

The surgical treatment of intestinal obstruction due to left sided carcinoma of the colon

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Key words: COLORECTAL CARCINOMA; INTESTINAL OBSTRUCTION; LEFT SIDED BOWEL EMERGENCIES

Summary

Forty two consecutive patients who underwent surgery for an obstructing carcinoma of the left colon over a 5 year period were studied retrospectively. Twelve patients underwent an initial defunctioning procedure with no hospital deaths but with four deaths after a mean follow-up of 25 months. Of the 30 patients who had a primary tumour resection, 7 died during the first hospital admission and a further 4 during a mean follow-up period of 23.7 months. The hospital mortality following primary resection was related to the site and timing of the anastomosis. During the first hospital admission 3 of 5 patients died after colocolic anastomosis, 3 of 10 died following ileocolic anastomosis, but only 1 of 15 died in those who did not have a primary anastomosis performed. The mean hospital stay of patients undergoing a delayed resection was 41 (s.e. (mean) 2.8) days compared to 24 (s.e. (mean) 2.8) days in those undergoing a primary resection.

Primary tumour resection with a delayed anastomosis is recommended on the basis of these findings.

Introduction

Between 8 and 23% of patients with a primary carcinoma of the large bowel present with intestinal obstruction and this is the commonest cause of large bowel obstruction (1-5). Two-thirds of obstructing tumours lie distal to the transverse colon (2) and there is no consensus on the initial operative treatment, unlike tumours of the right colon where right hemicolectomy and primary ileocolic anastomosis is standard practice. Traditional management of obstructing left sided colonic carcinoma is a defunctioning procedure followed at a later date by resection and restoration of bowel continuity (2). More recently early resection with or without a primary anas-

tomosis has been advocated (6-11) with the suggestion that long-term mortality is improved (3,6) although this is not confirmed in all series (4,5). Other potential benefits of early resection for patients in whom the chance of cure is small include avoidance of a stoma and a reduced stay in hospital (5,12).

The majority of published series fail to distinguish the intestinal obstruction caused by left and right sided tumours. Consequently the optimum initial surgical management of this difficult problem remains unclear.

Method

All patients who underwent operation for an obstructing primary colonic tumour distal to the mid-transverse colon between June 1980 and May 1985 at the Royal Surrey County Hospital were included in the series. The cases were identified from theatre records and discharge summaries. For this review a tumour was defined as producing obstruction by the following criteria: (1) colicky abdominal pain, (2) abdominal distension, (3) constipation and (4) radiological evidence of large bowel distension on plain abdominal X-ray films.

A hospital death was defined as a death occurring during the first hospital admission or within 28 days of the initial operative procedure. A transfer to geriatric care was considered as a discharge.

It is well known that many of the patients who present with an obstructing large bowel carcinoma are elderly and suffer from other concurrent disease, especially cardiac and respiratory problems, and that these patients do badly. This is however difficult to quantify. In this study we have used the system proposed by the 1962 House of Delegates of the American Society of Anesthesiologists, Inc. (ASA) for the classification of physical status (13).

The length of hospital stay for each patient was calculated as the total number of days spent in hospital in order to defunction, resect the tumour and restore bowel continuity.

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As the patients in each group were not randomised no statistical comparison was made between the groups. The χ^2 test was used to compare the Dukes grade of the tumours in the series with a similar series of consecutive non-obstructing left sided colonic tumours treated by a single surgeon (CGM) over the same period.

Results

Forty two patients fulfilled the criteria for inclusion in this study. The mean age was 72.5 years (range 39–89 years) and the sex distribution was approximately equal (male 20: female 22). Twenty patients fitted into the ASA grade for physical status E1 (emergency operation in a normal healthy patient), 15 into E2 (emergency operation and a patient with mild systemic disease), 5 into E3 (emergency operation in a patient with severe systemic disease that limits activity, but is not incapacitating) and 2 into E4 (emergency operation in a patient who has severe incapacitating disease that is a constant threat to life). The commonest site for an obstructing left sided carcinoma was in the sigmoid colon (24 patients) followed by the distal transverse colon and splenic flexure (12), descending colon (5) and rectum (1).

The original operation was considered to be palliative in 8 of the 42 patients as tumour was left behind either locally or as liver metastases. The Dukes grading of the obstructing left sided colonic carcinomas is listed in Table I and compared with the 165 patients who were treated over the same period of time for non-obstructing left sided colorectal carcinoma. This shows that there were only two A tumours in the series with a corresponding increase in the number of B tumours.

Seven of the 42 patients died during the first hospital admission and eight more during the period of follow-up (mean period of follow-up 25.4 months, median 24 months, range 4–70 months). The mortality of the series

TABLE I Dukes grade of the obstructed left sided colonic tumours compared with a similar series of non-obstructed tumours treated by one surgeon between 1980 and 1985

Dukes grade	Obstructed n=42	Non-obstructed n=165
A	2 (5%)	30 (18%)
B	25 (60%)	68 (41%)
C	15 (35%)	67 (41%)

$\chi^2=6.59$, DF=2, $P<0.05$

has been related to the initial procedure performed and the results are listed in Table II. The cause of the 7 hospital deaths are listed in Table III together with the operation performed and the ASA grading of physical condition.

All the hospital deaths occurred in patients who had undergone a primary tumour resection. When these were examined further it is seen that the majority of deaths occurred in patients undergoing immediate anastomosis and in particular colocolic anastomosis. In the patients who underwent a primary resection without anastomosis there was only one death (due to postoperative bleeding) and only 2 more of these 15 patients had died after a mean follow-up period of 27.1 months (median 28.5 months, range 4 to 50 months).

There were no hospital deaths after the second or third operations in staged procedures and no patient in whom a staged resection was planned failed to undergo resection. In 4 of the 27 patients who had a colostomy fashioned this was not closed. One patient underwent a subsequent abdominoperineal resection, one suffered a severe cerebrovascular accident on the second postoperative day; one died of pulmonary metastases prior to closure, and one patient preferred to keep the colostomy. The median time to closure of the colostomy was 15 weeks (range 4–30 weeks) after a staged procedure and 14 weeks (range 6–104 weeks) after a primary resection.

The majority of the initial operations were performed by junior surgeons (juniors 38 patients of whom 5 died in hospital, consultants 4 patients with 2 hospital deaths

TABLE III Cause of death in the seven patients who died during their first hospital admission

Procedure performed (initial resection + anastomosis)	Cause of death	Time (days)	ASA grade
No anastomosis	Intra-abdominal bleed	1.5	2
Ileocolic	Pulmonary embolus	24	1
Ileocolic	Pneumonia	9	4
Ileocolic	Unknown	1.5	3
Colocolic	Anastomotic leak	11	3
Colocolic	Anastomotic leak	120	1
Colocolic	Congestive cardiac failure	5	2

TABLE II The ASA grade, hospital stay, hospital mortality and final mortality (see text) divided according to the operative procedure performed

Procedure performed	Number	ASA grade mean	Hospital stay mean (s.e.(mean))	Hospital mortality n (%)	Final mortality n (%)
Staged resection	12	1.6	41 (2.8)	0	4 (33)
Initial resection	30	1.8	24 (2.8)	7 (23)	11 (37)
Initial resection plus					
delayed reanastomosis	15	1.7	30 (3.9)	1 (7)	3 (20)
ileocolic anastomosis	10	1.9	22 (0.8)	3 (30)	4 (40)
colocolic anastomosis	5	2.0	14 (*)	3 (60)	4 (80)

*Only 2 survivors

both of whom had a primary resection and anastomosis, one colocolic and one ileocolic).

The total number of days spent in hospital by the survivors after primary resection of the tumour was 24 days (s.c. (mean) 2.8 days) compared with 41 days (s.c. (mean) 2.8 days) for those who had a staged procedure. Following primary resection patients who underwent delayed anastomosis had a mean hospital stay of 30 days (s.c. (mean) 3.9 days), immediate ileocolic anastomosis 14 days (s.c. (mean) 0.75 days) and immediate colocolic anastomosis 19 days (only two survivors).

Discussion

Tumours of the large bowel that present with obstruction have a poor prognosis. Only 12–28% of patients survive 5 years (1,2,4,5,14–17) and even in those patients who were considered to have undergone a curative resection this only rises to 31–40% (2–4,15). This poor prognosis was confirmed in our study in which there was both a high hospital mortality and a poor longer term survival.

No patient who underwent a delayed resection died as a direct result of their surgery. In contrast 7 of 30 who underwent a primary resection died. However over the period of follow-up, those who had undergone a primary resection did better so that at the end of this period the proportion of patients who survived was similar in both groups. This confirms the results of other studies in which an initial higher mortality in patients undergoing a primary resection subsequently falls to below the mortality of patients undergoing a staged resection (3,18). In this series, primary resection, even when combined with a staged anastomosis leads to a marked reduction in the hospital stay of patients in whom the chance of cure is small.

The results after colocolic anastomosis are clearly unacceptable even in this small number of patients. Two of the 3 deaths were directly due to anastomotic problems. In 1980 antegrade colonic lavage was suggested as a procedure which would allow immediate colocolic anastomosis to be performed even in the presence of colonic obstruction (19). A recent report of the use of this technique has again suggested that primary colocolic anastomosis may be possible with an acceptable immediate mortality although this series included bowel resections performed for a variety of reasons and the authors did emphasise the need for selective use of this procedure (10). No patient in our study underwent intraoperative colonic lavage.

The ileum can be joined to the sigmoid colon or rectum after an initial resection with acceptable functional results even in the elderly (7,9). In our series of 10 ileocolic anastomoses 5 were to the descending colon, 3 to the sigmoid and 2 to the rectum. Three of the 10 patients who had a primary ileocolic anastomosis died during the first hospital admission although none of the deaths was as a direct result of the anastomosis.

A subtotal colectomy may be performed because of a proximal perforation or a synchronous tumour. There were 4 proximal perforations in our series. Three were treated by a primary resection, 2 with delayed anastomosis and one, who died, with a primary ileocolic anasto-

mosis. One patient who had a caecal perforation oversewn and a transverse colostomy fashioned, survived. Proximal perforation alone therefore does not seem to explain the high mortality seen with ileocolic anastomosis. Three patients had a second synchronous colonic tumour. Two were treated by primary resection and ileocolic anastomosis and one by delayed resection.

Simple defunctioning of the colon has in the past been considered to be a safe option because it was thought to be a minor procedure in a sick patient. However several studies have shown that the mortality of this operation can be as high or even higher than that of a primary resection (6,12,15,18). Furthermore, if a colostomy is performed without an accompanying laparotomy, as originally suggested (20), then there is a real risk of making an incorrect diagnosis or of missing a perforation in the proximal colon (18). Obstruction of colonic tumours is associated with perforation which may often be unsuspected clinically (2). In our series there were 5 perforations by the time of laparotomy, one at the tumour and 4 proximally. Of these patients one died in hospital and 2 subsequently. Although we had no hospital deaths in those who underwent laparotomy and defunctioning colostomy as the primary procedure (no patient underwent blind colostomy), 2 developed life threatening septicaemia in the immediate postoperative period and required admission to an intensive care unit and ventilation before recovery.

Many factors may contribute to the high mortality of obstructed tumours. These include age (2), locally advanced stage of tumours at presentation (16) and high grade tumours (2). In our series of obstructing left sided colonic carcinomas the mean age of the patients was high and mortality in colorectal carcinoma has been shown to increase with age (17). The Dukes grade shows a shift to the more advanced tumours when compared to the series of non-obstructing tumours presenting over the same period of time. It has previously been suggested that biochemical and haematological abnormalities do not contribute to this high mortality (2) and in our series this seems to be confirmed. Approximately half of our patients were considered to be systemically fit at the time of presentation (ASA grade E1) and mortality was not confined to those patients who were considered to be at high risk. It seems probable that the combination of a poor long-term survival after delayed resection and a high operative mortality amongst those patients undergoing primary resection contributes to the poor overall survival of patients with an obstructing colonic carcinoma. Thus a procedure which allows a primary tumour resection to be performed safely should improve the outlook in this condition.

Primary anastomosis was associated with a high post-operative mortality but the longer-term survival of these patients suggests a benefit from early resection. The patients who underwent a primary resection with a delayed anastomosis did best of all with only one post-operative and 2 subsequent deaths amongst 15 patients after a mean follow-up of 27 months. In addition these patients had a mean saving of 11 days in hospital compared to those who had a delayed tumour resection.

We are grateful to Mr P S Boulter, Mr A E B Giddings and Mr M E Bailey for permission to study patients treated under their care.

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Received 14 July 1987

Notes on books

Perioperative Chemotherapy edited by U Metzger, F Largiadèr and H-J Senn. 157 pages, illustrated. Springer-Verlag, Berlin. DM 108.

The Proceedings of an International Symposium held in March 1983 in Zurich. A large section of the volume is devoted to perioperative chemotherapy of breast cancer but there are also shorter sections on various types of intestinal cancers as well as sarcomas. The book is Volume 98 of the series Recent Results in Cancer Research.

Surgical Anatomy of the Heart by Benson R Wilcox and Robert H Anderson. Illustrated. Churchill Livingstone, Edinburgh. £60.00.

A folio atlas containing a large number of exceedingly high quality colour photographs of the dissected heart. Each photograph has a labelled line diagram adjacent to it together with a supporting text. The first part of the book deals with normal anatomy and later chapters illustrate the various congenital abnormalities. Beautifully produced, it will surely be studied and re-studied by cardiac surgeons everywhere.

Orthotics: Principles and Practice by G K Rose. 237 pages, illustrated. William Heinemann Medical Books, London. £29.95.

Orthotics is defined as that branch of surgery which covers the manufacture and clinical use of splints, braces and similar appliances. This book first introduces the principles and then goes on to a classification of orthoses, the appliances themselves. Part 3 discusses each anatomical region in turn with a description of the conditions requiring such treatment, the objectives of treatment and the range of orthoses available.

Total-Condylar Knee Arthroplasty: Technique, Results and Complications edited by Chitranjan S Ranawat. 282 pages, illustrated. Springer-Verlag New York DM 220.

The total-condylar knee implant was introduced in 1971. Since then it has been very widely used and this volume updates and reviews current thought in this field. Beginning with a history of its development the book goes on to describe the surgical techniques, rehabilitation and complications including revision. It also has a section on current controversies. Orthopaedic surgeons who practise knee arthroplasty will find much of interest.

Course Organisers in General Practice edited by A H E Williams. 39 pages, paperback. Royal College of General Practitioners, London. £4.50.

This slim pamphlet is Occasional Paper number 34 of our sister College. It comprises an analysis of a national survey of course organisers in general practice and gives detailed information on how organisers perceive their role as well as demographic data about the organisers themselves. It would be interesting to see a similar publication about course organisers in surgery, the number of which increase year by year.

Corrective Osteotomies of the Lower Extremity after Trauma edited by G Hierholzer and K H Müller. 407 pages, illustrated. Springer-Verlag, Heidelberg. DM 198.

Designed as a reference book for trauma surgeons and orthopaedic surgeons this work outlines the origin of malposition of bones in the lower limb caused as a result of trauma. The indications for corrective osteotomy are discussed as well as the various operative procedures and the clinical results obtained.