THE OPERATIVE TREATMENT OF CARCINOMA RECTI

E. Enchev¹, G. Minkov², D. Petrov³, Y. Yovchev²

¹Medical student, Medical Faculty, Trakia University, Stara Zagora, Bulgaria
²Department of Surgery, MHAT “Prof. Stoyan Kirkovich”AC, Stara Zagora, Bulgaria
³Department of Social Medicine and Healthcare Management, Medical Faculty, Trakia University, Stara Zagora, Bulgaria

ABSTRACT

PURPOSE Review of pathological anatomy of the carcinoma recti in its relation to the nature of the operation necessary for removal of the growth in early XXth century.

METHODS We searched BRITISH MEDICAL JOURNAL (1910) using the medical subject headings “carcinoma recti” and “operative treatment”.

CONCLUSION Rectal cancer rate of malignancy in elder patients is not high. The prognosis is better in high growths than in low ones, so in low growths no attempt must be made to save the anal canal or sphincters. The patient with rectal cancer has 4/5 chances of recovering from operation, and caught fairly early quite a good chance of surviving some years without recurrence. The combined abdomino-perineal operation was first introduced as the ideal radical operation for rectal cancer as fulfilling all the requirements of cancer surgery.

Key words: abdomino-perineal, operation, growth, upper rectum, lower colon

INTRODUCTION

"Rectal cancer, except in young subjects, does not possess a high rate of malignancy. It is much less than that of the tongue, breast, or stomach, largely because the rectum is a "self-contained" viscus. Its mucous membrane is enclosed by muscular walls of some thickness, and it is further isolated by the strong fascia propria, one of the visceral layers of the pelvic fascia. Very extensive cancerous ulceration of the rectum frequently exists without this fascia being invaded or transgressed. At its lower end where it joins the anal canal this isolation ceases, owing to the insertion of the levators, and lymphatic communication is here much freer along the intersecting muscular fibres. Hence cancer at the lower end of the rectum infiltrates the surrounding tissues more quickly, and is more likely to recur after removal, however freely this may be done. The prognosis is better in high growths than in low ones. So in low growths no attempt must be made to save the anal canal or sphincters. To save the anus may be desirable enough from the point of view of the subsequent comfort of the patient, but it must not be allowed to endanger his safety, and should not be done if the lower edge of the growth is within 3 inches of the anus.

The arrangement of the lymphatics also helps to prevent or to delay widespread lymphatic invasion. After a very short course the primary lymph vessels end in a compact group of presacral glands, and from these a definite narrow track leads upwards to the abdomen. Rectal cancer spreads chiefly by local infiltration of the muscular and fatty tissues immediately subjacent to the growth. Sections of all the glands from a series of rectal growths would prove that glandular invasion is not widespread in the stage early enough to be operable. Patients die either from local recurrence in the tissues around the scar or from metastasis in the liver. Emboli of cancer cells escaping from the primary growth pass much more readily into the venous blood stream than by the lymph path. The radical scientific operation for rectal cancer demands not only the removal of the rectum and the

*Correspondence to: Emil Enchev, Faculty of Medicine, Trakia University, Stara Zagora, Bulgaria, 11 Armeiska str, e-mail: emil_19_89@abv.bg
presacral fat and glands, but also the pelvic colon with its mesocolon and the secondary glands about its line of attachment. Removal of the rectum, anatomically complete, together with the lowest portion of the mesocolon, is as likely to prove satisfactory as when the more extensive dissection is carried out. The removal of the whole pelvic mesocolon is not necessary. This structure has a V-shaped attachment, the upper limb of which passes horizontally along the left lateral wall of the pelvic brim, over the iliac vessels inwards to the middle line to the sacral promontory. The attachment then turns vertically downwards along the front of the sacrum as far as its third segment, constituting the lower limb of the V. It is this portion which contains the emissary lymphatics of the rectum, and these, at the apex of the V, continue upwards into the retro-peritoneal tissue of the posterior abdominal wall around the bifurcation of the aorta, where complete removal is impracticable. The upper portion of the mesocolon does not contain the rectal lymphatics, and the good results following its complete removal would appear to be due rather to the absence of invasion than to more radical extirpation attained thereby. The rectal growth tends to spread round the circumference of the gut, rather than upwards or downwards to any great extent. In low cases the anal canal and skin of the anus occasionally become involved. Unlike rectum proper, ulceration of the anal canal is likely to be quickly followed by glandular infection. Of greater importance is the rone above the upper edge of the growth, and it is essential that a wide margin of apparently healthy tissue above the growth should be removed. This means that never less than 8 in., and in many cases 12 or 14 in., of bowel must be excised.

Secondary nodules or ulcers in the submucous area above the primary growth are rare. This is noteworthy in view of certain investigations published by Mr. Sampson Handley in his Hunterian Lectures. A continuous microscopic section of bowel way for 5 in. above a rectal cancer, normal in appearance to the naked eye, showed in the submucous lymph plexus small collections of cells, taking on a muci-carmine stain, distributed at fairly regular intervals along the whole of the 5-in. section. Mr. Handley pronounces these to be cancer cells, but thinks they have undergone mucoid degeneration, and that "permeation of the mucous plexus as a factor in dissemination is probably limited in effectiveness by the habitual early degeneration of the cancer cells in this situation." Further investigation on this point is needed; Mr. Handley concludes:

1) That in the muscular and peritoneal coats (where the active non-degenerated cancer cells are found) cancer invasion does not extend far from the primary growth, and (2) that effective dissemination probably as a rule occurs through the mesorectum or perirectal tissue opposite the primary growth, and this is the tissue which requires most careful removal.

W. J. Mayo in a review of 120 operations for rectal cancer, says:

"In our experience inoperable conditions as a rule have been due to local extension rather than to lymphatic metastasis" . . . Hartwell collected records of 50 patients operated on by seventeen New York surgeons, and found that local return was the rule in all cases that were not cured. The whole of the evidence obtainable from the study of the natural history of rectal cancer demonstrates that in operating upon it the freest possible local removal is essential, and that the local removal of a small growth or partial resection of the rectum with end-to-end suture is mischievous, and ought not to be undertaken.

**DIAGNOSIS**

Excluding ulcers and stricture of the rectum due to syphilis or gonorrhoea, ulcerative conditions of the upper rectum or lower colon easily can be mistaken for carcinoma. A chronic simple ulcer, with thickened base and enlarged glands, very similar to the ulcer of the pylorus, is so difficult to distinguish from cancer.

In spite of the innocence of the ulcer the excision is necessary. In the other variety of ulcer the edges project to such an extent that they may be described as polypoidal or hypertrophic. The ulcers are irregular in shape, generally multiple, and are situated in the higher rectum and lower colon. The sigmoidoscope is the best help in the diagnosis of cases of obscure haemorrhage from or too frequent action of the bowels with increased mucous secretion, where, nothing can be felt per rectum by the finger. Unfortunately it only too often happens that medical treatment is employed ineffectually for some months before sigmoidoscopic examination is suggested, and thus the invaluable opportunity of detecting an early carcinoma of the colon is allowed to slip away. The importance of a prompt digital examination of the rectum cannot be too strongly insisted on. Over 50% of cases of rectal cancer
that come for examination are beyond removal. This lamentable state of affairs is due partly to the insidiousness of the onset and the absence of symptoms in the early stages, partly to lack of observation on the patient's part and his failure to seek advice, but also, in part, to failure of diagnosis because no digital examination has been made.

SELECTION OF CASES FOR OPERATION
A growth that is limited to the rectum, at whatever part it may be situated and however high it may extend along the course of the bowel, may be removed by one of the various methods of operation. Extension beyond the rectum to surrounding parts, as shown by fixity of the growth to the sacrum on the one hand or to the bladder, vagina, or uterus on the other, constitutes a contraindication to any attempt at a radical operation as a rule, but the degree of adhesion may be most difficult to estimate, and in doubtful cases the patient may himself choose to undergo an operation which may perhaps be attended by unusual risk as long as there remains a fair chance of obtaining relief of symptoms and prolongation of life, although the chances of a permanent cure may seem to be poor. An examination of the rectum under an anesthetic is always necessary, without it appear to be quite fixed (and therefore inoperable) will be found to be much less so when the tissues are relaxed and the growth can be freely manipulated and, the true amount of mobility determined. In many doubtful cases also, especially high growths, much is to be gained by an abdominal incision with the patient in the Trendelenburg position. The state of the pelvis and the upper limits of the growth can be definitely ascertained, also the condition of the lumbar glands, and, above all, the presence or absence of metastasis in the liver. This is the strongest argument in favor of the abdominoperineal operation. A growth, the base of which is firmly adherent to the sacrum, ought not to be removed, but partial or very limited adhesion need not contraindicate operation. Growths on the anterior wall which have become adherent to the prostate ought to be left alone. This is the most unfavorable position for a growth, and quite small ones may for this reason prove beyond removal. A growth above the prostate on the anterior wall is more favorable, where it is a question of implication of the rectovesicle pouch of peritoneum. The general condition of the patient is very important at or beyond middle age. Operation should be advised if there is any possibility of removing the growth, however bad it may appear. Of course it means sacrificing statistics, for most of the fatalities have been after operations in such bad cases, but there is no greater hindrance to progress than a too careful eye on statistics.

PROGNOSIS AFTER OPERATION, IMMEDIATE AND REMOTE
A substantial death-rate is inevitable in an operation of such magnitude as excision of the rectum, undertaken in patients no longer young, who are often weak and wasted, in a part which cannot be kept absolutely aseptic and where therefore there is a facility for shock, haemorrhage, cellulitis, and peritonitis. If the patient with rectal cancer submits to operation, he has four chances out of five of recovering from it, and, if he is caught fairly early, quite a good chance of surviving some years without recurrence.

METHOD OF OPERATION
The combined abdomino-perineal operation was first introduced as the ideal radical operation for rectal cancer as fulfilling all the requirements of cancer surgery - the widest possible removal of the organ containing the growth, together with the complete lymphatic track leading therefrom and the primary and secondary groups of lymph glands. Some conclusions:

1. Extension of the growth is chiefly by local infiltration, not by lymphatic metastasis.
2. Lymphatic invasion once spread above the sacrum would not be likely to be eradicated by removal of the pelvic mesocolon.
3. The operation involves a greater risk, especially in men, where the narrow pelvis, often along with much fatty tissue, makes its performance more difficult. Men do not stand the shock as well as women.
4. In ampullary rectal cancer the operation by the perineal route gives complete removal of the rectum and perirectal tissue. Also by it 12 inches of bowel at least can be removed, and it therefore satisfies all reasonable requirements. The combined operation as the routine method in cases of rectal cancer is not justifiable. It ought to be done in growths situated in the lower pelvic colon and at the junction with the rectum, and, as an exploratory measure in the first place, in growths lower down where long duration renders it probable that metastasis in liver or in retroperitoneal tissues has occurred, or where from the great extent of the growth its removal is doubtful.
The two-stage method is useful in some cases where the patient's general state or the local conditions would make the complete operation at one sitting too dangerous.

THE OPERATION FROM BELOW
All the earlier operations were done by the sacral route—essentially the Kraske operation. The sacral incision, opening up the left sacro-sciatic foramen, gives an excellent view of the back of the rectum up to a certain point, but the patient is in the exaggerated lithotomy position and a mesial incision in the perineum that:
1. A better view of the upper part of the pelvis, as far as the sacral promontory, can be got. This facilitates a higher division of the fat and tissues in the mesocolon, and though the Kraske operations resulted in 50% of so-called cures.
2. The freeing of the pelvic colon is rendered easier. Thus the new anus can be kept in the normal position, and experience shows this to be better than the sacral or gluteal anus. The sacral anus, situated directly below the prominent ridge of the lower border of the sacrum, which stands out more after the coccyx has been removed, is on a depressed and uneven surface, and is difficult to manage afterwards. Being in a rigid position, where it cannot retract between the folds of the buttock, it is also more liable to accidental leakage if the feces are soft or fluid.
3. Separation from the prostate is easier by the perineal route, and the early opening of the peritoneal cavity through the recto-vesicle pouch in front rather than higher up on the lateral walls makes the later stages easier.
4. The lateral sacral incision takes longer to heal than the perineal one. Three weeks is the average time before the patient can get about after the perineal operation, whereas the sacral method it used to require live.
5. The perineal position is preferable for the administration of the anaesthetic and the prevention of shock. The exaggerated lithotomy position means elevation of the pelvis until the perineum is horizontal. This is done partly by tilting the table, partly by a large sand pillow under the lumbar spine. To prevent the patient slipping down the sloping table, padded straps are passed over each shoulder and fastened to the leg supports at the foot of the table. The rectum is finally washed out before the pelvis is elevated. A long sausage-shaped gauze pad soaked in 1 in 500 biniodide spirit is introduced into the rectum, its end projecting some inches from the anus. A circular incision round the anus is deepened beyond the external sphincter, and the anus, thus separated, is firmly secured to the pad by a double cruciform suture of thick silk, taking a good hold on the sphincter, so that it will not tear away even if some traction is made on the pad. This is, of course, where the anus is to be sacrificed. In some cases the sphincter is preserved, splitting it by a mesial incision fore and aft of the anus, and then dividing the upper end of the anal canal. In cases in which the anus is thus saved the reunited sphincter regains some power, but not sufficient to make the anus quite efficient. Its voluntary grip grasps quite perceptibly the examining finger, but can’t close the anus completely. In these cases, also, a projecting sharp-edged septum is apt to form above the anus at the line of suture of the pelvic colon with the anal canal, which rather tends to contract the orifice. The anus with the sphincter preserved is not greatly better than the perineal anus where it has been removed, and, saving of the anus is dangerous except in high growths. The mesial incision is carried back to the lower part of the sacrum and the coccyx is removed. The mesial raphe formed by the junction of the levatores ani between the anus and the coccyx is divided, and the finger is passed round the rectum on each side above the levators, which are divided by scissors well outside their insertion into the rectal wall. In growths impinging on the anal canal the levators should be divided further away still nears their origin from the white line of the pelvic fascia, and it is also wise to remove some of the ischio-rectal fat surrounding the sphincters. The rectal fascia immediately deeper than the levators is next divided. It has a very definite horizontal attachment to the front of the sacrum at the level of the third or fourth segment.

The fascia holds the rectum in position, and until it is divided the rectum does not begin to come down at all. The fat and tissue should be clear rapidly with the fingers as far up as the promontory. A swab is inserted to check the oozing and the separation of the rectum from the prostate. The finger is the best dissector. A metal staff should be inserted in the urethra as a guide. The peritoneum is opened through the recto-vesicle pouch, and its lateral reflections on to the rectum divided with scissors. The lateral connexions of the rectum are then gradually separated with the finger. In doing this the superior haemorrhoidal artery is isolated and clamped, and the large lymphatic vessels passing up over the pelvic brim may be defined. This separation is through the lower part of the
mesocolon, and results in the freeing of the long loop of the pelvic colon, which then comes down readily, and the rectum will now be found to hang free, well beyond the skin level. This freeing of the colon is imperative for the success of the operation, for otherwise its cut end cannot be united to the skin around the anus without tension. The use of the finger in dissecting out the rectum and tearing through the mesocolon at the upper limit of the wound enables one to pass more easily along the fascial planes, which are the true anatomical boundaries of the viscus, and thus ensure its being removed completely, with the perirectal tissue and lymphatics intact. Other advantages are the division of the lymph trunks at a higher level, and the avoidance of bleeding. After the rectum is cut off and removed the divided peritoneum must be sutured to make a new pelvic floor, and it should be stitched to the front of the colon at the proper level, so as to prevent adhesion of the small intestine, which will subsequently occupy the pelvis. Silkworm-gut sutures, passing deeply, are introduced along the line of incision but not tied. The cut end of the colon is then sutured to the skin on each side of the former anus by a continuous silk suture, taking a good hold of the bowel wall, but not drawn too tightly. The anal circle of sutures is completed in front and behind after the silkworm-gut sutures have been tied. If the sphincter has been preserved its ends must be carefully sutured, in front and behind the anus, by buried catgut stitches. A large drainage tube is inserted posteriorly, passing to the hollow of the sacrum, and a second smaller tube into the perineum in front of the anus. The amount of shock after the operation varies greatly, and is sometimes astonishingly small. The elevation of the pelvis and legs in this method certainly helps to diminish the shock, and constitutes one of its greatest advantages. The disadvantages of the artificial anus, wherever it may be situated, can be very largely mitigated by careful management. The chief care must be not to let the bowels become loose, and this can be done by attention to diet. A tumbler of hot water, alone or with salines, taken on waking ensures emptying of the colon within an hour before the patient dresses. After cleansing, a T-bandage with a pad is put on and worn through the day. Some patients have no further movement of the bowels till next morning; others have a second evacuation after the evening meal, necessitating a second dressing. But, unless the faeces are allowed to become fluid, no inconvenience occurs, and the patient can go on doing his work and enjoying life.

REFERENCES
4. Quoted by Jacobson. loc. cit.