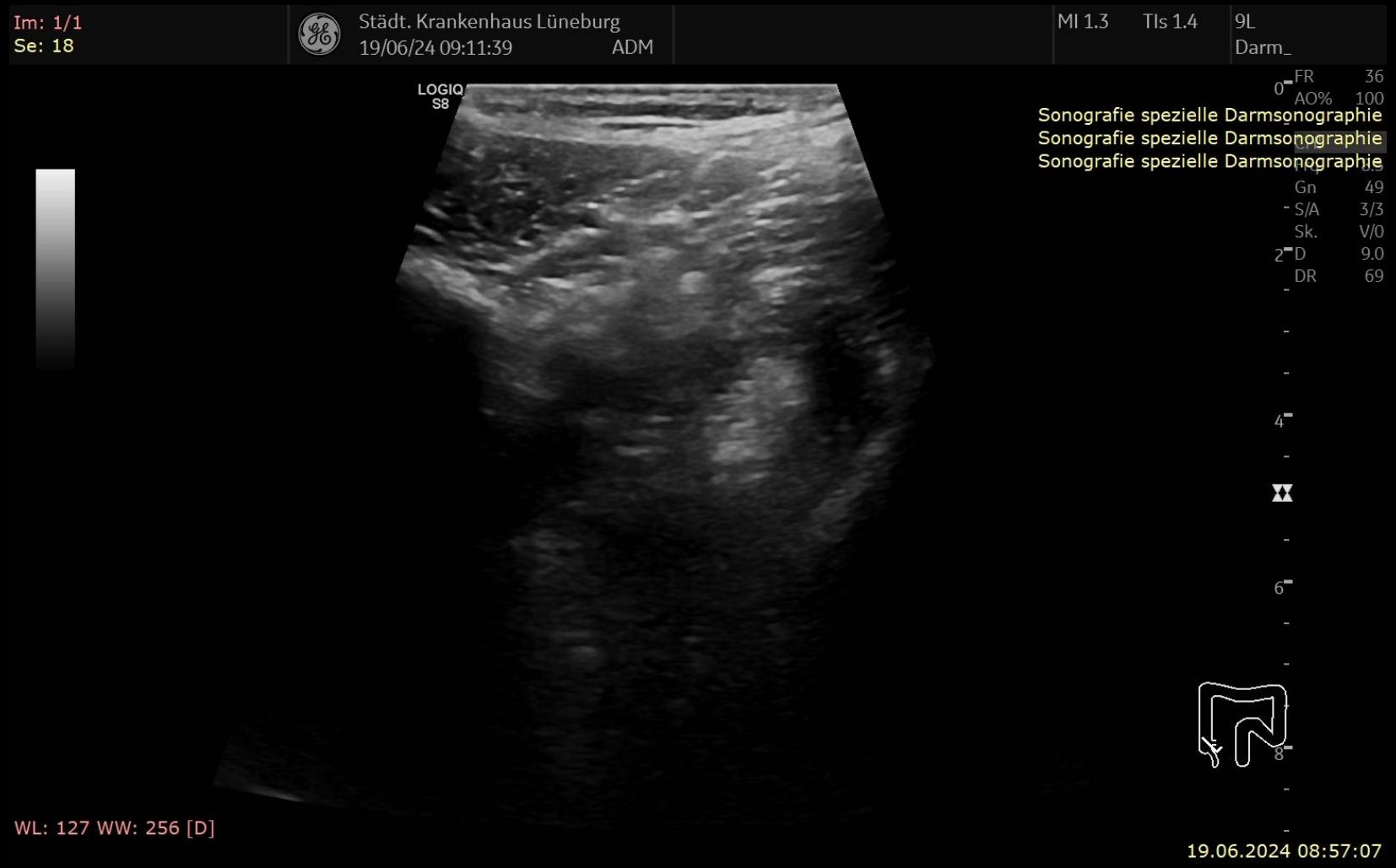
Corrected position



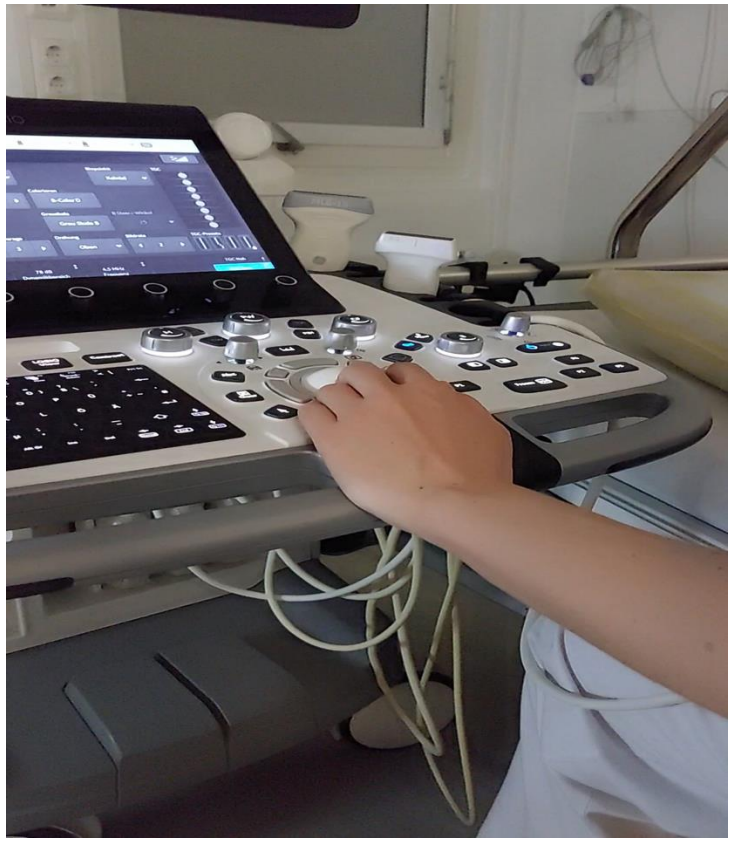
Always start at the inguinal ligament → identify anatomic landmarks



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**

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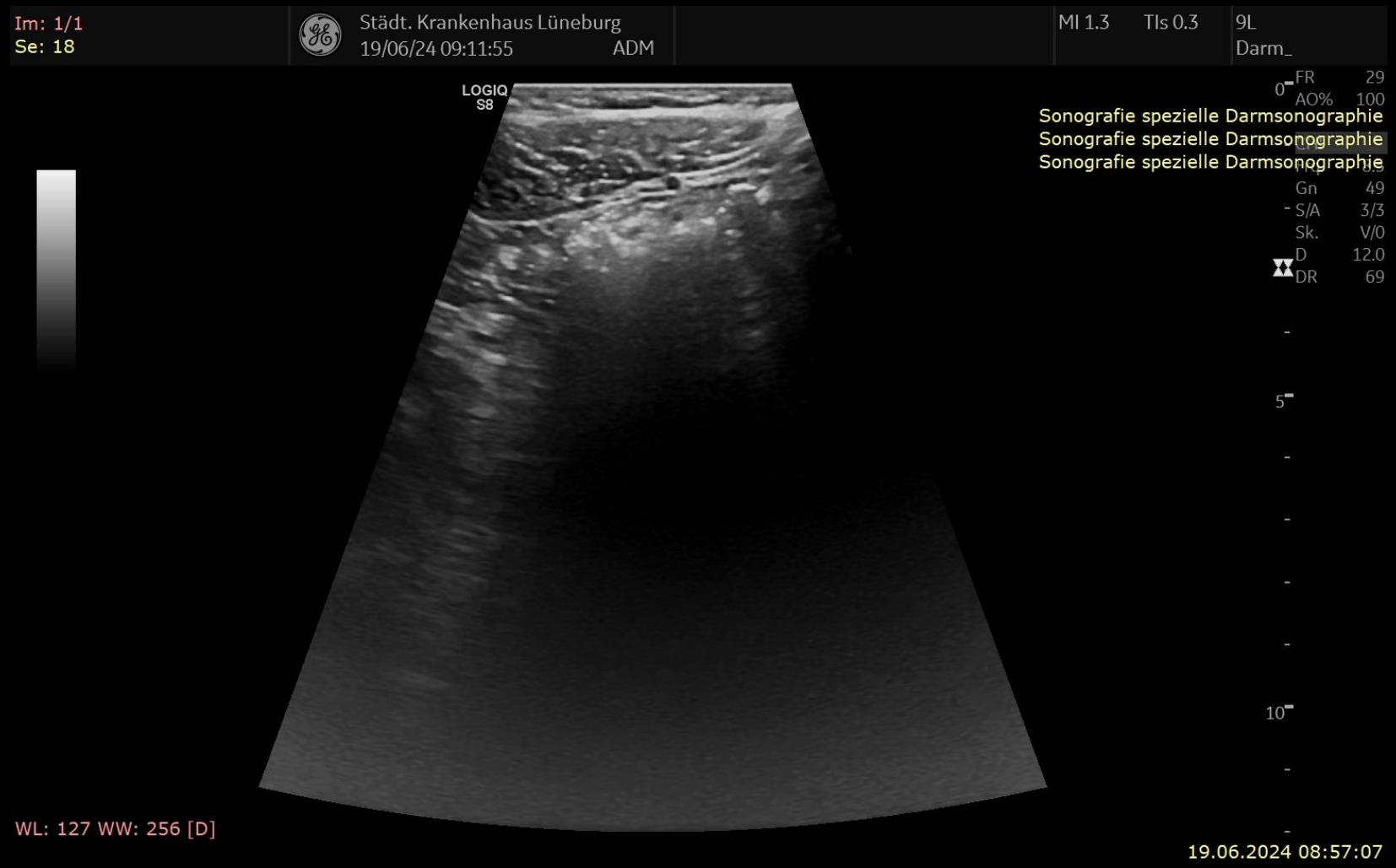
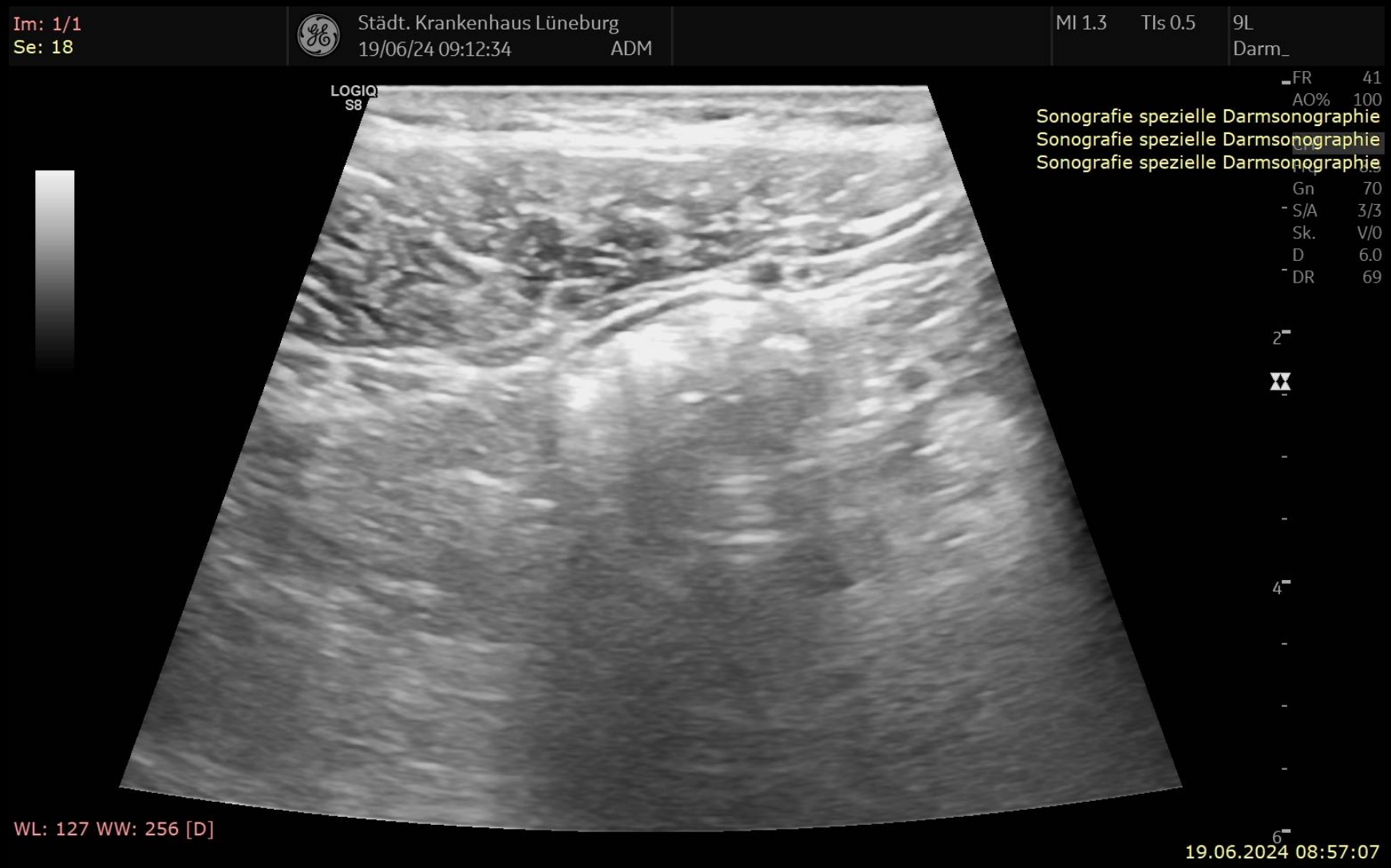
What needs to be optimized?



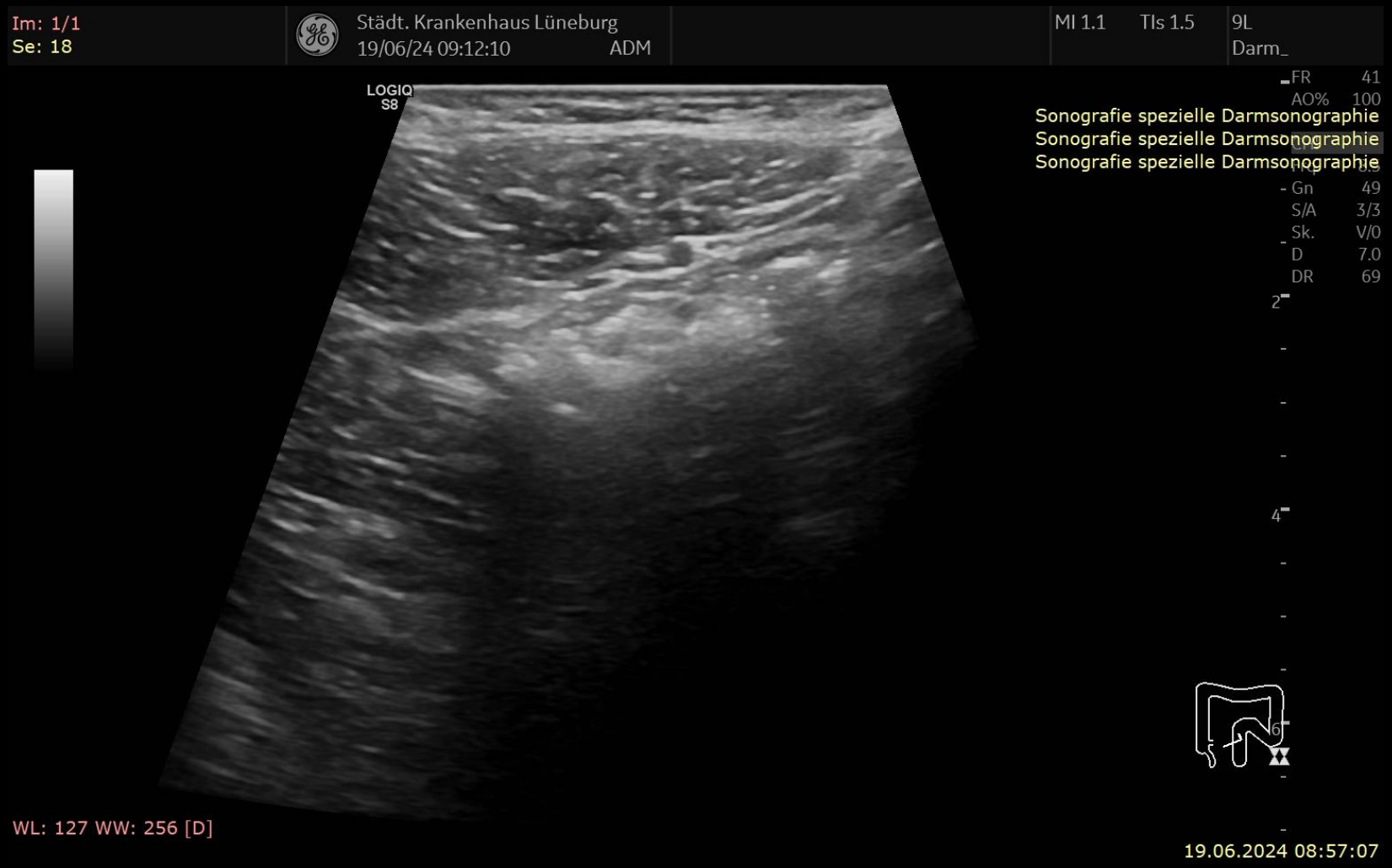
- Depth

What needs to be optimized?



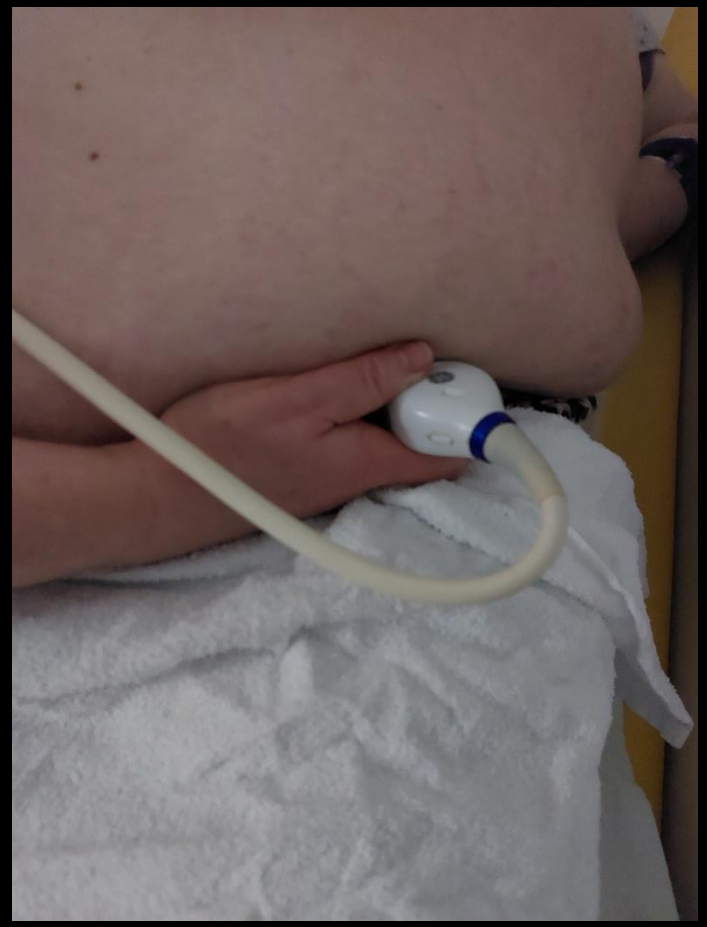
- Gain

What needs to be optimized?



- **Focus**

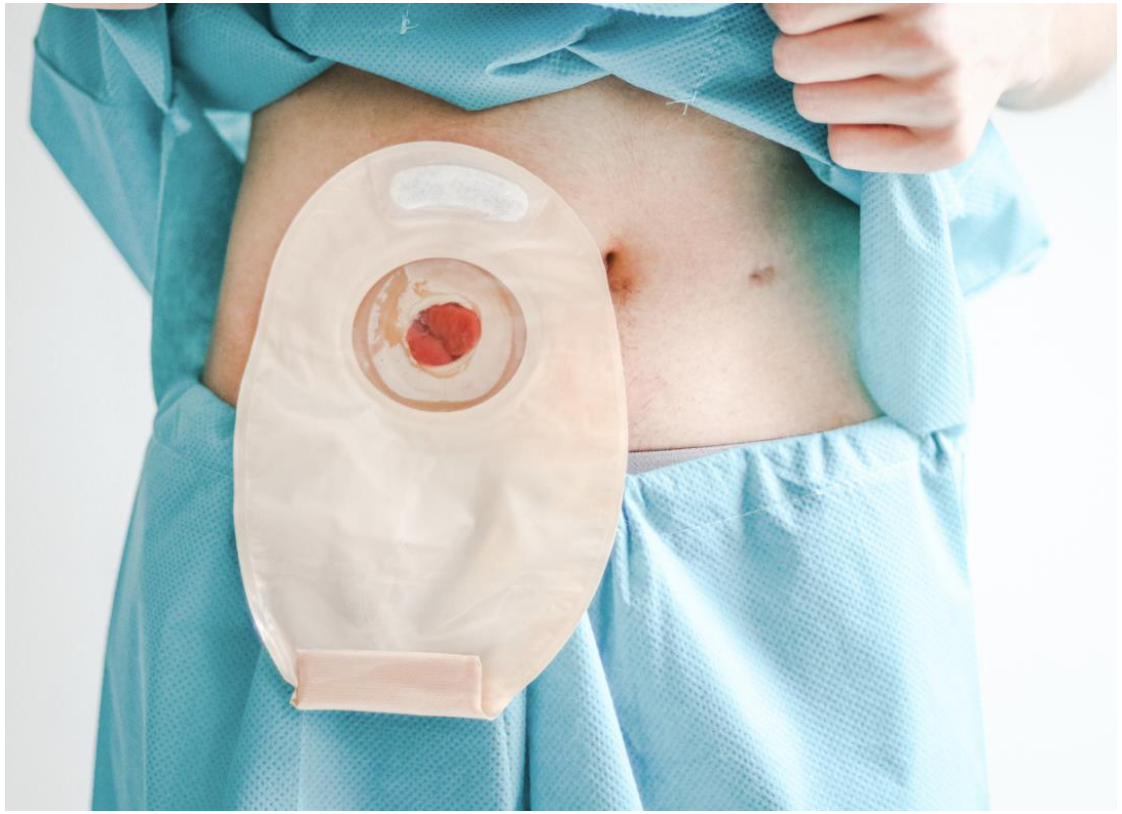
IUS in the obese patient

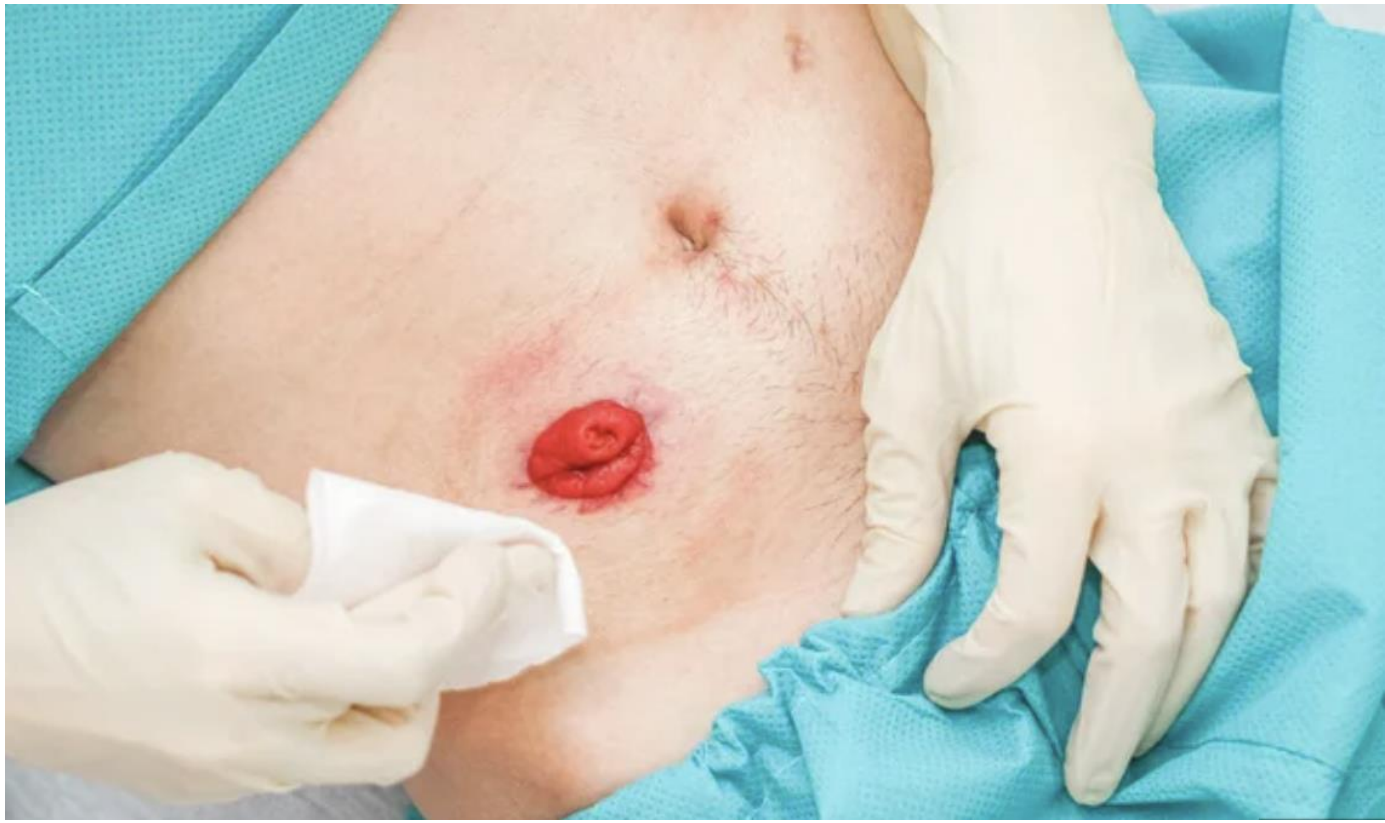


- The inguinal ligament: entrance gate in the obese
- Stay underneath the bowel wall, fat and air
- Tilt the probe instead of swiping

Stoma

Problem: takes more time!

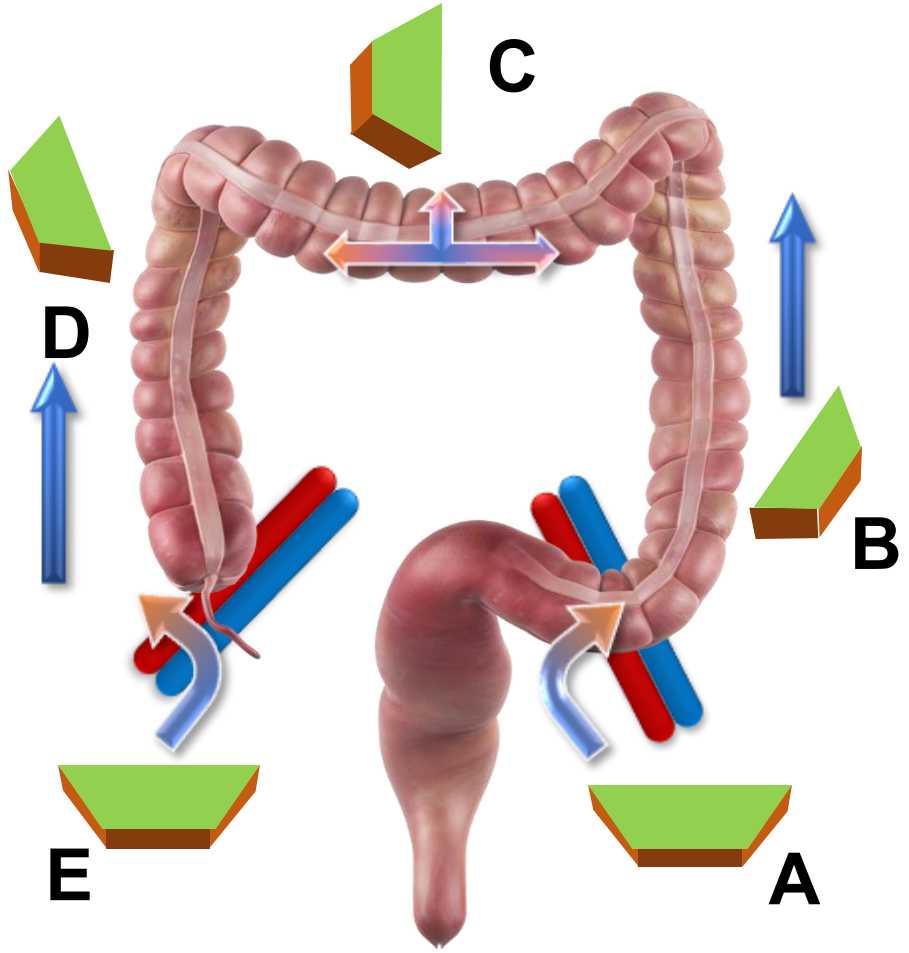




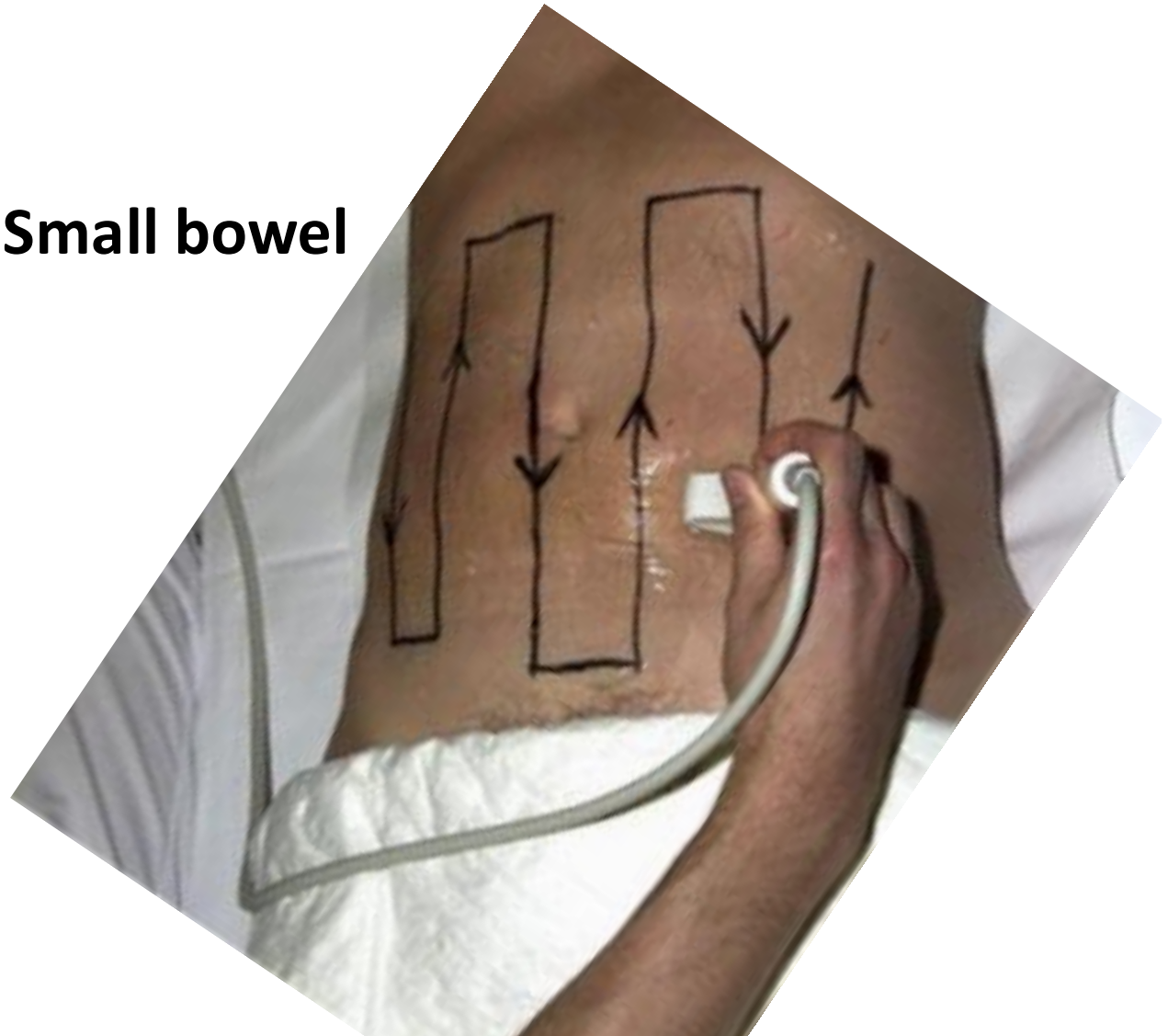
Have patient bring extra stoma equipment; gel on probe → glove over probe (and hands ☺) → gel on glove

Examination technique – always (!!!) systematic approach

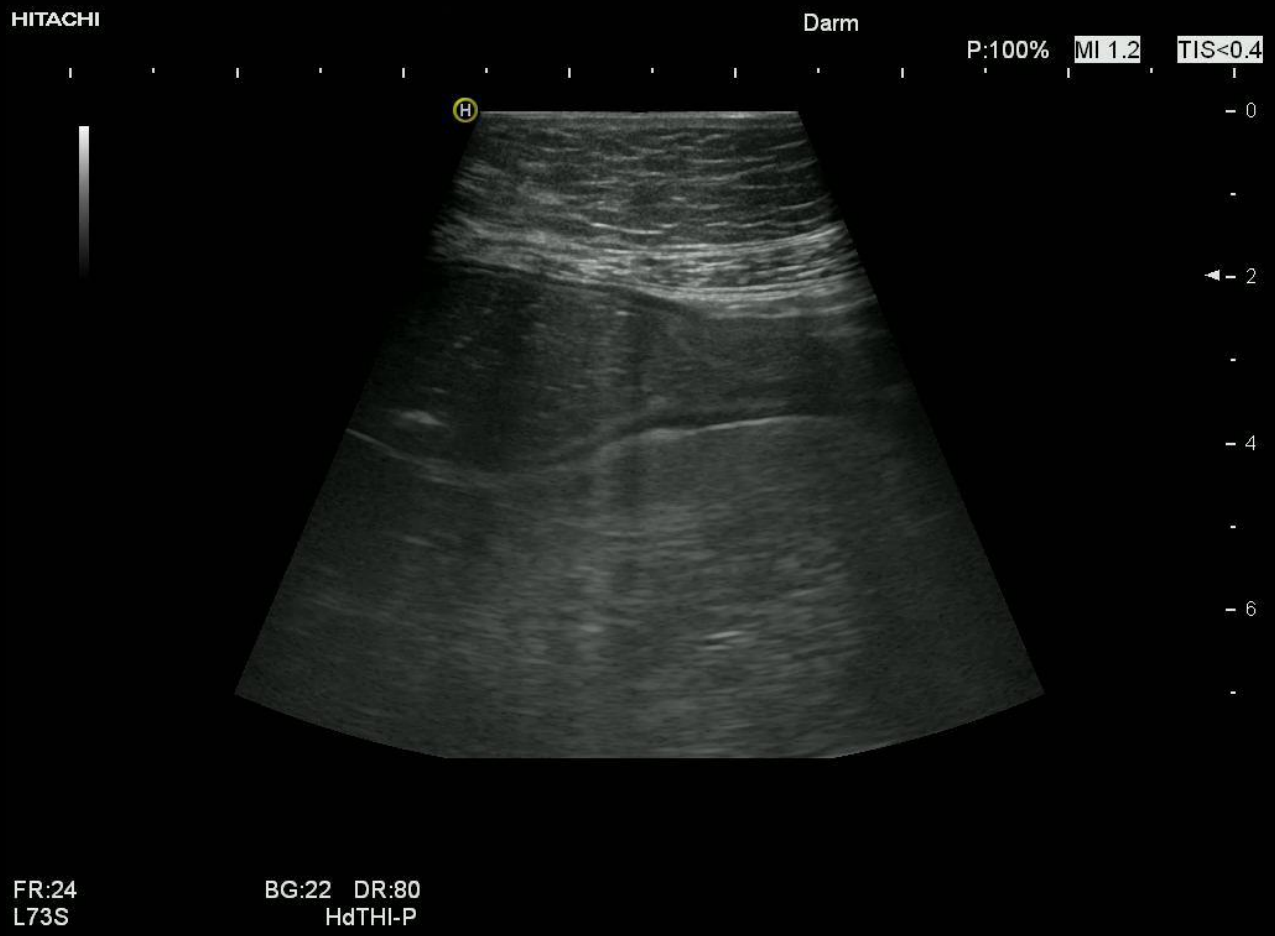
Colon



Small bowel



Mistake: Choice of the probe



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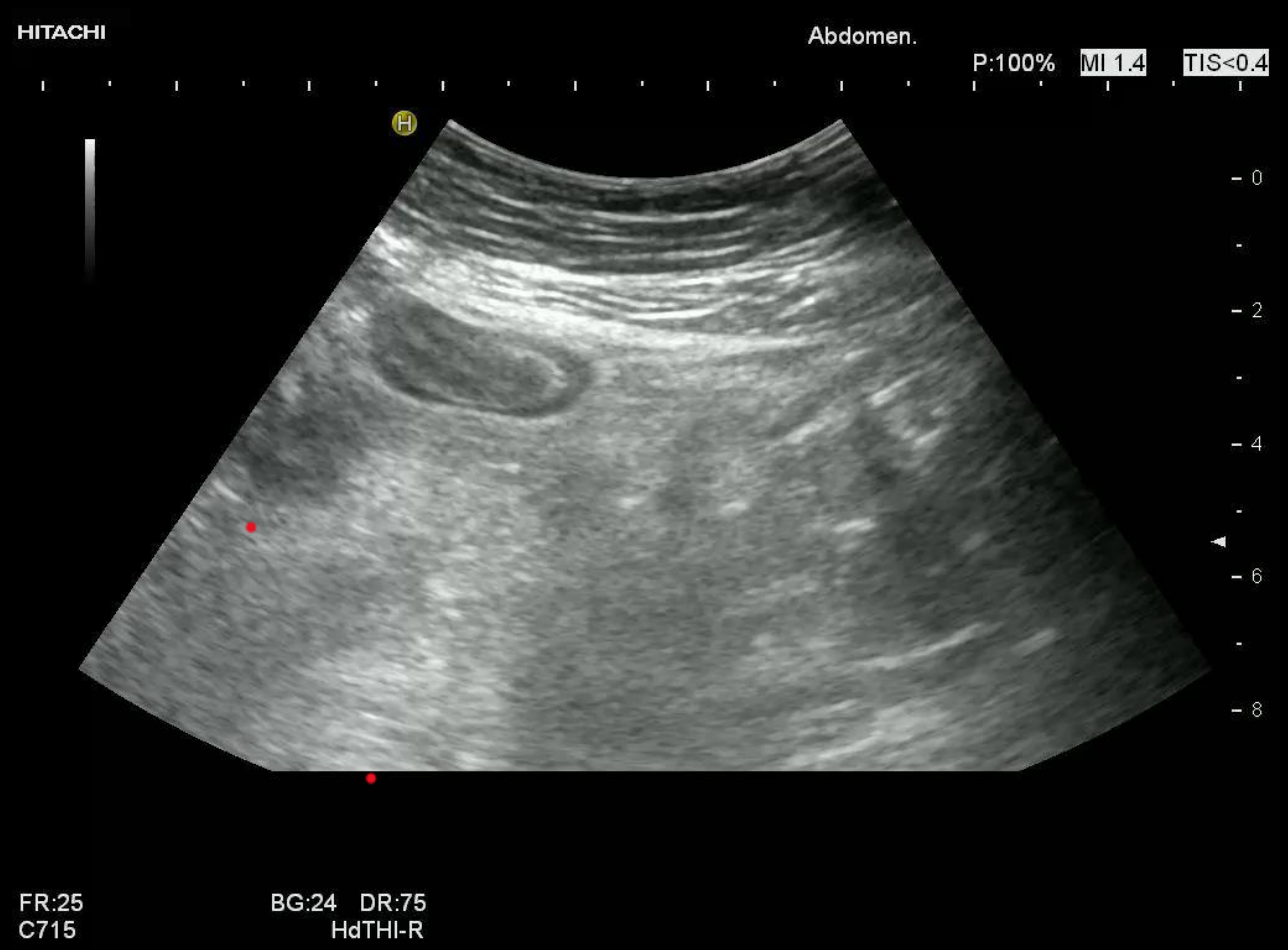
Deep fistula can be missed by the high resolution probe



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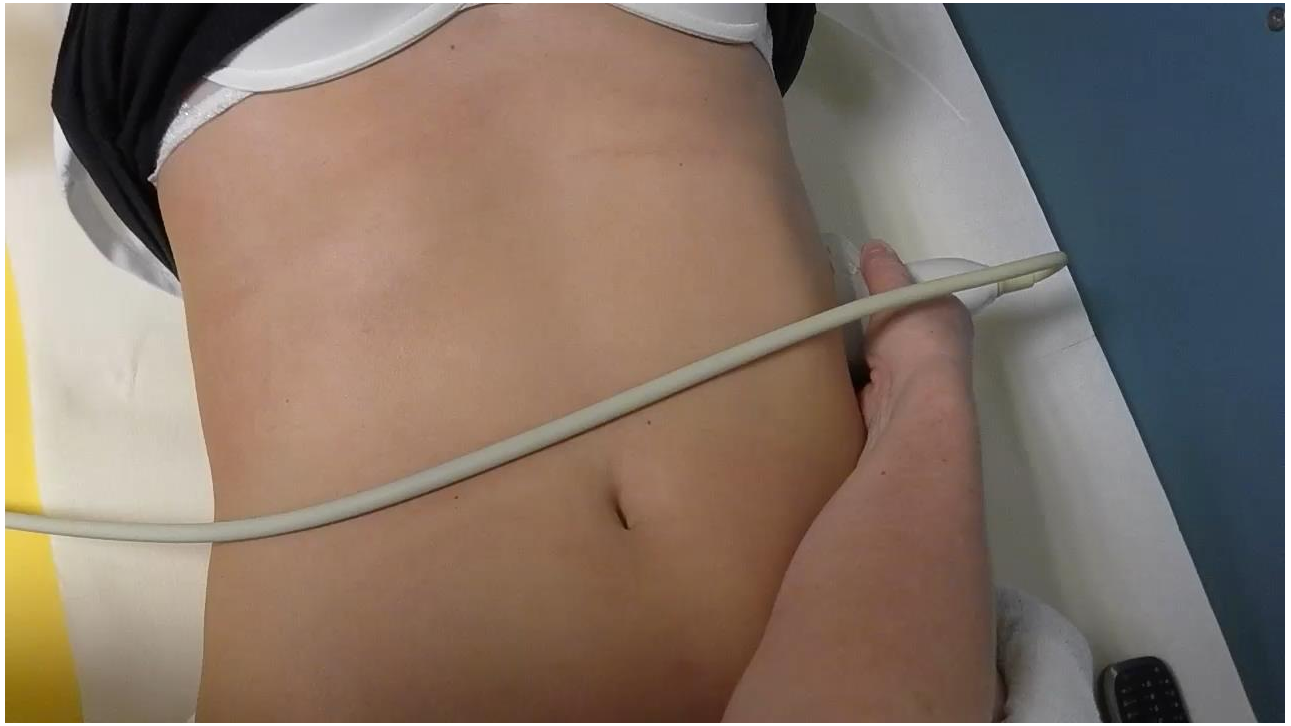
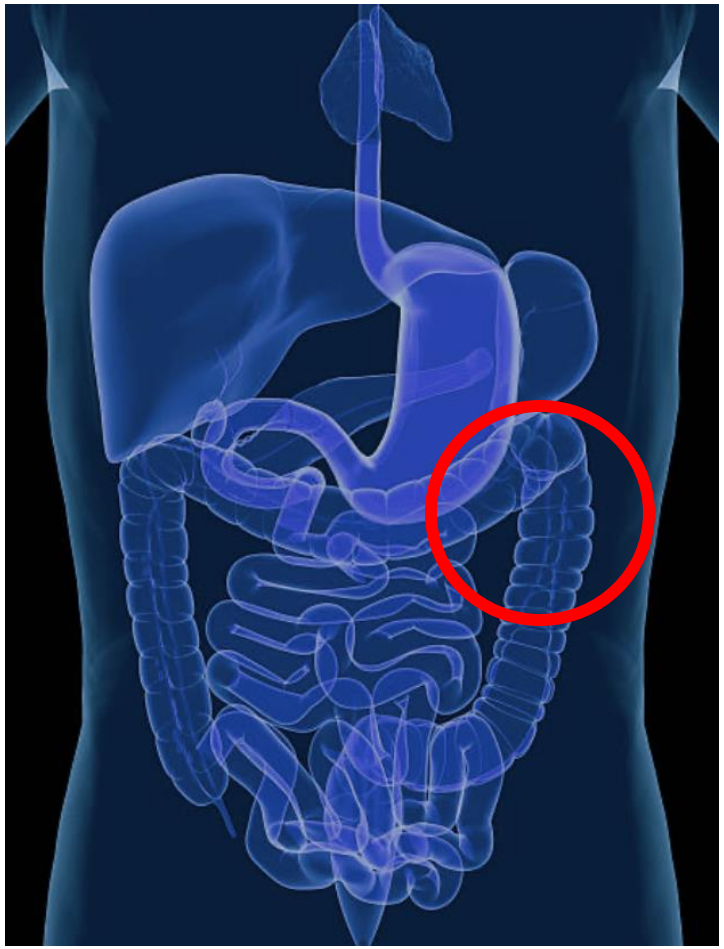
How to avoid mistakes

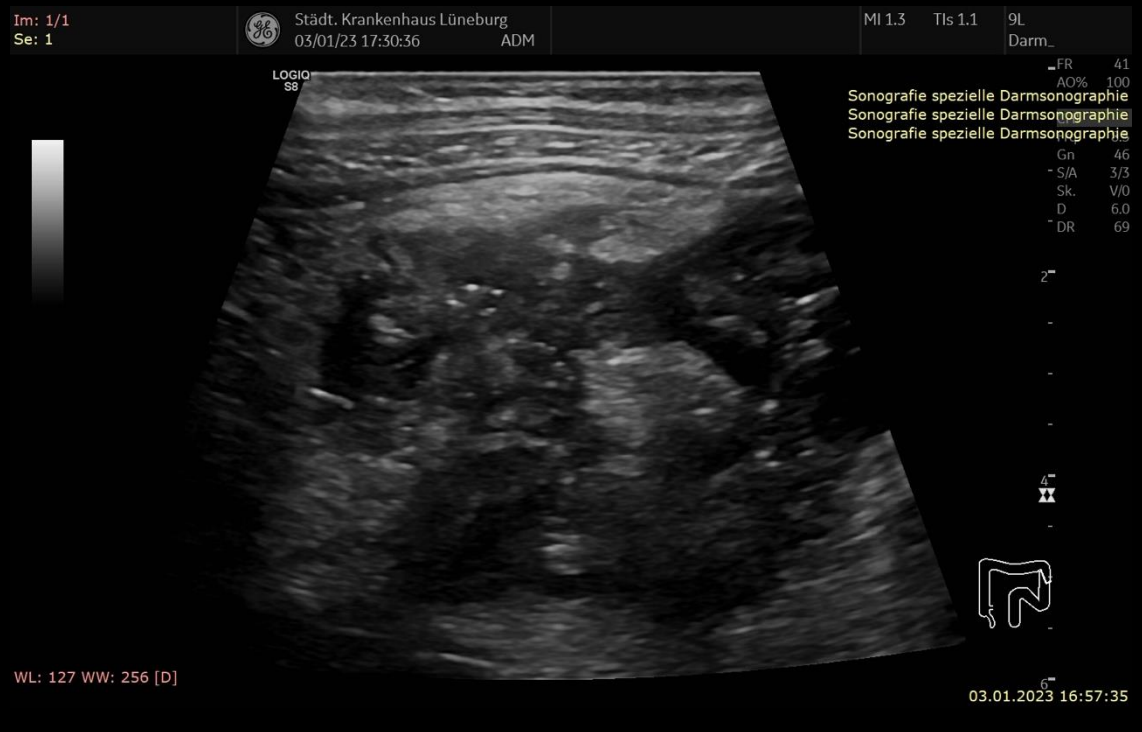
- (in adults)
- Always use both probes → in the long-term will save time
- Better start with the curved array to have fast identification of the problem and make your closed-up evaluation afterwards

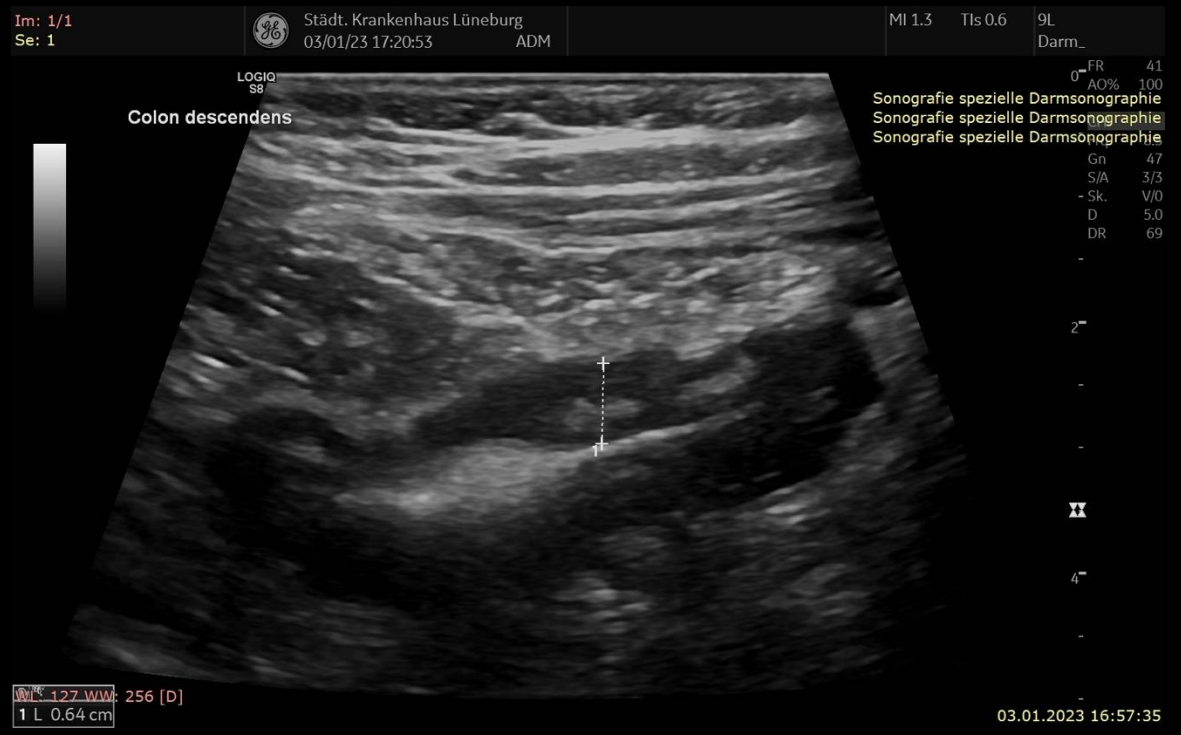
How to perform intestinal ultrasound: Descending colon





Intestinal ultrasound of the descending colon





To keep in mind

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

Mistaking the small bowel for the sigmoid

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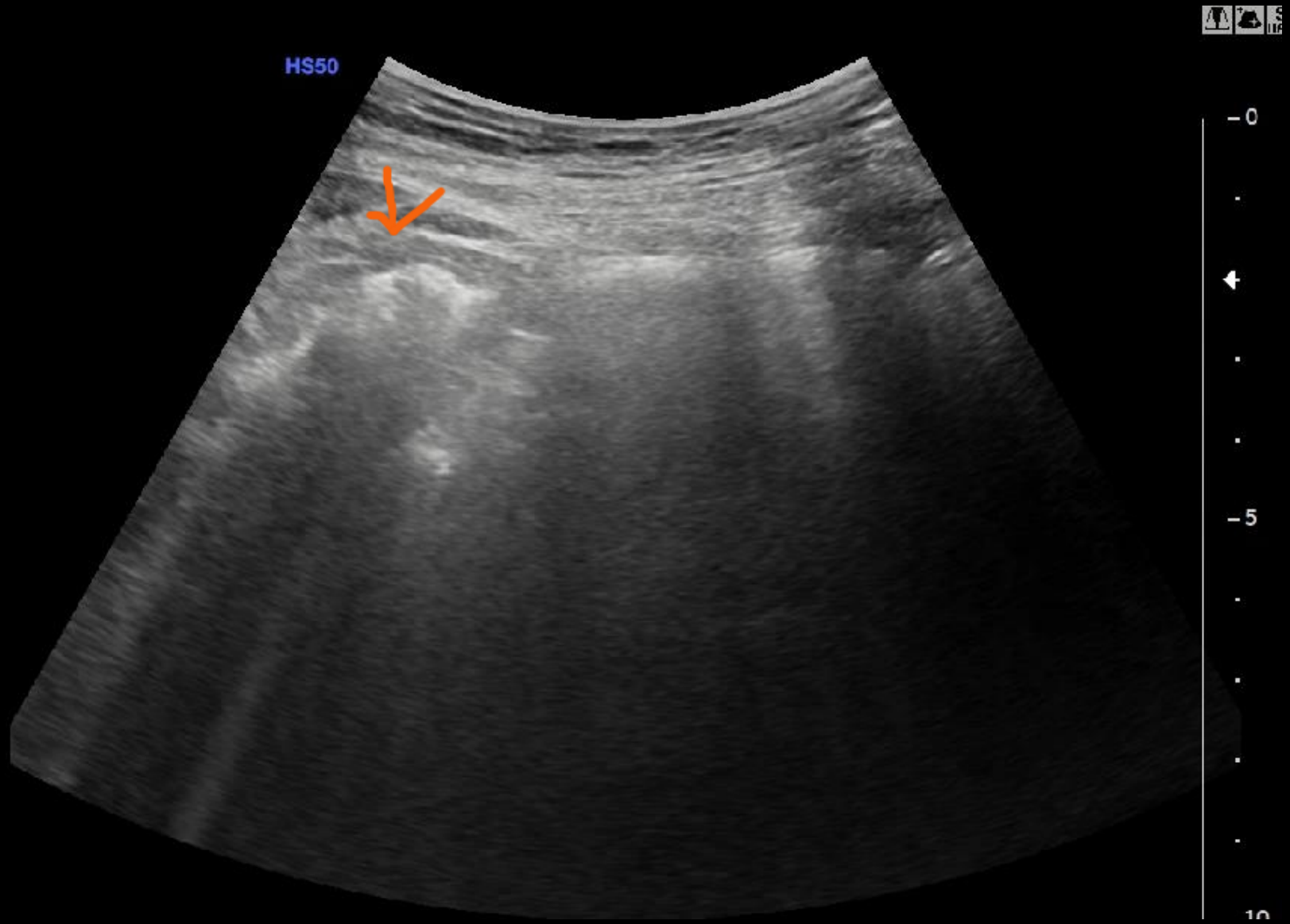

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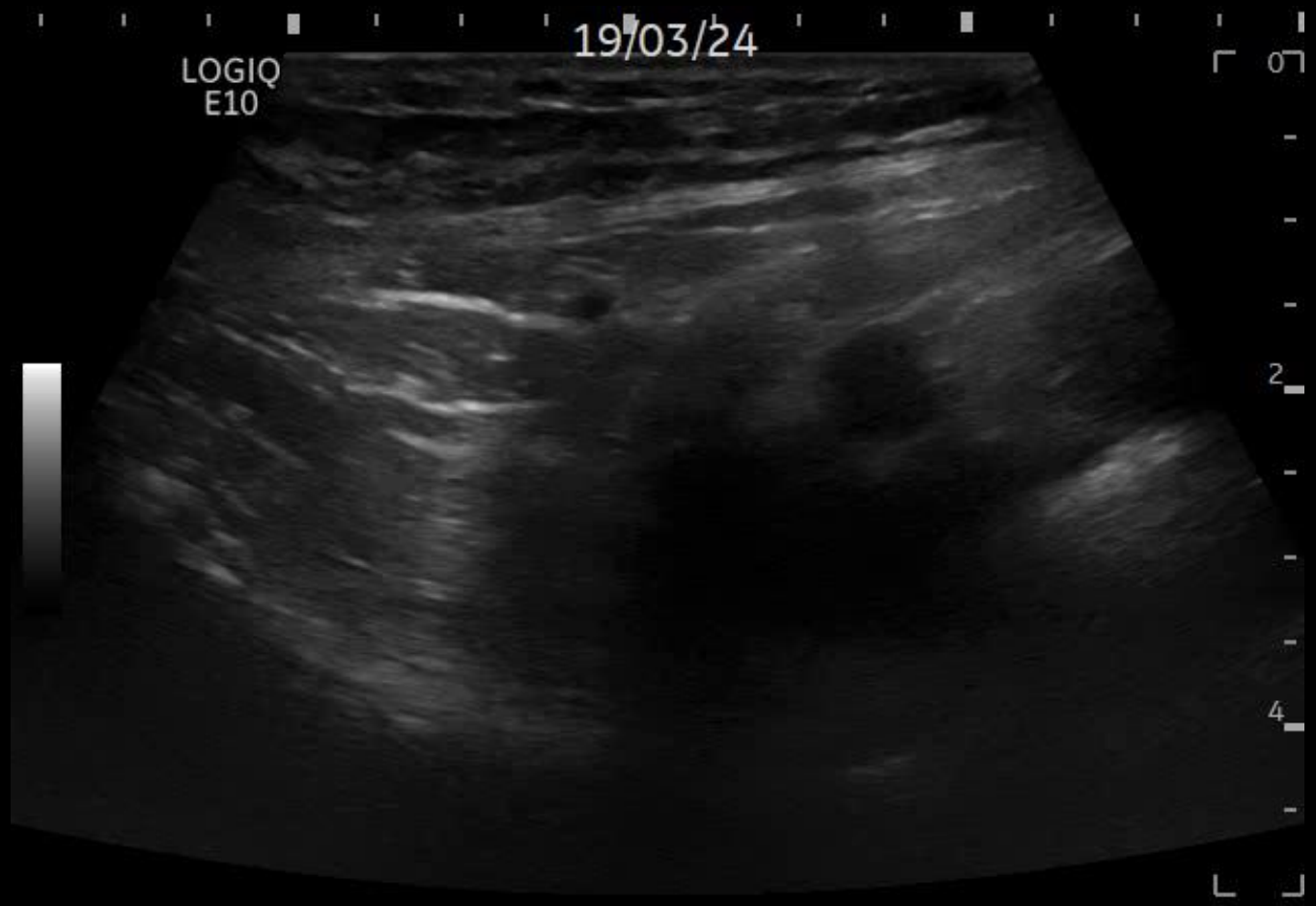
Small bowel ventral part of the sigmoid



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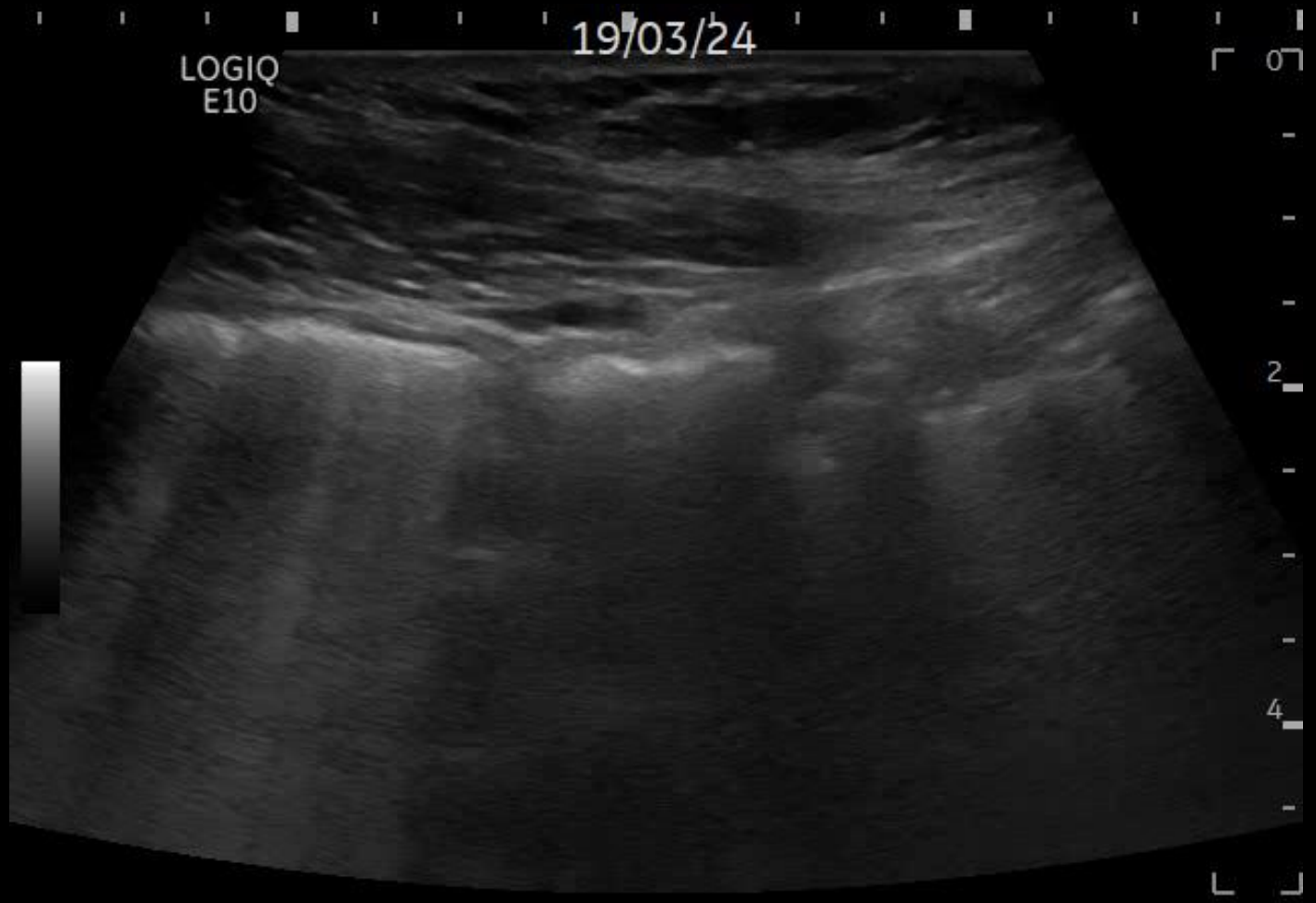
Same patient with graded compression



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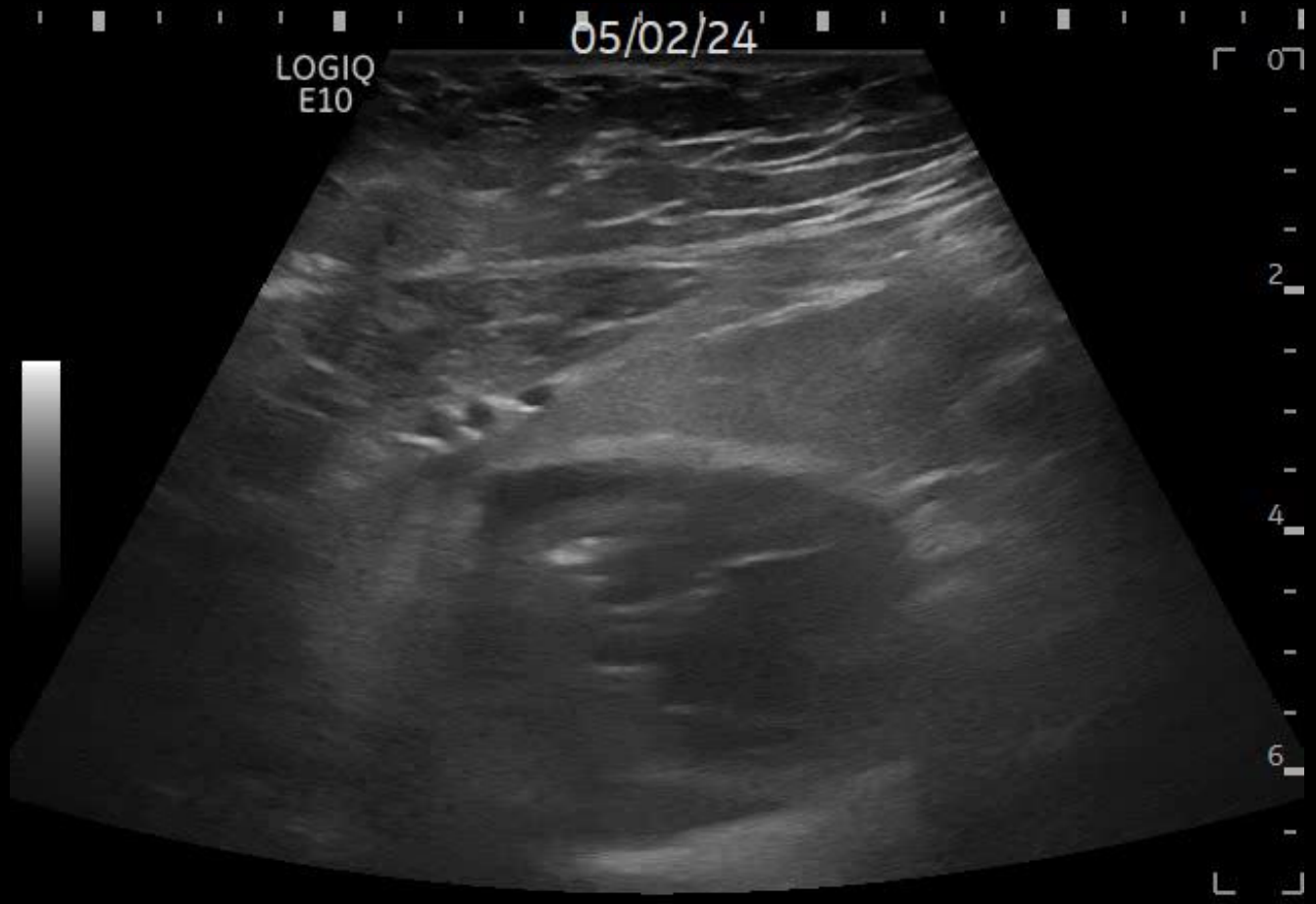
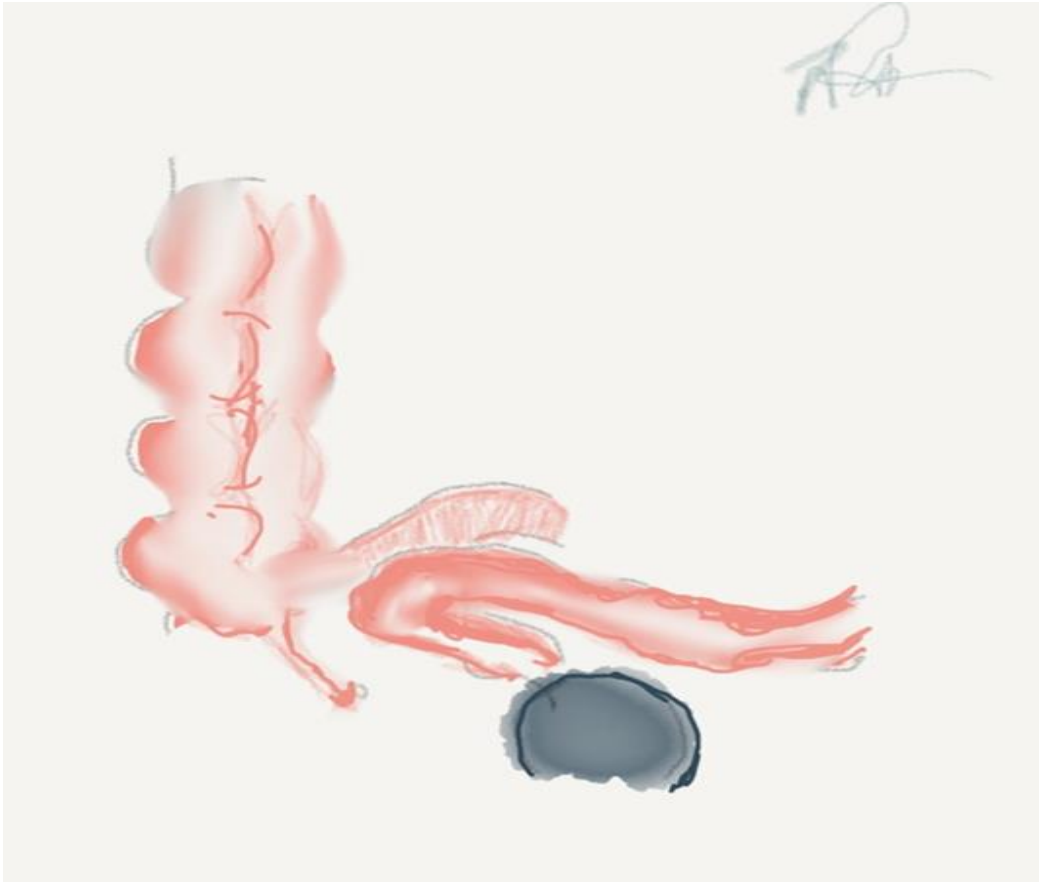
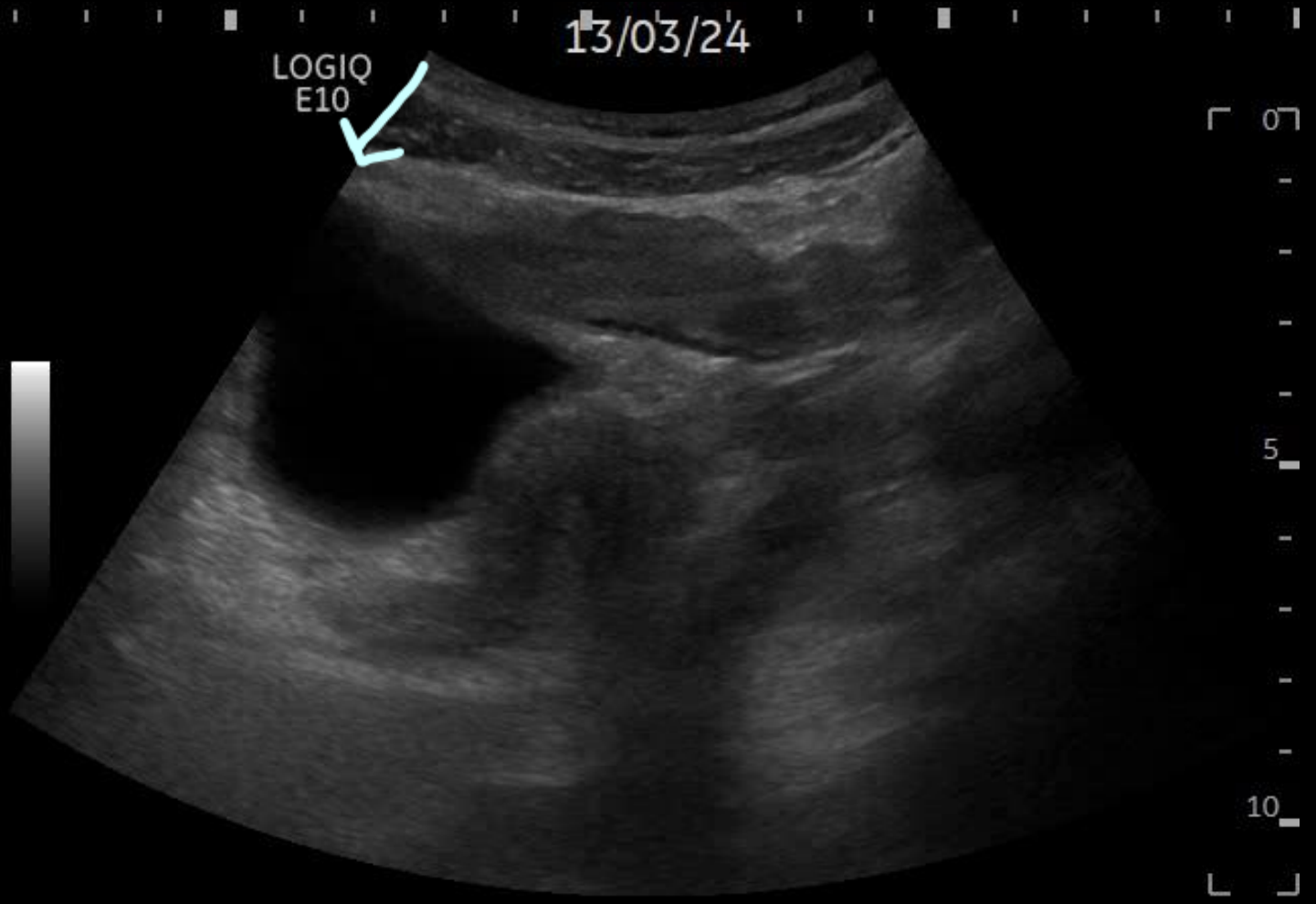
What is what in the right lower quadrant?



Mistaking the sigmoid for the TI

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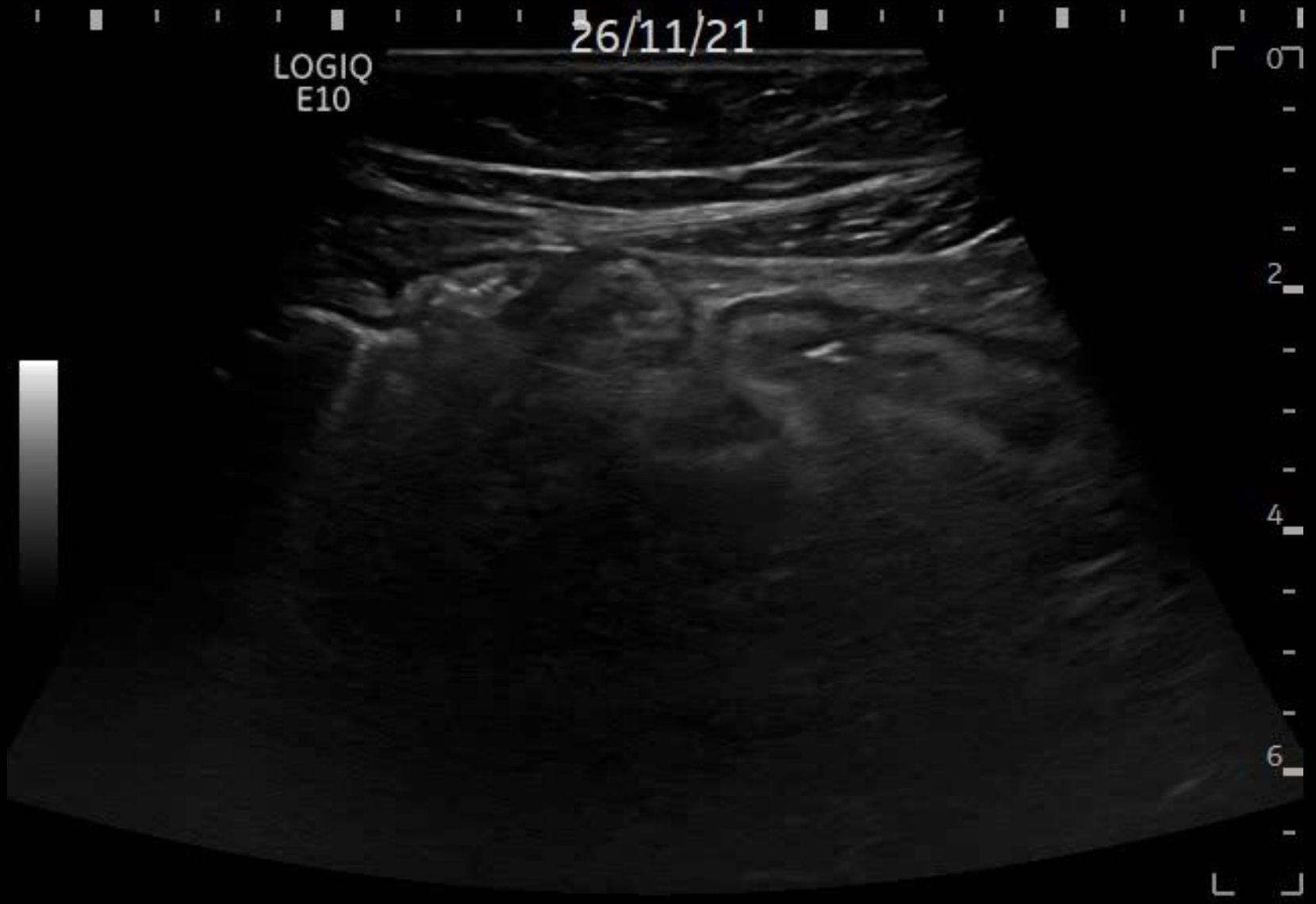
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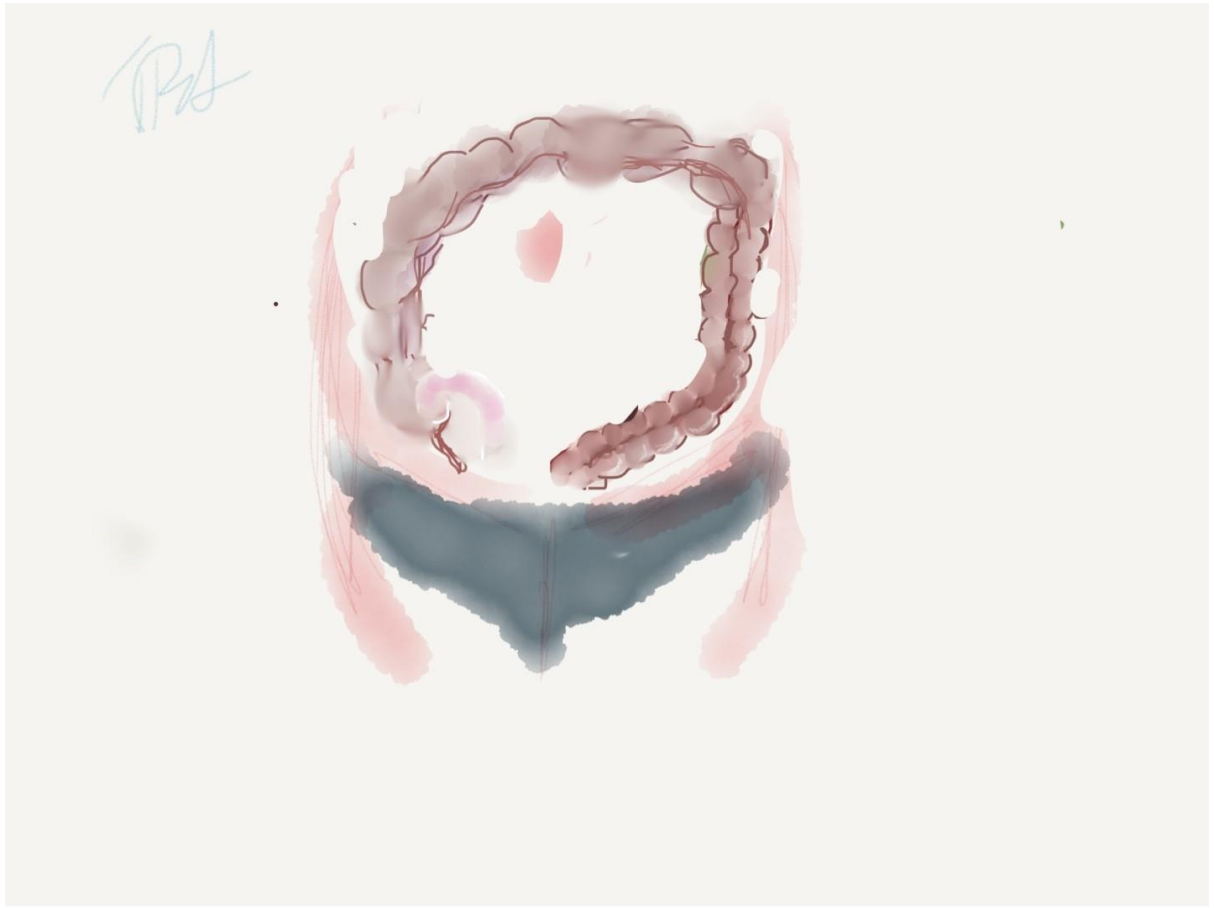
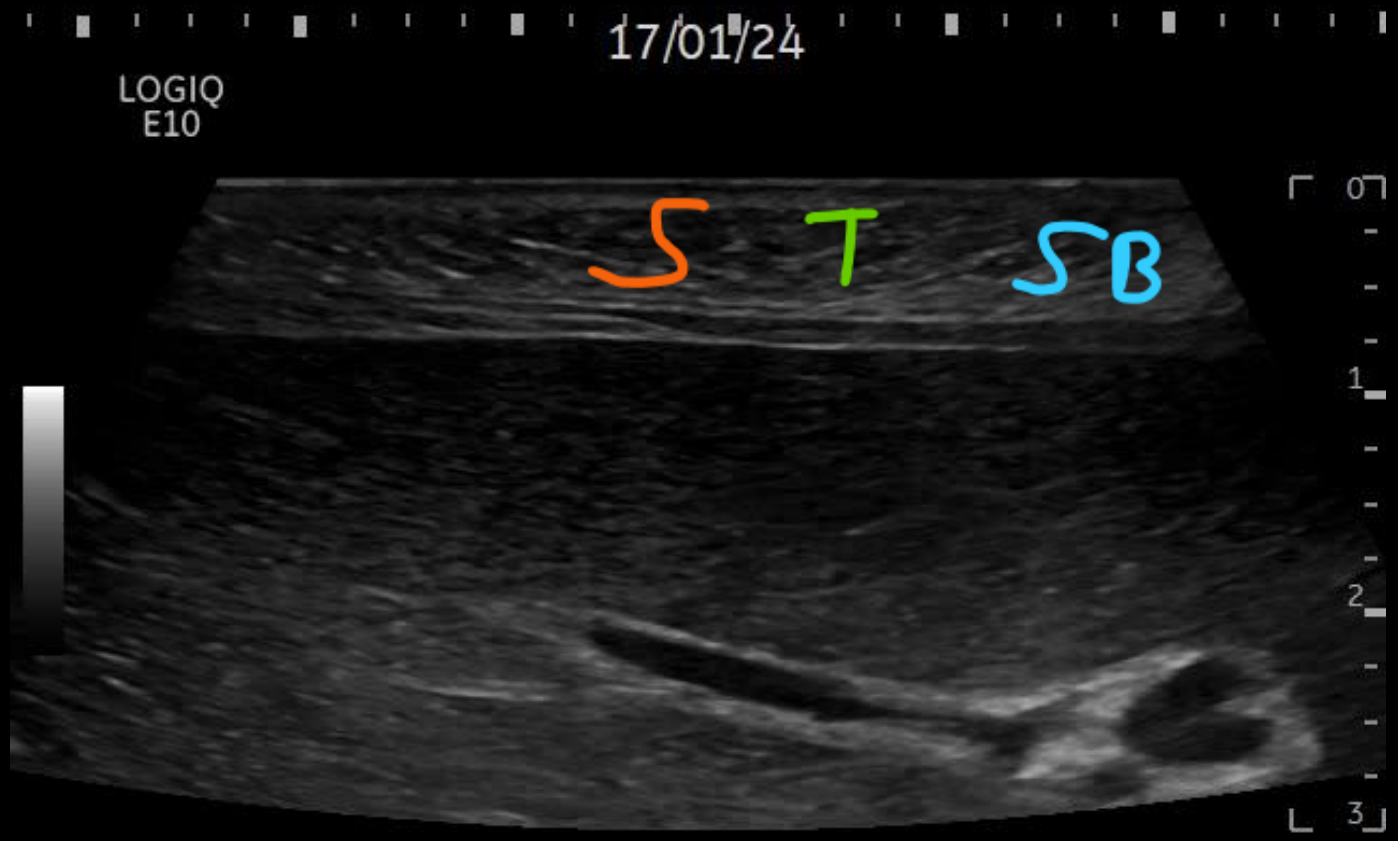
Variants of the transverse colon position

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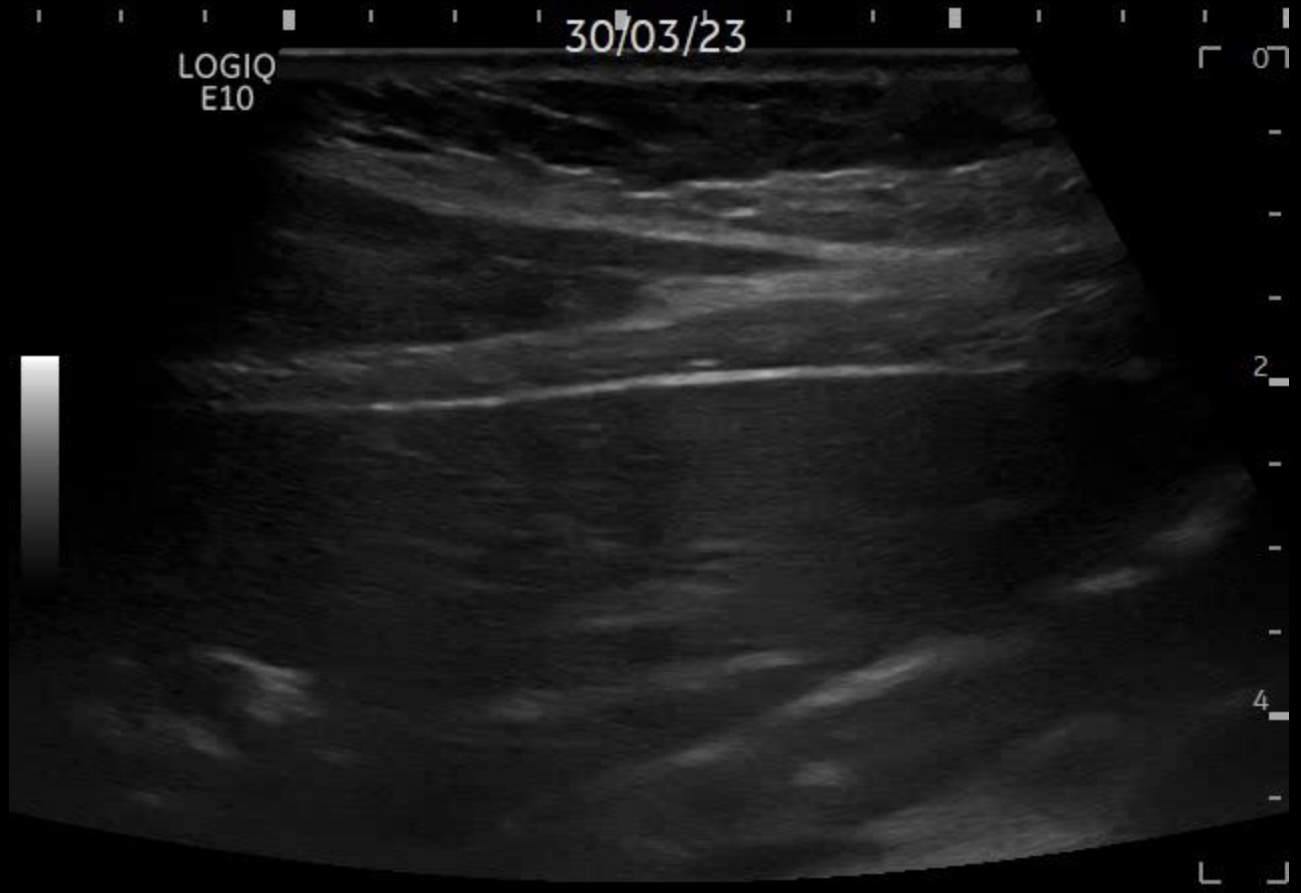
Finding the transverse colon, starting at the liver



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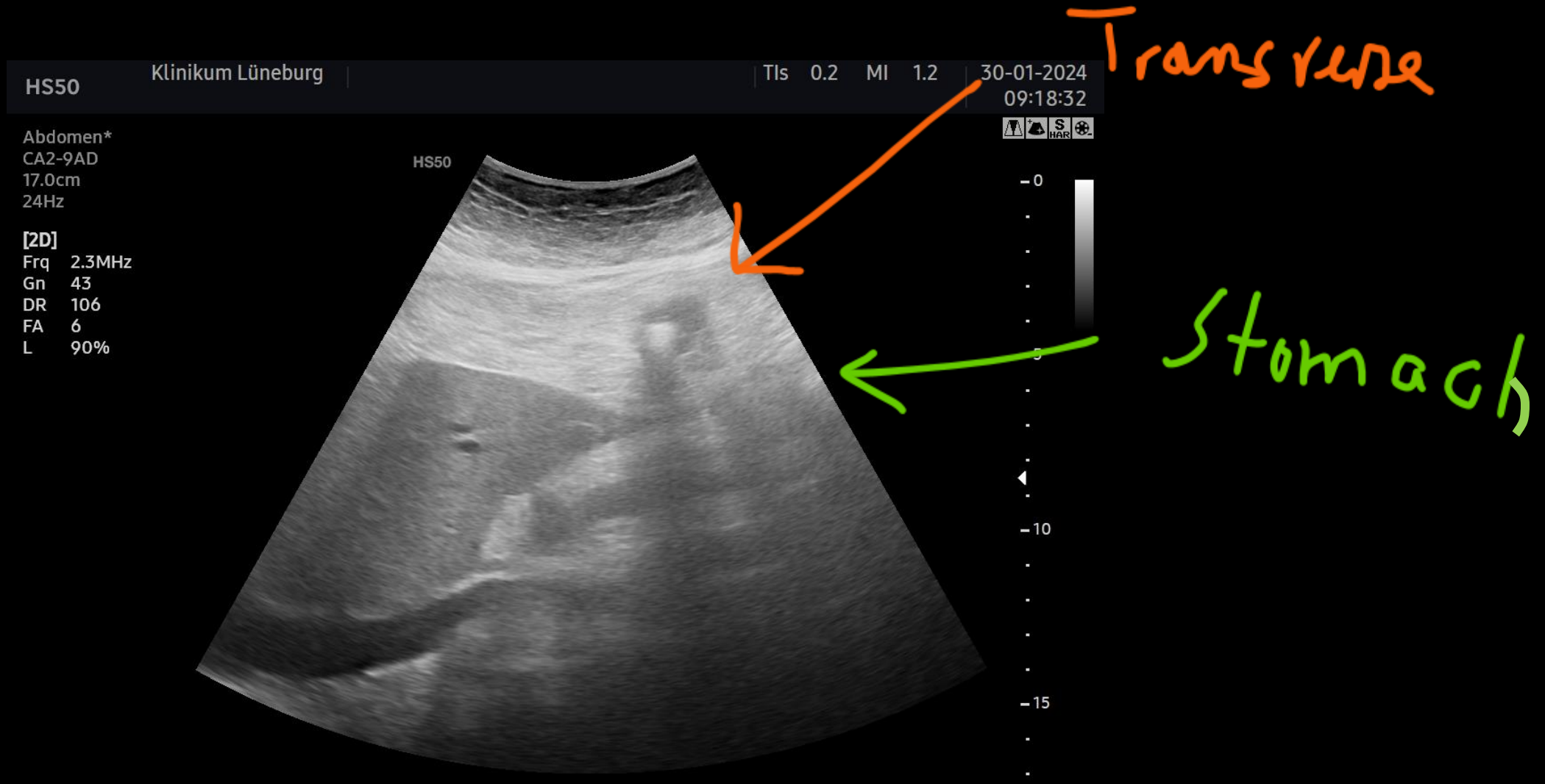

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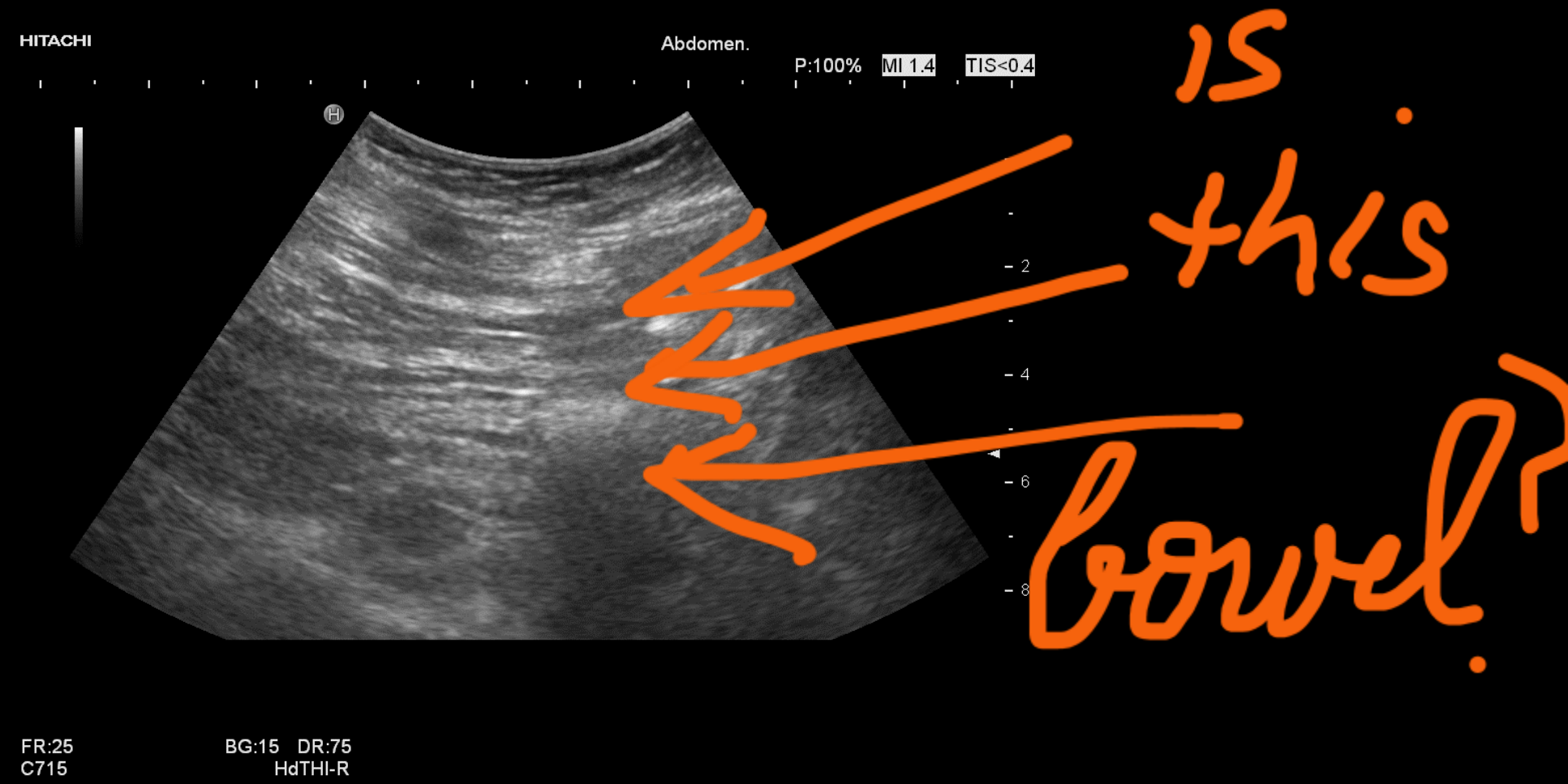
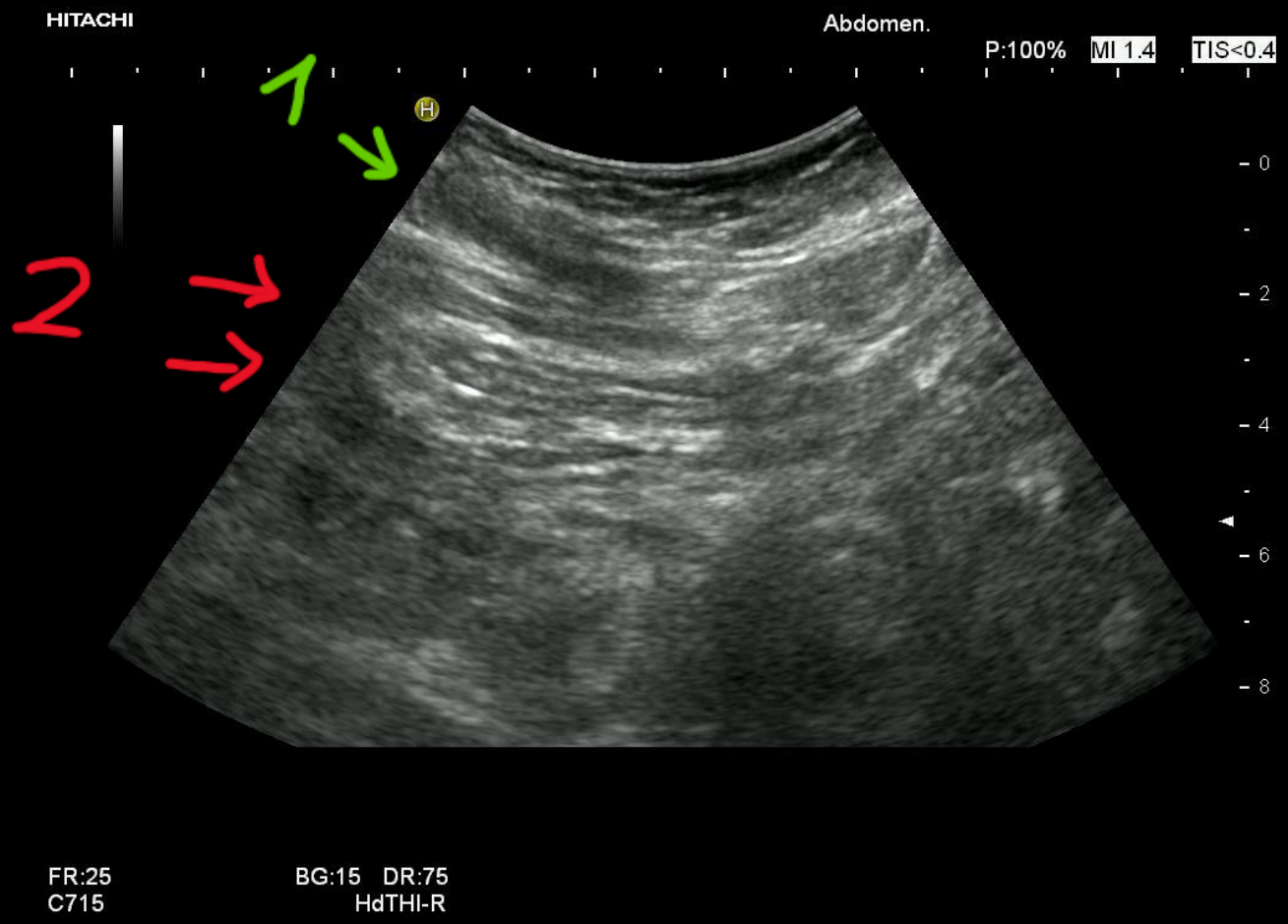
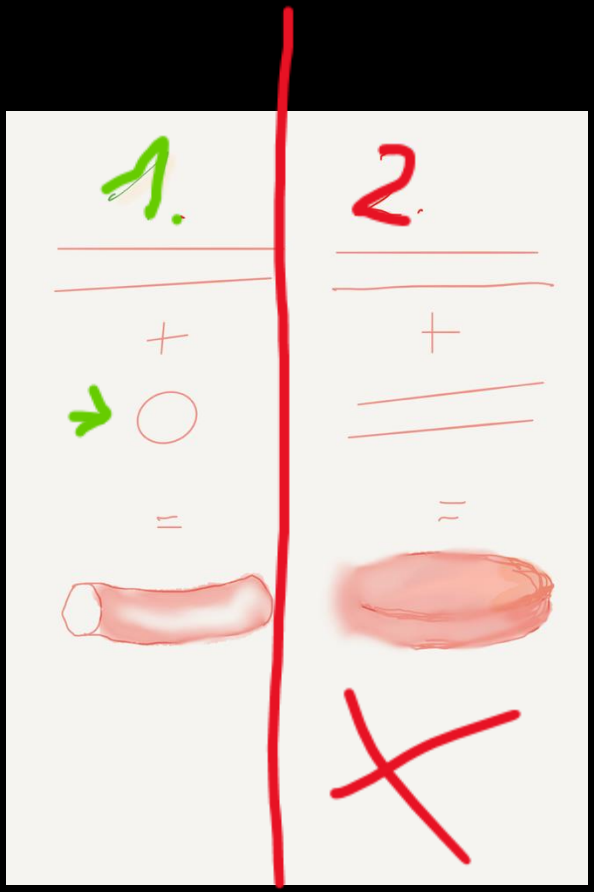
Always check on motility!
Follow the structures
Never judge a still image alone

False interpretation



How to avoid this : turn the probe!





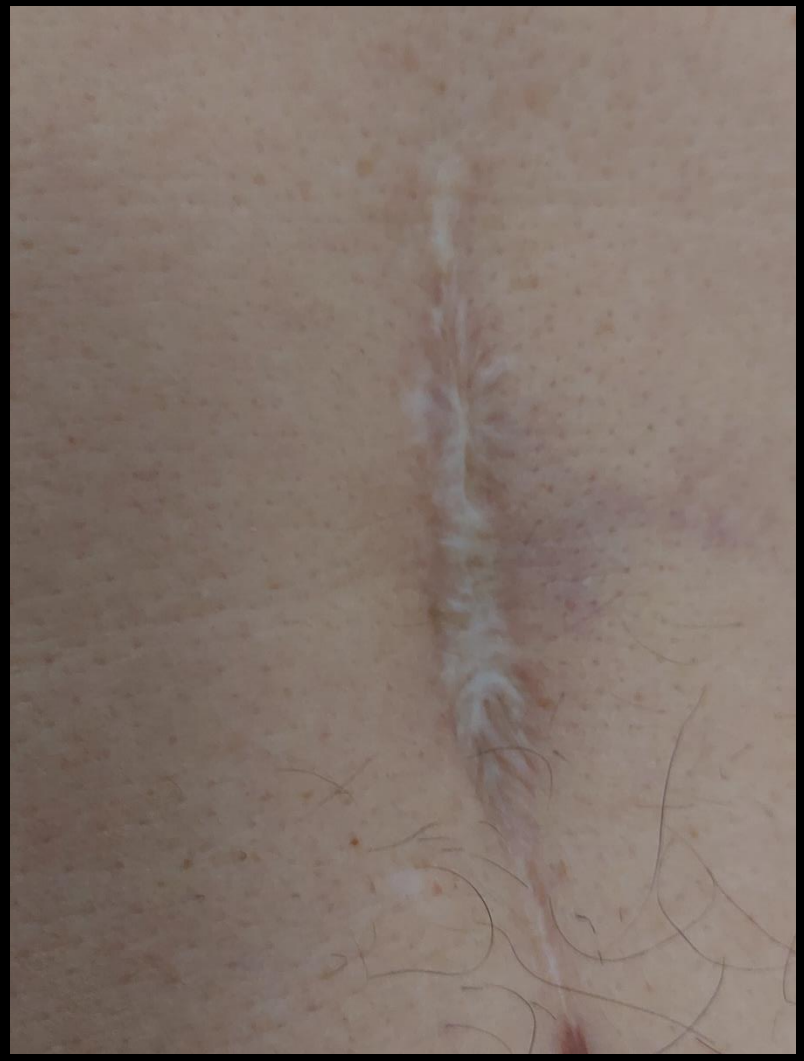
Mesenteric stratification, due to prolonged steroid therapy?
Sclerosing mesenteritis?

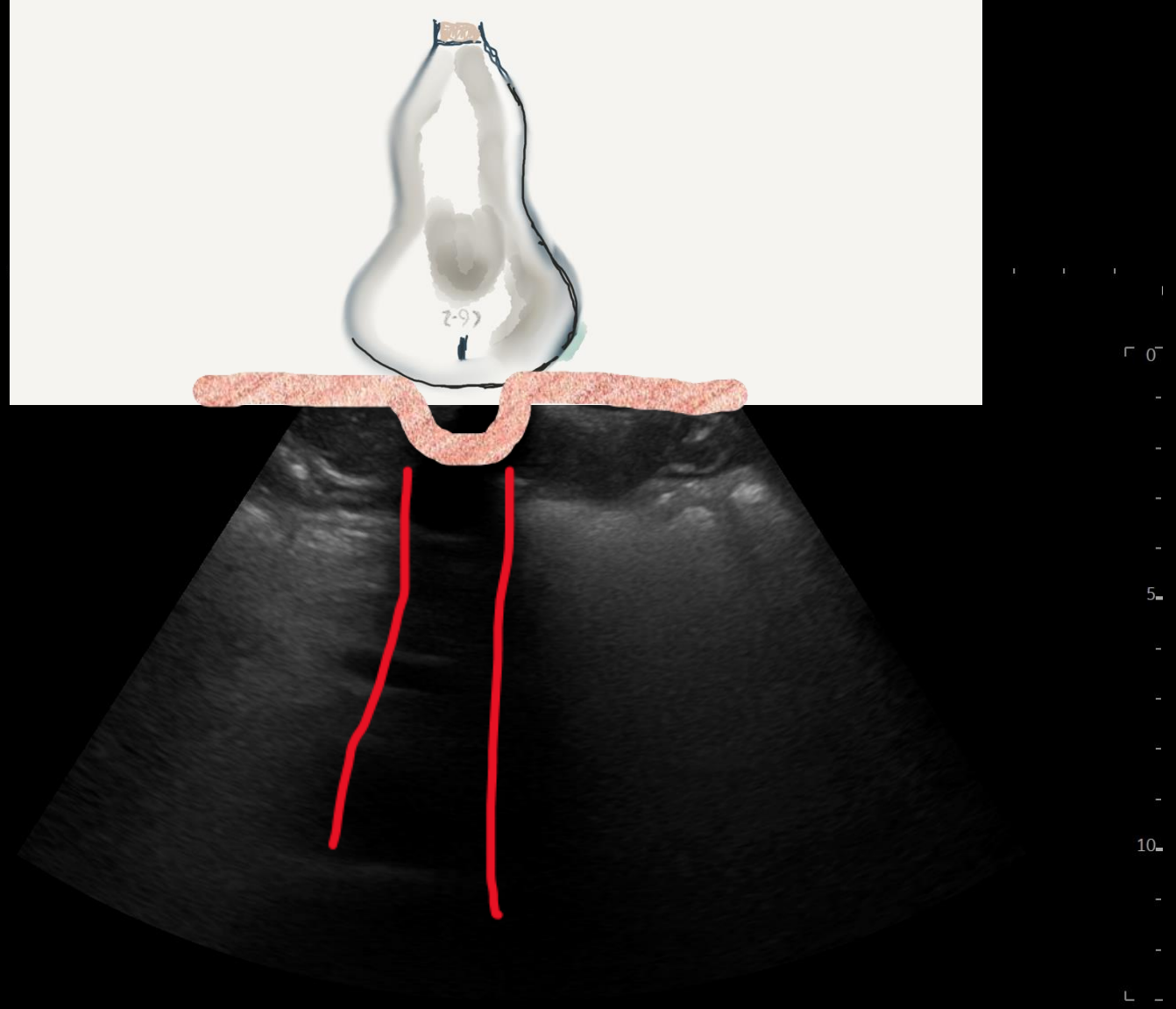
How to avoid this

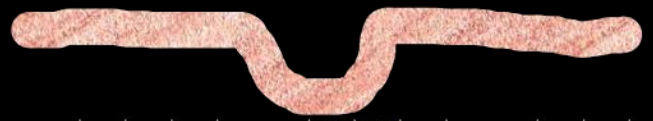
- Always turn the probe for proper identification of the bowel!
- Bowel has to be round in one dimension

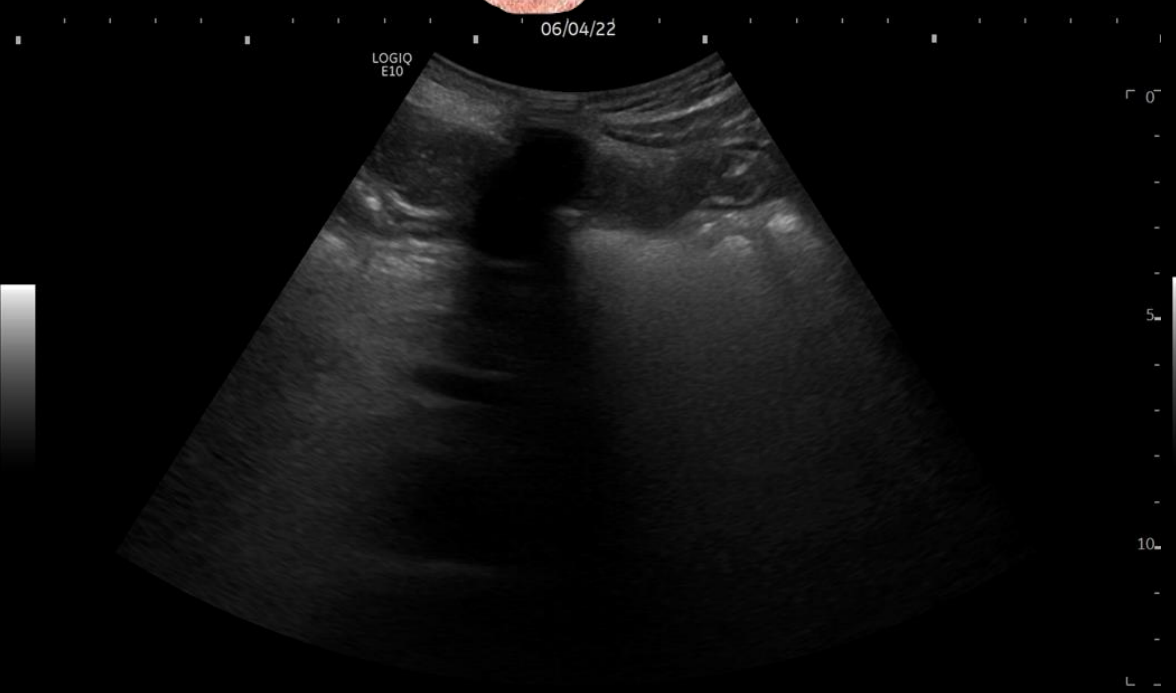
Postoperative anatomical changes: just 2 examples

Avoid problem „air“





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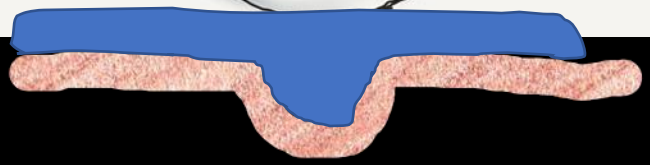

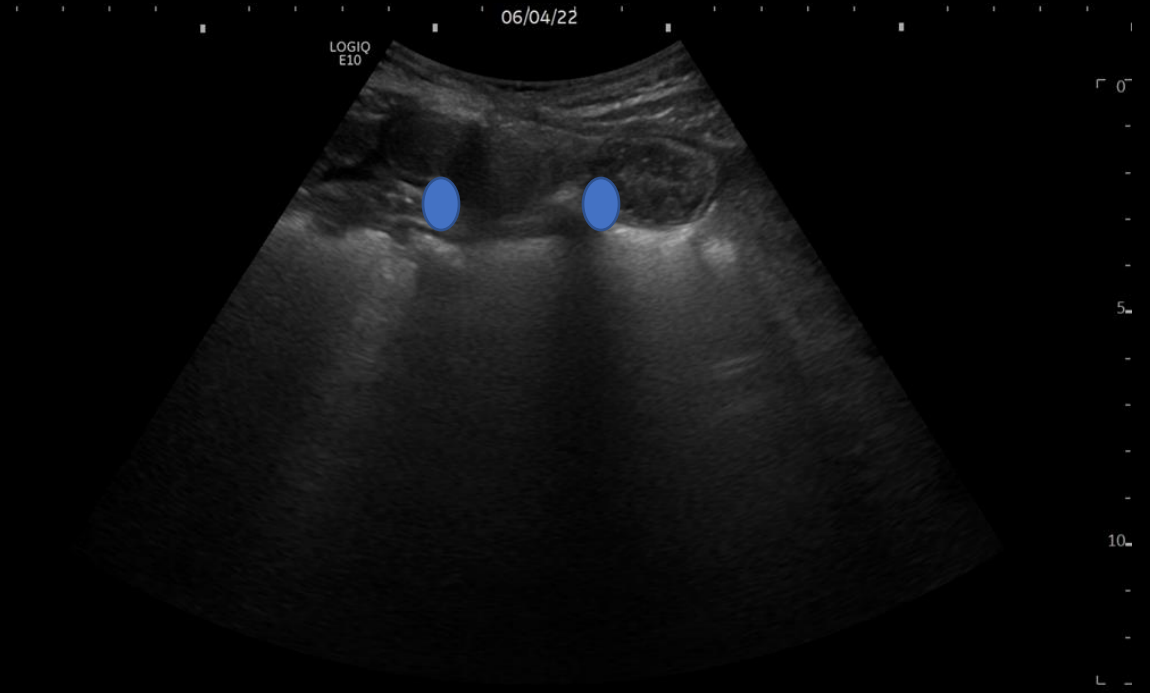
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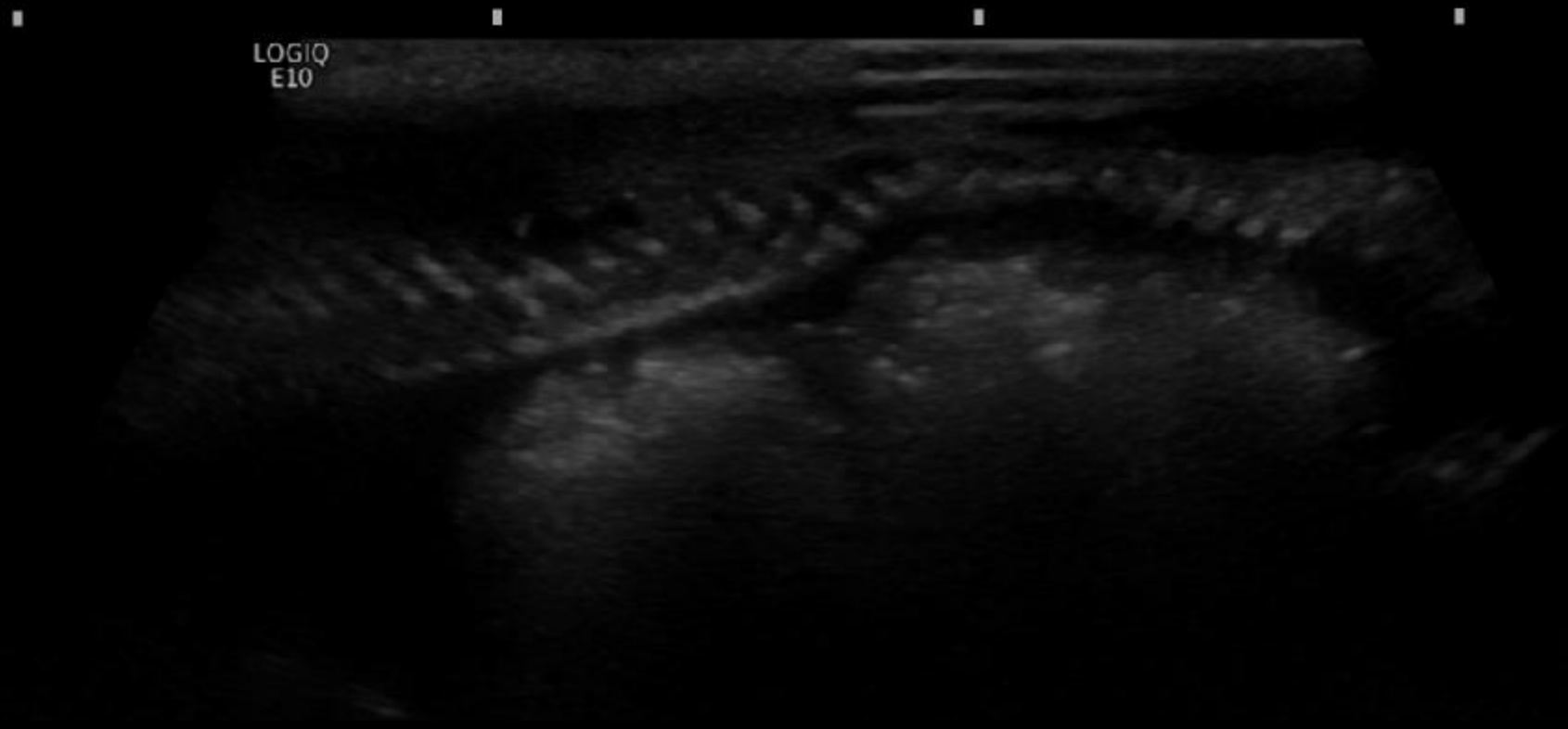
Funny shape of the sigmoid in the left lower abdomen?



Sublay-mesh after surgical hernia procedure

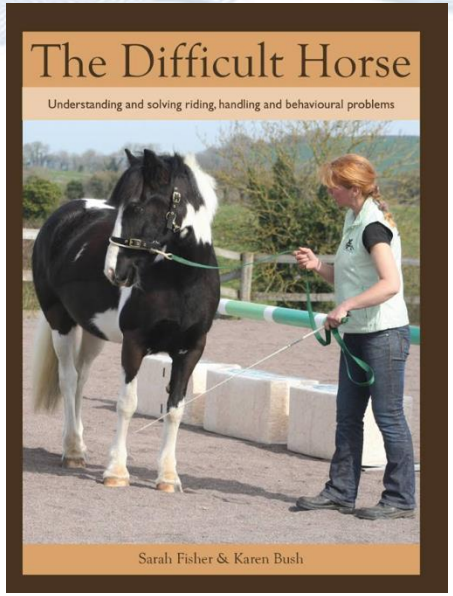
General advice

- 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

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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