Surgery and medical therapy in Crohn’s disease

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General introduction
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Inflammatory bowel disease

Inflammatory bowel disease (IBD) is a chronic disease of the gastrointestinal tract usually affecting patients at a young age. Patients are either diagnosed with Crohn’s disease (CD) or ulcerative colitis (UC). CD can affect any part of the gastrointestinal tract and is characterized by transmural inflammation, while UC is confined to the colon and rectum with more superficial inflammation. Both UC and CD are reported to have a substantial impact on quality of life (QoL).

Prevalence and incidence

In the past two decades, prevalence and incidence rates of IBD have changed throughout the world. IBD used to be more common in industrialised countries in Europe and North-America and was relatively rare in Asia, Africa, and Latin-America. The highest reported prevalence rates for IBD were in Europe (UC, 505 per 100,000 persons; CD, 322 per 100,000 persons) and North America (UC, 249 per 100,000 persons; CD, 319 per 100,000 persons).

Multidisciplinary treatment

Most IBD patients are initially treated with medical therapy. However, intestinal resection is ultimately required in approximately 75% of patients with CD and up to 35% of patients with UC during the course of their disease.

Established indications for surgery in IBD include therapy refractory disease, unacceptable medical therapy side-effects and, in patients with CD, a perforation or obstruction. Procedures depend on the localization and extension of the disease and vary from ileocecal resections for localised disease in CD to restorative proctocolectomy with ileal pouch-anal anastomosis (IPAA) for extensive therapy refractory UC.

Ileocecal Crohn’s disease

Ileocecal resection versus infliximab

Patients with CD of the terminal ileum are nowadays treated according to the step-up approach. This traditional pyramid step up approach has not been changed for years, starting with prednisolone for induction after which maintenance treatment with an
General introduction

An immunomodulator, e.g. azathioprine or mercaptopurine, can be initiated. If necessary treatment can be escalated to anti-TNF, which was introduced in 1999. Ileocolic resection for localised terminal ileitis is a common procedure in CD patients with a stenosis of the ileum or medical therapy refractory disease. However, surgery is still generally considered as last resort when all medical options failed.

Single port laparoscopic surgery for IBD

Multi-port laparoscopic surgery for IBD was first reported in the early 1990s. Since then experience has evolved and more complex laparoscopic procedures were performed for both CD and UC. There is an abundance of literature claiming that laparoscopic small and large bowel resections are safe and efficacious. Therefore, laparoscopy is considered to be an important surgical tool in the minimally invasive treatment of IBD patients. Single-incision laparoscopic resection in colorectal surgery was first described in 2008 and is considered a feasible and safe procedure.

Perianal Crohn’s disease

In population-based estimates CD patients have a lifetime risk of fistula development ranging from 14% to 38%. Perianal fistulising disease is associated with local pain, discharge, and considerable morbidity rates (including sphincter and perineal tissue destruction) resulting in a negative impact on quality of life. Unfortunately spontaneous fistula closure rates are low, with estimates from 6% to 13%. The impact on health care resources is enormous due to multiple surgical interventions and costly medication.

Classification

Two classification systems of perianal fistulas are used: the Park’s and the American Gastroenterology Association (AGA) classification. The Parks classification defines four types of perianal fistulas in relation to the external sphincter: intersphincteric, transsphincteric, suprasphincteric and extrasphincteric. The most common fistulas are the intersphincteric and the transsphincteric. A more clinical classification with a distinction between simple and complex fistulas was proposed by the AGA. The Parks classification is superior from a surgical point of view. However, since this system can be complicated
in daily practice a distinction between simple and complex can be a better option, especially in a multidisciplinary setting.

Treatment of perianal fistulas
Management of perianal fistulas requires the availability of specialist imaging techniques and detailed understanding of perianal anatomy and pathology, especially in complex fistulas. Treatment of perianal fistulas has changed since the introduction of biologicals, towards more non-surgical treatment. There are several treatment options for complex high fistulas (involvement of upper two-thirds of external sphincter). Complete closure and fibrosis of the fistula tract can be achieved either via surgical approach or with medical treatment.

Medical therapy
The administration of medical therapy in Crohn’s perianal fistulas aims at reduction of symptoms and eventually closure, with improvement of QoL. Prevention of recurrent abscess formation is of crucial importance. There are several medical treatment options. Symptom alleviation may be achieved with medical therapy, however definite closure of perianal fistulas is rare and, unfortunately, overall recurrence rates are high. With the introduction of anti-TNF agents (infliximab and adalimumab), the treatment for Crohn’s fistulas has changed from almost exclusively surgical to placing a much larger emphasis on medical therapy. Since the results of two large trials, assessing the benefit of anti-TNF medication, almost all patients receive this medication.

Surgical therapy
The majority of patients with perianal fistulas requires surgical treatment during the course of their disease. Primary treatment goals of surgical treatment are abscess drainage and prevention of recurrent abscesses by remaining patency of the tract. On the long term, fistula closure and preservation of continence are more important. Several techniques are available, depending on the characteristics of the fistula. Until several decades ago, the most frequently used treatment approach for complex perianal fistulas has been surgical seton placement for chronic drainage of the tract. A seton maintains patency of the tract and eliminates the accumulation of pus which prevents the recurrent formation of tracts and abscesses, with subsequent low re-intervention rates (10-20%). However, the seton has been reported to negatively influence QoL. Another disadvantage of this technique is that the fistula will not close with the seton
in situ. It remains unclear when the seton can be removed and whether the tract heals after removal.

Another surgical treatment option is closure of the internal fistula opening by creating an advancement plasty (figure 1 and 2). This is usually done after primary seton drainage for several weeks. In a recent systematic review, the success rate of endorectal advancement plasty for Crohn’s fistulas was 64%. These results seem quite promising, although almost 10% faecal incontinence was described and re-interventions were needed in almost 50% of the patients.  

Fig 1 and 2: Endorectal advancement flap procedure steps.

Proctectomy in IBD

In some patients with severe (colo)rectal CD or UC, a completion proctectomy may be indicated. Epidemiological studies revealed that rectal resection is necessary in up to 20% of Crohn’s patients with perianal fistulas. In these patients, perineal wound healing is frequently disturbed and creates a major problem for these patients.

In CD, failed primary perineal wound healing is reported in > 50% of the patients, whereas this is less frequently reported in ulcerative colitis (UC). Known perineal complications are persistent perineal sepsis with presacral abscess formation or development of a persistent sinus, both of which are difficult to manage.

Since complete lymph node dissection according to oncological principles is not necessary in IBD, close rectal dissection has been proposed. This technique was first described by Lee and Downing in 1972. It has been hypothesised that close rectal dissection could improve healing and reduce infectious complications by leaving the rectal mesentery in situ to minimise the pelvic dead space when compared to total mesorectal excision.
The mesorectum is mainly composed of adipose tissue. Adipose tissue has been implicated in CD, as one of the hallmarks of CD is the wrapping of mesenteric adipose tissue around the intestine, known as creeping fat.\textsuperscript{26, 27} Although creeping fat is generally considered to be pathological, only scant literature is available regarding its composition and function.
References