Completing the Puzzle
AJCC TNM Staging
Colon

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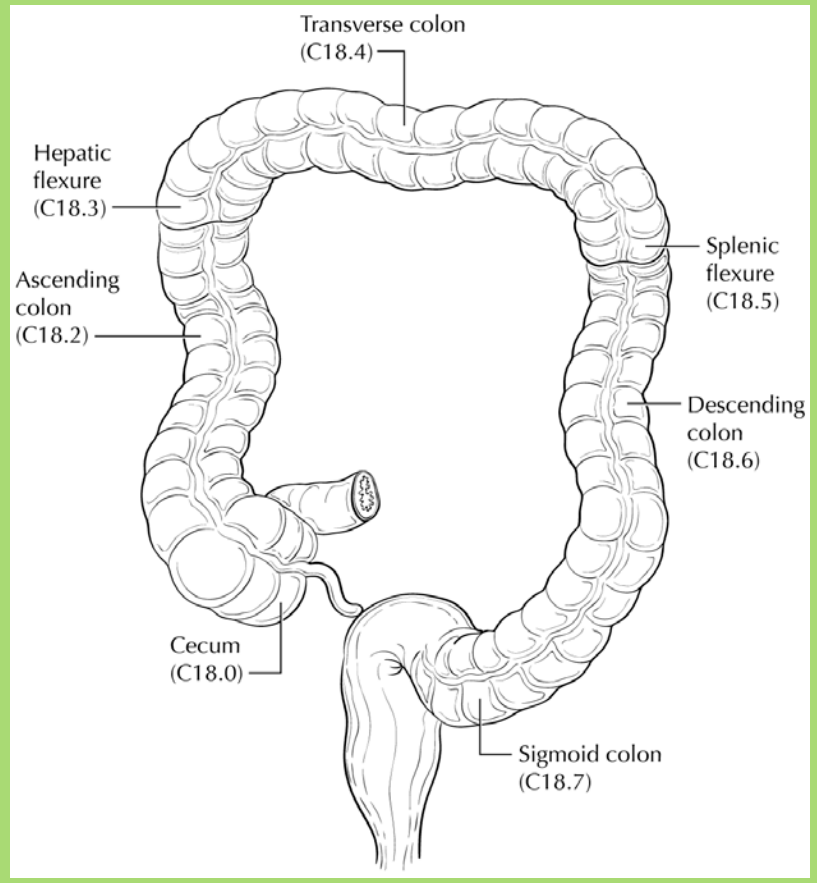
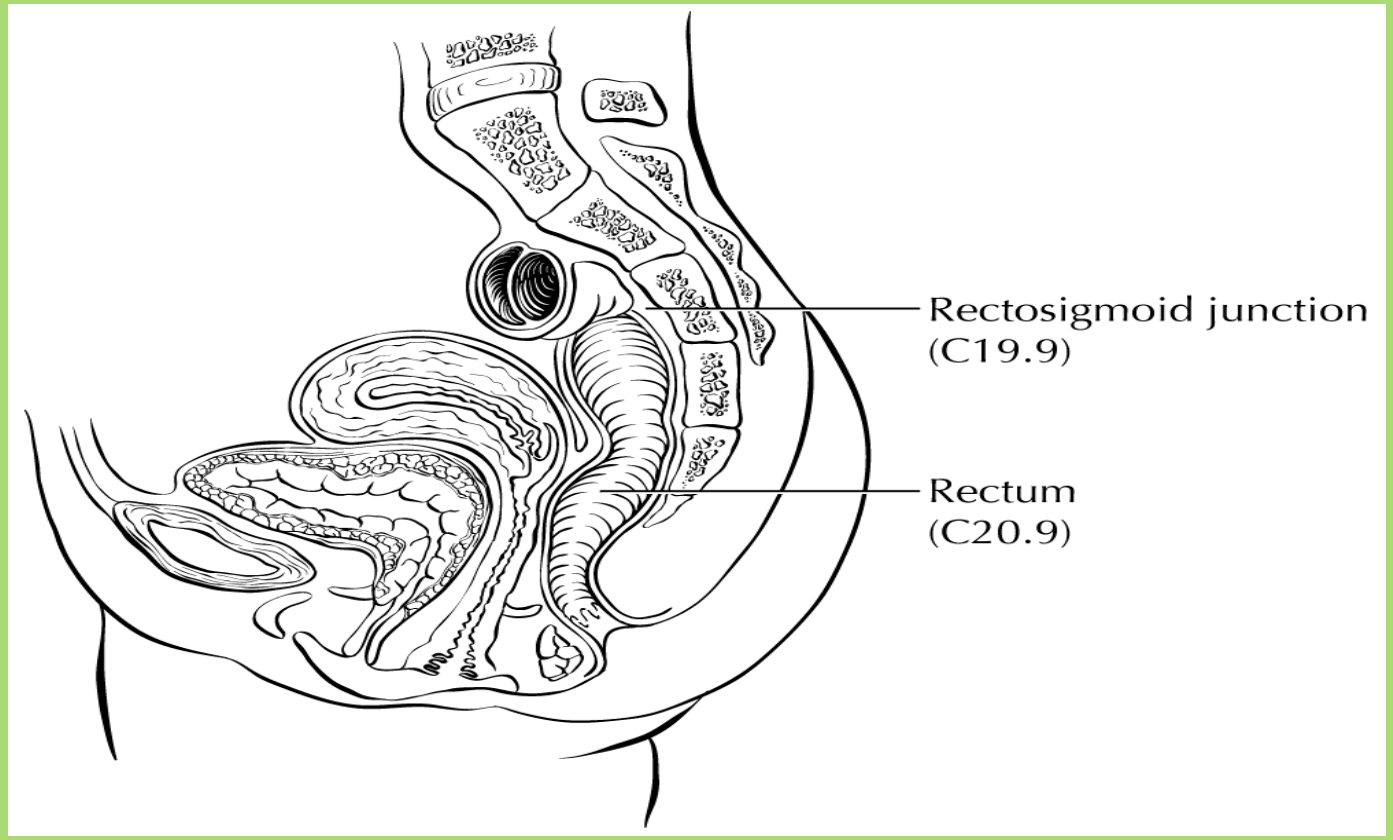
Colon and Rectum



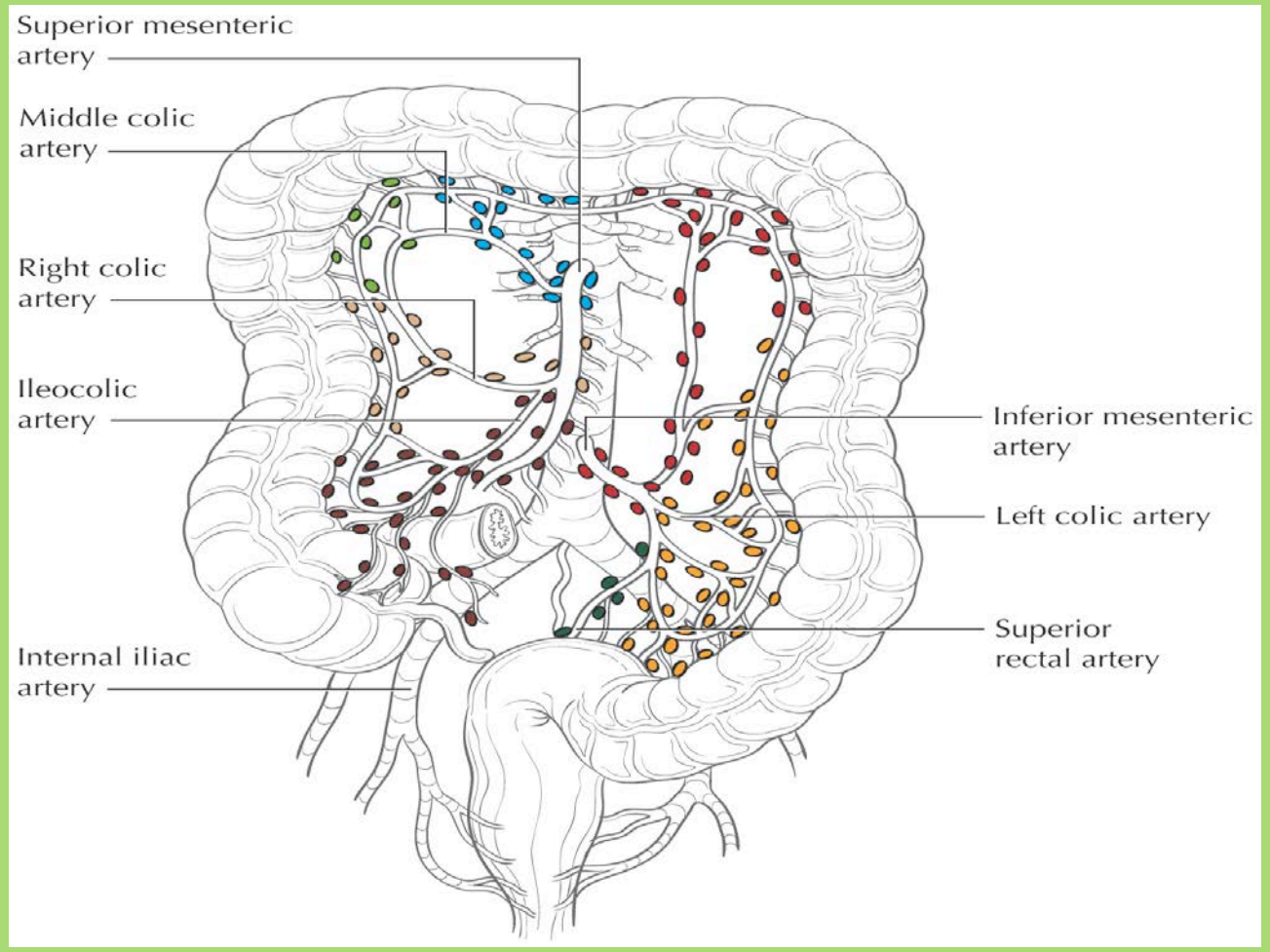
Anatomic subsites of the colon.

Colon and Rectum



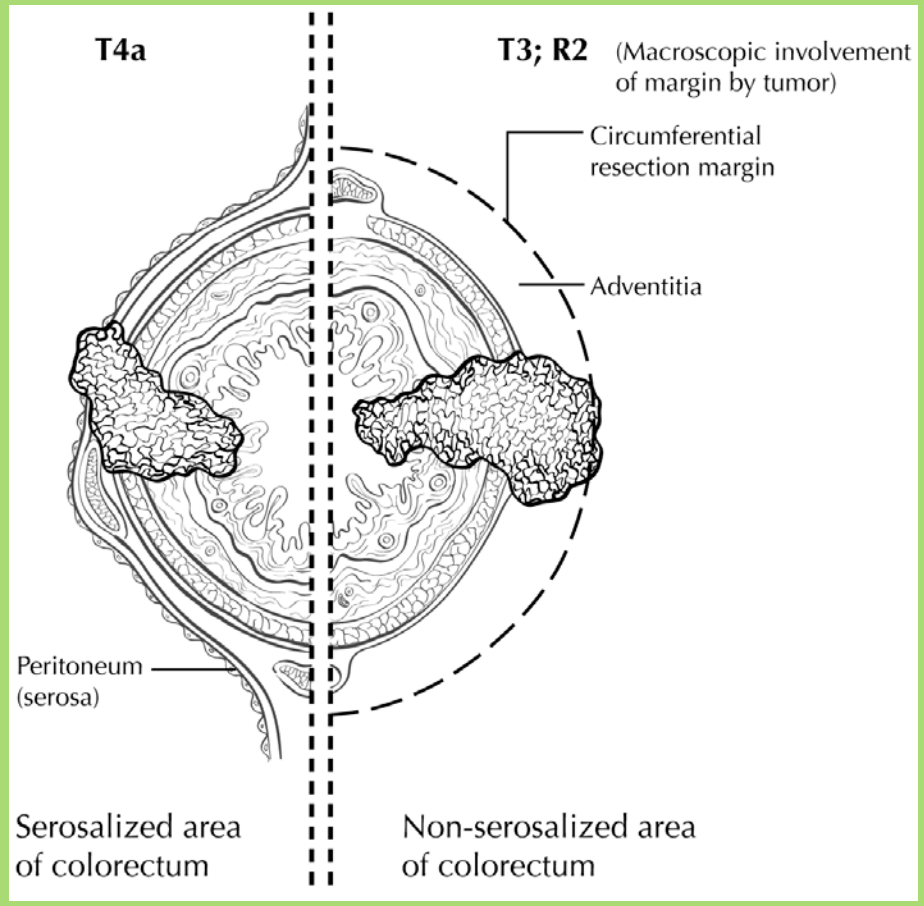
Anatomic subsites of the rectum

Colon and Rectum



The regional lymph nodes of the colon and rectum are colored by anatomic location, e.g., dark brown – right colon and cecum; blue – hepatic flexure to mid transverse colon; red – splenic flexure, left colon and sigmoid colon.

Colon and Rectum



Circumferential resection margin. T4a (left side) has perforated the visceral peritoneum. In contrast, T3; R2 (right side) shows macroscopic involvement of the circumferential resection margin of a non-peritonealized surface of the colorectum by tumor with gross disease remaining after surgical excision.

OBJECTIVES

- Understanding of Colon TNM staging
- Identify clinical versus pathologic information to use in staging cases
- Case eligibility for pathologic staging

AJCC T classifications

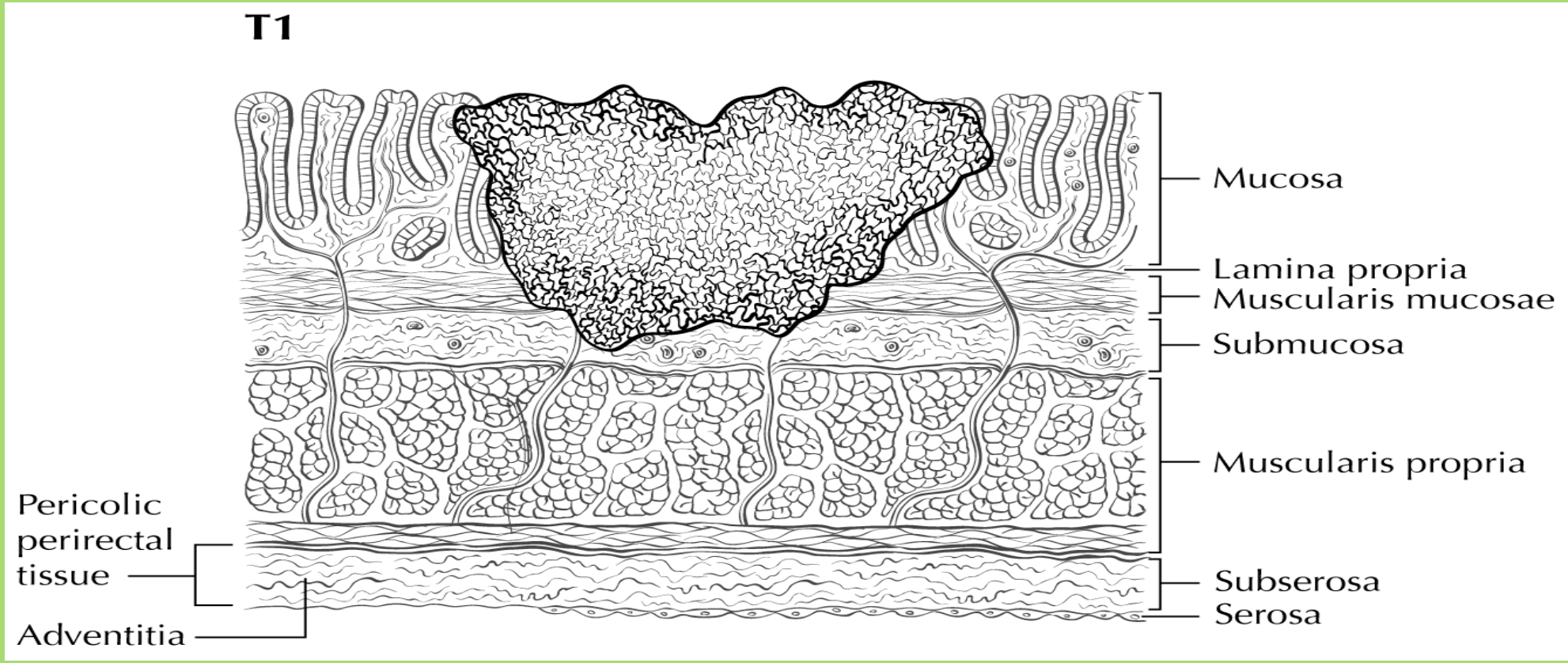
- **TX** Primary tumor cannot be assessed
- **T0** No evidence of primary tumor
- **Tis** Carcinoma in-situ: intraepithelial or invasion of lamina propria*

*Note: Tis includes cancer cells confined within the glandular basement membrane (intraepithelial) or mucosal lamina propria (intramucosal) with no extension through the musclaris mucosae into the submucosa.

AJCC T classifications

- **T1** Tumor invades submucosa

Colon and Rectum

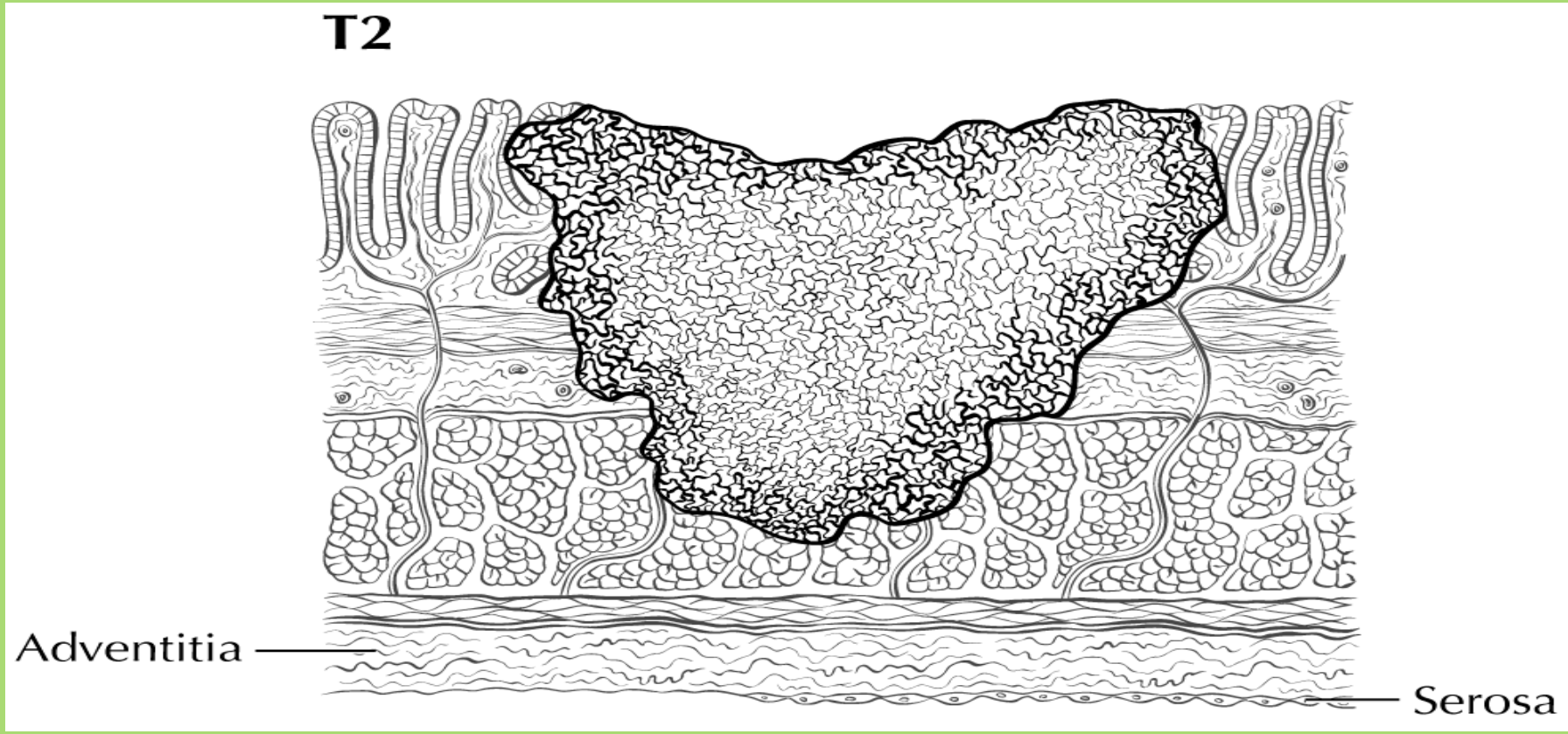


T1 tumor invades submucosal.

AJCC T classifications

- **T2** Tumor invades muscularis propria

Colon and Rectum

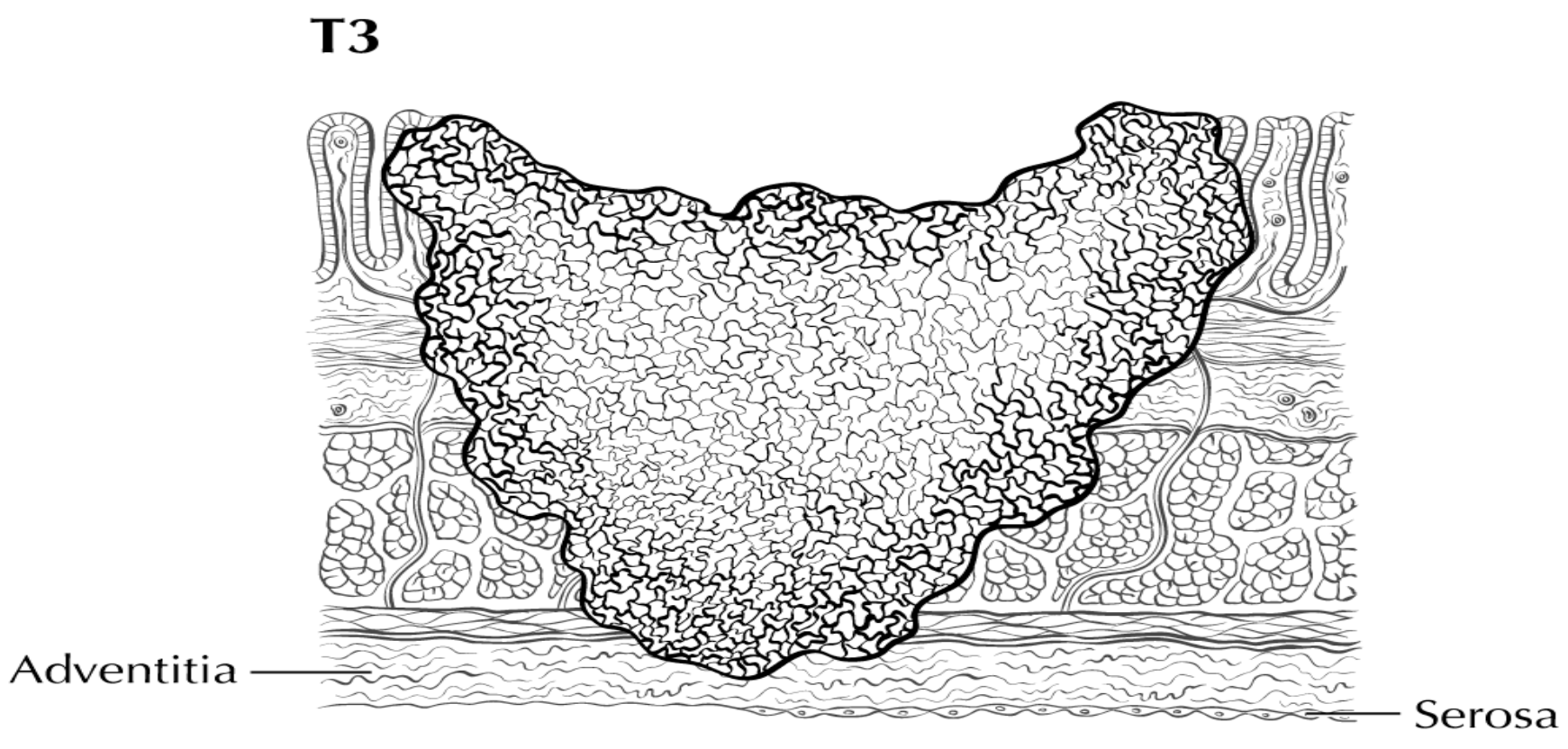


T2 tumor invades muscularis propria.

AJCC T classifications

- **T3** Tumor invades through muscularis propria into pericolorectal soft tissues (pericolic fat/subserosal fat)

Colon and Rectum

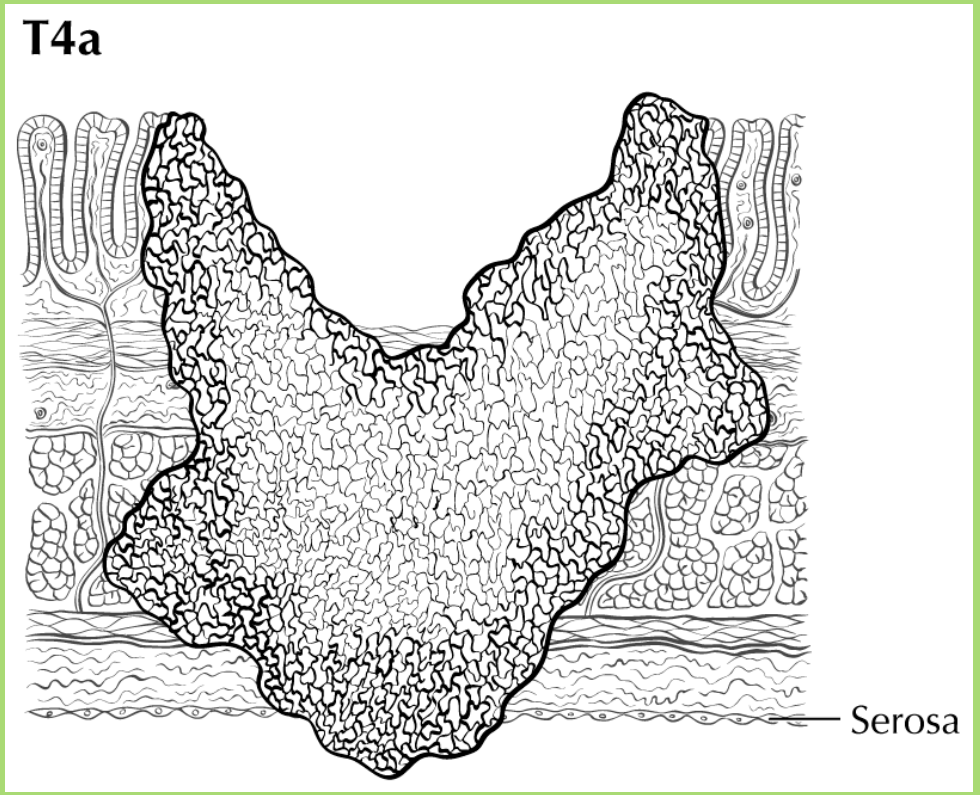


T3 tumor invades through the muscularis propria into pericolorectal tissues.

AJCC T classifications

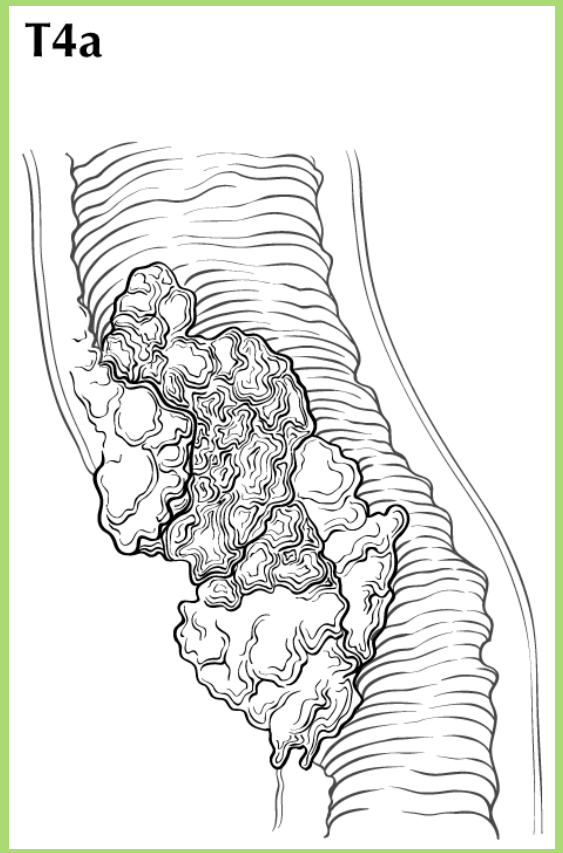
- **T4a** Tumor penetrates to the surface of the visceral peritoneum
- **T4b** Tumor directly invades or is adherent to other organs or structures

Colon and Rectum



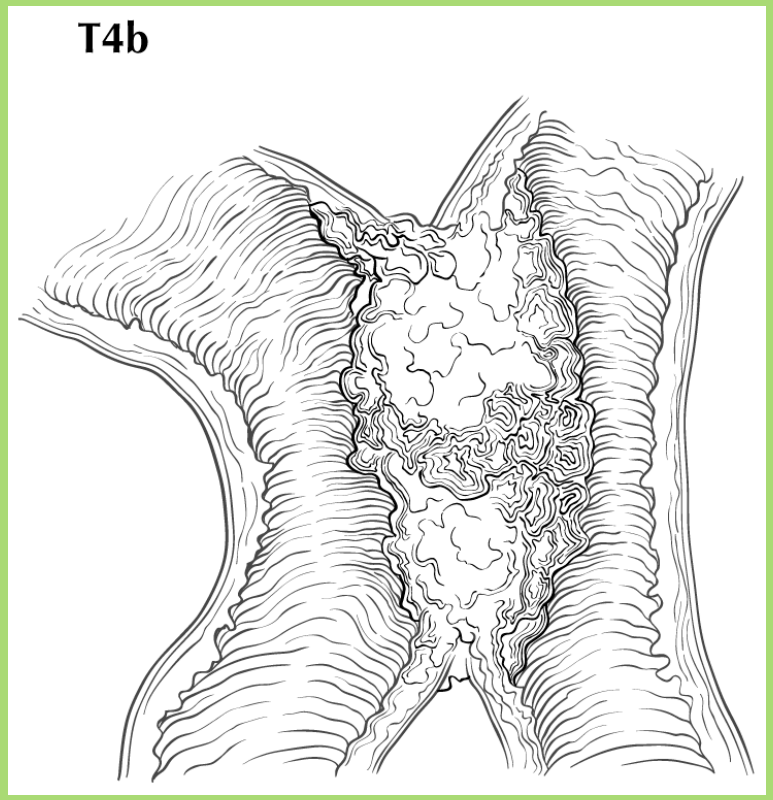
T4a tumor penetrates to the surface of the visceral peritoneum. The tumor perforates (penetrates) visceral peritoneum, as illustrated here.

Colon and Rectum



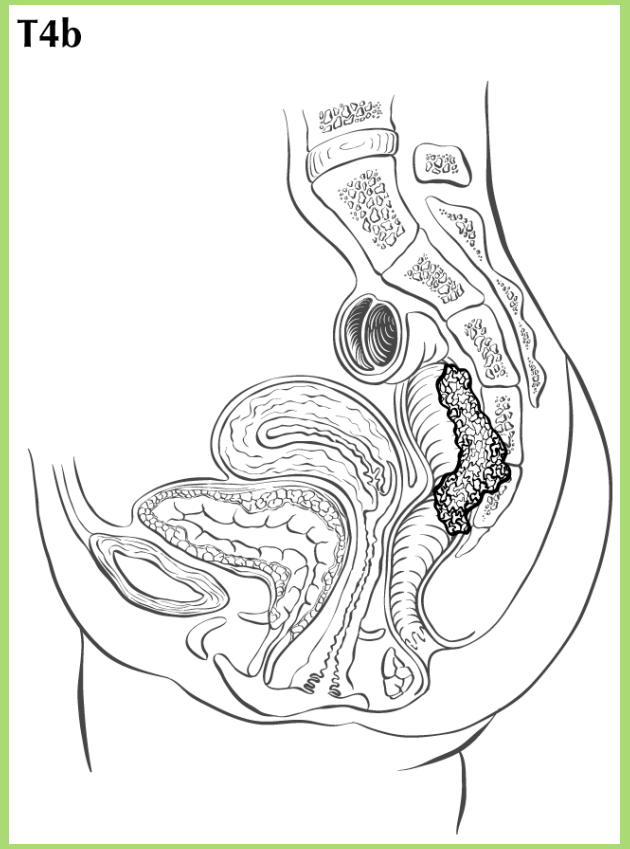
T4a tumor perforates visceral peritoneum (shown with gross bowel perforation through the tumor).

Colon and Rectum



T4b tumor directly invades or is adherent to other organs or structures, as illustrated here with extension into an adjacent loop of small bowel.

Colon and Rectum



T4b tumor directly invades or is adherent to other organs or structures (such as the sacrum shown here).

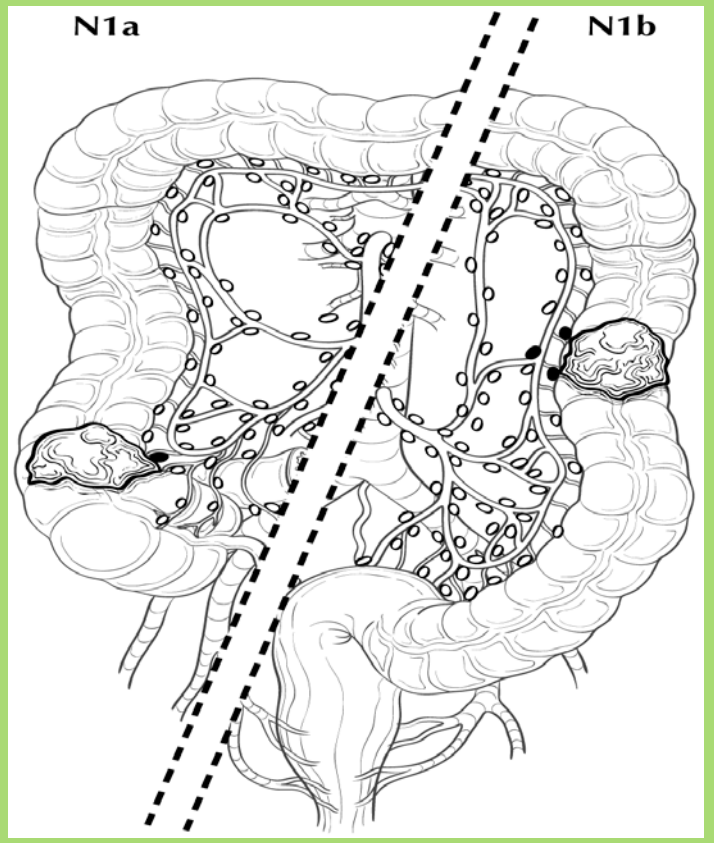
AJCC N classifications

- **NX** Regional Lymph nodes cannot be assessed
- **N0** No regional lymph node metastases

AJCC N classifications

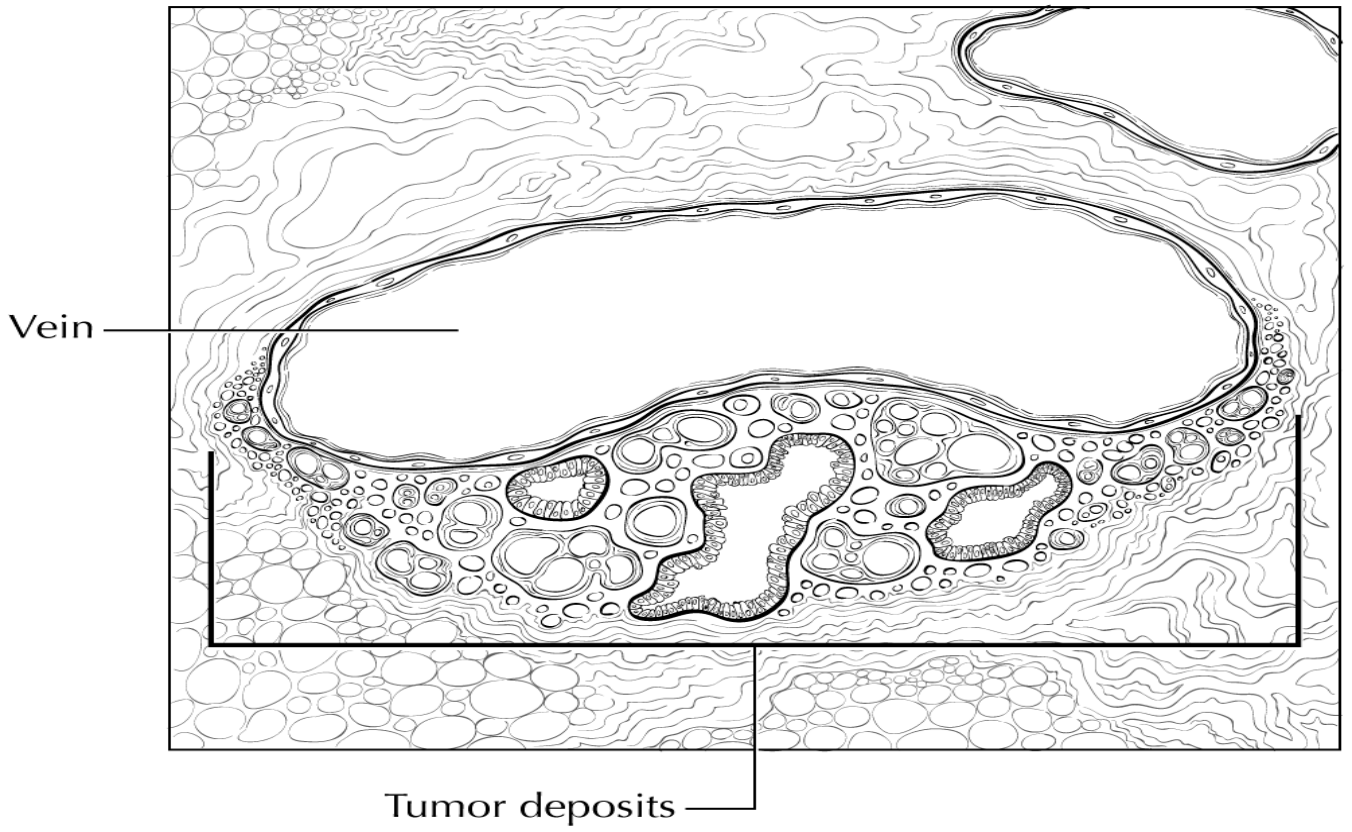
- **N1** Metastasis in 1-3 regional lymph nodes
- **N1a** Metastasis in one regional lymph node
- **N1b** Metastasis in 2-3 regional lymph nodes
- **N1c** Tumor deposit(s) in the subserosa, mesentery, or nonperitonealized pericolic or perirectal tissues without regional lymph nodal metastasis

Colon and Rectum



N1a is defined as metastasis in one regional lymph node. N1b is defined as metastasis in 2 to 3 regional lymph nodes.

Colon and Rectum

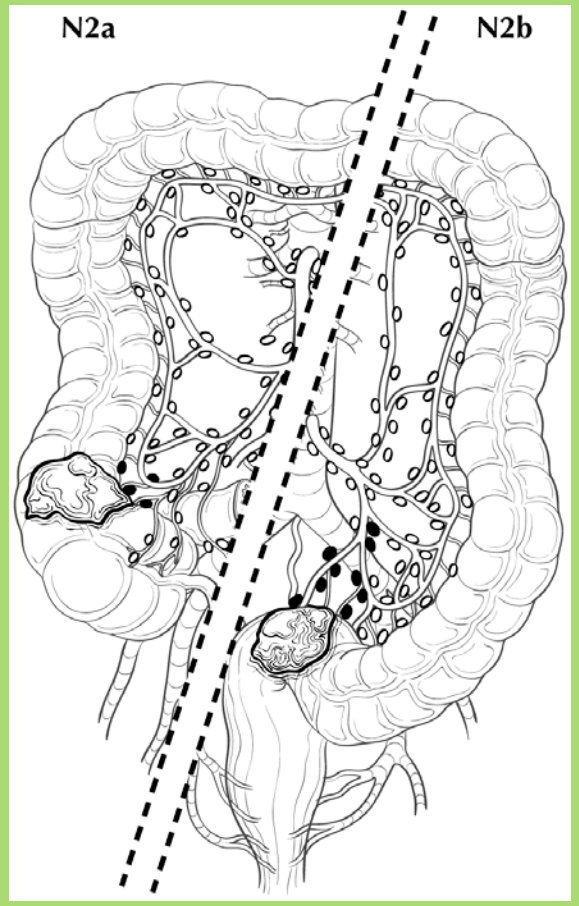


Tumor deposit. Discrete foci of tumor found in the pericolic or perirectal fat or in adjacent mesentery (mesocolic fat) away from the leading edge of the tumor and showing no evidence of residual lymph node tissue but within the lymph drainage area of the primary carcinoma are considered to be peritumoral deposits or satellite nodules, and their number should be recorded in the site-specific Prognostic Markers on the staging form as Tumor Deposits (TD).

AJCC N classifications

- **N2** Metastasis in four (4) or more regional lymph nodes
- **N2a** Metastasis in 4-6 regional lymph nodes
- **N2b** Metastasis in seven (7) or more regional lymph nodes

Colon and Rectum



N2a is defined as metastasis in 4 to 6 regional lymph nodes. N2b is defined as metastasis in seven or more regional lymph nodes.

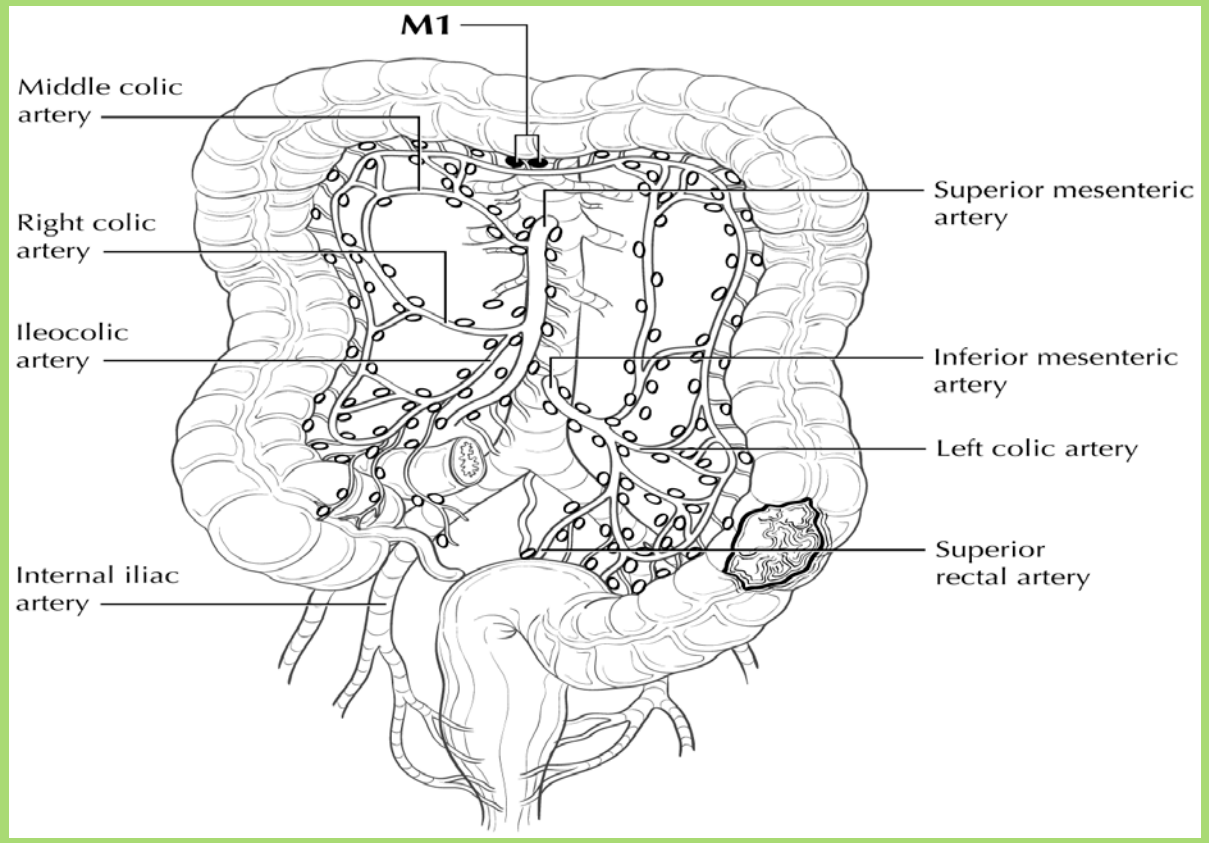
Colon and Rectum

N2b showing nodal masses in more than 7 regional lymph nodes.

AJCC M classifications

- **M0** No distant metastasis
- **M1** Distant metastasis
- **M1a** Metastasis confined to one organ or site (e.g., liver lung, ovary, non-regional lymph node)
- **M1b** Metastases in more than one organ/site or the peritoneum

Colon and Rectum



M1a disease is defined as distant metastasis confined to one organ or site (e.g., liver, lung, ovary, nonregional node). In this case, involvement is outside the regional nodes of the primary tumor.

COLON ANATOMIC STAGE/PROGNOSTIC GROUPS

Stage 0	Tis	N0	M0
Stage I	T1	N0	M0
	T2	N0	M0
Stage IIA	T3	N0	M0
Stage IIB	T4a	N0	M0
Stage IIC	T4b	N0	M0
Stage IIIA	T1-T2	N1/N1c	M0
	T1	N2a	M0
Stage IIIB	T3-T4a	N1/N1c	M0
	T2-T3	N2a	M0
	T1-T2	N2b	M0
Stage IIIC	T4a	N2a	M0
	T3-T4a	N2b	M0
	T4b	N1-N2	M0
Stage IVA	Any T	Any N	M1a
Stage IVB	Any T	Any N	M1b

AJCC Staging for Colon Cases

- For clinical staging to apply, there must be a suspicion of cancer.
- For pathologic staging to apply you must meet one of the following criteria:

1. Surgical resection per AJCC Colon chapter including poypectomy, segmental resection (ex: sigmoidectomy), partial colectomy, hemicolectomy, total colectomy)
2. Biopsy of highest T category PLUS biopsy of highest N category. (T4/N2 proven).
3. Positive histologic confirmation of a metastatic site. (M1 proven).

Clinical Staging for Colon cases

- Physical Exam (for LAD)
- Imaging (CXR, CT chest/Abdomen/Pelvis, MRI, PET)
- Endoscopic Procedures (Colonoscopy, Sigmoidoscopy, EUS)
- FNA/CT guided BX (regional LNs without resection of primary tumor)

COLON CASE EXAMPLE

- 55 year old Asian male presents for screening colonoscopy. A mass was found in the descending colon. Biopsy positive for Adenocarcinoma. CT A/P performed revealed left colon thickening but no adjacent LAD or distant METS seen. Left hemicolectomy performed. Path: Adenocarcinoma descending colon, low grade, 3.9 cm with invasion into pericolic fat. 2 Tumor deposits identified,12 benign pericolic lymph nodes.

COLON CASE EXAMPLE

- Does our case meet eligibility for clinical staging ?

YES

There is a diagnosis of colon cancer so clinical staging must be completed.

COLON CASE EXAMPLE

- What info can be used for clinical staging ?

✓ **Colonoscopy**

✓ **Imaging (CT, MRI, PET)**

COLON CASE EXAMPLE

- What is our clinical T classification?

cTx

What is this based on ?

Colonoscopy was performed but will not tell you the depth of invasion.

Imaging was performed but did not give you any info on the depth of invasion.

COLON CASE EXAMPLE

- What is our clinical N classification?

cN0

What is this based on ?

Imaging showing no LAD.

COLON CASE EXAMPLE

- What is our clinical M classification?

cM0

What is this based on ?

Imaging showing no evidence of METS, also based on H&P with no signs or symptoms of METS present.

COLON CASE EXAMPLE

- What is our clinical staging?

  cTx

  cN0

  cM0

  cStage 99 unknown (w/Tx)

COLON CASE EXAMPLE

- Does our case meet eligibility for pathologic staging ?

YES

There has been surgical resection of the primary tumor.

COLON CASE EXAMPLE

- What is our pathologic T classification?

pT3

What is this based on ?

Pathology report showing invasion into pericolic fat.

COLON CASE EXAMPLE

- What is our pathologic N classification?

pN0

What is this based on ?

LNs were removed for evaluation and the Pathology report stated 12 benign pericolic LNs.

COLON CASE EXAMPLE

- What is our pathologic M classification?

cM0

What is this based on ?

Imaging showed no METS.

COLON CASE EXAMPLE

- What is our pathologic staging?

pT3

pN0

cM0

pStage IIA

Interactive Colon TNM staging

- It’s time to put you to work…
- One side is Yellow = which indicates either “No” or “Disagree” = X
- One side is Pink = which indicates “YES” or “Agree” = ✓

Interactive Colon TNM staging

- 60 year old female presents to ER with complaints of rectal bleeding and severe abdominal pain. CT abdomen/pelvis performed showing diffuse liver METS and a cecal mass invading through bowel wall. There were No LNs seen within adjacent mesentery.
- PT taken to surgery for exploratory LAP and R hemicolectomy. OP report states liver BX was also performed.
- Path report: 9 cm cecal Adenocarcinoma with invasion of serosa. 12/12 positive mesenteric LNs. Liver BX: Positive for metastatic adenocarcinoma.

Interactive Colon TNM staging

- Does our case meet eligibility for clinical staging ?

YES Cancer has been diagnosed so

  - clinical staging must be completed

Interactive Colon TNM staging

Based on the information given what is the clinical T classification ?

Answer ? **cTx**

Do you agree ? X **T3 invasion through bowel wall seen on imaging.**

Interactive Colon TNM staging

Based on the information given what is the clinical N classification ?

Answer ? **cN0** (No LNs per imaging)

Do you agree ?

Interactive Colon TNM staging

Based on the information given what is the clinical M classification ?

Answer ? **cM1a** (Liver METS per imaging)

Do you agree ?

Interactive Colon TNM staging

Based on the information what would the clinical staging be ?

Answer

cT3

cN0

cM1a

cStage IVA

Interactive Colon TNM staging

Based on the information given does the case meet criteria to be pathologically staged ?

Answer ?

(surgical resection of primary performed)

Interactive Colon TNM staging

Based on the information given what is the pathologic T classification ?

Answer ? pT4a Involvement of serosa

Do you agree ?

Interactive Colon TNM staging

Based on the information given what is the pathologic N classification ?

Answer ? **pN2**

Do you agree ? X **pN2b (12 LNs involved per path)**

Interactive Colon TNM staging

Based on the information given what is the pathologic M classification ?

Answer ? **pM1a**

Do you agree ?

Interactive Colon TNM staging

Based on the information what would the pathologic staging be ?

Answer

pT4a

pN2b

pM1a

pStage IVA

- Let's take a look at the Anatomic Stage/Prognostic Groups for Colon (page 157 in AJCC 7th Edition Manual, large book)

Can we assign a stage group for TxN2bM0 ?

Answer

X **No we must know the T category to assign a stage group**

COLON ANATOMIC STAGE/PROGNOSTIC GROUPS

Stage 0	Tis	N0	M0
Stage I	T1	N0	M0
	T2	N0	M0
Stage IIA	T3	N0	M0
Stage IIB	T4a	N0	M0
Stage IIC	T4b	N0	M0
Stage IIIA	T1-T2	N1/N1c	M0
	T1	N2a	M0
Stage IIIB	T3-T4a	N1/N1c	M0
	T2-T3	N2a	M0
	T1-T2	**N2b**	M0
Stage IIIC	T4a	N2a	M0
	T3-T4a	**N2b**	M0
	T4b	**N1-N2**	M0
Stage IVA	Any T	Any N	M1a
Stage IVB	Any T	Any N	M1b

Colon PRACTICE CASE #1

- PT presents to ER for abdominal pain. CT A/P showing a transverse colon mass directly invading the uterus. Several lymph nodes identified in the adjacent mesentery suspicious for local spread of disease. CT chest performed showing bilateral lung METS and thoracic LAD suspicious for involvement as well. PET scan performed showing bone METS and Lung METS. PT expired the next day.

- Does clinical staging apply ? ✓
- What information can be used ? (all of the information provided can be used which is imaging – CT abdomen/pelvis, CT chest & PET scan.

- Does pathologic staging apply ? X **There was no surgery to primary site, No BX of highest T & N categories and No histologic confirmation of the METS.**

Colon PRACTICE CASE #1

- cStaging: cT4b (direct invasion uterus per imaging)
  cN1b (several LNs per imaging)
  cM1a (lung METS per imaging; one organ/site involved)
  cStage IVA
- pStaging: pT blank
  pN blank
  pM blank
  pStage 99 unk

Colon PRACTICE CASE #2

- 50 year old female presents for first screening colonoscopy. A polyp was identified in the R colon. A polypectomy was performed. Path showed tubular adenoma with intramucosal adenocarcinoma. No invasion seen. Margins were negative. No further treatment planned.
- QUESTION: Will the polypectomy be clinical or pathologic ?
- ANSWER: Pathologic
- RATIONALE: The polypectomy was the definitive procedure for the cancer that was incidentally found. Clinical staging will not apply and should be left blank. Your pathologic staging will be pTis cN0 cM0 pStage 0.

Colon PRACTICE CASE #3

- 51 year old male presents for screening colonoscopy and a polyp was found in the L colon. Polypectomy performed with path showing a serrated polyp with invasion into the submucosa. CT performed showing no abnormalities. A segmental resection was performed with path showing no residual cancer and 13 benign regional LNs.
- QUESTION: Is the case eligible for clinical staging ?
- ANSWER: Yes (the polypectomy info will be used for clinical staging as this DX'd the cancer).
- What is the clinical staging ?
- cT1
- cN0
- cM0
- cStage I

Colon PRACTICE CASE #3

- 51 year old male presents for screening colonoscopy and a polyp was found in the L colon. Polypectomy performed with path showing a serrated polyp with invasion into the submucosa. CT performed showing no abnormalities. A segmental resection was performed with path showing no residual cancer and 13 benign regional LNs.
- QUESTION: Is the case eligible for pathologic staging ?
- ANSWER: Yes (the patient had surgical resection of the primary site).
- What is the pathologic staging ?
- pT1
- pN0
- cM0
- pStage I

Things to remember

- You must be familiar with AJCC Staging manual and site specific chapter rules.
- Review your medical record/info available closely to assign **clinical** and **pathologic** staging if case meets eligibility.
- A colonoscopy will NOT be able to tell how far a cancer has spread through the bowel wall. If a cancer is invasive, review imaging for any mention of the depth of invasion. If not noted (which is common), cTx is appropriate and correct.Y
- You cannot bring down a cN0 to the pN field for invasive colon cancers, lymph nodes must be evaluated to assign pN classification.
- Document clinical and pathologic staging in your text. Please differentiate between your MD staging and CTR staging.

Questions

Contact Information

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Thank you!