Management of Low Rectal Cancers

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- 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



www.downstatesurgery.org 2431477KI Sekv: SE Slice: 5 mm Pos: 177.706 TR: 603.614 TE: 80 AC: 1 Body Part: 23.6 mm Laterality U FFS FoV: 300 mm Image no: 27 Image 27 of 42 Pulse Seq T2 COR CLEAR 5/11/2012, 12:26:41 PM

- cT₃NoMo 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

- 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

pT₃NoM_x

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

- 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

www.downstatesurgery.org Discussion

- 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

www.downstatesurgery.org Anatomy



Starts below
 peritoneal reflection

- 10-15cm long
- Dentate line to sacral promontory (rectosigmoid)

www.downstatesurgery.org Anatomy



FIGURE 1-3. Fascial relationships of the rectum: A male, B female.

www.downstatesurgery.org 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

www.downstatesurgery.org Pre-operative Staging: Locoregional

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
- Siddiqui AA, et al. The role of endoscopic ultrasound in the evaluation of rectal cancer. Int Semin Surg Oncol 3: 36, 2006
- Bipat S, et al. Rectal cancer: local staging and assessment of lymph node involvement with endoluminal US, CT and MR imaging a meta-analysis. Radiology 2004; 232: 773-783
- Lahaye MJ, et al. Imaging for predicting the risk factors--the circumferential resection margin and nodal disease--of local recurrence in rectal cancer: a meta-analysis. Semin Ultrasound CT MR 26 (4): 259-68, 2005

www.downstatesurgery.org Pre-operative Staging: Locoregional

Circumferential Resection Margin (CRM)

- Closest radial margin between deepest penetration of tumor and edge of resected soft tissue
- + CRM = tumor within 1mm
- Strong predictor of local recurrence and overall survival

Pre-op assessment: MRI

- Glynne-Jones R, et al. The clinical significance of the circumferential resection margin following preoperative pelvic chemo-radiotherapy in rectal cancer: why we need a common language. Colorectal Dis 2006;8:800-807.
- Adam IJ, et al. Role of circumferential margin involvement in the local recurrence of rectal cancer. Lancet 1994;344:707-711.

www.downstatesurgery.org Pre-operative Staging: Metastatic Work-up

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

www.downstatesurgery.org Surgical planning

Principles

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

www.downstatesurgery.org Surgical planning



www.downstatesurgery.org Management of Stage I Rectal Cancer

Transanal excision vs. transabdominal resection

NCCN guidelines for transanal excision

- Early cancers- T1/? T2, No
- <3cm
- <8cm verge</p>
- <30% circumference</p>
- 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

www.downstatesurgery.org 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
- Nash GM, et al. Long-term survival after transanal excision of T1 rectal cancer. Dis Colon Rectum. 2009 Apr

Recommended only in patients with prohibitive medical contraindications to major surgery

www.downstatesurgery.org 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%

Sauer R, et al.: Preoperative versus postoperative chemoradiotherapy for rectal cancer. N Engl J Med 351 (17): 1731-40, 2004

www.downstatesurgery.org Neoadjuvant ChemoXRT: Literature Review

- 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 Techniquest 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 APR s performed for rectal cancers <5cm and <6cm from anal verge (23%, 26%)

www.downstatesurgery.org Total Mesorectal Excision (TME)

 En bloc removal of mesorectum with vascular & lymphatic structures, fatty tissue and mesorectal fascia by sharp dissection



www.downstatesurgery.org 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

Adam IJ, et al. Role of circumferential margin involvement in the local recurrence of rectal cancer. Lancet 1994

www.downstatesurgery.org Abdominoperineal Resection (APR)

• 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

www.downstatesurgery.org Low Anterior Resection with Sphincter Preservation

- Ability to obtain adequate distal margin
- Body habitus
- Adequacy of anal sphincter

www.downstatesurgery.org 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

www.downstatesurgery.org 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

www.downstatesurgery.org Coloanal Anastomosis – Rectal Reservoir

Colonic J Pouch

Coloplasty





www.downstatesurgery.org Topics of Discussion - APR vs. LAR

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)

www.downstatesurgery.org Topics of Discussion - APR vs. LAR

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 Diseussinger gesperoscopic 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

www.downstatesurgery.org **Topics of Discussion – Extralevator APR**

 Creation of a cylindrical specimen without a 'waist' to minimize CRM involvement



www.downstatesurgery.org **Topics of Discussion – Extralevator APR**

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)

www.downstatesurgery.org 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

www.downstatesurgery.org 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

www.downstatesurgery.org Summary

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
- Extralevator 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 ultrasonagraphy 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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The best management would be:

- A. local excision alone
- B. local excision, adjuvant chemoradiation therapy
- c. total mesorectal excision with coloanal anastomosis
- 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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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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