by ileo-colostomy or enterostomy (using a self-closing method for tube insertion) is the essential objective of the operation. Separation of the adhesions at this stage will prove insufficient, and will involve more exposure and handling of distended coils than a simple drainage operation.

Obstruction during Convalescence.

Operative treatment is necessary in almost all cases in this period. Separation of organized adhesions about the lower ileum, followed by a gentle milking down of the intestinal contents through the liberated bowel, will be sufficient in the majority of cases, but in cases developing early on in this period or in cases presenting widespread adhesions an ileo-colostomy or even an enterostomy may be necessary.

GENERAL REMARKS.

As some basis for the substance of this paper I ought to refer to my own experience of acute appendicitis. Taking a series of 126 consecutive cases (since January, 1921), which includes an average proportion of desperate cases, there have been four deaths. The cause of death was determined after a *post-mortem* examination in each case, except the first.

1. Delirium tremens following pronounced alcoholism: a case of fulminating perforative appendicitis.

2. Cardiac muscle failure in a man of 63, whose arteries were rigid and tortuous: a case of diffuse peritonitis in which there appeared no possibility of recovery without operation. *Post-mortem* examination revealed no evidence of spread of peritonitis.

3. General peritonitis in a woman of miserable physique.

4. General peritonitis and ileus duplex: enterostomy performed at primary operation, and this acted freely up to the time of death on the third day after operation. *Post-mortem* examination showed general peritonitis; there was an absence of intestinal distension and a definite diminution in swelling of the intestinal wall at site of the ileal lesion.

In this series one patient required re-operation during the first week for intestinal obstruction due to ileal band (Case 1); two patients required re-operation during convalescence—on the twenty-fourth and forty-second days after primary operation. All recovered.

Very little mention has been made in this paper of paralytic ileus; that some degree of paralytic ileus occurs in bowel which is exposed to acute peritonitis cannot be doubted, and I believe it to be a factor in the production of the types of obstruction already described. The presence of a kink or of an angulation, which in normal circumstances would be insufficient to produce obstruction, will in the case of bowel already sluggish and inactive (from paralytic ileus) lead to acute intestinal obstruction. This contention is borne out by the observation that treatment directed to the reduction of intra-intestinal tension above the obstruction, but which ignores the actual site of the obstruction, is usually effective in affording complete relief; on the other hand, the liberation at the primary operation of a fixed and kinked terminal ileum will lead to the speedy disappearance of ileus in a case where this is a conspicuous feature before operation, and will, moreover, materially reduce the patient's liability to ileus during the post-operative and convalescent periods.

Finally, in regard to the influence of a drainage tube in the production of intestinal obstruction, I believe a drainage tube may be a factor in cases of pelvic peritonitis where no attempt is made to release an adherent terminal ileum; under such conditions a tube, passing from a wound on the right side straight down to the floor of the pelvis, will lie over the point of angulation in the ileum and must tend to intensify the effects of this by pressure and irritation. If, however, the terminal ileum is free, or is mobilized at the operation, then I believe the risk of obstruction from adhesions around the tube track is a very small one and is much less than that attaching to the abandonment of drainage in cases of purulent pelvic peritonitis.

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ACUTE INTUSSUSCEPTION IN CHILDREN: FIFTY CONSECUTIVE CASES.*

BY

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ACUTE intussusception is comparatively common in the first year of life, especially from the fourth to the eighth month; it is more common in boys than girls. The most important features are: (1) periodic attacks of crying because of acute abdominal pain in a previously healthy child; (2) a swelling in the abdomen; (3) vomiting, which may become persistent; (4) passage of blood and mucus once or several times from the rectum; (5) emptiness of the right iliac fossa; and (6) the abnormal quietness of the child.

The persistent periodicity of these attacks of abdominal colic with the associated crying is one of the most important features. Fifty consecutive cases were observed and all gave this typical history; many displayed it during their short sojourn in the ward prior to operation.

In all the cases save four blood had been passed by the rectum. The cases where no blood was passed were ileal intussusceptions, two of which required resection. In four cases blood was passed soon after the commencement of the attack, then not for a period of almost a day, and then more blood was passed; all four were on operation seen to be two intussusceptions—one, the original, an ileo-ileal which had proceeded to the ileo-caecal valve, and, sticking there, was replaced by an intussusception which had for its apex the ileo-caecal valve.

In some cases a tumour cannot be felt, partly because of the position of the intussusception; it may be tucked up under the ribs at the splenic flexure, or the patient's abdominal wall may be too resistant to permit its palpation. In these cases the tumour can readily be felt under light anaesthesia. If deep anaesthesia be induced, only the mass swelling of an advanced intussusception will be detected, as the spasm of the intestinal musculature, to which the early tumour is due, will not then occur, or, if present, will disappear.

In some cases the "signe de Dance"—that is, emptiness of the right iliac fossa—can be made out; this will obviously only be present when the intussusception has progressed beyond the caecum, and when the caecum is mobile.

The abnormal quietness of the child may be commented upon by the mother. It is usually a grave sign, and may mean that gangrene has occurred or that severe toxæmia is present. The possible explanation is that the toxins have paralysed the nervous mechanism of the musculature of the sheath, which no longer attempts to pass on the enclosed bowel. This is probably the reason why the intussusceptum, in every case that is left to itself, does not present at the anus. The toxæmia which kills the child has previously paralysed the bowel.

At the onset there may be no rise of temperature, but later on, especially after twenty-four hours, the temperature may be anything from 100° to 105°. In this series there is one in which the temperature was 108.2° prior to operation. Intussusception is associated with an abnormally mobile colon, and all are agreed that it occurs after intestinal upset with succeeding irregular peristalsis, but there is probably some other important factor. Intestinal upsets are frequent, yet few develop intussusception.

A pedunculated tumour growing in the lumen of the gut would, of course, tend to give rise to an intussusception; this does occur sometimes in the adult, but I have never seen such a condition in the child. Neither have I seen or palpated anything in the lumen which was capable of giving rise to this condition. An enlarged Peyer's patch is said to cause intussusception, and that is theoretically possible, but cannot be asserted as the cause, for had it been normal when it got in with the apex it would soon become enlarged and congested.

Latterly I have been looking out for possible causes outside the lumen, and I have noticed the presence of enlarged

* A post-graduate lecture delivered at the Royal Liverpool Children's Hospital, December, 1923.

mesenteric glands in the ileo-caecal neighbourhood in about 80 per cent. of cases operated on. In some these glands were close to and in front of that portion of the gut which was the original apex of the intussusception; in others they were situated as far as 1½ inches from the original apex and almost at right angles to it. In some cases they were connected by a well defined band (often containing one or two small glands) to a portion of the intestine in front of the apparent apex; in other cases they were not so connected. The glands were about the size of a hazel-nut (in five of the cases half as big again), and often distinctly congested.

The constancy with which one meets these enlarged ileo-caecal glands in young children of the poorer classes and their almost complete absence in infants from more fortunate surroundings seems to suggest a reason why intussusception is common in the former, and rarer in the latter.

When from any cause, such as enteritis, these glands become more enlarged, this enlargement may cause traction through the bands, when present, or through the mesentery itself to a portion of the gut, which, becoming relaxed, permits that piece of intestine immediately above to pass inside, where it is engulfed, passed on, and becomes the apex of the intussusception. The gland itself is dragged in and when of moderately large size may prevent the intussusception passing beyond the ileo-caecal valve. This actually appeared to have occurred in two of my cases. A large gland may prevent an intussusception progressing for a time by hindering its commencement, and the symptoms may subside and recur again, giving rise to a condition of recurrent incipient intussusception. I have had one such case in my practice.

In the differential diagnosis we have to consider:

1. *Henoch's Purpura*.—In this there may be a rash, associated joint pains or haemarthrosis, an oedematous feeling in the rectum on examination, and albumin and sometimes blood in the urine. Henoch's purpura is more common in older children. It is worth remembering that an intussusception may occur in Henoch's purpura.

2. *Ileo-colitis*.—In this there is frequent passage of blood-stained liquid stools.

3. *Rectal Prolapse and Rectal Polyp*.—Careful examination easily verifies these.

Operation.

A vertical incision 2 inches long is made to the right of the umbilicus through the rectus muscle near its inner side, one-third of the incision being above the umbilicus. The intussusception is mainly reduced inside the abdomen, using one finger inside and the index finger and thumb of the other hand outside to manipulate it back from the apex. The terminal portion should be reduced outside where it can be thoroughly examined. When difficult to reduce this portion should be covered with gauze wrung out of hot saline and firmly and gently squeezed for about one minute, when it usually reduces easily. The abdominal cavity is then filled with warm saline and the incision closed in three layers for better security.

ANALYSIS OF 50 CONSECUTIVE CASES OF INTUSSUSCEPTION. (Males 34, Females 16.)

Age.	Cases.	Age.	Cases.
3 months ...	3	11 months ...	2
4 " ...	6	12 " ...	2
5 " ...	9	13 " ...	1
6 " ...	8	15 " ...	2
7 " ...	4	2 years ...	1
8 " ...	4	3 " ...	1
9 " ...	3	10 " ...	1
10 " ...	3		

Types.

	Cases.	Deaths.
Ileo-ileo-caecal ...	22 = 44%	7
Ileo-caecal ...	14 = 28%	2
Ileo-ileal ...	8 = 16%	1
Ileo-colic ...	4 = 8%	2
Colic or colo-colic ...	2 = 4%	0

Mortality 24 per cent. includes 7 resections.

Duration of Attack prior to Operation.

	Cases that lived.	Cases that died.
24 hours or less ...	26	2
24 to 48 hours ...	10	4
48 to 72 hours ...	1	4
Over 72 hours ...	0	2
Uncertain ...	1*	0

* A case of recurrent incipient intussusception where symptoms subsided and recurred over a period of several days.

Observations.

1. Eighty-eight per cent. of cases occurred in the first twelve months of life.

2. Sixty-two per cent. occurred between the fourth and the eighth month.

3. The ileo-caecal type only includes those cases where the intussusception apparently started at the ileo-caecal valve and where this remained as the apex (28 per cent.).

4. The majority of cases started as ileo-ileal (60 per cent.), in which the last portion to be reduced was ileum. The commencement of the intussusception in the ileum was recognized as a well defined dimple. Of these, 8 cases, or 16 per cent., progressed only to the ileum; they have been called "ileo-ileal" (that is, ileal or enteric). The remaining 22 cases (44 per cent.) were made up of two intussusceptions—the original an ileo-ileal which, when it reached the ileo-caecal valve, was superseded by a second which had the ileo-caecal valve for its apex (that is, an ileo-ileo-caecal intussusception).

5. The jejunal type of intussusception described in so many textbooks was not met with in this series. It is found *post mortem* in children dying from other diseases. It is probably of no pathological importance.

6. The ileo-colic type was the most fatal (two deaths out of four cases).

7. Perhaps the ileo-colic type may occur in those cases where the caecum is less mobile; at any rate, in two of these cases I experienced great difficulty in delivering the caecum to the abdominal wound.

8. Ten cases required resection, because of irreducibility or strangulation. Of these, three recovered and are still well, one of which was an infant of 3 months in whom a resection involving 6 inches of ileum, caecum, ascending colon, and part of the transverse colon was required. This case was published in the *BRITISH MEDICAL JOURNAL* of October 20th, 1923. The others, aged 2 years and 10 years respectively, were published in the *BRITISH MEDICAL JOURNAL* of June 9th, 1923. One other patient lived nineteen days and then died of bronchopneumonia. The remaining six cases died without recovering from the initial and operative shock.

Memoranda :

MEDICAL, SURGICAL, OBSTETRICAL.

TREATMENT OF GASTRO-DUODENAL ULCER.

SEEING how common and how serious a disease gastro-duodenal ulcer is, perhaps I may be permitted to make a suggestion on its medical treatment from mainly theoretical considerations and without any personal experience—the absence of which is due to my now not being in clinical practice. My suggestion is to use emetine in small repeated doses (say 1/8 grain hypodermically twice a day) in suitable cases, cautiously increasing the dose or its repetition if well borne.

Emetine is used at present mainly for its amoebicidal action in amoebic dysentery and hepatitis. This action is now known to be an obscure indirect one; thus, it is a poor direct amoebicide *in vitro*, and it does not cure amoebic dysentery in cats, even if experimentally infected with human strains of amoebae. It does act directly on the whole gastro-intestinal and bronchial mucous membranes, as evidenced by hyperaemia of these parts in animals after fatal doses.

I am not suggesting that peptic ulcer is associated with amoebae—which is perhaps not so very unlikely—but am suggesting that the "stimulant" action of emetine on the gastro-intestinal mucous membrane is, despite its obscureness, a sufficient indication to give the drug a good trial. In this connexion the following statement in Hale-White's *Materia Medica* is not without significance: "The compound powder (of ipecacuanha) has been praised in cases of gastric ulcer; probably any good effect it may have is due to its stimulating power." I do not know on whose observations this statement is founded, but it does indicate a trial of the more refined preparation, emetine, given hypodermically to begin with, in cases where ordinary medical