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COLONIC POUCHES AFTER SURGERY FOR RECTAL CARCINOMA

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Therev is little dout about the excellent early functional outcome obtained after colonic pouch analanastomosis . the improvement in the functional outcome at 2 years following complete rectal excision with colonic J- pouch anal anastomosis has been frequently reported .

The aim of this to evaluate the clinical, the function and the oncologic results of low and ultralow anterior resection of the rectum for carcinoma with or without creation of a pouch .

Forty patients in the Surgical Oncology Unit in Mansoura University Hospital , under low or ultralow anterior resection for rectal carcinoma located between 4-11 cm from tge anal verge . twenty patients werw randomized for restoration of cotinuity by coloanal anastomosis , and the remainig 20 patient underwent colonic J- pouch anal anastomosis. All patirnt underwent a complete metastatic and oncologic workup , abdominal ultrasound , pelviabdominal CT , barium studies and colonoscopy .

As regards the functional outcome , about 90% of the patient , with pouch were good continence but only 80% in the othergroup . Uregency was 5% in the pouch group and 45% in the other group . Frequency of tool was 2- day and 4- day in both groups respectively. As regards the recurrence of the disease the creation of the pouch does not affect the oncologic results.

Colonic J- pouch anal anastomosis is an oncologically safe procedure and an optimum means of reconstruction after rectal excision for carinoma of the low and mid rectum, if distal safety of at least 2-cm could be ascertained . The superior functional outcome after colonic pouch anal anastomis could achieved and maintained.

Keywords: Colonic J- pouch, Cancer retum, Anterior resection , Coloanal anastomosis

INTRODUCTION

The classic 5- cm role of distal clearance margin in rectal carcinomas has been greatly modified. Rectal excision with a minimum distal safety margin of 2- cm below the lower limit of the tumor is associated with a 5 – years survival rate and local recurrence rates similar to abdominoperineal resection (1&2) Therefore, sphincter saving resection for mid-and low rectal cancers can be performed without jeopardizing the radical clearance, if there is at least a 2 cm distance between lower limit of the tumor and the anorectal ring (3).

The objective of the study to evaluate the clinical , the functional and the oncologic results of low and ultralow anterior resection of the rectum for carcinomas of its middle or lower third .

MATERIALS AND METHODS

From December 1994 to April 1996 in the Surgical Oncology Unit in Mansoura Hospital, fourty patients underwent low or ultralow anterior resection for carcinomas located between 4-11 cm. from the anal verge. Twenty patients were randomized for restoration of continuity by stapled straight colonal anastomosis and the remaining 20 patients underwent colonic J- pouch anal anastomosis. All patients underwent a complete metastatic and oncologic workup including tissue diagnosis, From December 1994 to April 1996 in the Surgical Oncology Unit

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The surgical technique and pouch design :

In all patients colonic and rectal mobilization was according to the standerd oncolgic principle; high mesenteric vascular ligation,no touch technique with proxinal and distal rectal luminal occlusion by nylon tapes , total mesoretal excision and washout by chlorhexidine solution [4].

The proximal level of resection was at the descending colon 15- 20 cm distal to the solenic flexure; thus excluding the sigmoid colon from the pouch design in all cases. the distal level of resection was at least 2 cm (2.8-4 cm) below the lower edge of the tumor .the distal stump is closed by a right – angled non- crushing rectal clamp. An 8- cm pouch was created by folding 16 cm segmebt of the proximal end of the desceending colon upon itself, and the 2 limbs of the J- pouch are held together by seromuscular sutures(Fig. 1)

Ten pouches were designed manually through a double layer side – t – side anastomosis between both limbs of J- pouch using 3/0 synthetic absorbable sutures (Vicryl) . Then the open end of the distal limb of the pouch is closed in 2 layers . The remaining 10 pouches were designed using a 75 mm. Proximate linear staplerintroduced through two small colltomy incisions at the top of the pouch is closed using a transverse stapler.

A colotomy at the bottom of the J- pouch made by the stapler, and colonic pouch anal anastomosis was carried out manually in 8 cases using interrupted single layer end-to-end anastomosis with synthetic absorbable sutures Pouch – anal anastomosis was performed using circular end- to – end anastomosis stapler in 12 cases. A dafunctioning stoma (aloop ileostomy) was fashioned in all cases with colonic pouches to be closed 6-8 weeks after radiologic documentation of a sound anastomotic healing (Fig. 2) .

RESULTS

I-Clinical results :

(Table 1) shows patients criteria whereas (Table 2) shows operative criteria and postoperative complications . All patients were submitted to a standard clinic questionnaire concerning the sstatus of continence and the act of defecation to be answered by the patients themselves A definitive functional outcome was clearly evident between 6 months and 1 year after stoma closure, where 50% of our oatients [10] were fully continent, and 40 % had troubles in the form of minor perineal soiling necessitating wearing protactive pads, and occasional fluid incontinence (Table 6) . In 2 patients (10%) the functional outcome was not satisfactory and a permanent ileostomy was neede. A good continence is achieved within a shorter period with a colonic reservior (within 6 month after stoma closure) , versus 20 % of major incontinence in patients with straight coloanal anastomosis 1 year after surgery (Tables 6&7) . The discrimination between liqud stool, solid, stool and flatus was normal in 95% of patients with a colonic reservior (Table 8) 80% of patients with straight colonal anastomosis (Table9) .

Urgency was present in 1 patient (5%) out of 20 patients with colonic J- pouch,(Table 8) . In patients without a colonic reservior urgency was present in 45% of patients (Table 9).

The mean stool frequency per 24 hours was 2 (range 0.3-3) as shown in (Table 4) in patients with colonic reservoir, compared to 4 (range 3-6) in patients with straight coloanal anastomosis (Table 5). No patient required antidiarrheal medication in the coonic J- pouch group (Table 8), compared to 60 % of patients with no reservior (12 patients) in (Table 9). In patients with colonic reseroir, 2 patients (10%) reported the sensation of incomplete evacuation and use rectal suppositories or enemata to assist evacuation at 1 year postoperatively.

II- Functional results: (Table 3)

Anal manometry was carried out in patients both before surgery and postoperatively after stoma closure, starting at 1 month, 3 month, 6 months, 9 months, 12 months till 24 months. Both the maximum resting anal pressure and maximum aqueeze anal pressure are measured. The pouch sphincteric inhibility reflex, pouch capacity and dispensability were also tested. Manometric studies (in all 40 patients) showed that the maximum resting and squeeze anal presure are comparable in patients with strsight coloanal anastomosis and with a constructed colonic J- pouch. The maximum tolerated volume of the pouch was nearly semilar to the intact rectum (228 Vs 230 ml). The healthy rectum being more compliant . (normal rectal compliance; 4.5 mi/cm H2O, versus pouch compliance ; 3 mi/ cm H2O).

However after total excision of the rectum, the compliance of the straight colon is much reduced (1.9 mi/ cm H2O). The pouch sphincteric inhibitory reflex was positive in 15 patients with colonic reservoirs, and in 12 patients with straight colcanal anastomisi and tends to

improve in both groups, with time, to reach a miximum at 1 year after stoma closure. There was no significant between the reservoir and non- reservoir group in the recovery of both resting and sqyeeze qnal pressure, through the 28 months follow – up period. The sensitivity threshold value, maximum tolerated volume and dispensability are much more increased in patient with colonic reservoirs when compared to those values in patients with no reservoirs.

III- Oncologic results:

During the follow – up period (28 months), no patients developeed a local recurrence and 3 patients (2 with a colonic pouch and 1 with straight colonal anastomosis) developed multiple hepatic secondaries at 18 months and 20 months respectively (Table 2).

IV- Procedure – related complications: (Table 2)

No operative related morality occurred in our series. Partial anastmotic leakage occurred in 3 patients (2, with colonuc pouch , and 1 with straight colonal anastomosis) at 2 weeks and 4 weeks postoperatively repectively . However , non required operative intervention and all were managed conservatively .

Pelvic sepsis occurred in 2 patients (one with pouch and one with coloanal annastomosis) and was successfully managed by zepeated CT guided aspiration .

Wound infection occurred in 4 patients and was successfully managed by open drainage and systemic administration and sensitivity based antibiotics. Small bowel obstructation of culture in 4 patients in both groups (with and without pouches), 3 of them were managed conservatively, and 1 patient (with a pouch) required laparotomy and adhesolysis in 2 patients one from each group. Anastomotic stricture occurred in 3 patients with pouch anal anastomosis (in 2 of them the anastomosis was stapled), and in 2 patients with straight coloanal anastomosis . However all patients responded to gentle dilatation with no long – term incapacitating effects.

Table (1) ***: patients criteria.***

	Pouch group	*Non pouch group*
-Total number	20 patients	20 patients
-Mean age	55.4 (39-70)	54.5(40-68)
-Sex :M:F	12:8	13:7
-Mean tumor distance from the anal verge(cm).	5.6 (4-11)	5.2(4.5-10)
-Anastomotic height from the anal verge (cm)	3.6(2.5-4.5)	3.9(2.6-5)
Pathologic grade:		
GI	6	5
GII	12	13
GIII	2	2
Duke's stage :		
A	3	2
B	7	10
C	10	8

Table (2) : ***operative criteria and postoperative complication***

	Pouch group	Non pouch group
Mean operative time	140 min (120-170)	115 min (100-130)
Mean operative blood loss	480 ml (360-560)	420 ml (340-500)
Distal safety margin	2.2cm (2-4.5)	2.6 cm (2-4)
Hospital stay	20 days (12-36)	21 days (14-30)
Anastomaotic leakage	2 patients	1 patients
Pelvic sepsis	1 patients	1 patients
Wound sepsis	2 patients	2 patients
Small bowel obstruction	2 patients	2 patients
Stricture	3 patients	2 patients
Distant metasasis	2 patients	1 patients
Impotence	1 patients	1 patients

Table (3)*: Anorectal physiology before and after surgery.*

	Before surgery	*After surgery*	
		Pouch group	Non – pouch group
- Maximum resting anal pressure (cm H2O)	68.5	64	65
- Maximum squeez anal pressure (cm H2O)	185	164	160
- Threshold volume (ml)	20	26	20
- Maximum tolerated volume (ml)	230	228	185
- Physiologic length of anal canal (cm)	3.3	2.7	2.9
- Rectoanal inhibitory reflex	+ve	+ve in 15 patients	+ve in 12 patients

Table (4): *postoperative frequency of defecation in the pouch group (n –20)*

Postoperative time	*Frequency / 24 hours*	
	Mean	Range
1st. month	2.8	0.4-8
3rd. month	2.6	0.3-7
6th. Month	2.4	0.3-7
12th. Month	2.1	0.3-6
2nd. Year	2	0.3-3

Table (5) :*postoperative frequency of dfefcation in the non - pouch group (n –20)*

Postoperative time	*Frequency / 24 hours*	
	Mean	Range
1st. month	5	4-10
3rd. month	4	3-8
6th. Month	4	3-8
12th. Month	4	3-8
2nd. Year	4	3-6

Table (6): *degree of continence through the period of follow – up in the pouch group (n= 20)*

Degree of continence	*Time*				
	1 month	3 month	6 month	1 year	2 year
- Perfect continence	8	8	10	10	10
- Minor soiling	10	10	8	8	8
- Major soiling	2	2	2	2	2

Table (7): *degree of continence through the period of follow – up in the non- pouch group (n= 20)*

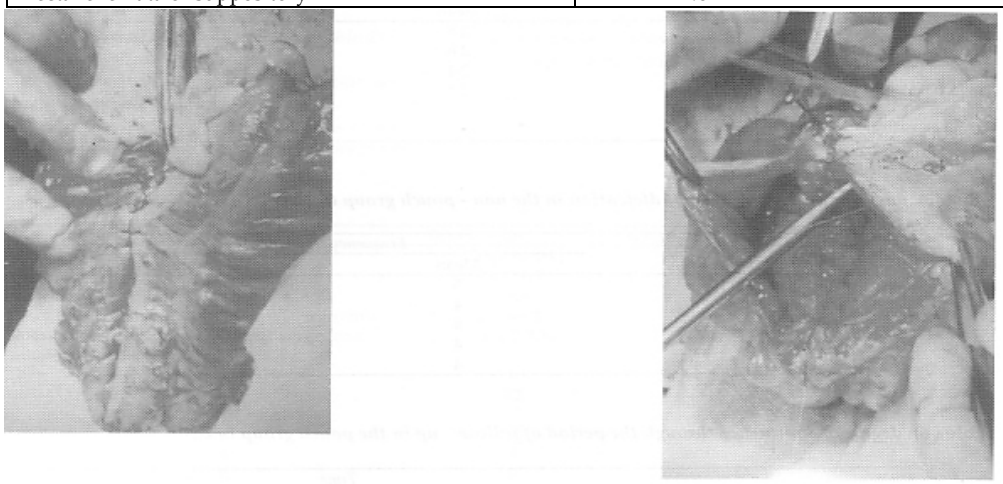
Degree of continence	*Time*				
	1 month	3 month	6 month	1 year	2 year
- Perfect continence	7	7	7	8	8
- Minor soiling	9	9	9	8	8
- Major soiling	4	4	4	4	4

Table (8): ***The act of defecation in patients with colonic J. pouch at 1 year postoperative***

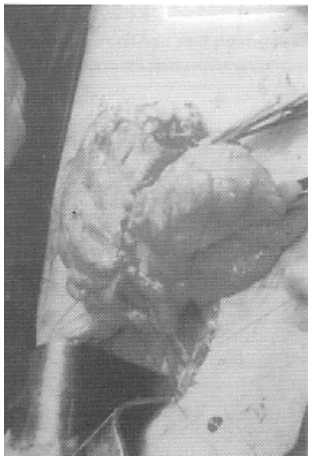
Discrimination of gas from stool	Good, 16 patients Fair, 3 patients Absent , 1 patients
Perception of the need to defecate	Normal : 18 patients Absent :2 patients
Urgency	1 patients
Spontaneous evacuation	15 patients
Use of antidiarreal medication	non
Use of rectal enemata or suppostory	5 patients

Table (9) : ***The act of defection in patients without pouch at 1 year postoperative***

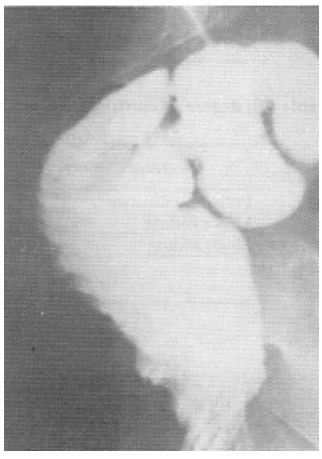
Discrimination of gas from stool	Good, 8 patients Fair, 8 patients Absent , 4 patients
Perception of the need to defecate	Normal : 8 patients Absent : 12 patients
Urgency	Present in 9 patients
Spontaneous evacuation	10 patients
Use of antidiarreal medication	12 patients
Rectal enemata or suppository	Non



(Fig 1 A,B): Creation of Colonic J-Pouch



(Fig 1): Creation of Colonic J-Pouch



(Fig 2): Three months Postoperative Pouchogram

DISCUSSION

There is little doubt about the excellent early functional outcome obtained after colonic pouch anal anastomosis , and the improvement in the functionl outcome at 2 years following complete rectal excission with colonic J pouch – anal anastomosis has beeen frequently reported [5].

The continued improvement of function after colonic pouch anal anastomosis is the consequence of both the recovery of anal sphincteric function and the increasse in the capacity of neroectal reservoir [6].

In our study we intended to compare the long – term results (with a 28 month follow – up) between colonic j. pouch anal anastomosis and straight coloanol anastomosis. Our results indicate that the functional results obtained after colonic pouch anal anastomosis better and appears than those obtained after straight coloanal anastomis. These function are still maintained at than 2 years.

Many functionl disorded after complete rectal excision results from loss of the reservior function, and in accordance with the receent radomized trials, our obtained functional results appesred superior in patients with constucted colonic pouches, wich manifested mainly in the form of reduction of stool frequency / 24 hours, good continence, ability to defer defecation and abseence of urgency.

In our patients the mean number of bowel motiions per day was 2 (range 0.3-3) which is lower than that reported by Berger et al [7] who reported or more bowel motions / day. This frequency of defecation was semilar to that reported by Ortz et al.[8]. Two of our patients with colonic reservior required small enemata or suppositories to assist evacuation of the reservior , and this is still reported by these patients at 1.5 years . Semilar results were reportew by Paty et al [2], who reported the indidence of incomplete rectal evacuation in 20 % of their patients. Parc and cowokers of two with absence of urgency and a satisfactory continence in 96% of patients.

Lazorthes et al [1] demostrated an improved functional outcome with a significant correlation between the volume of nerorectum and the frequency of defecation. Semiliar results were reported by Nicholls et al.,[9], who reporteed that normal continence was achieved in 70% of patients and a mean stool frequency of 1.4 / day (0.5-2/ day) in these patients with a constructed pouch .

Nakahara et al.[10] reported disappointing functiosl results after straight coloanal anastomosis or low col- rectal anastomosis, with distressing feacal soiling . Urgency and a mean stool frequency of 2.3 / day (3- 10 / day) at one year after surgery.

In more than 50 % of his patients semilar results were obtained by lewis et al[11] who reported major fecal leakage in 8 out of 11 patients at 11 months after straight colo – anal anastomosis with a mean bowel frequency of 4 /24 hours (range 2- 8). Our clinical and physiological results support the better functional outcome obtained after colonic J pouch – anal anastomosis , that is frequency reported by these different series. Sphincter saving resection for rectal cancer has become widely accepted as an oncol ogically safe operation [3].

In our patients, on isolated local recurrence was detected at a follow – up of 28 months, although 3 patients developed multiple hepatic secondaries at 18 months. Berger et al.[7] reported an isolated rate of local recurrence after low anterior resection for mid and low rectal carcinoma to be of 6 %, which is still amenable to salvage by abdomimoperineal resection .

This could be explained by the oncologic adequency of the technique in pouch construction in which all the rectum and mesorectum are removed as in abdomioperineal resection . The total excision of he mesorectum , which is the clue to pelvic recurrene is of crucial importance[12].

CONCLUSION :

Colonic J- pouch anal anastomosis an oncological safe procedure and an optimum means of reconstruction after rectal excision for adenocarinoma of the low and mid rectum, if a distal safety margin of at least 2 cm could be ascertained. The superior long – term functionl outcome after colonic - pouch anal anastomsis could be achieved and maintained.

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