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ON

CANCER OF THE COLON.*

BY

CHARLES A. PANNETT, M.D., F.R.C.S.,
PROFESSOR OF SURGERY, UNIVERSITY OF LONDON; SURGEON TO
ST. MARY'S HOSPITAL.

THE colon is one of the sites where, when malignant disease develops, operative treatment can effect a great deal. It therefore has urgent claims to careful consideration.

In itself, cancer of the colon is only a relatively common condition. Thus, at St. Mary's Hospital, during 1924, no more than 16 cases were admitted to the practice of all the surgeons. The general practitioner can scarcely expect to see more than one case in two or three years. Considering such facts, it is amazing that he recognizes the disease as early as he does, for the diagnosis is by no means always easy. Vague symptoms may suggest, but the most modern investigations may be unable to prove, its presence. There is nothing for it but an exploratory operation—not to be advised lightly at the time of life when malignant disease prevails—or a waiting policy of careful observation. Decisive symptoms will eventually make their appearance, but by this time effective treatment may not be simple to carry out, and perhaps may be impossible.

Some Difficulties in Diagnosis.

I need not remind you that the scirrhus growth tends to encircle the bowel and call attention to its presence by attacks of obstruction. This is the commonest clinical picture. Yet it is not always easy to recognize.

A youngish woman had several attacks of abdominal pain lasting a few hours only, spread over eighteen months. She never called in her doctor until the subsidence of the attack, when a most careful examination failed to reveal any clinical objective sign. One day the pain persisted. Her doctor was able to feel a distended caecum. The diagnosis was made, but the growth of the ascending colon had spread beyond the bowel and was irremovable. It had, in fact, become adherent to the right kidney and perforated into the extraperitoneal tissues, where it had given rise to a small abscess.

Recurrent attacks of pain in the abdomen, accompanied by constipation, need careful investigation, especially if there has been a gradually increasing trouble with the bowels. These patients often come to us complaining of indigestion and pain after food. It is due to the peristalsis which is called forth by the entry of food into the stomach. They say that their appetite has failed. Sometimes there is a call to stool after each meal—a very suspicious occurrence. Aperients always give them excessive pain, and they notice very often that there is much rumbling from wind within the bowels. The examination of the abdomen between the attacks of pain may throw no light on the condition. During the attack careful palpation will reveal the characteristic elastic feel of a distended caecum, which will appreciably harden and relax under the hand. This is the only part of the large intestine which can ever be felt to contract. The caecum always bears the brunt of the pathological process when an obstruction is situated

in the large bowel, for reversed peristalsis seems to force the intestinal contents back against the ileo-caecal valve. The caecum distends more than any other part; it is the usual part to rupture in a neglected case and the first to necrose from bacterial infection.

In about 40 per cent. of cases a tumour is felt. This tumour is not always the growth itself, which is of quite small bulk, but a mass of faeces impacted above the constricted area. Such tumours disappear after the bowel has been emptied with an enema. The disappearance of a lump in this way does not remove the suspicion of a new growth being present. Further observation and examination are required before a diagnosis of simple faecal impaction can be confidently made. The commonest site for carcinoma to grow is somewhere in the sigmoid loop, and the normal situation of this part of the bowel is in the pelvis. By rectal examination the finger can not infrequently detect through the thin rectal wall a growth of the sigmoid colon. This examination should never be omitted, for by it not only is a growth in the rectum excluded, but a growth which is sometimes hidden to x-ray examination is definitely revealed. The following two cases are interesting as showing how difficult diagnosis may be.

CASE I.

B. C., a girl aged 23 years only, suffered from a number of attacks of abdominal pain spread over eighteen months. They were of short duration, and only once was she laid up. The pain came on after food. She suffered from nausea and lost her appetite. In the worst attack she vomited, and the pain was referred to the epigastrium and the right iliac fossa. Her bowels were regular all through. Her doctor in this attack found tenderness in the right iliac fossa. Appendicitis was diagnosed, and a month later she came into hospital. There were no physical signs at this time, and, because of this and the fact that she had complained of cramps of the right leg, cystoscopy, pyelography, and renal x-ray examinations were performed. No indication of renal disease being discovered, appendicectomy was performed. Externally the caecum and appendix looked normal, but on cutting open the latter its mucosa was obviously inflamed. She went home, and a month later had an attack of acute obstruction. She was operated upon and a ring carcinoma of the transverse colon was found. I am glad to say I was able to resect this and reconstitute the alimentary canal. It is interesting to note how the pain was referred to the distended caecum, which was tender, so that appendicitis was simulated, and the colitis, always present above a growth, had extended to the mucosa of the appendix, so misleading me even after it was removed. The condition, too, occurred at an exceptionally early age.

CASE II.

H. W., a woman aged 30, about to be married, had an acute attack of pain in the left hypochondrium accompanied by vomiting, and was admitted to hospital with a temperature of 101° and a pulse of 118. She was rigid and tender over the affected area, and also in the renal angle behind. No lump could be felt. She had had a very minor attack of similar nature two months before. She said she had always been constipated. A perinephric infection was suspected, but the leucocyte count was only 11,800; cystoscopy showed no abnormality, nor did examination of the urine. The attack gradually subsided, and then a barium enema revealed an obstruction just beyond the splenic flexure. This proved to be a carcinoma, which was excised and the bowel continuity restored.

This case illustrates another clinical point—namely, the liability to local infective attacks. The surface of the growth is ulcerated and gives access to organisms which, penetrating the wall of the bowel, set up a local inflammatory process. The general condition of a patient with a stenosing scirrhus growth is often strikingly good. The condition remains latent until mechanical obstruction

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causes abdominal symptoms to arise. In excluding cancer of the bowel no reliance at all can be placed upon a healthy aspect, a clear complexion, youth, or an absence of wasting.

But there is another type of growth—the fungating variety, which projects as a cauliflower growth into the lumen of the bowel, but shows little tendency to encircle it and sometimes none to obstruct it. These tumours always ulcerate, and the infection which takes place plays the most important part in the production of symptoms. There is no constipation, but nearly always diarrhoea. The general symptoms are pronounced. There is the wasting and cachectic appearance of toxic absorption and an irregular temperature. Such growths are quite likely to be diagnosed as a simple colitis.

CASE III.

C. M., a country denizen aged 60, suffered for two and a half years before admission to hospital. He complained of pain under the left costal margin, aggravated by food, vomited occasionally, and for the last eight months had had an irregular temperature. In the left hypochondrium was felt a tumour. The abdomen was not at all distended. The caecum could not be felt. An irremovable malignant growth was found at the hepatic flexure. An anastomosis was made between the transverse colon and sigmoid. He died two weeks later, and *post mortem* the growth was found to be of the cauliflower type, without the slightest tendency to surround the bowel, although it was of large size.

It is well known that attacks of diarrhoea occur in growths of the large bowel. Moynihan asserts that a growth of the right half of the colon causes diarrhoea, one of the left half constipation. My experience agrees with this statement, but I think the picture would be more complete to add that diarrhoea may occur in addition to the constipation when the growth is left-sided. The diarrhoea is much more upsetting to the patient than the constipation, which he is apt to lay little stress upon in recounting the history of his illness.

The pelvically situated tumours often give rise to another symptom—irritability of the bladder, so that prostatic disease is simulated. During the last three and a half years 28 patients suffering from carcinoma coli have been admitted to the surgical unit wards at St. Mary's Hospital. Of these 6 had urinary symptoms. At operation the growth in these patients is found to have formed adhesions with the bladder.

A bleeding from the rectum may come from a growth low down in the colon. Even should haemorrhoids be present, without a careful inquiry into the recent health of the patient the haemorrhage should not be attributed to them, for occasionally they themselves are due to a low growth blocking the venous channels above.

Clinically, then, cases of growths of the colon may be divided up into: (1) those suffering from only vague abdominal symptoms, especially undistinctive short-lived attacks of abdominal pain; (2) those obviously suffering from chronic obstruction; (3) cases of acute obstruction, the natural ending of groups (1) and (2); (4) those suffering from pronounced general symptoms with irregular temperature and very often diarrhoea.

X Rays in Diagnosis.

The value of x rays is very great. In every suspicious case a barium examination should be carried out. Radiographers are agreed now that the enema gives more information than the meal. But a warning must be given

against overestimating the reliability of the method. A growth may be present yet remain unrevealed. This is particularly the case when the growth is in the sigmoid colon, which lies folded up in the pelvis. The malignant stricture may easily lie concealed behind another part of the loop. Again, if the affected bowel lies with its axis in the direction of the rays, the defect in the shadow will not be seen. At the Portsmouth meeting of the British Medical Association in 1923 I showed the skiagrams of such a case.¹ They are not uncommon. Lockhart-Mummery² goes so far as to say that negative findings are useless, and A. F. Hurst at the same meeting said that he had met four cases where a growth was found, though an enema failed to show the slightest abnormality of the colon. The opposite error, the supposed demonstration of a growth which does not exist, is less common. At Portsmouth I called attention to such cases. I have met but three, in each of which a persistent spasm near the splenic flexure mimicked a growth (Fig. 1).

Curiously, these patients on exploration had pelvic tumours, suggesting that the spasm above might be of a protective nature.

I would not like to over-emphasize the fallacies of x-ray examination. In many instances this method affords the best and clearest evidence of the existence of a growth at a time when removal is possible.

Sigmoidoscopy in Diagnosis.

When a growth can actually be seen through the sigmoidoscope, it is the best of all evidence of its existence. Sigmoidoscopy should therefore always be carried out. There exist, however, a number of cases where a growth low down in the sigmoid cannot be seen. This is because the tumour becomes fixed in the pelvis. Ever so lightly though it may be, it yet prevents the bowel from straightening out by air inflation, to allow of the passage of the instrument. The procedure has to be abandoned, but the very fact that this must happen is in itself suggestive.

The Occurrence of Multiple Growths.

The colon is one of the few places in the body where multiple malignant growths may be met with. The lower growths are generally supposed to be implantations from the primary orally situated one.

CASE IV.

I. S., a male aged 44, had a characteristic history of colonic growth. A faecal lump could be felt in the left iliac fossa, and, through the rectal wall, a small growth in the pelvis. At the operation a sigmoid growth was pulled up out of the pelvis for excision. Whilst doing this another growth was felt a little higher up. In all, four growths were discovered, the uppermost being just beyond the splenic flexure. A large excision was performed with good result.

The specimen, now in the St. Mary's Hospital Museum, is interesting in that all the tumours are of the same size. It is not possible to say which was primary.

CASE V.

W. W., a male aged 58, had a demonstrable growth in the sigmoid colon, both by rectal palpation and x rays. At operation the growth was excised and a caecostomy performed. He died a month afterwards. No faeces had passed per anum. Pus had discharged from the caecostomy wound. *Post mortem* a leakage was found at the junction, with an abscess spreading up to the region of the caecostomy. There was a large carcinoma of the ascending colon which was not discovered at operation. I had excised the implantation tumour.

FIG. 1.—Radiogram showing barium enema of a case where, even under pressure, the gruel could not be made to flow past the splenic flexure. There was no growth here. Obstruction due to spasm. At operation growth found in sigmoid flexure.

CASE VI.

F. B., a lady aged 68, had a caecostomy performed by her doctor for acute obstruction. After admission to hospital a growth was demonstrated by *x* rays at the lower end of the sigmoid. The caecostomy had nearly closed. Operation revealed a large growth fixed to the pelvis and irremovable. There was also a typical annular carcinoma of the transverse colon. This was removed by Paul's method and a permanent transverse colostomy left.

This last case, where the lower growth was so much the larger, leads one to speculate whether, by antiperistalsis, implantation orally cannot take place as well as caudalwards.

A Few Points in the Surgical Treatment.

The greatest decision which has to be made in every case is whether radical excision or a palliative drainage without or within the abdomen should be carried out. Hepatic metastases and peritoneal implantations, of course, negative any radical attempt. But local extension and the enlargement of near-by lymphatic glands stand in another category. A number of successful cases have been reported where a part of some neighbouring viscus has been removed and lasting cure resulted.

With regard to glandular enlargement, no information of any reliability at all is given as to the cause of the induration or increase in size by examination on the operating table, for infection from the ulcerated growth may be equally as responsible as carcinomatous invasion. Experience has shown that, in an otherwise suitable case, the carcinoma is often confined to the nearer enlarged lymphatic nodes. Thus we get the rule that it is sufficient to excise the affected region of the bowel with a moderate amount of the lymphatic drainage area.

The next great rule is that reconstitution of the continuity of the large bowel after excision of a growth should never be done in the presence of obstruction which cannot be relieved by enemata or aperients. This rule must be strictly adhered to, except sometimes when there is a growth of the caecum and an ileo-transverse colostomy is performed. The danger of leakage at the anastomotic junction in this case is very much less than when a union is made between two parts of the colon.

When such obstruction exists a two-stage operation becomes necessary: either drainage first and excision afterwards, or excision *plus* drainage first and reconstitution second. The most universal type of drainage operation is the caecostomy recommended by Sir Harold Stiles.³ This drainage operation has much to recommend it. Unless the tumour is in the ascending colon, the faecal fistula is away from the site of the subsequent operation, which can be performed through an uninfected region of the abdominal wall. On the other hand, when the growth is beyond the splenic flexure, a caecostomy does not always drain the bowel above the obstruction, so that conditions within the abdomen are not so favourable at the second operation. From this point of view a transverse colostomy is much more effective, but does not close as readily spontaneously. There are drawbacks whichever course is followed, and I am not prepared to lay down which is preferable at this stage of my experience; I have had good results from both methods. When a caecostomy has been made as a preliminary to a removal of a growth at the hepatic flexure, on the whole it is best to excise the caecostomy with the caecum, lower end of ileum and colon, to beyond the growth at the same time. This requires careful technique to minimize the soiling which must inevitably occur, but I think it best. In one patient I removed locally an hepatic flexure growth, performing an ileo-transverse colostomy, and leaving the caecum and lower distal end of the ileum to

drain through the caecostomy wound. The patient lived four and a half years before a recurrence caused his death, but the mucous fistula was rather a nuisance to him and the caecum prolapsed through the opening. In an old lady in whom I could only do a palliative ileo-transverse colostomy for a large hepatic flexure growth, I made a caecostomy to drain the secretion of the doubly excluded caecum; the same prolapse occurred. I was forced to remove the prolapsed portion under a local anaesthetic.

This brings me naturally to another very serious factor in all colectomies—namely, the gravity of infection from the bowel contents. Operations upon the stomach can be carried out and some soiling with gastric contents is harmless, but in colectomy it is necessary to take great precautions to diminish infection from this source. Death from peritonitis must be reckoned with as a result of the operation. Fortunately the resistance of these patients to infection from the bowel seems to be abnormally high.

As to the method of joining up the two ends of the bowel,

many surgeons now carry out an axial union. This seems to me the preferable way if a safe technique be adopted, for it allows a wider resection to be done and yet permits of suture without tension. Lockhart-Mummery asserts that after axial anastomosis leakage occurs because of the poor blood supply of the antimesenteric margin, which can be avoided by oblique section of the bowel ends. I have had the best results by performing an anastomosis by a method I described two years ago.⁴ The principle of this is to avoid the two non-peritonealized mesenteric angles from coming into apposition. It is here that union is likely to be imperfect, as all experiments on animals have shown,⁵ and it is an axiom in intestinal work that at least one surface of the viscus to be sutured should be covered with peritoneum. By slightly rotating the bowel ends before suture around their own longitudinal axes in opposite directions, peritoneum at least on one side of the suture

FIG. 2.—Axial union of the colon, showing how the posterior row of Lembert sutures is inserted after clamping the ends of the colon in such a way as to avoid bringing the mesenteric angles in apposition. The line of section after completion of the posterior part of the stitching is shown. Union is then effected by a through-and-through suture and an infolding Lembert suture in front.

line will be present all round the circumference. The method is shown in Fig. 2. In Figs. 3 and 4 are shown radiograms of a growth of the descending colon before and after excision by this technique.

Paul's method of excision, by which the growth is brought outside the abdomen, removed, and the two ends of bowel left to discharge on the surface, has fallen into disfavour with most surgeons, but I have found it to be an excellent method in properly selected cases. The operation can be done when acute obstruction is present, provided the distension of the bowel is not too great and the patient is equal to the prolongation of the operation beyond a simple drainage, which the greater intervention necessitates. The advantage is that the growth is removed at the earliest possible moment and the drainage is instituted at the best possible place, whilst there is no danger of intra-abdominal infection from leakage at a line of suture. After this operation, when the spur has been broken down by the use of a clamp, I find that closure can only be done satisfactorily by opening the peritoneum and withdrawing the adherent loop. I have not been able to close the fistula by the extraperitoneal method.

Growths at the lower end of the sigmoid are a difficult problem to deal with. Sometimes abdomino-perineal excision is the only possible operation. This is a formidable undertaking. When a short stump leading into the rectum can be retained, the method of Rutherford Morison is satisfactory. The growth is excised and the upper end of the bowel invaginated into the lower. The operation may present difficulties of access. The floor of the pelvis lies at the bottom

of a narrow cavity, and soiling is somewhat difficult to avoid. Nevertheless, most gratifying results can be obtained.

As to the most suitable incisions for these operations, it may be accepted that the paramedian is the best for growths in the transverse colon or sigmoid. For growths in the

FIG. 3.—Growth of descending colon, showing the defect in the shadow.

flexures or lateral parts of the colon the oblique incision, also advocated by Rutherford Morison, gives good access. It is much better than a vertical one through the outer part of the rectus sheath.

I have only spoken of radical extirpation of the growth. This is possible in a little more than one-third of the patients coming to St. Mary's Hospital. When the condition has advanced too far for excision, great relief may be afforded by relieving the obstruction, preferably by a short-circuit, perforce by an artificial anus. The rule about short-circuiting is that care should be taken not to exclude entirely the portion of the bowel between the ileocaecal valve and the growth. Such an isolated segment of the bowel will gradually dilate and ultimately burst.

The Results of Operative Treatment.

It is generally accepted that the surgery of cancer of the colon gives results better than those which can be obtained in some other regions of the body. Those who would like to know what can sometimes be effected in advanced cases should read Grey Turner's interesting book *Some Encouragements in Cancer Surgery*. Körte, in 1913,⁴ collected the records of 434 cases. Of these, 61.3 per cent. survived the operation and 38.3 per cent. lived over three years—that is, one-half of the survivors of the operation were in a fair way to being considered permanently cured. Paul⁷ reported 46.66 per cent. of three-year cures. R. T. Miller⁸ found that of those patients surviving excision 28 per cent. were alive after five years. But he points out that a considerable number of recurrences take place after the five-year period, so that the ultimate results must be less favourable. This is rather the impression I have got from my own cases. Kuttner⁹ gives the final results as only 10 to 12 per cent. cured, whilst Majerus¹⁰ reports that of 43 radical operations 8 patients were alive three years afterwards—that is, 18.6 per cent. Amongst his cases one recurrence took place at four years and one at eight, so that the final recovery figure would more nearly agree with that of Kuttner.

The early impressions obtained as to the success in surgery of cancer of the colon have to be modified somewhat in the light of further experience. But the answer as to whether surgery in this condition is justified is undeniably

that it is. Survival over three years is common, and up to five years not infrequent, and this in a disease which is quickly fatal once obstruction has come on. Many victims are at the time of life when they cannot expect to live for many years. They get immediate relief and prolongation

FIG. 4.—Radiogram taken seven months after removal of growth. Axial anastomosis by rotational method. Same case as Fig. 3. Note how mobilized splenic flexure has been lowered to effect the junction.

of life in comfort. Gloomy as the outlook of a carcinomatous patient is, when the disease attacks the colon there is indeed hope in surgery.

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SAVE THE WOMEN AND CHILDREN.*

BY

COMYNS BERKELEY, M.D., M.C. CANTAB.,
F.R.C.P.,

OBSTETRIC AND GYNAECOLOGICAL SURGEON, THE MIDDLESEX HOSPITAL;
PRESIDENT OF THE METROPOLITAN COUNTIES BRANCH.

FROM time immemorial it has been the proud tradition of Englishmen, wheresoever scattered over the face of land—or water—in the presence of danger, to rally to the cry, "Save the women and children." Such a cry has become part of our common language. Let it be the slogan of the medical profession.

Every year some 700,000 women in this country pass through the pangs of labour, and of these 3,000 never leave their beds again except in a coffin. Such is the appalling sacrifice made by our women in the performance of a physiological act, and in that of the primary object of their sex—the provision of healthy citizens for our nation. Most of these women were in good health up to the time of their pregnancy or confinement; most of them were young and had very many years of active and useful life before them.

Since 1900 the infant mortality, after the first month, has fallen from 154 to 69 per 1,000 live births. The general death rate of all persons at all ages has fallen. The death rate from all causes of women from 15 to 45 has fallen, but the maternal mortality, and the infant mortality at birth

* The substance of an address to the Metropolitan Counties Branch and to the West Dorset Division of the British Medical Association.