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REVIEW

Ileal pouch-anal anastomosis: Points of controversy

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Summary Restorative proctocolectomy with ileal pouch-anal anastomosis has become the most commonly used procedure for elective treatment of patients with ulcerative colitis and familial adenomatous polyposis. Since its original description, the procedure has been modified in order to obtain optimal functional results with low morbidity and mortality, and yet provide a cure for the disease. In this review of the literature of restorative proctocolectomy with ileal pouch-anal anastomosis, we discuss these technical modifications, limiting our discussion to the current points of controversy. The current ''hot topics'' for debate are: indications for ileal pouch-anal or ileo-rectal anastomosis, indications for pouch surgery in the elderly, indeterminate colitis and Crohn's disease, the place of the laparoscopic approach, transanal mucosectomy with hand-sewn anastomosis vs. the double-stapled technique, the use of diverting ileostomy and the issue of the best route for delivery of pregnant women. Longer follow-up of patients and increased knowledge and experience with pouch surgery, coupled with ongoing prospective evaluation of the procedure are required to settle these issues.

Introduction

Ileal pouch-anal anastomosis (IPAA) is currently a well-codified surgical procedure, and can be proposed for treatment of ulcerative colitis (UC) and familial adenomatous polyposis (FAP). The theoretical value of IPAA in these settings is to achieve definitive cure the disease, prevent the risk of malignant degeneration and ensure adequate continence with defecation while avoiding a permanent stoma. Progressive improvements in surgical technique have led to satisfactory functional outcomes with low associated mortality and morbidity.

The goal of this update is to identify the points of controversy arising in the management of patients requiring an IPAA.

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Indications for IPAA

Total coloproctectomy (TCP) with IPAA is the reference treatment for UC and FAP. Although generally contra-indicated in colonic Crohn's disease (CD), IPAA can also be proposed in some highly selected patients.

Ulcerative colitis (UC)

Subtotal colectomy with ileo-rectal anastomosis (IRA) allows preservation of postoperative fertility in the female similar to that of the overall population. Functional results are better than with ileo-anal anastomosis (IAA) (frequency of bowel movements, nighttime and daytime seepage, anal incontinence), but the quality of life is not necessarily improved [1].

IRA can also be proposed in case of technical difficulties, when doubt persists between the diagnosis of UC and CD or in patients with altered sphincter function, in particular, patients older than 70. IRA is also indicated in the young female with hopes of procreation since fertility is better preserved [2].

IRA can only be performed when the rectum is not fibrotic and when there are no extra-intestinal manifestations, dysplasia or colorectal malignancy or when the duration of disease is less than 10 years. The patient must adhere to a strict surveillance program for the remnant rectum (level of evidence 3). At 10 years, the risk of secondary proctectomy is estimated to be around 20% [3].

Familial adenomatous polyposis (FAP)

The choice of anastomotic technique (ileo-anal vs. ileo-rectal) is based on several criteria:

- age;
- sphincter function;
- possibility of regular surveillance;
- degree of dysplasia and the severity of colonic and rectal involvement:
  - in case of severe polyposis (> 1000 colonic adenomas and/or > 20 rectal adenomas), first-line IRA is recommended (grade of recommendation C) [4],
  - in case of non-severe polyposis (< 1000 colonic polyps and < 5 rectal polyps), subtotal colectomy with IRA is recommended, particularly in young patients wanting pregnancy after the operation (grade C) [5],
  - for patients with 6—19 rectal polyps, irrespective of the number of polyps elsewhere in the colon, the indication must be discussed case by case (grade C) [5].

However, whenever maintenance of a program of rigorous rectal surveillance seems impossible, an IAA is recommended, irrespective of the degree of colorectal involvement (grade C) [5].

Is there an age limit to performance of IAA?

Because of the complexity of the operation and the absence of prospective studies with long-term results, IAA has long been reserved for young patients capable of tolerating the consequences of altered intestinal and sphincter function inherent in such a procedure.

On one side, ageing with consequent muscular atrophy, fibrosis and neurologic disorders have a deleterious effect on pelvic floor and anal sphincter function [6,7], leading to decreased anal pressure and rectal compliance. On the other, aged patients are more vulnerable to sphincter traumatism during IAA because of slower recuperation of muscular elasticity [7]. Consequently, the functional outcome of IAA is less satisfactory in the elderly with more seepage than in younger patients [8,9].

One prospective study from the Mayo Clinic including 2002 patients with an average follow-up of 10 years, divided patients into three age-defined groups [< 45-years-old ($n = 1688$), between 46 and 55-years-old ($n = 249$), and > 55-years-old ($n = 65$)]. The authors concluded that the postoperative complication rate was similar among the three groups. The functional outcomes as well as the quality of life were evaluated by a yearly questionnaire. The reservoir failure rate for patients older than 55 was 1.6% at 10 years, without any statistically significant difference compared to the other age categories. The quality of life as evaluated by social, professional, sexual and sports activities was also similar among the three age categories. Quality of life was thought to be satisfactory for most patients. Daytime and nighttime seepage nevertheless occurred more frequently for patients > 55-years-old: 5.6% and 13.3%, respectively ($P = 0.002$) [10].

Nine studies, five of which were prospective (Table 1), evaluated the impact of age on morbidity, quality of life and functional outcome. The authors concluded that the rate of readmission for dehydration was statistically significantly higher in older patients. The daytime and nighttime rates of seepage were higher for the older patients, but the differences were not statistically significant [10,11].

Digital anorectal examination is the investigation of choice to evaluate preoperative sphincter function. Anorectal manometry should be proposed in case of sphincter disorders and should be considered in patients over 70 [7]. Evaluation of sphincter function should take into account anal incontinence secondary to rectal fibrosis, which does not contra-indicate TCP with IAA.

In conclusion: IAA can be proposed to elderly patients who want to avoid a definitive ileostomy, as long as preoperative sphincter function is preserved.

Initial disease

Studies comparing IAA for UC vs. indeterminate colitis (IC)

One prospective study reported by Murrell et al. compared 334 patients undergoing IAA, 236 for UC and 98 for IC. The authors concluded that there was no statistically significant difference in the incidence of acute or chronic pouchitis between the two groups [18].

Dayton et al. prospectively evaluated postoperative morbidity in 723 patients undergoing IAA of whom 79 had IC and 565 had UC. No statistically significant difference could be found between the two groups for anastomotic leak (5.1% vs. 2.3%, $P = 0.15$), intra-abdominal abscess (0 vs. 1.1%, $P = 0.36$) or anastomotic stricture (7.6% vs. 4.8%, $P = 0.29$) [19].

Revision of diagnosis from indeterminate colitis to CD seems to be a risk factor for IAA failure, as the reservoir failure rate increases from 4 to 28% [19]. Patients with IC without any clinical signs of CD preoperatively seem to have similar functional outcomes and failure rates after IAA compared to patients with UC [20,21].

In conclusion: patients with IC have functional results and failure rates similar to those patients with UC.