

Endometriosis of the Bowel: Role of Bowel Resection, Superficial Excision and Oophorectomy in Treatment

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ENDOMETRIOSIS of the bowel most commonly involves the lower colon and less frequently the appendix, cecum and terminal ileum to the level of Meckel's diverticulum. No report of occurrence on the transverse colon has been noted by us. Sampson's theory of origin from retrograde menstruation, ovarian implantation, ovarian hematoma formation, subsequent rupture and secondary implantations on the pelvic peritoneum may be correct in certain cases, but stimulation of mullerian-oriented celomic epithelium explains the frequent appearance of ectopic endometrium and especially elucidates the origin of distant growths from varying portions of the celomic cavity, including its limb buds.

Endometriosis in the wall of the uterus, originally known as adenomyosis, was described before the turn of the century. T. S. Cullen stated that over a hundred cases were reported up to 1884; he reported his first case in 1892 and published a book² on the subject in 1908. Robert Meyer,¹⁶ in 1909, described an extensive benign proliferation of intestinal epithelium up to the root of the mesocolon. In this case, a bowel resection was performed by Professor Mackendrodt. The lumen in the area of the lesion was markedly narrowed and slit-like. Within the mesocolon was a connective tissue tumor which projected into the bowel and produced a folding of the overlying mucosa. The photomicrographs in this paper appear characteristic of endometriosis. DeJong⁴ reported a case with small bowel obstruction from endometriosis in 1913. Lockyer¹³ in his book, "Fibroids and Allied Tumors" (1917), stated that literature on adenomyomas of the alimentary tract was extensive at that time.

In 1920, Cullen³ described the distribution of ectopic endometrium in 18 cases, as is known today. He included the wall of the uterus, ovary, fallopian tube, uteroovarian ligament, rectovaginal septum, uterosacral ligament, round ligament, rectus muscle, umbilicus and bowel wall (Fig. 1). In one case the patient, aged 26, had diarrhea, intestinal spasms with each menstrual period, and bleeding from the bowel. The pain began a full day before the onset of menses. Exploration revealed adenomyoma of the rectovaginal septum and an independent growth of similar type in the sigmoid colon (Fig. 2). It was following Sampson's contributions in 1921¹⁹ and 1922²⁰ that the terms "endometrial adenomas," "endometrial implants" and "endometriosis" began to replace the term "adenomyoma."

In a significant paper, "Intestinal Adenomas of Endometrial Type," J. A. Sampson²¹ (1922) indicated that half the cases with endometrial cysts of the ovary will have degrees of endometriosis on some portion of the intestinal tract, which may form (1) superficial and surface implantations, (2) nodules between adherent folds of peritoneum, or (3) deep invasion into the bowel wall, which may constrict and obstruct the lumen. In 12 cases, the sigmoid colon was resected twice and the ileum once, each with end-to-end anastomosis. In the remaining nine, the bowel lesions were not excised but the uterus, tubes and ovaries were removed. He suggested that the bowel lesions may be left undisturbed if they appeared benign and treatment be restricted to excision of the pelvic organs. He added that the operative treatment for extensive bowel endometriosis was an unsettled question.

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Little appeared in the literature until Sutler,²² in 1947, reported 35 cases with endometriosis of the intestinal tract. McGuff, Waugh, Dockerty and Randall,¹⁵ in 1948, described three cases with intestinal obstruction of the terminal ileum and summarized 13 similar cases in the literature. In 1950 Grimes⁸ cited six cases with endometriosis of the colon relieved by castration. A seventh had carcinoma of the sigmoid associated with endometriosis.

Two unusual reports related to the use of testosterone in relieving symptoms. Marshak and Friedman,¹⁴ in 1950, described a constricting lesion of the sigmoid relieved by testosterone treatment for 8 weeks. Rencoret and Vargas,¹⁸ of Chile, (1954) reported an extraordinary case with persistent, obstructive and recurrent endometriosis. The patient had rectal, ovarian and intestinal lesions which required bilateral oophorectomy. Three subsequent laparotomies were performed for ileal obstruction attributed to recurrent endometriosis, possibly stimulated by adrenal estrogens. Finally, relief of symptoms followed prolonged therapy with androgens.

Johnson, Coppola and Moll,¹⁰ in 1957, reported six constricting lesions of the sigmoid from endometriosis (all of which were treated by resection), of which three were thought to represent carcinoma. They discouraged castration as the sole treatment because partial obstruction continued. Lesh and Hathcock,¹² in 1955, reported a case with abdominoperoneal resection and permanent colostomy in a case thought to represent carcinoma. The pathologic diagnosis was endometriosis.

Hauck,⁹ in 1960, reported before this association, eight cases of endometriosis of the sigmoid colon among 356 cases operated on for endometriosis. Five were diagnosed as carcinoma, six had end-to-end resection, one a wedge resection and one castration. In 1965, Cromer¹ had six cases of endometriosis of the sigmoid, all of which were resected. In 1965, Gray⁷ reported 17 cases of endometriosis of the colon, five with resection and end-to-end anastomosis and 12 with resection of the anterior wall of the bowel. Lees,¹¹ in England in 1966, reported ten cases involving the rectosigmoid; he stated that removal of the ovaries does not always allow shrinkage of the bowel lesions and relief of symptoms.

This short summary gives some general understanding of the literature on the subject of endometriosis of the bowel and may suggest that bowel resection has been the treatment of choice. On the contrary, the bowel has been rarely invaded by the gynecologist and castration has been the usual treatment. While some authors have suggested that estrogens may be administered after castration alone, a general opinion prevails that estrogens will stimulate further growth of endometriosis and increase in symptoms.

In this report, 179 cases with endometriosis of the

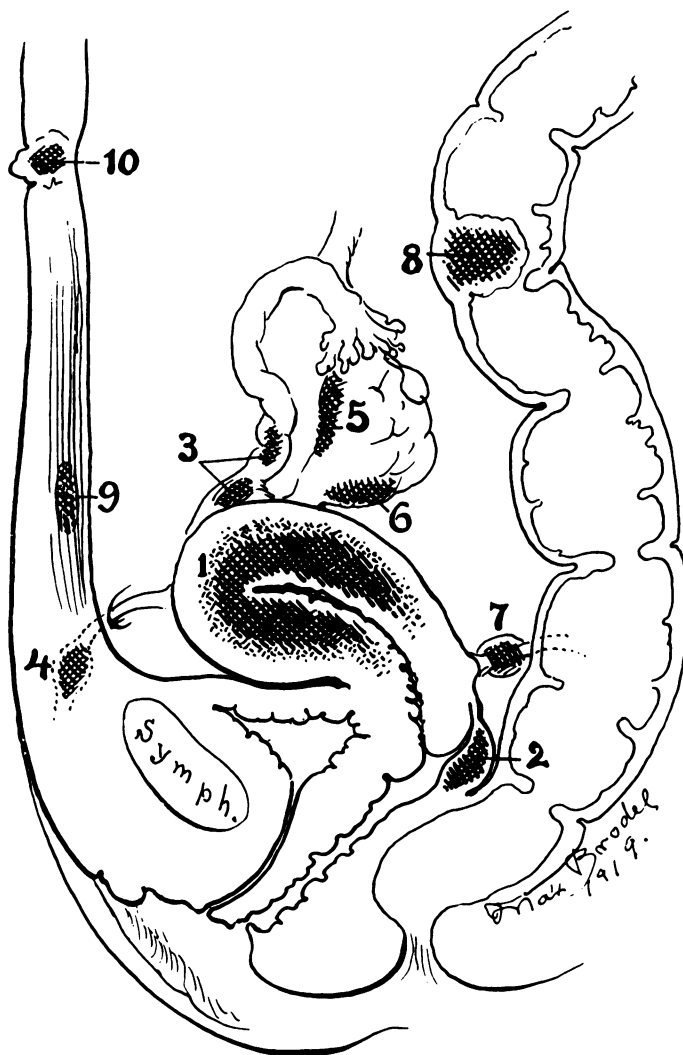


FIG. 1. Various areas in which endometrial mucosa had been found 50 years ago are similar today. (from Cullen, T. S. The Distribution of Adenomyomas Containing Uterine Mucosa. Arch. Surg. 1:215, 1920. Reprinted by permission).

bowel (occurring in some 1500 cases operated for endometriosis) are analyzed in three groups. In 81, apparently all endometriosis was excised without entering the lumen of the bowel. In the second group of 61 cases, not all of the endometriosis was excised, either due to extensiveness of the lesions or lack of bowel preparation. In the third group, 37 cases had bowel resection for extensive lesions, impossible to excise otherwise, with end-to-end anastomosis in ten and excision of full thickness of the anterior wall in 27 cases.

I. Apparent Complete Surface Excision Bowel Endometriosis. (81 Cases)

Apparent complete excision of lesions without entering the lumen of the bowel was carried out in 81 cases (Table 1). A preoperative diagnosis of pelvic endometriosis was made in 78 of the 81 cases from palpation

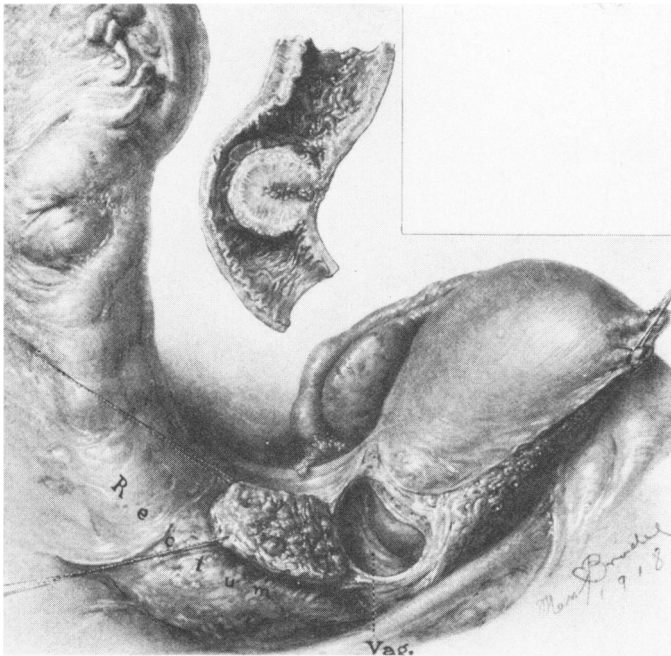


FIG. 2. Endometriosis in the rectosigmoid and free portion of the sigmoid (Cullen, T. S. The Distribution of adenomyomas Containing Uterine Mucosa. Arch. Surg. 1:215, 1920. Reprinted by permission).

of the disease in the cul-de-sac, uterosacral ligaments and rectal wall. Because of concomitant endometriosis in the ovaries, myomas, and age after a reasonable childbearing time, the uterus and both ovaries were preserved for childbearing in only nine of this group.

Seventy-nine had estrogens postoperatively, 25 from their own ovaries and 54 from oral estrogens given in small dosages.* Two had none. Pain was relieved in 65 of the total. Nine of those with estrogens developed recurrent palpable endometriosis and seven others de-

* The estrogens used in all cases was conjugated equine estrogen in dosages of 0.3 mg., 0.6 mg. and occasionally 1.25 mg. daily. (Premarin, Ayerst Laboratories.)

TABLE 1. *Endometriosis of Bowel*

Group I. Bowel Not Entered. Complete Excision. Cases: 81. Preop. Diagnosis Endometriosis 78	
Operations:	
Uterus and Bilateral S & O	56
Ovaries Retained	25
Estrogens Postop: 79 Cases	
Ovaries Retained	25
Oral Estrogens	54
None	2
Results: 81 Cases. (Estrogens 79)	
Recurrent endometriosis or symptoms	16
Palpable 9 (Retained ovaries 5)	
Pain 7 (Retained ovaries 3)	

TABLE 2. *Endometriosis of Bowel*

Group II. Bowel Not Entered. Incomplete Removal. Cases: 61 Preop. Diagnosis Endometriosis: 51	
Operations:	
Uterus and Bilateral S & O	53
Ovaries Retained	8
Estrogens Postop: 46 Cases	
Ovaries Retained	8
Oral Estrogens	38
None	15
Results: 61 Cases (Estrogens 45)	
Recurrent endometriosis or symptoms	10
Palpable 8 (Retained ovaries 2)	
Pain 2 (Retained ovaries 1)	
Marked residual endometriosis (estrogens intermittently)	17

veloped symptoms suggesting recurrent endometriosis. Five with conservation of ovaries and retained uterus developed palpable recurrences. Three others with retained ovaries developed pain. Of the 56 cases with both ovaries removed and receiving estrogens, eight developed masses or symptoms thought related to endometriosis. Discontinuation of estrogenic therapy in those cases relieved the pain and menopausal symptoms recurred.

In this series, when endometriosis of the bowel and pelvis appeared totally excised, palpable recurrence or symptoms recurred in 16 of 79 cases with estrogens (23.1 per cent). Twenty-five of those had retained ovaries, of which eight had recurrence. However, 76.9 per cent of those with continued estrogens from 1 to 20 years remained free of evidence of recurrent endometriosis.

II. Incomplete External Surface Excision Bowel Endometriosis. (61 Cases)

Of the 61 cases with bowel endometriosis, clearly not all excised although attempted without entering the bowel (Table 2), a preoperative diagnosis of endometriosis was made in 51 cases from palpation of the disease in the cul-de-sac, uterosacral ligaments and rectal wall. Both ovaries and the uterus were excised in 53 cases, because the ovaries were severely involved or the bowel lesions were quite extensive. The ovaries alone were excised in five, and the uterus and ovaries were preserved for childbearing in only three. Fifteen had such extensive residual lesions that no estrogens were given postoperatively. Bowel and pelvic pain were largely relieved in the latter but menopausal symptoms continued.

Estrogens postoperatively were present in 46 cases with residual endometriosis, eight from their own ovaries and 38 from oral estrogens, commonly on an intermittent basis. Ten with estrogens have had evidence of recurrence, six with palpable endometriosis and four with symptoms alone. Four patients in particular developed

marked bowel cramping with constipation or diarrhea, following small dosages of estrogens.

Residual bowel endometriosis has remained largely asymptomatic while under the influence of estrogens in 36 of the 46 cases. In 15 of the 36 the residual endometriosis in the bowel wall was moderate or marked and yet the patients were largely comfortable with estrogens. Seven of these had residual rectosigmoid lesions. In eight the higher sigmoid lesions were limited to the antemesenteric border of the bowel. Estrogens were not given until 3–5 years later in two cases. One developed severe symptoms when given estrogens.

III. Bowel Resection of Endometriosis. (37 Cases)

In 37 cases, the full thickness of the bowel was resected (Table 3). Ten had end-to-end anastomosis, of which two involved the terminal ileum (one obstructed, Fig. 3) and eight involved the lower sigmoid (one obstructed). Twenty-seven had excision of the anterior wall of the sigmoid or rectosigmoid colon. Resections, whether end-to-end (Fig. 4) or excision of the anterior wall of the colon, were performed in two layers with double-zero chromic suture in the mucosa and interrupted four zero silk sutures externally. Bowel preparation, given to 21 of the 37 cases, consisted of castor oil (60 cc.) at noon the day previous to the operation, followed by neomycin (1 gm.) and sulfathalidine (1.5 gm.) each hour for 4 hours, then at intervals of 4 hours until operation (Poth rapid preparation).¹⁷ All received postoperative antibiotics. Gastric suction was used in 11 cases, while 25 were not allowed to speak or receive oral fluids until passage of flatus. Cecostomy was used in three cases; colostomy was performed in one for low obstruction before subsequent resection.

A preoperative diagnosis of pelvic endometriosis was made in 33 of the 37 cases from palpation of the disease in the cul-de-sac, uterosacral ligaments and rectal wall. The uterus and both ovaries were excised in 28, the uterus and one ovary were removed in four, while five had conservative operations which preserved possible fertility. Two of the latter five have had one and two children each. Also, three of the latter five had had recurrence of marked endometriosis, including one with two children subsequent to the operation. Four of the 37 patients had previous conservative operations for endometriosis, with complete excision the second time. Four of the 37 patients had received high dosage progestin therapy daily for 5 to 7 months previously without improvement.

The ages of these 37 patients varied from 25 to 49 years, nine being between 31 and 35 years, ten between 36 and 40 years, and eight between 41 and 45 years. Twenty-four were above the age of 36 years. Previous

TABLE 3. *Endometriosis of Bowel*

Group III. Bowel Excised. All Endometriosis Removed.
Cases: 37. Preop. Diagnosis Endometriosis 33

Operations:		
Uterus and Bilateral S & O		28
Ovaries Retained		9
End-to-End		10
Anterior Wall		27
Technic:		
Bowel Preparation		21
Gastric Suction		11
Silence		26
Cecostomy		3
Colostomy		1
Estrogens Postop: 36 Cases		
Ovaries Retained		9
Oral Estrogens		27
None		1
Results: 37 Cases		
Recurrent endometriosis or symptoms		9
Palpable	3	(Retained ovaries 3)
Pain	6	

pregnancy had occurred in 21 (56.7 per cent) and had not been attempted in eight.

In follow-up of the 37 cases for 6 months to 15 years, palpable endometriosis reappeared in three cases (with retained ovaries), while six others (with oophorectomy and estrogens) developed mild or moderate symptoms which suggested recurrence. On the other hand, 28 cases have remained asymptomatic and have no palpable endometriosis. Nine had one or both ovaries intact, 27 received oral estrogens and one received no oral estrogen.

Discussion

Intestinal symptoms, in addition to the usual gynecologic complaints of acquired dysmenorrhea, dyspareunia, menometrorrhagia and sterility, suggest involvement of the bowel when endometriosis is palpated in

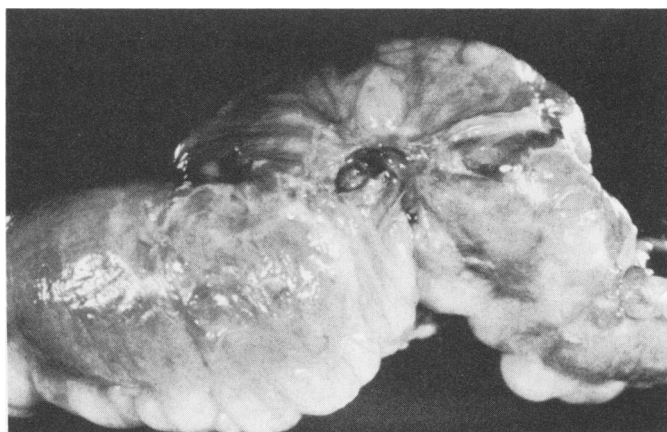


FIG. 3. Endometriosis of the terminal ileum causing obstruction. Symptomatic exacerbations after oophorectomy when estrogens were given.

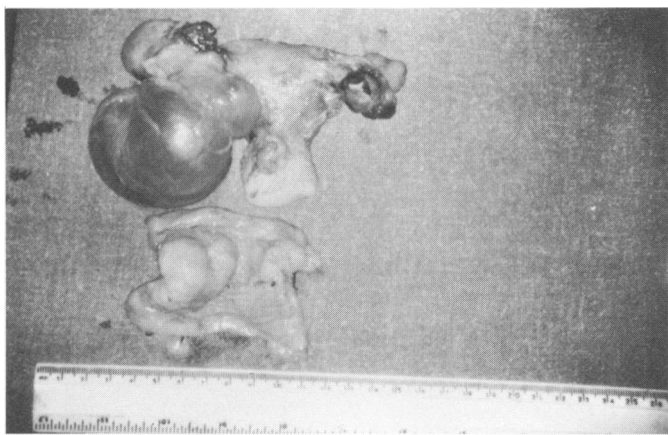


FIG. 4. Endometriosis of the rectosigmoid causing severe obstipation and menstrual pain. Recurrent endometriosis of ovaries and posterior uterus, following conservative ovarian resections 6 years earlier.

the pelvis. These include marked constipation, obstipation or diarrhea with the menses. Diarrhea may persist throughout the month. Indigestion, nausea, vomiting, daily cramping and rectal pain also occur. On the other hand, on occasion, marked endometriosis of the bowel may produce no symptoms. Obstruction in the ileum, partial or complete, does occur, as does obstruction in the sigmoid colon. The palpation of typical tender nodularities through the rectum confirms the diagnosis of pelvic endometriosis, and in those cases with intestinal symptoms, suggests the possibility of higher lesions in the intestinal tract.

In 162 of 179 cases with significant bowel endometriosis, a preoperative diagnosis of pelvic endometriosis was made from rectovaginal examination (90.5 per cent). On the other hand, only 21 of 37 cases who merited resection of the bowel wall had preoperative bowel preparation, which indicates that the severity of the bowel involvement was not always appreciated.

In none of the cases reported here was the mucosa perforated, nor was bleeding from the bowel noted. X-ray films of barium enemas revealed no accurate diagnosis. Commonly, impingement of the lumen was not demonstrated. Proctosigmoidoscopy revealed normal mucosa and extrinsic pressure. These latter examinations served to exclude carcinoma and were helpful at abdominal exploration.

When bowel lesions which represented endometriosis were found at operation, differential diagnosis ordinarily was not difficult in this series. The puckered, retracted area on the antemesenteric surface of the bowel, with rusty-brown or purple granular appearance, ordinarily indicated endometriosis. Less often a constricting lesion extended around the entire bowel, but usually brownish granular endometrial growths were found on the pelvic

peritoneum and ovaries, commonly with the formation of endometrial cysts. This association made the diagnosis of simultaneous bowel endometriosis likely. However, recorded cases in the literature note that pelvic endometriosis and bowel carcinoma may exist together. Differentiation from carcinoma of the bowel always was considered. When the diagnosis was not clear, excision and biopsy were contemplated. Training and experience in bowel surgery are important in these situations.

In younger women conservative excision of endometriosis to preserve fertility was carried out. In cases with extensive bowel lesions, as a rule, the endometriosis was widespread and commonly the ovaries were severely involved, so that hysterectomy and oophorectomy were necessary.

In all cases with operations for symptomatic pelvic endometriosis, including those on the ovaries and pelvic peritoneum, total excision of the growths was attempted. Results from such conservative operations have been documented by several surgeons (Gray).⁵ Dissection of endometriosis from the bowel wall is advised when possible (Gray).⁶ As the endometriosis becomes more extensive, conservative excision is possible less frequently.

Pelvic endometriosis requires operation only if symptoms are marked or the diagnosis does not exclude malignant disease. This especially refers to the persistent adherent ovarian cyst, which usually requires operation. If laparotomy is performed for another reason and asymptomatic endometriosis is found, implants and cysts involving the pelvic organs ordinarily are excised. An asymptomatic nodule in the bowel first requires an accurate diagnosis. If a strong opinion of endometriosis exists, excision may not be necessary. In the 179 cases reported here, there was little or no doubt of the gross diagnosis, and in no instance was the diagnosis proved incorrect. However, doubt in diagnosis will exist in individual cases from time to time. In those instances, excision biopsy is indicated. In the menopausal woman with marked asymptomatic bowel endometriosis found incidentally at laparotomy, oophorectomy is to be considered. Estrogens may be used cautiously thereafter. In a number of cases reported here with sizeable residual lesions of endometriosis, castration was performed and estrogens were given intermittently or continuously with good results. On the other hand, in the case with marked intestinal symptoms and severe lesions, excision of bowel endometriosis, with resection as necessary, and commonly with the pelvic organs, is the preferred approach in this opinion.

Colostomy has been performed rarely in this experience (in only one case with complete low obstruction, followed by subsequent excision and restoration of bowel continuity). Cecostomy was used three times. These

diverting operations with bowel resections possibly have not been used often enough. Cecostomy is especially appealing as it averts a second operation.

No real difference was noted in the postoperative course of patients with and without antibiotic bowel preparation. However, preoperative bowel preparation is used if an extensive bowel lesion is suspected. Castor oil alone produces a clean, empty bowel and probably should be used more frequently.

Postoperative antibiotics were given when the bowel was resected. Nasogastric suction was used in 11 of 37 patients with open resection of the bowel. The remainder had requested complete silence and complete restriction of oral intake to prevent air swallowing until flatus was passed. No unusual distention followed in those cases. None of these 179 patients had appreciable postoperative complications and all recovered.

Attempts to compare these three groups of patients are difficult, largely because the degrees of bowel involvement were progressive. In Group I, of 81 cases with apparent complete excision of endometriosis without entering the bowel, sixteen developed recurrent palpable or symptomatic endometriosis over a period of years. Obviously, not all endometriosis was excised surgically although the operation seemed complete. In Group II, of 61 patients with extensive disease, not excised totally, ten of 46 cases with estrogens developed increased symptoms and palpatory evidence of endometriosis. But, in 36 patients estrogens were continued, often intermittently, and with good results. Fifteen of these have taken continuous estrogenic therapy over many years with few or no symptoms. In eight of these cases the antemesenteric border of the freely movable sigmoid was involved. A lack of constriction and mobility of the bowel in the higher areas may explain the asymptomatic effect of estrogenic therapy over long periods of time. Residual partially excised cul-de-sac lesions did not react in seven cases after estrogen and may represent inactive scar tissue. Evidently following castration and partial excision of endometriosis many patients may take estrogens, often continuously, with marked improvement.

Finally, in Group III patients with resection of the full thickness of the bowel wall (37 cases), palpable endometriosis re-appeared in three with retained ovaries, while intermittent symptoms in six suggested endometriosis. Bowel resection for severe involvement was followed by great improvement.

Since it is clear, at least to the author, that ordinarily residual endometriosis will continue to grow when estrogens are administered after castration, the operations here reported have been designed to remove as much endometriosis as possible, to preserve fertility when feasible, and to alleviate pain and allow the patient to receive estrogenic therapy. On the other hand, the marked variation

in the growth and symptoms of endometriosis is well known. This disease, as pointed out by Sampson 50 years ago, has vagaries and variations that are not explained. It may progress steadily for a period of time, only to become static and then grow rapidly again. Symptoms are extremely variable. The response to estrogens is, indeed, different, but activity is progressive as a rule.

Summary

1. In 179 cases with endometriosis of the bowel, total superficial excision was performed in 81. Estrogens were continued in 79. Recurrent palpable endometriosis appeared in nine and symptoms in seven (20.2 per cent).

2. Sixty-one cases with partial superficial excision of bowel endometriosis had continued estrogens in 46. Recurrent endometriosis or symptoms appeared in ten of the latter. (21.5 per cent)

3. In 37 cases with extensive endometriosis of the bowel, resections were performed (end-to-end in ten, and anterior wall of bowel in 27). Recurrent endometriosis was palpated in three and suggestive symptoms appeared in six. (24.3 per cent). In the three groups the endometriosis was progressively severe.

4. Conservation of fertility was performed in only 17 of 179 cases due to extent of the disease. Ovaries were conserved in an additional 25 cases.

5. Intestinal obstruction was present in two cases (one ileum and one colon).

6. Operations were performed for symptomatic endometriosis or for diagnosis and exclusion of malignant disease.

7. As a rule the gross diagnosis at operation was clear. Excision-biopsy is indicated in doubtful cases.

8. Asymptomatic bowel endometriosis found at operation may be left undisturbed in the young for the time, or castration may be performed in menopausal patients.

9. Certain symptomatic patients may have relief from castration and may receive cautious estrogenic therapy. However, continued estrogens may cause recurrence or continued growth of endometriosis. Complete excision of endometriosis, whether pelvic or intestinal, to relieve symptoms and allow subsequent estrogenic effects is the procedure of choice when feasible.

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DISCUSSION

DR. JOSEPH H. PRATT (Rochester): Dr. Gray has given us an excellent summation of his extremely large experience with, and long interest in endometriosis of the intestinal tract. All abdominal surgeons, sooner or later, will encounter the problem of endometriosis involving the bowel. When it happens, one must make the decision, first, as to diagnosis; second, as to the timing of treatment and, third, as to what should be done.

How often does this occur? Kratzer and Salvati [*Am. J. Surg.*, 90:866, 1955] reported that in 77, or 34%, of 225 patients with endometriosis, the bowel was involved with the endometriosis.

We have conducted a study on my own service over a 5-year period. There were 543 laparotomies on patients from 15 to 55 years of age, excluding those with carcinomatosis and postradiation. In 280 patients, or 52 per cent, we could identify endometriosis; and of the 280 who had endometriosis of all degrees, 94, or 34 per cent—almost exactly the same figure as Kratzer's—had endometriosis of the bowel.

I would like to ask Dr. Gray if his patients who have endometriosis seem to correspond to these statistics.

It should be emphasized, as Dr. Gray has, that endometriosis is a widespread disease. The lesions are not single, they may be multiple, and occur in multiple sites, and one should expect this. Even though the rectosigmoid is the most commonly involved portion of the bowel, other areas can and may be involved. Also, there may be involvement of the ileum, and so on, without extensive endometriosis of the pelvis.

[Slide] Recently, we operated upon a 45-year-old patient who was completely symptomless from the standpoint of the intestinal tract. We were exploring her for pelvic endometriosis under the impression that the disease was primarily in the ovaries, which it was. But she also had three obstructing lesions in the distal ileum and a fourth area was in the sigmoid.

We first resected the ileum, then resected the sigmoid. This is the type of problem that will occasionally be encountered with endometriosis of the bowel.

One must resect such areas. You cannot be certain that with ablation of the ovaries the lesions will subside. They might, but if, subsequently, the patient is to receive estrogens, the lesions may perfectly well be reactivated and then obstruct the bowel. I think the best treatment for the patient under these circumstances is to make the decision to resect the obstructing lesions.

Our feeling is that if the endometriosis is causing 40 to 50% diminution in the lumen of the bowel, or if the endometrial lesion

completely surrounds the bowel, then one should resect the bowel, since castration for relief may not be effective.

Secondly—and it was emphasized by Dr. Gray in his paper—in the young patient with partially obstructing lesions but who wants to retain her uterus, tubes and ovaries, one should resect areas of endometriosis of the bowel. The continuity of the bowel can be re-established and the ovaries, tubes and uterus can be retained. A number of these patients will reproduce. The only suggestion I can make for that situation is to advise the girl that when she gets out of the hospital she should go right home and get to bed. She may not have much time for conception, and she should start now.

[Slide] These are our 94 patients with endometriosis of the bowel. Of course, the rectosigmoid was the most commonly involved region, the sigmoid next, but then it is found in the appendix, the ileum, the cecum, even in the rectum. We had to resect the bowel in 11 of these patients. The 14 cases of endometriosis of the appendix were interesting but entirely incidental. If we can suspect that there is an obstructing lesion in the bowel, we will put these patients on a 2-day colon prep preoperatively, with antibiotics, cleansing enemas, and so on. But if we encounter the lesions unexpectedly, we resect them anyway, trusting in the preoperative cleansing enema; afterward the patients are given antibiotics. We have not had to use any proximal colostomies in these patients.

I would like to ask Dr. Gray: (1) Does he use a preoperative colon preparation in extensive endometriosis when he does not know whether the bowel is involved? (2) How long does he wait after operation, when he has had to resect bowel or ablate all the ovarian tissue, before these people are given estrogens?

DR. GEORGE B. SANDERS (Louisville): I am sure we are all aware that Dr. Gray's paper represents an immense experience, not only with endometriosis, but with endometriosis of the bowel. Consequently, it is with considerable hesitation that, with my meager experience in these matters, I arise to discuss his paper and to describe interesting patients with endometriosis involving the mid-rectum, extensively in the pelvis, and also the left ureter.

The first of these was a young woman in her mid-thirties, who had had earlier obstructive manifestations involving the rectum and large bowel, and most obviously had extensive pelvic endometriosis. She had never been pregnant.

At operation a very extensive process of endometriosis was found, involving most of the adjacent pelvic organs—the uterus, the mid-rectum, the left tube and ovary, and to a lesser extent the right tube and ovary.