Total Colectomy and Ileo-Rectal anastamosis Versus Total Procto-Colectomy and Ileo-anal (j) Pouch Anastamosis for Ulcerative Colitis

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ABSTRACT:

BACKGROUND:

The aim of this study is to compare the outcome of two sphincter-saving operations for ulcerative colitis namely total colectomy & ileorectal anastamosis (TC-IR) retrospectively with total procto-colectomy & ileo-anal (j) pouch anastamosis (TC-IA) prospectively.

METHODS:

Surgery was indicated in 89(7.84%) among 1135 patients with ulcerative colitis of these; 57 subjected to TC-IR (Group A) during period 1968-1990 and 32 to TPC-IA (Group B) between 1991-2005, by Z R Al-Bahrani at the Medical City Teaching Hospital and Al-Mustansiria Private Hospital, Baghdad.

RESULTS:

Of these 89 patients, 41 were males and 48 were females. Mean (range) age in years was 35.5+/-13.3 (12-65). Indications for surgery were; intractability 59(66.2%), carcinoma 13(14.6%), toxic colon 8(9%), sever bleeding 7(8%) and intestinal obstruction 2(2.2%) patients. The type of colitis were; pan-colitis 72(81%), left colitis 16(17.9%) and procto-sigmoiditis one (1.1%) patient. Pseudo-polyposis was seen in 52(58.5%) patients.

The outcome of Group A (57 patients) were; post-operative mortality 2(3.5%), 1-3 complications minor and/or major in 31(53.4%) patients.

After operation; normal defecation, bowel motion/day reduced from 8 to 5 (P<0.001), body weight/Kg increased from mean 53 to 62.5 (P<0.001) and the Hb gm/dl rose from mean 10.2 to 12.2 (P<0.001).

The outcome of Group B (32 patients): post-operative mortality 1(3.1%), 1-3 complications minor and/or major in 16(50%) patients.

After operation; control on defecation took few weeks-months to settle, bowel motion/day was reduced from a median 10 to 5 (P<0.001), body weight/kg increased from mean 52.9 to 56.2 (P=0.59[ns], and Hb gm/dl rose by a mean 03(P=0.68[ns].

CONCLUSION:

Both surgical operations are super major and carry potential risk of complications and should be advised when medical treatment fails or serious complications of the disease arise which risk the patient's life or interfere with his normal life. Both procedures improve bowel motion, general health and quality of life without incontinence but total procto-colectomy and ileo-anal with pouch is considered superior to total colectomy& ileor-rectal anastomosis because excluding to a great extent the risk of rectal cancer.

KEY WORDS: Ulcerative Colitis, Total Colectomy and Ileorectal, Total Procto-Colectomy and Ileo-Anal (j) pouch

INTRODUCTION:

Ulcerative Colitis (U.C.) is an inflammatory process involving the colonic mucosa, characterized by alteration in bowel function symptoms and of intestinal inflammation. The most frequent sign of U.C. is hematochezia, the passage of red blood from the rectum .The presence of abdominal pain, fever & weight loss depends on the severity of the inflammation. U.C. has been recognized since the nineteenth century, when it was reported in several London hospitals.[1]

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The disease has been rare in Eastern population but is now being reported more commonly, suggesting an environmental cause that has developed as a result of an increasing westernization of diet and /or social habits and better diagnostic facilities. The sex ratio is equal; it is uncommon before the age of 10 years and most patients are between the ages of 20 to 40.[2] The specific cause of U.C. is unknown, current hypothesis suggest that it probably results from a combination of factors, leading to dysfunctional immunoregulation in the intestinal wall. These factors include dietary intake, genetic

predisposition and an imbalance between the normally controlled states of regulated inflammation in the intestinal wall. [3] U.C. involves the rectum in most patients, if confined to the rectum as in over half of cases, it is termed ulcerative proctitis. Inflammation may spread proximally to affect the left colon and in about one –third of patients the entire colon becomes involved (pan-colitis). A few centimeters of distal ileum are ulcerated in 10 % of patients with pan-colitis (back wash ileitis). The diseased areas are contiguous, i.e. segmental disease or skip lesions are rare. [4] The most common indication for operative treatment is intractability and failure of prolong medical treatment. Other indications; high grade dysplasia-carcinoma, massive bleeding, toxic mega colon, stenosis causing obstruction and extra intestinal manifestation.[1,5] Fazio (1983) reported that the ideal operation for U.C. would; remove the diseased bowel, return the patient to health, lessen the risk of developing cancer, obviate the need for permanent ileostomy, preserve the anus for defecation, maintain continence, have few complications and be done in one stage. [6]

The four current surgical options for treating ulcerative colitis are:

1. Total procto-colectomy with Brooke ileostomy.

2. Total abdominal colectomy with ileorectal anastomosis .

3. Total procto-colectomy, continent ileostomy (Barnett or Kouch pouch).

4. Total procto-colectomy, ileal pouch anal anastomosis.

To date none of these options completely satisfies all of the ideals. Proctectomy and segmental colectomy are inadequate surgical treatment of ulcerative colitis. [7]

PATIENTS AND METHODS:

During the period (1965-2005), 1135 patients with ulcerative colitis were treated by Zuhair R Al-Bahrani at the Medical City Teaching Hospital and Al-Mustansiria Hospital, Baghdad. All relevant features were recorded, including patient's demographics, presentation and follow up. Surgery was indicated in 89(7.8%) patients of these; 57(Group A) had total colectomy and ileorectal (TC-IR) and 32(Group B) had total procto-colectomy and ileo-anal j-pouch (TPC-IA) anastamosis. Surgery was in one stage in most cases for TC-IR and two (occasionally three) stages for TPC-IA. No staplers were used in all these procedures. Patients were followed at regular period; their progress recorded especially control on defecation and bowel motion/day, examined clinically, body weight checked, blood tests done and sigmoidoscopy with biopsy if necessary. Comparison of the results between the two surgical procedures were studied.

RESULTS:

Of 89 patients subjected to surgery 41 were males and 48 were females. Age ranges from 12-60 years with a mean 35.5 +/- 13.3 (SD). 16(18%) were single and 73(82%) were married. Type of colitis were; procto-sigmoiditis in one (1.1%), left colitis in 16(17.9%) and pan-colitis in 72(81%) patients. Pseudopolyposis were reported in 52(58.5%) of them. Surgical indications were: intractability in 59 (66.2%), carcinoma in 13(14.6%), toxic colon in 8(9%), recurrent or massive bleeding in 7(8%) and intestinal obstruction (stricture) in 2(2.2%) patients. The difference in relative frequency of selected surgical indications by type of colitis among subjects operated upon is shown in table 1.

Three died post-operatively, two (3.5%) among Group A (major leak in a 12 years female and severe pelvic sepsis in a 65 years male with rectal carcinoma) and one (3.1%) among Group B (thrombo embolism in a 19 years old female). The case fatality rate after surgery by selected variables is shown in table 2. The results of surgery among Group A (57) versus Group B (32) patients were; uneventful recovery in 27(47.4%) versus 16(50%), one complication in 21(36.8%) versus 12(37.5%), two in 7(12.3%) versus 3(9.4%) and three in 2(3.5%) versus one (3.1%) patients. The difference in median count of post-operative complications per subject between two types of operations illustrated in table 3. Out of 86 patients who survived after surgery, 71 were followed from 1-39 years, of these; 42 were Group A and 29 were Group B. Table 4 reveals the difference in relative frequency of post-operative complications between the two types of operations. The highest incidence of complications was proctitis 28% among Group A while pouchitis 21.9% among Group B. Comparison of other complications between Group A versus Group B were; wound sepsis 10.5% v 6.3%, perianal lesions 10.5% v 3.1%, intra-abdominal abscess 7% v 3.1%, abdominal wall sinus 5.3% v 0%, rectal carcinoma 5.3% v 0%, anastomatic leak 3.5% v 3.1%, intestinal obstruction 1.7% v 15.6%, poucho-vaginal fistula 0% v 3.1% and thrombo-embolism 0% v 3.1% of patients. The control on defecation and continence in patients were; fairly normal early after surgery among Group A while in Group B it took few week-few month for the control to become fair-good without incontinence. The effect of surgery on the bowel motions per day, revealed that; bowel

motion was reduced by a median (-3/day) among Group A and (-5/day) among Group B, the reduction after both types of surgery is significant (p=<0.001).Table 5.

The mean body weight (kg) difference attributed to effect of surgery for patients in Group A was (9.5) which is significant (p=<0.001) while that in Group B was (1.6) which is not significant (p=0.59 [ns]). Table 6 .

The mean haemoglobin concentration (gm/dl) difference attributed to effect of surgery for patients in Group A was (3.2) which is significant (p=0.001) while that for Group B patients was (0.3) (p=0.68 [ns]. Table 7

Picture of a case with J-pouch had a barium study.

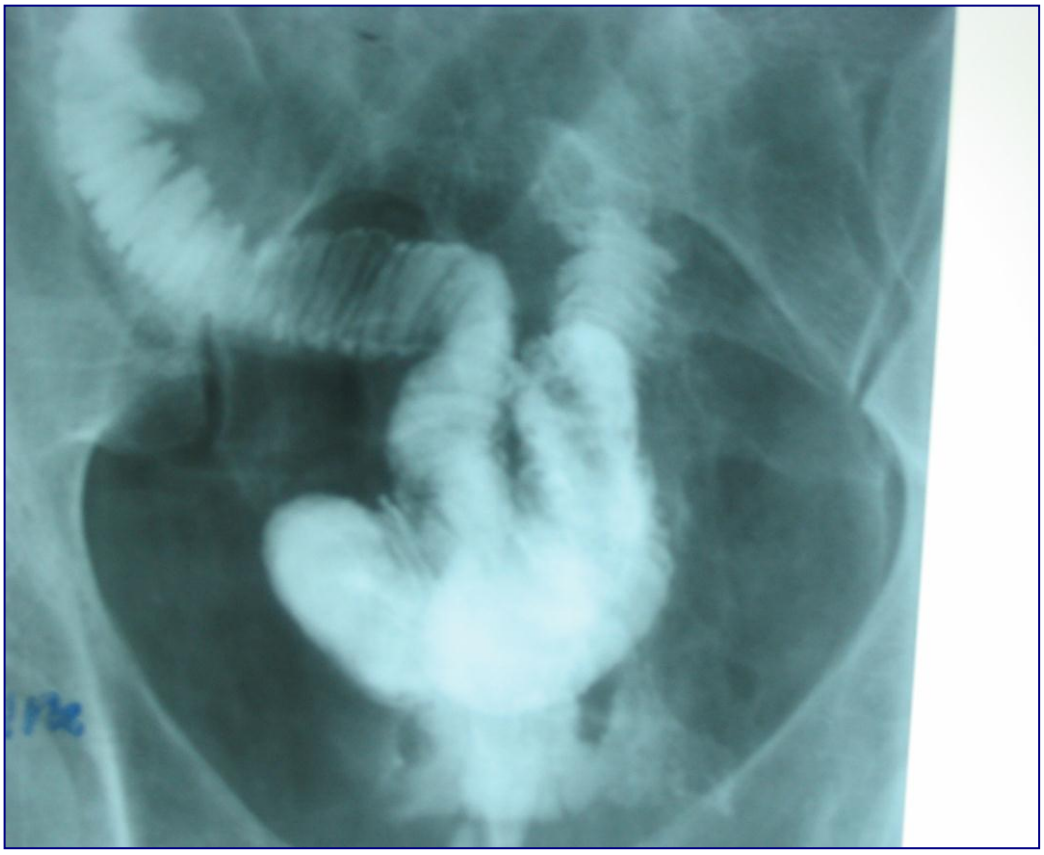

Table 1:The difference in relative frequency of selected indications for surgery by type of colitis among subjects who had surgery.

	Indication for operation											
	Intractability		Carcinoma		Toxic colon		Bleeding		IO (stricture)		Total	
Type of colitis	N	%	N	%	N	%	N	%	N	%	N	%
Procto-sigmoiditis	0	0	0	0	1	100	0	0	0	0	1	100
Left colitis	12	75	3	18.7	0	0	1	6.3	0	0	16	100
Pan- colitis	47	65.3	10	13.9	7	9.7	6	8.3	2	2.8	72	100

P (χ^2) < 0.001

Table 2:The case fatality rate after surgery by selected variables (possible risk factors).

	Total	Death as an outcome		
	N	N	%	P (χ^2)
Age in years				0.002
<20	8	2	25	
20 – 39	56	0	0	
40 +	25	1	4	
Gender				0.55[NS]
Female	48	2	4.2	
Male	41	1	2.4	
Type of colitis				0.40[NS]
Procto-sigmoiditis	1	0	0	
Left colitis	16	0	0	
Pan-colitis	72	3	4.2	
Pseudo-polyps				0.39[NS]
Negative	37	1	2.7	
Positive	52	2	3.8	
Indication for operation				0.28[NS]
Intractability	59	2	3.4	
Carcinoma	13	1	7.7	
Toxic colon	8	0	0	
Bleeding (recurrent or massive)	7	0	0	
I.O(stricture)	2	0	0	
Type of operation				0.70[NS]
Total colectomy+ileorectal,Group (A)	57	2	3.5	
Total proct-colectomy+ileoanal J pouch,Group (B)	32	1	3.1	

Table 3 : The difference in median count of postoperative complications per subject between 2 types of operations.

Count of selected complications	Type of operation			
	Total colectomy+ileorectal Group (A)		Total procto- colectomy+ileoanal J pouch Group (B)	
	N	%	N	%
0	27	47.4	16	50.0
1	21	36.8	12	37.5
2	7	12.3	3	9.4
3	2	3.5	1	3.1
Total	57	100	32	100
Median count	1		1	

P (Mann-Whitney for difference in median between the 2 groups = 0.28[NS}

Table 4:The difference in relative frequency of selected postoperative complications between 2 types of operations.

Complications	Type of operation				P (Fisher exact significance)
	Total colectomy+ileorectal Group (A) (n=57		Total procto- colectomy+ileoanal J pouch Group (B) (n=32		
	N	%	N	%	
Proctitis	16	28	0	0	<0.001
Wound sepsis	6	10.5	2	6.3	0.16[NS]
Pouchitis	0	0	7	21.9	<0.001
Intestinal obstruction	1	1.7	5	15.6	0.04
Perineal lesions	6	10.5	1	3.1	0.17[NS]
Intra-abdominal abscess	4	7.0	1	3.1	0.35[NS]
Abdominal wall sinus	3	5.3	2	6.3	0.66[NS]
Cancer of rectal remnant	3	5.3	0	0	0.22[NS]
Amastomatic leak	2	3.5	1	3.1	0.37[NS]
Poucho-vaginal fistula	0	0	1	3.1	0.41[NS]
Thrombo-embolism	0	0	1	3.1	0.41[NS]

Table 5 :Changes in bowel motion.

	Number of bowel motions per day			
	before surgery	after surgery	difference attributed to effect of surgery	P (Wilcoxon signed rank test)
Total colectomy+ileorectal (Group A)				<0.001
Range	(4 to 15)	(2 to 10)	(-10 to 1)	
Median	8	5	-3	
N	39	39	31	
Total procto-colectomy+ileoanal J pouch				<0.001
Range	(2 to 20)	(2 to 12)	(-16 to 7)	
Median	10	5	-5	
N	27	27	25	
P (Mann-Whitney) for difference in median difference attributed to effect of surgery between the 2 types of operation =			0.19[NS]	

Table 6 :Changes in body weight.

	Body weight (Kg)			
	before surgery	after surgery	difference attributed to effect of surgery	P (Paired t-test)
Total colectomy+ileorectal (Group A)				<0.001
Range	(20 to 80)	(36 to 87)	(-8 to 43)	
Mean	53	62.5	9.5	
SD	13.3	12.2	12.8	
N	39	39	31	
Total procto- colectomy+ileoanal J pouch (Group B)				0.59[NS]
Range	(29 to 94)	(30 to 78)	(-27 to 30)	
Mean	52.9	56.2	1.6	

SD	16.1	13.4	13.5	
N	23	25	21	
P (t-test) for difference in mean difference attributed to effect of surgery between the 2 types of operation =			0.04	

Table 7 :Changes in blood hemoglobin concentration (gm/dl)

	Blood Hb concentration (gm/dl)			
	before surgery	after surgery	difference attributed to effect of surgery	P (Paired t-test)
Total colectomy+ileorectal (Group A)				<0.001
Range	(5.2 to 15)	(9.1 to 15)	(0.4 to 8.8)	
Mean	10.2	12.2	3.2	
SD	2.5	1.7	2	
N	37	23	18	
Total procto-colectomy+ileoanal J pouch (Group B)				0.68 *[NS]*
Range	(5.5 to 15)	(7 to 13)	(-4 to 4.2)	
Mean	11.1	11.2	0.3	
SD	2.4	1.7	2.4	
N	27	16	15	
P (t-test) for difference in mean difference attributed to effect of surgery between the 2 types of operation =			<0.001	

DISCUSSION:

The evolution of surgery for U.C. has been one characterized by the request for restoring fecal continence after removal of the diseased colon and rectum. Unlike Crohn's disease, U.C. is cured by procto-colectomy.[8] Medical treatment adequately controls the disease in many patients, although eventual failure of medical therapy and the long term risk of cancer may lead to the consideration of surgical alternatives for some patients.[9] 61 % of patients with pan colitis require surgery, compared to 52% for left sided colitis & 14% for proctosigmoiditis.[9] In the present study, 1135 patients with U.C. were seen in the period (1965-2005), and surgery was performed for 89 patients (7.8%). 81 % of patients, who had surgery were having pan-colitis, while left colitis and procto-sigmoiditis represent 17.9% and 1.1 % respectively. The mean age of diagnosis of U.C. is 32 year and the mean age at surgery was 35 years.[9] In our study the mean age of patients with U.C., who had surgery was 35.5 +/-13.3 (SD). In general the main reason for surgical treatment is chronic colitis with long standing persistent symptoms which are never fully resolved by medical treatment, frequent acute exacerbations requiring considerable time off work and perhaps hospitalization and steroid dependence where any attempt at withdrawing it result in relapse.[10] In our study (66.2%) of patients who had surgery for U.C. were complaining from intractability. Failure of medical treatment is difficult to define and the decision to operate under these circumstances must result from a careful discussion among patients, the surgeon and the gastroenterologist. The increased risk of carcinoma of the large bowel in patients with ulcerative colitis is well established and the incidence is dependant on the duration of the disease. The exact risk varies from series to series, but it seems to be about 1 % at 10 years, 5 % at 20 years and 10 % at 25 years. The extent of colitis also seems to be important with carcinoma usually occurring in patients with total or subtotal colonic involvement.[10] The indication for carcinoma in our study was 14.6% while other indications were for; toxic colon 9%, bleeding 8% and 2.2% for patients with intestinal obstruction. The ultimate goal of surgical therapy for U.C. is to remove the disease with as little as possible alteration of normal physiologic functions and life style. In our study, two different types of sphincter saving operations for U.C. were done for 89 patients. 57 had TC-IR (Group A) and 32 had TPC-IA (j) pouch (Group B). 3 cases of mortality were reported, 2 of them in Group A and 1 in Group B. 45.6% of patients had no complications

after surgery in Group A while that in Group B was 50%. TC-IR anastomosis by leaving the rectal reservoir in place, maintains the normal ano-rectal defecation route with as little alteration as possible and there by avoids the need for a permanent ileostomy. This procedure does not however remove the entire diseased bowel, so the risk of disease recurrence and rectal cancer remains a significant problem. In our study the incidence of proctitis was 28% and rectal carcinoma 5.3%.TPC-IA (j) pouch has the advantage of removing the involved bowel entirely and thus eliminating the risk of cancer or colitis. Pouchitis is the most common complication after this operation, patient with pouchitis present with an increased stool frequency, urgency, incontinence, cramping abdominal pain and a flu like generalized malaise, up to 30 % of patients with TPC & IA (j) pouch, have an episode of pouchitis. The fast response to metronidazole supports the role of anaerobic bacteria over growth as a cause or significant factor in the etiology.[11,12] Small bowel obstruction is encountered in 10-22 % of patients following TPC & IA .[13,14] Our results were ; pouchitis in 21.9% and intestinal obstruction in 15.6%. Wound infection and urinary retention are uncommon and rarely cause serious long term problems. [15]

Functional outcome differences between Group A and B were studied from the records of followed patients after surgery; changes in bowel motion, control on defecation, body weight and Hb. Table 5, 6, 7. Patients in Group A had median reduction in bowel motion after surgery of (-3/day) which was less than that recorded in patients of Group B (-5/day). The median gain in body weight (kg) after surgery in Group A was (9.5), significantly greater than that for patients in Group B (1.6). While the mean gain in Hb after surgery in Group A was (3.2), significantly greater than that for patients in Group B (0.3) In a study at the Cleveland Clinic with 92 patients who had TC&IR, bowel function was quite satisfactory, had an average of 4.3 bowel movements (range 1 to 10) per day.[16] TC&IR: has functional results comparable to the Ileoanal pouch reconstruction and Oakley et al 1985 found that over 95% of patients experienced improved quality of life following the procedure.(16) One limitation with ileorectostomy is the persistence of disease in the rectum, which requires subsequent excision, either for symptoms or for cancer, limiting it's attractiveness for young and middle age patients with long life expectancy.[17]

TPC&IAPA: In the Mayo Clinic the series of open (IAPA) patients showed that the average number of diurnal bowel movement was 6 & the average number of nocturnal bowel movements was 1. [18, 19] In patients who had had an ileal pouch for longer than 10 years, stool frequency and continence remained remarkably stable over time. [20]

Several reports have been shown that the quality of life improves after operation regardless of what procedure is performed, probably as a consequence of eradication of the underlying disease. [21]

CONCLUSION:

Both surgical operations are super major procedures and carry potential risk of complications and should be advised when medical treatments fail or complications arise which risk the patient's life or interfere with his normal life. Both procedures improve bowel motion, general health and quality of life but total procto-colectomy & ileo-anal anastomosis with pouch is considered superior to total colectomy and ileo-rectal anastomosis because exclude to a great extent the risk of rectal cancer.

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