ECTOPIC SPLEEN CAUSING INTESTINAL OBSTRUCTION

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Ectopic or wandering spleen is a comparatively rare condition, as is indicated by the fact that in five hundred splenectomies done at the Mayo Clinic [1] there were only two cases of "wandering spleen."

Case Report.—The patient in my case was a woman, seventy-three years of age, who had been in good health for the past forty years except for four attacks of pain in

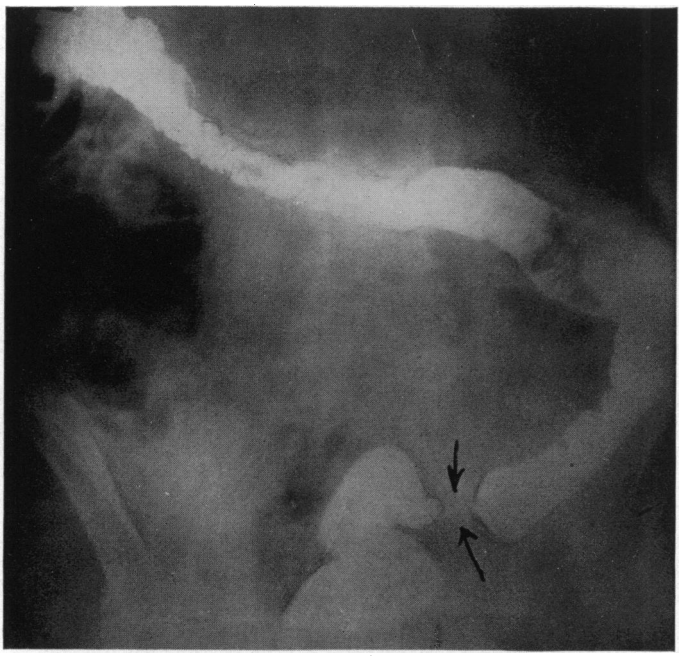

Fig. 1.—Skiagraph showing the interruption in the fecal flow in the colon caused by the pressure of the wandering spleen.

the lower abdomen, constipation, and nausea without vomiting. There had been a twenty-year interval between the last attack and its predecessor. The attacks had lasted one to two weeks, with the exception of the last, which was of only ten hours' duration.

This last attack occurred in May, 1929, and since that time the patient had lost about twenty pounds in weight, partly owing to her loss of appetite, due to fear of the pain. A fluoroscopic examination with a barium meal a few days after this attack was followed by a low-grade fever of 100° to 100.5° F. at night.

For two months previously, the patient had felt a sausage-shaped mass in the lower quadrant, which at one time during the barium meal had become quite large and tender. She had refused to submit to any operative procedure and had been treated with ice

packs by her family physician. She was admitted to the Sydenham Hospital on August 5, 1929.

On examination there was a palpable mass in the left lower quadrant in the sigmoid axis. It appeared to be sausage-shaped, was not movable, but was compressible. There were moderate abdominal tenderness and rigidity on palpation, most marked on the left side.

The X-ray examination of the colon with a barium enema showed the following:

The rectum and distal end of the sigmoid filled readily. About mid-sigmoid there was evidence of some obstruction with very definite tenderness. After a short interim the obstruction was overcome and the barium meal was seen to pass into the descending and transverse regions of the colon. During the entire fluoroscopic examination this portion of the sigmoid over an area of about three inches in length appeared extremely spastic. The film picture had the appearance of a chronic inflammatory lesion.

In view of these findings and the patient's age, a diagnosis of neoplasm of the sigmoid was made.

The laboratory tests disclosed: Urine had a faint trace of albumin, many squamous cells, many white blood cells, some clumps. Blood count on August 5: Hæmoglobin 63 per cent.; red blood cells 3,848,000; white blood cells 8,200; neutrophiles S. F. 57 per cent., B. F. 21 per cent.; S. L. 15 per cent., mononuclears 6 per cent.; basophiles 1 per cent.

On the seventh of August operation was performed under spinal anæsthesia. A left upper rectus incision revealed an ectopic, enlarged and very congested spleen surrounded by a very tense capsule. Its pedicle was twisted, and the notched anterior border of the spleen was turned downward. There were adhesions fixing the spleen to the lower ileum. The displaced spleen, weighing about 900 grams, pressed on the descending colon and the sigmoid so as to block the passage completely. The distal transverse colon and the splenic flexure were displaced downward and distended. Clamps were placed on the pedicle, the spleen separated *in situ* and then removed. There was no post-operative shock, and convalescence was smooth.

On the second day after operation, there was an arrhythmic pulse, but otherwise the patient's condition was good. The abdomen was soft and not tender; urine and gas were voided freely from the first post-operative day; there was a good bowel movement on the second day *post operationem* and a spontaneous defecation on the following day. The wound healed by primary union, and the patient was discharged from the hospital in good condition August 16.

She remained in excellent health for about two months, when she suddenly developed anuria and died.

Three blood counts were made after operation as follows:

TABLE I

Blood Counts in Author's Case

Date	Hæmoglobin percentage	Red blood cells	White blood cells	Neutrophiles		Transitionals	S.L.	Eosinophiles	Platelets
				S.F.	B.F.				
Aug. 8.....	70	4,168,000	20,000	71	12	2	14	1	..
Aug. 10....	75	4,640,000	20,000	64	14	..	12	3	..
Aug. 12....	71	4,540,000	15,000	60	11	6	..	..	408,000

The pathological report was made by Dr. A. A. Eisenberg and read as follows:

"Enlarged spleen measuring 18 by 10 by 6 centimetres and weighing 900 grams. The capsule of the spleen is considerably thickened, and the splenic artery leading to

it is also considerably thickened. On section the spleen has a nutmeg appearance, is very friable, with very distinct markings of the venous spaces.

"Histologically, the spleen shows a marked increase in the fibrous framework, the capsule is markedly thickened, the Malpighian bodies are increased in number and size in some places. In them the lymphocytes are decreased and the endothelial cells are increased proportionally. There are areas of fresh hæmorrhage present throughout. The blood spaces in the pulp are unusually dilated. Fibrosis around some Malpighian corpuscles suggests the appearance of fibro-adenoma.

"*Pathological diagnosis.*—Idiopathic splenomegaly, possibly Banti's disease?"

REVIEW OF EARLIER LITERATURE

Wandering or ectopic spleen is usually acquired and occurs more frequently in women. It is caused by traction on its suspensory ligaments and favored by enlargement of the organ with consecutive increase in its weight, and by laxity of the abdominal wall.

Torsion of the pedicle is not an uncommon complication. Intestinal obstruction due to the wandering spleen is, however, an unusual condition.

In the earlier literature there are records of five cases in which the patients died of ileus; pressure of the ectopic spleen or from its twisted pedicle was found to be the cause.

ALONZO (*Arch. d. med. espagn. y etrang.*, October, 1846) reports a case in which the spleen was found in the right iliac fossa, covered with omentum and adherent to surrounding tissues; the transverse colon was displaced by the enlarged spleen and strangulated.

BABESIU,[2] 1877, reports a case in which the patient with slight symptoms of ileus was treated with enemata, calomel and croton oil from the fourth to the thirteenth of August, 1877. The full diagnosis was made at autopsy and reads as follows: "Strangulatio ansæ jejuni per ligamentum gastro-lienale lienis migrantis dextrorsum versus tortum, subsequente thrombosi venæ et arteriæ lienalis, gangræna lienis, peritonitide et ileo." The spleen lay in the left inguinal region extending into the right side of the small pelvis. It was adherent, and the gastro-splenic ligament was twisted. A loop of jejunum was caught and compressed between this ligament and the spinal column.

In COLLINS' case,[3] 1882, an enlarged and displaced spleen pressed on the sigmoid flexure and caused strangulation.

LEDDERHOSE,[4] 1890, cited a case described by Helm and Klob in which the spleen lay along the inner surface of the left ilium, the pancreas being so displaced that it pressed the duodenum up against the vertebræ, causing gastric dilatation and subsequent gangrenous perforation.

In 1893 KÖRTE [5] demonstrated a specimen obtained at autopsy showing an ectopic spleen with a twisted pedicle. A loop of small intestine was caught and strangulated between the adhesions at the upper pole and the pedicle, causing the fatal intestinal obstruction.

REVIEW OF RECENT LITERATURE

In the more recent literature, a few cases have been reported in which a wandering spleen caused symptoms of intestinal obstruction and in which splenectomy was done with complete relief of symptoms.

O'SHEA [6] in 1915 reported two cases of wandering spleen in women; one aged forty-four, the other forty.

In the first case, there had been several attacks of severe abdominal pain and

vomiting in the past eighteen months. Three days before she came under care, she had developed a similar attack of pain and vomiting with inability to secure a satisfactory bowel movement. The abdomen was tender to pressure, and there was a large, rounded, somewhat movable and tender mass in the right iliac fossa.

At operation, this mass was found to be a large and engorged spleen, twisted on its pedicle, with "a loop of the small bowel engaged in the torsion." Splenectomy was done and the patient made a good recovery. The spleen showed chronic passive congestion. The patient was in excellent health after the operation. At the last examination, eighteen months after operation, the blood count showed red cells 4,500,000, white cells 6,900, and no abnormal cells.

In the second case reported by O'Shea, there were no symptoms of intestinal obstruction. A tumor was palpable on the left side of the pelvis. Splenectomy resulted in complete recovery.

PETRIDIS [7] in 1918 reported two cases of wandering spleen with torsion of the pedicle; one in a man twenty years of age, the other in a woman thirty-two years of age.

In the first case, before admission to the hospital, there had been four days during which no fæces were passed, and the patient had considerable pain. This condition was relieved by a laxative and hot applications. On examination a tumor was found on the right side of the abdomen. This was not recognized as the spleen until operation was done. In the second case the spleen was found to be adherent to the appendix. Both these patients were treated by splenectomy and both made good recoveries.

In 1922 PACCHINI [8] reported a case in a woman fifty-six years of age. Ten years previously she had had an attack of abdominal pain and gastric dilatation with vomiting, relieved by the passage of flatus. Shortly before admission to the hospital she had one attack of abdominal pain and vomiting, and was admitted to the hospital when a second attack developed. Meteorism was so marked that abdominal palpation could not be done satisfactorily. It was somewhat relieved by the passage of a long tube into the intestine to aid the escape of flatus following the administration of an oil purgative. Then a tumor could be palpated on the left side of the abdomen, which from its form and consistency was thought to be the spleen. At operation, this diagnosis was confirmed. The mass was of globular shape but normal in size and consistency. Splenectomy was followed by complete recovery.

BROSSMANN [9] in 1922 reported a case in a woman forty-five years of age, who was sent to the hospital with a tentative diagnosis of ileus. She had had severe epigastric pain and nausea and passed neither fæces nor flatus. There were abdominal distention and tenderness to pressure on the left side, where a tumor was palpable. At operation, this tumor was found to be the spleen on a twisted pedicle and adherent to the omentum. After freeing the adhesions and ligating the pedicle, the spleen was removed. It was enlarged and showed hæmorrhagic necrosis. The patient was in excellent health two months after operation. Three blood counts on the second, fourth and eighth days showed the lowest red cell count, 4,000,000, on the fourth day; by the eighth day it had risen to 6,000,000; the total leucocyte count diminished from 17,000 to 14,000.

In 1927 HARRIS [10] reported a case of wandering spleen causing intestinal obstruction in a man twenty-seven years of age. He had not passed fæces or flatus for about thirty-six hours prior to admission; he had vomited "some greenish fluid" once. Pain was not severe, although there were occasional "colicky attacks." The abdomen was slightly distended, and there was a large, rounded, firm mass to the left of the umbilicus. The patient stated that he had noted the presence of this "lump" for about a year, but it had caused no symptoms. An exploratory laparotomy was done. A left subumbilical paramedian incision was made and "a firm, fleshy, reddish-blue mass" found that proved to be the spleen. The pedicle had undergone torsion for one complete turn. The tail of the pancreas was contained in the pedicle. The spleen was removed without difficulty; the pedicle was ligated in several portions distal to the tail of the pancreas and the free ends of the vessels invaginated. The patient died on the ninth day following a sudden

collapse. Examination of the spleen showed a misshapen organ with a high degree of passive congestion.

Harris noted that Ledomski (*Khirurg. Mosk.*, vol. xxiv, p. 559, 1908) reported a case in 1908 in which a wandering spleen with twisted pedicle caused intestinal volvulus. In his own case, Harris believed that the twisting of the pedicle acted as the predisposing cause of the obstruction, the consequent swelling of the organ sufficing to obliterate the lumen of the bowel by pressure.

Discussion.—In my own case, I am of the opinion that elongation of the ligaments with its consequent stretching of the blood-vessels, aggravated by the torsion of the pedicle, produced congestion and enlargement of the spleen, which then pressed heavily on the intestines, as in the case noted above by Harris. I am strongly of the belief that in my case the removal of the organ was the only possible procedure, and in this opinion I find myself in agreement with others. Fowler [11] states that, in cases of wandering spleen, splenectomy is the treatment of choice and produces "slight if any change in the blood picture." Sutton [12] says that the most satisfactory treatment for wandering spleen with twisted pedicle is splenectomy.

Pool and Stillman [13] write that in cases of movable spleen beneficial results should be "confidently expected" from splenectomy and that even with torsion of the pedicle, the prognosis should be good if there is "prompt recognition that a surgical condition exists."

A definite pre-operative diagnosis of ectopic spleen causing intestinal obstruction is rarely made, as indicated by the cases already cited. The spleen under those circumstances is usually palpable as a "mass" or tumor and is often enlarged and misshapen, so that its typical outline, especially the anterior notched border, cannot be recognized. The symptoms, however, indicate the need of operation.

Removal of the spleen in adults is generally recognized as entirely compatible not only with life but also with good health and vigor. The functions of the spleen are evidently taken over by other parts of the reticuloendothelial system. Following splenectomy, there is usually some change in the blood count, which may be persistent; but there is comparatively little variation from the normal and no abnormality of the blood cells.

Fowler,[11] as noted above, believes that the blood change is slight, if any, when there is no previous disease of the spleen.

Beer [14] states that, following splenectomy, there is an increase in the blood platelets and usually in the red cells; also, a tendency of the white cells toward an increase in the lymphocytes and sometimes in the eosinophiles.

Carrol Smith [16] reports a case in which splenectomy was done for a wandering spleen simulating a uterine tumor. A month after operation, the red cell count was 5,000,000; the white cell count, 7,400.

In Sutton's [12] case of splenectomy for wandering spleen with twisted pedicle in a boy thirteen years of age, the total white cell count was high, 31,700, immediately after operation. It decreased subsequently but remained above normal (14,800) six weeks after operation. There was a steady decrease in the polymorphonuclear cells and an increase in the percentage of lymphocytes, the last count showing 59 per cent. polymorphonuclears, and 40 per cent. lymphocytes. The red cells at this time had increased to 5,100,000.

HALL [16] reports a series of blood counts in a case in which operation was performed for traumatic rupture of the spleen. The white cell count was variable for the first two and one-half months after operation; then, in the last period of observation—up to three months after operation—it showed a definite leucocytosis varying from 8,700 to 13,500, averaging 11,570, with 50 per cent. of neutrophiles and 40 per cent. of lymphocytes. From his study of the white cell count in this case, including the Arneth index, he came to the conclusion that the increase in the leucocyte count after splenectomy is due in part to the removal of some factor that restricts the production of white cells—possibly a function of the normal spleen.

LARRABEE [17] also notes that after splenectomy for ruptured spleen there is a persistent leucocytosis with a relative increase in lymphocytes and endothelial cells. These slight variations from the normal in the blood counts, however, do not appear to have an effect on general health, as all the patients in these cases are reported as in full health and vigor.

SUMMARY

1. An unusual case of ectopic spleen is reported. The organ occupied the left lower quadrant of the abdomen, in the sigmoid axis, and pressed upon the descending colon and sigmoid so as to cause intestinal obstruction. Its pedicle was twisted. Splenectomy was performed. The patient made a good recovery; but, two months later, she suddenly developed anuria and died.

2. A survey of the literature proves that such cases of wandering spleen with twisted pedicle causing intestinal obstruction are of rare occurrence.

3. The pre-operative diagnosis of the underlying cause of the intestinal obstruction in such cases is exceedingly difficult, even impossible, on account of the pathological changes occurring in the spleen, disfiguring its outline.

4. Authorities agree that splenectomy is the operation of election.

5. Following removal of the spleen, there is generally rapid improvement in the hæmatologic condition.

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