Surgical Treatment of Colon and Rectal Cancer in the 2020s

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Presentation Goals

• Outline the major treatment approaches for Colon and Rectal Cancer
• Identify key quality and outcome measures in Colon and Rectal Cancer treatment
• Discuss future changes and evolutions in the surgical treatment of cancer over the next decade
Colon and Rectal Cancer- a common problem

• Colorectal Cancer remains the 3rd most common malignancy in men and women; and the 3rd most common cause of cancer death in men and women.

• Estimated ~100,000 colon cancer cases and ~40,000 rectal cancer cases per year.

• Lifetime risk is 4.6% in men, 4.2% in women (about 1/23)

• 2016: ~1.5 million survivors of CRC alive in the US
  • Some cancer free, some with ongoing treatment/surveillance

• While aggressive screening is effective and preferred, this disease is still a frequently encountered problem.
  • Colonoscopy
  • CT Colonography
  • Flex-Sig
  • Barium enema
  • Fecal immunochemical test (FIT), Stool DNA, Fecal Occult Blood Test

Barriers to Treatment/Potential Solutions

• Ewwww.... Gross
  • Take away the Stigma with straightforward talk
• Screening Hassle
  • Early stage cancer is curable
• Week in the Hospital
  • Not anymore
• Colostomy Bag
  • Uncommon, and manageable, outcome
# Colon and Rectal Cancer Staging

<table>
<thead>
<tr>
<th><strong>TUMOR</strong></th>
<th></th>
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<tbody>
<tr>
<td>T1- Submucosa</td>
<td></td>
</tr>
<tr>
<td>T2- Invades Into Muscularis Propria</td>
<td></td>
</tr>
<tr>
<td>T3- Invades Through Muscularis Propria</td>
<td></td>
</tr>
<tr>
<td>T4- Penetrates to the visceral peritoneum</td>
<td></td>
</tr>
<tr>
<td>T4a- Surface of visceral peritoneum</td>
<td></td>
</tr>
<tr>
<td>T4b- Invades other organs</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>NODES</strong></th>
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<tbody>
<tr>
<td>N1- 1-3 regional nodes or deposits</td>
<td></td>
</tr>
<tr>
<td>N1a- 1 node</td>
<td></td>
</tr>
<tr>
<td>N2a- 2-3 nodes</td>
<td></td>
</tr>
<tr>
<td>N1 c- Tumor deposits</td>
<td></td>
</tr>
<tr>
<td>N2- 4+ regional nodes</td>
<td></td>
</tr>
<tr>
<td>Ns2a- 4-6 nodes</td>
<td></td>
</tr>
<tr>
<td>N2b- 7+ nodes</td>
<td></td>
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<table>
<thead>
<tr>
<th><strong>METASTASIS</strong></th>
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</thead>
<tbody>
<tr>
<td>M1- any Metastasis</td>
<td></td>
</tr>
<tr>
<td>M1a- one organ metastasis</td>
<td></td>
</tr>
<tr>
<td>M1b- more than one organ metastasis</td>
<td></td>
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</tbody>
</table>

- **Stage I**: T1 or T2
- **Stage II**: T3 or T4
- **Stage III**: Any N
- **Stage IV**: Any M
### Treatment of Colon and Rectal Cancer: Overview

#### Colon Cancer
- Accurate Staging with complete Endoscopy; CT Chest/Abdomen/Pelvis; CEA Level
- Surgery Remains the Mainstay of Treatment
- Chemotherapy for advanced Disease

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
<th>Treatment</th>
<th>Survival Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage I</strong></td>
<td>T1 or T2 (confined to the submucosa or muscularis propria)</td>
<td>Surgical Resection of Disease</td>
<td>5 year Survival 90%</td>
</tr>
<tr>
<td></td>
<td>Surgical Resection of Disease</td>
<td>Follow up Surveillance</td>
<td></td>
</tr>
<tr>
<td><strong>Stage II/III</strong></td>
<td>T3 or T4 or N1/N2 (through the muscularis propria or involving lymph nodes)</td>
<td>Surgical Resection of Primary Disease</td>
<td>5 year Survival 71%*, but..</td>
</tr>
<tr>
<td></td>
<td>Chemotherapy depending on results, indicated for stage III, debatable for stage II</td>
<td>Follow up Surveillance</td>
<td>52-89% based on specific staging</td>
</tr>
<tr>
<td><strong>Stage IV</strong></td>
<td>Any Metastatic Disease</td>
<td>Chemotherapy</td>
<td>5 year Survival 14%</td>
</tr>
<tr>
<td></td>
<td>Surgical Resection of Primary site +/- metastatic disease pending completion of above</td>
<td>Ongoing treatment per oncology, discussion of alternative regimens</td>
<td></td>
</tr>
</tbody>
</table>

*5 year Survival 71% based on specific staging
High Quality Surgery for Colon Cancer

- **Essential** to good outcomes
  - Survival Benefit has been linked to correct surgery

- **Clear Margins**
  - 5cm proximal and distal
  - Total Mesocolic Excision

- **Adequate Lymph Node Removal**
  - At least 12 nodes should be removed.
    - Fewer than 12 nodes is a high risk feature for recurrence or understaging
    - Only 80% success in achieving this goal as of 2011
  - Evidence increasing that the more nodes retrieved, the better the outcome
    - Recent studies suggest that for right-sided lesions, 22 nodes may be the more ideal target

- **Colon Reconstruction with Bowel Anastomosis and Prompt Discharge Home**
  - Complication rates 20-25%
  - Wound Infections, Pneumonia, MI, DVT, Bleeding, UTI, Ileus, ect.
  - Anastomotic leaks ~2-3%; Mortality ~1-2%
**Minimally Invasive Surgery- from novelty to standard of care**

- **2004-2014** - COST/CLASICC/COLOR/JCOG 0404/ALCCS trials have demonstrated non-inferiority for cancer resection. i.e. minimally invasive and open approaches have the same long-term and disease-free survival and recurrence rates

- Trials have shown clear advantage to laparoscopic when it comes to short-term benefits though
  - Shorter length of stay - Faster Return of Bowel Function
  - Less narcotic use - Fewer Surgical Complications

- Grade 1 A recommendation to MIS from ASCRS (American College of Colon and Rectal Surgeons)
  - When feasible, minimally invasive approach is preferred

- Not a Universal Solution
  - Prior surgical history - Large Bulky Tumors
  - Obstruction - Body Habitus

- Technology has kept pace
  - Energy Devices - Staplers - Wound Protectors
  - Robotic Abilities and instrumentation

- Surgical Experience has Increased
  - Late 90s: “I saw a couple laparoscopic cases in training”
  - Today: “I did more laparoscopy than open surgery in training”

- **2019** - New Studies Suggesting Laparoscopy may be Superior
  - Denmark: Laparoscopic Approach associated with higher probability of good resection quality compared to open resection
  - China: Laparoscopic Approach superior to Open for nodal counts and other quality measures

*In the coming decade, the question is no longer: “CAN YOU DO MINIMALLY INVASIVE SURGERY?” but rather “WHY DIDN’T YOU DO MINIMALLY INVASIVE SURGERY?”*
Rectal Cancer
• Much more complex
• Accurate Staging with complete Endoscopy; CT Chest/Abdomen/Pelvis; CEA Level
• Additional Local Staging needed with MRI and/or Endoscopic Ultrasound to determine the T-stage and N-stage preoperatively
• Role of Neoadjuvant AND Adjuvant Chemotherapy and Radiation Therapy
• Surgical Complexity Increases- Multiple Surgical Options

Stage I
• T1 or T2 (confined to the submucosa or muscularis propria)
• Surgical Resection of Disease
• Complete TME with Nodes
• vs TransAnal Excision
• Follow up Surveillance
• 5 year Survival 89%

Stage II/III
• T3 or T4 or N1/N2 (through the muscularis propria or involving lymph nodes)
• Neoadjuvant Chemotherapy and Radiation
• Surgical Resection of Primary Disease
• Additional Chemotherapy depending on results
• Ostomy Reversal Surgery
• Follow up Surveillance
• 5 year Survival 70%*

Stage IV
• Any Metastatic Disease
• Chemotherapy
• Radiation pending above
• Surgical Resection of Primary site +/- metastatic disease pending completion of above
• Ongoing treatment per oncology, discussion of alternative regimens
• 5 year Survival 15%

Increased Surgical Risk
• Length of operation, bleeding, injuries
• Bladder and Sexual Function
• Pre-existing vs Resulting Incontinence
• Chemo/Radiation Alone
• Locally Advanced Lesion
• Urology and/or GYN-Onc input
• Permanent vs Temporary Ostomy
• Tumor factors, patient function, choice
• Patient Desire for Trans-Anal Procedure
• Compromise of oncologic outcome
High Volume Centers, Multidisciplinary Conferences, Credentialing

- Multidisciplinary conference has been shown to enhance care and improve outcomes
- 2015 Study showed a change in management plan in 29% of presented cases
- 2017 Study using Data from the National Cancer Database
  - 2006 to 2012- high volume centers (>26 cases per year) associated with higher nodal counts, high compliance with chemo/radiation, lower 30 and 90 day mortality and improved 5 year survival.
  - Patients who traveled long distances for treatment
- “Nowhere in colorectal surgery are therapeutic decisions more complex or more important to long-term patient outcomes than in the treatment of rectal cancer”- ASCRS Textbook
- National Accreditation Program for Rectal Cancer
  - OSTRiCh Consortium (Optimizing the Surgical Treatment of Rectal Cancer)
  - CoC (Commission on Cancer)
  - Only 13 listed so far, but predict many more on the way in the coming decade

Ostomies- a matter of perspective?

- Data confirm a negative impact on quality of life
- Patient education has a positive effect though
- Preoperative stoma site marking decreases postop complications
- Most Ostomies are temporary and reversible, especially if they are planned in advance
- Future research into improving ostomy quality of life
- Vegan Ostomy
ERAS: Early Recovery After Surgery
- Not just the latest buzzword, but an effective way to improve patient outcomes

- Reduced Infections
- Shorter Length of Stay
- Fewer adverse events

- Mobilization after surgery
- Reduced Narcotic Usage
- Faster Advancement of Diet
- Earlier Discharge Home

- Good for Patients, Good for Providers, Good for Hospitals
- Started in Colon and Rectal surgery, but starting to be more widely adopted in other surgical specialties as well
ERAS Outcomes

- Reducing hospital average stay from 9 days to 2.5 days
  - Many Patients now leaving on Post-op Day 1
- Liquids PO up to 3 hours before surgery
- Fluids Stopped within 24hrs of surgery
- Walking the day of surgery
- Solid Food PO the day of surgery
- Nasogastric Tubes only used in the event of post-op ileus
- Less Narcotic Usage
  - Many Patients don’t even take narcotics post-op
Stage IV Cancer- not the end of options

• Historically Dismal survival rates of <10%
• Many of these cases are not curable

• Liver Metastasis
  • Untreated disease has a median survival of 8 months, and <5% 5-year survival
  • Selected cases with potentially resect-able disease 30% survival
  • Even with chemotherapy alone, median survival is greater than 2 years, sometimes closer to 3

• Pulmonary Metastasis
  • Minimally invasive options are more prevalent for lung surgery as well
  • 5-year survival rates of 30-40% in series of lung resection for metastatic colorectal cancer

• Increased Understanding of Palliative Care and Hospice
Take Home Points

• Colorectal Cancer is a common, but treatable problem, often with great outcomes
• Early Detection is key
• High-Quality Surgery remains the mainstay of curative treatment for Colon Cancer. Margins and Nodal Counts
• Complex Decision Making with Rectal Cancer means multidisciplinary conferences, credentialing, and treatment at high volume centers
• ERAS is leading the way to better patient outcomes
• Treatment options may be better than patients think
That's All Folks!
Questions? Comments? Coffee Time?