Original Article

Different Result of Restorative Proctocolectomy between Polyposis Coli and Ulcerative Colitis — A Single Surgeon's Experience

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Purpose. Early operation is recommended for patients with adenomatous polyposis coli because cancer will develop in 100% of patients if untreated. Surgery is reserved for treating complications of ulcerative colitis (UC). This is a retrospective analysis of surgical results of restorative protocolectomy with ileal pouch anal anastomosis (IPAA), performed by a single surgeon (TCH) for patients with adenomatous polyposis coli and ulcerative colitis in a period of 27 years.
Materials and Methods. A total of 44 patients with adenomatous polyposis coli and two patients with juvenile polyposis coli were operated from 1983 to 2010. Twenty-three patients were male, and 23 patients were female. Age ranged from 11 to 58 years old (an average age of 34.2 years old). Twenty-two cases of adenomatous polyposis coli received restorative proctocolectomy with IPAA. A total of 44 patients with ulcerative colitis were operated by the same surgeon. Twenty four were male and 20 were female. Age ranged from 16 to 74 years (an average age of 46.4 years old). Restorative proctocolectomy with IPAA was performed for 25 patients.
Results. In the patients with adenomatous polyposis coli, four patients were re-explored postoperatively for postoperative complications, a patient did not have the ileostomy closed, a patient died of metastatic cancer, and a patient died of non-cancer cause. 19 patients (86%) had good function of pouch. Complications of the patients with UC included intestinal obstruction in five patients (20%), wound infection in five patients (20%), rectovaginal fistula in three patients (12%), pelvic abscess in two patients (8%), pouch perforation in one patient (4%) and pouchitis in five patients (20%). Six patients had pouch removed for various complications. 16 patients (64%) had good function of pouch.
Conclusion. Restorative proctocolectomy with IPAA is not a perfect operation, but could offer reasonable good quality of life among 86% of our patients with adenomatous polyposis coli. Only 64% of our patients with ulcerative colitis had good pouch function after restorative proctocolectomy with IPAA. Although IPAA may offer fair to good quality of life, the price is high while such an operation was offered to the patients especially in patients with ulcerative colitis.
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Adenomatous polyposis coli has an incidence of about one in 7,000 to 24,000 live birth.[1,2] It manifests equally in both sexes, and accounts for less than 1% of colorectal cancer cases. Unless the colon is removed early in life, most of patients will develop cancer before 40 years old.[3,4] Therefore, early operation is recommended for patients with adenomatous polyposis coli. There are various operative procedures for the patients with adenomatous polyposis coli. Restorative proctocolectomy with ileal pouch with anal anastomosis (IPAA) is one of them.

Ulcerative colitis is usually treated medically.[5] Surgery is reserved for treating complications of ulcerative colitis, such as toxic megacolon, colon perforation, massive bleeding, and uncontrollable extraintestinal manifestations. Among various surgical procedures, restorative proctocolectomy with IPAA is also a choice of surgical procedure.

This study is aimed to evaluate a single surgeon's experience of the surgical outcomes of IPAA for patients with adenomatous polyposis coli and ulcerative colitis.

Materials and Methods

All the patients with adenomatous polyposis coli and UC treated surgically during the period of 1983 to 2010 by a single surgeon (TCH) were reviewed retrospectively. We excluded the patients with hyperplastic polyposis, Peutz-Jegher's syndrome or hamartomatous polyposis, patients who refused surgery, patients who were operated by other surgeons. There were 46 patients with adenomatous polyposis coli. Twenty three were male and 23 were female. Age ranged from 13 to 58 years (an average age of 34.2 years). There were 44 patients with ulcerative colitis. Twenty four were men and 20 were women. Age ranged from 16 to 74 years (an average age of 46.4 years).

Results

The demographic data of the patients were shown in Table 1. Restorative proctocolectomy with IPAA was the operative procedure for 22 patients with adenomatous polyposis coli. (Table 2). The postoperative complications included intestinal obstruction in eight patients (36.3%), upper gastrointestinal bleeding in three patients (13.6%), and dehiscence of ileoanal anastomosis in two patients (9.1%) (Table 3). Four patients were re-explored postoperatively for postoperative complications. Two patients were operated for intestinal obstruction following IPAA operation, a patient was operated for upper GI bleeding following IPAA operation and a patient was operated following closure of ileostomy for intestinal obstruction. In the patients who had restorative proctocolectomy with IPAA, a patient did not have the ileostomy closed, a patient died of metastatic cancer, and a patient died of non-cancer cause a few years later. Nineteen patients (86%) had good function of pouch.

Restorative proctocolectomy with IPAA was performed in 25 patients with ulcerative colitis (Table 4).

Table 1. Gender and age in both groups (adenomatous polyposis coli and UC)

	Male:Female	Age (y/o)	IPAA
Adenomatous poloposis coli	23:23	34.2	22
Ulcerative colitis	24:20	46.4	25

Table 2. Operative procedure in patients with adenomatous polyposis coli

	Male	Female	Total (%)
Restorative proctocolectomy	11	11	22 (47.8)
Total proctocolectomy with ileostomy	5	4	9 (19.5)
Abdominoperineal resection	2	1	3 (6.5)
Subtotal colectomy with ileoproctostomy	3	2	5 (10.8)
Subtotal colectomy with ileostomy	1	1	2 (4.3)
Segmental colectomy	0	1	1 (2.1)
Hartmann's resection	1	2	3 (6.5)
Colostomy	0	1	1 (2.1)

Table 3. Complications of restorative proctolocolectomy for adenomatous polyposis coli

	No. (%)
Intestinal obstruction	8 (36.3)
Upper GI bleeding	3 (13.6)
Ileoanal anastomosis dehiscence	2 (9.1)

Table 4. Operative procedure in patients with UC

	Total (%)
Restorative proctocolectomy	25 (56.8)
Subtotal colectomy with ileorectal anastomosis	14 (31.8)
Colectomy with ileostomy	4 (9.1)
Colostomy	1 (2.2)

The complications included intestinal obstruction in five patients (20%), wound infection in five patients (20%), rectovaginal fistula in three patients (12%), pelvic abscess in two patients (8%), pouch perforation in one patient (4%) and pouchitis in five patients (20%) (Table 5). A total of six patients with ulcerative colitis had pouch excision for pouch related complications. A patient succumbed to pelvic abscess following resection of pouch for pouch failure. A patient died of hepatoma a few years later. Sixteen patients (64%) had good function of pouch.

Discussion

Restorative proctocolectomy with ileal pouch anal anastomosis (IPAA) has been popularized by several surgeons since 1970.[6-8] However the operation is limited to selected patients due to several factors, such as difficulty in technique. Patients who are aged, who had weak anal sphincter, who had advanced or wide spread of rectal cancer, and patients who can't withstand long time of anesthesia are also not suitable for the procedure. Besides, restorative proctocolectomy with IPAA is associated with many complications which included pelvic sepsis, subphrenic abscess, wound infection, pouch cutaneous fistula, rectovaginal fistula, pouch bleeding, anastomotic stricture, pouchitis, pouch perforation, small bowel obstruction, electrolyte imbalance and malabsorption, etc.[9,10] About 20% of patients would lose the pouch after five years due to pouch-related complications.[11] Although restorative proctocolectomy with IPAA has the advantages of fair to good quality of life and without threat of developing rectal cancer, it is associated with high morbidity and usually needs at least two operations.

Bulow described a series report of adenomatous polyposis coli with the association of cancer in 1886.[12] Lockhart-Mummery in 1925[13] and Dukes in 1930[14] reported that several cases with adenomatous polyposis coli which could became malignancy. Besides intestinal manifestation, adenomatous polyposis coli could be associated with extra-intestinal manifestation, such as osteoma and desmoid tumor in Gardner's syndrome, malignant brain tumor in Turcot's syndrome.[15] In this series, a patient is currently receiving treatment of desmoid tumor which alerts us that all the patients with adenomatous polyposis coli should be closely followed for possible extraintestinal manifestations and malignancies.

The average age of appearance of symptoms of adenomatous polyposis coli is 20 years old. Cancer usually develop at approximately 35 years old and average age of death of the patients with cancer is 41 years old.[16] Following discovery of the disease, it was soon recognized that the disease should be treated surgically before it became malignant.[17]

Principle of surgical management is early operation for all patients with adenomatous polyposis coli, operation especially should be carried out as soon as possible in patients who are diagnosed late in life.[16,17]

Restorative proctocolectomy with IPAA is the operative procedure of choice for adenomatous polyposis coli, and was performed for 22 patients in this series. Restorative proctocolectomy with IPAA is not without complications as four patients had re-exploration for complications. Good function of pouch was obtained in 19 patients (86%) with adenomatous polyposis coli which encourage us to continue this time-consuming, complicating procedure especially in pa-

Table 5. Complications of UC patients

	No (%)
Wound infection	5 (20)
Intestinal obstruction	5 (20)
Rectovaginal fistula	3 (12)
Pouch cutaneous fistula	1 (4)
Pelvic abscess	2 (8)
Pelvic bleeding	1 (4)
Anastomotic stricture	1 (4)
Pouch perforation	1 (4)
Pouchitis	5 (20)

tients whose life expectancy might be long.

Ulcerative colitis is a chronic or long-lasting disease that causes inflammation of the mucosal layer of the large intestine. Most people with UC have mild to moderate symptoms. About 10 percent of patients have severe symptoms such as frequent fever, bloody diarrhea, nausea, and severe abdominal cramps.[18] Patients with chronic UC have an increased risk of colon cancer when the entire colon is affected for a long period of time. In patients with chronic ulcerative colitis, precancerous changes with dysplasia of epithelial cells can occur. Patients with dysplasia are at increased risk of developing colon cancer. Most important risk factors for possible malignancy include total involvement of the large bowel, long duration of the disease, young age at the onset of colitis, continuous active disease as opposed to intermittent symptoms and the severity of the disease.[19]

About 10 to 40 percent of patients with UC eventually need a proctocolectomy.[18] Indications for surgery in ulcerative colitis included toxic megacolon, colon perforation, massive bleeding, uncontrollable extraintestinal manifestations, possible malignant change and intractable bowel disease.[20]

Inflammation of the ileal pouch, called pouchitis, is a potential complication and can lead to symptoms such as increased diarrhea, rectal bleeding, and loss of bowel control.[21] Six patients eventually had pouch excision due to complications. In this series, 16 patients of UC (64%) obtained good function of pouch following IPAA and closure of ileostomy.

A large, retrospective study of 1005 cases at the Cleveland Clinic Foundation, who received IPAA for various disease entities, including polyposis coli, UC, indeterminate colitis, and Crohn's disease, reported a good quality of life among 93% of assessable patients (N = 645).[22] The authors found that there was no difference in functional results and quality of life in the subgroups. However, their results revealed a higher rate of pouch failure among patients with Crohn's disease (25.4%), while no difference in pouch failure rate between patients with UC (1.8%) and FAP (1.6%). Present series revealed good function of pouch in 19 patients (86%) with adenomatous polyposis coli and 16 patients (64%) with UC.

Conclusion

Restorative proctocolectomy with IPAA is not a perfect operation, but could offer a reasonable good quality of life among 86% of our patients with adenomatous polyposis coli.

Only 64% of our patients with ulcerative colitis had good pouch function after restorative proctocolectomy with IPAA. Although IPAA may offer fair to good quality of life, the price is high while such an operation was offered to the patients especially in patients with ulcerative colitis.

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原　著

復原式結腸直腸切除手術治療家族性大腸息肉症及潰瘍性大腸炎的結果及併發症之比較 — 單一外科醫師的經驗

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目的　家族性大腸息肉症通常採用外科療法以預防大腸息肉的惡性變化，而潰瘍性大腸炎則是針對其所造成的併發症採用外科療法。這篇回顧性研究分析，主要是呈現單一外科醫師對家族性大腸息肉症及潰瘍性大腸炎採用復原式結腸直腸切除術的結果及併發症作探討。

方法　從 1983 年 12 月到 2010 年 12 月，共收集 46 位罹患大腸腺瘤及 44 位潰瘍性大腸炎患者，其中 22 位大腸腺瘤及 25 位潰瘍性大腸炎患者接受復原式結腸直腸切除術，這些患者手術都由同一位外科醫師執行。這些研究資料包括患者的流行病學資料、手術治療的適應症、手術併發症及死亡率。

結果　針對家族性大腸息肉症患者的收集，共計有男性 23 位及女性 23 位。平均年齡為 34.2 歲，開刀術式為復原式結腸直腸切除術共計有 22 位。治療追蹤期間術後併發症最常見的是腸道阻塞共計有 8 位 (36.3%)，其次為上消化道出血共計有 3 位 (13.6%)。而有 4 位病人因術後併發症而再次接受手術。針對潰瘍性大腸炎患者的收集，共計有男性 24 位及女性 20 位。平均年齡為 46.4 歲，開刀術式為復原式結腸直腸切除術共計有 25 位。治療追蹤期間術後併發症最常見的是腸道阻塞共計有 5 位 (20%)，其次為傷口感染共計有 5 位 (20%)，直腸陰道廔管共計有 3 位 (12%)，骨盆腔膿瘍共計有 2 位 (8%)，迴腸袋穿孔共計有 1 位 (4%)，而迴腸袋發炎共計有 5 位 (20%)。而有 6 位病人因術後併發症而接受迴腸袋切除手術。

結論　預防性結腸切除術是目前家族性大腸息肉症患者預防大腸直腸癌發生的最佳治療方式，而手術對於潰瘍性大腸炎則是針對其產生的併發症。雖然採用復原式結腸直腸切除手術能提供患者術後較理想的生活品質，但其手術併發症的代價相對是較高的，所以應視患者情況及手術醫師的經驗做最適當的選擇。

關鍵詞　家族性大腸息肉症、潰瘍性大腸炎、復原式結腸直腸切除術。