Staging of Rectal Cancer

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SCOAP Retreat – June 17, 2011

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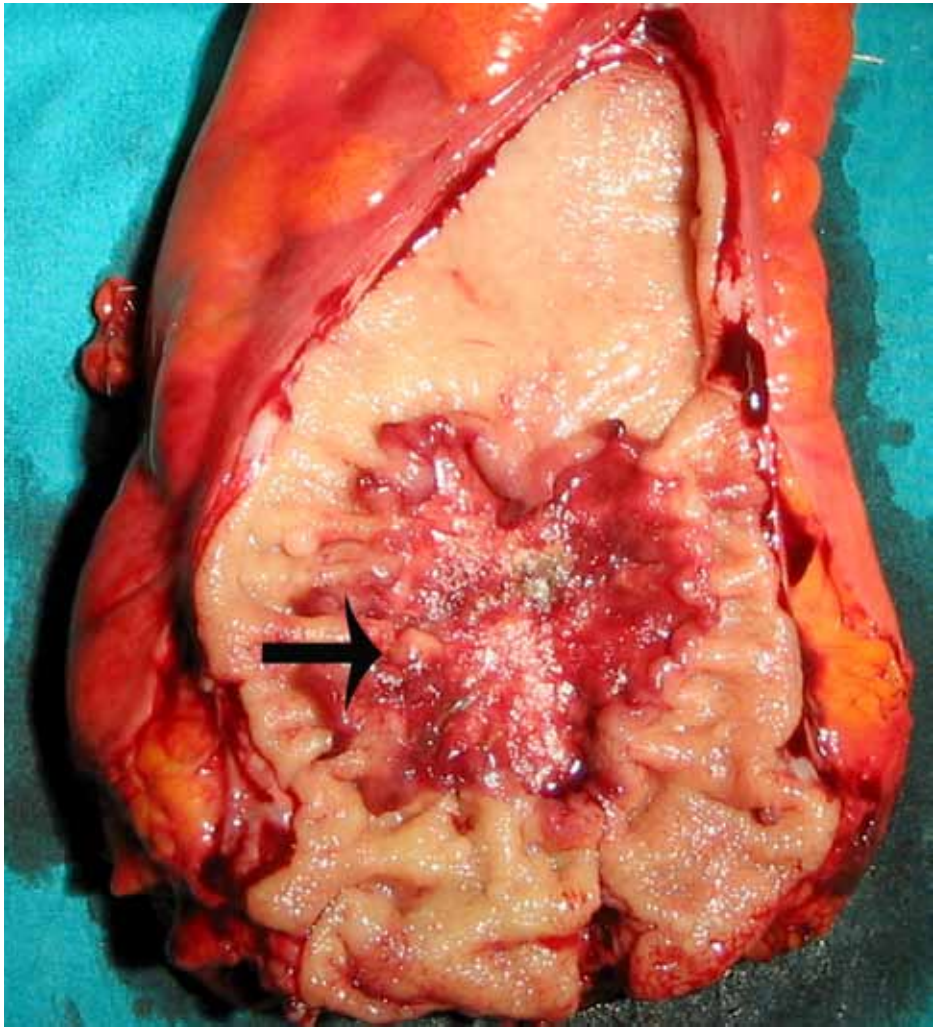
Why does it matter?

- Obviously, because it changes management
  - Decision points:
    - Local/Regional Disease vs widely metastatic
    - T3/T4 vs T2
    - T2+ vs T1
    - Nodal Disease
  - Surgery?
    - Which?
  - Radiation/Chemotherapy?



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WHY NOT JUST RESECT EVERYONE?

Neodjuvant Therapy

- Swedish (no relation) Rectal Cancer trial
  - *N Engl J Med 336:980-987, 1997*
  - *Journal of Clinical Oncology, Vol 23, No 24*
    - (18 year followup)
    - Preoperative Radiation improves local recurrence and long term survival

Neoadjuvant Therapy

- Dutch Rectal Cancer Trial
  - *N Engl J Med 2001; 345:638-646*
    - Neoadjuvant therapy improved local control more than of TME alone
- German Rectal Cancer Study Group
  - *N. Engl J. Med 351;17, 2004*
    - Preop radiation has better local control and lower toxicity than postop

Why not just resect everyone?

- Neoadjuvant therapy will
  - Down size
  - Down stage
  - Potentially improve resectability and sphincter preservation
  - Reduce local recurrence
  - Improved overall survival

Local recurrence is difficult to manage and salvage

DON’T JUST RESECT EVERYONE!

WHY NOT JUST GIVE EVERYONE PREOPERATIVE THERAPY?

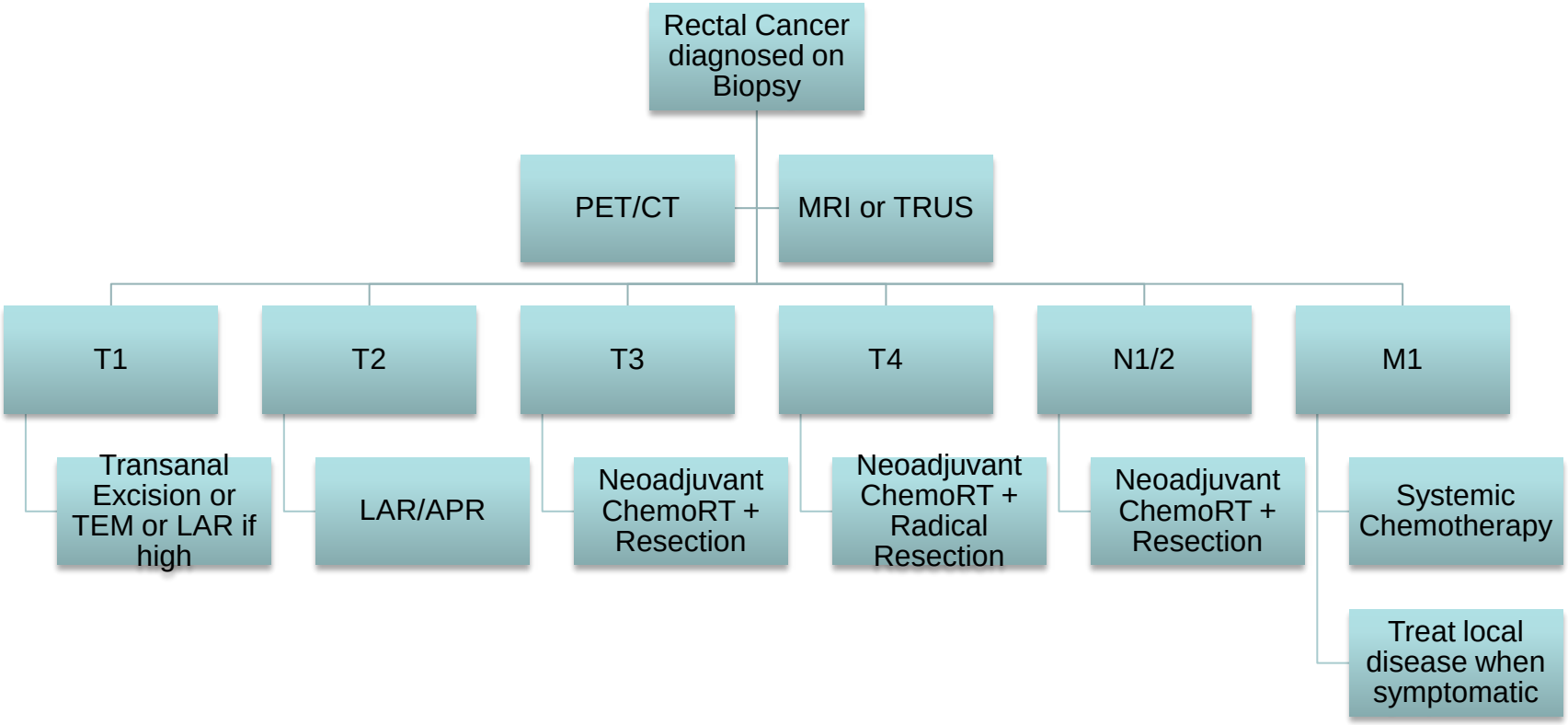
Why Not just give everyone Preoperative Therapy?

- Over treating unnecessarily early stage cancers
  - Complications and toxicity
  - Expensive
  - Delay in surgery
- More stomas?

- Risk benefit analysis does not favor preoperative treatment of early stage rectal cancer like it does for advanced stage rectal cancer

SO, DEFINING STAGE MAKES A DIFFERENCE IN TREATMENT

Rectal Cancer Decision Tree



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Staging methods

- Transrectal ultrasound
- Pelvic MRI
- CT abdomen/pelvis (chest?)
- PET/CT
- Combination

Accuracy of rectal US in staging rectal cancer compared with surgical pathology

	T Staging	N Staging
Ultrasound	80-95%	70-75%
CT	65-75%	55-65%
MRI	75-85%	60-70%

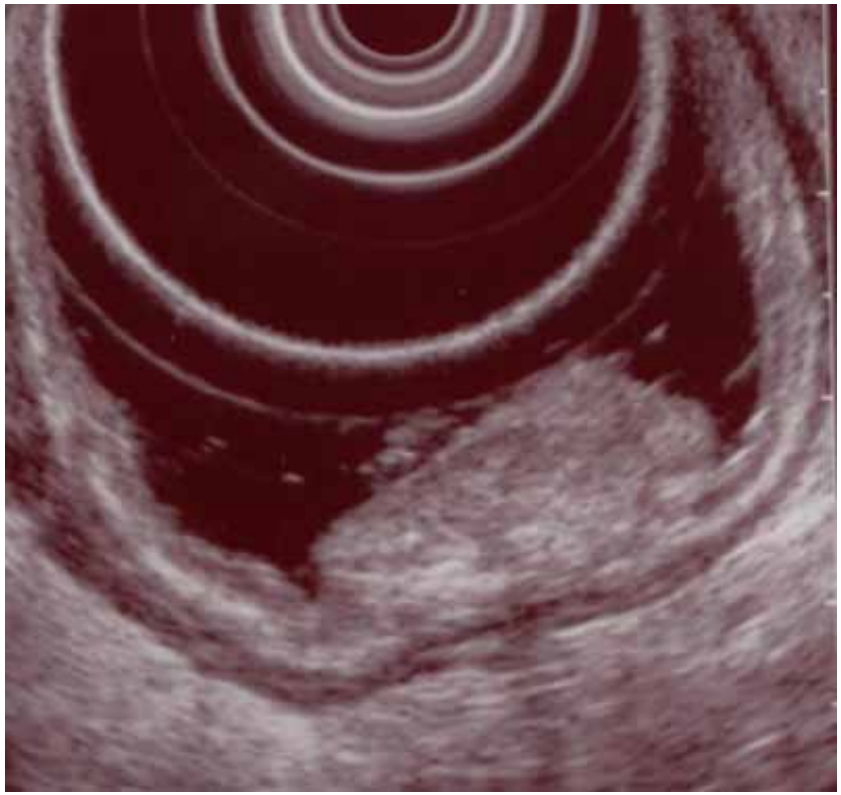
Siddiqui *et al. International Seminars in Surgical Oncology 2006* ***3:36***

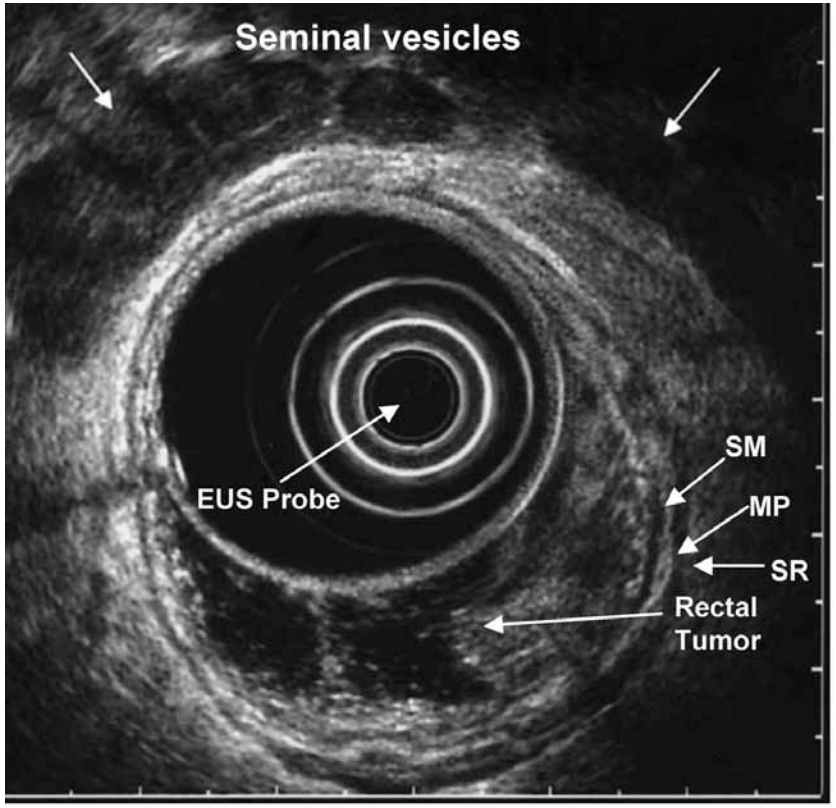
Transrectal Ultrasound

- Technically easy
- Inexpensive
- Low risk
- High accuracy for T stage (up to 96%)

- Diagnostically challenging
- User variability
- Not so high accuracy for N stage (about 70%)
- No assessment of M stage

uT1 Rectal Cancer





International Seminars in Surgical Oncology 2006 3:36
Gastrointestinal Endoscopy Volume 38, Issue 4,

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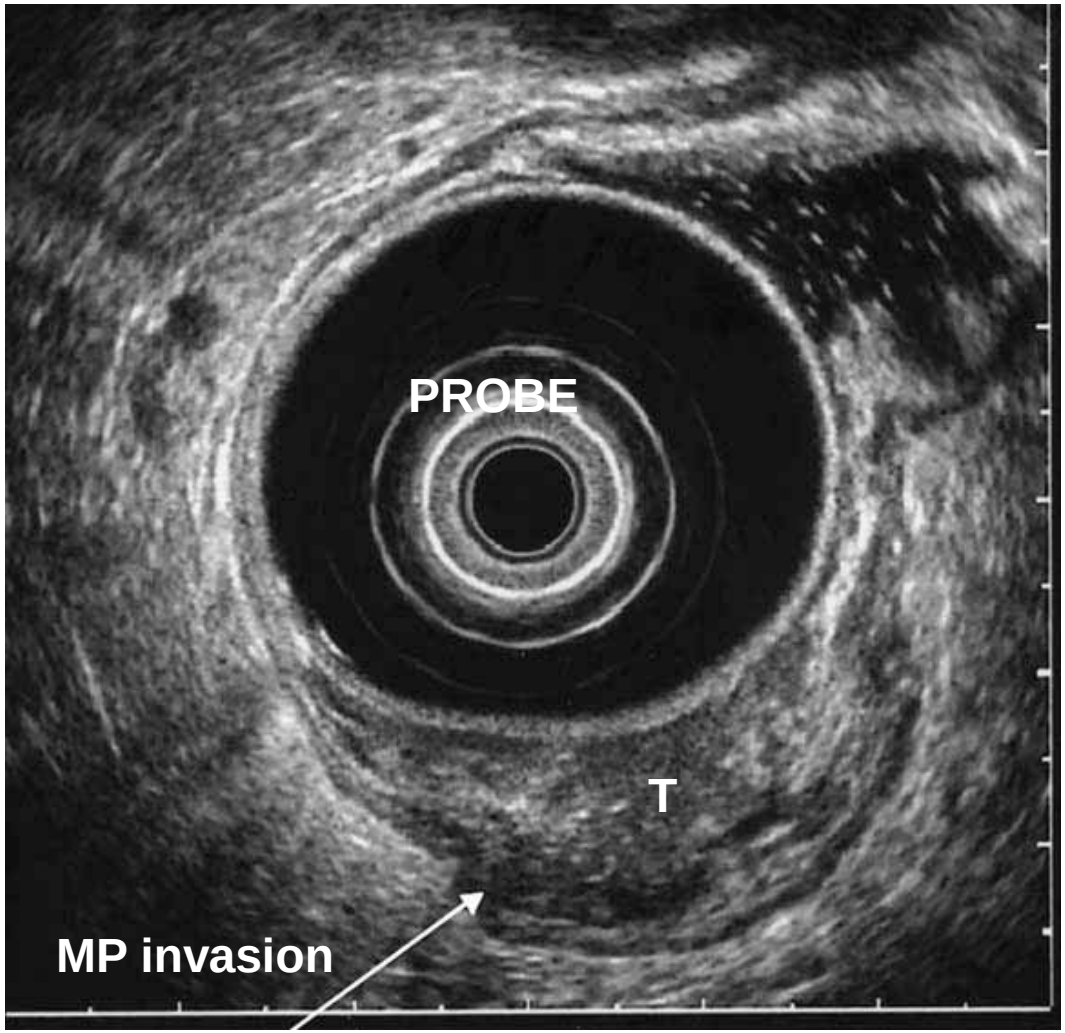
uT2



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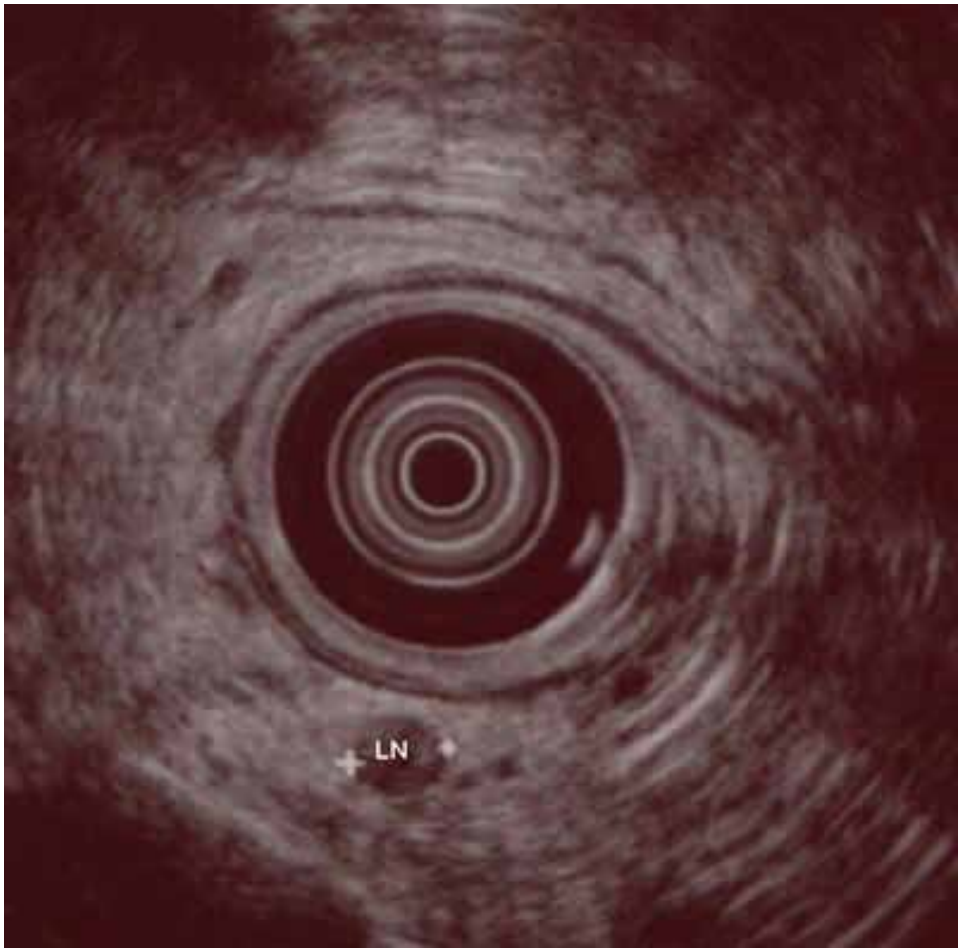
uN1



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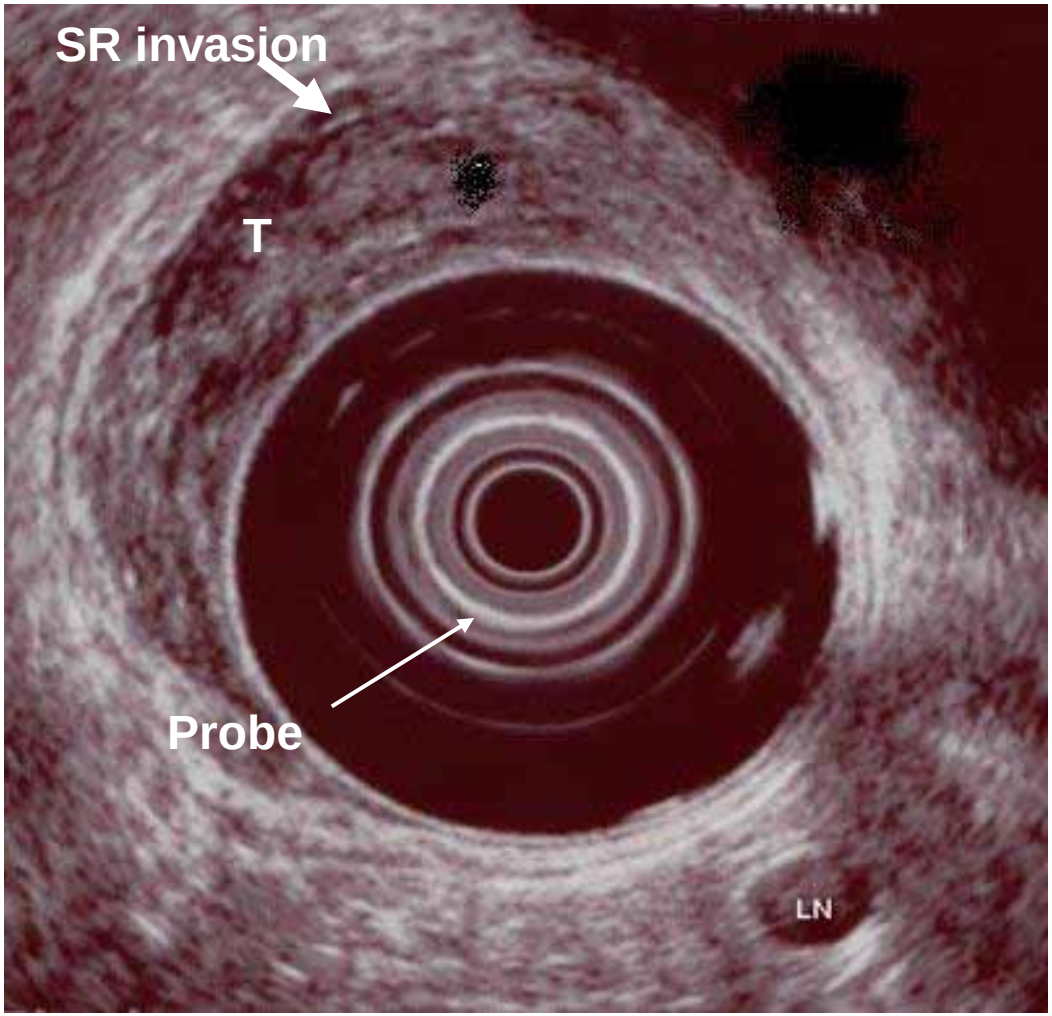
uT4N1



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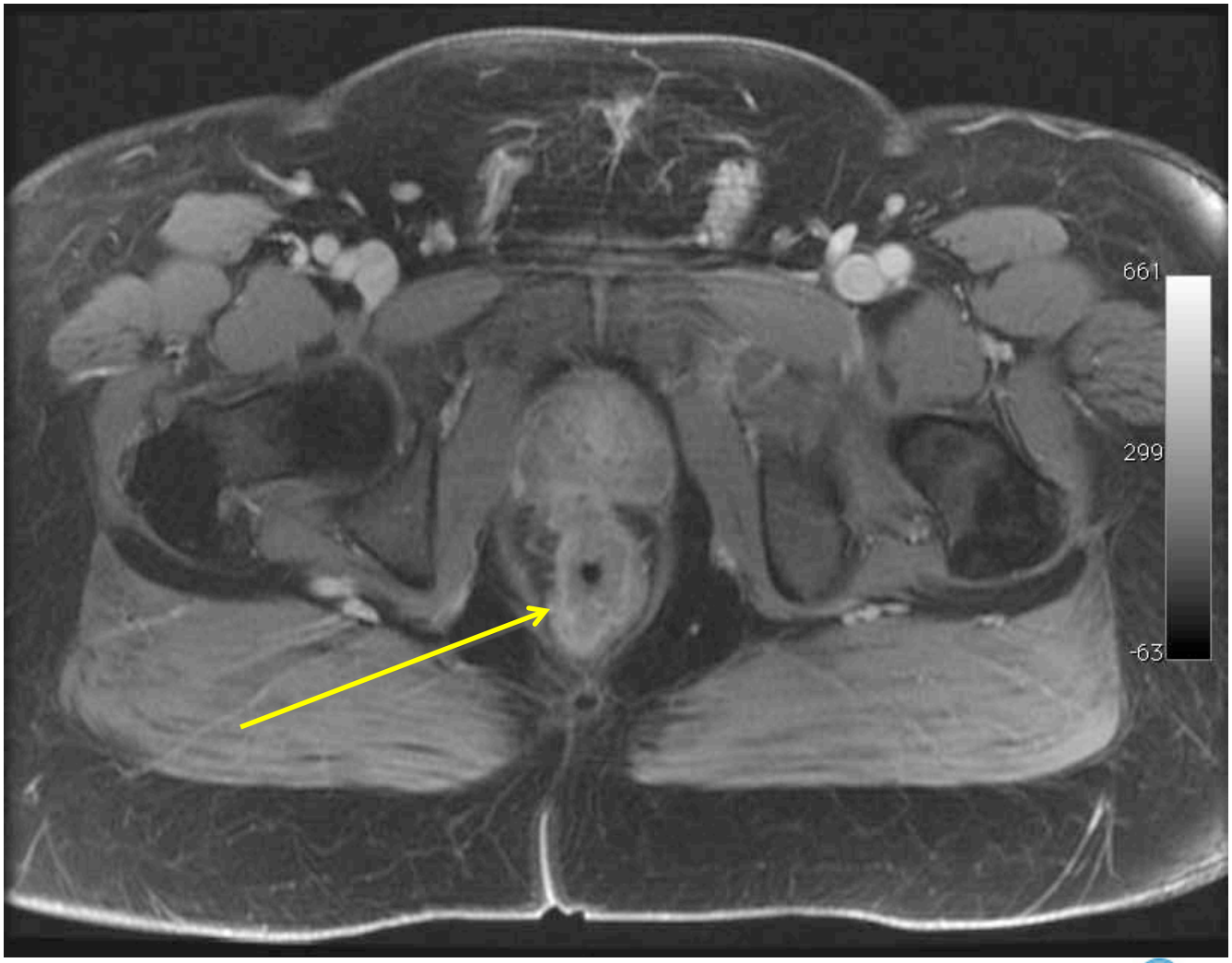
MRI

- Special equipment and techniques
- When done properly, reproducible, accurate staging
- Will likely become the standard of care
- Expensive
- Requires special training
  - Protocol with contrast,
  - 1.5T
  - thin slices
  - small field of view
- When done poorly, no better than CT

Diffuse Rectal Wall Thickening



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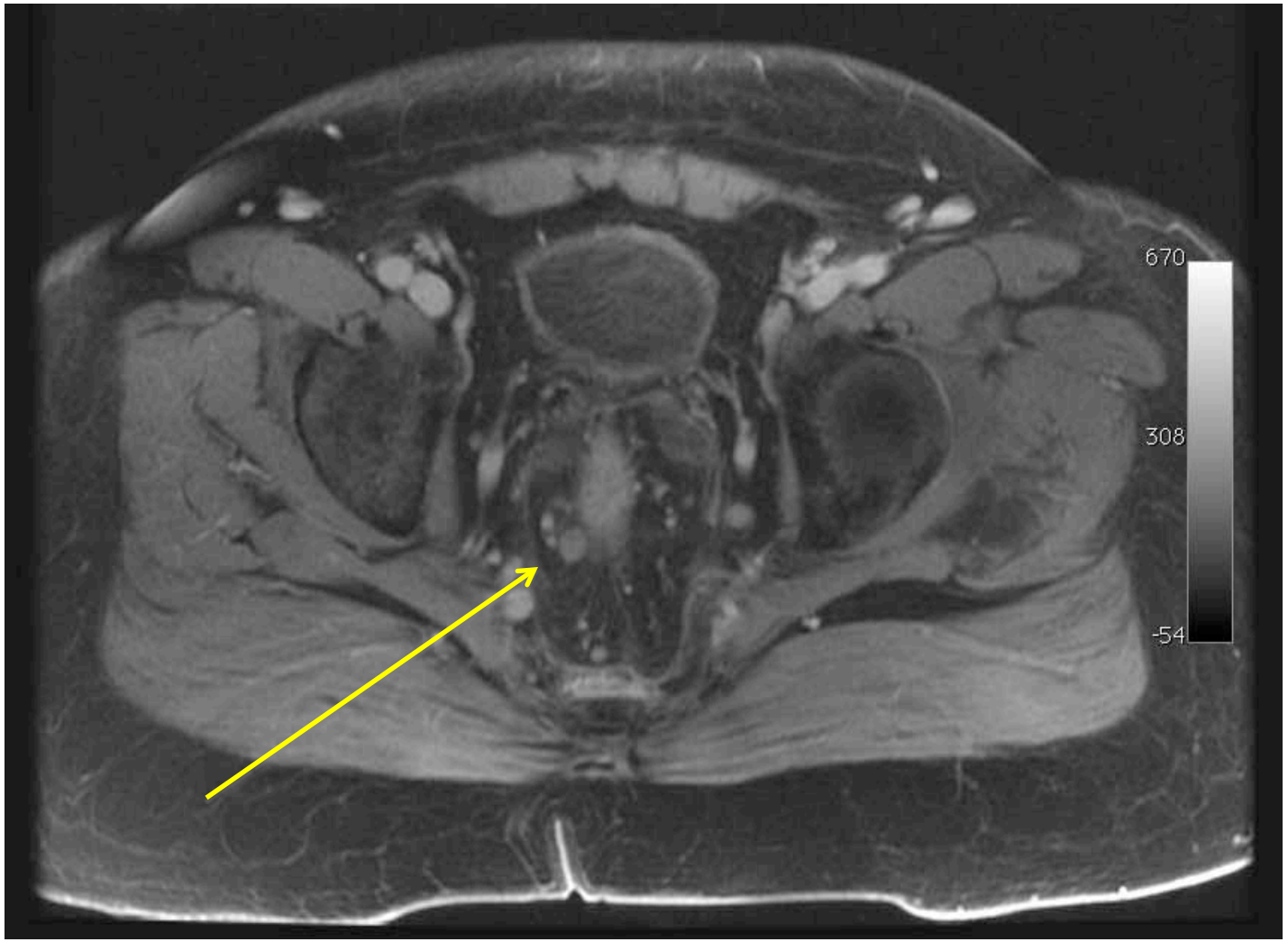
Suspicious Lymph Node



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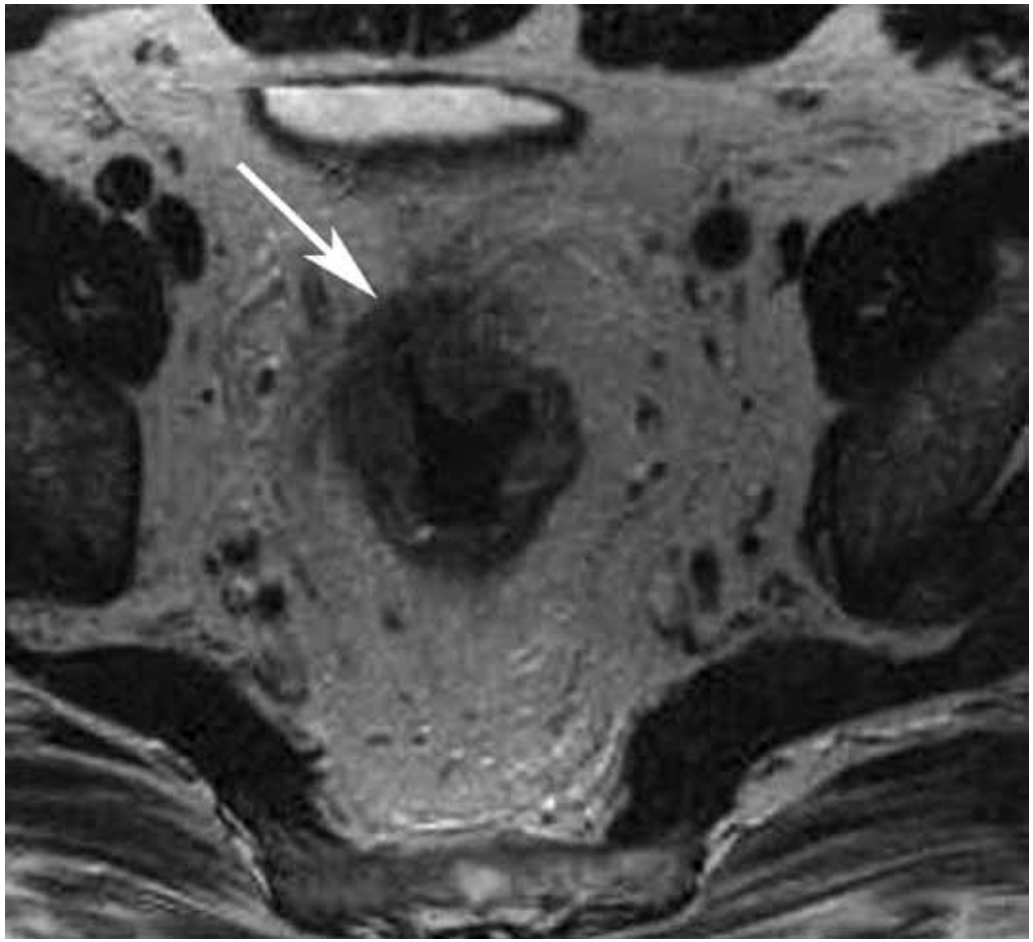
Stage T3 rectal carcinoma without involvement of the mesorectal fascia.



- thin slices
- small field of view

Iafrate F et al. Radiographics 2006;26:701-714

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CT

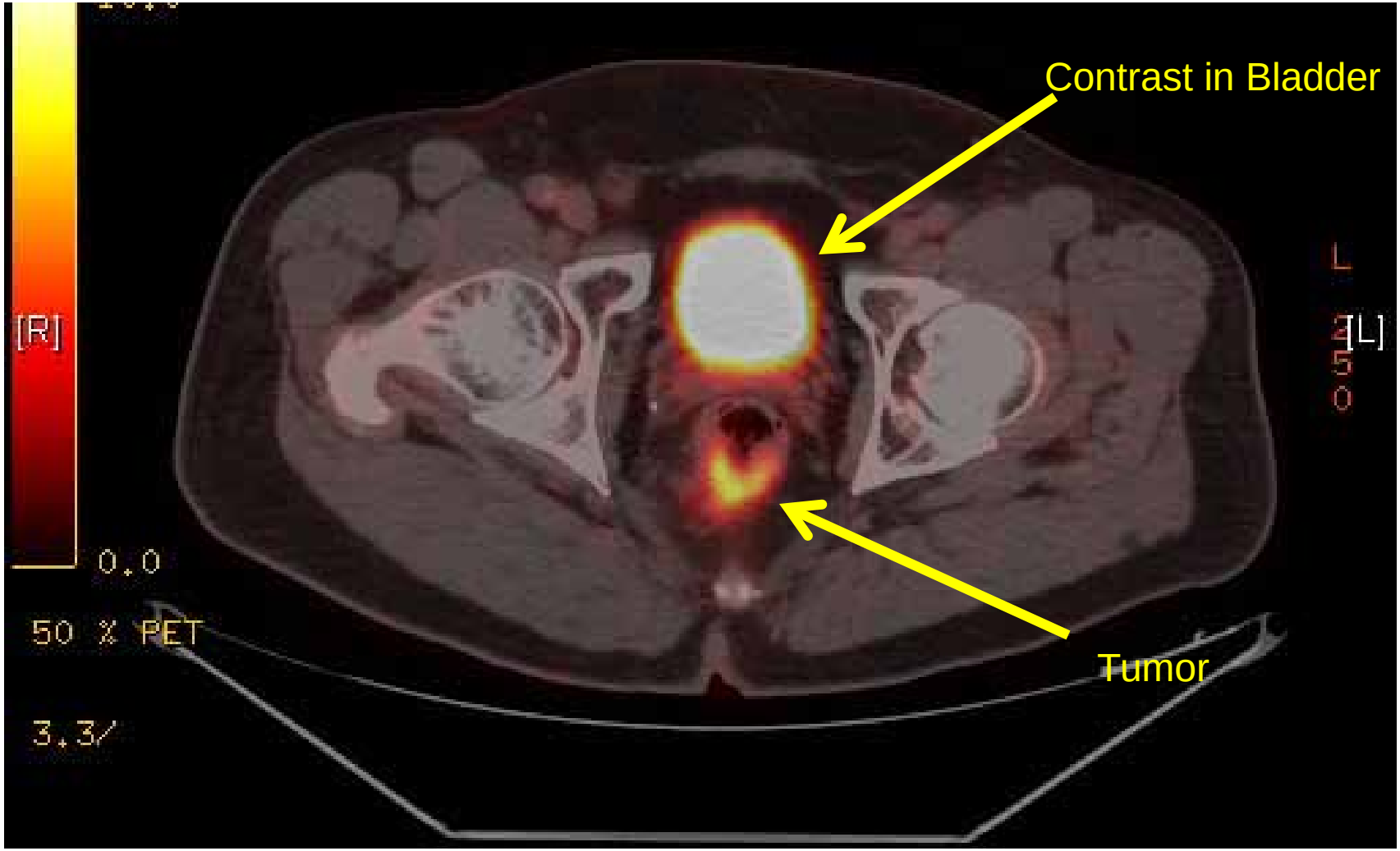
- Standard staging for distant disease
- Suspicious nodal involvement
- Easy access
- Not as expensive as MRI
- Unable to determine T stage
- More useful when used with PET

PET/CT

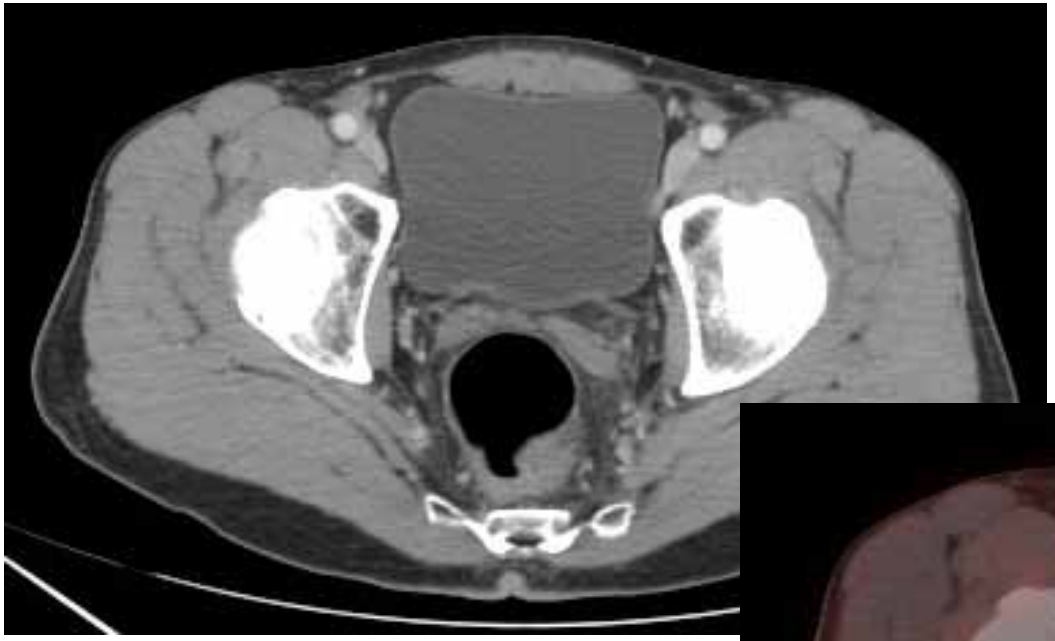
- Helpful for distant disease detection
- Occult second cancers (thyroid, adrenal, etc.)
- Clarifies suspicious CT findings

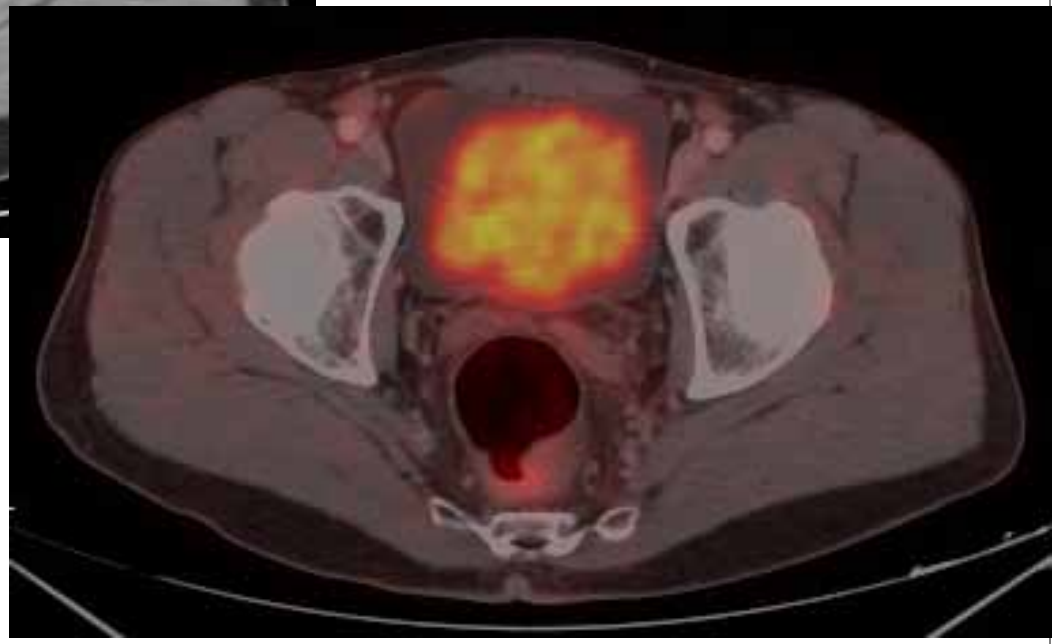
- Can’t determine T stage
- Variable accuracy for N stage
- Expensive
- Not proven yet
  - Not standard of care yet

T3 Rectal Cancer

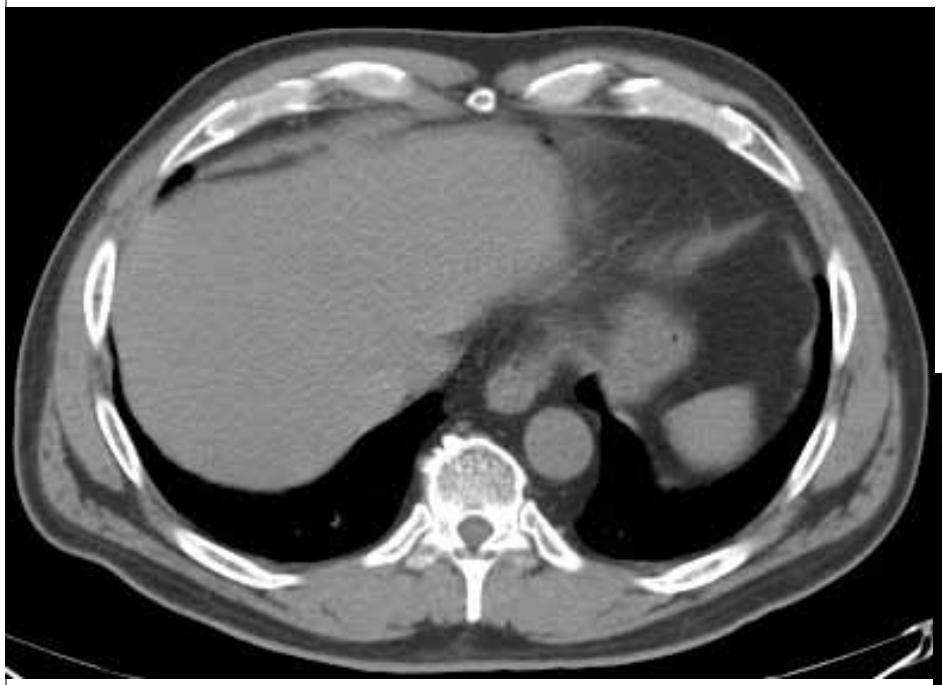


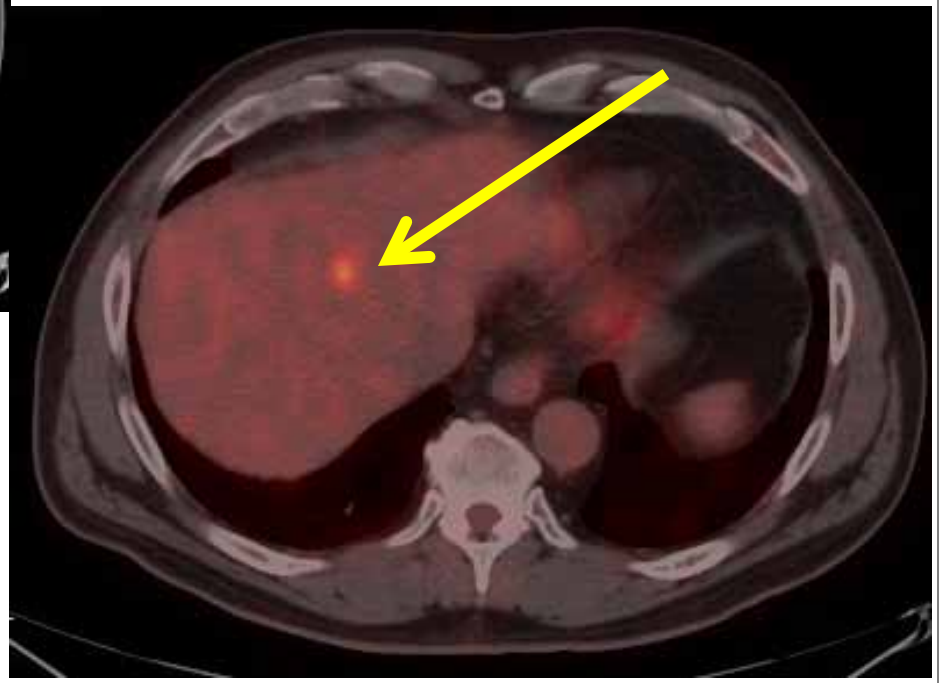
T3 Rectal Cancer





T3 Rectal Cancer, Occult Liver Metastasis





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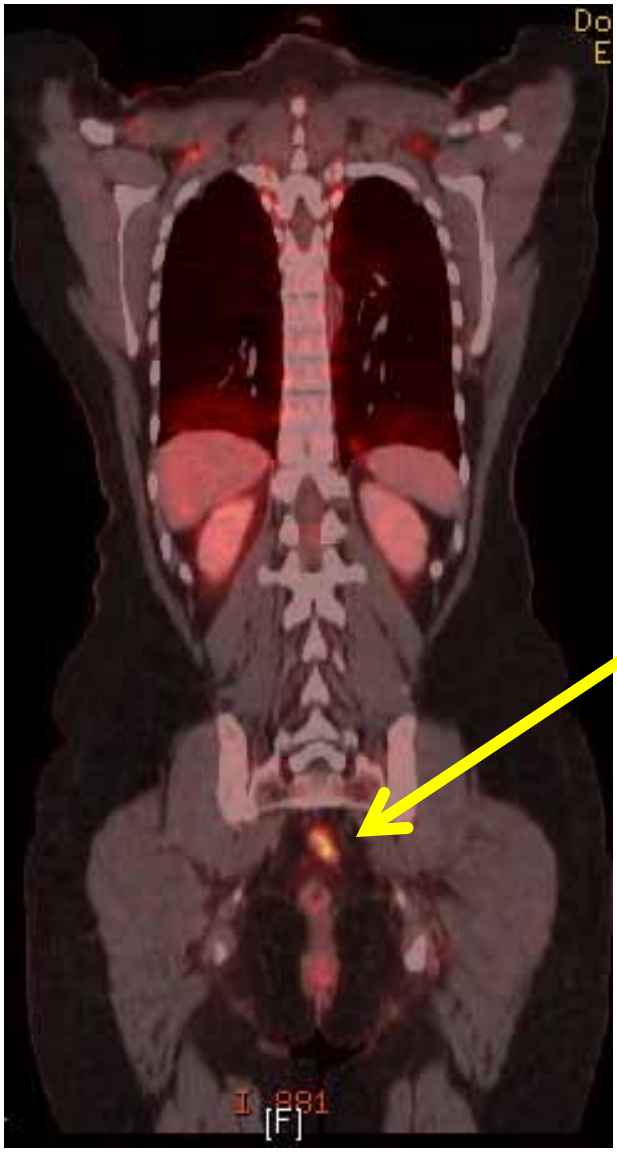
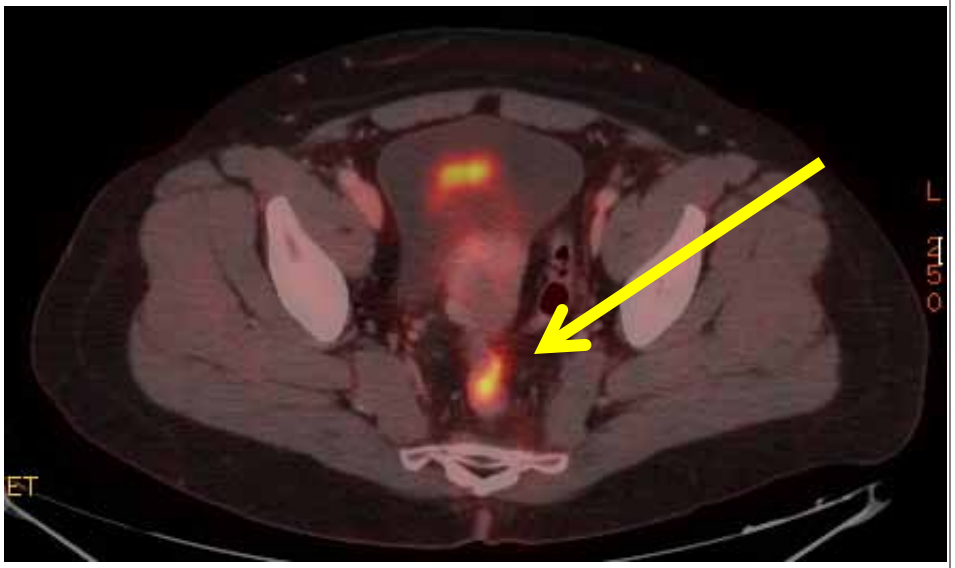
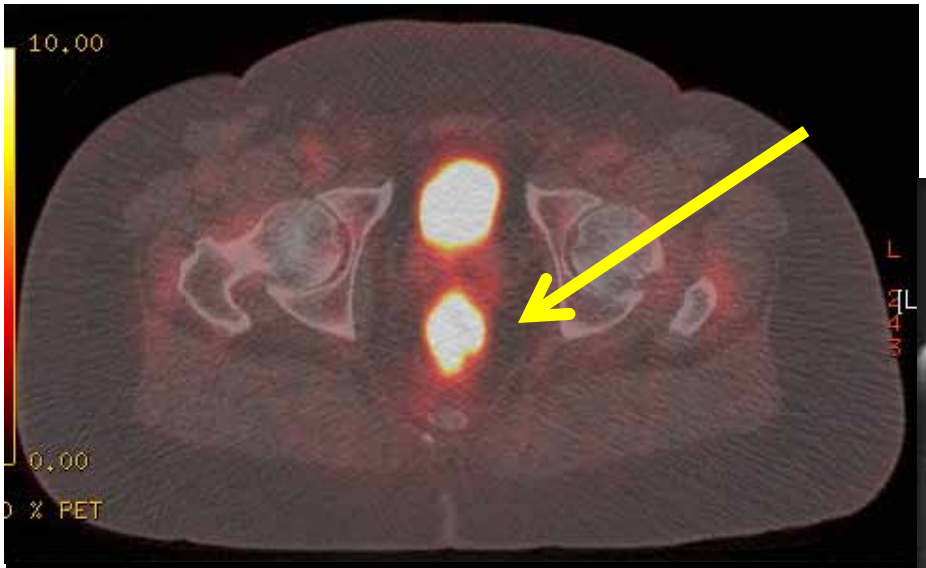
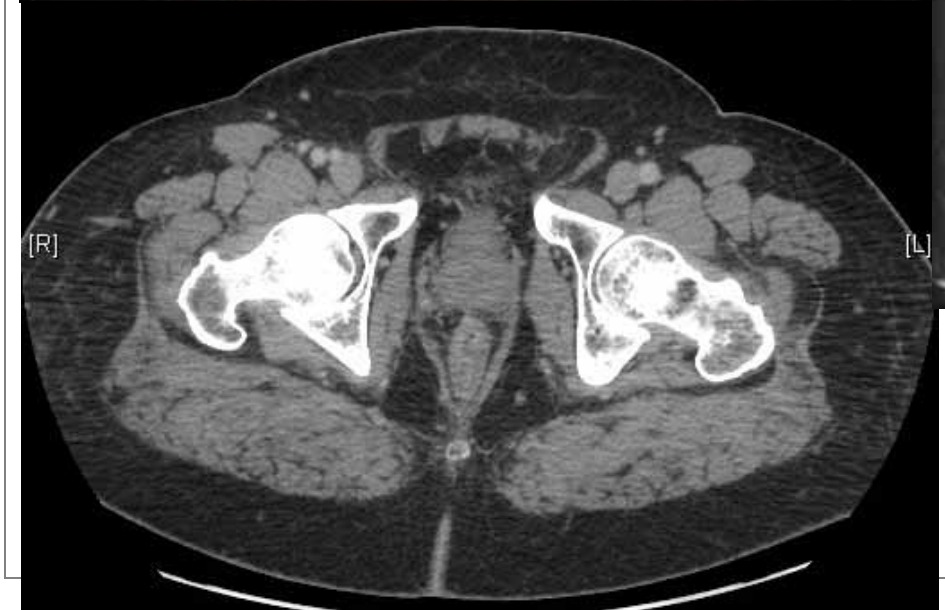
T3N0 Multiplanar imaging helps in planning

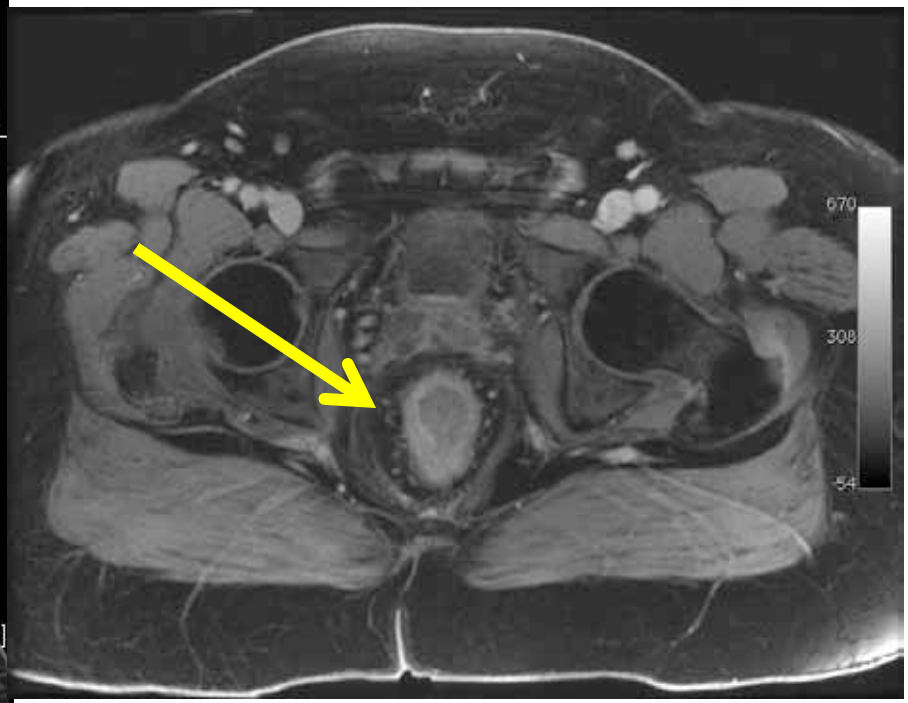




CT vs MRI







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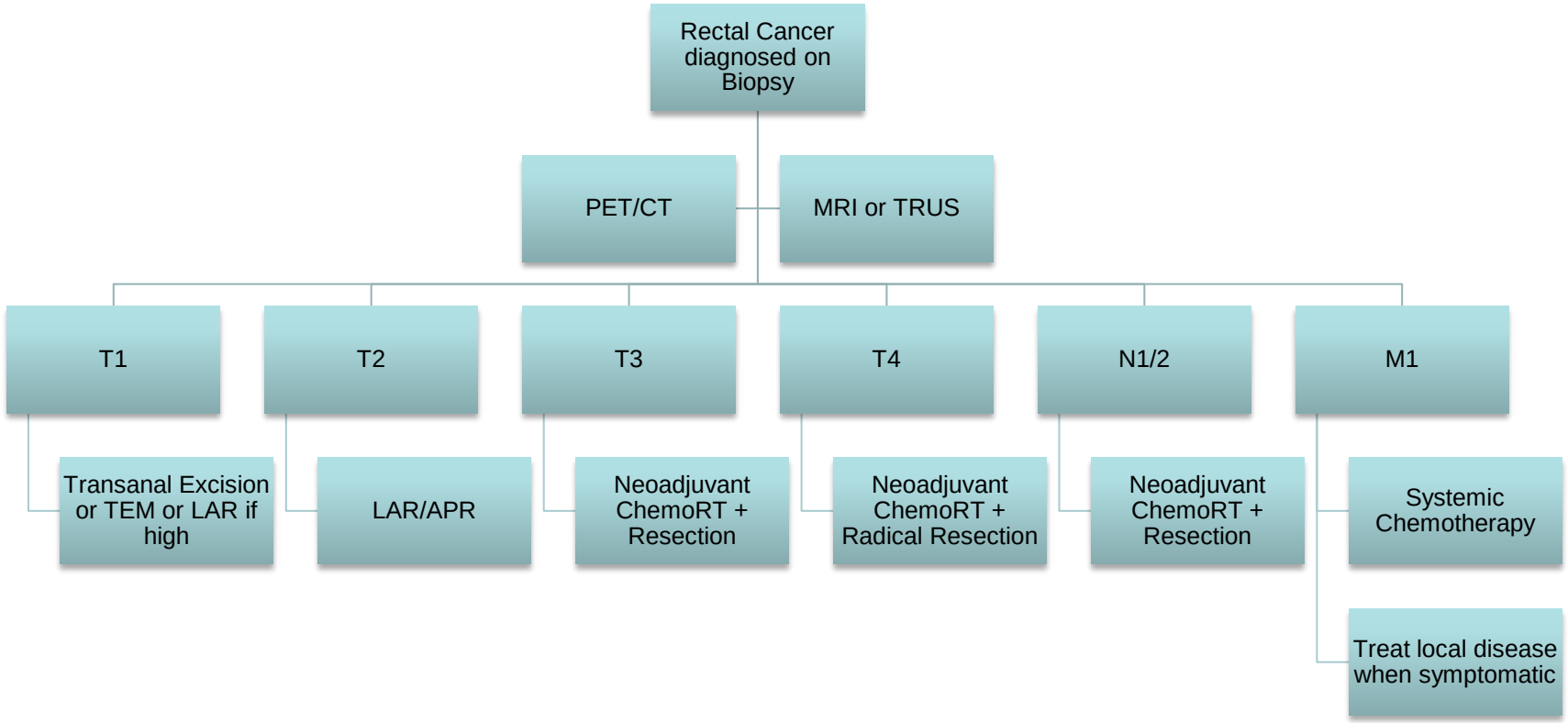
Correlation of staging with recommended treatment for rectal cancer

Ultrasound (or MRI) staging	Histopathological Staging	Therapy
uT1	Invasion of mucosa and submucosa	Excision (including TEM)
uT2	Invasion into the muscularis propia	Excision (LAR)
uT3	Invasion through the serosa	Neoadjuvant chemoradiotherapy then resection
uT4	Invasion into adjacent organs	Neoadjuvant chemoradiotherapy then resection

Decision Tree



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THANK YOU!

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DISCUSSION