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Current Management of Diverticulitis

Alexis Grucela, MD
Assistant Professor of Surgery
Controversies in Surgery
December 20, 2013

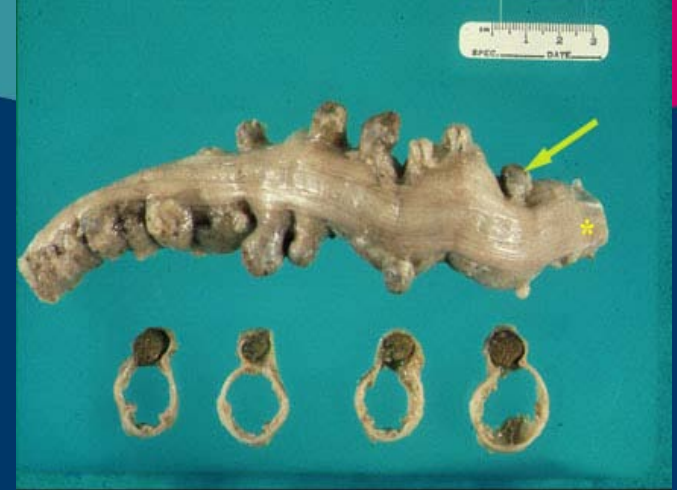


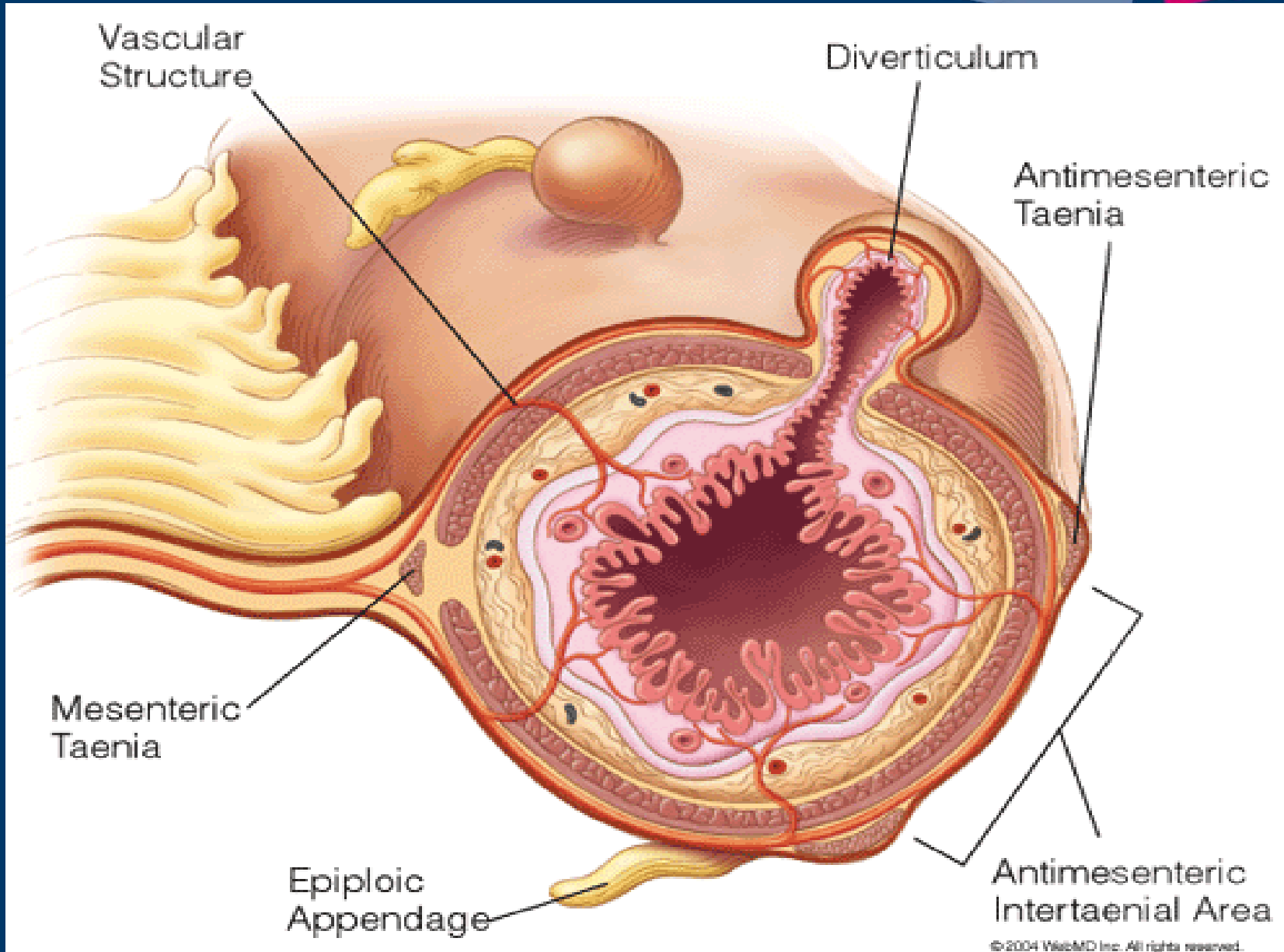
Overview

- Background
- Pathophysiology
- Clinical Classification
- Presentation
- Management: Controversies
- Outcomes

Diverticula

- Small (0.5 - 1.0 cm) pouches protruding from bowel wall
- Most pseudodiverticula:
 - mucosa and submucosa only- muscle layer not present
- True diverticula: all layers of the bowel wall involved
- Up to 60% of people living in industrialized countries will develop colonic diverticula





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Pathophysiology Diverticular Disease

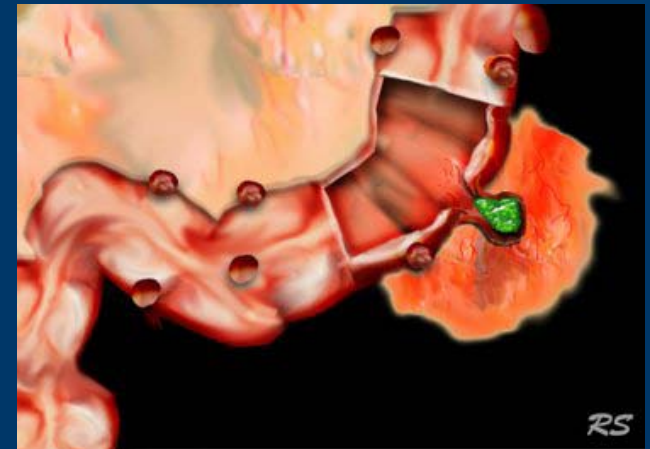
- Increased intraluminal pressure
- Caused by low fiber, constipation
- Sigmoid colon most commonly involved (95%)
 - Smallest diameter
 - Laplace's law: generates highest pressure
- Right sided disease tend to be younger
 - RLQ pain, fever, leukocytosis, suspect acute appendicitis
- Incidence of diverticular disease increases with age:
 - 30% at age 60
 - 60-80% at age 80

Risk Factors

- Low fiber Diet
- Smoking
- Constipation
- Obesity
- NSAIDS

Diverticulitis

- Diverticulum inflamed due to obstruction
- Microperforation and inflammation of surrounding tissue results in phlegmon
- Incidence 10% to 25% in patients with diverticula
 - 75% Uncomplicated
 - 25% complicated
- Risk of diverticulitis increases as pts. w/ diverticulosis age
 - 10% after 5 years
 - 35% after 20 years



Significance of Diverticulitis

- Significant problem in Western Countries
- One of the most common causes of acute surgical admission
- 152,000 yearly hospitalizations
- 1.5 million days of inpatient care per year
- Annual costs of diverticular disease estimated at \$2.7 billion per year

Sandler RS et al. The burden of selected digestive diseases in the United States. *Gastroenterology*. 2002;122:1500-1511.

Clinical Classification

- Uncomplicated vs. Complicated
- Uncomplicated
 - Pericolic soft-tissue stranding, colonic wall thickening, phlegmon
- Complicated: Acute diverticulitis +
 - Abscess
 - Obstruction
 - Perforation
 - Fistula

Complicated Diverticulitis: Hinchey Classification

Hinchey Stage

I Pericolic or Mesenteric abscess

II Retroperitoneal or Pelvic abscess

III Purulent peritonitis

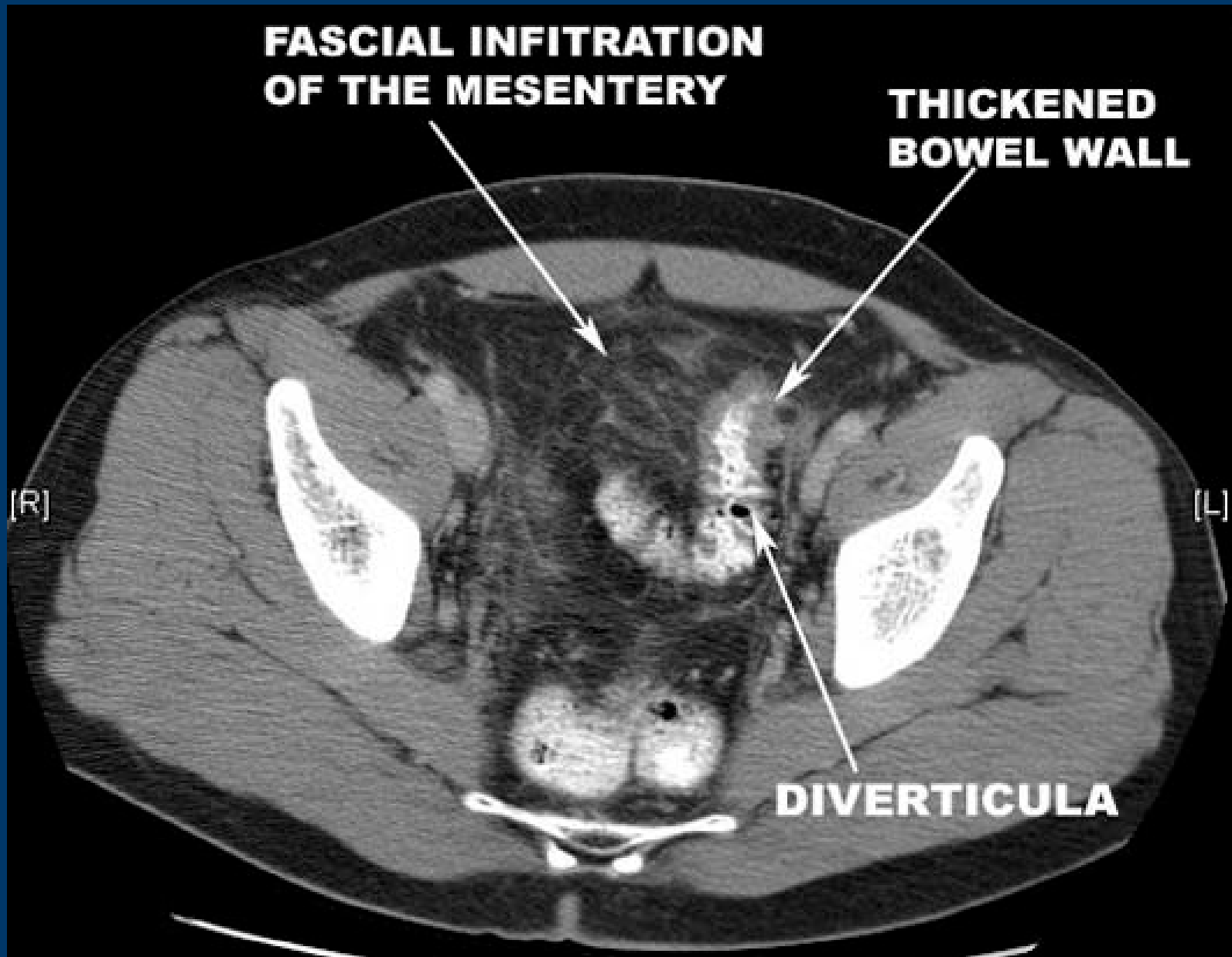
IV Fecal peritonitis

Presentation

- Symptoms
 - LLQ Pain, Fever, Diarrhea or constipation
 - Urinary symptoms if inflammation adjacent to the bladder
- Classic Triad
- Fever, Leukocytosis, LLQ tenderness
- Mass is occasionally felt
- Complicated Diverticulitis:
 - Abscess: tender, +/- palpable mass on abdominal, rectal, or pelvic examination.
 - Obstruction: distention, tenderness
 - Free perforation: peritonitis, sepsis

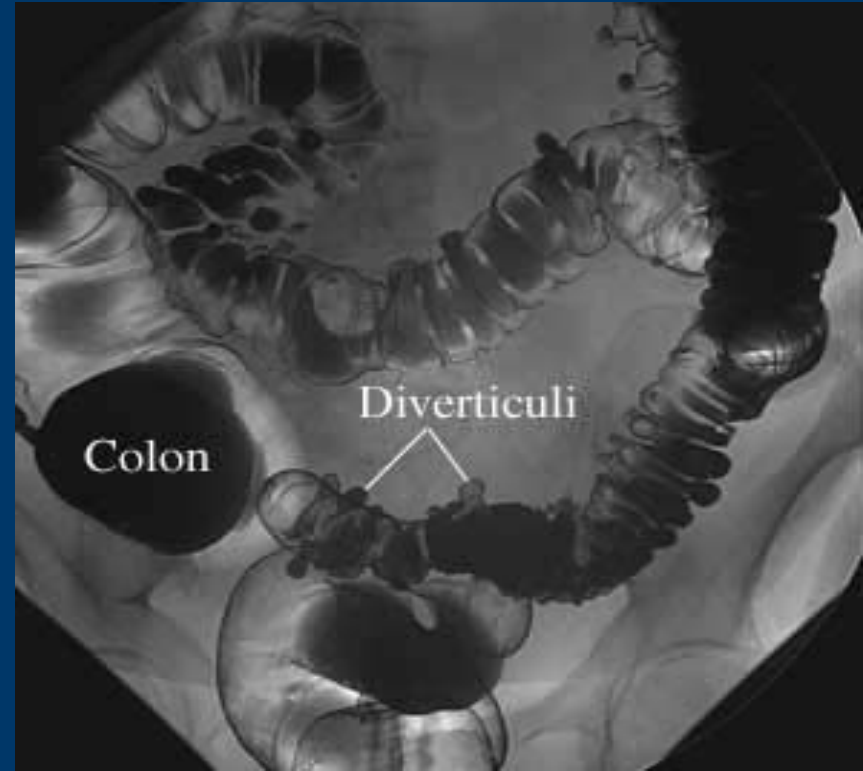


- Imaging: CT Scan



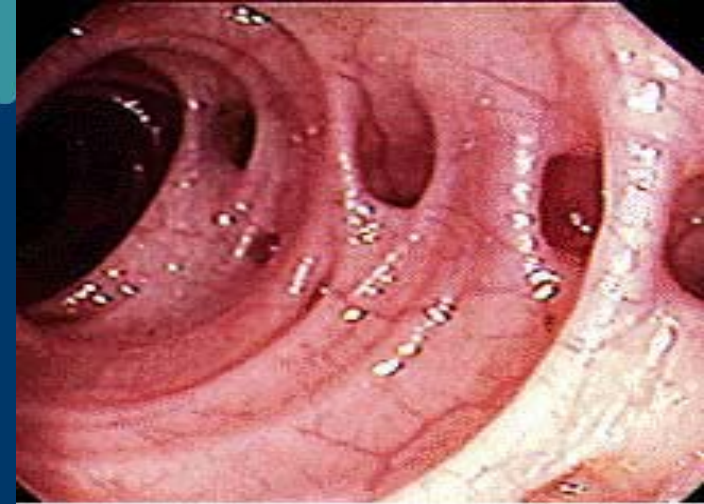
Imaging

- Barium Enema
 - Avoid in acute setting
 - If scope not possible can aid in distinguishing CA vs. diverticulitis after acute attack
 - Consider CT Colonography
- Sensitivity: CT 98% vs. BE 92%



Colonoscopy

- Avoid with acute diverticulitis
 - Risk of perforation
- Perform 6 to 8 weeks after when inflammation subsides
- Confirms diagnosis and excludes malignancy
- Current Accepted society and international guidelines recommend routine colonoscopic evaluation after 1 episode of acute diverticulitis



Diverticulosis "pockets"



Diseases of the
Colon & Rectum

**Practice
Parameters**

Practice Parameters for Sigmoid Diverticulitis

Janice Rafferty, M.D., Paul Shellito, M.D., Neil H. Hyman, M.D.,
W. Donald Buie, M.D., and the Standards Committee of The American Society of
Colon and Rectal Surgeons

Is Colonoscopy Mandatory After Radiologically Confirmed Acute Diverticulitis?

ORIGINAL CONTRIBUTION

Is Colonoscopy Still Mandatory After a CT Diagnosis of Left-Sided Diverticulitis: Can Colorectal Cancer be Confidently Excluded?

K. C. Lau, M.B.B.S., F.R.A.C.S.¹ • K. Spilsbury, Ph.D.² • Y. Farooque, M.B.B.S.¹
S. B. Kariyawasam, M.B.B.S., F.R.A.C.S.¹ • R. G. Owen, M.B.B.S.¹
M. H. Wallace, M.S., F.R.C.S.^{1,3} • G. B. Makin, M.B.B.S., F.R.A.C.S.¹

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² Curtin Health Innovation Research Institute – Population Health, Curtin University, Perth, Western Australia, Australia

³ Department of Surgery, University of Western Australia, Perth, Western Australia, Australia

- N=319 had colonoscopy after episode
- 23 (2.1%) had cancer
- Odds of Dx CRC
 - 6.7 time in pts w abscess
 - 4 times in local perforation
 - 18 times in pts with fistula
- Concluded: Recommend routine colonoscopy in all cases

Systematic Review and Meta-analysis of the Role of Routine Colonic Evaluation After Radiologically Confirmed Acute Diverticulitis

Prashant V. Sharma, FRACS, Timothy Eglinton, FRACS,* Phil Hider, FAFPHM, RACP,†
and Frank Frizelle, FRACS**

- Proportion Estimated Risk of Malignancy:
 - Uncomplicated 0.7% vs. Complicated 10.8%
- Conclusion: Risk of malignancy after radiographically proven episode of acute uncomplicated diverticulitis low
- Routine colonoscopy may not be necessary in uncomplicated cases
- Pts with complicated diverticulitis have significant risk & should have colonoscopy

Management: Acute Uncomplicated Diverticulitis

- Conservative Management
 - Nonoperative: Bowel rest, Antibiotics
 - PO or IV depending on severity
 - Anaerobic/GN coverage
 - Outpatient or Inpatient
- Successful in 70-100% pts
- Etzioni et al. 94% successful outpt mgmt of uncomplicated diverticulitis
- 6-8 weeks later
 - Scope to rule out cancer
- Elective Resection??

Outpatient Versus Hospitalization Management for Uncomplicated Diverticulitis

A Prospective, Multicenter Randomized Clinical Trial (DIVER Trial)

Sebastiano Biondo, MD, PhD, Thomas Golda, MD, PhD,* Esther Kreisler, MD, PhD,* Eloy Espin, MD, PhD,†
Francesc Vallribera, MD, PhD,† Fabiola Oteiza, MD, PhD,‡ Antonio Codina-Cazador, MD, PhD,§
Marcel Pujadas, MD,§ and Blas Flor, MD, PhD||*

- DIVER Trial: Multicenter RCT, *Ann Surg*, Jan 2014
- 132 Patients, 5 Hospitals in Spain
- Outpatient vs. Hospital Treatment of Uncomplicated Diverticulitis (CT Confirmed) + Abx
- Same rate of treatment failure
- Overall health care cost per episode was 3 times lower in outpatient group
- No difference in QOL
- Concluded: Outpatient treatment safe and effective selected patients with uncomplicated acute diverticulitis
- Important costs saving without negative influence on QOL

Randomized clinical trial of antibiotics in acute uncomplicated diverticulitis

A. Chabok¹, L. Pählman², F. Hjern³, S. Haapaniemi⁴ and K. Smedh¹, for the AVOD Study Group

¹Colorectal Unit, Department of Surgery, and Centre for Clinical Research Uppsala University, Västmanlands Hospital, Västerås, ²Colorectal Unit, Department of Surgical Sciences, Uppsala University, Uppsala, ³Division of Surgery, Department of Clinical Sciences, Danderyd Hospital, Karolinska Institute, Stockholm, and ⁴Department of Surgery, Vrinnevi Hospital, Norrköping, Sweden

Correspondence to: Dr K. Smedh, Department of Surgery, Central Hospital, SE-72189 Västerås, Sweden (e-mail: kenneth.smedh@ltv.se)

- AVOD Trial: Multicenter RCT, *BJS 2012*
- 10 surgical departments in Sweden & 1 Iceland
- 623 patients
- Abx vs. No Abx in Uncomplicated Diverticulitis
- Complication Rates same (1.9% vs. 1.0%)
- LOS same (3 d)
- Concluded: Antibiotics for acute uncomplicated diverticulitis neither accelerates recovery nor prevents complications or recurrence
- Should be reserved for the treatment of complicated diverticulitis

Elective Sigmoid Resection

- Open, Lap, Robotic
- Sigmoid Resection
 - Proximal Margin: compliant bowel
 - Include thickened, woody or grossly diseased bowel
 - Not all diverticula bearing colon must be removed
 - Distal: upper rectum
- Ureteral stenting available

Elective Sigmoid Resection: Bowel Prep?

ORIGINAL ARTICLE

The influence of mechanical bowel preparation in elective colorectal surgery for diverticulitis

H. P. van't Sant · J. C. Sliker · W. C. J. Hop ·
W. F. Weidema · J. F. Lange · J. Vermeulen ·
C. M. E. Contant

- Concluded: bowel prep has no influence on anastomotic leak rates or other septic complications

Management of Acute Uncomplicated Diverticulitis: Elective Surgery

- >20% will require surgical treatment
- Management of acute diverticulitis has evolved over the past 2 decades
- Shift toward higher threshold for elective resection in recurrent disease and in favor of primary anastomosis for patients with acute disease

Diseases of the
Colon & Rectum

**Practice
Parameters**

Practice Parameters for Sigmoid Diverticulitis

Janice Rafferty, M.D., Paul Shellito, M.D., Neil H. Hyman, M.D.,
W. Donald Buie, M.D., and the Standards Committee of The American Society of
Colon and Rectal Surgeons

Management of Acute Diverticulitis:

Natural History of Disease

- Most perforations and complications do not occur after recurrences, happen at first attack
- Thus, a policy of elective resection after recovery from uncomplicated acute diverticulitis may not decrease likelihood of later emergent surgery or overall mortality
- Conservative management of recurrent nonperforated diverticulitis associated with low rates of Morbidity & Mortality with mild course

Chapman J, et al. Complicated diverticulitis: is it time to rethink the rules? *Ann Surg.* 2005;242:576–581.

Chapman JR, et al. Diverticulitis: a progressive disease? Do multiple recurrences predict less favorable outcomes? *Ann Surg.* 2006;243:876–880

Practice Parameters for Sigmoid Diverticulitis

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W. Donald Buie, M.D., and the Standards Committee of The American Society of
Colon and Rectal Surgeons

- “The decision to recommend elective sigmoid colectomy after recovery from acute diverticulitis should be made on a case-by-case basis”
 - Level of Evidence III; Grade B
 - Consider Age, comorbidities, frequency & severity of attacks, and if sx persistent after acute episode
 - Consider travel outside US and QOL

Indications for Elective Sigmoid Resection in Diverticular Disease

Bastiaan R. Klarenbeek, MD,* Michelle Samuels, MD,* Maarten A. van der Wal, MD,†
Donald L. van der Peet, MD, PhD,* Wilhelmus J. Meijerink, MD, PhD,* and Miguel A. Cuesta, MD, PhD*

TABLE 4. Univariate Analysis of Risk-Factors for Perforation (Recurrences in 88 Patients)

	Risk Factor	No Risk Factor	P
Age <40	2/6 (33%)	8/82 (10%)	0.079
Age >70*	0/29 (0%)	10/59 (17%)	0.019
ASA >2	5/23 (22%)	5/65 (8%)	0.068
Collagen vascular disease*	4/11 (36%)	6/77 (8%)	0.005
BMI >25	6/56 (11%)	2/25 (8%)	0.705
Cardiovascular	6/36 (17%)	4/52 (8%)	0.192
Diabetic	0/8 (0%)	10/80 (13%)	0.288
Immune suppressive therapy	1/6 (17%)	9/82 (11%)	0.672
NYHA >2	2/12 (17%)	8/76 (11%)	0.533
Pulmonary	1/13 (8%)	9/75 (12%)	0.651
Chronic renal failure*	3/3 (100%)	7/85 (8%)	0.000
Smoking	2/25 (8%)	8/63 (13%)	0.531
High-risk*	5/14 (36%)	5/74 (7%)	0.002

High-risk is considered the high-risk group consisting of collagen vascular disease, immunosuppression therapy, and/or chronic renal failure per patient.

*Significant risk factors.

ASA indicates American Society of Anaesthesiology; BMI, Body Mass Index; NYHA, New York Heart Association.

TABLE 5. Multivariate Analysis by a Logistic Regression Model of Risk-Factors for Perforation (Total 291 Patients)

	Odds-Ratio	P	95% CI	
			Lower	Upper
Start of analysis				
Age <40	0.680	0.679	0.109	4.246
Age >70	1.055	0.886	0.508	2.188
ASA >2	1.000	0.999	0.344	2.911
Collagen vascular disease	0.972	0.961	0.317	2.982
BMI >25	1.727	0.145	0.828	3.602
Cardiovascular	0.632	0.258	0.285	1.399
Diabetic	0.178	0.025	0.040	0.801
Immune suppressive therapy	3.034	0.094	0.829	11.099
NYHA >2	1.289	0.657	0.420	3.956
Pulmonary	0.669	0.448	0.238	1.886
Chronic renal failure	20.419	0.000	4.923	84.692
Smoking	1.163	0.716	0.516	2.624
Constant	0.189	0.000		
End of analysis				
Immune suppressive therapy*	2.934	0.026	1.136	7.576
Chronic renal failure*	16.161	0.000	4.490	58.164
Constant	0.237	0.000		

*Significant risk factors.

ASA indicates American Society of Anaesthesiology; BMI, Body Mass Index; NYHA, New York Heart Association.

- Concluded elective sigmoid rsxn should be restricted and only considered in complicated cases and for high risk patients (IS/CRF/CVD) following a conservatively treated episode

Predicting Recurrence After Initial Attack

ORIGINAL CONTRIBUTION

Long-Term Follow-up After an Initial Episode of Diverticulitis: What Are the Predictors of Recurrence?

Jason F. Hall, M.D., M.P.H.¹ • Patricia L. Roberts, M.D.¹
Rocco Ricciardi, M.D., M.P.H.¹ • Thomas Read, M.D.¹ • Christopher Scheirey, M.D.²
Christoph Wald, M.D.² • Peter W. Marcello, M.D.¹ • David J. Schoetz, M.D.¹

¹ Department of Colon and Rectal Surgery, Lahey Clinic, Burlington, Massachusetts
² Department of Radiology, Lahey Clinic, Burlington, Massachusetts

- 5-year Recurrence 36%
- Complicated Recurrence 3.9%
- Concluded: although recurrence is common following an initial attack managed medically, complicated recurrence is uncommon

TABLE 3. Multivariate model

	HR (95% CI)
Retroperitoneal abscess	4.5 (1.1–18.4)
Family history of diverticulitis	2.2 (1.4–3.2)
Segment >5 cm	1.7 (1.3–2.3)
Right colonic disease	0.27 (0.09–0.86)

Diverticulitis in Young Patients

- < Age 50
- No clear consensus
- More virulent course of disease untrue
- Not at increased risk of complications or recurrent attacks
- Longer lifespan – higher cumulative risk for recurrent attacks
- Resection is no longer indicated at the time of the first attack in young pts.

Nelson et al. Management of Diverticulitis in Younger Patients. Dis Colon Rectum 2006; 49:1341-45.

Guzzo J, Hyman N. Diverticulitis in young patients: is resection after a single attack always warranted? Dis Colon Rectum 2004;47:1187-91.

Laparoscopic Resections

- Sigma Trial: Multicenter double blind RCT 2002-2006
- Lap vs. Open Elective Resection
- Lap and Lap-assisted elective colon resections can be performed safely with low conversion and complication rates
- Faster Recovery, Decreased LOS
- Less postoperative pain, more cosmetic
- Factors to Consider: body habitus, local tissue inflammation, complicated diverticulitis
- More complicated disease may require conversion

RANDOMIZED CONTROLLED TRIALS

Laparoscopic Sigmoid Resection for Diverticulitis Decreases Major Morbidity Rates: A Randomized Control Trial

Short-term Results of the Sigma Trial

Bastiaan R. Klarenbeek, MD, Alexander A. Veenhof, MD,* Roberto Bergamaschi, MD, PhD, FRCS,†
Donald L. van der Peet, MD, PhD,* Wim T. van den Broek, MD, PhD,* Elly S. de Lange, PhD,*
Willem A. Bemelman, MD, PhD,‡ Piet Heres, MD,§ Antonio M. Lacy, MD, PhD,¶
Alexander F. Engel, MD, PhD,|| and Miguel A. Cuesta, MD, PhD**

Lap vs. Open

- 2002-2006 prospective, multicenter, double-blind, parallel-arm, RCT in 5 centers
- Significantly more major complications in Open group 9.6% vs. 25.0% (P = 0.038)
- Less pain, improved quality of life, and shorter LOS at the cost of a longer operating time
- Minor complication rates were similar

Complicated Diverticulitis: Abscess

- Hinchey Stages I (pericolic abscess) and II (retroperitoneal or pelvic abscess)
- Approx 15% of patients with acute diverticulitis
- Admission + IV Antibiotics
- Abscesses <2 cm should resolve
- Larger abscess amenable percutaneous drainage
- Elective Resection?

Management of Acute Diverticulitis with Abscess After Drainage

- Elective resection typically advised after episode of complicated diverticulitis (ASCRS)
 - Association of Coloproctology of Great Britain and Ireland statement does not specifically address
- After percutaneous drainage of abscess elective resection has been recommended as 41% will develop recurrence
- This has been challenged
- All small, retrospective, single-institution data sets with limited follow-up and lack of time-to-event analysis, and selection bias

ORIGINAL CONTRIBUTION

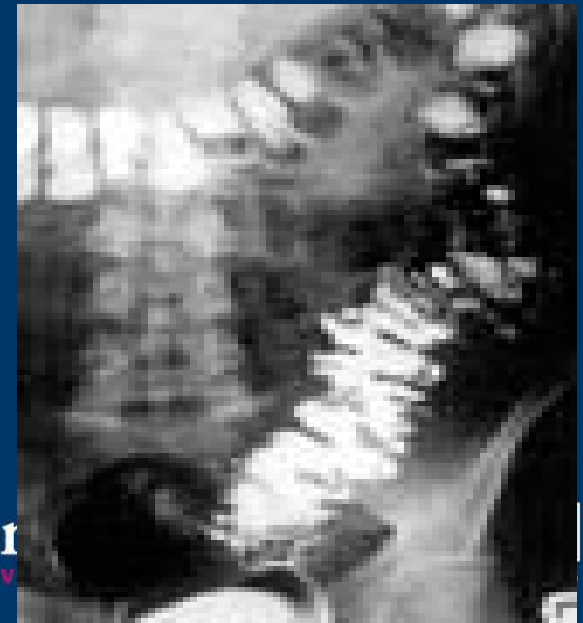
Percutaneous Drainage of Colonic Diverticular Abscess: Is Colon Resection Necessary?

Wolfgang B. Gaertner, M.S., M.D.¹ • David J. Willis, M.D.² • Robert D. Madoff, M.D.¹
David A. Rothenberger, M.D.¹ • Mary R. Kwaan, M.P.H., M.D.¹
George E. Belzer, M.D.² • Genevieve B. Melton, M.A., M.D.¹

¹ Division of Colon and Rectal Surgery, Department of Surgery, University of Minnesota, Minneapolis, Minnesota
² Division of Colon and Rectal Surgery, Department of Surgery, Park Nicollet Methodist Hospital, St. Louis Park, Minnesota

Complicated Diverticulitis: Obstruction

- Can be partial or complete
- Colonic obstruction from edema and/or inflammation.
- Recurrent attacks can cause inflammation and fibrosis resulting in stricture
- Must evaluate for cancer



Complicated Diverticulitis: Fistula

- Abscess rupture
- Incidence 5-33% reported
- Types:
 - Colovesical fistula:
 - Most common fistula from diverticulitis
 - Diverticulitis most common cause of CVF
 - Less common in females due to uterus protection
 - Colovaginal fistula: Females after hysterectomy
 - Colocutaneous fistula
 - Less Common: Coloenteric, colouterine, Colosalpingeal

Complicated Diverticulitis: Fistula

- Diagnosis is Clinical
- Many wont be identified on imaging
- Excess efforts should not be taken to demonstrate fistula
- Primary aim is determine etiology (Ca, IBD, Diverticulitis) and manage appropriately
- Treatment:
 - Treat acute attack
 - Elective resection, primary anastomosis

Complicated Diverticulitis: Free perforation

- 1% to 2% of cases
- Mortality between 20% - 30%
- Hinchey Stage III - Purulent peritonitis
- Hinchey Stage IV - free perforation with fecal peritonitis
- Emergent Operative Intervention
 - Management Options

Emergent Surgical Intervention

- Controversial Management of Hinchey III & IV disease
- According to current ASCRS guidelines, HP recommended
 - Sigmoid resection, end colostomy, closure of distal stump
 - Overall Morbidity up to 29%
 - Mortality 10-20%
 - Long LOS (20+ days)
 - Colostomy closure technically difficult
 - “Temporary” colostomies often never closed (30%-75%)
- This has been challenged by European Association for Endoscopic Surgery recommendations + several studies
- Alternative to HP include: PA +/- Diversion & Lap Lavage

Emergent Surgical Intervention

ORIGINAL ARTICLES FROM THE ESA PROCEEDINGS

A Multicenter Randomized Clinical Trial of Primary Anastomosis or Hartmann's Procedure for Perforated Left Colonic Diverticulitis With Purulent or Fecal Peritonitis

Christian Eugen Oberkofler, MD, Andreas Rickenbacher, MD,* Dimitri Aristotle Raptis, MD, MSc,* Kuno Lehmann, MD,* Peter Villiger, MD,† Christian Buchli, MD,† Felix Grieder, MD,‡ Hans Gelpke, MD,‡ Marco Decurtins, MD,‡ Adrien A. Tempia-Caliera, MD,§ Nicolas Demartines, MD,§ Dieter Hahnloser, MD,§ Pierre-Alain Clavien, MD, PhD,* and Stefan Breitenstein, MD**

- RCT: HP vs. PA +DLI
 - N=62 Hinchey III/IV
- Complication Rate (M&M) for resection and Stoma reversal comparable in each group
- Primary Anastomosis Favored:
 - Stoma reversal rate significantly higher (90% vs. 57%)
 - Significantly reduced major complications, OR time, LOS, and cost

Emergent Surgical Intervention

- Salem and Flum et al. Meta-analysis
 - PA (569 cases 50 studies) v. HP
 - M&M greater in HP group
 - Concluded PA safe
- Therefore PA +DLI in Left sided perforation
 - Higher Stoma reversal rate
 - Shown to be safe, with less complications, shorter LOS, and less cost
- Future Question: Is diverting ileostomy is necessary?

Laparoscopic Lavage

- Lap lavage for perforated diverticulitis is newer modality of treatment
- First described by O'Sullivan et al. *Ireland, 1996*
 - 2009 published 100 consecutive cases with 93% success
 - 2012 published 427 cases 14% morbidity
- Nonfeculent Perforated Diverticulitis (Hinchey 3)
- Not actually new concept, now more realistic option
 - Increase in adoption of laparoscopy & advances in technical skill + Improvement in CT imaging
 - Treatment option now within skills set of most general surgeons

Laparoscopic Lavage

- In institutions who use commonly: report refinements in technique and improvement in case selection have resulted in increased use
- Generally Antibiotics +
 - Hinchey I-II Percutaneous Drainage
 - Hinchey III Lap Lavage
 - Hinchey IV Hartmann's
- Failures:
 - Fistula formation
 - Perforated cancer
 - Ongoing sepsis/inadequate washout/missed collection

Laparoscopic Lavage

- Systematic Review Publications 1990 - 2008
- 8 studies met inclusion criteria
- 213 patients with acute complicated diverticulitis managed by laparoscopic lavage & Abx
- Hinchey Grade 3 disease
- Conversion to laparotomy in 6 (3%) patients
- Mean LOS 9 days
- 10% had complications
- Mean f/u 38 mos, 38% underwent elective sigmoid resection with primary anastomosis
- Alternative to more radical surgery in selected patients

Laparoscopic Lavage for Perforated Diverticulitis: A Population Analysis

Ailín C. Rogers, M.B., B.Ch., B.A.O.^{1,2} • Danielle Collins, M.D.¹
 Gerald C. O'Sullivan, F.R.C.S.I.^{1,†} • Desmond C. Winter, M.D., F.R.C.S.I.^{1,2}

¹ Institute for Clinical Outcomes Research & Education (iCORE) and Centre for Colorectal Disease, St. Vincent's University Hospital, Elm Park, Dublin, Ireland

² School of Medicine & Medical Science, University College Dublin, Dublin, Ireland

- Overall intervention rate same
- Proportion of pts undergoing lap lavage increased 8% to 17%
 - Lap Lavage more likely in pts at extremes of age
- Lap Lavage:
- Lower mortality
- Less complications 14.1% vs. 25% (P<0.001)
- Shorter LOS
- ICU admission rates significantly lower
- Concluded: Promising Therapeutic Option

TABLE 2. Demographics and outcomes of patients with acute diverticulitis undergoing emergency procedures 1995 to 2008

	Resection (n = 427) n (%)	Lavage (n = 2028) n (%)	p
Demographics			
Male	899(44.3)	199(46.6)	0.501
Mean age, y	64.8	60.7	0.000
Charlson score	0.9	0.8	0.041
Outcomes			
Median length of stay, d	20	10	0.000
Intensive care admissions	235(11.6)	13(3.0)	0.000
Mortality	210(10.4)	17(4.0)	0.010

Laparoscopic Lavage

- Issues that have precluded this from being standard of care to replace HP
 1. Patient selection (Hinchey 3)
 2. Accuracy of Preop Determination
 3. Lack Prospective RCT

Critiques:

- Selection Bias
- Inclusion Criteria Variable
- Lack of Prospective Data
- No Randomized Studies

Horgan, A. Laparoscopic Lavage for perforated diverticulitis: A Panacea? Another view. Dis Colon Rectum. 2013; 56:388.

Laparoscopic Lavage

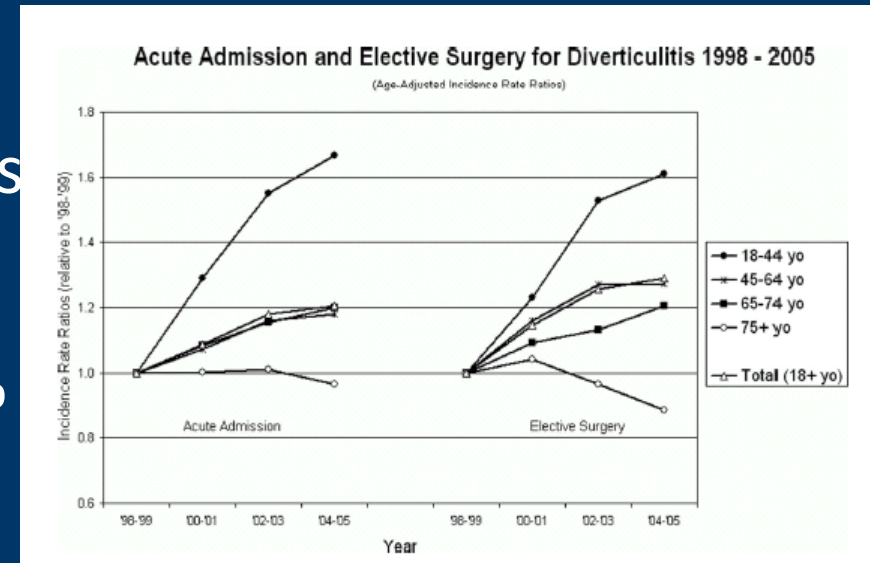
- RCT in Progress
 - DILA-LA *Scandinavia, Thornell et al.*
 - The Ladies Trial *Dutch Diverticular Disease (3D) Collaborative*
 - LapLAND *Hogan et al.*
 - SCANDIV *Scandinavia, Schultz et al.*
- Questions for future:
 - If we manage pts. successfully, what percent remain symptomatic?
 - Compare to HP and PA +/- DLI
 - Should elective resection be performed?

Diverticulitis in the United States: 1998–2005

Changing Patterns of Disease and Treatment

David A. Etzioni, MD, MSHS,*†‡ Thomas M. Mack, MD, MPH,† Robert W. Beart, Jr., MD,*
and Andreas M. Kaiser, MD*

- Nationwide inpatient sample
- N=267,000 acute diverticulitis
- 33,500 operations
- Admissions increased by 26%
- Rates of admission increased more rapidly for young pts (82% vs. 36%)
- Elective operations rose 29%
- No evid that PA becoming more widely used
- Mortality decreased



ORIGINAL CONTRIBUTION

Outcomes

- 1991 -2005

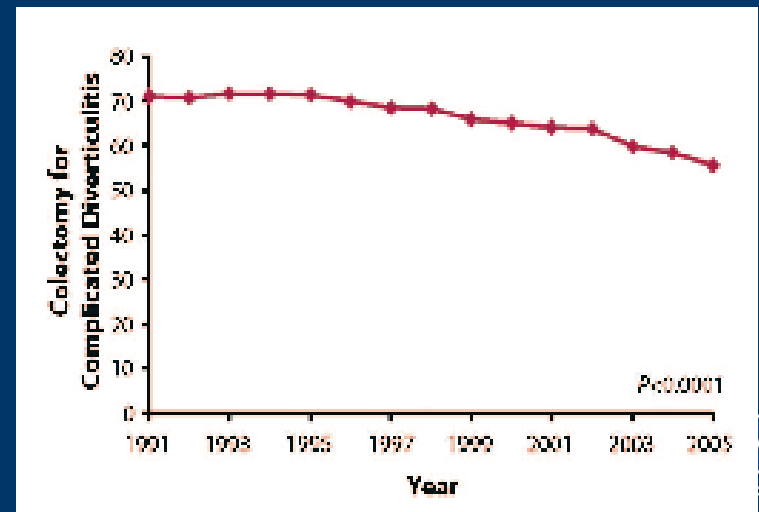
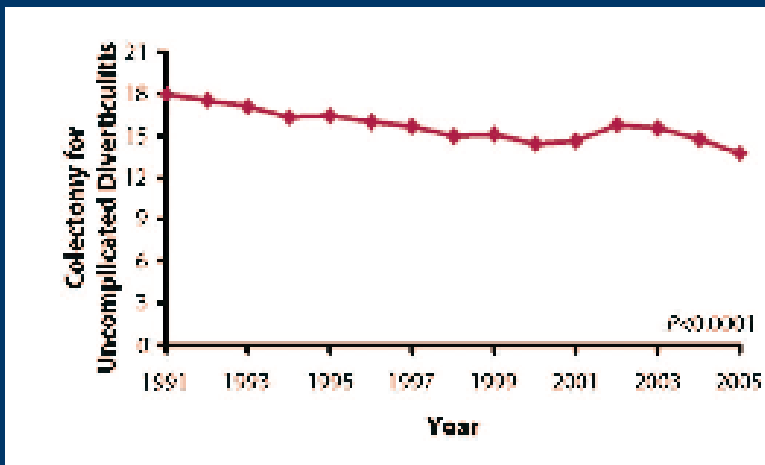
Is the Decline in the Surgical Treatment for Diverticulitis Associated with an Increase in Complicated Diverticulitis?

Rocco Ricciardi, M.D.¹ • Nancy N. Baxter, M.D., Ph.D.² • Thomas E. Read, M.D.¹
Peter W. Marcello, M.D.¹ • Jason Hall, M.D.¹ • Patricia L. Roberts, M.D.¹

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- Despite a significant decline in surgical treatment for diverticulitis, there has been no change in the proportion of patients discharged for free diverticular perforation
- Rationale for offering prophylactic surgery to prevent future free perforation is unsubstantiated



Recurrence After Resection

- Recurrent diverticulitis is rare after a colectomy for diverticulitis (3% to 13%)
- As many as 3% will require repeat resection
- Thaler et al. found level of anastomosis was the only predictor of recurrence
- Important predictor is colosigmoid rather than colorectal anastomosis
 - Recurrence 4 times greater
- To avoid recurrences, the rectum should be used for anastomosis
 - Where taenia coli splay out onto upper rectum

•Thaler et al., Determinants of recurrence after sigmoid resection for uncomplicated diverticulitis. Dis Colon Rectum. 2003 Mar;46(3):385-8.

Take Home Message

- Patients are often sent to a surgeon's office to consider an elective colectomy to avoid urgent surgery and the possibility of a stoma
- As few patients will actually require urgent surgery, should limit discussion regarding this uncommon complication
- Instead should focus on discussion of risks and benefits of surgery, QOL implications, and the higher likelihood of similar episodes as the reason to, or not to, consider surgery

Conclusions

- Colonoscopy in at least complicated if not all cases after an acute attack
- Uncomplicated Diverticulitis: Admission and Antibiotics may not be necessary
- Bowel Prep unnecessary
- Elective sigmoid colectomy after recovery from acute diverticulitis should be made on a case-by-case basis
- Guidelines should be revised
- Recommendations continually evolving as we learn more about the Natural course of the disease

Conclusions

- Emergent Resection: Primary Anastomosis + Diverting Loop Ileostomy better outcomes than Hartmann Procedure
- Laparoscopic Lavage is a promising new technique
- Prospective RCT data needed
- To avoid recurrence, ensure rectum

Thank You

