Abdominoperineal resection of the rectum for carcinoma at Groote Schuur Hospital, Cape Town, 1971-1982

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Summary
Abdominoperineal excision of the rectum remains the accepted treatment for the majority of lower rectal adenocarcinomas. Despite advances in surgery and anaesthesia, survival has not improved over the last 40 years. Over a 12-year period the overall 5-year survival rate for patients undergoing abdominoperineal excision for adenocarcinoma of the rectum at Groote Schuur Hospital, Cape Town, was 39%. The incidence of complications associated with the operation remains high (36%). The major causes of morbidity still originate in the urinary tract and the perineal wound. Further techniques which may improve the overall survival are briefly reviewed.

Carcinoma of the large bowel is now the commonest malignant gastrointestinal lesion. Although approximately 75% of patients with large-bowel cancer will die of their disease, clinicians commonly regard the prospects of cure as good. Mortality rates have not improved over many decades despite improvements in operative and anaesthetic techniques, and survival is directly related to the extent of the disease. Recent advances such as faecal occult blood testing and colonoscopy may well result in earlier diagnosis, it is to be hoped with improved survival figures.

Thirty years ago total excision of the rectum was the accepted treatment for rectal carcinoma. During the 1940s resection with restorative anastomosis began to be established as an alternative and has since been used increasingly for lesions involving the upper rectum. Recent reports have suggested that restorative resection for carcinoma of the mid-rectum is as effective as total excision in terms of 5-year survival.

It is now technically feasible to perform a restorative operation for some lesions situated only a few centimetres above the anorectal ring, either by a trans-anal anastomosis or by using the stapler technique. A recent report on trans-anal anastomosis for carcinoma of the rectum has shown that the 5-year survival figures are comparable with those following total excision of the rectum and pelvic floor for similarly sited tumours. However, a recent follow-up report on low anterior resections using the stapler technique has shown an alarmingly high incidence of local recurrence.

Patients and methods
At this institution low restorative resection is being increasingly used for carcinoma of the rectum. Between 1971 and 1976 restorative resection was performed in 42% of patients with resectable carcinoma of the rectum. Between 1977 and 1982 this figure increased to 53%. This corresponds to trends described in other series.

The case reports of the 196 patients who underwent abdominoperineal excision of the rectum for adenocarcinoma at Groote Schuur Hospital between January 1971 and December 1982 were reviewed. Of the patients 124 were White, 70 were Coloured and only 2 were Black. The low number of Blacks can be explained by the facts that rectal carcinoma is uncommon in this racial group and that the Black population of Cape Town is considerably smaller than that of other areas of South Africa.

Results
Age distribution
The ages of the White patients ranged from 32 to 85 years, the majority presenting in the 7th decade. The median age for this group was 65 years (64 years for females). This is similar to the age distribution in most Western series. Other authors have also shown that non-White patients tend to develop rectal carcinoma at an earlier age. The difference cannot be explained on the basis of the Coloured population being younger than the White one, since South African life tables show that life expectancy in the two groups is almost identical after the age of 30 years.

Sex distribution
The male/female ratio for the White patients was 4:3, which correlates well with western series. However, in the Coloured group the sex ratios were equal, which concurs with previous figures from Brettner and Ackerman.
Mortality
Four patients (2%) died within 30 days of the operation, 2 from myocardial infarction, 1 from sepsis and renal failure and 1 from respiratory failure.

Morbidity (Table I)
Of the 196 patients 71 (36%) developed non-lethal complications, but 49 of these had multiple complications. The most notable complications were of the perineal wound and urinary tract. Of the 29 patients who developed urinary retention 20 were male, and 9 eventually required prostatic resection before normal micturition was established. Three patients were left with permanent indwelling catheters. Four ureters were divided at surgery, ureteric catheters having been inserted pre-operatively in 1 of these cases. In each case the injury produced very considerable morbidity.

Abdominal wound dehiscence occurred in 8 cases (4%), while seven patients had to return to the operating theatre within 24 hours of surgery because of perineal bleeding. The overall incidence of perineal sepsis has fallen from 56% (1971-1976) to 18% (1977-1982).

Metachronous lesions
Six patients developed metachronous lesions of the colon and, of these, 5 had had lymph node involvement at the time of surgery.

Hepatic metastases
Eight patients were found to have hepatic metastases at surgery. One is alive after 3 months, the remaining 7 having died between 1 and 10 months after surgery (mean 4 months).

Staging and survival (Tables II and III)
The pathological staging of the tumours was similar to that in most Western series. In 9 patients there were insufficient details for pathological staging nor was there adequate information concerning follow-up; 3 patients underwent abdominoperineal excision of the rectum for extensive benign villous adenomas. The overall 5-year survival rate was 39%. The 3 patients who underwent abdominoperineal excision of the rectum for benign villous adenomas were all alive 5 years after surgery, and no patient with a lesion limited to the mucosa (Dukes-Astler-Coller class A) died of the disease. The 2 deaths in the latter group were from myocardial infarction and cerebral haemorrhage. The overall 5-year survival rate in patients with invasion through the entire wall of the rectum but without lymph node involvement was 40%.

It has been suggested by Floyd et al.\(^\text{20}\) that approximately 75% of patients with rectal cancer will die because of local recurrence of the disease. It was unfortunate that since this was a retrospective study, it was impossible accurately to assess the true incidence of local recurrence.

There is a marked difference in survival rates between Dukes-Astler-Coller groups C1 and C2 (Table III). It can be seen that the solitary finding of either lymph node metastases or complete penetration of the wall of the rectum is not as ominous as the presence of both.\(^\text{21}\)

Discussion
As a result of the pioneer work of Ernest Miles in the early part of this century, abdominoperineal excision of the rectum became established as the treatment of choice for carcinoma of the rectum. Subsequent efforts to devise operations to preserve the sphincter mechanism were generally regarded for some time as ill-founded. Even in the 1930s anterior resection was thought to be inadequate.\(^\text{22}\)

In recent years further efforts have been made to extend the scope of restorative resections. Such ideas undoubtedly gained impetus from the knowledge that for some patients a permanent colostomy was a tremendous price to pay for cure.\(^\text{23}\) There remains however little doubt that combined abdominoperineal excision of the rectum should be used for tumours involving the terminal 5 cm of the anorectum.

A 5-year survival rate has been used to report these results, because Bussey and Morson\(^\text{24}\) showed that most deaths from recurrence following excision of a rectal carcinoma occurred within the first 5 years, there being only a slight risk of
recurrence thereafter. Our overall 5-year survival rate of 39% is similar to that in many Western series. Despite recent advances in surgical and anaesthetic techniques these figures have not improved during the last few decades.

The distribution of rectal tumours among the different Dukes groups has remained constant during recent decades, with approximately 85% in the B and C categories. In these groups the incidence of pelvic recurrence of the disease is high (25-70%) and the 5-year survival rate is low.25 The margin most limiting resection of these tumours is often the circumferential transmural margin rather than the distal resection distance. It has been suggested that the incidence of pelvic recurrence of the disease could be reduced by the use of radiotherapy.26,27

There are differences of opinion regarding the preferred sequence of surgery and radiation therapy. The major advantage of pre-operative radiation is the potential damaging effect this has on cells that may be spread locally or to distant sites at the time of resection. If given postoperatively, radiation therapy can be offered selectively to patients found to have a high risk of local recurrence of the disease, while those with small tumours and a favourable prognosis and those found to have distant metastases need not be subjected to it unnecessarily. A combination of pre-operative and postoperative radiation (sandwich technique) may combine the theoretical advantages of both. When the lesion has recurred locally the chance of being able to offer the patient any further curative treatment is practically non-existent.

It seems evident from the last 40 years' experience that the prognosis of rectal cancer can hardly be improved by further surgical measures. Instead efforts should be made to educate the public to seek medical advice as soon as the classic symptoms of rectal cancer, i.e. rectal bleeding or an alteration in bowel habits, are noticed. It is also important to stress the importance of a rectal examination and sigmoidoscopy in every case of rectal cancer, i.e. rectal bleeding or an alteration in bowel habits, at the time of resection. If given postoperatively, radiation therapy can be offered selectively to patients found to have a high risk of local recurrence of the disease, while those with small tumours and a favourable prognosis and those found to have distant metastases need not be subjected to it unnecessarily. A combination of pre-operative and postoperative radiation (sandwich technique) may combine the theoretical advantages of both. When the lesion has recurred locally the chance of being able to offer the patient any further curative treatment is practically non-existent.

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The major causes of morbidity still originate in the urinary tract and the perineal wound. Urinary and bladder complications after proctectomy are relatively common, occurring in 20-25% of cases. In an attempt to avoid ureteric damage it is sometimes of value to insert ureteric catheters pre-operatively, especially when extensive disease is suspected and also at secondary operations after previous anterior resection.

Since 1976 we have performed primary closure of the perineal wound in over 90% of cases and have utilized constant suction and irrigation techniques.20 It is imperative that the drain should not be removed until the effluent is clear or alternatively until a sinogram has shown obliteration of the perineal space. Because of recent reports describing an association between latex rubber and retarded healing of the wound11 we now use a three-way irrigation silicone rubber drain.

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