Management of Diverticular Disease:
New Strategies, New Approaches

March 10, 2012
10:00 AM – 11:15 AM
Houston, Texas

Educational Partner
Miller Medical Communications, LLC.
Session 2: Management of Diverticular Disease: New Strategies, New Approaches

Learning Objectives

1. Characterize the patterns of prevalence and risk factors for diverticular disease.
2. Integrate evidence-based diagnostic approaches into the evaluation of patients with diverticular disease.
3. Formulate and apply appropriate medical management strategies when indicated for the treatment and prevention of diverticulitis.
4. Incorporate patient counseling approaches regarding indications for elective surgical intervention.

Faculty

Sita S. Chokhavatia, MD
Associate Professor of Medicine
Division of Gastroenterology
Mount Sinai School of Medicine
New York, New York

Dr Sita Chokhavatia is associate professor of medicine in the Division of Gastroenterology at Mount Sinai School of Medicine in New York City. She earned her medical degree from Seth G. S. Medical College at the University of Bombay, now the University of Mumbai, India. Residency and fellowship followed at the Jersey City Medical Center in New Jersey.

Board certified in internal medicine, gastroenterology, and geriatric medicine, Dr Chokhavatia maintains clinical and research interests in geriatric gastroenterology, irritable bowel syndrome (IBS), gastrointestinal dysmotility, gastroesophageal reflux disease, and chronic constipation, with a special emphasis on the overlap of IBS with other organic gastrointestinal diseases.

Dr Chokhavatia is a member of and has been elected to fellowship in several discipline-related societies, among them the American College of Physicians, the American College of Gastroenterology, the American Gastroenterological Society, and the American Society of Gastrointestinal Endoscopy.

Martin H. Floch, MD, MACG, FACP, AGAF
Clinical Professor of Medicine
Digestive Disease Section
Yale University School of Medicine
New Haven, Connecticut

Dr Martin Floch is clinical professor of medicine at Yale University School of Medicine in New Haven, Connecticut, where he is responsible for continuing medical education in gastroenterology and is involved in probiotic research in inflammatory bowel disease and irritable bowel syndrome. He received his medical degree from New York Medical College in Valhalla; completed his residency at Beth Israel Hospital in New York City; and trained in gastroenterology at the former Seton Hall College of Medicine in South Orange, New Jersey.

From 1970 to 1994, Dr Floch was chairman of internal medicine at Connecticut’s Norwalk Hospital, where he was also founding chief of gastroenterology and nutrition. A Master of the American College of Gastroenterology and a Fellow of the American College of Physicians, Dr Floch has been awarded numerous National Institutes of Health grants at both Yale University and Norwalk Hospital.

Dr Floch is editor of Netter’s Gastroenterology and co-author of Probiotics: A Clinical Guide. He is also editor-in-chief of the Journal of Clinical Gastroenterology.
Faculty Financial Disclosure Statements
The presenting faculty reported the following:
Dr Chokhavatia has no financial relationships to disclose.
Dr Floch has received a grant subsidy from Shire for his role as principal investigator.

Education Partner Financial Disclosure Statement
The content collaborators at Miller Medical Communications, LLC, report the following:
Lyerka D. Miller, PhD, has no financial relationships to disclose.

Suggested Reading List
Management of Diverticular Disease: New Strategies, New Approaches

Sita S. Chokhavatia, MD, FACP, FACP, AGAF, FASGE
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Learning Objectives

• Characterize the patterns of prevalence and risk factors for diverticular disease
• Integrate diagnostic approaches into the evaluation of patients with diverticular disease
• Formulate and apply appropriate medical management strategies when indicated for the treatment and prevention of diverticulitis

Drug List

<table>
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<tr>
<th>Generic</th>
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<tr>
<td>dicyclomine</td>
<td>Bentyl</td>
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<td>Bydilomine</td>
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<td>Anaspaz</td>
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<td></td>
<td>Levitid</td>
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<td>niflaxim</td>
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<td>mesalamine</td>
<td>Pentasa</td>
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<td>Asacol</td>
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<td></td>
<td>Canasa</td>
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<td></td>
<td>and others</td>
</tr>
</tbody>
</table>

How would you rate your level of knowledge of diverticular disease?

1. Expert
2. Very knowledgeable
3. Knowledgeable
4. Somewhat knowledgeable
5. Not at all knowledgeable

In which age group is diverticulitis more prevalent in men than in women?

1. <50 years of age
2. 50-75 years of age
3. >75 years of age

What dietary changes would you recommend in a patient with diverticular disease?

1. Increase dietary fiber
2. Reduce refined carbohydrates
3. Avoid nuts
4. 1 and 2 only
5. All of the above
The most common clinical presentation of acute diverticulitis in the Western world includes:

1. Left lower quadrant pain, elevated white blood count, and rectal bleeding
2. Left lower quadrant pain, elevated white blood count, and no rectal bleeding
3. Right lower quadrant pain, fever, and rectal bleeding
4. Right lower quadrant pain, fever, and no rectal bleeding

Acute Diverticulitis
Epidemiology, Pathogenesis, Clinical Features

Sita S. Chokhavatia, MD, FACP, FACP, AGAF, FASGE
Associate Professor of Medicine
Division of Gastroenterology
Mount Sinai School of Medicine
New York, New York

Diverticulosis Coli

Colonic Diverticulosis
- Acquired disease of the Western world, industrial revolution
- 18th century: initial report
- 19th century: infection and inflammation of diverticula
- 20th century, early: first surgery description
- 20th century, latter part: increasing worldwide prevalence
- 21st century: economic burden, aging population and a frame shift to younger age


Variability in Disease Location by Geographical Region

Diverticular Disease is Global
- Developed/ Western world:
  - Prevalence: 5% to 45%
  - 90% distal colon
  - Only 1.5% solely right colon diverticulosis
- Africa and Asia:
  - Predominantly right colon: 70%-74%, especially ascending colon
  - Diverticulitis less common in Asians, increase in Africans adopting Westernized diets
- Japan: despite Westernization of diet, higher prevalence of right-sided disease, some increase in left colon diverticula

Epidemiology of Diverticulosis Coli
Prevalence by age:
- < 40: 10%
- > 60: 30%
- > 80: 50%-70%
10% to 25% will develop diverticulitis unrelated to size, number, extent; 80% of diverticulitis in patients >90 yrs
Prevalence by sex:
- Age <50: more common in males
- Age 50-70: slight preponderance in women
- Age >70: more common in women


Changing Trend in Diverticular Disease
Admissions for Acute Diverticulitis 1998-2005

NIS: sharpest increase for Northeast and Midwest USA
TTUHSC: increase in Hispanic males <40 years

Diverticulosis
- Diverticulum:
  - Sac-like protrusion of mucosa and submucosa through the muscular layer of the colonic wall
  - Occurs in weak areas of the bowel wall
  - Typically 5–10 mm in size
  - Single or multiple
  - False diverticula - pseudodiverticula

Diverticular Disease
- Diverticulosis: presence of diverticula within the colon, incidental
- Diverticulitis: inflammation of a diverticulum, perforation
- Diverticular hemorrhage: bleeding diverticulum, no diverticulitis


Etiology: Multifactorial
- Anatomical/Structural
- Motility
- Fiber
- Other risk factors

Risk Factors
- Age
- Physical inactivity
- Obesity
- Constipation
- Smoking, caffeine, alcohol consumption
- NSAIDs, opiates

Structural Factors

- Outer longitudinal layer – 3 taenia
- Intrinsic weakness at vasa recta entry site
- Increased collagen cross linkage, age-related increase
- Increased elastin deposition, genetic (Marfan/ED syndrome)
- Decreased compliance of thickened colon
- Increased intraluminal pressures

Colon Dysmotility

- Segmentation – simultaneous contraction of adjacent haustra
- Extremely high intraluminal pressure zone
- Hypermotility- non propulsive
- Delayed transit
- Altered chemical mediators

Diet, Fiber, and Diverticular Disease

- Epidemiological data: strong inverse relationship (fruit, vegetable, popcorn, nut, seed consumption)
- Low fiber—less bulky stool —less water retained— longer transit: increased intracolonic pressure + altered micro flora
- Fiber-deficient diet (high in refined carbs):
  - increased risk of developing diverticular disease
  - diverticular disease less common in vegetarians
- Diet high in red meat and total fat content:
  - increased risk of developing diverticular disease

Clinical Spectrum of Diverticular Disease

- Asymptomatic
- Symptomatic
  - Uncomplicated diverticulitis
  - Recurrent symptomatic disease
  - Complicated disease
- Special conditions:
  - Young patients, immuno-compromised patients, giant diverticulum, right-sided diverticulitis, SCAD

Segmental Colitis Associated with Diverticulosis

- Symptoms overlap with IBD
- Older male patient
- Diarrhea
- Rectal bleed
- Endoscopic features: rectal and proximal colon sparing, inflammation restricted to segment with diverticulosis
- Seen in 0.25%-1.5% of colonoscopies

SCAD=segmental colitis associated with diverticulosis

IBD=inflammatory bowel disease

References:
Stages of Diverticular Disease (DD)

- Stage I: development of diverticula
- Stage II: asymptomatic DD
- Stage III: symptomatic uncomplicated DD
  - single episode acute diverticulitis
  - multiple discrete episodes of acute diverticulitis
  - smoldering symptoms
- Stage IV: complicated DD
  - abscess, fistula, perforation, obstruction, stricture, purulent and fecal peritonitis, bleed

Hinchey diverticulitis classification Stage I-IV (surgical)


Symptomatic Uncomplicated Diverticular Disease (SUDD)

- Symptoms overlap with IBS
- Chronic colicky/Constant lower abdominal pain
- Pain relieved with defecation, passage of flatus
- Bloating, distension, flatulence
- Associated alteration in bowel habit
- No signs of inflammation (fever, leukocytosis)

IBS=irritable bowel syndrome

Mechanisms for Abdominal Symptoms

- Intestinal bacterial overgrowth
- Mucosal low-grade inflammation
- Abnormal activation of intrinsic and extrinsic primary afferent neurons
- Neural and muscle dysfunction
- Visceral hypersensitivity


What Causes Diverticulitis?

- Obstruction of diverticulum
- Stasis
- Altered bacterial microflora
- Local ischemia
- Ulceration
- Micro/Macro perforation


Stages of Diverticular Disease

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Fiber Deficiency Causes Diverticulitis?

- Fiber-deficient diet
- SCAD
- Microscopic colitis
- Altered immune response
- Altered microflora

Acute Diverticulitis Symptoms

- Left lower quadrant pain
- Supra pubic/RLQ pain
- Fever
- Anorexia
- Nausea/vomiting
- Bloating
- Altered bowel habit
- Tenesmus
- Urinary symptoms

Stages of Diverticular Disease

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Clinical Features of Complicated Disease

- Abscess/Perforation
  - Purulent peritonitis
  - Fecal peritonitis
  - Colovesical fistula 65%
  - Pneumaturia
  - Fecaluria
  - Hematuria
  - Cystitis
  - Colovaginal fistula 25%
  - Vaginal discharge
- Intestinal obstruction, ileus
- Diverticular hemorrhage
- Extra intestinal manifestation

Case: A 76 y/o Woman

Presentation:
Intermittent chronic diffuse abdominal pain, bloating
Severe x 3 days; associated nausea, distension, no fever

Physical Exam:
VSS, distended abdomen-no guarding/rebound, +BS, –FOBT

Labs:
- Hgb: 11.6
- WBC: 5.4;
- Glucose: 160
- HbA1c: 8.2
- Creatinine: 0.7

Growth of an Aging Population, USA

- 2005: 35 million >65yrs
  - 155,000 >90yrs
- 2020: 22% of population >65yrs
  - over 3 million >90yrs

Effect of aging: disease presentation response to Rx
- iatrogenic complications
- ethical and social issues

Presentation May Be Atypical!

Age-related physiologic changes AND comorbid diseases AND polypharmacy:

- Normo/hypothermia and lower leukocyte counts in severe infections; NSAIDs block inflammatory response
- Normal blood pressure in hypertensive patient reflects hypotension; no tachycardia if beta-blocker Rx
- No guarding/rigidity may be elicited as lax abdominal wall
- Delirium; opioids block pain and alter mental status
**Case: A 25 y/o Man**

**Presentation and History:**
- 3 year h/o chronic constipation
- 1 day LLQ pain/ spasms, fever; no nausea, vomiting, BRBPR
- 1.5 pack/yr x 10 years, 4 beers/weekends, occasional marijuana
- ER eval for similar symptoms 11 months ago and 6 months ago
- 1 sister has Crohn’s disease

**ER evaluation:**
- CT abdomen/pelvis- sigmoid wall thickening, diverticula, adjacent inflammatory changes
- Normal labs

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**Diverticular Disease in the Young**

- 2%-30% of all diverticular disease
- 2%-5% male predominance
- Virulence debated
- Higher lifetime surgery rate
- Longer life expectancy = greater recurrences


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**Diverticulitis**

**Advances and Dilemmas in Treatment**

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*Clinical Professor of Medicine*  
Digestive Disease Section  
Yale University School of Medicine  
New Haven, Connecticut

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**Clinical Picture**

- Asymptomatic
- Symptomatic
  - Uncomplicated
    - Stages 1, 2a
    - Pain
    - Change in bowel habit
  - Complicated
    - Stages 2 a-h (above plus)
    - Fever
    - Elevated WBC
    - Abdominal tender mass
    - CT findings
    - Possible Sx of fistula

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**Antispasmodics**

- Dicyclomine HCl 10 or 20 mg – every 4-6 hours - up to 4 doses daily
- Hyoscyamine sulfate 0.125 mg – 1 to 2 doses every 4 hours as needed (there are extended-release forms)

These drugs are not FDA-approved for treatment of diverticular disease.
Dietary Fiber

- This is a deficiency disorder
- Treatment includes high (normal) fiber diet

Diet/Pathophysiology

- Burkitt, Trowell and others correlate prevalence of diverticula with low-fiber diets
- Data accepted as evidence that diverticular disease is a fiber-deficiency disease
- High fiber intake used to treat increased spasm and increased segmental contractions by British in 1970s
- Dietary Allowances now recommend 22-28 g of dietary fiber as correct intake in women and 28 to 34 g in men—varies with size
- But Western dietary fiber study reveals intake varies between averages of 8-10 g in most
- In vegan diets as much as 40-50 g/day

Pathophysiology

- Low-fiber diets have different colonic flora than high-fiber diets
- Is there an alteration in the healthy protective bacteria? Is there a dysbiosis?
- Decreased lactobacilli and bifidobacteria result in lessened immunity and proliferation of harmful organisms
- Diverticular disease patients have less fiber intake and hence change in flora that possibly promotes disease and inflammation

Dietary Fiber and Bacterial Flora

- Compared subjects on high bran diet to same subjects on regular diet
- Flora definitely different
- Significant alteration in relationships of aerobes and anaerobes, anaerobes inc.
  - (Similar results in other studies comparing flora of subjects on Western and Eastern diets)
- Conclusion: there is a dysbiosis in low-fiber diets
- Implications for diverticular disease patients
- No intestinal microbatome studies as yet with new genetic rRNA polymerase techniques, but definite changes with those methods in IBS and IBD

Is There Evidence to Support Dietary Modification?

- Historically, low-fiber diets were recommended for diverticulitis because of a concern that indigestible nuts, seeds, corn, and popcorn could enter, block, or irritate a diverticulum, resulting in diverticulitis and possibly increasing perforation risk
- Dietary fiber supplementation has been advocated to prevent diverticula formation and recurrence of symptomatic diverticulosis—Recommendations based largely on low-powered, epidemiologic observational studies
  - To date, there is NO evidence supporting such a practice


Strate LL et al. JAMA. 2008;300(9):1018-1024.
Is There Evidence to Support Dietary Modification?

- An 18-year study investigated the association of nut, corn, or popcorn consumption with diverticulitis and diverticular bleeding
- 47,228 men aged 40-75; free of diverticulosis or its complications, cancer, and IBD at baseline; assessed via food-frequency questionnaire
- During follow-up, inverse associations noted between nut and popcorn consumption and the risk of diverticulitis
- Multivariate hazard ratios for men with highest intake of each food vs men with lowest intake were 0.80 (P for trend = .04) for nuts and 0.72 (P for trend = .007) for popcorn

In this large prospective study in men, nut, corn, and popcorn consumption did not increase the risk of diverticulitis or diverticular complications, but decreased the risk of diverticulosis.


Clinical Picture

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  - Uncomplicated
    - Stages 1, 2a
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Standard Textbook Antibiotic Rx

- In acute stages
- For uncomplicated symptomatic disease
- For microabscess
- For abscess
- For fistula
- Rx anaerobic and aerobic flora, po or iv
- Use quinolone/metronidazole, trimethoprim-sulfamethoxazole, or amoxicillin/clavulanic acid
- Antibiotics used continuously from 1 to 4 weeks
- Recurrent use depends on symptoms and findings and may herald surgical intervention


New Nonabsorbable Antibiotics

- In 3 RCT of 555 patients with symptomatic uncomplicated disease rifaximin cyclic therapy of 400 mg bid for 7 d/mo significantly decreased symptoms
- In open label study of 968 patients cyclic therapy superior to high-fiber diet Rx
- Therefore, cyclic therapy is recommended

Rifaximin is not FDA approved for the treatment of diverticulitis.


Other New Treatments

Based on theory of chronic inflammation
- Mesalamine?
- Probiotics?

Mesalamine

- FDA-approved indication – ulcerative colitis
- Most common side effects: headache, abdominal pain, diarrhea

- Italy – Diverticulitis

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
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<tbody>
<tr>
<td>Trusoli (1999)</td>
<td>anti-7d/mes-8 wks, 4 yr f/up</td>
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<tr>
<td>Tursi (2002)</td>
<td>rif/mes vs rif alone: 12 mo</td>
</tr>
<tr>
<td>Tursi (2004)</td>
<td>rif/mes 100-8 wks, 8 wk f/up</td>
</tr>
<tr>
<td>Di Mario (2005)</td>
<td>500 mg/500 mg/mes 600 mg/mes 800 mg</td>
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</tbody>
</table>

- USA – Diverticulitis – Randomized controlled trials - DIVA Trial - PREVENT 1 and PREVENT 2

Mesalamine for Diverticulitis

- 170 patients, 98M, 72F, 67.1 yrs (39-84)
- 4 arms:
  1. rifaximin 200 mg bid
  2. rifaximin 400 mg bid
  3. mesalamine 400 mg bid
  4. mesalamine 800 mg bid
- Treated 10 days per month for 3 months
- Studied global symptom score (GSS) – 11 sx
- All groups improved except rifaximin 200 mg
- Mesalamine-treated patients had lowest GSS


Mesalamine in Diverticulitis: DIVA Study

- Randomized comparison of mesalamine ± probiotics vs placebo in patients with acute diverticulitis
- N = 117 patients with acute diverticulitis
- 3 arms:
  1. Mesalamine 2.4 g
  2. Mesalamine 2.4 g + B infantis (probiotic)
  3. Placebo
- At 52 wks, 40.7% in mesalamine group reported complete symptom response vs 18.2% in placebo group
- Mesalamine did not decrease the rate of recurrent diverticulitis
- Addition of probiotic did not affect outcomes


Mesalamine in Diverticulitis: PREVENT 1 Study

- Randomized, prospective, double-blind study investigating prevention of acute diverticulitis
- N = 584, 104 wks
- 4 arms:
  1. Mesalamine 1.2 g/day
  2. Mesalamine 2.4 g/day
  3. Mesalamine 4.8 g/day
  4. Placebo
- Results are pending

Probiotics for Diverticulitis

- 6 studies in literature
- First study in 1993 – rifaximin 7d/mo. followed by Lactobacillus sp 7d/mo for 12 mo in 79 pts. – decreased symptoms and no acute attacks or complications
- In 2003 – In 15 patients for 8-40 mo + antibiotic+intestinal absorbent for one week + or – E coli Nissle for 5 weeks = decreased symptoms and no attack for 2.43 mo vs 14.1 mo (p<.001)in probiotic Rx


Overview of Probiotics for Diverticulitis

<table>
<thead>
<tr>
<th>Probiotic Study/Year</th>
<th>Stage</th>
<th>N/ Follow-up</th>
<th>Outcome</th>
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<tbody>
<tr>
<td>L casei, 5-ASA, or both 2006</td>
<td>Symptomatic uncomplicated</td>
<td>90 12 months</td>
<td>Increased remission rate</td>
</tr>
<tr>
<td>L Casei + 5-ASA 2008</td>
<td>Symptomatic uncomplicated</td>
<td>75 24 months</td>
<td>Increased remission rate</td>
</tr>
<tr>
<td>VSL#3 + balsalazine 2007</td>
<td>Uncomplicated</td>
<td>30 12 months</td>
<td>Improved symptoms</td>
</tr>
<tr>
<td>L Acidophillus + L helveticus + Bifidobacterium 2010</td>
<td>Symptomatic uncomplicated</td>
<td>45 6 months</td>
<td>Prevented recurrence, improved symptoms</td>
</tr>
</tbody>
</table>

In summary...

5 different probiotic protocols tested in various stages of diverticulitis (no placebo-controlled studies)

With up to 40 months follow-up in 334 patients

Have produced suggestive but inconclusive results

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Treatment

Usual Practice – No Established Guidelines

- Varies with Stage
- Uncomplicated Stage 1
  - High (normal) fiber diet (HFD) with or without antispasmodics and antibiotics (approved/standard therapy)
  - Mesalamine – off label
  - Probiotics – no controlled studies
- Complicated Stage 2
  - Varies from NPO, to liquid diets, to no-fiber diets, to regular diet
  - Antibiotics
  - Antispasmodics
  - Mesalamine – off label
  - Probiotics – no controlled studies
  - Surgical Rx for complicated disease
  - Prevent Recurrences

Sheth AA. J Clin Gastroenterol. 2011;45(suppl 1):S43.
The Role of Surgery in Diverticulitis

Indications for surgery in acute diverticulitis
- Generalized peritonitis or free perforation, and patient is unstable
- Clear signs of obstruction not amenable to nonoperative measures
- Worsening clinical course after initial response

Indications in recurrent diverticulitis
- Sigmoid colectomy no longer recommended after 2 episodes
- Elective resection should be considered on a case-by-case basis, influenced by medical condition such as age, immune status, and comorbidities

Diverticulitis
- What about recurrences?

Natural History of Diverticular Disease
- Between 80% and 85% of patients with DD remain asymptomatic
- Of the 15%-20% symptomatic patients:
  - Approximately 75% will have painful DD without inflammation
  - Approximately 1%-2% will require hospitalization
  - Approximately 0.5% will require surgery

Diverticular Disease: Response and Recurrence
- Approximately 70% to 100% of patients respond to medical treatment to resolve a first acute attack of diverticulitis
- About 33% of patients will experience recurrent diverticulitis – often within 1 year of the first episode
- The 5-year recurrence rate is 19% to 54%
- Traditionally, surgical intervention was recommended after 2 or more episodes of acute, recurrent diverticulitis

Controversy Regarding Medical Versus Surgical Management of Diverticulitis
- Medical and surgical treatments have never been compared in a randomized, controlled trial in patients with diverticulitis
- Recurrent attacks occur in 33% of patients after medical resolution of initial episode
  - Is an antimicrobial approach only effective in the short term?
  - Data suggest that antibiotics may be no more effective at preventing future symptomatic episodes of mild uncomplicated diverticulitis than observation combined with bowel rest

Elective Surgery for the Treatment of Acute Uncomplicated Diverticulitis
- In 1999 Practice Parameters of the ASCRS and EAES recommended elective surgery
  - After 2 episodes of uncomplicated acute diverticulitis
  - After 1 episode in young patients
- In 2006 the ASCRS recommended that elective surgery should be made on an individual basis after a favorable response to conservative treatment

ASCRS = American Society of Colon and Rectal Surgeons
EAES = European Association for Endoscopic Surgery

Recurrent Mild Diverticulitis

- If no perforation, then each case treated based on findings. Rule of surgery after 2 attacks no longer exists and mild recurrent attacks do not have bad prognosis
- However, perforation has increased 6x mortality rate
- Elderly and comorbidities increase mortality rate


When To Consider Elective Surgery for Acute Diverticulitis

- The number of attacks of uncomplicated diverticulitis is not necessarily a determining factor in defining the appropriateness of surgery
- CT graded severity of a first attack is a predictor of an adverse natural history and may be helpful in determining the need for surgery
- Elective colon resection advised if an episode of complicated diverticulitis is treated nonsurgically
  - After percutaneous drainage of a diverticular abscess, a later colectomy usually should be planned, because 41% of patients will otherwise develop severe recurrent sepsis


Hinchey Grading System for Complications Related to Perforated Acute DD

<table>
<thead>
<tr>
<th>Stage</th>
<th>Hinchey Classification</th>
<th>Modified by Sher</th>
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<tbody>
<tr>
<td>I</td>
<td>Pericolic abscess or phlegmon</td>
<td>I. Pericolic abscess</td>
</tr>
</tbody>
</table>
| II    | Pelvic, intra-abdominal, or retroperitoneal abscess | IIa. Distant abscess amendable to percutaneous drainage  
         IIb. Complex abscess associated with fistula |
| III   | Generalized purulent peritonitis   | III. Generalized purulent peritonitis |
| IV    | Generalized fecal peritonitis    | IV. Fecal peritonitis |

The Hinchey classification is not applicable to the majority of patients with diverticulitis who do not require surgery


When To Consider Elective Surgery for Acute Diverticulitis (cont'd)

- Consider elective surgery in patients:
  - Who develop complications, such as fistulas, obstruction, or nonresolving smoldering disease
  - Who have had 2 or more episodes of severe diverticulitis, as determined by their clinical presentation and CT grade
  - With limited access to medical care
  - Who are concerned about the negative impact of repeated illnesses with regard to work productivity and/or psychosocial issues


Laparoscopic Colectomy

- A laparoscopic colectomy is appropriate in selected patients – advantages include:
  - less pain
  - smaller scar
  - shorter recovery
- Compared to open resection
  - There is no increase in early or late complications
  - A 27% reduction in major morbidity at 6 months
  - Cost and outcome are comparable
- Laparoscopic surgery is acceptable in the elderly and is safe in selected patients with complicated disease


What to Tell the Patient?

- Asymptomatic:
  - HFD – don’t worry, but if pain, need evaluation
  - 75% to 90% remain asymptomatic
  - 10% to 25% may develop symptoms, but only 1%-2% require hospitalization
- Elderly – need clinical observation if symptomatic
- Young – essentially no difference
Quality of Life (QOL) Issues in Diverticular Disease

- Prevalence >80% after age of 60
- Only 10% to 25% develop symptoms
- Complications in 5%-20% of symptomatic
- Few QOL studies in symptomatic, but they indicate DD has a negative effect
- Surgery needed in 0.5%


QOL Post Surgery for DD

- Mass General/Harvard evaluation of 325 patients who had open or laparoscopic sigmoid resection with restoration (no control group/no preoperative bowel sx)
- Survey from 2001 to 2008 (9 surgeons)
- 249 returned QOL evaluations
- 20% reported fecal incontinence (> in females), urgency or incomplete evacuation. Prospective study needed.


Summary

- Diverticula appear to form due to deficient fiber intake associated with increased or disturbed colonic motility.
- Low-fiber intake is also associated with a change in colonic flora. A high fiber diet is recommended.
- Chronic low-grade inflammatory mucosal changes occur that may progress to severe focal inflammation with complications of abscess or perforation.
- Medical treatment depends on the stage of the disease, ranging from treatment for uncomplicated symptomatic disease to disease with complications and use of antibiotics:
  - Investigational trials:
    - Initial mesalaminv studies indicate it may be effective in improving symptoms and preventing recurrence.
    - Limited uncontrolled trials with probiotics have shown some favorable results.
    - Rifaximin has shown symptomatic improvement.
    - Surgical intervention or resection is indicated on an individual basis in complicated disease.

How would you rate your level of knowledge of diverticular disease?

1. Expert
2. Very knowledgeable
3. Knowledgeable
4. Somewhat knowledgeable
5. Not at all knowledgeable

In which age group is diverticulitis more prevalent in men than in women?

1. <50 years of age
2. 50-70 years of age
3. >75 years of age

What dietary changes would you recommend in a patient with diverticular disease?

1. Increase dietary fiber
2. Reduce refined carbohydrates
3. Avoid nuts
4. 1 and 2 only
5. All of the above
### The most common clinical presentation of acute diverticulitis in the Western world includes:

1. Left lower quadrant pain, elevated white blood count, and rectal bleeding
2. Left lower quadrant pain, elevated white blood count, and no rectal bleeding
3. Right lower quadrant pain, fever, and rectal bleeding
4. Right lower quadrant pain, fever, and no rectal bleeding