

Surgical management of inflammatory bowel disease in children

Essay Submitted in Partial Fulfillment of MS Degree in surgery

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
" الْحَمْدُ لِلَّهِ الَّذِي هَدَانَا لِهَذَا وَمَا
كُنَّا لِنَهْتَدِيَ لَوْلَا أَنْ هَدَانَا اللَّهُ " "

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Introduction

INTRODUCTION

The goals and prognosis with respect to the surgical treatment of UC and CD are dictated by the underlying differences in the distribution and natural history of the mucosal disease observed in these patients. Disease activity in UC is limited to the colon. As such, colectomy in these patients is curative. The indications for surgery in patients with UC include fulminant or refractory disease including toxic megacolon, extraintestinal manifestations such as growth retardation, and cancer prophylaxis (**Parks, 1998**).

Total abdominal colectomy with creation of an ileoanal pouch allows patients to retain fecal continence after colectomy and has become the treatment of choice for these patients. Pouchitis is the most common long-term complication of ileal pouch surgery and occurs in a majority of patients followed over time. (**Martin, 1993**).

A diagnosis of pouchitis is made based on clinical symptoms, endoscopic appearance, and histologic findings. In most cases, pouchitis will respond to oral antibiotic therapy (metronidazole and ciprofloxacin). (**Belliveau et al, 1999**) Recent studies have demonstrated a prophylactic effect of probiotic therapy. However, in some patients the mucosal disease can be

refractory to existing antibiotic, anti-inflammatory, and immunomodulatory agents, and $\approx 2\%$ of pediatric and adult patients opt to have their ileal pouches removed and revert to a permanent ileostomy (*Shamberger et al, 1994*). The diffuse distribution and evolving clinical course observed in patients with CD has relegated surgical intervention largely to the management of disease activity or extraintestinal complications that have been refractory to medical management. As such, indications for surgery in patients with CD include stricture, fistulizing disease, abscess formation, and extraintestinal complications including growth failure. Ultimately, 80–90% of pediatric and adult patients with CD will require surgical intervention (*Parks, 1998*). While surgical resection of isolated small or large bowel segments can be effective in providing patients with excellent short-term benefits, disease will recur in most patients, and up to 80% will require another surgical procedure within 15 years (*Munoz et al, 2001*).

AIM OF THE WORK

AIM OF THE WORK

To highlight the important role of surgery in transferring a chronically ill unhappy child into a healthy thriving one,also to delineate the different surgical options appropriate for each patient and outcome of different techniques including the laparoscope on the long run.

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Chapter 1

overview on IBD in children

Specificities of inflammatory bowel disease in childhood

Inflammatory bowel disease

Definition;

Inflammatory disease (IBD) is the collective term for a group of idiopathic intestinal conditions typified by ulcerative colitis (UC) and Crohn's disease (CD). IBD is a chronic relapsing disorder associated with uncontrolled inflammation within the gastrointestinal tract (*Hanauer, 2006*), which has been shown to predispose to the development of colorectal cancer later in life (*Itzkowitz and Harpaz, 2004*)

Ulcerative colitis

Ulcerative colitis is a relapsing non-transmural inflammatory disease that is restricted to the colon.
(*Hanauer, 2006*),

Crohn's disease

Crohn's disease is a relapsing, transmural inflammatory disease of the gastrointestinal mucosa that can affect the entire gastrointestinal tract from the mouth to the anus.
(*Hanauer, 2006*),

Incidence;

UC has an incidence of 1-2 per 100,000 children in Western countries. (*Bentsen et al, 2002*) UC most commonly affects children in the adolescent years with a roughly equal gender ratio, but can also present in children under 10 and even occasionally in children under 5 years of age (*Mamula et al, 2006*).

CD is slightly more common than UC in paediatric patients with an incidence of approximately 1.3-5 per 100,000. (*Hildebrand et al, 2001*)

Etiology;**1. Environmental factors**

IBD has a higher prevalence in more developed, or “Westernized” countries, such as the United States and United Kingdom (*Loftus and Sandborn, 2002*). Increased sanitation and the lifestyles within these regions appear to increase the risk of developing IBD.

It has been proposed that the exposure to unhygienic conditions during development can prime the intestinal environment which will lead to optimal mucosal immune development and regulation, preventing a future inflammatory

response (*Loftus and Sandborn, 2002*).

2. Genetic factors

Studies in twins and within families have determined that genetic background can predispose a subset of IBD patients to the development of disease (*Mathew and Lewis, 2004*).

In the case of CD, linkage studies have indicated that the CARD15/ NOD2 gene is linked to the predisposition for the development of IBD (*Mathew and Lewis, 2004*).

Recent evidence suggests that genetic factors may play a greater role in CD than UC with concordance rates between monozygotic twins 6–14% in UC compared to 44–50% in CD (*Farrell and Peppercorn, 2002*).

3. Immunological factors

The commensal microbiota has been proposed to play a major role in the development and progression of IBD (*Thompson et al., 2005*) as it is widely believed that one of the underlying factors in the pathogenesis of IBD is an elevated immune response to the host commensal microbiota (*Bamias et al., 2005*).

Other immunological factors believed to play a role

downstream of antigen recognition include over-activity of effector lymphocytes and pro-inflammatory cytokines, failure of regulatory lymphocytes and anti-inflammatory cytokines to control inflammation, and resistance of T-cells to apoptosis (*Bamias et al., 2005*).

Anatomic distribution of pediatric

IBD

A-Paediatric ulcerative colitis

Unlike adult-onset UC, childhood-onset disease is more likely to be extensive, as exemplified in (Figure 1). Similarly, 41% of 180 children were found at presentation to have pan-colitis by colonoscopic assessment, 34% left-sided disease, and 26% proctitis or proctosigmoiditis. (*Hyams et al, 1997*) Proximal extension of paediatric proctosigmoiditis is estimated to occur in 25% of young patients within 3 years of initial diagnosis and in 29-70% over the course of follow-up. (*Hyams et al1997*).

B-Paediatric Crohn's disease

CD is a pan-enteric inflammatory process; classification according to anatomic distribution of macroscopic disease is