Management of Low Rectal Cancers

Madhuri Rao, MD
PGY-4
Kings County Hospital Center
• 62 yo male

• PMHX: HTN

• PSH: meniscal repair (knee)

• Meds: Norvasc

• NKDA

• Social: ex-smoker, occ ETOH

• Family history: nil contributory
HPI

- C/O mucous PR
- C scope April 2012: polyps in descending, sigmoid colon and rectum
- Pathology: adenocarcinoma (rectal polyp)
Work Up

- Flex sig and ERUS May 2012: Rectal lesion 3 cm above puborectalis (uT3N0)
- Pathology: invasive adenocarcinoma, moderately differentiated
- CTAP: thickening of left rectal wall
- CT Chest: normal
- Pelvic MRI: 2-2.5cm, 8mm thick lesion in distal rectal wall, some mesorectal extension
cT3N0M0 – stage IIa

Neoadjuvant chemoXRT, followed by resection with sphincter preservation

EBRT: 5400cGy

Concurrent chemotherapy: 5-FU (6 cycles)

Pre op flex sig: good response to therapy
Case Presentation

Procedure: proctectomy, coloanal anastomosis and protective ileostomy

- Midline laparotomy

- Exploration: no evidence of metastatic disease

- Proctectomy with TME and intersphincteric resection
  - Proximal – descending colon
  - Distal – beyond levators, 2-3 cm past lesion
  - Curved cutter stapler

- Coloanal anastomosis: hand sewn

- Loop ileostomy
Pathology
- Tumor size: 0.9 x 0.4 x 0.3cm
- Moderately differentiated adenocarcinoma
- Margins
  - Proximal: negative
  - Distal: 1.5cm
  - CRM: negative
- Treatment effect: moderate response
- Lymph nodes: 0/15

pT3N0Mx
Post-operative Course

- **POD 0-5**: uneventful, tolerating diet, functioning stoma

- **POD 7**
  - Hypotensive tachycardic and febrile to 104 F on floor
  - Transferred to SICU, intubated and managed for presumed septic shock
  - Profound shock and acidosis – multiple pressors and bicarb drip
  - ARF

- **POD 8-11**
  - Weaned off pressors
  - CT C/A/P: expected post-op changes
  - Scope through stoma and rectum: viable bowel
Case Presentation

• POD 11-28
  ▪ Supportive care
  ▪ Tracheostomy
  ▪ TF
  ▪ Improved renal function: HD stopped
  ▪ Off Abx

• Current status
  ▪ Transferred to floor
  ▪ Trach collar
  ▪ TFs
  ▪ Deconditioned but improving
• Anatomy and definitions
• Evaluation of the patient
• Preoperative staging / imaging modalities
• Surgical planning
• Management by stage
• Role of neoadjuvant therapy
• Surgical techniques
• New developments in the field
- Starts below peritoneal reflection
- 10-15cm long
- Dentate line to sacral promontory (rectosigmoid)
Figure 1-3. Fascial relationships of the rectum: A male, B female.
Evaluation of the Patient with Rectal Cancer

History
- Bleeding
- Change in BM
- Pressure
- Tenesmus
- Continence

Physical Exam
- DRE
  - Location
  - Morphology
  - Quadrants
  - Degree of fixation
  - Mobility
  - Extra-rectal growth
- Rigid sigmoidoscopy
- Colonoscopy
T Staging

- **ERUS vs. MRI**
  - ERUS: 80-95% accuracy (CT: 65-75%, MRI: 75-85%)
  - Similar sensitivities, but better specificity with ERUS

- **CT scan**
  - Advanced tumor growth
  - Relationship to surrounding structures

N Staging

- **ERUS vs. MRI vs. CT**
  - Similar results
  - MRI: additional information

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Circumferential Resection Margin (CRM)

- Closest radial margin between deepest penetration of tumor and edge of resected soft tissue
- $+ \ CRM = \text{tumor within 1mm}$
- Strong predictor of local recurrence and overall survival
- Pre-op assessment: MRI

M stage

- CT abdomen pelvis with IV contrast
- MRI (lowest false + rate for liver mets)
- PET not routinely recommended
- CT chest

Blood tests – CBC, LFTs, CEA
Principles

- Surgical options: local excision, sphincter saving transabdominal resection, APR
- Primary resection and anastomosis without stoma
- Sphincter preservation
- Palliation if curative resection not possible
Surgical planning

Upper third:
- TEM?
- LAR
- LAR + ChXRT
- Short XRT + LAR?
- ChXRT + LAR

Middle third:
- T1N0: TEM
- T2N0: ChXRT + TEM
- T2N0: TEM + ChXRT
- T1/T2, N0: LAR
- T3 or N+: ChXRT + LAR
- T3 or N+: Short XRT + LAR
- APR (elderly, fecal incontinence) +/- adjuvant therapy

Lower third:
- T1: Local excision
- T2: LE + ChXRT
- T3: ChXRT + coloanal or APR
- Sphincter involvement: APR
Transanal excision vs. transabdominal resection

NCCN guidelines for transanal excision

- Early cancers- T1 / ? T2 , N0
- <3cm
- <8cm verge
- <30% circumference
- No nodal involvement
- Freely mobile

- Technique:
  - full thickness, perpendicular through bowel wall into perirectal fat
  - >3mm negative margins- deep and mucosal

- Radical resection if high risk pathological features
Management of Stage I Rectal Cancer

LE Advantages
- Less morbidity & mortality
- Sphincter saving
- Rapid recovery

LE Disadvantages
- T2: no good data
- No nodal staging
- Studies showing
  - increased local recurrence
  - inferior disease specific survival for T1 lesions

You YN, et al. *Is the increasing rate of local excision for stage I rectal cancer in the United States justified?: a nationwide cohort study from the National Cancer Database.* Ann Surg 2007 May


Recommended only in patients with prohibitive medical contraindications to major surgery
Management of Stage II/III Rectal Cancer

- Neoadjuvant therapy, curative resection, adjuvant therapy

- Preoperative chemoXRT
  - Downstaging and improved resectability
  - Higher rate of sphincter preservation and local control*
  - Surgery naïve tissue: better sensitivity to RT
  - ↓ radiation injury to SB trapped in pelvis
  - Anastomosis not affected
  - Complete pathological response rate of 10 – 20%

German rectal cancer study group
- Prospective randomized trial: 823 patients
- Preoperative vs. Postoperative chemoRT in stage II/III rectal cancer
- Reduction in local recurrence ($p = 0.006$)
- No difference in overall 5, 10 year survival rate
- Increase in sphincter preservation rate

Cochrane database of systematic reviews
- Meta-analysis
- Preoperative RT vs. surgery alone, adjuvant and neoadjuvant strategies
- Improved local control with CRT
- Complications: pelvic, perineal wound infection, late rectal and sexual dysfunction
- No significant difference in overall mortality or sphincter preservation
Surgical Techniques - Advances in Surgical Practice

- Concept of total mesorectal excision

- Circular stapling devices
  - Anastomosis close to dentate line

- Double stapling techniques
  - Increased performance of sphincter saving operations

- Distal margin of < 1 cm acceptable

- Decline in numbers of APRs performed for rectal cancers <5cm and <6cm from anal verge (23%, 26%)
**Total Mesorectal Excision (TME)**

- *En bloc* removal of mesorectum with vascular & lymphatic structures, fatty tissue and mesorectal fascia by *sharp dissection*
Total Mesorectal Excision (TME)

- Sharp dissection under direct visualization
- Preservation of autonomic nerves
- Complete hemostasis
- Lymphatic drainage of distal tumors both upward and lateral
- Radical resection of lymphatic drainage above levators
- Positive radial margins down to 7%
  - Adam et al. – increased rate of death (x3) and local recurrence (x12) if positive radial margins
- Decreased sexual and urinary dysfunction

Miles in 1908 (reprinted in 1971)

En bloc resection of rectosigmoid, rectum, anus with TME, perianal soft tissue and creation of colostomy

Indications
- Direct involvement of anal sphincter of levators
- Inadequate margin
- Anastomosis not technically feasible
- Poor sphincter tone – inherent or due to cancer
Midline laparotomy
- Exploration
- Mobilization to splenic flexure
- Resection
- High ligation of SHA/IMA
- TME – posterior to lateral to anterior
- Male – include Denonvilliers fascia
  Female – incise POD, separate rectovaginal fascia

Perineal Dissection
- Anterior – perineal body
- Lateral – ischiorectal spine
- Posterior – coccyx
- Dissect down to levators
- Evert and remove specimen
- Close levators and soft tissue
- Drains

Colostomy creation
Low Anterior Resection with Sphincter Preservation

- Ability to obtain adequate distal margin
- Body habitus
- Adequacy of anal sphincter
LAR with Sphincter Preservation

- **LAR**
  - Dissection and anastomosis below peritoneal reflection
  - Ligation of superior and middle hemorrhoidal arteries

- **Extended LAR**
  - Mobilization of rectum down to pelvic floor
  - Division of lateral ligaments
  - Through Waldeyer’s fascia to tip of coccyx

- **Ultra low anterior resection**
  - Distal margin minimally acceptable, adequate cancer clearance
  - Extended LAR not technically possible
  - Sphincter not involved
Coloanal Anastomosis

- Full mobilization of splenic flexure
- Transection of rectum
- Techniques for obtaining adequate distal margin
  - Intersphinteric dissection – tubular mobilization of distal rectum in intersphinteric groove
  - Anal mucosectomy – stripping of anal mucosa between dentate line and level of transected rectum
- Coloanal anastomosis
  - Hand sewn or circular stapling device
  - Rectal reservoir creation – J pouch or coloplasty
Colonic J Pouch

Coloanal Anastomosis – Rectal Reservoir

Coloplasty
Sphincter Preservation in Low Rectal Cancer is Facilitated by Preoperative Chemoradiation and Intersphincteric Dissection.
Weiser et al., MSKCC. Annals of Surgery, Feb 2009

- Retrospective review

- 148 patients with stage II/III distal rectal cancer (<6cm)

- Preop chemoXRT and LAR/APR

- Results
  - Sphincter preservation facilitated by chemoXRT and ISR
  - No compromise of margins or outcome
  - Worse outcomes in the APR group (recurrence free survival, local recurrence)
The abdominoperineal resection itself is associated with an adverse outcome: the European experience based on a pooled analysis of five European randomised clinical trials on rectal cancer. den Dulk M, et al., Eur J Cancer. 2009 May

- The Swedish Rectal Cancer Trial (SRCT), TME trial, CAO/ARO/AIO-94 trial, EORTC 22921 trial and Polish Rectal Cancer Trial (PRCT) – 3633 patients

- APR – increased CRM involvement (p < 0.001), local recurrence (p = 0.001) and death (p = 0.002)
Topics of Discussion – Laparoscopic Assisted Surgery

Clasicc Trial

- Randomized control trial
- No difference in local recurrence
- Disease free survival, overall survival

Other trials – better short term benefits with laparoscopic surgery
Topics of Discussion – Extralevator APR

- Creation of a cylindrical specimen without a ‘waist’ to minimize CRM involvement
Extended abdominoperineal excision vs. standard abdominoperineal excision in rectal cancer--a systematic overview. Stelzner S, et al., Department of General and Visceral Surgery, Dresden-Friedrichstadt General Hospital Teaching Hospital of the Technical University of Dresden, Friedrichstr. 41, 01067, Dresden, Germany.

- Meta-analysis

- APER 1,097 patients, Standard APR 4,147 patients

- Superior oncological outcome for APER (decreased local recurrence)
Management of Stage IV Rectal Cancer

- Resectable primary cancer
  - Staged or synchronous resection of metastases + rectal lesion
  - Evaluation for neoadjuvant/adjuvant chemoXRT
- Unresectable
  - Symptomatic – chemo/XRT, diverting stoma, stent
  - Asymptomatic - chemotherapy
Summary

- **Clinical evaluation**
  - DRE, rigid sigmoidoscopy, colonoscopy

- **Preoperative staging**
  - T – ERUS/MRI
  - N – ERUS/MRI/CT
  - M – CT chest, abdomen, pelvis

- **Surgical planning**
  - Location of tumor
  - Goal is sphincter saving resection
Management
- Stage I – transabdominal resection unless medically contraindicated
- Stage II/III – neoadjuvant chemo XRT, curative resection, adjuvant therapy
- Stage IV – resectable primary and mets vs. unresectable cancer

Surgical techniques
- Total mesorectal excision
- Margins: proximal 5cm, distal 2cm (1cm), CRM 1mm

New techniques
- Rise of laparoscopically assisted resections
- Extracelevator APR
Thank you
A 54-year-old man has a 1.5-cm rectal mass in the posterior midline at the superior aspect of the dentate line. The mass is mobile on digital rectal examination. Endoscopic rectal ultrasonography suggests possible involvement of the submucosa, but no nodal enlargement. Biopsy shows evidence of adenocarcinoma.

Transanal excision of the lesion would be precluded by:

A. Likelihood of recurrence
B. A moderately well-differentiated histology
C. Location
D. Mass size
E. Submucosal involvement
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C. **Location**
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The best management would be:

A. local excision alone
B. local excision, adjuvant chemoradiation therapy
C. total mesorectal excision with coloanal anastomosis
D. neoadjuvant chemoradiation therapy, total mesorectal excision, coloanal anastomosis
E. neoadjuvant chemotherapy, total mesorectal excision, abdominoperineal resection
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In which of the following situations should LAR be performed?

A. A circumferential villous adenoma beginning at the dentate line and extending proximally 8 cm
B. Palliation of obstructing rectal cancer just above the dentate line with minimal liver metastases
C. A rectal cancer that produces anal pain and tenesmus
D. Anastomotic recurrence after LAR of the distal rectal cancer
E. An elderly patient with preexisting urinary incontinence and a rectal cancer 5 cm above the dentate line
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Question 4

Which of the following pathology warrants APR?

A. Fixed circumferential adenocarcinoma just above the dentate line
B. Ulcerating adenocarcinoma whose lower edge is 7 cm from the dentate line, with infiltration and expansion of the second hypoechoic layer seen on ultrasound imaging
C. A 2-cm mobile adenocarcinoma arising in a villous adenoma 3 cm from the dentate line, with an intact second hypoechoic band seen on ultrasound imaging
D. Circumferential adenocarcinoma 12 cm from the anal verge
E. A 1.5-cm carcinoid 5 cm from the dentate line
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