

SPASTIC ILEUS (SPASMODIC INTESTINAL OBSTRUCTION) *

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AN ordinary classification of obstruction of the bowels is into mechanical and dynamic, the latter including both muscular spasm and muscular paralysis. Considering, however, the real meaning of the word dynamic, it is more accurate to adopt three divisions, mechanical, dynamic and adynamic, as is done by Ashhurst and others; and it would probably be better still to speak simply of mechanical, paralytic and spastic ileus, which would admit of no misinterpretation.

Obstruction from spasm of the constrictor muscles of the bowel is usually put down in text-books as a rare occurrence, when it is mentioned at all. If it received the attention it deserves, it would undoubtedly be recognized more frequently. A little reflection upon the permanent character of mechanical obstructions can hardly fail to convince one that most cases of enterostenosis recovering spontaneously, or under the use of eserine, belladonna, electricity, etc., are really spastic in origin.

Enterospasm as a cause of serious obstruction was first emphasized by Haidenhain about twenty years ago. Many surgeons at once denied its existence; but since then a sufficient number of cases, supported by operative findings, have been reported to establish its actuality beyond question. In fact, its possibility should be evident from the frequency of pyloric spasm and that of the lower end of the œsophagus, to say nothing of spastic contractions of the small intestine occurring in lead-poisoning, tabes dorsalis, and hernia. The literature of the subject is comparatively meagre, an occasional article appearing here and there in American and foreign journals. In 1902 Langenak collected 12 cases, only 2 of which had been proven by operation, and even as late as 1915 Mathews could find but 21 reports fully substantiated by laparotomy or by autopsy.

Spastic ileus is due to a spasmodic muscular contraction of a portion of the intestinal tract. It may affect either the small or the large bowel or both; in one place usually, or possibly in many places. It generally includes a few inches of the gut only, although at times a considerable length is compromised. A common location is the lower portion of the ileum. The typical appearance is striking and unmistakable. A section of gut a few inches in length is contracted to the limit, rendering it white, bloodless, and so firm that it often may be picked up by one end and held horizontally without bending. The contracted part does not merge gradually into the adjacent bowel, but stops abruptly at either end, the rest of the intestine remaining normal (see Fig. 1); but if the trouble lasts long enough the proximal bowel dilates, as in any other form of obstruction. The spasm

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frequently persists after the abdomen is opened, although it may disappear, and it is sometimes found even at autopsy.

Some surgeons (Körte, Wilms) insist that there must be a coincident paralysis of the remaining bowel, or the spasm would be overcome by peristalsis; but if this were true it would be hard to account for the instances in which invagination occurs, as there would be nothing to impel the intussusceptum into the intussusciens. In this connection it should be noted that local spasm is probably the first stage of intussusception (Nothnagel), and many supposed cases of this difficulty that recover spontaneously are possibly instances of spasm only. When invagination occurs it is facilitated by the fact that the bowel stiffens and elongates as it contracts, thus forcing itself into the distal segment.

The origin of spastic ileus is involved in considerable obscurity. There are those who wish to attribute it to local causes—irritation of the peritoneal or mucous surfaces, contusion of the external abdomen (Trendelenburg), or even severe muscular strain. Others prefer to assume that the sympathetic system or the vagus is the seat of the difficulty, while still others lay the blame upon the central nervous system alone (hysteria, neurasthenia, tabes dorsalis, etc.). Payer discards the nervous system altogether, at least in post-operative cases, and insists that the trouble is due to emboli originating in traumatic thrombosis of the omental and mesenteric vessels.

No one of these theories will fit all cases, just as no single explanation will cover all instances of muscular spasm elsewhere.

The local-irritation theory is based upon the existence of the sympathetic plexuses of Meissner and of Auerbach in the submucosa and between the muscular layers of the bowel, which are supposed to be very susceptible to irritation of the mucous lining. It is supported by experimentation on dogs; and in the human such spasms have been observed in connection with the presence of gall-stones, ulcers, round-worms, incarcerated herniæ, and also bacterial and other poisons. The contraction has even been seen to shift from one point to another with movement of the foreign body. This solution of the problem seems less clear, however, when we take into consideration the multitude of operations performed in which the bowel is traumatized in every conceivable manner, and also the vast number of indigestions continually taking place, without diminishing the rarity of spasmodic ileus. In addition, if irritation is assumed to be the cause, it does not explain why opening the abdomen and handling the intestine should relieve the spasm, as it often does, or why spasm should take place with comparative frequency in breast-fed infants. It is likewise difficult to understand how a traumatic lesion of one part of the intestinal canal can produce spasm in another more or less remote portion, as has been observed by Haidenhain, Miller and others; and also why it should occur at times from twisting of the pedicle of an ovarian tumor or pinching of a testicle within the inguinal canal. Such phenomena are more readily explained by the assumption of a reflex nervous action. Hence if direct irritation is to be

considered, we must assume some other factor, such as a lack of local or general resistance, which, as in so many other conditions, does not explain much.

Beyond its mere possibility, there is not much to support the assumption that the trouble originates in the sympathetic or in the vagus. To be sure both these nerves, especially the former, supply the digestive tract, but this does not make it clear why they should cause a local spasm; in fact, if either one of them were at fault it would seem more likely that contracture of an extensive segment of bowel would result instead of a few inches only. This same objection also applies to the central nervous system.

In support of the theory of central origin, it is argued that spastic ileus is found in neurotic and hysteric individuals, Hawkins stating that "its dependence upon the mental state is not to be doubted." While this is probably true to a certain extent, it may not mean more than that such people have a nervous system which responds easily to stimuli. And in addition, a number of cases, including my own, have been reported in infants too young to be accused of hysteria or a "mental state" of any kind.

Payer's embolic theory can be made to apply to but few except post-operative or traumatic cases with injury of the omentum, and then it is supported by comparatively little direct evidence.

Hence the best we can say at present is that spastic ileus is a reflex nervous spasm of the bowel, due to some irritation in the immediate vicinity, or in some more remote portion of the abdomen or the body, and often determined by an especially susceptible condition of the local nerves or the central nervous system. Why it should occur in a few individuals and not in many others, and why it should usually affect a small section of the bowel only, we are not in a position satisfactorily to explain.

It is important to know that spastic ileus may follow any sort of abdominal operation, either immediately or a number of days subsequently. That it also may occur after operations near to but not within the peritoneal cavity seems to be shown by a case of my own in which a right nephrectomy was performed for pyonephrosis in a man of nervous temperament. The appendix had been removed some two weeks previously, and the gall-bladder, stomach and other organs examined and found to be normal. The patient did well for four or five days and then suddenly developed an extremely severe colicky pain near the umbilicus, accompanied with nausea and pale and clammy skin. Repeated enemata failed to produce either gas or fecal material. The temperature was normal and the pulse remarkably slow (this slow pulse has been emphasized by Haidenhain, who thought it might be due to irritation of the vagus). The attack lasted for more than twenty-four hours, slowly disappearing under the use of morphine.

Aside from other considerations, it is useful to realize that spasm may cause intestinal obstruction, because it helps to explain those cases in which the abdomen is opened and nothing is found. If we are able to say before-

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hand that an ileus may be due to spasmodic contracture, a possible post-operative embarrassment may be avoided, and, armed with this defense, we may be encouraged to operate earlier, thus avoiding dangerous delay.

The symptoms of this imperfectly understood trouble are always those of intermittent obstruction of varying intensity and duration. Some instances are so acutely severe, with vomiting, constipation, shock, feeble pulse, leaky shin, etc., that death may rapidly occur; while others merely give rise to occasional abdominal pains, during the course of weeks, months or even years, without the development of more serious results than recurrent constipation. Between these extremes are a multitude of obscure cases that may tax the diagnostic ability of the surgeon to such an extent that many escape detection or are confused with chronic appendicitis (Hawkins) or other troubles.

It is seldom easy to differentiate between spastic and mechanical ileus, except in manifestly hysteric individuals, although the symptoms of spasm are often less severe and are apt to occur intermittently, which should arouse suspicion. In acute cases, where an immediate decision is demanded, it should always be made in favor of the mechanical form, for fear of dangerously delaying an operation.

If spastic ileus could always be recognized the treatment would be comparatively easy, especially in the less severe cases, consisting principally in the administration of such antispasmodic remedies as morphine, atropine, chloral hydrate, the bromides, etc., together with hot fomentations and enemata of various kinds. If the symptoms are, however, at all urgent, one should not dwell upon the refinements of diagnosis, but proceed to operation at once. Delay is apt to be fatal if the obstruction is mechanical, and might even be so if it were merely spasmodic. When a spasm is found to be the cause of the obstruction, experience seems to show that considerable reliance can be placed upon its disappearing while the abdomen is open, or shortly after it has been closed. Why this should occur it is difficult to explain. It may be due to the mere opening of the peritoneal cavity, or to the coincident handling of the bowel. We know it is not the anæsthetic, because the spasm often persists throughout the operation in spite of profound anæsthesia. Hence, if the patient is in reasonably good condition, one may perhaps venture to close the abdomen, as has often been done, trusting that the spasm will disappear, from the combined effects of the operation and the subsequent administration of antispasmodics. But if the patient is in bad condition, with regurgitant vomiting from a paralyzed bowel, a poor pulse, subnormal temperature, etc., it will be necessary to obtain more certain relief, which can be done by establishing a fecal fistula above the obstruction, although even this may not suffice. (In a case reported by Pankow such a fistula had to be left open for two months, owing to persistence of the spasms.)

Anyone who has operated in spastic ileus must have been tempted to resect or short-circuit the contracted portion of bowel, and I believe this

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would occasionally be justifiable, in severe cases at least, because the risk of doing harm is but slight and the ultimate results of the let-alone policy have been unsatisfactory, owing to a tendency to recurrence. There is, however, no precedent for such a radical procedure, and there can be no certainty, with our present knowledge, that the spasm might not recur elsewhere.

CASE.—The following is a report of a typical instance of spastic ileus, occurring in a breast-fed female infant, about six months old. After remaining well for the first two weeks after birth, an intestinal indigestion occurred, with a moderate amount of mucus in the stools. Although this soon subsided, the colicky pains accompanying it persisted, in spite of medicinal and dietetic treatment administered by Dr. J. W. Amesse.

The pains were peculiar in that they came in spells at irregular intervals, lasting from a few minutes to many hours. Between the attacks the patient was well and happy, for hours or even days at a time, with normal stools, digestion and appetite. Then, without apparent cause, the abdomen would become rigid, the lower limbs draw up, and the patient scream, and roll about in agony. There was no vomiting, no diarrhoea, and no rise in temperature. Neither fecal movements nor expulsion of flatus could be obtained, so that abdominal distention would result if the attack lasted long enough. Repeated examinations revealed no abnormalities of the lungs, or of the nervous or circulatory systems, except a heart murmur which persisted for three weeks and then disappeared. An X-ray picture of the intestinal tract, taken between the attacks with the aid of bismuth, revealed nothing.

I first saw the case, with Doctor Amesse, at the end of the fourth week of the disease. A tentative diagnosis was made, of "partial intermittent intestinal obstruction, of unknown origin," and an exploratory laparotomy decided upon, in spite of the tender age and weakened condition of the patient. This was performed, under ether, on December 22, 1917, through a right, median, rectus incision.

A careful examination was made of the contents of the abdomen, including the stomach, the large and small intestines, the liver, gall-bladder and the spleen. Nothing abnormal was found except a marked spasm of a segment of the lower ileum, about 5 or 6 inches in length, which was white, bloodless, contracted to the size of a slate-pencil, and so rigid that it could be picked up by one end without bending. The peritoneal covering was normal, and nothing could be felt within the lumen of the bowel. The intestine above this narrow place was moderately dilated, and that below slightly smaller than normal, the contracture ending abruptly at either extremity by a sharp wall.

Although it seemed sufficiently evident that the cause of the trouble had been discovered, it was not so clear as to what should be done. Entero-anastomosis and resection were both considered, but the condition of the patient was such that further operative intervention had to be abandoned and the abdomen closed. Although there was considerable shock, a rapid recovery took place, and the child was relieved of

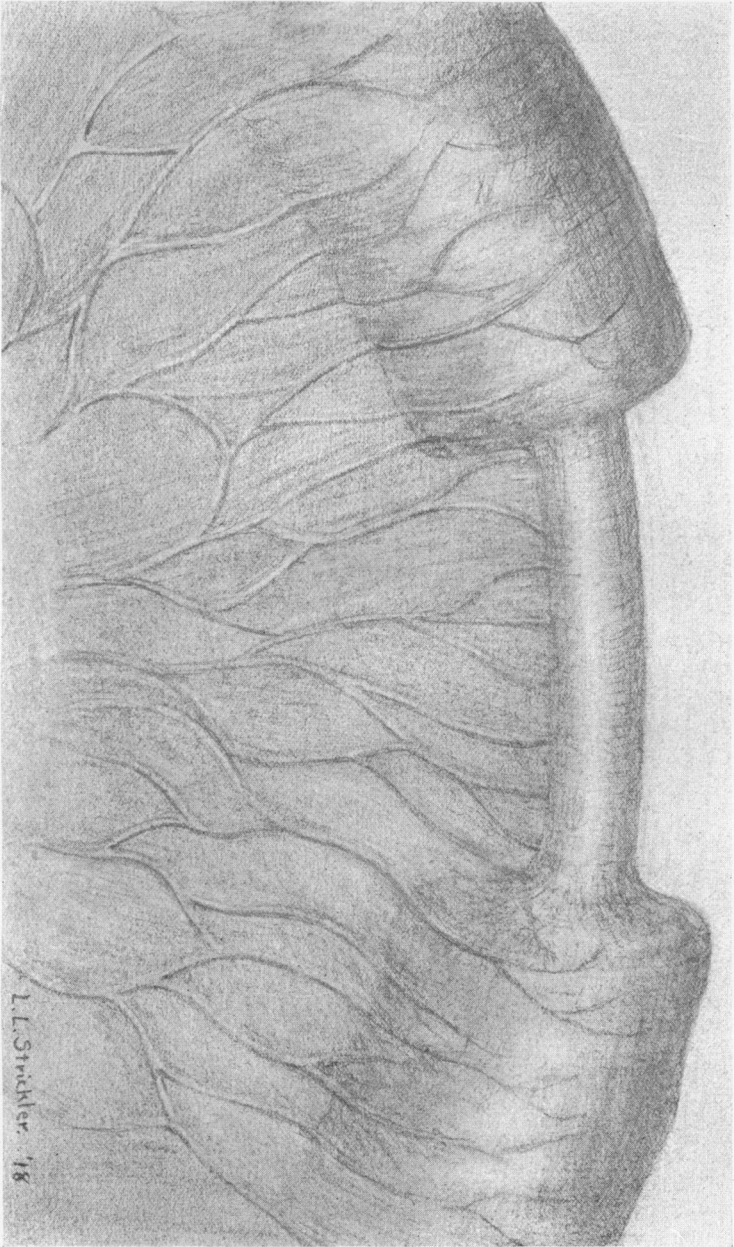


FIG. 1.

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its trouble. For a month it remained well, gaining an average of a pound a week. At the end of this time an acute indigestion developed, with violent pains, the child dying within twenty-four hours, apparently from a recurrence of its original trouble (Doctor Amesse).

Recently I operated (July 24, 1918) upon a man of sixty-two who had "always" suffered from constipation which had gradually become almost an obstipation. A radiogram, taken by Dr. Childs, showed marked ileal stasis (96 hours). Within the last six years he had developed epilepsy with frequent nocturnal and diurnal attacks, together with hebitude of mind, loss of memory and many nervous symptoms. Believing that the nervous phenomena might be due to the intestinal stasis, a laparotomy was done and a very decided "Lane's kink" found and rectified. During forty-eight hours following the operation his condition was satisfactory. Then distention and vomiting occurred and he died suddenly in a violent epileptic convulsion.

An autopsy revealed no peritonitis, but an extreme spastic contraction of the entire large intestine (which was found dilated at the operation) and the terminal twelve inches of the small bowel, which was greatly and suddenly dilated above this point. The entire contracted bowel was quite firm and not larger than a fountain pen, except in the region of the cæcum, which was not much larger.

An explanation of the condition would be that the long-existing intestinal toxæmia had not only caused general epilepsy together with other nervous symptoms, but had finally given rise to a fatal spastic ileus.

SUMMARY

1. The best classification of intestinal obstruction is into mechanical, paralytic, and spastic. The last named is considered rare, but is undoubtedly more common than is generally recognized.

2. The causes of spastic ileus are not clearly understood, but they are probably various and act reflexly through the nerves.

3. In this form of obstruction, a section of bowel, often only a few inches in length, becomes so firmly contracted that it is hard, white and bloodless, so that it often can be picked up by one end without bending.

4. The symptoms are intermittent. They may be acute, dangerous and severe, as in mechanical obstruction, or mild and chronic, merely causing occasional pains and constipation.

5. Where there is doubt about the diagnosis, it should always be made in favor of mechanical obstruction, for fear of a mistake leading to fatal delay in operating.

6. Hence the treatment is nearly always initiated by a laparotomy. When the condition is clearly understood, following an operation or otherwise, antispasmodics, such as morphine, atropine, etc., can be administered.

7. Mere opening of the abdomen generally relieves the spasmodic contraction for a greater or less length of time, but it may return with possibly fatal effect.

8. Hence it might be well to short-circuit the section of spastic bowel,

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although there is no precedent for this and no guarantee that the spasm might not recur elsewhere.

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