COLECTOMY,
OR
RESECTION OF THE LARGE INTESTINE FOR
MALIGNANT DISEASE.

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IN bringing before the Fellows of this Society the subject of colectomy for the removal of malignant disease of the large intestine, I wish to place on record the details of two cases in which I adopted this method of treatment. But while recording these cases in this paper, I consider that the hitherto small number of cases in which colectomy has been resorted to, imposes upon me the duty of shortly reviewing the subject, in order to call your attention to the present position in surgery which this operation occupies, and to invite discussion as to those details of procedure which may still be considered to be *sub-judice*.

The first case was that of a labourer, æt. 45, who was admitted to the Adelaide Hospital, Dublin, under the care of my colleague, Dr. Wallace Beatty, on February 12th, 1887. He had always been a temperate man, and enjoyed good health until about three weeks before admission. He then began to suffer from indigestion and diarrhœa, the bowels being moved eight or ten times in the twenty-

four hours. The diarrhoea was attended by pain all across the abdomen "as if a cat were tearing him." At the commencement of his illness there was some vomiting, but it was not repeated. During these three weeks the appetite became very bad, he got weaker, and his sleep was disturbed. He had had no rigors, no epistaxis, and had passed no blood in the evacuations. On admission, a swelling could be distinctly felt in the left iliac fossa, somewhat oval in shape, with its long axis directed obliquely from the left flank downwards and to the right. It measured four and three quarter inches in length, by three and a half inches in breadth. The borders were well defined and of inflammatory hardness. It was very slightly movable and was extremely tender to touch. The surface of the tumour was smooth and slightly convex. Over its left half there was dulness on percussion. The stools had the character of ordinary liquid fæces and were acid in reaction. Examination of the urine showed that there was always a small quantity of indican present. The tongue was coated with a dirty white fur; the heart-sounds were weak, but otherwise normal.

It was at first supposed that this tumour was inflammatory; and this hypothesis was borne out by a careful record of the temperature. It was found that the morning temperature varied between 99° and 100° F., while the evening temperature rose sometimes over 102° F., but in general marked 101°. Various antiphlogistic measures were adopted, without producing any result.

In the beginning of March I saw the case in consultation with Dr. Beatty. He expressed his belief that the swelling was possibly inflammatory, but feared that there was some malignant disease present. In this view I concurred. That suppuration had begun was evident on March 16th, as fluctuation was then for the first time detected, with some pitting on pressure over the surface of the tumour. We decided on operation, and this was performed under ether on the morning of March 18th, 1887. An oblique incision five inches in length was made

downwards and inwards, with its central point over the centre of the tumour. The divided tissues were found to be considerably infiltrated with inflammatory exudation, so that the various layers of the abdominal wall were indistinguishable. A small abscess cavity was first reached containing about a drachm of pus. A finger inserted into this reached a larger cavity containing broken-down material, evidently of a malignant character. As I found it impossible to recognise any peritoneum in this situation, I dissected down through the tissues at the margin of the tumour, until I reached healthy peritoneum, and this I divided all round the tumour. It was then found that the tumour, which was about the size of the closed fist, was growing from the descending colon, which it completely surrounded and to a great extent occluded. The colon was loosely ligatured both above and below the tumour in two places, and the gut was divided between each pair of ligatures, precautions having been adopted to prevent any extravasation into the abdominal cavity. The mesocolon, which was present in this case, was ligatured bit by bit and divided, and the tumour removed. The question then arose as to whether the divided ends of the gut should be sutured together and returned into the abdominal cavity, or whether an artificial anus should be established. I decided on the latter procedure, chiefly for the reasons that the operation had already occupied a considerable time and had been of a very extensive nature, and the patient, much reduced by his long illness, was in an exhausted condition. The distal end of the gut was therefore closed by turning in its edges and then suturing together the two sides of its peritoneal coat. The bowel was then replaced in its normal position. The upper end of the gut was drawn out into the external angle of the wound in the loin, and was fixed in this position by sutures, by the ordinary method. Those portions of the abdominal wall which seemed implicated in the disease were excised, and then the wound was closed. Two drainage-tubes were inserted, one on each side of the colon; the wound was

dressed and the patient removed to bed. His temperature then marked 95.5° F. At 4 p.m. it had risen to 97.3° and at 8 p.m. to 98° . He rallied well from the operation, although vomiting occurred frequently during the day. The next day he was better, but on the third day vomiting recurred and continued during that and the fourth day. On the fifth day, as there had been no evacuation, I injected some warm water gently into the bowel. This brought away some fæcal matter, but the returning fluid seemed to be merely the overflow; there was evidently no expulsive power in the colon, which was in a condition of complete atony. The abdominal wound looked perfectly aseptic.

The patient got weaker during the night, and died on the morning of the sixth day.

A post-mortem examination showed that there was no general peritonitis. There was a little lymph exudation in the immediate neighbourhood of the upper end of the divided colon. The edges of the abdominal wound were weakly glued together with recent lymph; there was scarcely any attempt at repair. The intestines were dilated, and contained large quantities of fæcal matter. Death was evidently due to exhaustion. The tumour was a columnar-celled epithelioma.

The second case which I desire to bring before this Society shows a happier result obtained. The patient was a man, æt. 58, of very temperate habits and with a good family history, who was admitted into the Adelaide Hospital under my care on October 19th last. He had been in good health until the previous October (1887), when he had severe attacks of diarrhoea, accompanied with pain in the epigastrium, whenever he ate beef or mutton. These attacks used to last for about a day, and were followed by constipation, which sometimes continued for ten days or a fortnight. He consulted the local doctor in the West of Ireland, where he lived, but not getting better he went up to Dublin, and was under treatment there for three weeks. He improved considerably, and for three

months after his return home he had no return of the diarrhoea. The symptoms then returned. He resorted to the remedies prescribed for him in Dublin, but this time they did him no good. He was obliged to restrict his diet to gruel, potatoes, bread-and-butter, and fish. In the early part of October, a fortnight before admission to hospital, one night as he was getting into bed he noticed a hard lump in the abdomen, which "seemed to fall backwards" when he lay down. This discovery brought him back to Dublin, and he then came under my care.

He was a thin man, with a sallow cachectic aspect, which suggested the presence of malignant disease. He complained of nothing, except his inability to eat any kind of meat without bringing on attacks of pain and diarrhoea. His bowels were generally constipated. On examining the abdomen I found it soft and flaccid. There was no distension. The intestines could be felt at parts to contain some faecal matter. There was no tenderness anywhere. As he lay on his back in bed, a very hard nodulated tumour, about the size apparently of a large orange, could be distinctly felt in the middle line, just below the umbilicus. It could be manipulated, and even firmly pressed without giving rise to any pain. The most remarkable thing about it was its extreme mobility. It could be pressed upwards into the epigastrium, or up to the ribs on either side. It could be made to occupy either renal region, and in this situation on the left side could be most distinctly outlined. It could be moved downwards nearer to the pubis, but in this direction its freedom of movement seemed more limited.

All the organs of the body seemed healthy, and the urine was normal. I kept him under observation for ten days, during which time he was examined carefully by all my colleagues. The weight of evidence seemed in favour of a tumour of the omentum, probably sarcomatous, and its extreme mobility seemed to augur an easy removal. Operation was decided on, and, assisted by my colleagues, I performed it on October 30th last. Although

I believed I had to deal with an omental tumour, still I suspected that the intestine might at some part of its course be more or less involved, and this suspicion was originated by the intestinal symptoms to which I have already referred, and which had existed for nearly twelve months. Acting on this suspicion, before proceeding to operate I had very fine silk (Chinese twist) and some intestinal needles in readiness in a solution of carbolic acid. On the night of October 29th the patient was given a dose of castor-oil, and the following morning an enema was administered, which acted well. When he was completely under the influence of ether, the abdomen well cleaned with soap and water and disinfected with corrosive sublimate, an incision about four inches long was made in the linea alba from the umbilicus downwards. The peritoneum was rapidly reached and opened to the same extent. The tumour was no longer to be felt in the middle line, so I was obliged to pass in my hand and search for it. I found it in the hepatic region, and drew it downwards till it was completely outside of the abdominal cavity. It was then found to be a malignant growth involving the transverse colon, near its hepatic flexure, and was when freshly removed about the size of a closed fist. The omentum, which was extremely small and contained little fat, was implicated in the neighbourhood of the colon, and some enlarged and hardened glands, not larger than very small beans, could be felt between the layers of the transverse mesocolon. Removal of the tumour thus involved resection of a portion of the transverse colon, which ran through the middle of it. Before beginning this portion of the operation the abdominal cavity was protected by placing two large flat sponges between the abdominal wound and the tumour, one on each side, and clipping their edges together with Wells' forceps so as to completely encircle the base of the growth, and to prevent any danger of their slipping. The colon on each side of the tumour was then encircled by a piece of catgut about two inches from the growth, and each of these was tied

just tight enough to occlude the bowel without interfering with its vitality. The bowel on each side was then divided with scissors. The great omentum, which in this case was reduced to a mere connecting band between the stomach and colon, was then tied, bit by bit, close up to the stomach on one side and to the tumour on the other, and divided between them. Then I had to deal with the transverse mesocolon ; which was tied in a similar manner ; but in this case, as the disease had spread into it to a small extent, and several glands were involved, in removing all these diseased parts a wedge-shaped piece was of necessity removed from the transverse mesocolon. The entire tumour was thus freed and removed.

The question then arose as to what should be the subsequent treatment of the divided ends of the gut. I resolved to attempt immediate union of the ends by suture, in preference to making an artificial anus. The patient had not hitherto suffered much from the operation. He was breathing well, and his pulse was very good. I therefore considered that he would run no greater risk by suturing the intestine at once than he would by being exposed to a second operation, at a later period, of intestinal suture for the cure of an artificial anus. Moreover, the situation of an artificial anus in the middle line near the umbilicus is not a place one would choose on its merits. I proceeded, therefore, at once with the suture. The sides of the triangular cutting in the mesocolon were first approximated by means of several points of interrupted suture, catgut being employed. The ends of the colon being then approximated, the edges were inverted. No sutures were used in the mucous coat, but the peritoneal coats were sutured together by means of fine silk passed through the peritoneal and muscular coats alone. These sutures were passed in the manner recommended by Gély, that is to say, the suture was armed with a fine needle at each end, and these were passed in the transverse direction to the long axis of the bowel. Each suture took up not more than a quarter of an inch of the intestine, and

they were passed about half an inch from the divided end of the gut. As each of these sutures were tied, they pressed together the sides of the serous coat not only at the points of entrance and exit of the needle, as is the case in Lembert's method of suture, but the intervening spaces between the sutures also. Thus the entire circumference of one end of the bowel is compressed against the entire circumference of the other end, and it seems to me that there must therefore be less chance of leakage than when Lembert's method is adopted. It should be observed that the suture is a continuous one, interrupted at each point of emergence by a knot.

As soon as the suture was completed the intestine was returned into the abdominal cavity after being carefully cleansed. A quantity of boracic acid solution at blood heat was poured into the peritoneal cavity to clean it, and allowed to pour out by turning the patient on his side. The remainder was carefully sponged out. The peritoneal edges in the abdominal wound were then sutured together, the edges being everted, and the rest of the wound was approximated by interrupted catgut sutures. Antiseptic dressings were applied, and the patient was removed to bed. The operation occupied two hours.

Shortly after the operation a hypodermic injection of one sixth of a grain of morphia was administered. He gradually rallied from the operation, and in three hours and a half had recovered from the ether. Small quantities of brandy and iced water were frequently administered. Four hours after operation one sixth of a grain of morphia was again given hypodermically, after which he slept quietly for two hours. The temperature at 9 p.m. was 100.6° , pulse 100 and fairly strong.

Next morning the temperature was 99° , pulse 98. Ice and brandy (four ounces in the twenty-four hours) were alone allowed by the mouth, and he was ordered a zymenised suppository every sixth hour.

On the morning of the third day matters did not look so promising; I found him very drowsy, not answering

questions, and making no attempt to put out his tongue when told to do so. His breathing was stertorous, his pupils contracted, the pulse 136 and small, and the temperature 102° . The abdomen, however, was soft and undistended, the wound looked perfectly aseptic. There were no local evidences of peritonitis. I could not account for the rise of temperature, unless it was due to the traumatism, but the drowsy condition of the patient, the stertor, and other symptoms made me inquire closely as to the amount of morphia which had been administered, and I ascertained that it had been continued beyond the limit which I had intended, by some misunderstanding as to the directions given. Whether, however, his condition was really due to an excess of the narcotic I have not been able to satisfy myself. He was ordered half a teaspoonful of Brand's essence with an equal quantity of brandy every six hours, and half way between each of these a nutrient suppository. Four grains of quinine were also given in a little milk every six hours. In the evening the pulse was 130, the temperature 101.8° , but he was not quite so drowsy. Next morning matters had considerably improved, the temperature 99.4° , pulse 96, much clearer. Same treatment continued unchanged.

On November 4th, that is the sixth day, there was in the evening a very copious discharge from the bowels, which almost filled the bed-pan. He seemed greatly relieved after it.

On the seventh day there were two motions, and after the ninth day the bowels moved regularly. On the ninth day the first solid food was allowed, in the shape of some chicken.

His progress henceforward was uninterrupted, and at the time of writing this paper, more than a month afterwards, the patient is walking about without any discomfort, and has rapidly put on flesh. There is as yet no sign of recurrence.

A microscopical examination of the growth shows that it is a typical columnar-celled epithelioma.

I have collected together in tabular form all the cases of colectomy for malignant disease hitherto reported which I have been able to find. The total number is fifty-one, and although this number is small, still it affords a provisional basis upon which we can form some opinion as to the value of the operation as a curative agent or as a palliative measure, and also as to its danger and consequently as to the justifiableness of the procedure.

In two of the cases I have not been able to ascertain whether the patient recovered or died, but in forty-nine cases the result is recorded. Of these I find that twenty died as a result of the operation, during a period varying from half an hour (Case 40) to thirteen days (Case 34). This gives a mortality of 40·8 per cent. By recoveries here, I mean those cases which did not die as a result of operation. Such recoveries amount, therefore, to 59·2 per cent. (twenty-nine cases).

Of these twenty-nine cases, no subsequent history is reported in nine cases,¹ but in twenty the result has been traced for a longer or shorter time. In ten cases recurrence or the death of the patient is reported. One case (17) recurred in a month, one in six months (31), death occurring in nine months; one in six months (1), death in a year; and one recurred in a year (15). Death is reported at the end of nine weeks (45), six months (9), seven months eleven days (11), one year (23), a year and a half (22), and a year and ten months (14). No recurrence was observed at the last occasion of examining the patient in ten cases; in one case after two months (51), in two cases after two and a half months (16 and 38), one after four months (43), two after five months (42 and 46), one after six months (39), one after nine months (25), one after ten months (29), and one after four years (6). In these last ten cases there is only one of which we can speak as a real cure, namely, Gussenbauer's (6), in which four inches of the sigmoid flexure, with its mesocolon, was removed for

¹ Cases 12, 20, 30, 33, 35, 41, 44, 47, and 48.

carcinoma, and in which, at the end of four years, there was no return of the disease.

Looking, then, at colectomy for malignant disease as a curative agent, we must confess that hitherto it has failed, even in a more marked way than operations for malignant disease in other parts of the body. But it is far otherwise when we look upon it as a means of affording relief to the sufferer. There are few forms of death in which the end is reached by a more painfully distressing road than by that which accompanies malignant stricture of the large bowel. I doubt even if death from starvation in malignant disease of the beginning of the digestive tube is as bad as the death from distension, when the lower portion of the tube is blocked. An operation which will remove the terrors of death, even though it may not ensure subsequent immunity, is justifiable; nay, it is more, it is demanded of the surgeon. In the cases which recovered and which were subsequently traced, even those in which it was known that recurrence had taken place, I doubt if in one of them death had been accelerated. In most of them undoubtedly life had been prolonged. And it is to be borne in mind that if in colectomy sufficient of the bowel is resected to cut wide of the disease, when recurrence takes place the disease reappears most frequently in the mesenteric glands or in the liver, and obstruction of the bowels is avoided. The mortality following the operation is no doubt formidable, and the patient must have the risks of the operation as well as its advantages placed clearly before him; but at the same time I believe that we shall have better statistics of the operation in the future than we have to-day. In the first thirty-three cases tabulated by Weir, the mortality is 51·5 per cent., but the added cases which I have collected have reduced the total mortality to 40·8 per cent. And these cases are collected from all countries and from the hands of all operators. The list includes cases which most surgeons, certainly in this country, would have hesitated to submit to operation, and which scarcely should be included in a statistical

table the object of which is to determine the exact truth as to the danger or otherwise of a legitimate colectomy. In the Table is to be found the record of a man aged fifty-seven, upon whom the operation was performed which is thus summarised: "Resection of small intestine, of transverse colon, then of the pylorus and of the superior horizontal part of the duodenum." The operation lasted five hours, and the patient died half an hour after it was completed!

There is another question upon which I would like to offer some remarks, and that is as to the relative advantage of immediate suture of the intestine over the temporary formation of an artificial anus, with the prospect of subsequently operating by suture to close the opening, although this secondary operation seems only to have been performed in one case by Maydl (23), and one attempt was made by J. M. Barton (46) to restore the calibre of the intestine by means of Dupuytren's enterotome, which was partly successful, a faecal fistula remaining.

The statistics shown by the Table of Colectomies give us little assistance in the matter. Five of the cases give no information (12, 16, 24, 44, and 49). In one case (18) suture was performed, but the result is not stated. In the remaining forty-five cases the intestinal ends were sutured together and returned to the abdominal cavity in twenty-six, and an artificial anus was formed in nineteen. Of the twenty-six cases of suture fifteen recovered, that is about 57·7 per cent. of recoveries. Of the nineteen cases of artificial anus eleven recovered, which gives a percentage of 57·9. These results are so nearly equal that they teach us little as to the relative merits of the two procedures, but they do teach us this, that in the main the death-rate is due either to the conditions which necessitated colectomy or to the operation itself, and that the employment of either the method of suture of the divided ends or the formation of an artificial anus does not materially influence the result. But beyond these considerations there is much to be said in favour of the immediate suture,

carefully performed. It is a great advantage to be able to live without an artificial anus. Even if it is proposed subsequently to close the artificial anus by a fresh resection and suture, as in Maydl's case, this entails a second operation on the patient, which cannot be altogether devoid of risk, so that, unless subsequent increase of experience proves that the immediate suture is more dangerous to the patient than the alternative artificial anus, I should be strongly inclined in any future cases to adopt the more convenient and more æsthetic method of intestinal suture at the time of the colectomy.

The patient (Case 2 in this paper) was reported to be "in better health than he has been for years," without any digestive troubles, and with no sign of recurrence of the disease in June, 1889, *i.e.* eight months after operation.

(For report of the discussion on this paper, see 'Proceedings of the Royal Medical and Chirurgical Society,' Third Series, vol. i, p. 74.)

Table of Cases of Colectomy for Malignant Disease hitherto published.

Operator and date.	Disease.	Length removed.	Treatment of resected intestine.	Situation, &c., of abdominal wound.	Result.	Where reported.
1 Reybard. 1843	Carcinoma of the sigmoid flexure	3 inches	Sutured and returned	Six inches long above crest of ilium. Wound united by 3 sutures	Recovery; 10th day movement from bowels. Recurrence 6 months later, and death 1 year after operation	Bull. Acad. de Mid., t. ix, p. 1038.
2 Thiersch. 1875	Carcinoma; acute obstruction	Not stated	Lembert's suture, intestine united and returned	Linea alba	Died in 12 hours. Septic peritonitis	Deutsche Gesellsch. f. Chir., 1878, Bd. vii, S. 127.
3 Gussenbauer. Dec. 6th, 1877. Man	Carcinoma of colon; adherent also to small intestine; acute obstruction	3 inches	Ends united by Lembert and Gussenbauer suture; wound accidentally made in small intestine closed by 3 sutures	Linea alba, and a second one transverse to this	Died 15 hours after operation from collapse	Archiv f. klin. Chirurg., 1878, Bd. xxii, S. 233.
4 Schede	Carcinoma of descending colon	None removed. Disease found too extensive. Intestine cut off	Ends sutured to wound as they could not be approximated	Over tumour on left side	Died in 24 hours from inanition; no peritonitis	Deutsche Gesellsch. f. Chir., 1878, S. 126.
5 Billroth. 1879. Woman, 60	Carcinoma of descending colon at transverse flexure	Not stated	Enormous distension of bowels; artificial anus made as it was impossible to unite ends—not stated why. Lower end closed and left in. To replace intestines, incisions made to let out flatus, which were afterwards sewn up	—	Died in 24 hours	Hauer Zeitschf. Heilkunde, 1884, S. 83.
6 Gussenbauer and Martini. Nov. 9th, 1879	Carcinoma of sigmoid flexure and mesocolon	4 inches	Lower end turned in on itself; sutured and returned to pelvis. Upper end made an artificial	Over tumour in left side of abdomen	Recovered; in 2 months resumed work. Reported by Schede in t. ciii, 486, 1883 as still free from	Petit. Bull. Gén. de Thérap., t. ciii, 486, 1883 as still free from

			anus in superior end of wound	Linea alba	disease	
7	Guyon. Nov. 23rd, 1879	Cylindrical epithelioma at junction sigmoid flexure and rectum	2½ inches	Ends united by 15 sutures and bowel replaced	Movements followed im- mediately; died in 3½ hours	für Heilkunde, Bd. i, S. 208 Petit. Bull. Gén. de Thérap., t. ciii, 587, from Peyrot, De l'intervention chirurgicale dans les ob- structions de l'intestines.
8	Baum. Jan. 13th, 1879	Carcinoma of ascending colon. Fæcal fistula made 8 weeks before operation above Poupart's lig. on right side in small intes- tine to allow escape of gas, which prevented use of percussion and palpation	8 inches	End of upper intestine being longer than that of the lower end, the former was made smaller after Billroth and Czerny's method, a wedge-shaped piece di- rected outward being made by 6 stitches. Ends then united with carbolised silk, Gusse- bauer's sutures. Gut returned Sutured	Fifth day soft move- ment; died 9th day. No peritonitis; sutures gave way	Centralblatt für Chirurg., 1878, vol. vi, p. 169.
9	Kraussold	Carcinoma sigmoid flexure	Not stated	—	Recovered, died 6 months later of recurrence in mesentery	Sammlung Klin. Vorträge, 191, S. 1724.
10	Kraussold. April, 1879	Carcinoma ileo-cæcal valve, cæcum, and vermiform process	—	As for ligation right external iliac	Died of shock in 2 hours	Centralblatt für Chirurg., 1881, vol. viii, p. 186
11	Czerny. 1880	Carcinoma of transverse colon and sigmoid flexure	3 inches of sigmoid flexure and 4½ inches of trans- verse colon	Cut ends of sigmoid united by 33 sutures, colon by 26	Recovered; movement 10th day after injec- tion. Abdominal wound opened, and healed in 4 months, but recur- rence began, and pa- tient died at end of 7 months 11 days	Petit, from Berl. klin. Wochenschrift, 1880, 638.

Operator and date.	Disease.	Length removed.	Treatment of resected intestine.	Situation, &c., of abdominal wound.	Result.	Where reported.
12 Credé. 1880. Incomplete operation	Carcinoma of intestine	—	Only a portion of tumour removed for microscopic examination. It was found to have many foci	—	Recovered	Archiv. f. klin. Chir., Bd. xx, S. 293.
13 Wittelschofer (Billroth). July 1st, 1880	Carcinoma of sigmoid flexure	9 inches	Lower turned in and sutured, upper sutured to upper end of wound	To left of median line with convexity external. Sutured from below up to artificial anus	Died in 14 hours from general peritonitis and endocarditis	Wiener med. Woch., 1881, S. 1886.
14 Fischer. Feb. 24th, 1881	Carcinoma of descending colon	Nearly 3 inches	United by Czerny's suture and then fixed by a suture in lower end of abdominal wound	Linea alba, upper $\frac{1}{2}$ closed, lower $\frac{1}{2}$ left open	Movement 1 hour after operation from rectum; 8th day faeces came from abdominal wound and fecal fistula formed there. Patient discharged on Oct. 19th (8 months after operation) cured, with no sinus. Died Jan. 9th, 1883	Deutsche Zeitsch. für Chir., 1884, No. 19 p. 251; Centralblatt für Chirurg., 1881, Bd. viii, S. 794.
15 Bryant. Sept. 10th, 1881	Alveolar carcinoma of descending colon	About 4 inches	Upper end made into artificial anus; lower closed, and sewed to lower end of wound	For left lumbar colotomy; stricture found above wound thus made pulled down and excised; lower part closed; upper made into artificial anus	Recovery; movements during operation. Aug., 1882, doing well; there had appeared recurrence at opening one year later which demanded stretching	Medico-Chir. Trans., vol. lxx, p. 131.
16 Nicholayeen, March 1st, 1881. Woman, 49	Carcinoma, sigmoid flexure prolapsed beyond anus	—	While protruding beyond anus it was removed with its mesentery	Removed per rectum	Recovery; 2½ months later reported well	Nord.med.Ark., iv, No. 13, 1882; Centralb. f. Chir., No. 36, 1882.

17	Von Wahl. 1882 (?). Woman, 26	Colon adherent to cancer of ovary and infiltrated with neoplasm Carcinoma cæcum	4 inches	Colon sutured together; Gussenbauer, Lembert; clamp to hold end inte- stine	—	Recovery, though recur- rence took place in a month	London Med. Record, April 15th, 1883.
18	Bergmann. 1882. Man, 40—50		?	Cæcum and small intes- tine sutured together	Median incision	?	Oral communi- cation from Dr. E. M. Culver, who witnessed the operation.
19	Billroth. Aug. 20th, 1881. Man, 56	Carcinoma cæcum	Cæcum and part of ileum	Colon reduced in size by 11 "occlusive" sutures, and then united to small intestine by 11 Wölfler and 19 Lembert sutures	From umbilicus to middle of Poupart's ligament	Sixth day stercoraceous vomiting; wound open- ed; cause not found; artificial anus then made. Died—no au- topsy	Hauer, Zeitschr. f. Heilkunde, 1884, S. 83
20	Billroth., Oct. 18th, 1881. Woman, 29	Carcinoma both ovaries, involving intestine and bladder, both of which were resected	5 inches	Ends united by 5 Wölfler and 9 Lembert sutures and replaced. Gut held by assistants	Median line	Recovered; bowels mov- ed on 10th day	Do.
21	Marshall. April 15th, 1882	Carcinoma descending colon	3½ inches	Lower end cleaned with sol. zinc chloride, and sutured to skin wound by silk sutures through serous and muscular layers, and gut sutures through all coats; lower end ligated with gut and fastened in wound	Wound in median line closed with silk; lateral wound made, artificial anus; first incision made in median line just below umbilicus to pubes; supplement- ary incision 3 inches long parallel to last rib of left side, 1½ inches above crest of ilium	Movement during ope- ration. Died 3rd day. Diffuse suppuration	Lancet, 1882, p. 721.

Operator and date.	Disease.	Length removed.	Treatment of resected intestine.	Situation, &c., of abdominal wound.	Result.	Where reported.
22 Volkmann	Carcinoma upper part sigmoid flexure	4 inches	Artificial anus made; both ends brought into wound	?	Recovery; reported in 1884 as dead from a recurrence of cancer 1½ years after operation	Centralb. f. Chir., No. 10, 1883
23 Maydl, April 1st, 1883. Man, 54	Cancer cæcum	Cæcum and small intestine removed, 7 inches in all	Artificial anus made, and six months later closed by re-uniting intestine after a further resection of two inches	Outside of rectus; drainage after resection of fecal fistula, which slowly contracted but did not heal	Recovered; since dead from recurrence 1 year later	Wiener med. Presse, April, 1883.
24 Czerny	Carcinoma cæcum and part of duodenum	—	—	—	Died	Centralb. f. Chir., No. 30, 1883.
25 Schede, June, 1883. Man, 50	Carcinoma of small intestine attached to abdominal walls, tumour size of man's fist	8 inches, mesenteric glands removed	Temporary ligature, ends united by single row of mucous, and double row of serous sutures, all continuous and of sub-ligated catgut	Median laparotomy	Recovered, movement from 1st day; 9 months later intestinal obstruction from a band; laparotomy; death; no recurrence found	Beilage zum Centralb. f. Chir., 1883, p. 66.
26 Partsch, July 14th, 1883	Carcinoma of small intestine	3½ inches	Sutured with silk passing through serous and muscular coats to middle of wound; ligature left about lower end of gut when stitched to wound	From umbilicus to symphysis closed, except for 2 inches in centre, where peritoneum was sutured to edge of wound, and both ends of gut were secured	During operation, movements carefully kept from abdominal cavity; doing well on 4th day, except delirium, in which patient jumped out of bed and tried to escape; death 5th day, exhaustion	Centralb. für Chir., 1883, No. 52, S. 833.
27 Lammiman, Feb. 14th, 1883	Scirrhus carcinoma of descending colon	Not stated	Upper end sutured to wound; lower end ligated with carbolic silk; gut returned to cavity	As for left lumbar colotomy; closed to artificial anus	Died in 48 hours from exhaustion; movement in a few hours	Lancet, Aug. 4th, 1883, p. 182.

28	Treves	Cylindrical epithelioma of descending colon	Not stated	Ends united by 25 Lembert's sutures, not including serous membranes; Chinese twist silk divides mesentery from the gut	Median line	Died in 12 hours without stool from shock and exhaustion	Med.-Chir. Trans., 1883, vol. lxi, p. 55.
29	Billroth. Jan. 28th, 1883. Woman, 56	Colloid carcinoma of transverse colon	6 inches	9 inner and 27 Lembert sutures; tumour adherent to anterior abdominal wall	Drain used	7th day fecal fistula developed, which closed on 14th day; recovered; reported herself well 10 months later	Hauer, Zeitschr. f. Heilkunde, 1883, S. 83.
30	Billroth. March 23rd, 1884. Man, 55	Carcinoma of cæcum, size of apple	2½ inches of colon, 1½ inches small intestine	Ends joined with 22 sutures intestine excised, after tying temporarily with broad strips of iodoform gauze	6 inches long, just outside right linea alba; drain used for 5 days	Recovered; 6th day bowels moved	Do.
31	J. K. Barton. Dec. 17th, 1883. Man, 25	Sarcoma enveloping sigmoid flexure of colon and attached to bladder	—	Upper end of bowel sutured into upper angle of wound; lower end ligatured and ligature brought out at lower angle of wound; tumour dissected from bladder; artificial anus	4 inches median	Recovery; 6 months later disease returned; death in 9 months	Supplied to author by operator.
32	Sydney Jones. May 23rd, 1884	Scirrhus carcinoma of ascending and transverse colon	Not stated	14 silk sutures through whole thickness of gut joining ends; "others" through serous coat alone, one fastening serous coat to abdominal wall	Over tumour 5 inches; vertical direction; closed, except in centre; here packed with gauze (iodoform)	Died 3rd day; no movement; exhaustion; no peritonitis, but "dirty-looking pus had infiltrated tissues" at junction of mesentery and gut	Lancet, Jan. 10th, 1885, p. 60.
33	v. Bergmann. 1884	Cancer of descending colon and sigmoid flexure	—	Sigmoid flexure and part of descending colon excised; artificial anus; 4 weeks later, 1 foot of gangrenous intestine discharged	—	Recovery with artificial anus	Deutsch. med. Wochenschr., No. 24, 1888.

Operator and date.	Disease.	Length removed.	Treatment of resected intestine.	Situation, &c., of abdominal wound.	Result.	Where reported.
34 W. Whitehead, 1884. Oct., 1884. Man, 38 Hofmökl. April, 1885. Woman, 24	Carcinoma of ascending colon, involving the cæcum Malignant adeno-sarcoma of cæcum	14 inches 9½ inches	Ileum sutured to lower angle of wound; colon to upper angle; artificial anus Ends secured with 3 rows sutures; drained	Outer border of rectus Curved 5 inches from rectus, exposing tumour	Death 13th day; acute peritonitis Recovery; movements 5th day	British Medical Journal, 1885, Jan. 24th, p. 171. Anzeige der k. k. Gesellschaft der Aertze in Wien, May 1st, 1885.
36 Lange, 1885	Carcinoma of flexure and ascending colon	4 inches	Ends united with difficulty; duodenum wound and sewn up	—	Died 2nd day	Oral communication, Annals of Surgery, 1886, vol. iii, p. 481. Do.
37 Lange, 1885. Woman, 32	Sarcoma of transverse colon, with sarcoma of both ovaries	6 inches	Ends sutured by Czerny-Lembert method	Median	Died 9th day from perforative peritonitis, diarrhoea persisting from time of operation	Annals of Surgery, 1886, vol. iii, p. 469.
38 Weir, Oct. 22nd, 1886. Man, 54	Carcinoma of sigmoid flexure, lower end	5½ inches	Temporary ligatures; artificial anus made; rectal end closed	4 inches; median	Recovery; left hospital Jan. 3rd, 1886, gaining flesh and strength; recurrence probable	Annals of Surgery, 1886, vol. iii, p. 469.
39 v. Bergmann, Mar., 35	Malignant tumour size of fist, of lower end of the cæcum	—	Resection with primary intestinal suture	—	Recovery; no return 6 months later	Virchow and Hirsch, Jahresbericht Ges. Med., 1885, ii, 406. Do.
40 v. Bergmann. Man, 57	Malignant disease	—	Resection of small intestine, of transverse colon, then of the pylorus and of the superior horizontal part of the duodenum; suture	—	Death half hour after operation, which lasted 5 hours	Do.

41	E. Hahn. Aug. 12th, 1886. Man, 19	Small-celled round-celled sarcoma of the ileum involving the cæcum	—	Cæcum and part of ileum excised; artificial anus	At border of sacro- lumbalis muscle, from 12th rib to crest of ilium; from the middle of this, trans- verse incision	Recovery with artificial anus	Berl. klin. Wochenschrift, June 20th, 1887.
42	B. Pitts. Nov. 22nd, 1886. Woman, 37	Columnar- celled epithe- lioma of splenic flexure of colon; acute obstruc- tion	4½ inches	Intestine sutured three fourths round; anterior fourth sutured to ex- ternal opening, forming artificial anus; prelimi- nary colotomy 2 months previously	3 inches outwards Oblique incision below left ribs	Recovery with artificial anus; 5 months later in perfect health	British Medical Journal, April 30th, 1887, p. 936.
43	A. Alsberg. March 24th, 1887. Woman, 53	Retro-peritoneal lipoma weighing 34 lbs., in removing which transverse colon ripped up	18 centi- metres	Joined by 26 sutures; Czerny's method	Median	Recovery; faeces evacu- ated on 6th day; 4 months later patient quite well	Deutsch. med. Wochenschrift, 1887, xii, 994.
44	E. Küster. June 15th, 1887. Woman, 22	Colloid carci- noma of trans- verse colon, attached to sto- mach, which was drawn down in to left iliac fossa	—	—	2 centimetres from ant. sup. spine, curved inwards and downwards	Recovery	Berl. klin. Wochenschrift, July 11th, 1887, p. 617.
45	J. Eastman. Sept. 27th, 1887. Woman, 20	Cylindrical epi- thelioma of de- scending colon; right ovary removed for fibroid change	8 inches	Lembert's sutures, ½ inch apart; tested by Ber- geon's method of rectal distension with H ₂ S	Median	Recovery; death 9 weeks later from return of disease in pedicle of right ovary; intestine sound	Journ. Americ. Med. Assoc., 1887, ix, p. 838.
46	J. M. Barton. Nov. 1st, 1887. Woman, 38	Epithelioma of ileo-cæcal valve	3 inches	Temporary artificial anus; subsequent use of Du- puytren's enterotome	Incision, 3 inches in length, parallel to median line, 1 inch outside middle of Poupart's ligament	Recovery; 5 months later, well; but still fecal fistula	Journ. Americ. Med. Assoc., 1888, x, 549.

No.	Operator and date.	Disease.	Length removed.	Treatment of resected intestine.	Situation, &c., of abdominal wound.	Result.	Where reported.
47	Hofmøkl. Nov. 14th, 1887. Woman, 29	Adeno- carcinoma of ascending colon, involving caecum	—	Sutured with silk in three rows	20 centimetres long from lower ribs behind, forward and downward to near Poupart's ligament	Recovery; bowels moved on 4th day; patient up and about 8th week	Wiener med. Presse, 1888, xxix, 321—357.
48	Penrose. Feb. 1st, 1888	Cancerous mass, 12 inches long, involving descending colon and mesocolon; complete obstruction	At least 12 inches	Partial suture of ends of divided gut together; rest sutured to skin wound; artificial anus	Abdominal incision 4 inches long	Reported going on well on 8th day	Medical and Surgical Reporter, Phila- delphia, 1888, lviii, 273.
49	A. Inversen. 1888	Tumour of the sigmoid flexure with intestino- vesical fistula	—	Resection of sigmoid flexure and descending colon, with resection of part of the bladder	—	—	Gynæk. og. obst. Medd. Kjøbenhavn, 1888, vii, 169—175.
50	Kendal Franks. March 19th, 1887. Man, 45	Cylindrical epithelioma of descending colon, involving parietes; almost complete occlusion	About 6 inches	Lower end inverted and sutured; upper end brought out at upper angle of wound forming artificial anus	Oblique incision, centre over tumour; 5 inches long from tip of 12th rib, downward and forward	Death on 6th day from exhaustion	Present communication.
51	Kendal Franks. Oct. 30th, 1888. Man, 58	Cylindrical epithelioma of transverse colon, size of fist; par- tial occlusion	5 inches	Primary suture of intes- tine—one row of sutures; Gély's method	Median; umbilicus to pubis	Recovery; bowels moved copiously 5th day; quite well 9 months later	Present communication.