



November

Colon Cancer

Alison Lieberman, MD

Alison
Lieberman, MD



Alison Douglass
Gillian Lieberman, MD

Our Patient

Mr. K. is a 67 year old man with no prior medical problems other than hemorrhoids which have caused occasional rectal noticed an increase in the frequency and amount of bleeding.bleeding over the last 20 years. Over the last 6 months, he has



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on Patient History Differential Diagnosis based

- Hemorrhoids
 - Diverticula
 - Vascular anomalies
 - Cancers or polyps
 - Colitis (infectious, idiopathic, ischemic or radiation induced)
- hyperplasia, vasculitis, aortocolic fistulas, and amyloidosis/trauma,



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Mr. K. continued

- He presented to his PCP for his yearly physical with colon cancer
- At this time he admitted to having an older brother
- A rectal mass was palpated.
- Upon digital rectal examination, a posterior rectal adenocarcinoma
- Colonoscopy detected a rectal



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Clinical Presentation of Colon Cancer

- Hematochezia or melena: 40%
- Abdominal pain: 44%
- Change in bowel habit: 43%
- Weakness: 20%



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Primary Diagnosis

- Digital rectal exam (DRE) and colonoscopy with biopsy
- Double contrast barium enema and CT also play a role



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Plain Film With Double Contrast



Double contrast is best at diagnosing large obstructing masses as seen here.

From <http://www.medinfo.ufl.edu/>

10 percent for large polyps and 50 percent for small polyps•The false-positive rate is less than 1 percent for cancers, 5 to

rectosigmoid region•Misses about 25 percent of

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From BIDMC Databases

- Seen as intraluminal masses with focal or circumferential wall thickening

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Importance of Radiology in Colon CA

- Staging
- Operative management decisions:
 - anal sphincters determine abdominoperineal
 - Relationship of the tumor to pelvic floor
 - and resection versus a sphincter-saving



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TNM Staging

treatment options • Necessary for
evaluating prognosis and

- T addresses the extent of tumor invasion
- N addresses lymph node involvement
- M addresses distant metastasis



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“T” Staging

- Primary Tumor (T)

TX Primary tumor cannot be assessed

T0 No evidence of primary tumor

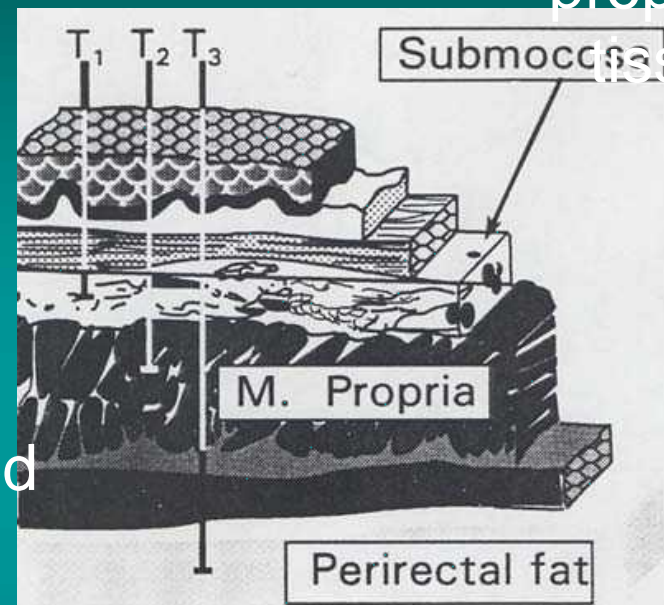
Tis Carcinoma in situ

T1 Tumor invades submucosa

T2 Tumor invades muscularis propria

subserosa, or into nonperitonealized pericolic or

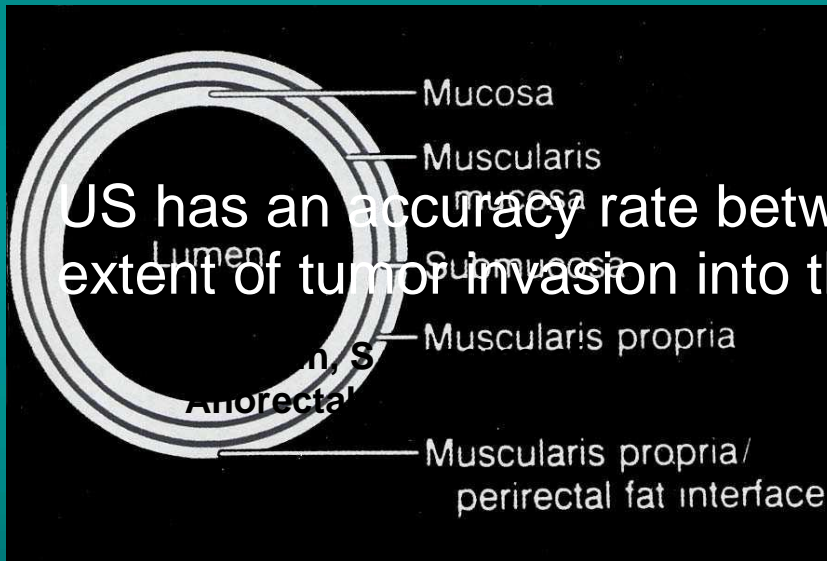
perirectal **T3** Tumor invades through the muscularis





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Tumor Staging With US



US has an accuracy rate between 80 and 90% Assessment of extent of tumor invasion into the bowel wall by



Submucosa

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From BIDMC Databases



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Tumor Staging With CT

indistinguishable tumor) is limited as the submucosa and muscularis are • The accuracy of CT for early tumor staging (T1 and T2 spread to be visualized mesenteric or extraperitoneal fat allowing extramural • Tumors may be diagnosed as T3 when the colon is near



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“N” Staging

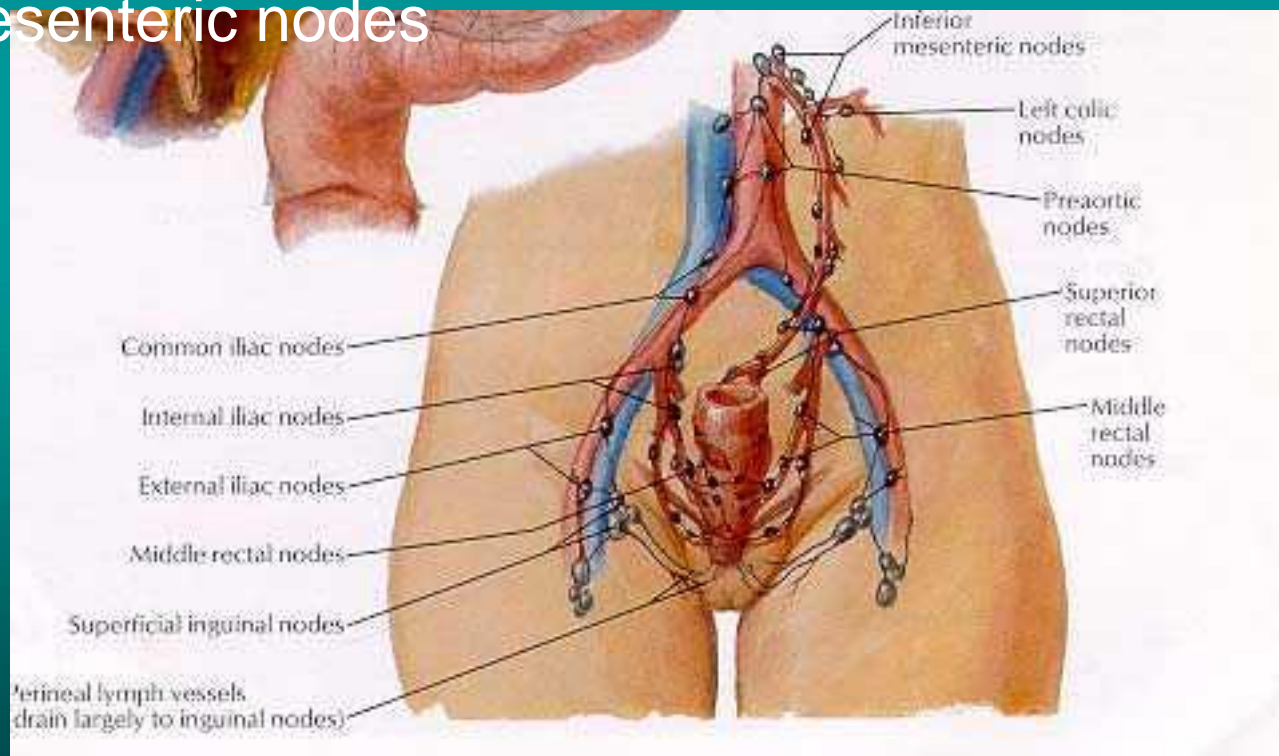
- Regional Lymph Nodes (N)
 - NX** Regional lymph nodes cannot be assessed
 - N0** No regional lymph node metastasis
 - N1** Metastasis in 1 to 3 pericolic or perirectal lymph nodes
 - N2** Metastasis in 4 or more pericolic or perirectal lymph nodes



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Perirectal/Pericolic Drainage Areas

- Inguinal nodes
- Internal and external iliac nodes
- Mesenteric nodes



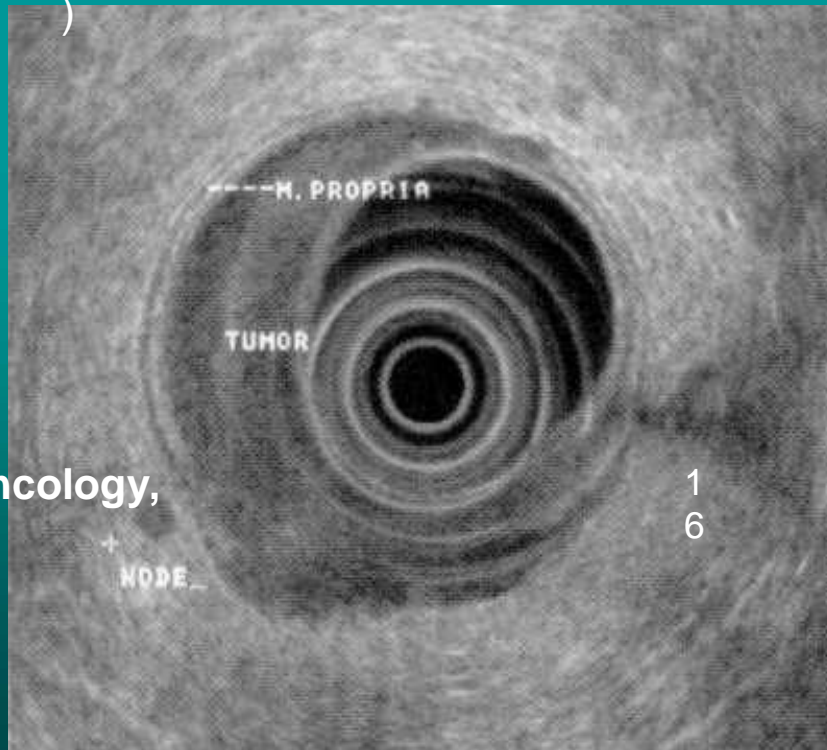


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Lymph Nodes and US

Identification of enlarged lymph nodes has a specificity 28% if 5mm is used as a cutoff, and 62% if 7mm is used as

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From Abelloff Clinical Oncology,
2nd ed

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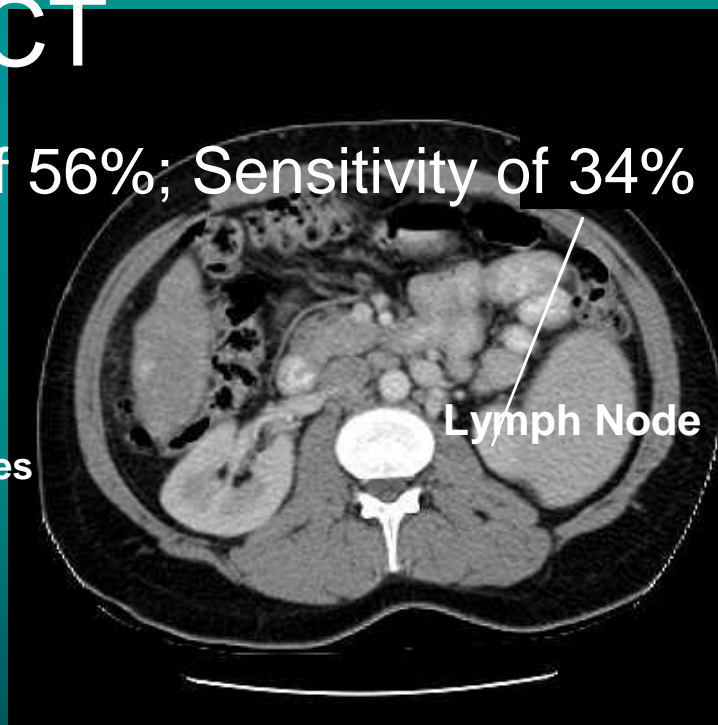
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Lymph Nodes and CT

- Specificity of 56%; Sensitivity of 34% (Meyers)

From BIDMC Databases





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Staging Node Involvement Limitations of Radiology and

enlargement and metastatic involvement.

- There is a poor correlation between nodal

diameter of less than 5mm. Lymph nodes also enlarge due to inflammatory response



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“M” Staging

- Distant Metastasis (M)
 - MX** Presence of distant metastasis cannot be assessed
 - M0** No distant metastasis
 - M1** Distant metastasis
- Work-up includes:
 - CT of abdomen (to assess liver and adrenal glands)



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Assessing Metastasis With CT

(Abeloff)

detecting distant metastases •CT scans have a sensitivity of 81% to 87% for

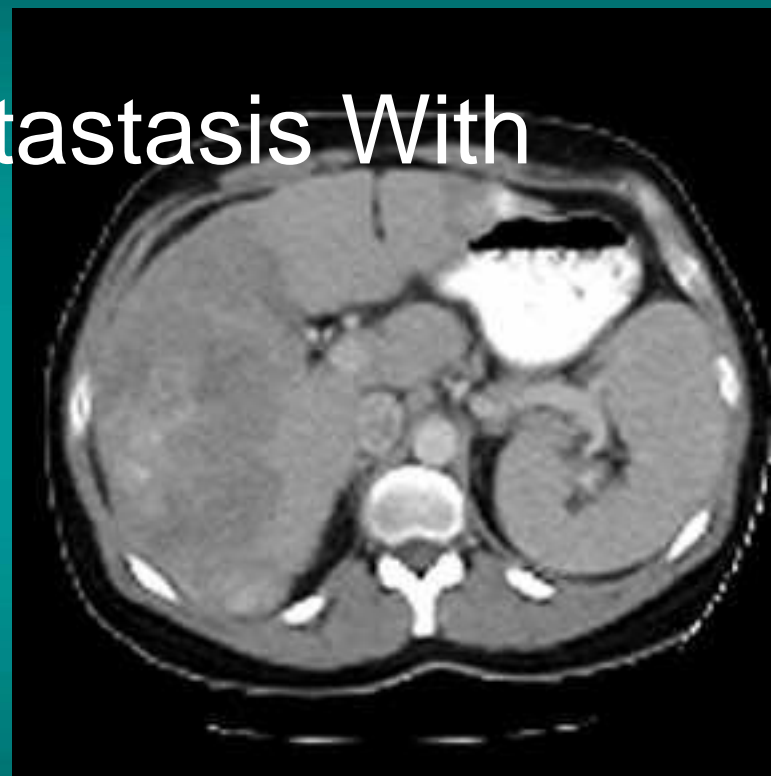
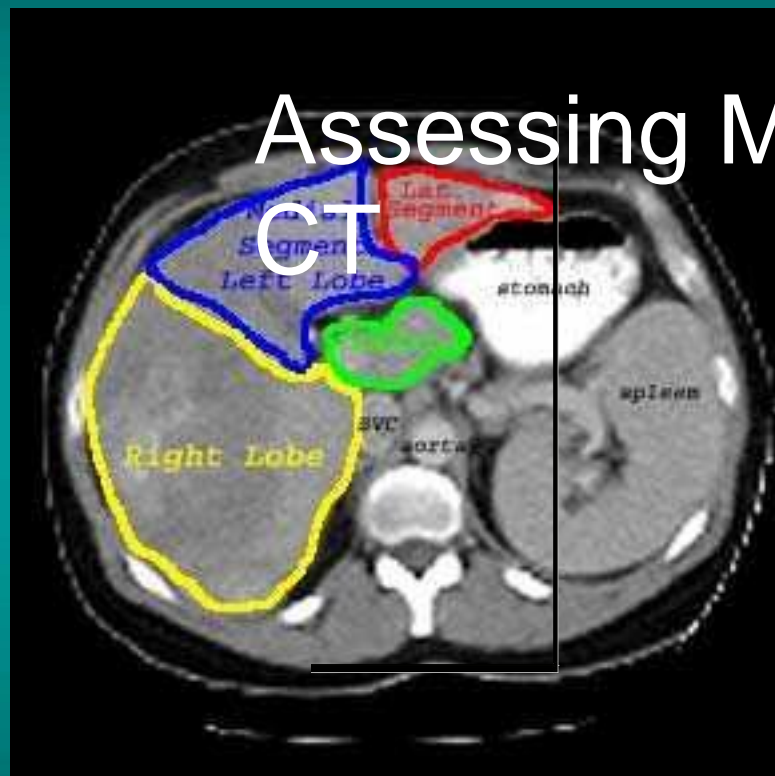
- It is most important to detect small, single hepatic lesions as surgical resection of such lesions increases patient survival time



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Assessing Metastasis With

CT





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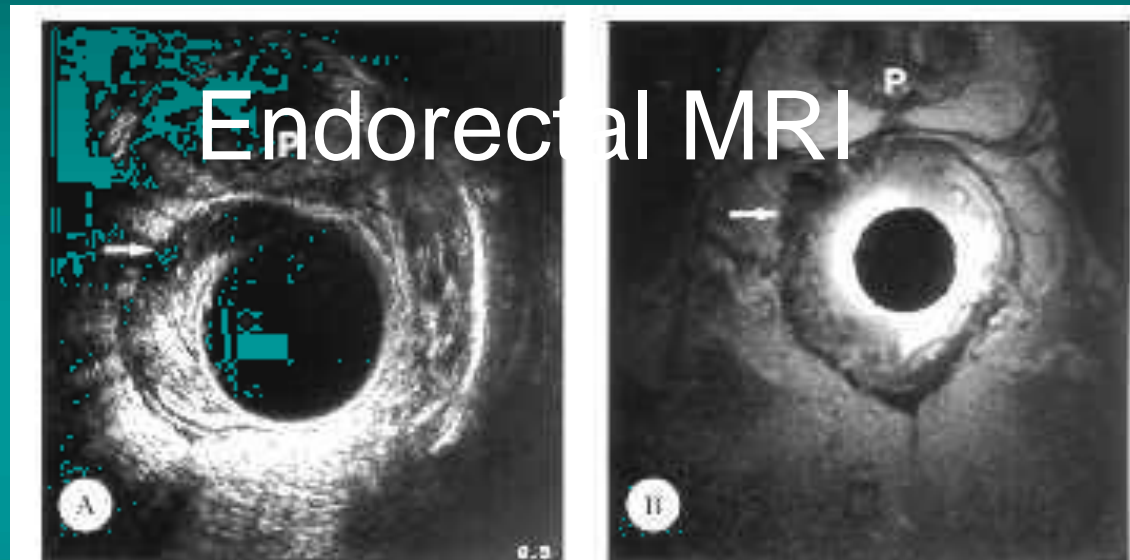
Colorectal Cancer and Standard MRI

62% for CT•Comparable resolution to CT without radiation. Accuracy of bowel wall penetration is 64% for MRI vs.

34% for CT•Sensitivity for lymph node metastasis is 15% to 40% vs.



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From Hussain, S. Imaging of Anorectal Diseases.

between 70% and 90% (compared to 80% - 90% for



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We've Come A Long Way Baby...

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Gillian Lieberman, MD
Gillian Lieberman, MD

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