Myth and Evidence in Diverticular Disease

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Myths

- Derived from the Greek word *mythos*, which means "word of mouth."
- Something that is widely thought to be false
- Holy story
Evidence

- Evidence is anything that can be used to prove something.

The word *evidence* is derived from the Latin *ēvidēnt-*-, meaning "obvious."
Evidence

Bloodletting

Pierre-Clarles-Alexandre Louis (1787-1872)

The cure for hot, moist diseases

Found that, on average, patients who were bled did worse than those who were not.
It was Hippocrates who first reported the pain killing and anti-inflammatory properties of willow leaves, of which 5-ASA is a derivate.
Salazopyrin, a new sulfanilamide preparation.

A. Therapeutic Results in Rheumatic Polyarthritis. B. Therapeutic Results in Ulcerative Colitis. C. Toxic Manifestations in Treatment with Sulfanilamide Preparations.

By

NANNA SVARTZ.

(Submitted for publication March 23rd, 1942).
Mith and evidence in Diverticular Disease

• Epidemiology

• Pathophysiology

• Management

• Treatment
Mith and evidence in Diverticular Disease

- Epidemiology

- Myth

- Diverticulosis Frequently Progresses to Diverticulitis

Illapa ("lightning" in Quechua, also known as Ilyap'a, Apu-llapu, ilyapa, iyapa, Katoyllu) is the Inca god controlling the weather phenomena (lightning, rain and storms). It is often confused or merged with the Lightning God Catequil / Apocatequi I. Illapa usually represented as a man wearing bright clothing or as a man wielding a club and stones.
Diverticular disease
Natural course

Diverticulosis
- <40y: <10%
- 60y: ~30%
- >80y: >60%

Asymptomatic
70-75%

Diverticular bleeding
- 5-15%, cease spont. 75%
- 1/3 major bleeding

2nd bleeding episode
14-38%

Recurrent bleeding episodes
up to 50%

Diverticulitis
10-25%

Simple
10-25%

Complicated
- 20-25%
- Abscess
- Perforation
- Obstruction
- Fistula

Recurrent episodes
- 2% / y\(^1\) to 25-35% in 5y\(^2\)

References:
Epidemiology

- The literature says that 10%-25% of patients with diverticulosis will develop diverticulitis.
- A retrospective epidemiologic study using the Veterans Affairs of Greater Los Angeles database included more than 2200 patients and looked at a period of 11 years.
- The incidence of diverticulitis was 4.3%
- Based on CT or surgery < 1%
- Considering all these data at least 75% to more than 95% of patients with diverticulosis will not develop diverticulitis

Mith and evidence in Diverticular Disease

- Epidemiology
- Pathophysiology
- Myths
  - Fiber Intake Prevents the Development of Diverticulosis
  - Constipation Raises the Risk for Diverticulosis
  - Nuts and Seeds Increase the Risk of Diverticulitis

Aphrodite (Ancient Greek: Ἀφροδίτη, transl. Aphrodite) is the goddess of love, beauty and sexuality in Greek mythology. Her Roman equivalent is the goddess Venus. Historically, their worship in ancient Greece was imported, or at least influenced by the cult of Astarte in Phoenicia. According to the Theogony of Hesiod, she was born when Cronus cut off the genitals of Uranus and threw them into the sea; Foam (aphros) emerged arose Aphrodite.
Fiber Intake Prevents the Development of Diverticulosis

- The hypothesis that diverticulosis is a deficiency disease of Western civilization was made popular by Painter and Burkitt based on their observation that diverticulosis was rare in rural Africa, but increasingly common in economically developed countries.
- They attributed the difference in disease prevalence to differences in dietary fiber, and proposed that this deficiency of fiber predisposed the population to diverticulosis.

# Fiber Intake Prevents the Development of Diverticulosis

<table>
<thead>
<tr>
<th>Authors</th>
<th>Journal</th>
<th>Year</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crowe FL, Appleby PN, Allen NE, Key TJ. &lt;br&gt;<strong>Diet and risk of diverticular disease in oxford cohort of european prospective investigation into cancer and nutrition (EPIC): Prospective study of british vegetarians and non-vegetarians.</strong></td>
<td>BMJ</td>
<td>2011</td>
<td>Persons who were self-reported vegetarians had a 31 % lower risk (0.69 RR, 95 % CI 0.55–0.86) of developing diverticular disease. <strong>Interestingly, low fiber alone did not explain the lower risk for vegetarians. On the basis of the pathophysiological considerations, could be argue that a diet rich in fiber and low in meat might prevent the formation of diverticula</strong></td>
</tr>
<tr>
<td>Peery AF, Barrett PR, Park D, et al. &lt;br&gt;<strong>A high-fiber diet does not protect against asymptomatic diverticulosis.</strong></td>
<td>Gastroenterology</td>
<td>2012</td>
<td>Contrary to expectation, a high-fiber diet was associated with a higher (not lower) prevalence of diverticula. The constipation was not a risk factor for diverticulosis</td>
</tr>
<tr>
<td>Peery AF, Sandler RS, Ahnen DJ, Galanko JA, Holm AN, Shaukat A, Mott LA, Barry EL, Fried DA, Baron JA &lt;br&gt;<strong>Constipation and a low-fiber diet are not associated with diverticulosis.</strong></td>
<td>Clin Gastroenterol Hepatol</td>
<td>2013</td>
<td>Neither constipation nor a low-fiber diet was associated with an increased risk of diverticulosis</td>
</tr>
<tr>
<td>Crowe FL, Ballwill A, Caims BJ, Appleby PN, Green J, Reeves GK, Key TJ, Beral V. &lt;br&gt;<strong>Source of dietary fibre and diverticular disease incidence: a prospective study of UK women.</strong></td>
<td>Gut</td>
<td>2014</td>
<td>A higher intake of dietary fibre is associated with a reduced risk of diverticular disease. The associations with diverticular disease appear to vary by fibre source, and the reasons for this variation are unclear.</td>
</tr>
</tbody>
</table>
Constipation Raises the Risk for Diverticulosis

- Neither constipation nor a low-fiber diet was associated with an increased risk of diverticulosis\(^1\)
- A large population-based study indicates that amongst those with IBS, it was IBS-D that was the strongest predictor of colonic diverticular disease\(^2\)
- IBS-D also more often follows colonic infection and is related to a low grade mucosal inflammation

1 - Peery AF, Sandler RS, Ahnen DJ, Galanko JA, Holm AN, Shaukat A, Mott LA, Barry EL, Fried DA, Baron JA. Constipation and a low-fiber diet are not associated with diverticulosis. Clin Gastroenterol Hepatol 2013
Nuts and Seeds Increase the Risk of Diverticulitis

Nut, Corn, and Popcorn Consumption and the Incidence of Diverticular Disease

Lisa L. Strate, MD, MPH
Yan L. Liu, MS
Sapna Syngal, MD, MPH
Walid H. Aldoori, MD, MPA, ScD
Edward L. Giovannucci, MD, ScD

JAMA. 2008;300(8):907-914
Nut, Corn, and Popcorn Consumption and the Incidence of Diverticular Disease

Participants  The study included 47,228 men aged 40 to 75 years who at baseline were free of diverticulosis or its complications, cancer, and inflammatory bowel disease and returned a food-frequency questionnaire.

Main Outcome Measures  Incident diverticulitis and diverticular bleeding.

Results  During 18 years of follow-up, there were 801 incident cases of diverticulitis and 383 incident cases of diverticular bleeding. We found inverse associations between nut and popcorn consumption and the risk of diverticulitis. The multivariate hazard ratios for men with the highest intake of each food (at least twice per week) compared with men with the lowest intake (less than once per month) were 0.80 (95% confidence interval, 0.63-1.01; \( P \) for trend = .04) for nuts and 0.72 (95% confidence interval, 0.56-0.92; \( P \) for trend = .007) for popcorn. No associations were seen between corn consumption and diverticulitis or between nut, corn, or popcorn consumption and diverticular bleeding or uncomplicated diverticulosis.

Conclusions  In this large, prospective study of men without known diverticular disease, nut, corn, and popcorn consumption did not increase the risk of diverticulosis or diverticular complications. The recommendation to avoid these foods to prevent diverticular complications should be reconsidered.
## Nut, Corn, and Popcorn Consumption and the Incidence of Diverticular Disease

### Risks for Diverticulitis According to the Frequency of Nut, Corn, and Popcorn Consumption

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency of Consumption, No. of Servings</th>
<th>P Value for Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;1 per mo</td>
<td>1-3 per mo</td>
</tr>
<tr>
<td><strong>Nuts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of cases&lt;sup&gt;a&lt;/sup&gt;</td>
<td>199</td>
<td>138</td>
</tr>
<tr>
<td>Person-years</td>
<td>167,825</td>
<td>116,932</td>
</tr>
<tr>
<td>Age-adjusted HR (95% CI)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1 [Reference]</td>
<td>1.00 (0.80-1.24)</td>
</tr>
<tr>
<td>Multivariate HR (95% CI)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1 [Reference]</td>
<td>0.97 (0.78-1.21)</td>
</tr>
<tr>
<td><strong>Corn</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of cases&lt;sup&gt;a&lt;/sup&gt;</td>
<td>85</td>
<td>296</td>
</tr>
<tr>
<td>Person-years</td>
<td>75,660</td>
<td>241,903</td>
</tr>
<tr>
<td>Age-adjusted HR (95% CI)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1 [Reference]</td>
<td>1.09 (0.86-1.38)</td>
</tr>
<tr>
<td>Multivariate HR (95% CI)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1 [Reference]</td>
<td>1.08 (0.85-1.38)</td>
</tr>
<tr>
<td><strong>Popcorn</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of cases&lt;sup&gt;a&lt;/sup&gt;</td>
<td>242</td>
<td>223</td>
</tr>
<tr>
<td>Person-years</td>
<td>196,926</td>
<td>179,739</td>
</tr>
<tr>
<td>Age-adjusted HR (95% CI)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1 [Reference]</td>
<td>1.01 (0.84-1.23)</td>
</tr>
<tr>
<td>Multivariate HR (95% CI)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1 [Reference]</td>
<td>0.98 (0.82-1.19)</td>
</tr>
</tbody>
</table>

Abbreviations: CI, confidence interval; HR, hazard ratio.

<sup>a</sup>The total number of cases varies slightly between nut, corn, and popcorn consumption because of missing information for individual food items. For diverticulitis, information on recent intake (simple updating) was missing for nuts in 110 cases, for corn in 120 cases, and for popcorn in 118 cases. Dietary information was updated every 4 years; age, body mass index, physical activity level, medication use, and cigarette smoking were updated every 2 years.

<sup>b</sup>Values adjusted for age and study time period.

<sup>c</sup>Values adjusted for age, study time period, body mass index, physical activity level, total daily caloric intake, intake of nuts, corn, popcorn, total fat, total fiber, and red meat; current use of nonsteroidal anti-inflammatory drugs; current use of acetaminophen; and current cigarette smoking.

Nut, corn, and popcorn consumption was not associated with an increased risk of complicated diverticular disease. Instead, we observed inverse relationships between nut and popcorn consumption and the risk of diverticulitis.

No association was seen between corn consumption and diverticulitis.
WHY COULD HAVE NUTS AND POPCORN A PROTECTIVE EFFECT?

Nuts contains:
• Vit E
• Alfa-linoleic acids
• Unsaturated fatty acid
• Zinc and magnesium

Nuts consumption is inversely correlated with level of anti-inflammatory markers:
• PCR
• IL-6
• Reduce oxidative stress in the colon (Mg)

Collagen in the colon:
• Increase zinc containing peptidase

Popcorn contain:
• Lutein, a micronutrient with anti-inflammatory and chemoprotective properties
Mith and evidence in Diverticular Disease

- Epidemiology
- Pathophysiology
- Management
- Myths
  - Diverticulitis Can Not Be Predicted
  - Recurrent Diverticulitis Is Inevitable. The patient with diverticulosis and a history of diverticulitis, nothing can be done to prevent the recurrence of diverticulitis.

In Norse mythology, Thor is the god who wields the hammer Mjolnir, associated with thunder, lightning, storms, oak trees, strength, humanity's protection and also sanctification, healing and fertility. The deity was known for Germanic mythology and paganism as Donar (Old English) or Donar (in Old High German), resulting from protogermanic language Þunraz (meaning "thunder"). Thor is also called Ásatrúr, Ökur, Hlóðin and Véurr.
Diverticulitis Can Not Be Predicted

• Vitamin D

• Patients with low serum hydroxyvitamin D levels had a much higher likelihood of having diverticulitis or complications of diverticulitis

• Higher serum levels of vitamin D are associated with a reduced risk of diverticulitis

• Vitamin D has a role in maintaining colonic homeostasis and mucosal integrity and in modulating inflammation in the gut.

Diverticulitis Can Not Be Predicted

Kaplan-Meier analysis of cumulative rates of recurrent acute diverticulitis by normal (<15 µg/g) and abnormal (>15 µg/g) faecal calprotectin (FC) test at least once during follow-up. P<0.0004, log rank test

Symptomatic Uncomplicated Diverticular Disease:
Evaluation of Mesalamine and/or Probiotics Treatment
in Fecal Calprotectin

• 163 patients with SUDD and > FC 150microg / gr were selected after colonoscopy and CT
• Patients received mesalazine 800mg b.i.d. for 60 days and made new dosage FC. 48 patients presented CF> 150 microgr / g and were divided into 3 groups:
• 1) MP group: 16 patients using mesalazine 800mg bid and a mix of probiotics (L. acidophilus, L.casei, L. lactis, B. lactis, B. bifidum) bid for 8 days;
• 2) M3 group: 16 patients with mesalazine 800 mg tid for 8 days.
• 3) Group P: 16 patients using mix of probiotics (L. acidophilus, L.casei, L. lactis, B. lactis, B. bifidum) bid for eight days; After treatment, all of them made new FC dosage
Symptomatic Uncomplicated Diverticular Disease: Evaluation of Mesalamine and/or Probiotics Treatment in Fecal Calprotectin

Graphic 1: Number of patients (%) with FC levels > or < 150 after 60 days of treatment with mesalazine 800 mg b.i.d. in SUDD patients
Fc levels before and after Mesalazine and Probiotics

Before: 309
After: 150

p < 0.01

Fc levels in M3 group before and after mesalazine 800mg t.i.d for 8 days

Mesalazine 2.4g

Before: 455
After: 261

p < 0.02

Fc levels in P group before and after a mix of probiotics (L. acidophilus, L. casei, L. lactis, B. lactis, B. bifidum) b.i.d for 8 days

Before: 537
After: 284

p = 0.08
Mith and evidence in Diverticular Disease

• Myths
  • Diverticulitis Can Not Be Predicted

• Recurrent Diverticulitis Is Inevitable. The patient with diverticulosis and a history of diverticulitis, nothing can be done to prevent the recurrence of diverticulitis.
Recurrent Diverticulitis Is Inevitable

Use of a High-Fiber diet

<table>
<thead>
<tr>
<th>Authors [year]</th>
<th>Type of article</th>
<th>Endpoints</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larson [1976]</td>
<td>Prospective, interventional study</td>
<td>Prevention of diverticulitis recurrence</td>
<td>Positive</td>
</tr>
<tr>
<td>Rafferty (ASCRS) [2012]</td>
<td>Guidelines</td>
<td>Prevention of diverticulitis recurrence</td>
<td>Recommended</td>
</tr>
<tr>
<td>Crowe et al. [2011]</td>
<td>Prospective, cohort study</td>
<td>Prevention of diverticular disease occurrence</td>
<td>Positive</td>
</tr>
<tr>
<td>Peery et al. [2012]</td>
<td>Cross-sectional study</td>
<td>Prevention of diverticulosis occurrence</td>
<td>Negative</td>
</tr>
</tbody>
</table>

Recurrent Diverticulitis Is Inevitable

### Rifaximin

<table>
<thead>
<tr>
<th>Authors [year]</th>
<th>Control group</th>
<th>Endpoints</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papi [1992]</td>
<td>Fibers</td>
<td>Prevention of DD complications (diverticulitis included) (secondary endpoint)</td>
<td>$p = \text{NS}$</td>
</tr>
<tr>
<td>Papi et al. [1995]</td>
<td>Placebo</td>
<td>Prevention of DD complications (diverticulitis included) (secondary endpoint)</td>
<td>$p = \text{NS}$</td>
</tr>
<tr>
<td>Latella et al. [2003]</td>
<td>Fibers</td>
<td>Prevention of DD complications (diverticulitis included) (secondary endpoint)</td>
<td>$p &lt; 0.005$</td>
</tr>
<tr>
<td>Colecchia [2007]</td>
<td>Fibers</td>
<td>Prevention of diverticulitis recurrence (secondary endpoint)</td>
<td>$p = 0.041$</td>
</tr>
<tr>
<td>Lanas et al. [2013]</td>
<td>Fibers</td>
<td>Prevention of diverticulitis recurrence (primary endpoint)</td>
<td>$p = 0.025$</td>
</tr>
</tbody>
</table>

DD, diverticular disease; NS, not significant.

Recurrent Diverticulitis Is Inevitable

Mesaalazine

Double-blind, placebo-controlled studies on mesalazine in diverticulitis.

<table>
<thead>
<tr>
<th>Authors [year]</th>
<th>Mesalazine (type of release and dosage)</th>
<th>Endpoints</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parente et al. [2011]</td>
<td>Eudragit L (DIV/01-04 trial) (pencol 1.6 g/day × 10 days/months for 2 years)</td>
<td>1. Prevention of diverticulitis recurrence</td>
<td>( p = \text{NS} )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Improvement of quality of life</td>
<td>( p = 0.021 )</td>
</tr>
<tr>
<td>Gaman et al. [2011]</td>
<td>Granules (Granustix 500 mg/day × 2 years)</td>
<td>1. Prevention of diverticulitis occurrence</td>
<td>( p = 0.044 )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Prevention of diverticulitis recurrence</td>
<td>( p = 0.001 )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Prevention of surgery</td>
<td>( p = 0.020 )</td>
</tr>
<tr>
<td>Raskin [2012]</td>
<td>MMX (PREVENT 1 trial) (Lialda 1.2 versus 2.4 versus 4.8 g/day for 2 years)</td>
<td>Prevention of diverticulitis recurrence</td>
<td>( p = \text{NS} )</td>
</tr>
<tr>
<td>Kann [2013]</td>
<td>MMX (PREVENT 2 Trial) (Lialda 1.2 versus 2.4 versus 4.8 g/day for 2 years)</td>
<td>Prevention of diverticulitis recurrence</td>
<td>( p = 0.047 ) (only for 4.8 g/day)</td>
</tr>
<tr>
<td>Stollman et al. [2013]</td>
<td>Eudragit L (DIVA trial) (asacol 2.4 g/day × 3 months)</td>
<td>1. Symptoms control after diverticulitis</td>
<td>( p = 0.03 )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Prevention of diverticulitis recurrence</td>
<td>( p = \text{NS} )</td>
</tr>
</tbody>
</table>

NS, not significant.
Recurrent Diverticulitis Is Inevitable

Probiotics

Probiotics in diverticulitis.

<table>
<thead>
<tr>
<th>Authors [year]</th>
<th>Probiotic strain (dosage)</th>
<th>Endpoints</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Giacciari et al. [1993]</td>
<td><em>Lactobacillus</em> spp. (5 billion/day × 7 days/months following rifaximin)</td>
<td>1. Prevention of diverticulitis recurrence 2. Improvement of symptoms</td>
<td>50% disease free 80% symptom free</td>
</tr>
<tr>
<td>Dughera et al. [2004]</td>
<td><em>E. coli</em> strains 01, 02, 055 and 0111; <em>Proteus vulgaris</em> (80 × 10⁹ – 1 × 10⁹) versus no treatment</td>
<td>Prevention of diverticulitis recurrence</td>
<td>p &lt; 0.01</td>
</tr>
<tr>
<td>Turci et al. [2007]</td>
<td><em>VSL</em>.#3 (450 billion) alone versus <em>VSL</em>.#3 + balsalazide</td>
<td>Prevention of diverticulitis recurrence</td>
<td>p = NS</td>
</tr>
</tbody>
</table>

NS, not significant.
Recurrent Diverticulitis Is Inevitable

• 210 patients who had recurrent diverticulitis. They were randomly assigned to 1 of 4 groups:

• Placebo;

• Mesalamine 1.6 g/day;

• Lactobacillus DG 24 billion units daily; or

• Mesalamine 1.6 g/day and lactobacillus DG 24 billion units daily.

Recurrent Diverticulitis Is Inevitable

- At 1 year, the recurrence rate was 46% in the placebo group.
- 14% in each of the mesalamine and lactobacillus DG groups.
- 0% in the combination group.

Mith and evidence in Diverticular Disease

• Epidemiology
• Pathophysiology
• Management
• Treatment

• Myths

• In diverticulitis recurrence surgery is indicated
• Diverticulitis must be treated with antibiotics

**Poseidon** (or **Poseidon**) was the Greek supreme god of the seas, also known as **Neptune** by the Romans. He was the son of the Titans **Cronus** and **Rhea** and brother of **Zeus**, **Hades**, **Hestia**, **Hera** and **Demeter**. He and his brothers defeated the Titans and took power. Zeus became the supreme ruler of heaven and earth, Hades became lord of the underworld, and Poseidon received the domain of the oceans. Although one of the Olympian gods, his home was in a palace under the sea.
In diverticulitis recurrence surgery is indicated.

Myths ....

- ‘Recurrent attacks of diverticulitis are less responsive to medical treatment’
- ‘And have high mortality rates’
- ‘So most doctors agree that elective resection is indicated after two episodes of uncomplicated diverticulitis’
Diverticulitis recurrence

90% of fatal perforations occur in the first episode

60% of patients requiring emergency surgery in the first episode

After completing resolution of clinical treatment the risk of colectomy is 1 / 2,000 patient years

Uncomplicated diverticulitis: Clinical treatment / surgery and 73%. 79%

<table>
<thead>
<tr>
<th>Main author</th>
<th>Year</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nylamo</td>
<td>1990</td>
<td>48</td>
<td>96</td>
</tr>
<tr>
<td>Lorimer</td>
<td>1997</td>
<td>154</td>
<td>95</td>
</tr>
<tr>
<td>Hart</td>
<td>2000</td>
<td>58</td>
<td>78</td>
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<tr>
<td>Somasekar</td>
<td>2002</td>
<td>108</td>
<td>97</td>
</tr>
<tr>
<td>Andeweg</td>
<td>2008</td>
<td>183</td>
<td>80</td>
</tr>
</tbody>
</table>

Recurrence of diverticulitis and complications requiring surgery

After an episode of diverticulitis:

The future risk of recurrence with major complications is small

The future risk of recurrence in need of emergency surgery is small

Clinical treatment in this condition is effective
Diverticulitis recurrence

Recurrence of diverticulitis after surgical treatment

The risk of future episode of diverticulitis is reduced but not eliminated

It must be weighed the risks and benefits of surgery:

Elective surgery - mortality risk 2.3%
Age > 75 years OR 7.9
Obesity OR 5.2

Colostomy risk - 14.2%

Recurrence of symptoms

Recurrence of symptoms after surgery for uncomplicated diverticulitis

<table>
<thead>
<tr>
<th>Main author</th>
<th>Year</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benn</td>
<td>1986</td>
<td>501</td>
<td>20</td>
</tr>
<tr>
<td>Breen</td>
<td>1986</td>
<td>100</td>
<td>60</td>
</tr>
<tr>
<td>Munson</td>
<td>1996</td>
<td>78</td>
<td>27</td>
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<tr>
<td>Thorn</td>
<td>2002</td>
<td>75</td>
<td>33</td>
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<tr>
<td>Thaler</td>
<td>2003</td>
<td>236</td>
<td>5</td>
</tr>
<tr>
<td>Killingback</td>
<td>2004</td>
<td>127</td>
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<tr>
<td>Andreweg</td>
<td>2008</td>
<td>183</td>
<td>22</td>
</tr>
<tr>
<td>Egger</td>
<td>2008</td>
<td>124</td>
<td>25</td>
</tr>
</tbody>
</table>
Guidelines on operative treatment

Task force of the American Society of Colon and Rectal Surgeons: ‘the number of attacks of uncomplicated diverticulitis is not necessarily an overriding factor in defining the appropriateness of surgery’
‘the decision to recommend elective sigmoid colectomy … should be made on a case-by-case basis’

Association of Coloproctology of Great Britain and Ireland ACPGBI
‘the majority of patients presenting with acute diverticulitis can be managed with a conservative medical approach in the longer term’
‘the decision on elective resection should be made on an individual basis’

Mith and evidence in Diverticular Disease

- **Treatment**
  - In diverticulitis recurrence surgery is indicated
  - Diverticulitis must be treated with antibiotics
Clinical treatment of uncomplicated diverticulitis

• Traditional approach and supportive care with antimicrobial agents, which are typically prescribed for 7 to 10 days.

• Short course of antibiotics for 5 days

• Without antibiotics

468 Patients: Admitted with clinical signs of Acute Diverticulitis

317 Patients: Acute Diverticulitis Confirmed with CT

311 Patients: Conservative treatment

6 Patients: Immediate surgery

192 Patients: No Antibiotics

186 Patients: Successful treatment

13 Patients: Treatment failure

55 Patients: No further event

133 Patients: At least one further event

118 Patients: Antibiotics

115 Patients: Successful treatment

3 Patients: Treatment failure

82 Patients: Successful treatment

53 Patients: No further event

33 Patients: At least one further event

272 Patients with imaging confirmed acute mid/uncomplicated diverticulitis of the sigmoid colon managed conservatively.

191 Patients: NO antibiotics

81 Patients: Antibiotics

184 Patients: Successful treatment

7 Patients: Treatment failure

76 Patients: Successful treatment

5 Patients: Treatment failure

176 Patients: No recurrence

14 Patients: Recurrence

69 Patients: No recurrence

12 Patients: Recurrence

Follow up

Hjern F et al. SJG 2007;42:41-7

de Korte N et al. Colorectal Dis 2012;14: 325-30

Uncomplicated Diverticulitis
Antibiotics x No Antibiotics

• AVOD Study Group – Antibiotic therapy did not prevent complications, recurrence or decreased length of hospital stay

• DIABOLO Trial – Observational treatment similar to antibiotics
(Modified) Hinchey Classification

Only Modified Hinchey stages Ia and Ib (~Ambrosetti ‘mild’) diverticulitis are included. CT with IV contrast is needed for all patients for classification within 24 hours.

<table>
<thead>
<tr>
<th>Hinchey</th>
<th>Modified Hinchey</th>
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<tbody>
<tr>
<td>I</td>
<td>Colonic wall thickening and/or confined periocolic inflammation</td>
</tr>
<tr>
<td></td>
<td>Confined small periocolic abscess (&lt;5cm)</td>
</tr>
<tr>
<td>II</td>
<td>Pelvic, distant intra-abdominal or retroperitoneal abscess</td>
</tr>
<tr>
<td>III</td>
<td>Generalized purulent peritonitis</td>
</tr>
<tr>
<td>IV</td>
<td>Generalized fecal peritonitis</td>
</tr>
<tr>
<td>Fisctia</td>
<td>Obstruction</td>
</tr>
</tbody>
</table>

Hazard ratio 0.910, non-inferior

Observational treatment median 14 days [IQR, 6 to 35] vs.
Antibiotic treatment median 12 days [IQR, 7 to 30]; P=0.291 by the Log-Rank test
Antibiotic dilemma in Diverticulitis

- Uncomplicated diverticulitis - Some benefit?

- Complicated diverticulitis - Essential
Apollo is the Greek god of the sun and patron of truth, archery, music, medicine and prophecy, with the most majestic among the Olympian gods. He is associated with the basic precepts of the Greeks: "Know thyself" and "Nothing in excess". He founded the oracle at Delphi, which gave advice to Greece, good and bad, and light or dark prophecies and his cult had great influence in the Greek mentality.