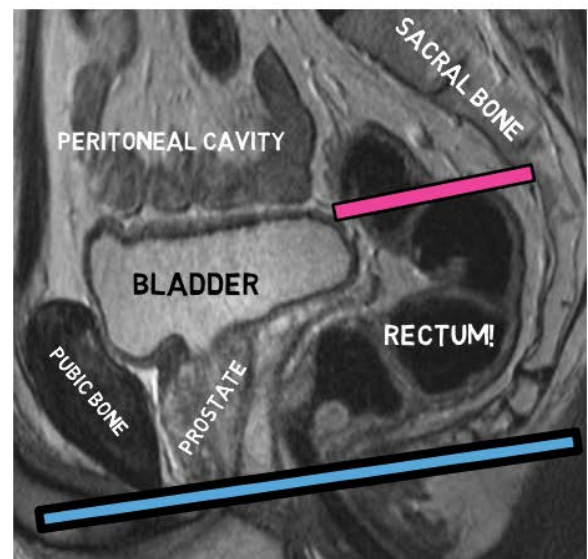
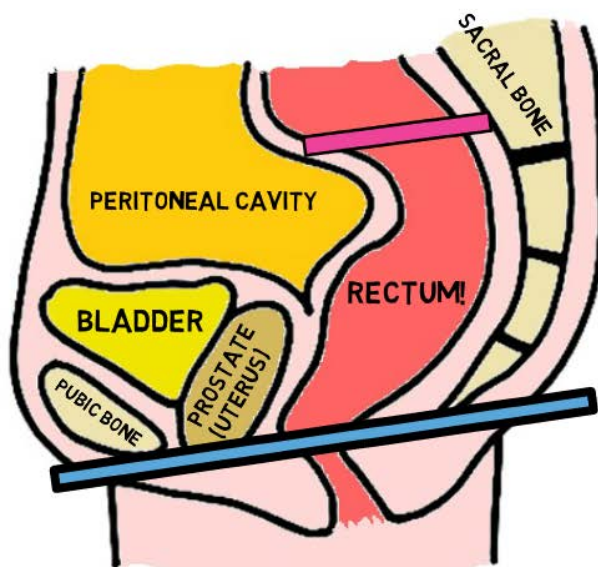


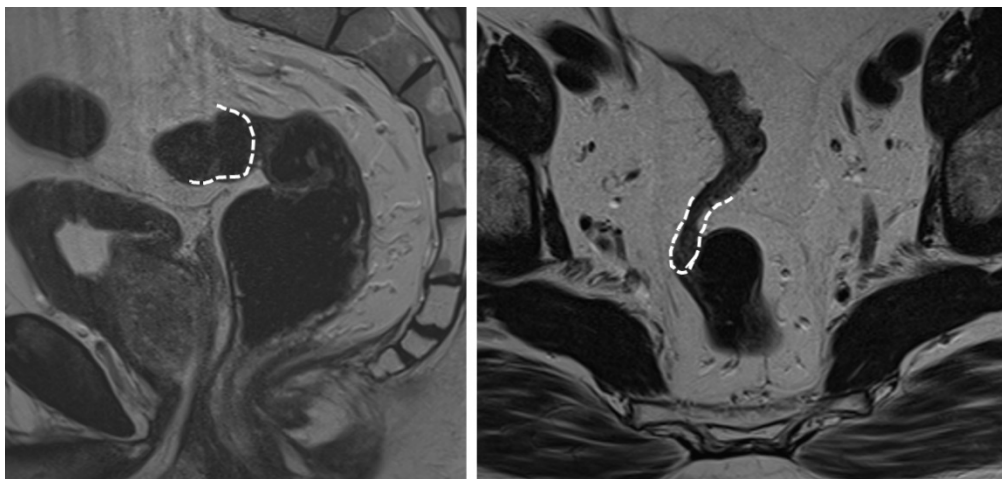
SUMMARY OF LEARNING POINTS

THE UPPER AND LOWER ANATOMICAL MARGINS OF THE RECTUM



Blue line: anorectal junction = anatomical junction between anal canal and distal rectum. Typically at the level of imaginary line between lower margin of sacral bone and pubic bone

Pink line: Sigmoid take-off = anatomical transition between rectum and sigmoid. Can be recognized on MRI as the point where the sigmoid sweeps horizontally on sagittal view and ventrally on axial view (see images below)

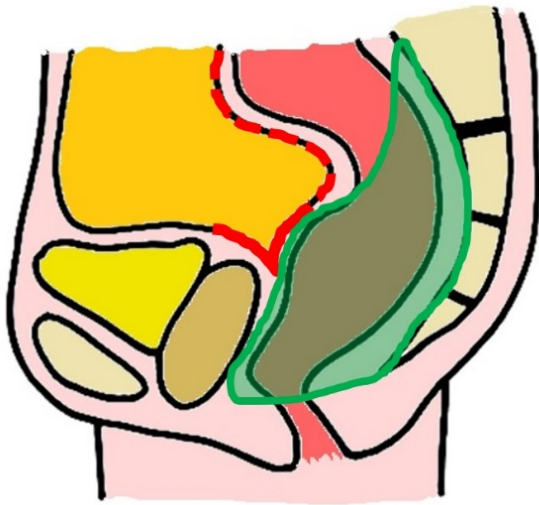


Dashed
white line

=

sigmoid
take-off

THE MESORECTUM, MESORECTAL FASCIA & PERITONEAL REFLECTION

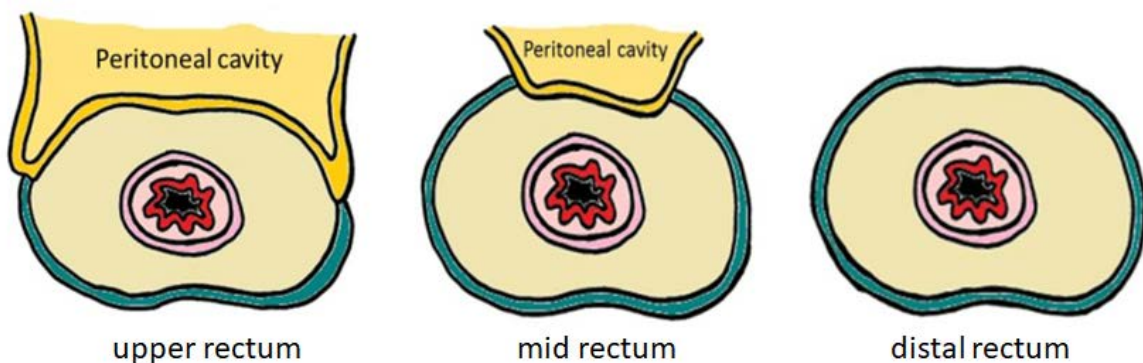
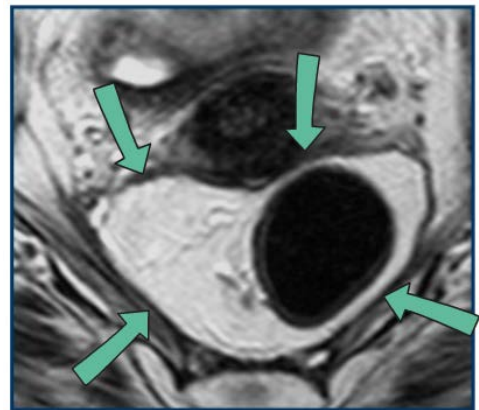


The mesorectum contains:

- Rectum
- Mesorectal fat
- Blood- and lymphatic vessels
- Lymph nodes

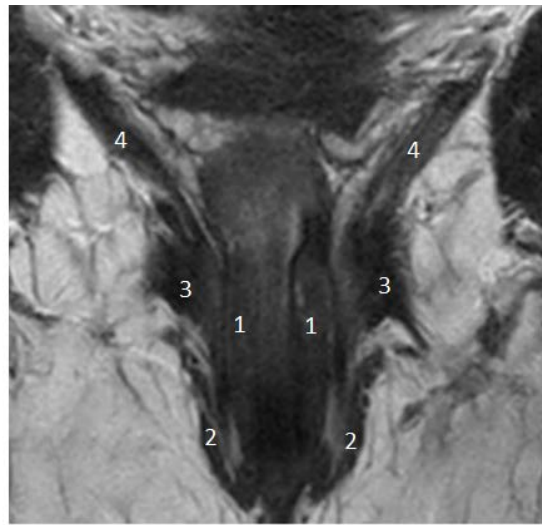
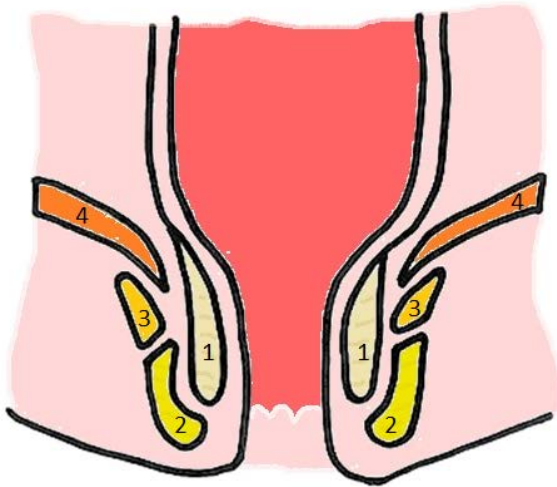
The **mesorectal fascia** (MRF) lines the mesorectum. Anteriorly it ends at the level of the **peritoneal reflection** (red line). Above this level, the mesorectum is lined by the peritoneum anteriorly (dashed red line)

The **mesorectal fascia** can easily be recognized as a thin hypointense line on axial MRI (green arrows)



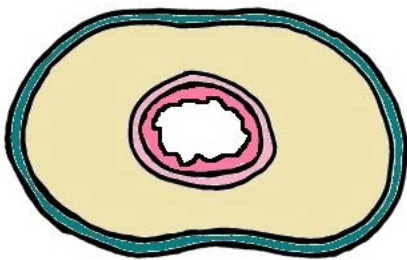
Schematic cross-sections of the upper, mid and distal rectum illustrating that the distal rectum is completely lined by the **MRF**, while the mid- and upper rectum are partially lined by the **peritoneum** (starting from the level of the anterior peritoneal reflection)

THE PELVIC FLOOR AND ANAL SPHINCTER

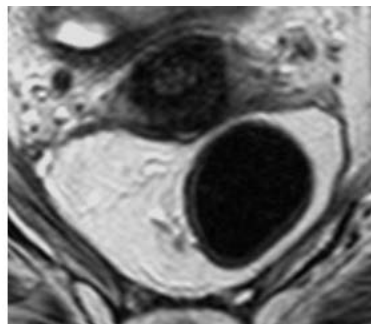


- 1 = internal anal sphincter
- 2 = external anal sphincter
- 3 = puborectal muscle
- 4 = levator ani muscle

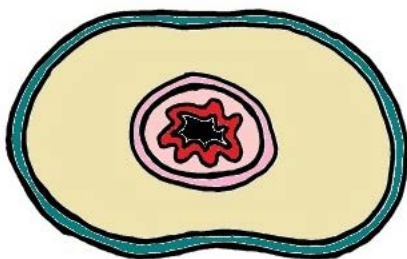
THE RECTAL WALL



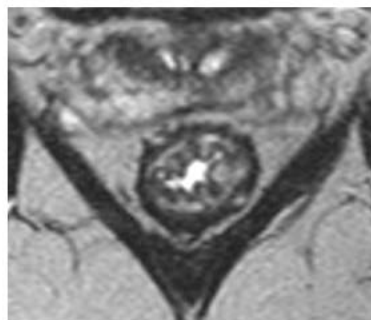
normal
(2-layered)



Typically the rectal wall has a two-layered appearance on MRI, consisting of an inner layer of **mucosa** (grey on MRI) and outer **muscularis propria** (black on MRI)



submucosal edema
(3-layered)

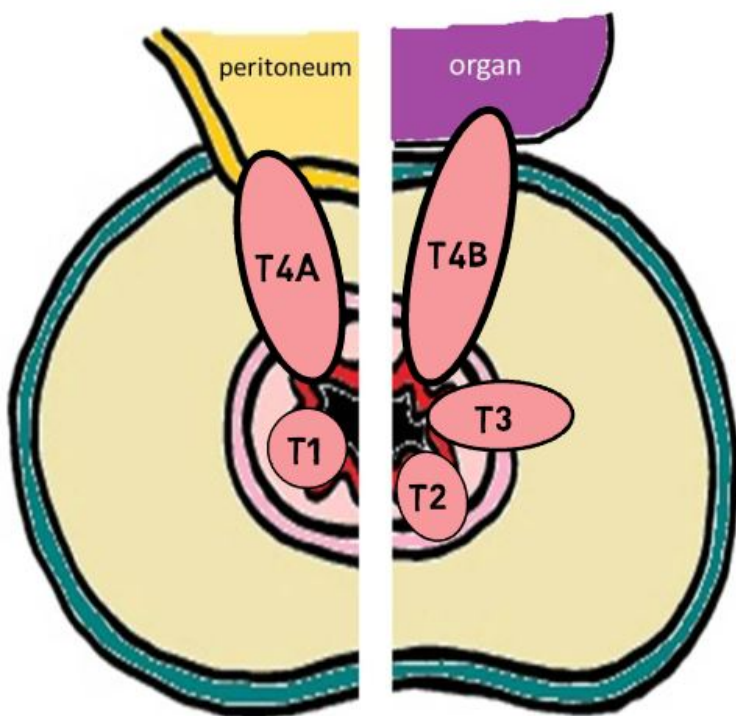


In case of submucosal edema, the rectal wall has a three-layered appearance on MRI, consisting of the **mucosa** (grey), **submucosa** (white) and **muscularis propria** (black)

T-STAGING IN RECTAL CANCER

TUMOR STAGES IN RECTAL CANCER

T1	Tumor invades submucosa
T2	Tumor invades muscularis propria
T3	Tumor invades through muscularis propria into perirectal fat T3a: <1 mm T3b 1-5 mm T3c 5-15 mm T3d >15 mm
T4a	Tumor invades peritoneum
T4b	Tumor invades adjacent organs/structures



Note:

Typically it is not possible on MRI to discern between T1 and T2 tumours, as MRI is not able to separately visualize the mucosa, submucosa and muscularis propria

Anterior tumours above the level of the anterior peritoneal reflection have a potential risk for peritoneal invasion (i.e. T4a stage). Below this level, the mesorectum is not lined by the peritoneum anteriorly, but by the mesorectal fascia (N.B. MRF invasion without organ invasion indicates a T3 tumour)