

# The Evolving Role of Radiotherapy in Treatment of Rectal Cancer

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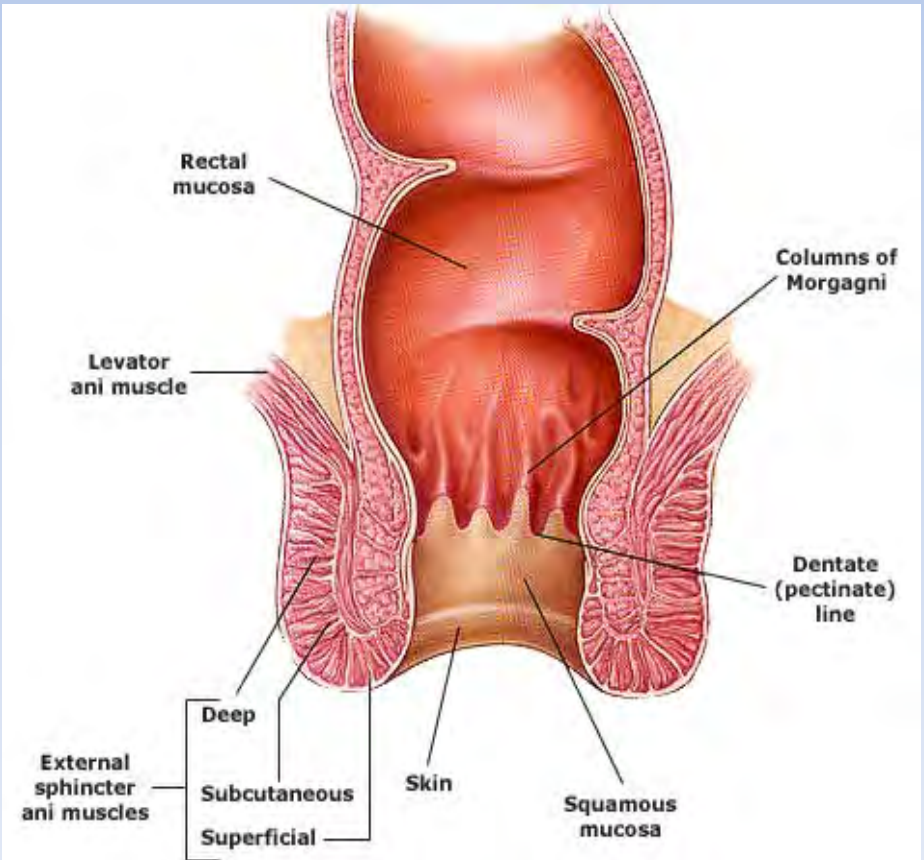
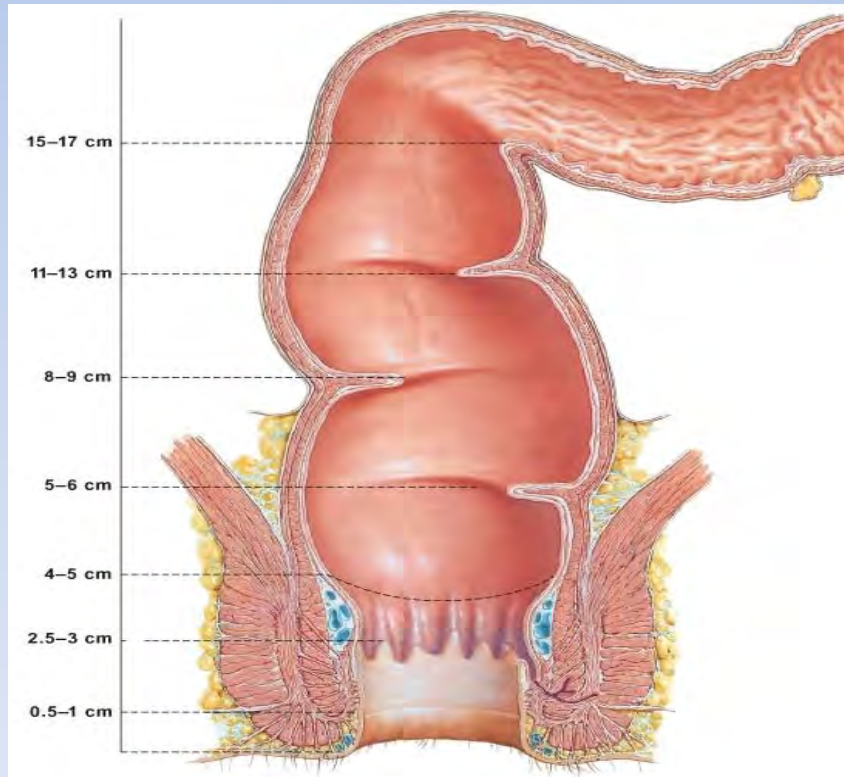
UT Health San Antonio MD Anderson Cancer Center

*Living Beyond Cancer A-Z*

*January 12, 2019*

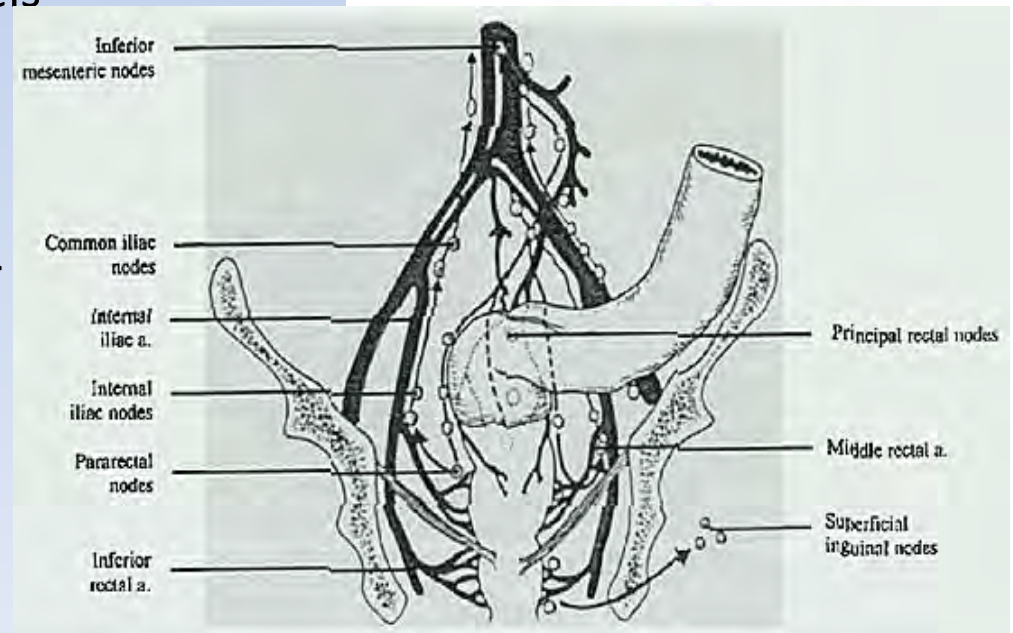
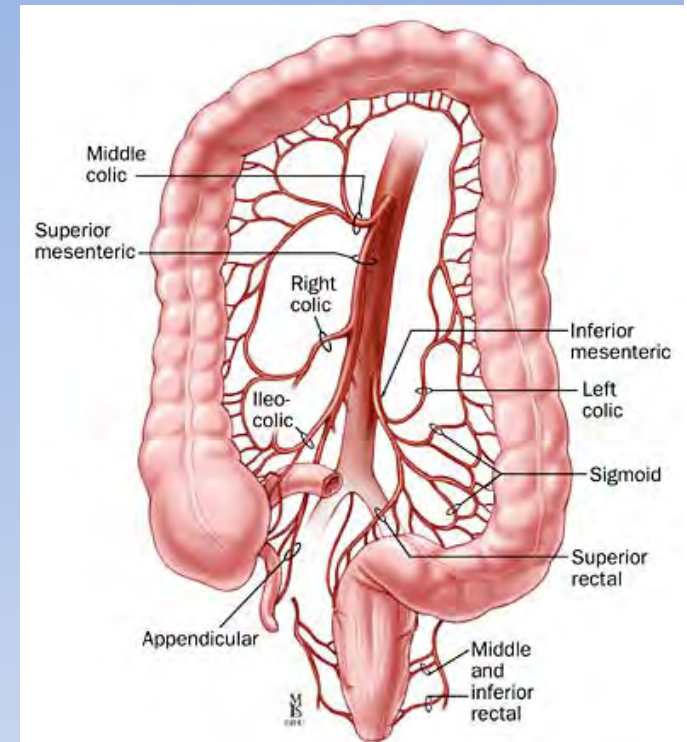
# RECTAL ANATOMY

- Rectum
  - Extends from 12-15 cm from anal verge
  - True surgical rectum begins at anorectal ring (just proximal to dentate line)



# Rectal Lymphatic drainage

- Venous drainage
  - Upper Rectum:
    - Superior Hemorrhoidal V → inferior Mesenteric V → Portal V
  - Distal Rectum:
    - Middle and inferior rectal V → pelvic V → IVC
- Lymphatics follow hemorrhoidal vessels
  - iliac
  - presacral
  - inferior mesenteric nodes
- Distal mesorectal LN spread can occur 3-4 cm below tumor



# RECTAL CA PROGNOSTIC FACTORS

- Stage
- Tumor location (distal worse than proximal)
- Histology (signet cell poorer outcomes); tumor grade
- Circumferential tumors or with near/total obstruction respond poorly
- Circumferential margin
- Mobile cancers more favorable than fixed
- LVSI, PNI
- Response to neoadjuvant tx

# RECTAL CANCER TREATMENT

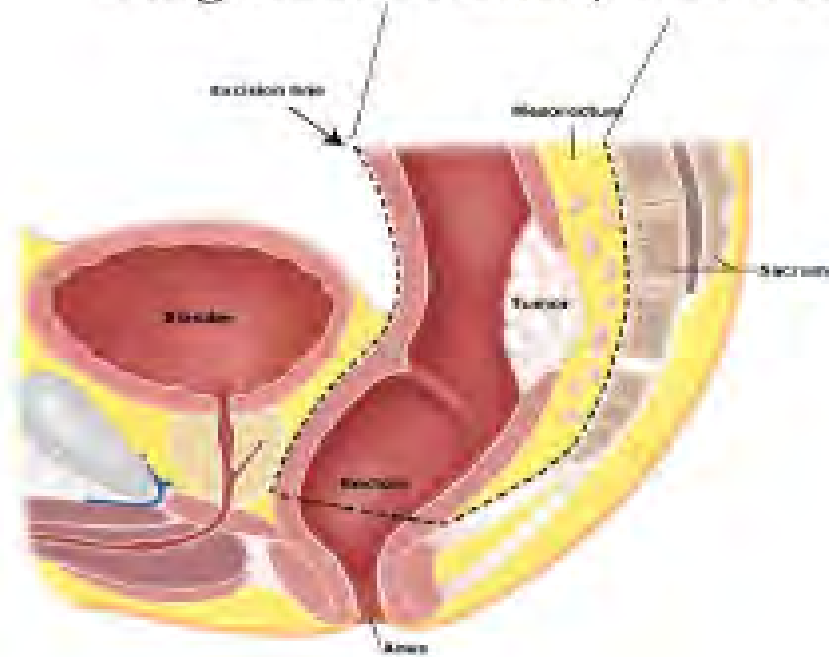
- SURGERY is cornerstone of treatment
  - total mesorectal excision (TME) either via the low anterior approach (LAR) or abdomino-perineal approach (APR) is the gold standard
- Trans-anal surgical excision can be attempted in a well defined group of low risk patients
  - inferior oncologic outcomes for patients with adverse prognostic features or T2 disease

# NEOADJUVANT THERAPY

- Trend toward greater use
  - Tumor downstaging
  - Improved resectability
  - Sphincter Preservation options in distal rectum

# Radiation can safely expand the 'surgical resection' volume

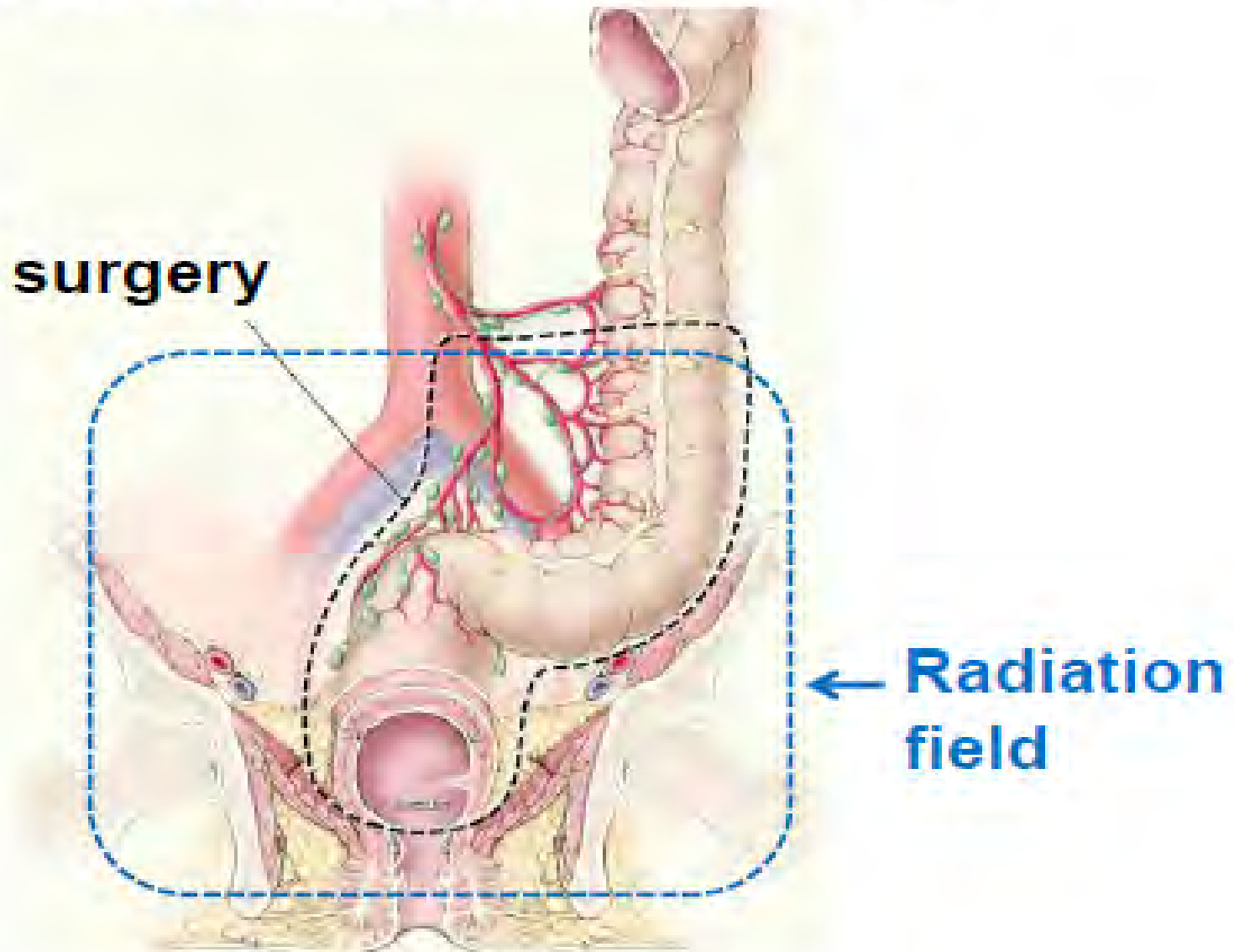
Surgical Resection (Mesorectal)



Radiation Field



# Radiation can safely expand the 'surgical resection' volume

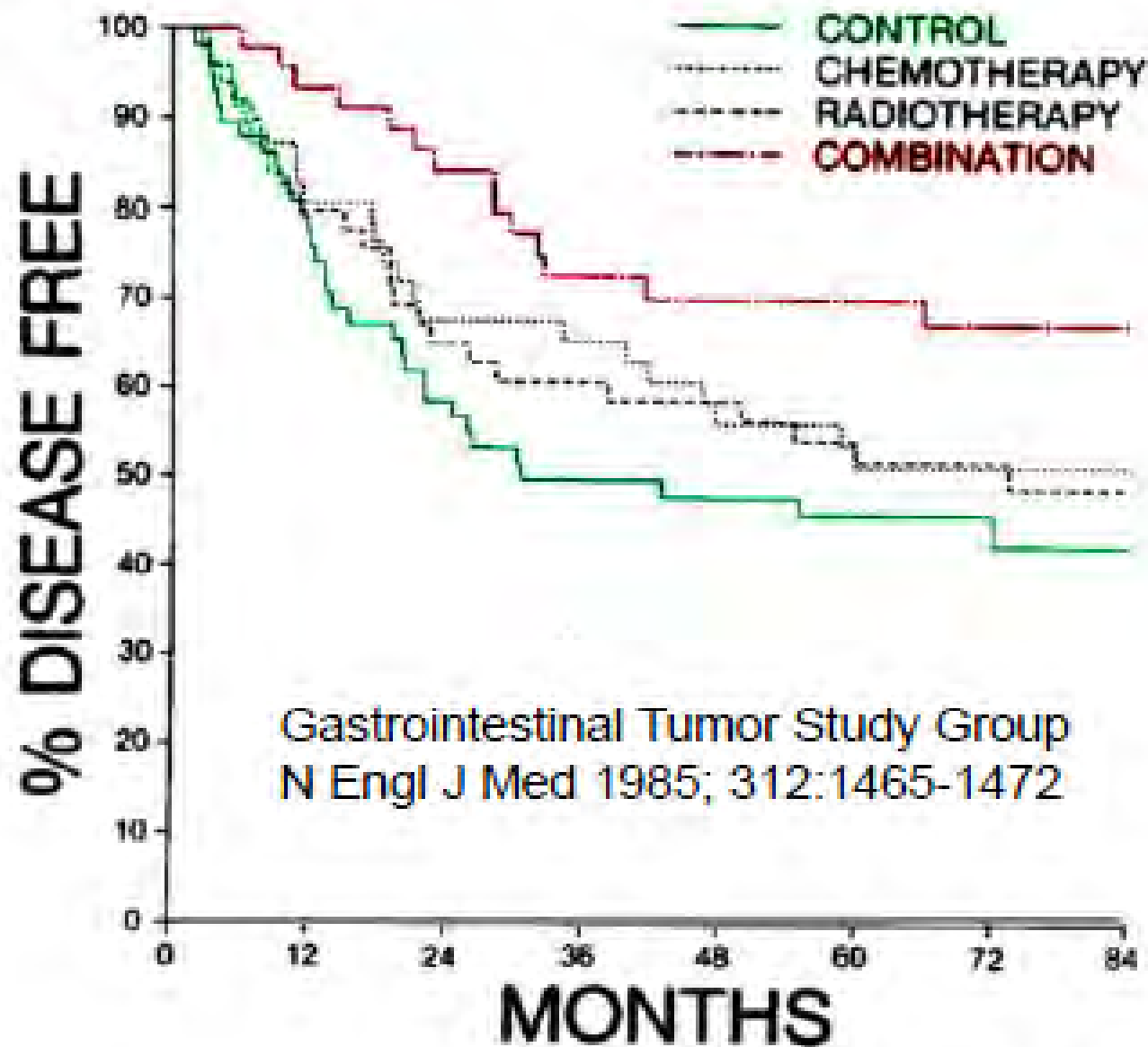




## **Benefit of Combining chemoradiation with surgery for rectal cancer**

- Will lower the risk of a local recurrence in the pelvic region and improve survival
- If given prior to surgery may help the surgeon avoid a permanent colostomy
- If given before surgery may be less complications than if given after surgery

# Improved Outcome after Surgery by Adding Chemoradiation



# German Trial of PreOp or PostOp Chemoradiation for Rectal Cancer

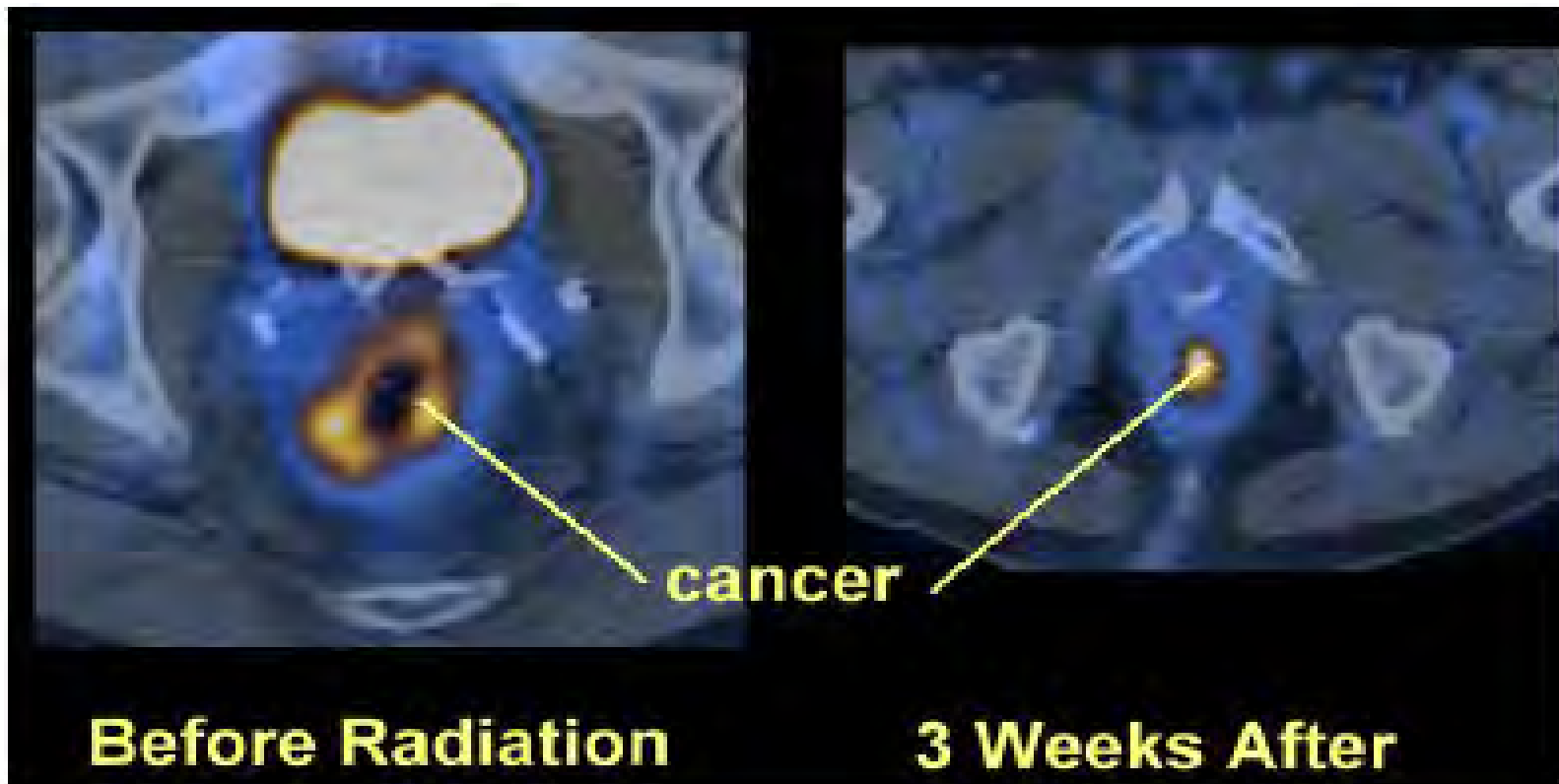
NEJM 2004;351:1731

Outcome	PreOp	PostOp
Survival	76%	74%
Local Relapse	6%	13%
Complication	27%	40%

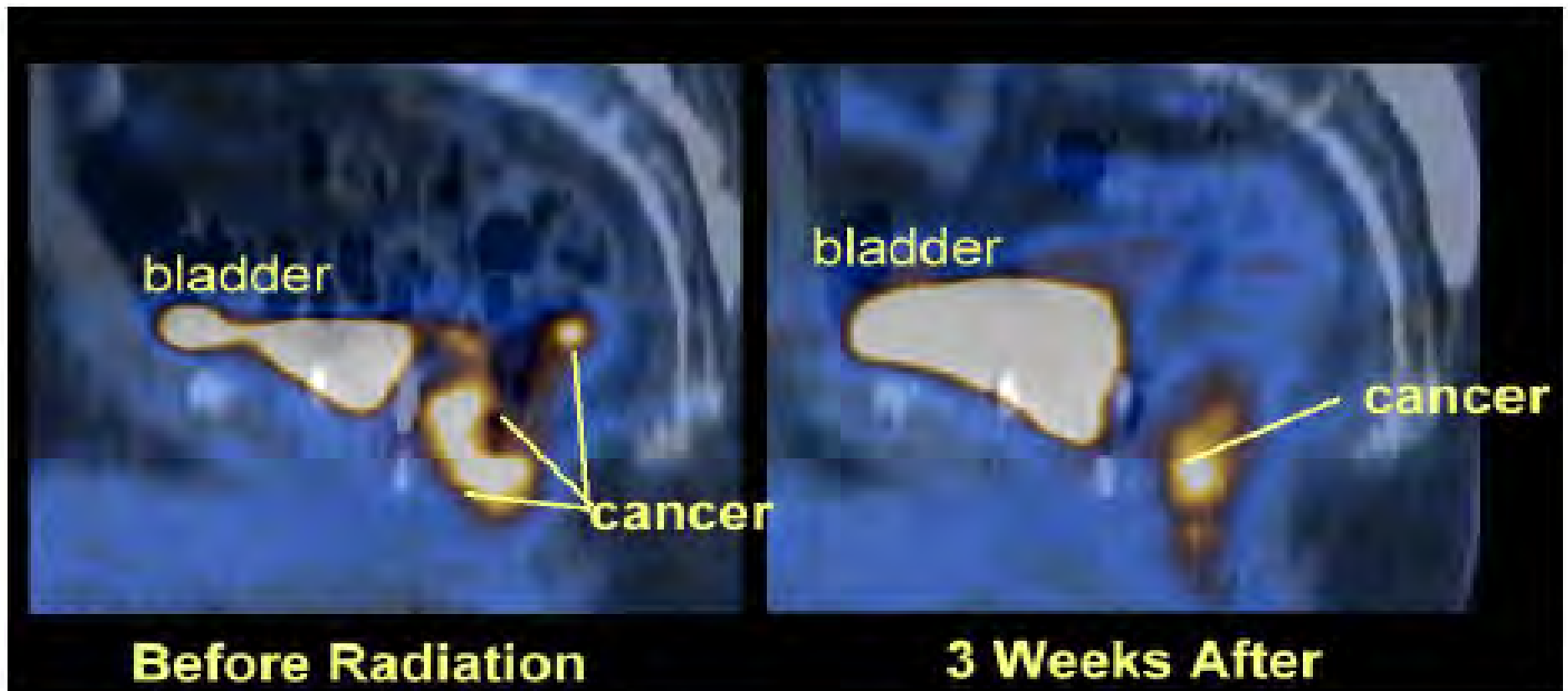
## Benefits of preOp chemoradiation for Rectal Cancer in Avoiding a Permanent Colostomy

In series where patients were expected to require a colostomy, after preOp therapy the number who were able to avoid a permanent colostomy (**sphincter preservation**) in such reports ranges from 39 to 94 percent, averaging **67 percent**

**Chemo-Radiation will often shrink the cancer making surgery easier**



# Chemo-Radiation will often shrink the cancer making surgery easier



# PreOp Chemoradiation for Locally Advanced Rectal Cancer



Appearance of  
advanced rectal cancer  
at colonoscopy before  
chemoradiation



Appearance after

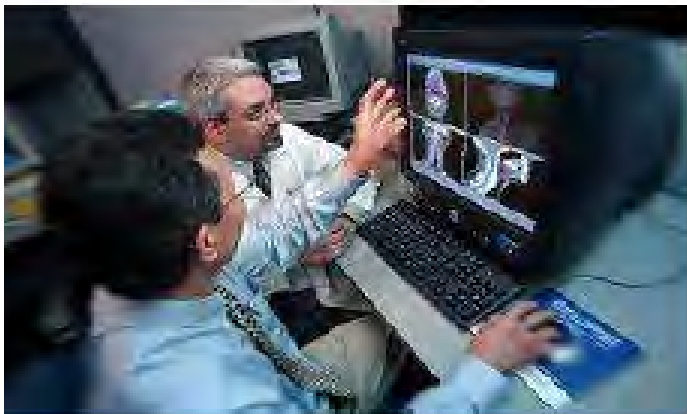
# Typical Course of Preoperative Radiation

- Daily radiation Monday through Friday 5 days a week for 28 treatments (so 5 and half weeks)
- Treatments generally take about 10-15 minutes
- Radiation is combine with daily chemotherapy (usually continuous IV infusion of 5-FU or Xeloda pills)
- Side effects typically show up after the 2-3 week and fade away starting a week or two after completion
- Surgery is generally scheduled 12-15 weeks after completing the radiation
- Further chemotherapy is often given after surgery



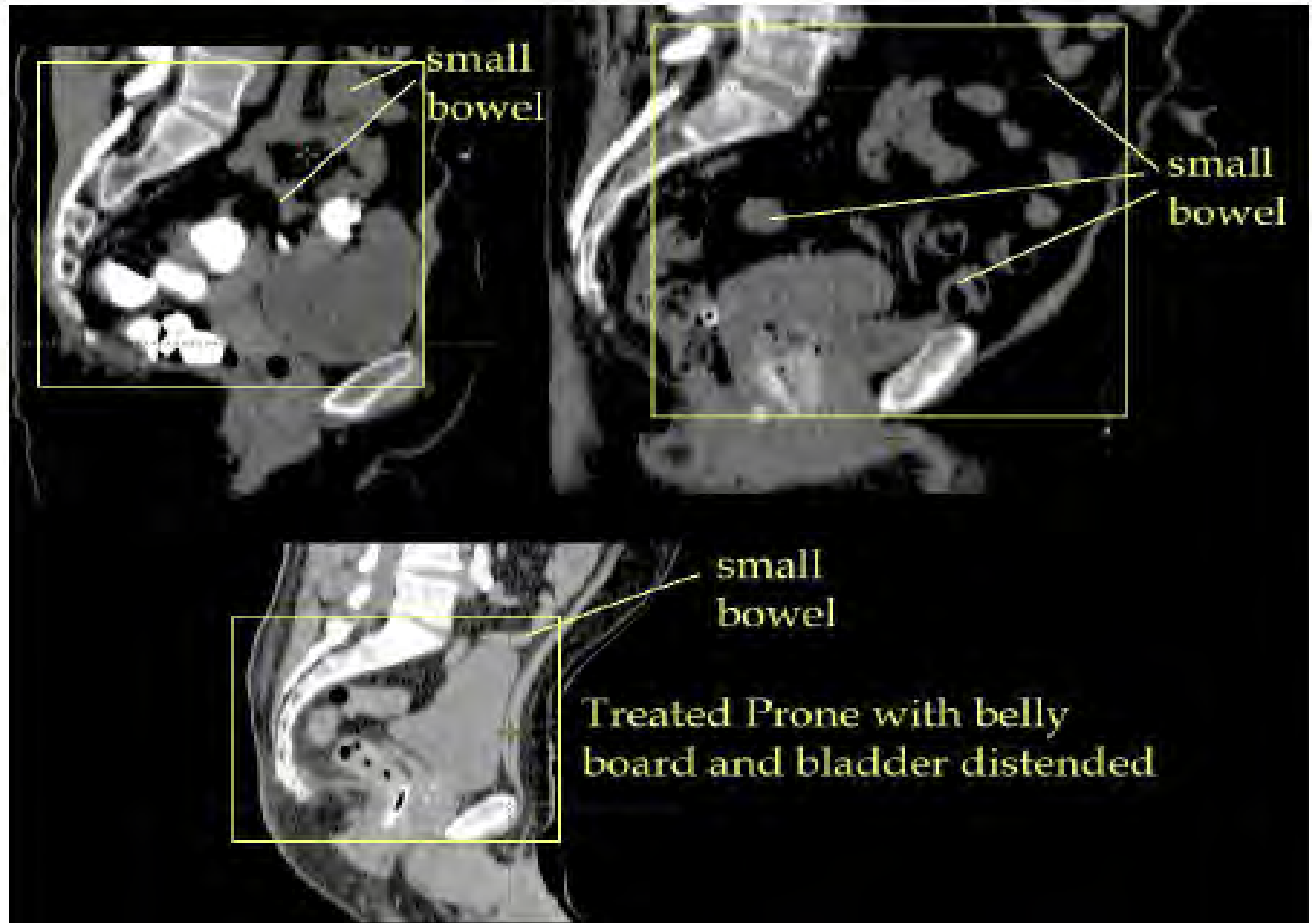
# Radiation Technique

CT scan is obtained at the time of simulation



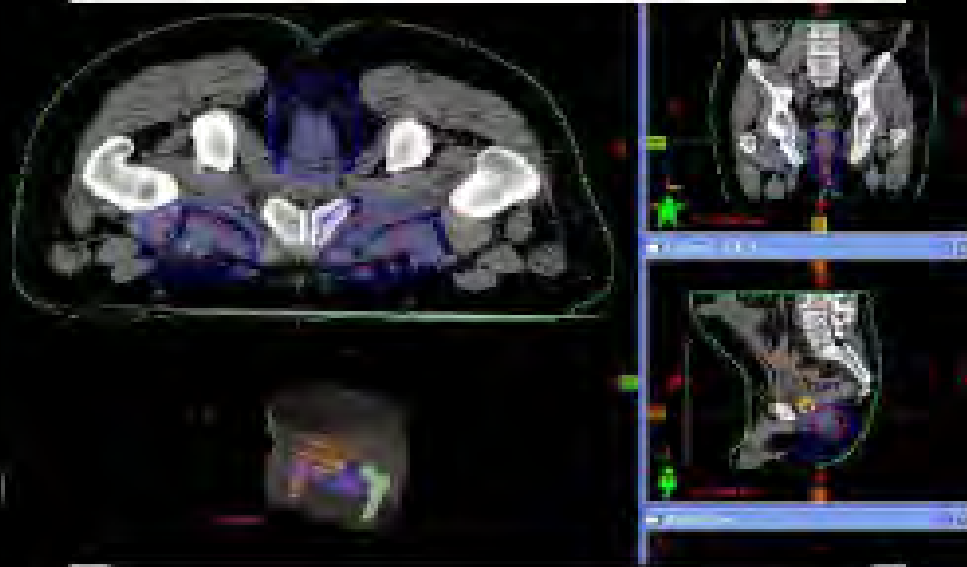
CT images are then imported into the treatment planning computer

## Techniques to minimize radiation side effects

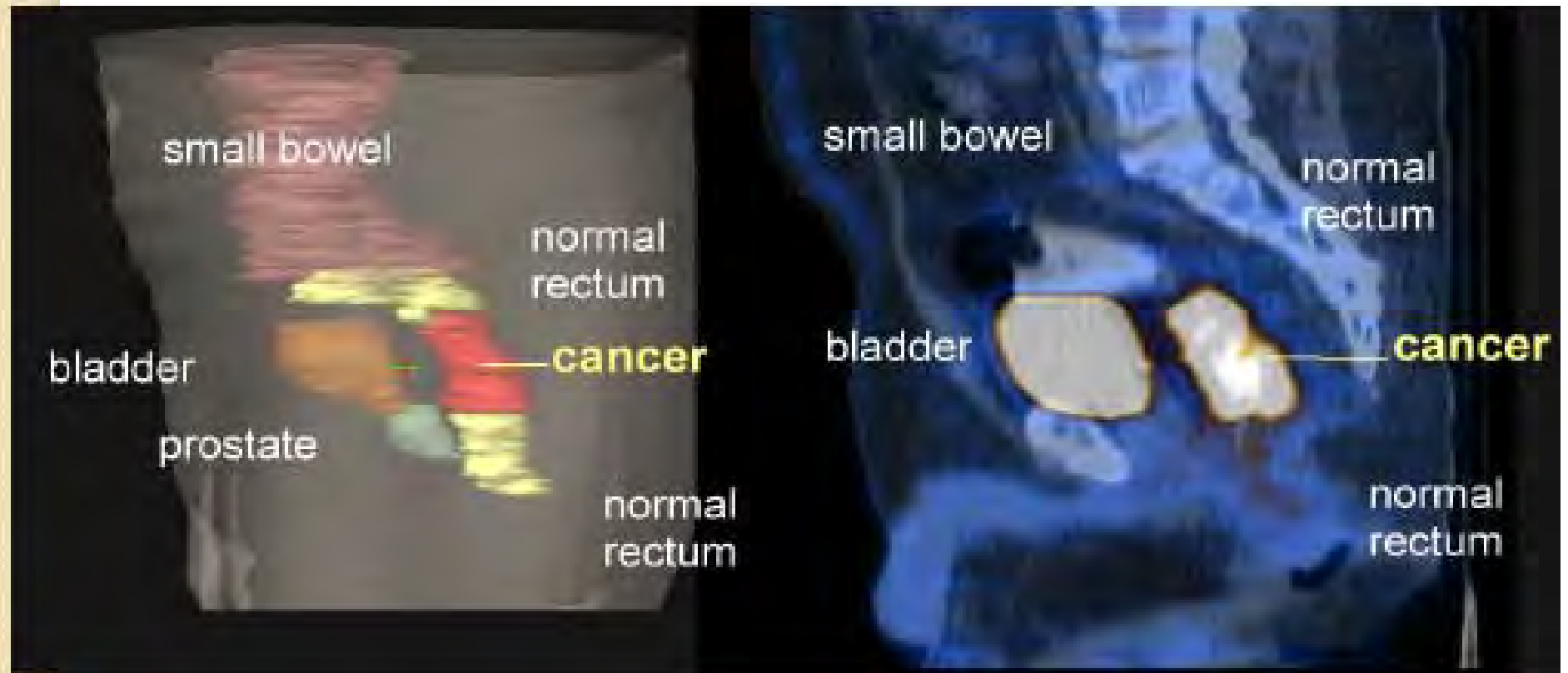


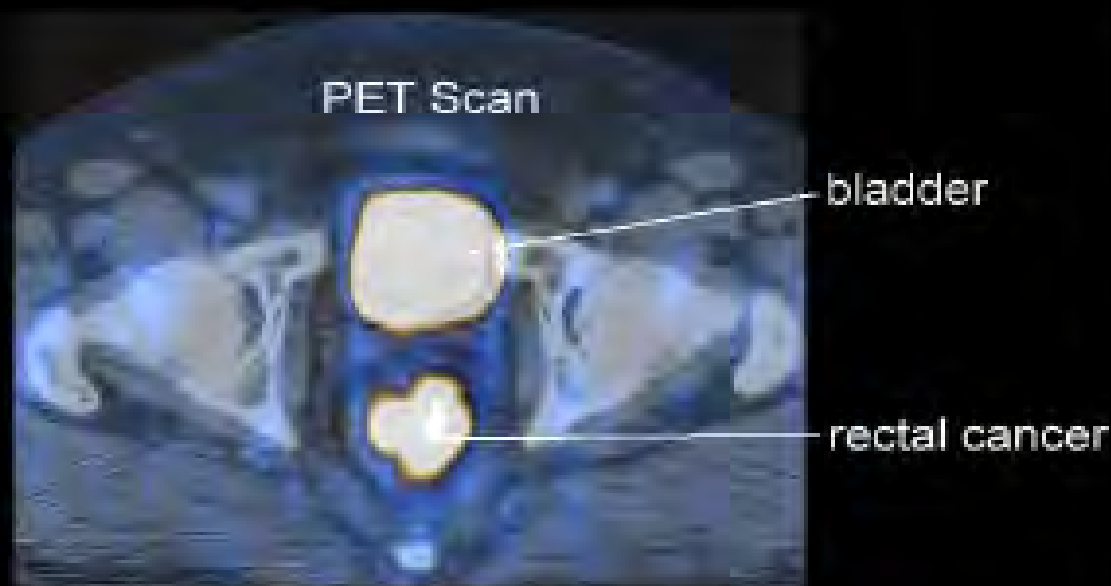
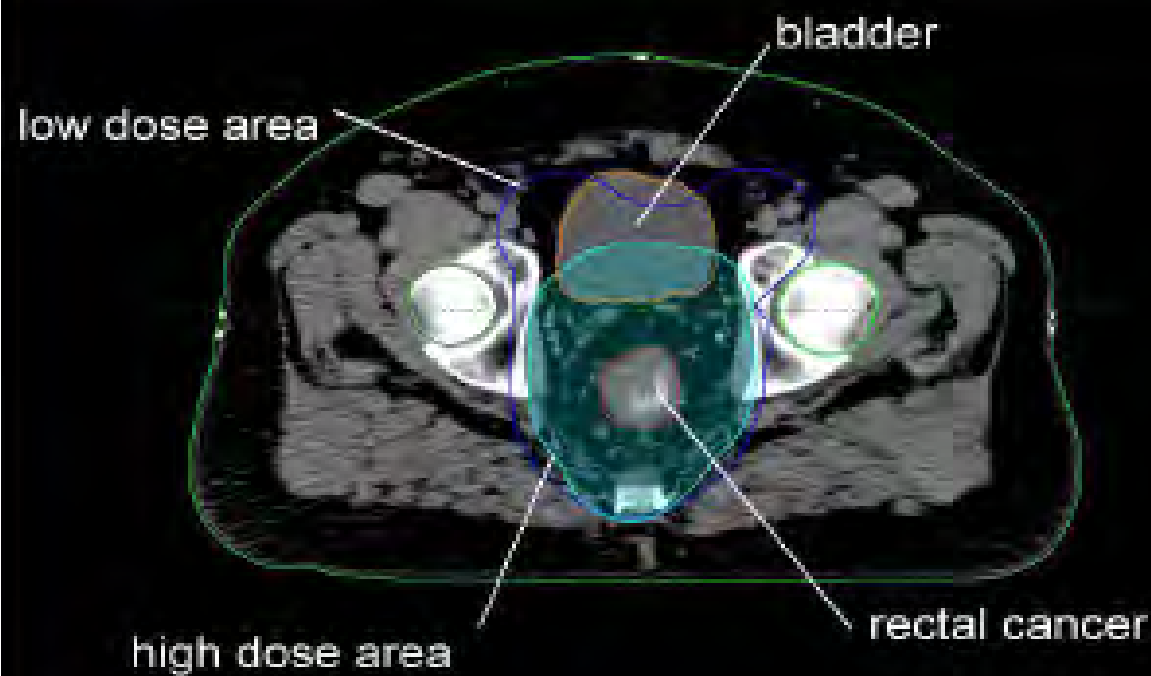


In the simulation process the CT and PET scan images are used to create a computer plan



PET scan images are used to target the areas that need radiation





PET  
scan  
images  
are used  
to target  
the areas  
that need  
radiation

Liver CT - looks slight abnormal



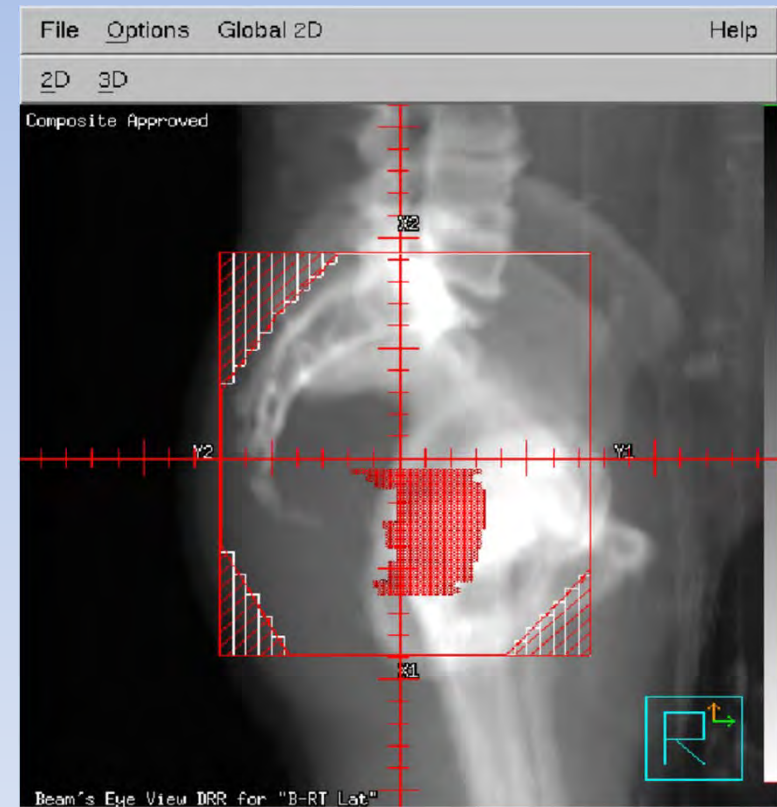
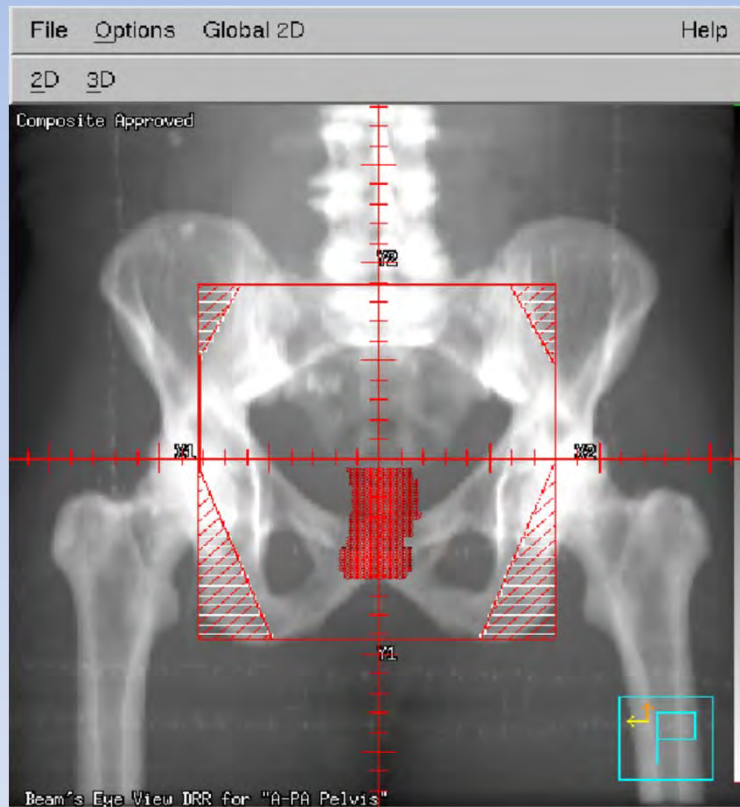
PET = multiple areas of spread



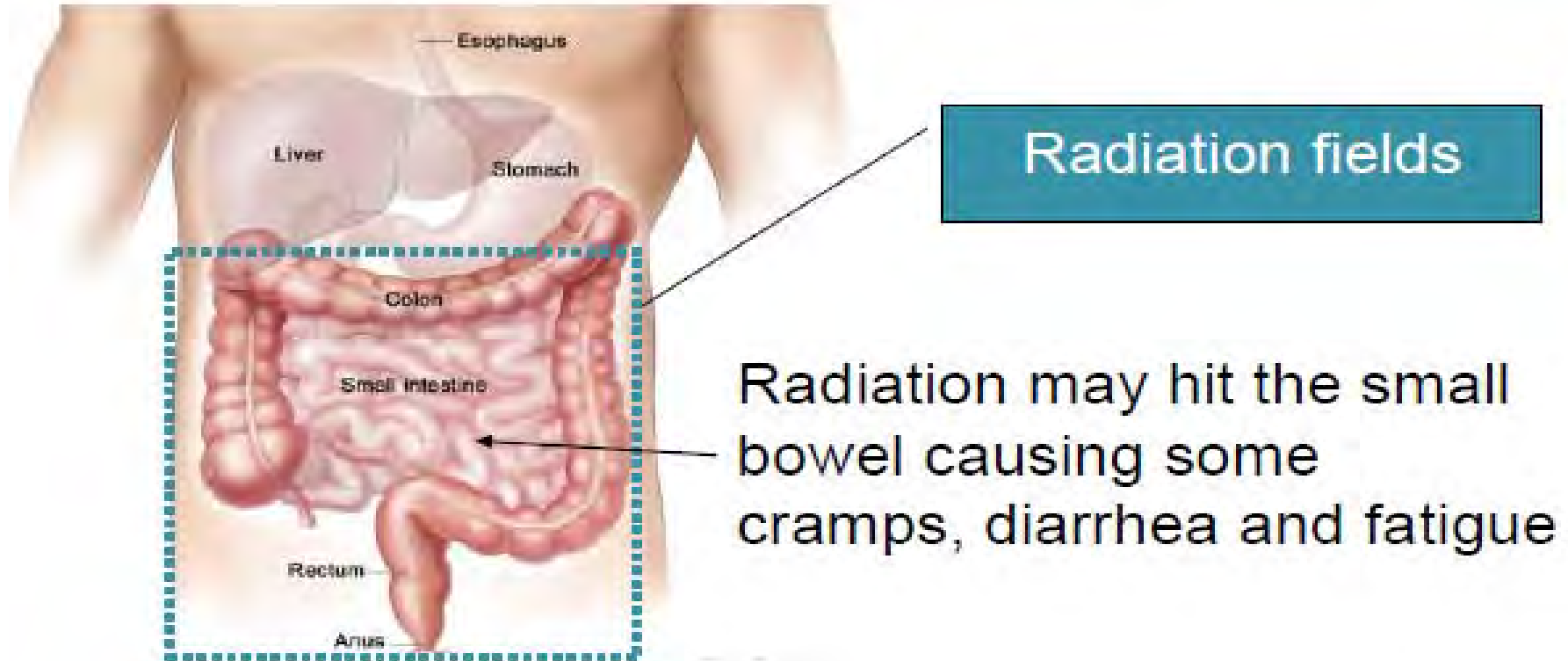
PET Scan will also show if the cancer has spread elsewhere in the body such as the lymph nodes or liver

This case show areas of liver metastases so the patient would be classified as having stage IV rectal cancer and would need chemotherapy

# Rectal Cancer-RT Fields



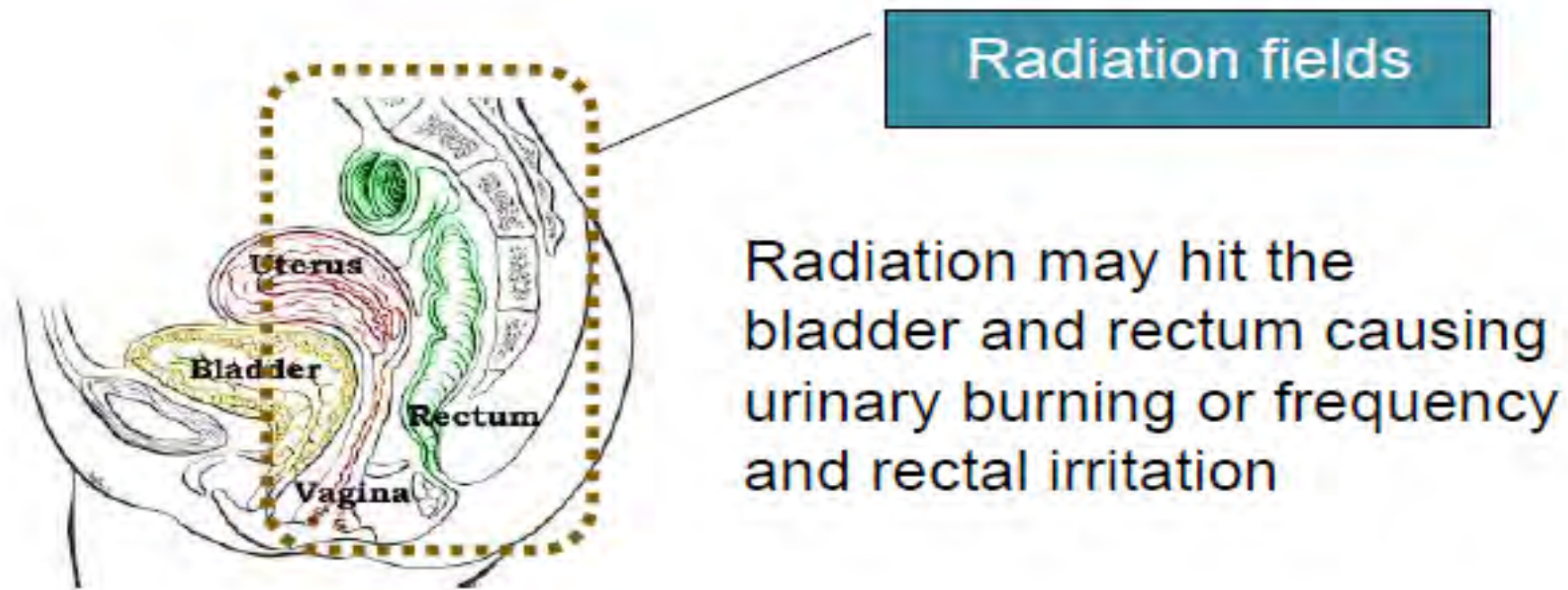
# Side Effects of Pelvic Radiation



Fatigue, diarrhea, loss of appetite and rectal irritation are very common during the combined chemoradiation period



# Side Effects of Pelvic Radiation



In pre-menopausal women, radiation is likely to effect ovarian function and should not be used if the woman is pregnant

# TOXICITY OF CHEMORADIATION THERAPY

- Acute

- Diarrhea
- Acute proctitis
- Decreased blood counts
- Dysuria/cystitis
- Fatigue
- Skin redness/desquamation

- Delayed

- Persistent diarrhea
- Proctitis
- Fistula
- SB obstruction/adhesions
- Perineal and scrotal tenderness
- Delayed wound healing
- Urinary incontinence
- Bladder atrophy/bleeding
- Sexual dysfunction

Dose limitations

Small Bowel – 45-50 Gy

Femoral head and neck: 42 Gy

Bladder: 65 Gy

Rectum: 60 Gy

Thank you!



**Patient Rating**



**4.8** out of 5

90 Ratings

7 Comments

# Zheng Shi, M.D.

## 📍 Practice Locations

- Radiation Oncology - Mays Cancer Center

210-450-1016

If you're a patient of Zheng Shi, M.D., and a MyChart user, you can:



Send message via MyChart



Request appointment via MyChart

## 🏥 Specialties

- Radiation Oncology