

مجلة الجراحة المصرية

The Egyptian Journal of Surgery



Vol. (18), No. (1), Feb. 1999

مجلة الجراحة المصرية

المجلة الرسمية لجمعية الجراحين المصرية

DAR EL-HEKMA 42, KASR EL-AENI STR., CAIRO - EGYPT.

# TOTAL MESORECTAL EXCISION VERSUS SUBTOTAL MESORECTAL EXCISION IN MANAGEMENT OF CANCER RECTUM

By

Shams N., M.D., Abd El-Halim I., M.D. and El-Dosoky, M.D.

Department of Surgical Oncology, Radiotherapy and Pathology,  
Mansoura University

## ABSTRACT

Total mesorectal excision (TME) appeared to be associated with a reduced local recurrence rate and distant metastasis with increased disease free survival, which is the golden rule for success of rectal cancer surgery. Of 78 patients with rectal cancer of the middle and lower third, 42 patients with potentially curative rectal cancer had TME done with low anterior resection (18) or abdominoperineal excision (24). Local mesorectal spread was found in 7 patients. Those tumours in the mesorectum had a worse outcome at 3-years follow up, a greater risk and an increased frequency of distant metastasis. This study compare patients who were subjected to TME and subtotal mesorectal excision to show a decrease in local recurrence and increase of cumulative survival percent in those patients. Anastomotic leakage and low anterior resection syndrome were more with TME but the urine retention and sexual dysfunction were more with subtotal mesorectal excision (STME). So TME is the new golden standard for surgery for rectal cancer.

## INTRODUCTION

The mesorectum can be considered as an integral visceral mesentery of the hind-gut. It is surrounded by a layer of fascia dorsally separated from the presacral fascia (Waldeyer's fascia) and extended from the aortic bifurcation and distal border of the mobile mesosigmoid till the anorectal junction. Anteriorly below the peritoneal reflection is Denonvillier's fascia, which in the male is related to the seminal vesicles and the prostate, in the female, there is an areolar tissue between the anterior wall of the rectum and the posterior wall of the vagina. Laterally on each side the nerve plexuses lie on the piriform muscles and then down to the coccygeus and levator muscles. At the level of S4, the mesorectal and Waldeyer fascia fuse, and condense to the rectosacral ligament and anococcygeal raphe causes the characteristic bilobed appearance of the Mesorectum<sup>(1)</sup>

Meticulous, precise, sharp dissection with scissors and/or diathermy under direct vision

following the avascular plane between the visceral and parietal layers of the pelvic fascia allows a specimen oriented operation with an intact bi-lobed mesorectum avoiding any tearing or disruption of lymph vessels and nodes. Thus it is possible to excise the mesorectum intact and leave a tube, of rectal muscles for anastomosis 3-5 cm from the anal verge. The concept of total mesorectal excision has been associated with construction of ultra low colorectal or coloanal anastomosis omitting a permanent stoma as in abdominoperineal resection or Hartman's procedure leaving anal stump. Total mesorectal excision must be differentiated from the so called subtotal mesorectal excision which need only to remove the mesorectum to level 5 cm below the lower edge of the tumor rather than anatomical mesorectum or incomplete lateral dissections. Why total mesorectal excision?: Local growth of rectal cancer occurs more in the transverse rather than longitudinal axis of the rectum due to intramural spread<sup>(2)</sup>. Distal spread of aggressive disease is associated with bad

prognosis<sup>(3)</sup> Spread of rectal cancer occurred not only upward but also distal within the mesorectum<sup>(4)</sup> TME improves the quality of rectal cancer surgery with potential increase in 5-years survival to 75% and decrease in local recurrence-rate so it is an ideal method to obtain lateral mesorectal clearance.

## PATIENTS AND METHODS

TME was performed in 42 patients with potentially curative resection for carcinoma of the rectum and STME was performed in 36 patients. These patients were defined clinically as having a tumor in the middle and lower 1/3 rectum. 48 patients underwent ultra low and low anterior resection using stapler or a hand-sewn anastomosis and 30 subjected for abdominoperineal resection. Each specimen was sent for pathological examination for staging and for mesorectum spread below the tumor margin and also the lymph nodes. These patients were followed up for 3 years for local recurrence: anastomotic, pelvic, distant metastasis and postoperative sequelae.

## RESULTS

The distribution of the studied patients according to Dukes staging is shown in table (1). There was no significant difference between the TME and STME groups as regard as Dukes staging.

7 of 42 tumors in the TME group showed distal spread without involvement of the distal surgical resection margin. The characteristics of these 7 tumors are summarized in table 2. Five showed involvements less than 3 cm and 2 cases more than 3 cm below the tumor mass. The most extensive distal infiltration was seen in 6 cases of Dukes C and also of grade II and III of infiltrative type. Of these seven cases, two developed local recurrence (2/4 of local recurrence after TME) and 2 have distant metastasis (2/2 of distant metastasis after TME as shown in table 3.

The mesorectal deposits were commonly associated with intramural spread and more with Dukes C and high-grade rectal carcinoma (7/42). The local recurrence rate is the most important indicator of surgical quality in rectal cancer. Of 72 patients entered into the study, eleven patients developed local recurrence within the first 3 years follow up. Of these 4 belonged to the TME group (42) and 7 belonged to the STME (36). Six developed pelvic recurrence and five developed suture line recurrence. Distant metastasis developed in 7 patients; 2 in the TME group (4.8%) and 5 in the STME group (14%). 4.8% of patients in whom TME was done and 5.5% of patients whom STME was done developed both local and distal metastasis as shown in table (3).

Anastomotic leak was observed in 16% of cases in the TME group versus 3.3% in the STME group (figure 1). Low anterior resection syndrome in the form of urgency, frequent bowel movement and sometimes faecal incontinence occurred more in the TME group (16.6%) but these are correctable by time. We have start doing J pouch to avoid these complications. Urine retention and sexual dysfunction were noticed more in the STME group (8.3%) due to non-anatomical dissection in which the presacral and autonomic nerves not identified properly (table 4).

## DISCUSSION

In this study the intramural and extramural spread was found in 7/42 of pathological specimens from the TME group (16.6%). Distal intramural spread occurred in 12% of anterior resection specimens whereas<sup>(2)</sup>. Isolated tumor deposits in the mesorectum were found up to 31% of patients undergo total mesorectal excision in other centers. Local recurrence defined as any detectable local disease of follow up, occurring either alone or in conjunction with distant recurrence. In orthodox anterior resection much of the mesorectal tissue remain in the pelvis and it is suggested that these foci of lymphatic spread lead to suture line or pelvic recurrence<sup>(4)</sup>.

**Table (1): Distribution of the studied patients according to Dukes Stages**

	A		B		C	
	No.	%	No.	%	No.	%
TME (42)	12	28.5	21	50	9	21.5
STME (36)	11	30.5	18	50	7	19.5
P	>0.05		>0.05		>0.05	

**Table (2): The pattern of distal intramural and extramural spread in TME (42):**

No. of patients		Dukes			Grades			Distal spread													
Anterior resection	Abdominoperineal	B	C1	C2	G1	G2	G3	<1cm		1-3cm		>3cm									
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%						
4	9.5	3	7.1	1	2.3	3	7.1	3	7.1	1	2.3	2	4.7	4	9.5	3	7.1	2	4.7	2	4.7

**Table (3): Outcome after 3 years**

	TME (42)		STME (36)		P
	No	%	No.	%	
local recurrence	4	9.5	7	19.4	>0.05
Pelvic	3	7.1	3	8.3	>0.05
Suture line	1	2.4	4	11.1	>0.05
Distal metastasis	2	4.8	5	13.9	>0.05
Both	2	4.8	2	5.5	>0.05
<i>Total</i>	4	9.5	10	27.8	<0.05

**Table (4): postoperative complications.**

	TME (42)			STME (38)		
	Patients	No.	%	Patients	No.	%
Low ant. Resection syndrome	18	3	16.6	30	1	3.3
Urine retention	42	1	2.4	36	3	8.3
Sexual dysfunction	42	1	2.4	36	3	8.3

We consider that a 3-years follow up has some validity in the assessment of locally recurrent disease because 80-90% of local recurrence present.

Within 2 years (7-8) the incidence of local recurrence varies from 4%<sup>(5)</sup> to 43.3% just by various definitions of local recurrence<sup>(10)</sup>.

Our findings seem somewhat at variance with this discrepancy in the result but what is important to us is the difference between both local recurrence and distant spread in both groups to clarify the significant results between TME and STME. As regard the cumulative free survival percent after 36 months which showed marked improvement in patient in whom TME was done. Anastmotic leakage reaches to 16.6% after pelvic emptying because the vascular tissues has been peeled out with the specimen 13% anastmotic leak for anastmosis below 6 cm from the anal verge was observed<sup>(4)</sup>. Substantial risk for healing dehiscence of 10-20% if a traditional end to end anastmosis is done<sup>(11,12,13)</sup>. Currently the most logical procedure is therefore to use a colonic J-pouch which has been shown to reduce the frequency of anastmotic leakage and implies an acceptable anorectal function<sup>(14,15)</sup>.

TME has low incidence of urine retention and sexual dysfunction as meticulous and anatomic dissection is properly done sparing the autonomic and presacral nerves.

### CONCLUSIONS

It is precisely known from the consideration of surgical technique, the plane around the mesorectum is a vascular and it is surgically possible to encompass it without undue difficulty. It lead to a clean muscle tube, the pelvic fascia and autonomic nerves can often be preserved outside it and a small anorectal remnant can be retained to provide a reasonable function.

### REFERENCES

1. Sjodahl R.: Total mesorectal excision. Presentation to 8th world congress of the international gastrosurgical club, Strasbourg, France 15-18 April 1998.
2. Grinnel R.S.: Distal intramural spread of carcinoma of the rectum and rectosigmoid. *Surg. Gynecol. Obstet.* 1954, 99, 421-430.
3. Williams N.S., Dixon M.F., Johnson D. Reappraisal of 5 centimeter rule of distal excision for carcinoma of the rectum: a study of distal intramural spread and of patient's survival. *Br.J.Surg.* 1983, 70,150-154.
4. Heald R.J., Husband E.M., Ryall R.D.H.: The mesorectum in rectal cancer surgery-the clue to pelvic recurrence? *Br.J.Surg.* 1983, 69, 613-616.
5. Quer E.A., Dahlm D.C., Mayo C.W.: Retrograde intramural spread of carcinoma of the rectum and rectosigmoid. *Surg. Gynecol. Obstet.* 1953, 96,24-30.
6. Loyce W P., Dolan J. and Hyland J.: The mesorectum: re-appraisal of its morphology and its unique importance in rectal cancer. *Int.J.Colorectal.Dis.* 1993, 8:235.
7. Tyndal E.C., Docheny M .B. and Waughj.M. : Pelvic recurrence of cancer rectum.*Surg. Gynecol. Obstet.* 1964,118:47-51.
8. Morson B.C., Vaughan E.G. and Bussery H J.R.: Pelvic recurrence after excision of the rectum for carcinoma.*Br.Med.J.* 1963, 2,13-18.
9. Mac Farlane J .K., Ryall R .D H. and Heald R .J. Mesorectal excision for rectal cancer. *Lancet* 1963, 341: 457-60.

10. Marsh P.J., James R.D. and Schofield P.F.: Definition of local recurrence after surgery for rectal carcinoma. *Br.J.Surg.* 1995, 82,465-468.
11. Koranjia N.D., Corder AP., Holdsworth P.J., and Heald R.J.: Risk of peritonitis and fatal septicemia and the need to defunction the low anastomosis. *Eur. J. Surg.* 1991,160, 293-297.
12. Pakkasite T.E., Luukkonen P.E. and Jarvinen H.J.: Anastmotic leakage after anterior resection of rectum. *Eur. J. Surg.* 1994,133, 220-238
13. Atkin R: Mesorectal excision for rectal cancer. *Br. J. Surg.* 1996, 83, 214-216.
14. Berger A., Turet E. and Parc R.: Excision of the rectum with colonic J-pouch anastmosis for adenocarcinoma of the low and mid rectum. *World J. Surg.* 1992,16, 470-477.
15. Cohen A.M: Colon J-pouch rectal reconstruction after total or subtotal proctectomy. *World J. Surg.* 1993,17, 267-270.

Final

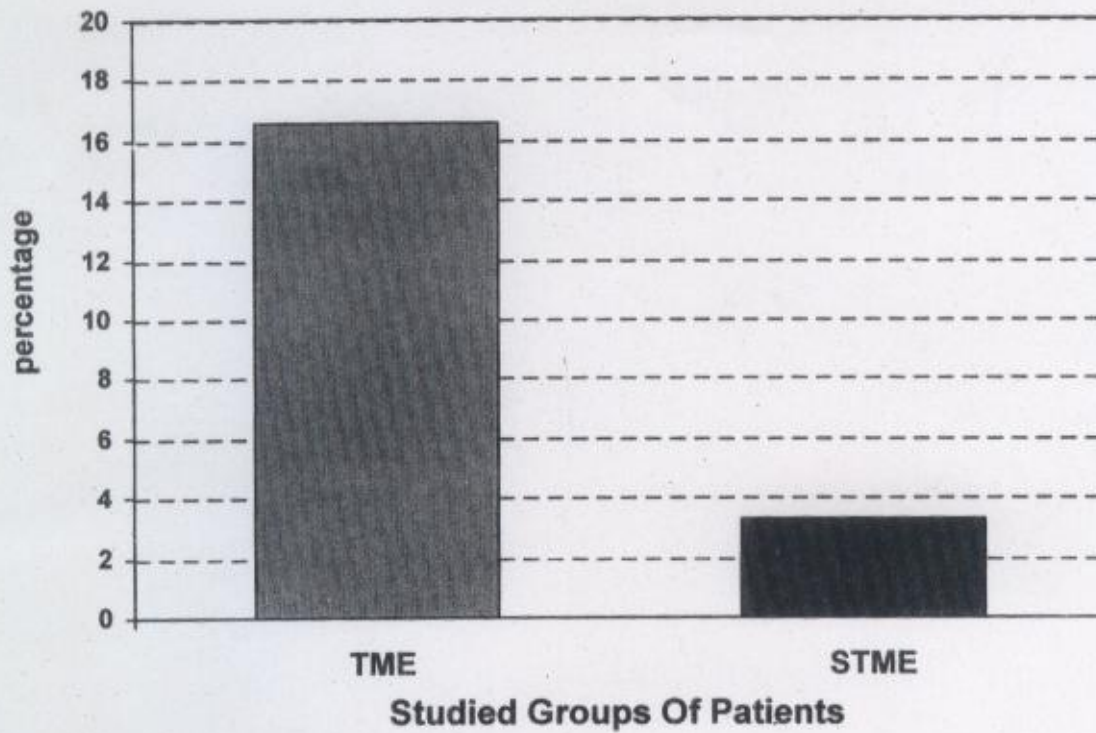


Fig. (1): Anastomotic leakage among the studied groups of patients.

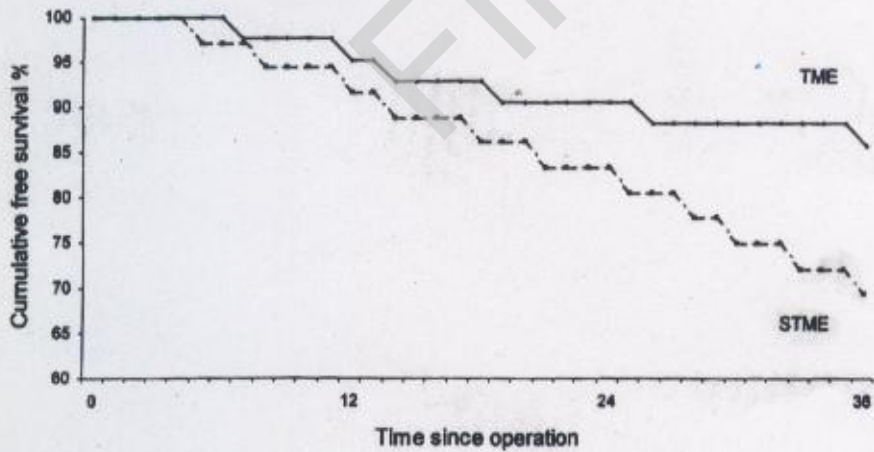


Fig. (2): The cumulative free survival % showed marked difference between the 2 groups as shown in figure 2.