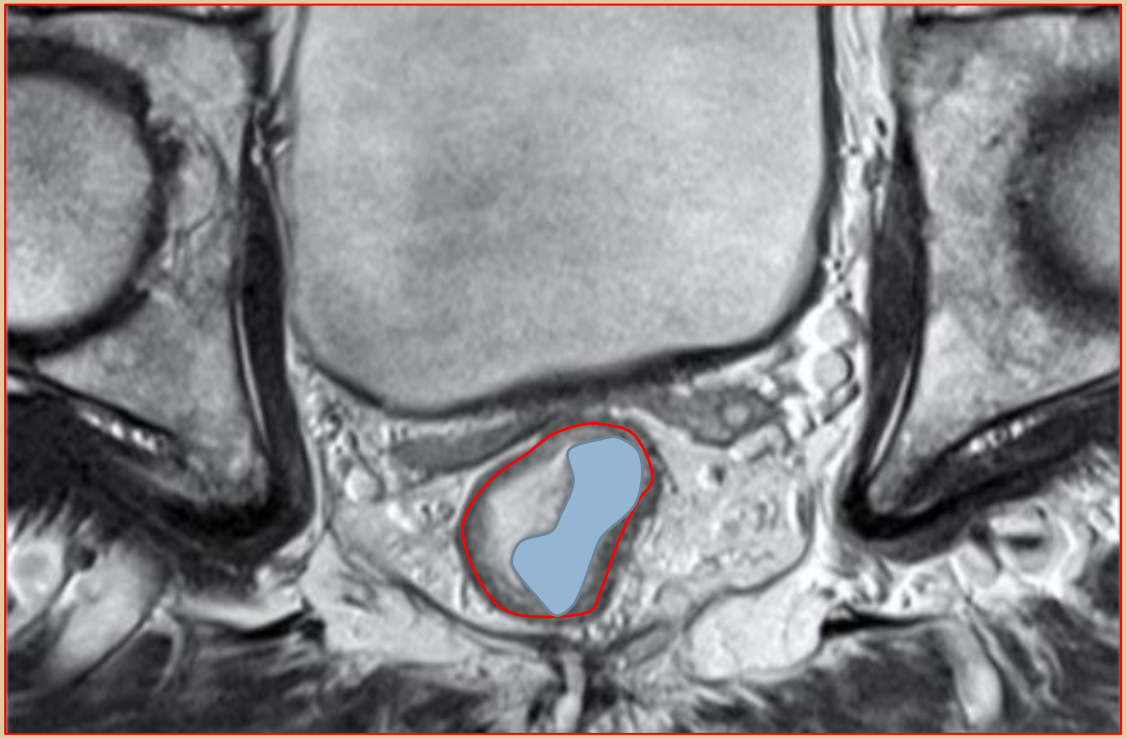
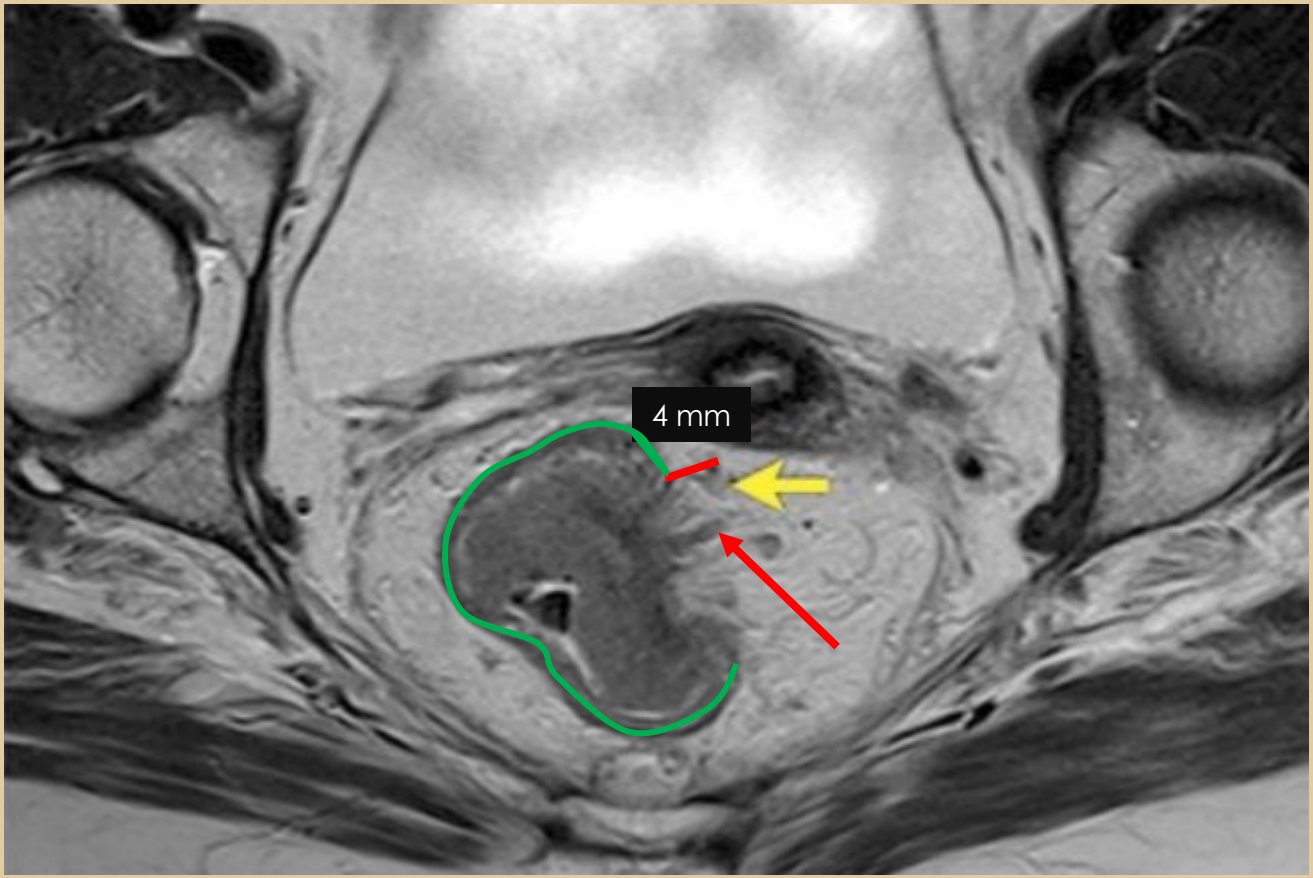
# MRI of T staging and others

# MRI: T1/T2: limited to bowel wall

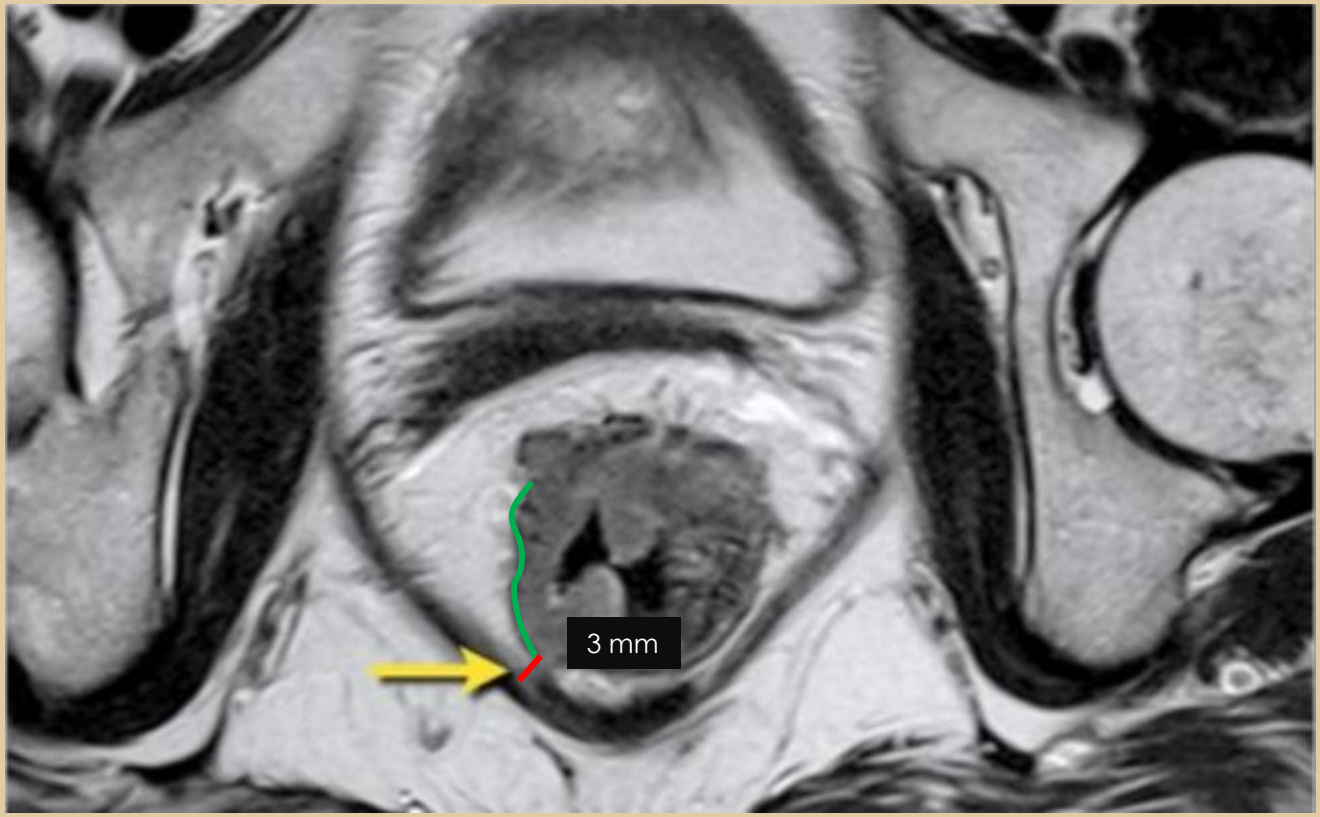


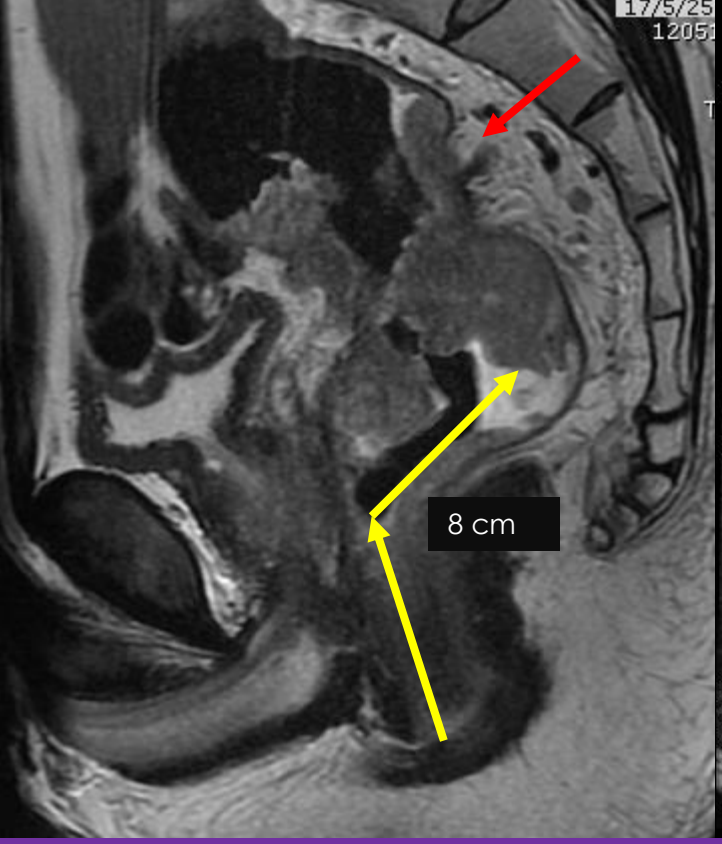
- MR imaging is unable to distinguish between T1 and T2 tumors (If needed, use EUS).
- Key finding in T1 and T2 is an intact external muscularis layer, which is identified as a hypointense thin line surrounding the rectum

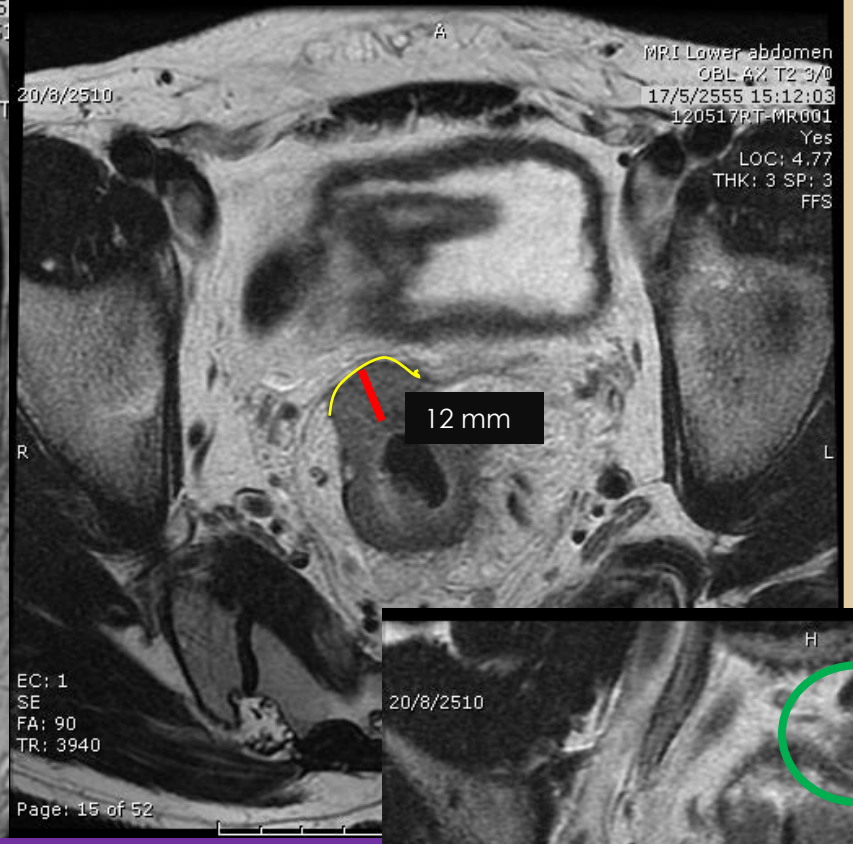
# MRI: T3b (4mm), MRF-, EMVI +

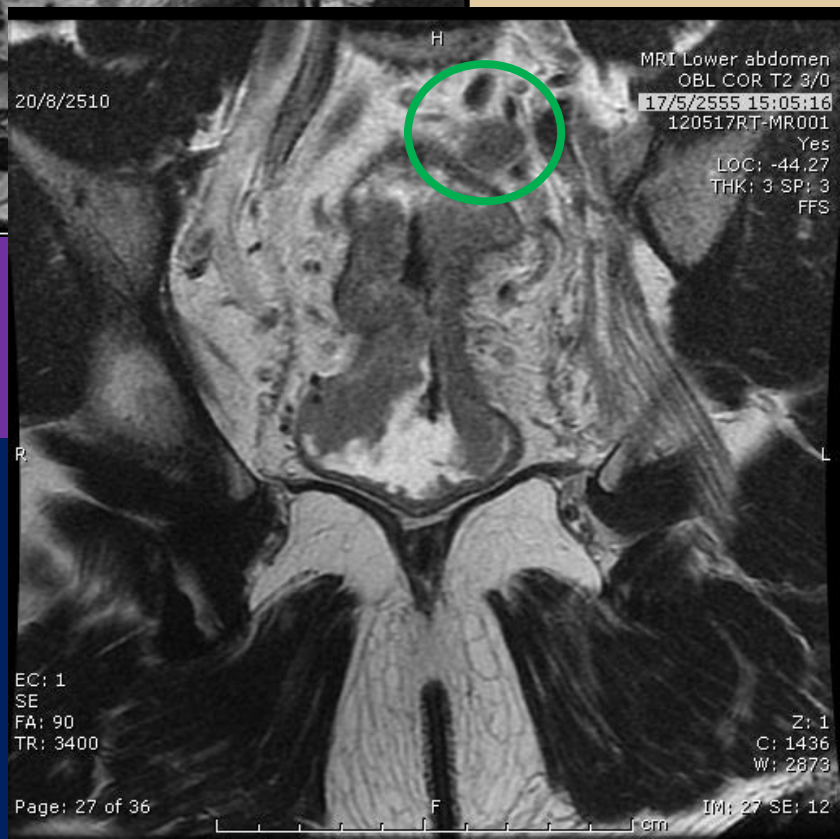


# MRI: T3b (3 mm), MRF+





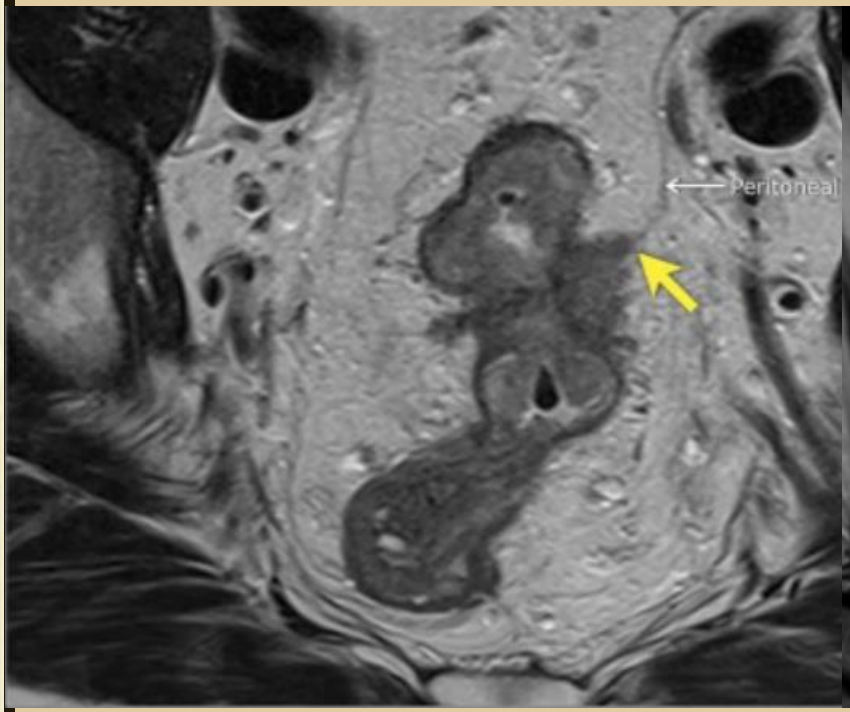



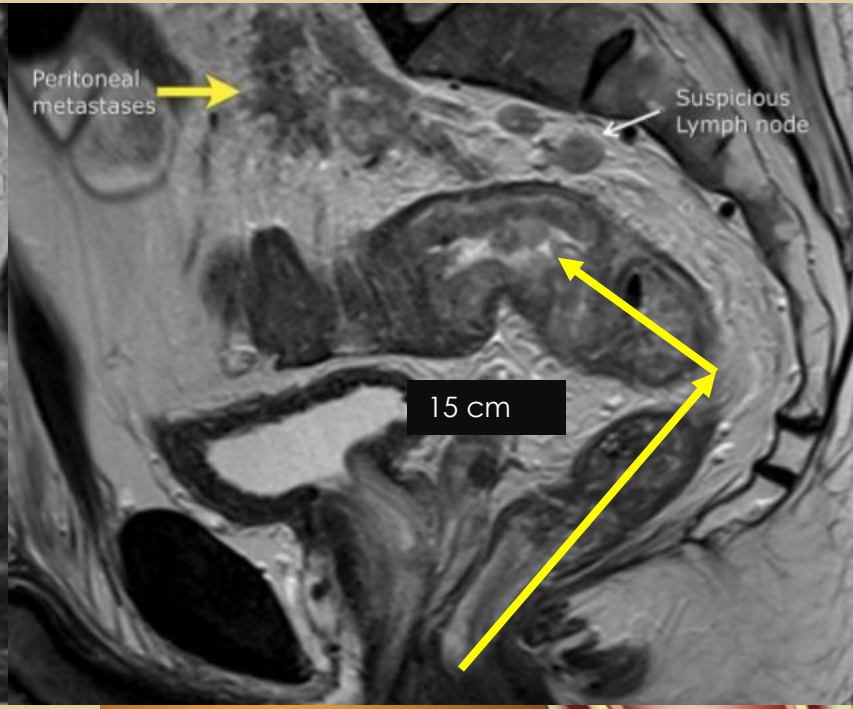




# MRI: T3c (12 mm) N1, MRF+, EMVI+

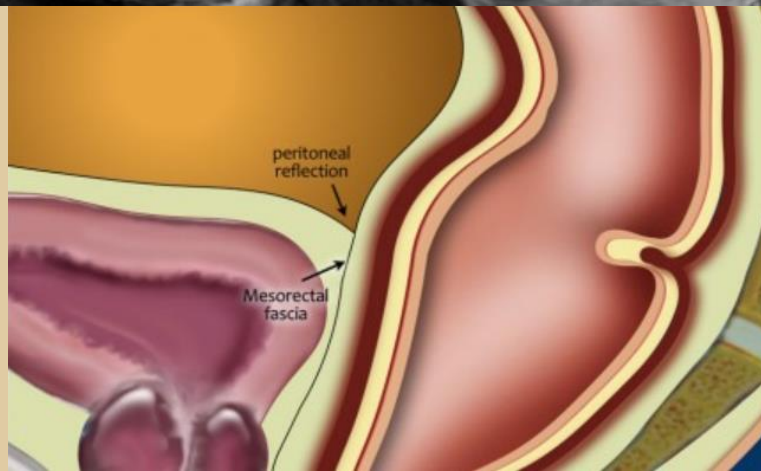
DIS: 8 cm = mid rectal cancer
T : T3 c (12 mm extramural depth)
A: N/A
N: N1 (+ve 1 node)
C: +ve MRF
E: +ve EMVI

# MRI: T4aN1: invasion of peritoneal reflection

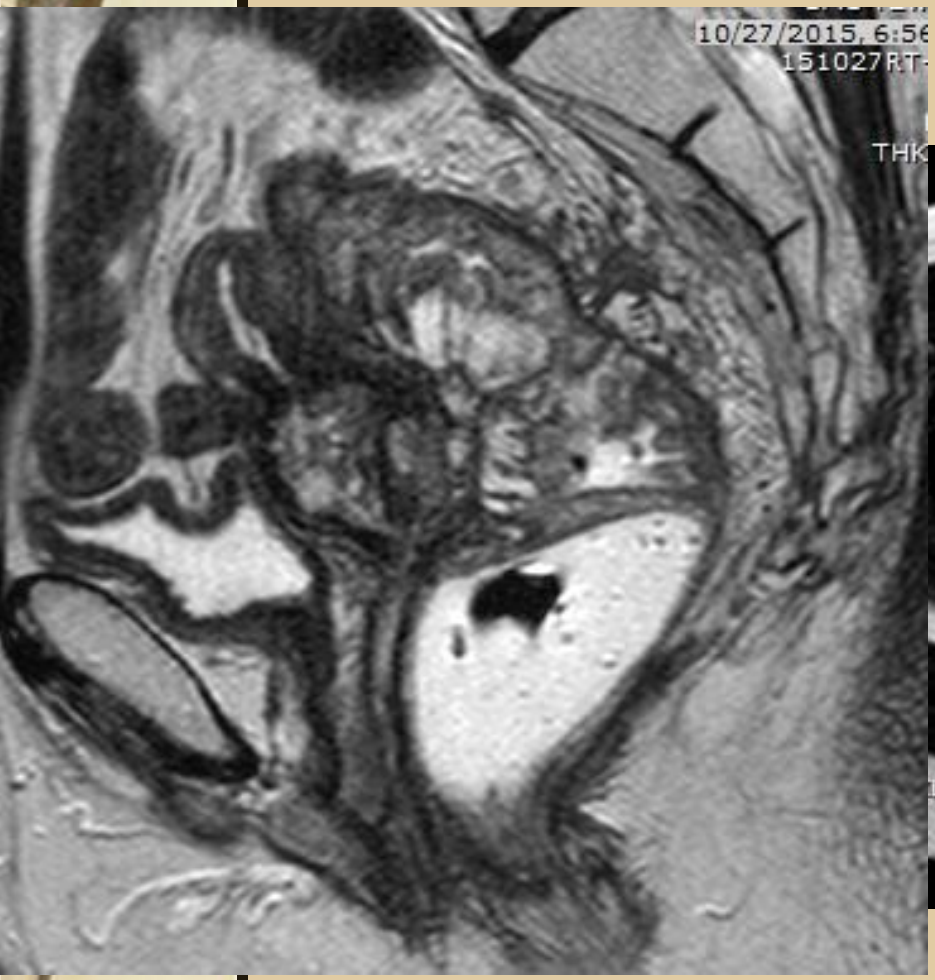


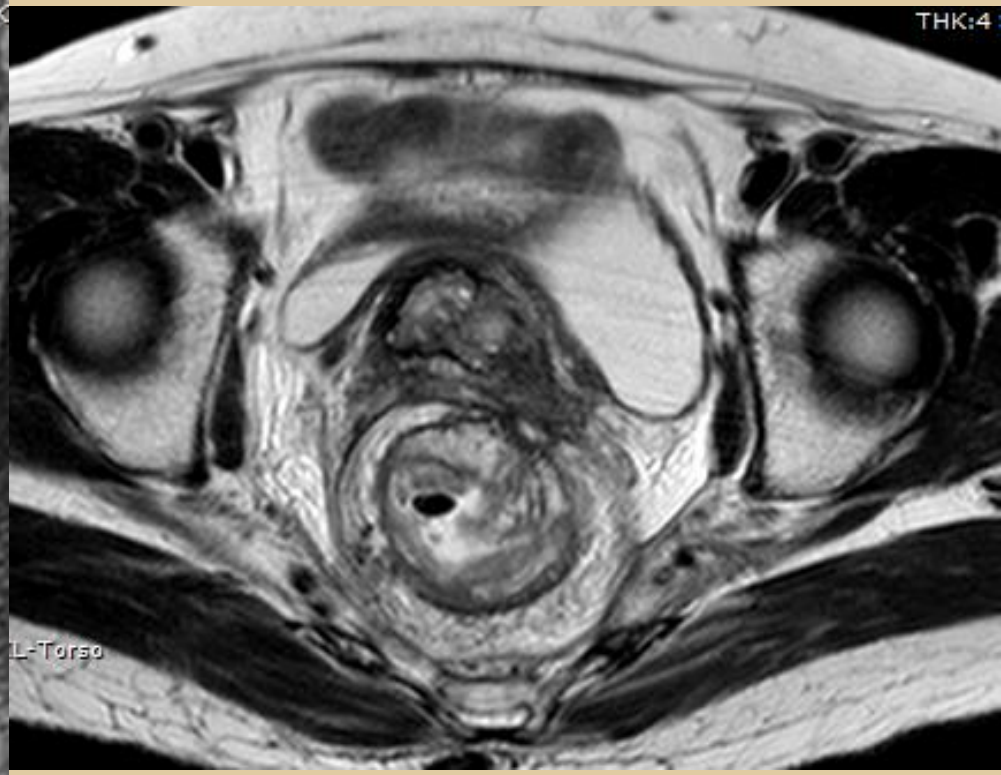




DIS: 15 cm = high rectal cancer
T : T4a (peritoneal invasion)
A: N/A
N: N1 (+ve 1 node)
C: N/A
E: -ve EMVI

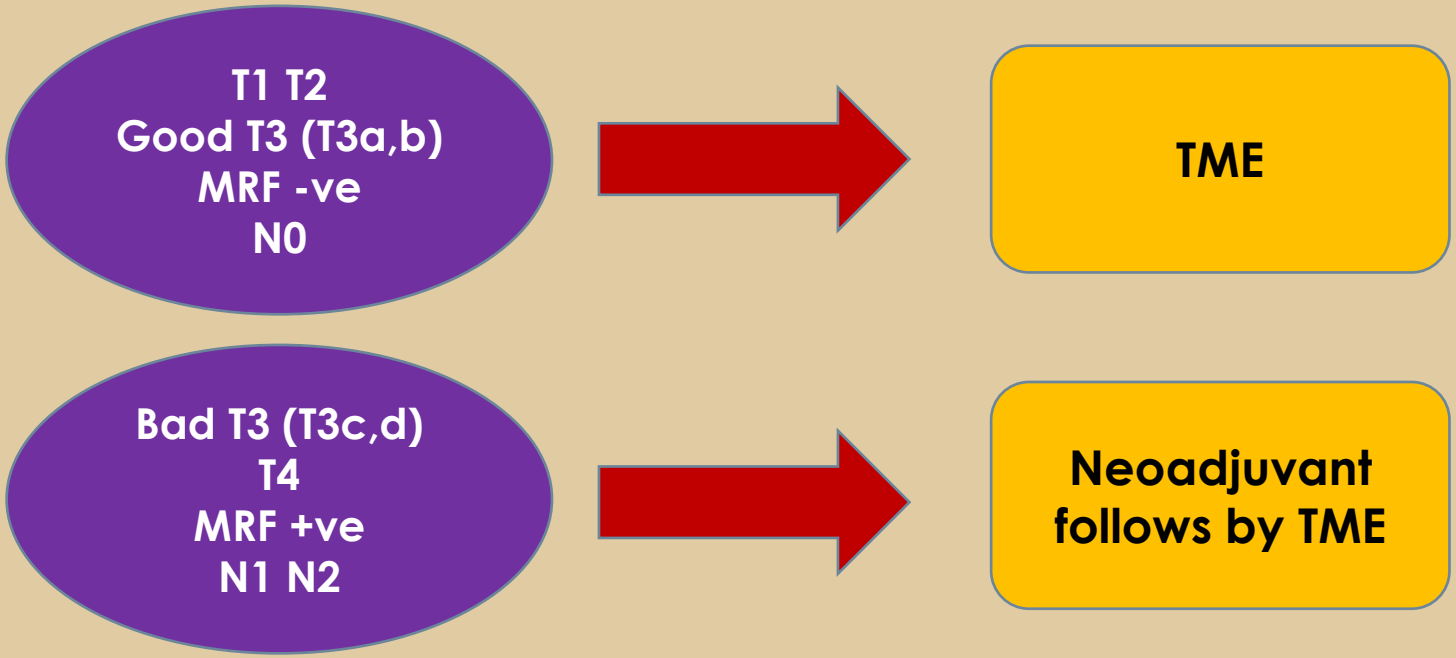


# MRI: T4b: invasion surrounding organs



# Treatment


T1 T2
Good T3 (T3a,b)
MRF -ve
N0
TME
Bad T3 (T3c,d)
T4
MRF +ve
N1 N2
Neoadjuvant
follows by TME

# MRI after neoadjuvant treatment

FIRE VOLCANO
PHOTOGRAPH BY ANGEL BORRAYO, YOUR SHOT

# MRI: after neoadjuvant treatment (CCRT)

- Not as good as pre-neoadjuvant therapy
- Accuracy for T staging is 50% (pre, 85%), and CRM involvement is 66% (pre, 95%)
- Overstaging: marked fibrosis of bowel wall, peritumoral inflammation after CCRT is difficult to distinguish from residual tumor
- Understaging: non-visualization of the tumor after CCRT
- ***DWI may help identify residual tumor***

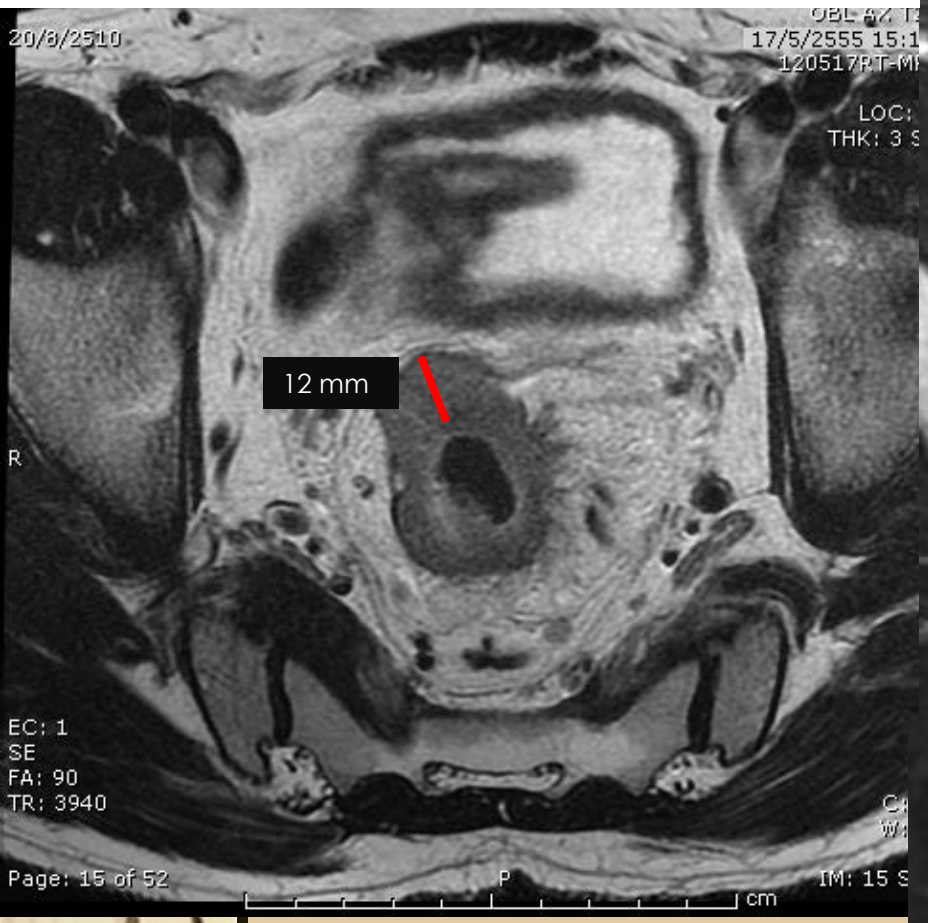
Kim RG,10

# MRI: after neoadjuvant treatment (CCRT)

| Tumor regression Grade | | |
|---|---|---|
| Grade 1 | No evidence of ever treated tumor | CR |
| Grade 2 | Good response:<br>dense fibrosis no obvious residual tumor | Near CR |
| Grade 3 | Moderate response:<br>> 50% fibrosis or mucin and vis | Residual tumor |
| Grade 4 | Slight response:<br>little areas of fibrosis or mucin, | Residual tumor |
| Grade 5 | No response | No response |

**WATCH & WAIT**

Pre treatment, T3c (12mm) N1 MRF+




Post CCRT

Post CCRT DWI

MRI: DWI helps identify viable tumor.

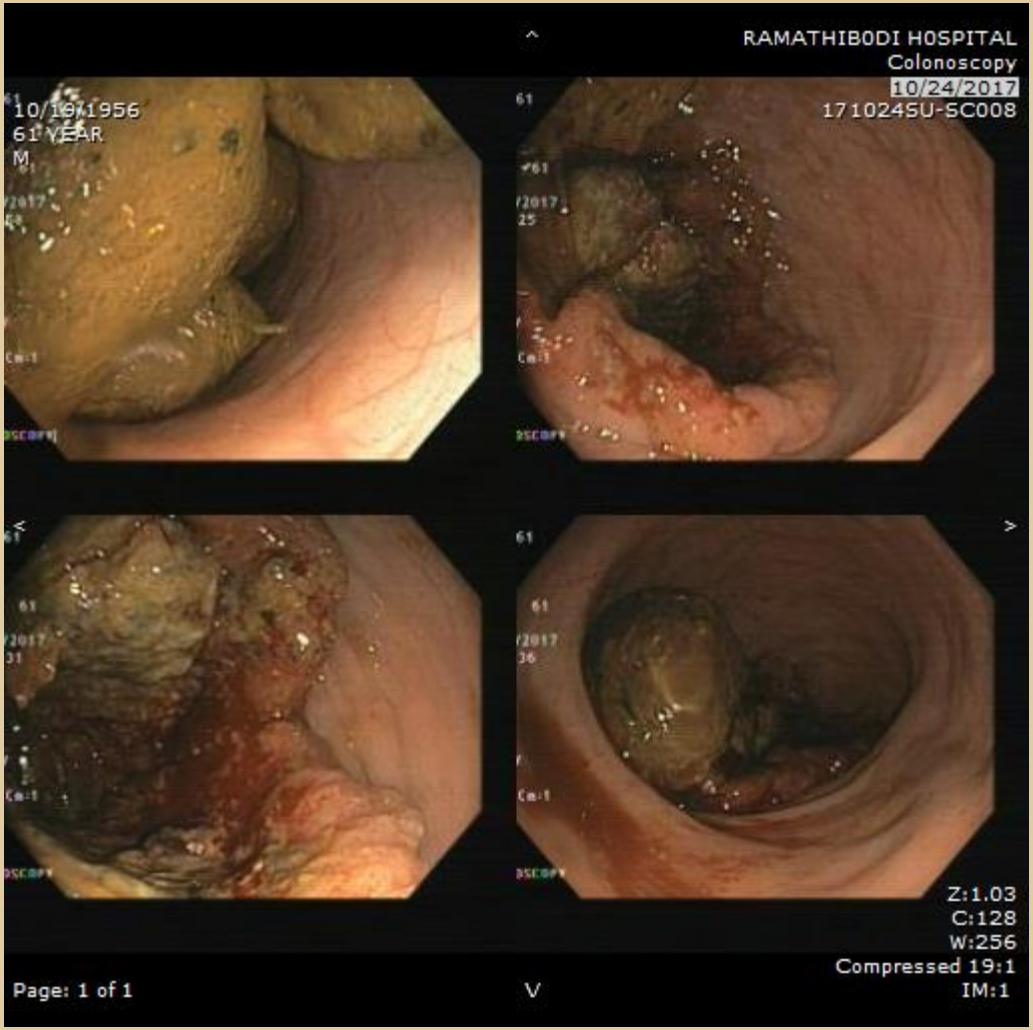
Grade 3:
moderate response

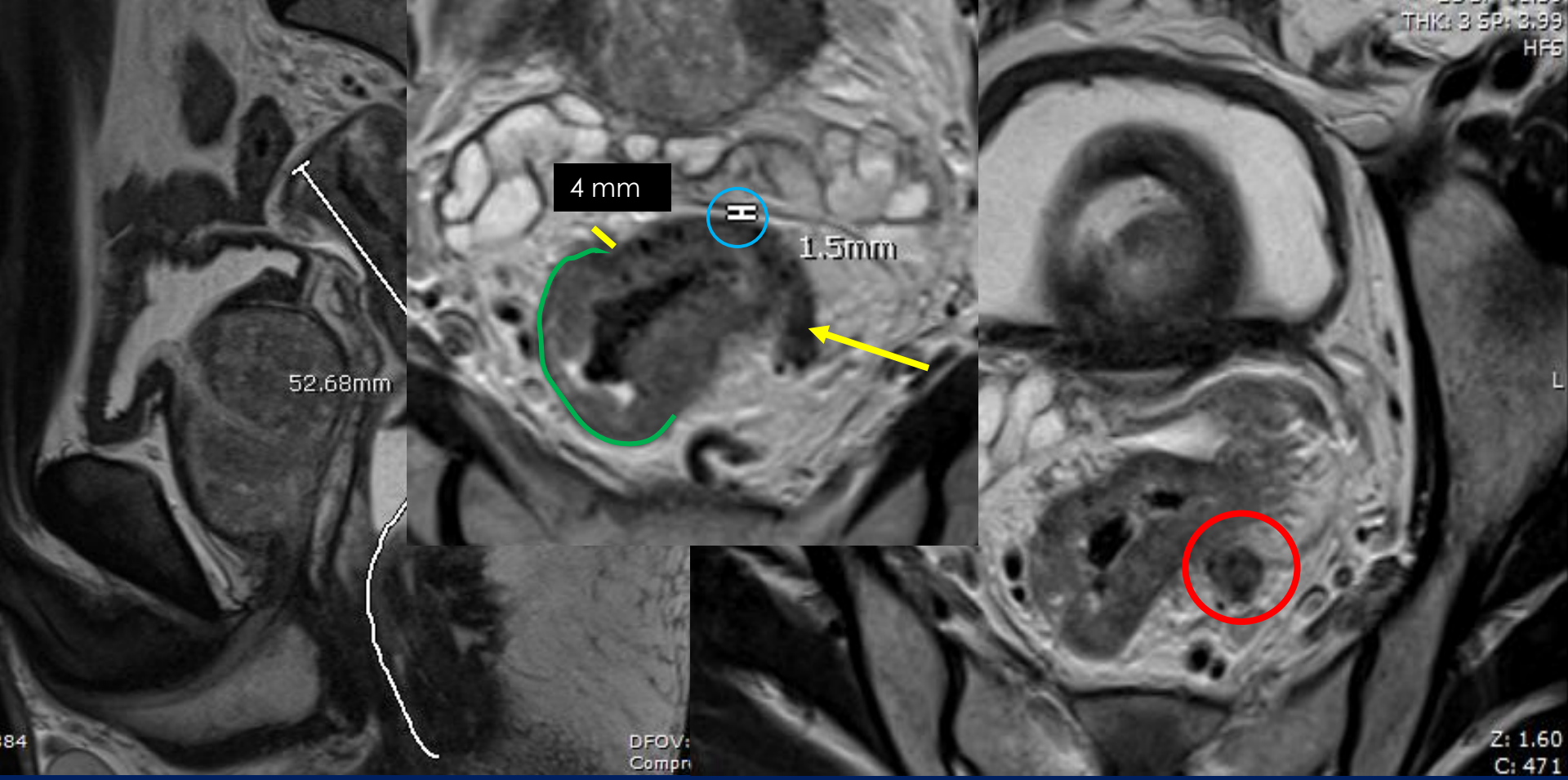

CASE EXAMPLE

# Case:

# A 61 male with lower GI bleeding

# Rectum: ulcerative mass

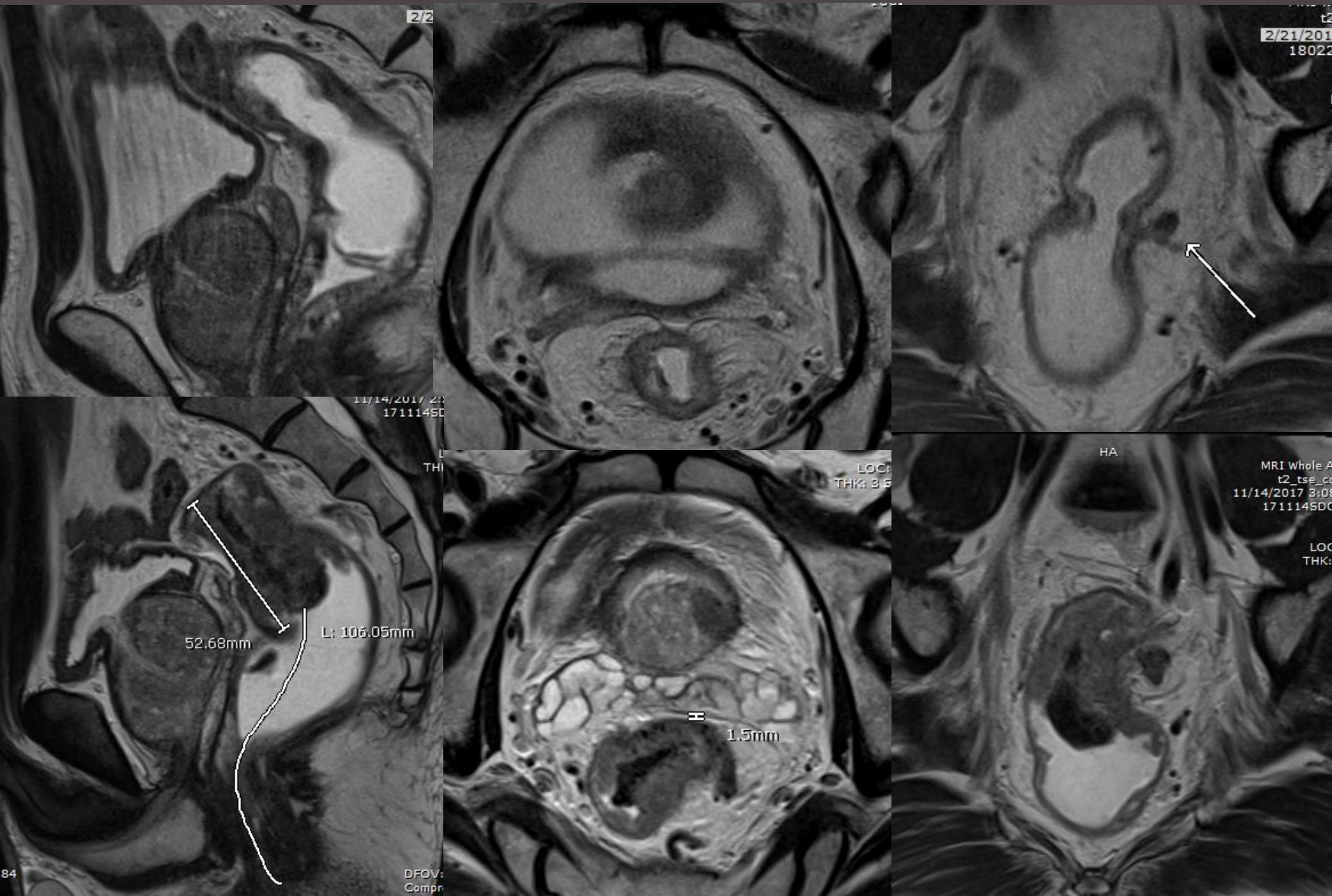




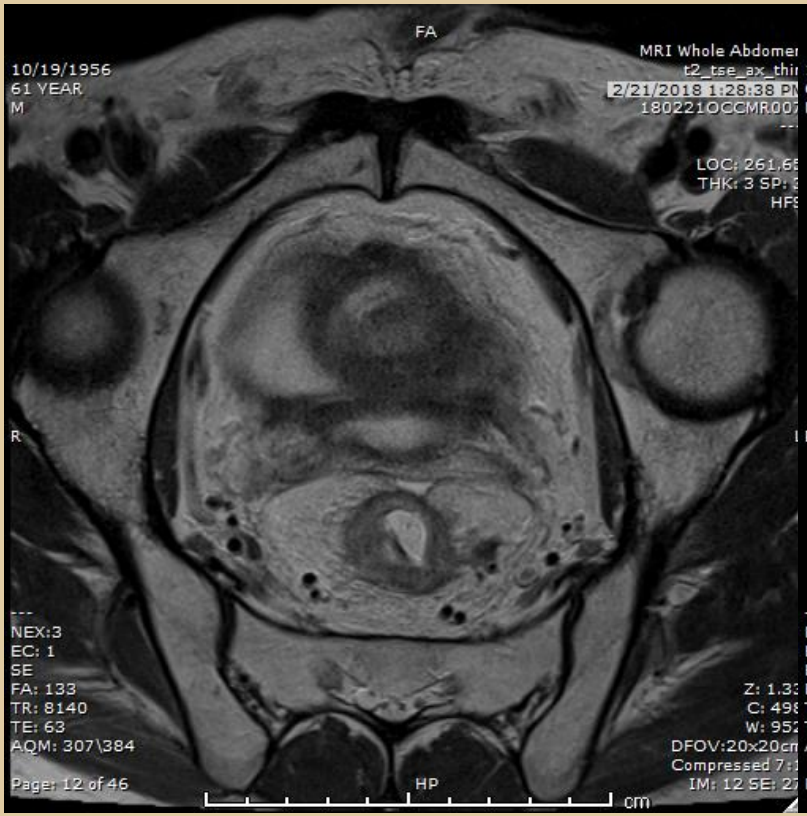

**DIS: 11 cm = high rectal cancer**
**T: T3b (4 mm extramural depth)**
**A: N/A**
**N: N1 (+ve 1 node)**
**C: MRF threatened (1.5 mm)**
**E: EMVI +ve**

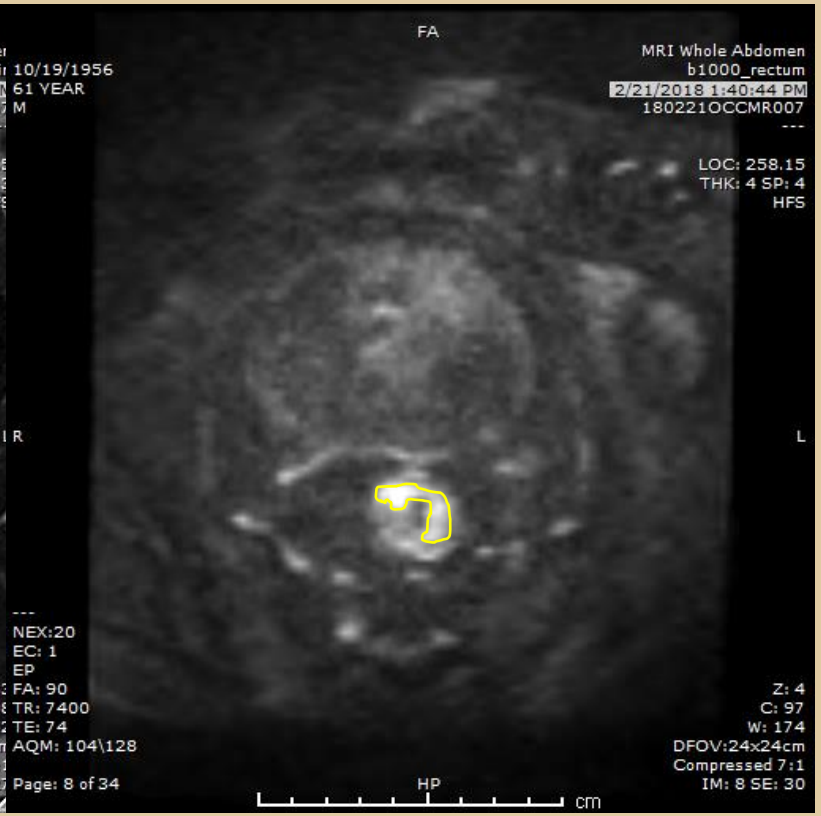
**Rx: Pre-op neoadjuvant CCRT**

# MRI post CCRT, >50% fibrosis with residual tumor: Gr 3 moderate response

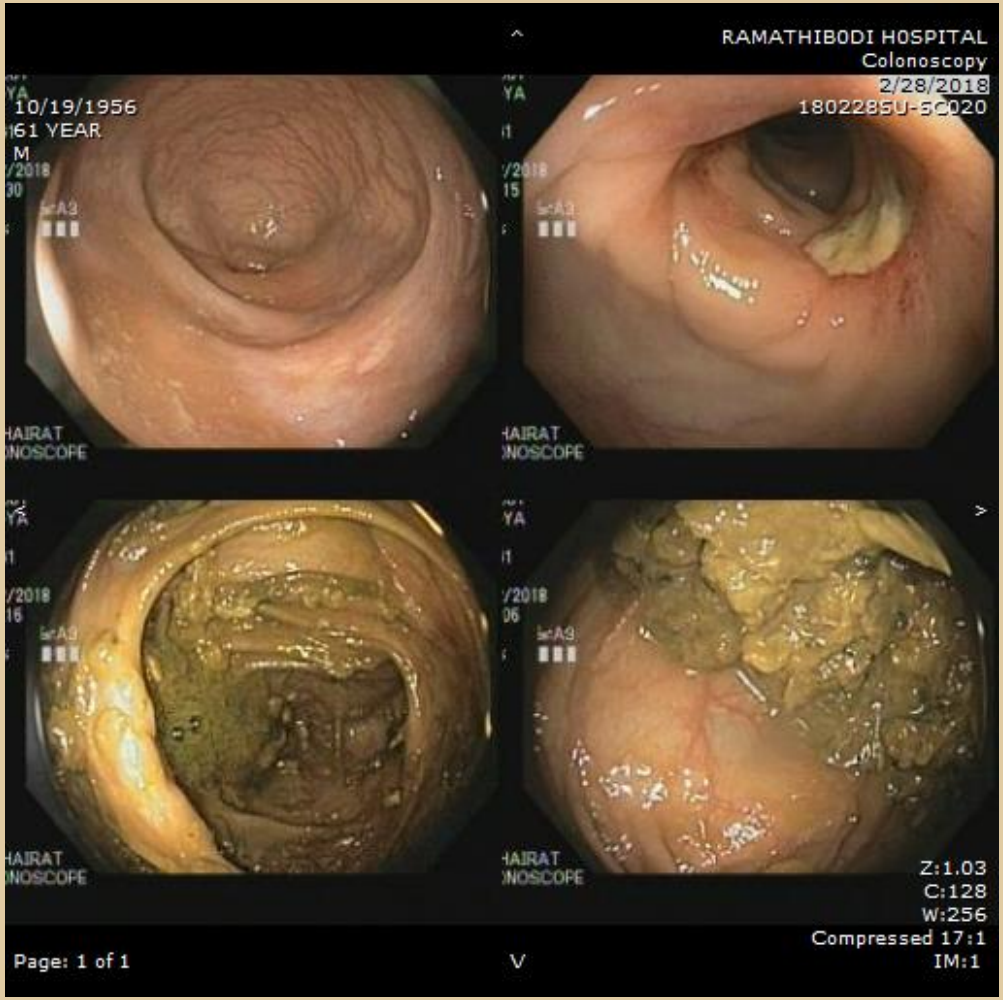


# MRI post CCRT, Gr 3 moderate response (viable tumor visualized by DWI)

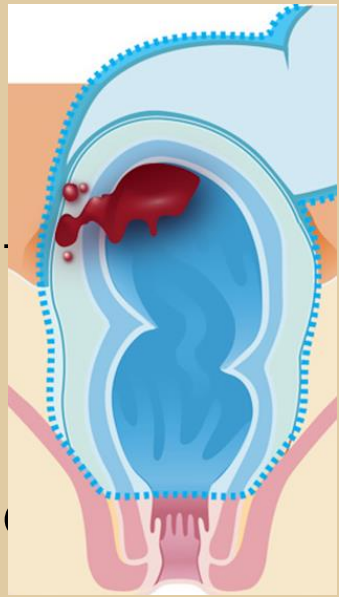


# Rectum: scar


RAMATHIBODI HOSPITAL
Colonoscopy
2/28/2018
10/19/1956
Z:1.03
C:128
W:256
Compressed 17:1
IM:1
Page: 1 of 1

# Surgery: Low anterior resection and TME



**PATHOLOGICAL DIAGNOSIS :**

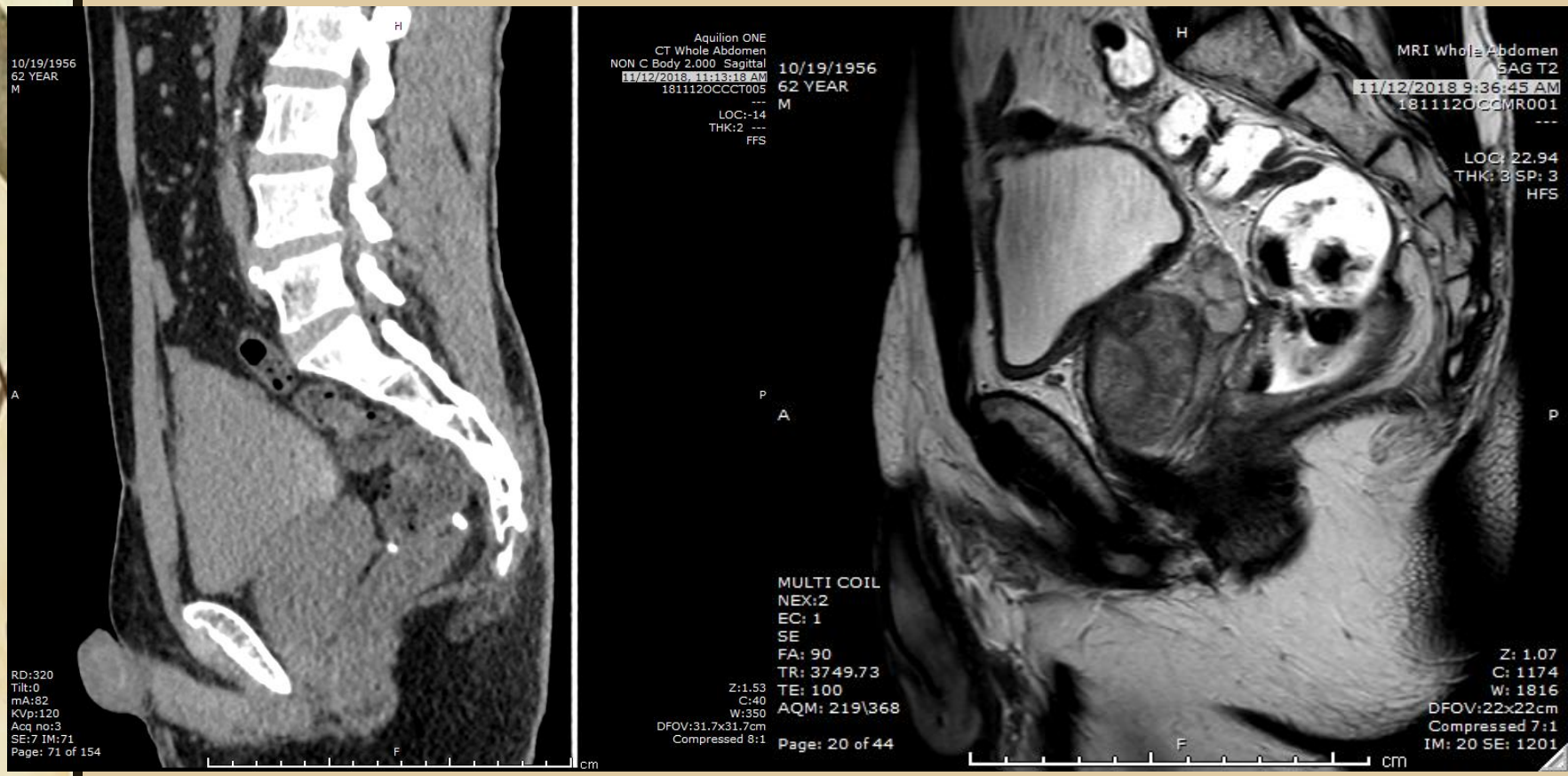
- ADENOCARCINOMA, MODERATELY-DIFFREN
INVADING MUSCULARIS PROPRIA INTO THE PERIRECTAL TISSUE OF THE UPPER RECTUM

**YPT3NO**

- NO DETECTA ULAR INVASI

- LN: NO METASTASIS IN 15 PERIINTESTINAL NODES
  NO METASTASIS IN 3 "N2 DISSECTION"
  NO METASTATIS IN 1 " N3 DISSECTION"

# FU CT and MRI: 1 YEAR PO, no recurrence or metastasis



# Conclusions

TAKE OFF
PHOTOGRAPH BY VICTOR ATELEVICH, YOUR SHOT

# Conclusions

- MRI is the most accurate modality for local staging of rectal cancer prior to treatment.
- MRI cannot distinguish T1 and T2. If needed, EUS is recommended.
- MRI is less accurate for re-staging post CCRT, but still a good modality to determine response to treatment.
- Mnemonic "DISTANCE" is recommended for practical reminder of rectal cancer evaluation.

# Thank you

CHOCOLATE FALLS
PHOTOGRAPH BY BERNHARD MICHAELIS, YOUR SHOT