



Medical Procedure Costs and Surgical Rates in Patients with Irritable Bowel Syndrome

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Irritable bowel syndrome (IBS) is generally classified as a “functional” disorder. It is characterized most commonly by cramping, abdominal pain, bloating, constipation and/or diarrhea. Care of IBS is challenging for the medical community because there is no specific cure for this syndrome. No single treatment option is successful in all patient types. This is likely due to the many factors which can affect illness presentation resulting in different expressions (heterogeneity) of the disease. Numerous treatment options are available; none are uniformly effective. Many patients have difficulties with the medications used to treat the disorder – whether it is fiber, antispasmodics, tricyclic antidepressants (for pain relief), or serotonin receptor modulators – due to intolerances from the side effects of the medications.

Because a universal cure is not available and because of recurrent symptoms, the quality of life of the patient with IBS can be dramatically diminished. The frustration generated by the symptoms and also by the lack of a clear explanation of the disease from their health care providers can drive patients to consume extensive medical services (testing, procedures, increased number of doctor visits) and ultimately to seek surgery to deal with the symptoms.

Patients invariably will experience recurrent pain and discomfort as part of the symptoms complex of IBS. In working diligently with the patients, the clinician will try to rule out other causes of the pain and the treatments may be modified in an attempt to improve the patients’ condition.

The types of interactions between clinician and patient influence widely the rates of using medical services: procedures, surgery, or medication. Often the diagnosis of IBS ultimately rests upon excluding other causes to the satisfaction of the health care provider as well as the patient, and considerable resources may be spent. Currently, Rome III criteria can guide the physician to an IBS diagnosis.

According to these criteria, a diagnosis of IBS is made if there is a painful or uncomfortable abdominal sensation with onset at least six months prior to diagnosis along with 2 or more from the following symptoms:

- 1) the abdominal sensation is improved by defecation and/or;
- 2) the onset of abdominal pain/discomfort is associated with change in,
 - a) frequency of stool and/or,
 - b) form (appearance) of stool.

What is a functional gastrointestinal (GI) disorder?

A functional GI disorder refers to one where the body’s normal activities in terms of the movement of the intestines, the sensitivity of the nerves of the intestines, or the way in which the brain controls some of these functions is impaired. However, there are no structural abnormalities that can be seen by endoscopy, x-ray, or blood tests. Thus a functional GI disorder is identified by the characteristics of the symptoms (for example, the Rome criteria) and infrequently, when needed, limited tests.

Even if Rome III criteria are based mainly on the medical history and physical examination, the physician can apply them only after structural and metabolic abnormalities are ruled out. That is why minimal testing such as blood tests (cell count, ESR, C-reactive protein), a test for blood in the stool (fecal occult bleeding test, or FOBT), or endoscopy (sigmoidoscopy or colonoscopy) are performed.

In some situations even if the IBS diagnosis is made, persistence or aggravation of the symptoms despite the treatment may spur the physician to order additional tests, possibly at the patient's insistence. Additional and sometimes more expansive and invasive testing such as abdominal imaging (abdominal CT scans and ultrasounds) expands the domain of possible abnormalities that need to be ruled out to reassure the physician that Rome III criteria were properly applied. In these situations, incidental findings can be discovered diverting attention away from the focus of the functional GI diagnosis. In some other situations, the physicians do not focus mainly on Rome III symptom-based criteria. Instead the diagnostic approach is based on tests, and consequently this generates significant increases in costs and utilization of the medical services.

The diverse medical evaluation offered to a possible IBS patient can be very costly. Leong [1] and colleagues studied in detail the economic impact of medical services related to IBS. IBS accounts for 2.4–3.5 million physician visits annually and the cost of an IBS patient visit is \$524 versus \$345 of a control subject from the general population in 1998 [1]. Also annually absenteeism caused by IBS cost the employer \$901 versus \$528 per employee without IBS [1]. Another study, by Longstreth [2], showed that IBS patient costs are 51% higher than those of a non-IBS patient from the general population group; this increase was significant for outpatient services (emergency, radiology, surgery, and medication) but not for inpatient services. Interestingly, for patients with moderate and severe symptoms non-GI related radiology costs (for x-rays or other imaging studies) were significantly higher than in the general population patients, revealing the emphasis by all to eliminate other causes of IBS symptoms.

Multiple other studies [3,4,5] approached in more detail the propensity of surgical procedures in IBS patients. The authors of these studies identified two main reasons for this phenomenon:

1. The IBS patients are more exposed to surgery because the diagnostic testing reveals findings which may be incidental or without symptoms (asymptomatic), but the relationship between the test abnormality and the clinical symptoms may be unclear. This propels the patients and clinicians to possibly treat the incidental/asymptomatic finding in hopes of a cure of symptoms. In his or her attempt to discover the real cause of the pain, the clinician places “blame” on the asymptomatic

conditions that ultimately are referred to surgery.

2. Sometimes the surgical approach was initiated by an inaccurate preoperative diagnosis.

A study by Cole and colleagues [4] published in 2005 found that abdominal and pelvic surgery (except gallbladder surgery) was 87% higher in IBS patients compared with the general population sample. They found that the risk for exposure to abdominal surgery (except gallbladder surgery) was almost 2 times higher in the IBS population. Among all those with IBS studied, the highest risk for exposure to surgery was seen in those who experience alternating constipation and diarrhea along with the abdominal pain or discomfort of IBS (relative risk 2.74). A study by Yao and Longstreth [5] published in 2004 found that IBS patients were more exposed than the non-IBS group to back pain surgery and to surgical removal of their:

- gallbladder (cholecystectomy),
- appendix (appendectomy), and
- uterus (hysterectomy).

Cholecystectomy

Some studies [3,4,5] looked specifically to the rate of gallbladder surgery (cholecystectomy) in IBS patients compared with patients from the general population. These reports demonstrated a higher rate of cholecystectomy in the IBS population. Typically, the patients with IBS visit the GI physician or the primary care physician complaining of pain or abdominal discomfort. The approach of this clinical situation is to perform laboratory analysis and imaging studies in order to make an accurate clinical decision. In numerous situations in these patients, asymptomatic gallbladder stones were found when investigated using abdominal ultrasound. For a percentage of these, the clinician will associate the symptoms of pain or abdominal discomfort with the presence of the stones. As a consequence, the patient will be referred to a surgeon in hopes of a “curative” surgery. If the association is incorrect, then the surgery does not help the patient's symptoms.

A study by Kennedy and Jones [3] looked at the incidence of cholecystectomy in IBS and control populations in the United Kingdom. They noticed that 4.6 % of the IBS group and only 2.4% of the control group had experienced cholecystectomy. So, the risk to the IBS population in this study tends to be similar with other studies, almost double (odds ratio=1.9) [3].

Longstreth and Yao [5] analyzed a sample of 89,008 subjects from San Diego, California from

which 4,587 were IBS patients and 84,221 were non-IBS controls. Of the IBS patients, 569 or 12.4% underwent gallbladder surgery compared with 3,428 or 4.1% in the general population. In this study, the risk of a patient with IBS undergoing a cholecystectomy was 3 times greater when compared to a non-IBS sample group.

A similar outcome was reported in a study by Cole and colleagues [4] where cholecystectomy was 2.91 times greater in IBS patients than in the general population sample. This study also found the most exposed group to cholecystectomy was those patients who had alternating diarrhea and constipation along with the abdominal pain or discomfort of IBS. An explanation for this could be that in this specific case clinicians are less certain about the IBS diagnosis because the patients do not exhibit the more extremes of one predominant bowel pattern.

Appendectomy

Gallbladder removal is not the only surgical procedure with high prevalence in the IBS population. Appendix removal (appendectomy) is another surgery shown to be more performed in the IBS population. The symptoms of IBS may worsen after stressful life events. Sometimes the pain can be sharp and localized in the right lower abdomen mimicking acute appendicitis. Because the diagnosis of acute appendicitis still mostly relies on physical exam and clinical judgment rather than diagnostic testing regarding the decision to operate urgently, the symptoms of IBS could be confounded.

Consequently the patients with IBS are at risk for referral to surgery for an unnecessary appendectomy.

In the United States, the risk to an IBS patient to be operated on for appendectomy is 2.45 greater than a patient from a general population matched sample. [4] The same study by Cole and colleagues reported that the greatest risk is again to the group with alternating diarrhea and constipation along with the abdominal pain or discomfort of IBS (risk ratio= 2.97). A study by Longstreth [5] demonstrated that the risk for persons in the IBS population to undergo appendectomy is almost double (1.80) compared to the general population sample.

Hysterectomy

Regarding hysterectomies, the outcomes are similar. Worsening of IBS symptoms associated with menstruation may sometimes make the differentiation between this GI condition and gynecologic diseases to be subtle. For example, fibroids are benign (non-cancerous) tumors widely present in the female

population, especially in African-American females. The symptoms associated with the fibroids are very similar with that of IBS: bloating, lower abdominal pain, constipation, and pelvic pressure. As with the gallbladder stones, a fibroid that caused no symptoms, when found, could be considered the cause of the GI symptoms and consequently referred to surgery. Longstreth [5] reported a risk exposure to hysterectomy 2 times higher in the subjects with IBS than in the general population; Cole [4] found a similar result, the risk being 1.87 times higher in the IBS population. In the Cole study those with alternating constipation and diarrhea along with the abdominal pain or discomfort of IBS showed to be the most exposed to hysterectomy, a situation seen also with the other types of surgery.

Colon surgery

Higher risk was also found for colon surgery. The Cole [4] study demonstrated 10 times higher exposure for the IBS population. In this study the highest risk among all the surgeries was for colon surgery. This outcome reveals the possible confusion between IBS and other conditions of the colon.

Risks from surgery

Numerous challenges regarding the diagnosis and care of patients who have IBS still exist but our understanding of the disease is rapidly evolving. An informed approach for managing patients' symptoms can help with decreasing their suffering and reducing the risk of exposing them to unnecessary surgery. Reducing the risk for exposure to surgery is very important because surgical procedures are associated with some mortality and morbidity, depending on the procedure. As an example, Shea and colleagues [8] analyzed the morbidity and mortality related to least invasive gallbladder surgery (laparoscopic cholecystectomy). In this systematic review (meta-analysis), summarizing the data from 83 single-institution studies they concluded that the mortality (death) related to laparoscopy ranged between 0.14 to 0.16 % and that one of the serious operative complications, the common bile duct injury, was noticed in a range from 0.36% to 0.47%.

Surgery also involves risks due to anesthetic use in a patient population that may have sensitivity to this type of medication. Invasive procedures also run the potential of producing changes in the gut due to local inflammation that occurs with the recovery process of any surgery [6,7]. Heaton and colleagues [6] studied this possible effect on 1,058 women. Their study showed that women who had a

hysterectomy in the past were significantly more constipated than the control non-hysterectomy group. Even though there were no differences in pain symptoms, the hysterectomy group presented significantly more IBS-constipation related symptoms (bloating, incomplete evacuation, straining to finish). The same study also demonstrated that women who had experienced a cholecystectomy were more likely to have urgency of defecation and a feeling of incomplete evacuation, suggesting rectal hypersensitivity. A study by Prior and colleagues [7] found that 10% of post-surgical women after a hysterectomy enrolled in a study developed new IBS symptoms after the operation.

Summary

In summary, the lack of globally effective or curative treatment and of a clear explanation of the symptoms in IBS not only generates a considerable financial impact on the healthcare system, and an increased utilization of diagnostic testing, but also predisposes the IBS patients to unnecessary surgical procedures (e.g., cholecystectomy, appendectomy, hysterectomy, and colon surgery). In order to avoid these problems as much as possible, a good, direct communication between the patient and the healthcare provider is needed. While it seems tempting for the clinician to search for explanations and for curative treatments, once the diagnostic work-up is done, the healthcare provider should work with the patient on a program to manage his or her symptoms. This program should carefully take in consideration all the factors that could influence the evolution of the symptoms.

The healthcare provider should inform the patients about the disease course, emphasizing the possible symptom relapses and also the challenges of this condition. After explaining the current limitations of treatment, the clinician should work with the patient to try to set realistic goals and expectations. The patient is also encouraged to actively take part in management of their symptoms.

Surgical rates in IBS patients are increased but there is no evidence that this is beneficial. Because the life quality of the IBS patient is not improved with surgery, the focus should be on setting realistic expectations through an effective doctor-patient partnership and on an individualized treatment plan.

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