How to perform intestinal Ultrasound

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Outline

- Preparation
- Transducers
- Orientation and scan planes
- What to look for
- Ultrasound technique
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Courtesy of Dr. Carolina Palmela, Loures
Preparation

- **No preparation needed** (fluids, laxatives, anti-flatulent medication)

- **Fasting**
  - Not necessary
  - >4 h – reduce amount of food and air in the small bowel
  - >6 h/overnight – recommended before assessing splanchnic blood flow and GI motility
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Courtesy of Dr. Carolina Palmela, Loures
Transducers

- **Convex** (low frequency)
  - 6.1 MHz
  - Overview
  - Deeper bowel segments

- **Linear/microconvex** (high frequency)
  - 13-3MHz/4-8 MHz
  - Higher resolution
  - Detailed examination
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Courtesy of Dr. Carolina Palmela, Loures
Scan planes in imaging

Courtesy of Dr. Carolina Palmela, Loures
Scan planes in intestinal ultrasound

Longitudinal  Cross-section

Courtesy of Dr. Carolina Palmela, Loures
Scan planes

Longitudinal

Cross-section

Courtesy of Dr. Carolina Palmela, Loures

Probe orientation

right  left  cranial  caudal

Courtesy of Dr. Carolina Palmela, Loures

Courtesy of Prof. Christian Maaser and Dr. Frauke Petersen, Luneburg
Probe orientation

caudal

right

left

cranial
Orientation – turning the probe

Courtesy of Dr. Carolina Palmela, Loures
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Courtesy of Dr. Carolina Palmela, Loures
Normal bowel wall in ultrasound

- 5 distinct sonographic layers
Identify the bowel wall

Courtesy of Dr. Carolina Palmela, Loures

Courtesy of Prof. Christian Maaser and Dr. Frauke Petersen, Luneburg
Small bowel vs colon

Normal jejunum
(empty, peristalsis, kerckring folds)

Normal colon
(air filled colon, no peristalsis)

Courtesy of Dr. Carolina Palmela, Loures

Courtesy of Dr. Rune Wilkens, Copenhagen
Small bowel vs colon

Courtesy of Dr. Carolina Palmela, Loures

Courtesy of Dr. Rune Wilkens, Copenhagen
Outline

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- **Ultrasound technique**

Courtesy of Dr. Carolina Palmela, Loures
Prepare the patient

Courtesy of Dr. Carolina Palmela, Loures

Courtesy of Prof. Christian Maaser and Dr. Frauke Petersen, Luneburg
Ultrasound technique – systematic approach

Colon

Small bowel

Courtesy of Dr. Carolina Palmela, Loures
Anatomical landmarks

Terminal ileum
Psoas
A. iliaca
V. iliaca
Bladder

Right lower Q

Courtesy of Dr. Carolina Palmela, Loures

Courtesy of Prof. Christian Maaser and Dr. Frauke Petersen, Luneburg
Ultrasound technique

Courtesy of Dr. Carolina Palmela, Loures
Ultrasound technique

Sigmoid colon

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Ultrasound technique

Sigmoid colon

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Ultrasound technique

Descending colon

Courtesy of Dr. Carolina Palmela, Loures

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Ultrasound technique

Transverse colon

Courtesy of Dr. Carolina Palmela, Loures

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Ultrasound technique

Ascending colon

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Terminal ileum

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Terminal ileum

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Ultrasound technique

Small bowel

Courtesy of Dr. Carolina Palmela, Loures
Take-home messages

- Preparation needed: none
- Transducers: 5-8 MHz
- Orientation
- Know what to look for, anatomical landmarks
- Ultrasound scan planes
- Ultrasound technique – systematic approach
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