Advantages of mechanical bowel preparation for elective colorectal surgery

Christopher Ramos, MD
Department of Surgery
University of Colorado Health Sciences Center
Outline

- Types of colon resection
- Mechanical Bowel Preparation (MBP) types
- Rationale for MBP
- Outcomes
- Conclusions
- Further studies
Types of Colon Resection

Right hemicolecctomy
Types of Colon Resection

Transverse colectomy
Types of Colon Resection

Extended right colectomy
Types of Colon Resection

Left Hemicolecetomy

Transverse colon

Left (descending) colon resected

Tumor

Sigmoid colon

Rectum

Anastomosis

www.hopkinscoloncancercenter.org
Types of Colon Resection

Sigmoid colectomy
Low anterior resection
Types of Colorectal Resection

Abdominal perineal resection

- Tumor in rectum
- Anus resected; perianal skin closed
- Sigmoid colon divided
- Colostomy
Types of mechanical bowel preparation

• Past regimens
  – 4-5 days of clear liquid diet, elemental diet
  – Laxatives – senna, castor oil, bisacodyl,
  – Repeated enemas
  – Large volume saline/mannitol irrigations using NGT

  • Requires hospitalization prior to surgery

Duncan, Clinics in Colon and Rectal surgery, 2009
Types of mechanical bowel preparation

• Polyethylene Glycol (PEG)
  – Isoosmotic, nonabsorbable, minimal fluid shifts/electrolyte derangements
  – Induces catharsis by osmotic effects
  – 2 – 4 liter oral consumption
  – Large volume leads to pt discomfort, adjunct with others
  – Mucosal changes

Duncan, Clinics in Colon and Rectal surgery, 2009
Types of mechanical bowel preparation

– Sodium Phosphate
  • Saline laxative, hyperosmotic, causes some fluid shifts and electrolyte imbalances
  • Induces catharsis by osmotic effects
  • 45 mL oral consumption – improved compliance
  • May substitute with tablets (~40)
  • New research reveals that enema may be an improved form of MBP with this solution
  • Mucosal changes

Duncan, Clinics in Colon and Rectal surgery, 2009
Rationale for MBP

- Evacuation of stool leads to improved visualization of lumen and smaller tumors
- Reduction in fecal flora
- Easier manipulation of bowel with decreased fecal content
- Easier insertion of stapling devices
- Potential for intraoperative colonoscopy to locate smaller tumors
- Remaining column of stool in LAR with diverting ostomy without MBP -> potential anastamotic leak

Eskicioglu, Canadian Journal of Surgery, 2010
Platell, British Journal of Surgery, 2006
Outcomes

• Many studies looking at anastamotic leak, superficial surgical site infection, peritonitis and reoperation
• Most studies with varying results based on type of surgery
• Many small studies unable to declare significant results due to being underpowered
Outcomes

- Review of 14 randomized control trials (N=5026)
- Methods of the USPSTF to grade study quality and level of evidence
- Made following recommendations:

Eskicioglu, Canadian Journal of Surgery, 2010
Outcomes

• Latest Cochrane Review (9/2011): 18 trials (N= 5805) comparing MBP vs no MBP
  – “there is no statistically significant evidence that patients benefit from mechanical bowel preparation, nor the use of rectal enemas”
  – Odds ratio < 1 favor MBP
  – results do show improved odds ratios in favor of MBP
Outcomes

- Latest Cochrane Review (9/2011): 5 trials (N=1210) comparing MBP vs rectal enema only
  - Odds ratio > 1 favor rectal enema
  - Results do show improved odds ratios in favor of rectal enema
Conclusions

- Review of multiple meta-analyses reveal no statistical significance to MBP for elective colorectal procedures
- Trends mostly show improved outcomes with MBP
- Must consider pt discomfort, dehydration, electrolyte imbalance, comorbidities
- Surgeon’s discretion based on:
  - Pathology
    - Inflammatory
    - Tumor burden/size
  - Location
  - Comorbidities
  - Approach – Laparoscopic vs Open
Future Research

• Dehydration induced by MBP – improved outcomes with preoperative rehydration?

• Stratification of rectal surgeries
  – Based on level, higher risk of leak with ultra-low vs low anterior resection
  – Presence of diverting ostomy

• Further studies evaluating laparoscopic techniques
• Thank you for your time
• Questions/comments?