INTESTINAL OBSTRUCTION FROM TRAUMATIC RUPTURE OF BLOOD VESSEL.

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THE following case came under my care recently, and I thought it worth recording, owing to the apparently slight injury that caused it.

I was called on October 18th, 1909, to see a girl aged 13, and found her fully dressed reclining on a couch by the fire in the sitting-room of a cottage house. She looked pale and very thin, but sat up shortly after I entered. The pulse was 96, temperature normal. She was suffering from nausea. The abdomen was flat, and there was pain above and to the left of the umbilicus. The stomach contained a quantity of fluid, and was somewhat distended.

The history was that on the evening of October 16th, while on a skating rink, a man (another skater) had accidentally struck her in the back, that is, the mid-dorsal region slightly to the left of the spinal column, causing her to feel pain both there and in the abdomen. She took hold of the barricade to prevent herself falling, but soon recovered sufficiently to be able to resume skating, and continued for about twenty minutes, until the rink closed. As soon as she was outside, the pain in the abdomen returned, and she commenced vomiting. This condition continued (although she went to bed as soon as she got home) till the morning of October 17th, on which she was able to go out, feeling much better, but she returned in about twenty minutes, and again commenced vomiting; this was accompanied by the pain in the stomach, and thirst. Previous to going out she took a little soda and milk, etc., but that was returned with the subsequent vomiting. This condition continued all night and till I saw her. She was put to bed, and given small quantities of fluid; an enema produced little result. Hot applications were made to the abdomen. I was again called late at night, and found her somewhat excitable. Her mother told me that she had been vomiting, and drinking water and soda water by turns almost continuously, the vomit being only clear fluid. The pulse was 100, temperature normal, and there was very little pain. The abdomen was flat, except that there was fullness over the stomach. By applying my hand over the stomach, and keeping up continuous gentle pressure, the stomach was emptied easily, as the contained fluid simply welled up. She then seemed much better, but very thirsty. A hypodermic injection of $\frac{1}{4}$ grain of morphia was given, and no fluid allowed by the mouth; there was very little nausea through the night, and she had rested, though she had not slept much. In the morning small quantities of ice to suck were allowed. The abdomen was flat, the pulse 98, the temperature normal, and there was practically no pain in the abdomen except on pressure.

I was again called in the afternoon, and found her as on the previous night—vomiting, thirst, pain on pressure, stomach containing a good deal of fluid, apparently out of all proportion to the quantity taken. The vomit was very much bile-stained, but not faecal. I then ordered her removal to the Victoria Hospital, Burnley, for immediate operation, as a case of obstruction of the bowel high up near the stomach, and thought it might possibly be due to hernia of the bowel into the lesser sac or fossa duodeno-jejunalis. Dr. Rodgers, under whose care she was placed, agreed with the diagnosis and operated at once. I gave chloroform.

Operation.

Previous to opening the abdomen 36 oz. of bile-stained fluid were siphoned out of the stomach, which was then thoroughly washed out with normal saline solution until clear and the stomach thoroughly emptied. An incision was made in the middle line extending from just below the umbilicus upwards for about 2 in., and was later enlarged toward the ensiform cartilage. The small intestine, together with the caecum and large intestine, were collapsed and empty, and more or less studded over with small tuberculous nodules, as was also the greater part of the peritoneal cavity.

A great number of adhesions were felt at the pyloric end of the stomach, with much thickening. On turning the mass of small intestines aside, the first 7 or 8 inches of the jejunum was seen to be of a dark purple colour, greatly distended; the peritoneal covering had not lost its lustre, but in parts there were small black patches, especially at the free edge of the bowel. This distension and discoloration tapered both ways, and was longest at the free edge—in fact, had a very close resemblance to a piece of strangulated gut. While the upper limit of the injured bowel was being defined the swelling, which was firmly fixed, gave way, and a large quantity of dark, partly fluid, partly clotted blood was discharged. This disclosed the real cause of the obstruction. A vessel had been ruptured in the bowel wall and the blood discharged between the serous and muscular coats, where, being confined, the pressure caused complete obstruction. When the blood was removed the lumen of the bowel again became patent.

Although the operation was quickly and thoroughly carried out the patient died next day.

The blood being confined between the coats of the bowel had limited the haemorrhage by pressure, while

the same pressure had obstructed the bowel, and it is evident that, but for the pressure—that is, had the serous coat been ruptured—the patient would in all probability have died of internal haemorrhage soon after the accident. Another interesting point is that there was no external evidence of violence, subjective or objective, at the point where the patient received the knock.

ON THE EARLY RECOGNITION AND TREATMENT OF ACUTE INTESTINAL OBSTRUCTION.

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I VENTURE to bring forward these very imperfect jottings in the hope that they may induce others to believe that which has been all too slowly impressed on my own mind—namely, our proneness to neglect the early symptoms of obstruction, and to attribute them to biliousness, errors of diet, and the like—thus wasting much precious time, until the onset of so-called confirmatory signs, such as dry tongue, rapid pulse, and distended abdomen, forces us to amend our diagnosis and to recommend operation—all too late, it may be—to save the patient. For dry tongue, rapid pulse, and distended abdomen are not strictly signs of obstruction at all, but of the intestinal and peritoneal infection and toxic absorption resulting from obstruction and strangulation, results which we have permitted to develop by our delay. There can be little doubt that these secondary results rather than the initial lesion are mainly responsible for the difficulties and dangers which beset most operations for acute obstruction, and that they greatly conduce to their high mortality. Early operation has greatly lowered the death-rate in strangulated external hernia, and there can be no question that it would greatly reduce that from internal obstruction, although it is probable that the latter will always remain the more fatal lesion owing to greater difficulties of location and access.

In the following case the onset and early symptoms of obstruction and strangulation were clearly marked.

CASE I.

A. H., aged 27. Was seen for the first time at 10.30 a.m. on Sunday, May 30th, 1909.

History.

He stated that on the previous Thursday he had been seized with severe pain in the pit of the stomach, which lasted on and off for several hours, and then went off entirely. He was not sick, was well and at work on Friday, and the bowels acted naturally on Saturday morning. He felt shivery about midday on Saturday, and his wife said he looked ill, but he soon recovered himself, and seemed all right until 3 p.m., when the pain returned severely at the pit of the stomach, and he became very cold. The pain was relieved for a time by vomiting, but recurred every hour or so during that night, being followed and relieved each time by vomiting. The vomit consisted at first of food, but later of yellowish-green slimy liquid. The bowels had not acted since the preceding morning, but he stated that he had passed a little wind, downwards, on three occasions since the onset of pain and sickness. He also stated that he had had what he considered a similar attack seven years previously, after eating raw plums, but on that occasion there was diarrhoea.

Condition when First Seen.

His aspect was by no means one of distress, and he said that he was fairly comfortable. The tongue was moist and clean; the pulse quiet, full, and rather soft; and the temperature normal. There was no fullness of the abdomen, which moved freely on respiration; no tenderness anywhere, and only very doubtful increase of resistance over the upper part of the right rectus; the area of stomach resonance was considerably increased upwards, the left chest below the nipple line being markedly tympanitic, and the resonance extending round to the posterior axillary line. The patient pointed emphatically to the epigastrium as having been all along the seat of the pain. Nothing definite was felt by the rectum except that the grip of the sphincter was slack.

He was taken into the hospital about 1 p.m. An enema of olive oil $\frac{3}{4}$ v, castor oil $\frac{3}{4}$ ss, and turpentine $\frac{3}{4}$ ss, was given, followed by soap and water, and the stomach was washed out. The enema produced a very large motion, a thoroughly satisfactory evacuation, except that no flatus accompanied it. The washings from the stomach consisted of nearly clear fluid tinged with blood. The patient was relieved for a time, but in the afternoon the pain recurred in paroxysms, its character and position

being the same as before. He was no better during the night, except that he did not vomit until 7 a.m. When seen at 11 a.m. on Monday his aspect was markedly changed, the face being pinched, grey, and distressed. The tongue was still moist, but the lips dry and indented; the pulse was little altered in rate, but had lost firmness and was floppy. The abdomen was slightly fuller, but still moved fairly in respiration; there was pain still in the epigastrium, with in addition an area of distinct tenderness below and to the right of the navel, where something which suggested a distended coil of bowel could be felt. There was slight but definite increase of resistance over the right rectus. On rectal examination some bulging, like that of a full bladder, could be felt, though the bladder had just been emptied naturally. There was no ballooning and no tenderness, but the sphincter was slack.

Operation.

Chloroform followed by ether was given about 1 p.m. The abdomen was opened by an incision through the right rectus muscle a little to the right of the middle line reaching from above the umbilicus to just above the pubis. Clear blood-stained fluid welled up freely, and coils of somewhat distended and injected small intestine presented. On tracing toward the spine the mesentery corresponding to the distended coils, a firmly-twisted stalk was felt. Untwisting was impossible until a mass of heavy, distended coils, intensely congested and ecchymosed, had been lifted out of the pelvis. After this the twist, which was in the direction taken by the hands of a watch, was reduced without difficulty. A part of the ileum, about 2 in. from the ileo-caecal valve, had formed the axis of the volvulus which consisted entirely of ileum. At this point the bowel was constricted, and appeared scarred, as if the volvulus had existed to some extent for a considerable time. A split rubber tube with gauze wick was put into the pelvis. The operation occupied about thirty minutes.

After-History.

There was no great amount of shock at the time, but an hour after the operation the pulse was 120 and rather feeble. An enema of saline with 3j brandy had been given directly after the operation. When seen at 6 p.m. he was in less pain than before the operation; the pulse was 116 and the tongue moist. Liq. strych. mv was given hypodermically every four hours. Brandy and water by mouth and an enema containing magnesium sulphate to be given every four hours. He had little sleep during the night but was not restless; at 11 a.m. he looked less distressed, his colour was improved, the pulse was 108 and the temperature 99.6° F.; there had been no sickness, and he thought he had passed a little flatus. The abdomen was but little distended and moved well in the upper half but not much below. The enemata had been returned after a few minutes with no motion. A considerable amount of blood-stained serum was removed from the tube by pushing down and withdrawing strips of boiled gauze. The stomach, being still distended, was washed out; very little gas escaped, but some glairy, yellow liquid was evacuated. In the evening, after another injection of turpentine and soapy water, the bowels acted moderately well with flatus, and the patient went to sleep. The case gave no further trouble, and the patient, when seen five months afterwards, expressed himself as well.

I have related this case in full not only because its early symptoms were clearly marked, but also because its progress seems to be definitely divisible into three stages, as occurs, I believe, in nearly every case of acute obstruction unless interrupted by treatment.

First there was the preliminary stage in which the volvulus, though apparently existing, was not screwed up sufficiently tightly to cause strangulation or more than partial obstruction. The scarred appearance of the constricted gut, noted at the operation, together with the passing pain of Thursday, showed I think that the volvulus was in being on that day, and probably long before.

The second stage began with the acute attack of Saturday, when the presumably already partially obstructed coils in the pelvis had become sufficiently heavy to put on the screw (possibly owing to some sudden movement) and cause strangulation and total obstruction. The onset of acute strangulation was marked by sudden severe pain, shock (the patient becoming very cold) and vomiting, followed by temporary relief.

This sequence of pain, vomiting, and relief recurred throughout the night until the patient was seen at 10.30 a.m. on the Sunday. There was then one physical sign, and so far as I could see only one, namely, distension of the stomach upwards and to the left—without general distension or other discoverable abnormality of the abdomen, without change in pulse, temperature, or tongue, and without loss of the general appearance of health. This, be it remembered, was after acute strangulation had already existed for at least fourteen hours. Moreover, the bowels had acted naturally within twenty-four hours, and were to act again most freely, though without the passage

of flatus, after an enema given two hours later. Little result was obtained by washing out the stomach. The enema gave relief for a time, but the pain recurred in the afternoon, and through the night, becoming gradually less severe, but more continuous.

The third stage had begun when the patient was seen on the Monday morning, thirty-eight hours after the acute onset. Signs of peritoneal infection and toxic absorption, though slight, were then present—namely, slight fullness of the abdomen, with tenderness remote from the site of initial pain, together with softness of the pulse and some pinching and greyness of the face; the distended coils in the pelvis could then be felt on rectal examination as a fullness, the lips were dryish but the tongue moist. At the operation the coils of the volvulus were found distended, congested, and ecchymosed, and the lower abdomen full of clear blood-stained fluid. Had the operation been postponed for another twenty-four hours, it cannot be doubted that the coils of the volvulus would have been beyond repair and the abdomen full of pus. Indeed, I cannot help the conclusion that it might have been safer to have operated on the previous day, when it had become clear that stomach tube and enemata had failed to relieve the pain.

The difficulties attending very early operation are, first, the very natural repugnance of patient and friends to operation at a time when the patient does not appear seriously ill; and, secondly, the choice of the site of incision when no local tenderness or palpable abnormality is to be found. Probably one would not be far wrong in taking the old recommendation to go in a little to the right of the middle line, from 2 or 3 in. above to 2 or 3 in. below the navel in the first instance, according to the size of the abdomen and the amount of fat, afterwards lengthening the opening in either direction as required.

The site of initial pain is often, as is well known, in the upper abdomen or about the navel, and may be quite remote from that of the lesion, at any rate, at first.

CASE II.

A man, E. W., aged 55, was literally struck down, whilst giving a lecture, by sudden faintness with a pain (as he afterwards described it) as of a heavy blow over the middle third of his spine. He was intensely collapsed, and on partially recovering from the faintness, suffered, almost continuously till his death, from vomiting and diarrhoea without the passage of flatus. Slight tenderness was found on the second day just below the right hypochondrium. There was no distension till the third day. He died suddenly on the fourth day, having been so feeble throughout the illness that I feared to explore lest he should die on the table. At the *post-mortem* examination it was found that the ascending and transverse colons were united by firm old adhesions in such a way that the hepatic flexure formed a pocket roofed over by the adhesions. In this pocket a knuckle of ascending colon (which being provided with a long mesocolon was freely movable) was found, herniated and strangled. Only a small part of the lumen of the herniated knuckle was involved, hence the diarrhoea, but the adhesions were very firm, and the herniated part showed a dense hard ring of scar tissue. I learnt that the patient had suffered from flatulence and vague pains "about the liver" for many years.

This was obviously a case of acute exacerbation of a very old lesion. The site of the initial pain was remote from the lesion; the obstruction was not sufficiently absolute to prevent diarrhoea, but the strangulation of even so small a portion of the lumen of the gut did as a fact prevent the passage of flatus altogether. The acuteness of the onset gave here, as in so many cases, no hint of the chronicity of the original lesion.

I am indebted to my colleague, Mr. Pearson, for permission to refer to the two following cases, where were under his care in the Darlington Hospital. They emphasize the point that the passage of a good motion, or even of motion with some flatus (especially if it occur as the result of enemata), does not necessarily negative the diagnosis of acute obstruction in a suspected case.

CASE III.

A boy, aged 14, was admitted on a Saturday evening, suffering from severe paroxysmal pain in the abdomen, with vomiting, followed by relief, and this pain, vomiting, and relief recurred many times during the night. The abdomen appeared normal, except that there was slight tenderness in the region of the appendix.

As he seemed somewhat better on the Sunday morning, and there were no further signs, it was decided to await developments. He passed both motion and flatus that afternoon, but pain and vomiting returned during Sunday night, and at the

operation on Monday morning the end of the ileum was found tightly tied down by an inflamed appendix. This was removed, and the case did well.

CASE IV.

In the case of a young fellow who was admitted for recurrent paroxysmal pain and vomiting, the abdomen remained quite flat for five or six days, and the bowels acted regularly after enemata, but pain and vomiting continued. The abdomen then gradually became distended, and he died at the end of a week. At the *post-mortem* examination it was most difficult to make out the condition until the abdomen had been laid most thoroughly open by both transverse and longitudinal incisions. It was then found that the small intestines, the ascending and transverse colons, had something of the nature of a common mesentery, and that a huge volvulus had taken place around the duodeno-jejunal flexure. Relief by operation must obviously have been impossible.

Distension of the stomach upwards is, I believe, a sign not to be lightly passed over in a suspected case, and the washing out of the stomach should, I think, be as much a matter of routine as the administration of enemata before proceeding to operation. This latter point has been impressed on me by its results in two cases—one in a man of 45, the other in a man of 70. In both there was sudden onset of severe pain and vomiting. In one the initial pain was in the epigastrium, and when seen twelve hours after the onset there were slight resistance and tenderness below and to the left of the umbilicus. In the other case the sites of pain and tenderness were coincident in the left flank. In both cases there were periodical pain and vomiting, and in both there was well-marked shock. They appeared to be typical cases of acute obstruction. In both there was marked upward distension of the stomach, in both enemata failed to give relief until the stomach-tube was used, and a large quantity of gas in one case, and brown fluid in the other, had been evacuated. Then flatus and motion began to pass, and the patients were soon convalescent. No tenderness or resistance could be found the next day in the abdomen in either, though one could not help suspecting that a chronic lesion still existed in each case.

Distension of the abdomen does not, I believe, as a rule, occur to any extent until from thirty to forty hours, or even longer, after the onset of acute symptoms. Secondary changes are apparently more rapid where a loop of bowel is strangled, than when the constriction is single, though Mr. Pearson's case of volvulus seems to be an exception. I believe that distension should never be waited for, but that the abdomen should be explored as soon as it has become clear that stomach tube and enemata have failed to do away with both pain and sickness. The following case, which occurred in my own general practice, has been a lesson to me as to the difficulties and dangers which will almost surely follow the practice of waiting for distension, more especially as the amount of bowel distension always proves considerably greater than the size of the abdomen would have led one to expect.

CASE V.

A boy, A.B., aged 16, was seized with sudden pain in the epigastrium followed by vomiting on a Saturday evening. He was so far relieved by the vomiting that he was able to continue his work, but both pain and vomiting recurred frequently during the night, and when seen for the first time on Sunday afternoon these paroxysms of pain, followed by retching and relief, were still taking place. The tongue was clean and moist, the temperature and pulse natural, the boy did not look ill, the abdomen was flat, soft, and free from tenderness, and moved freely with respiration. He had passed neither motion nor flatus since the onset. On the Monday a fair amount of flatus was passed after enemata, but pain was still present, less severe but more continuous. On Monday evening it was noticed that the abdomen was a little fuller and more resonant. Tenderness was present but indefinite, chiefly over the left lower quadrant, the tongue was moist and not quite so clean.

On Tuesday morning there was definite distension, especially of the right lower quadrant, the pain was not severe but continuous, and there was occasional retching. The pulse was quiet and the temperature normal, but the tongue was inclined to be dry. The boy was now beginning to look ill.

First Operation.

The abdomen was opened through the right rectus near the middle line, from the level of the navel to a little above the pubis. Distended and injected small intestine presented. The incision was lengthened, and much distended intestine was extruded from the abdomen before the obstruction could be found and isolated, being due to the whip-like end of a Meckel's diverticulum which had tightly constricted the ileum a few inches from the ileo-caecal valve. The intestines were much

distended and difficult to return, and it was felt that if returned in their distended condition they would be subjected to much pressure and kinking. A Carwardine's tube, with a rubber one attached, was therefore put into the bowel just above the site of the relieved obstruction. There was, of course, considerable shock, but the tube acted freely.

Second Operation.

The boy did well for a fortnight, when paroxysmal pain and slight local distension again occurred. The abdomen was again opened, through the left rectus over a distended coil, and many adhesions broken down. The case appeared quite hopeless, but after a very long and severe illness the boy recovered, though with a fistula, the result of opening the ileum, which kept him continually in a mess and always sore.

Third Operation.

Many attempts were made to close it without opening the peritoneum, but at the end of fifteen months it was felt that something radical must be done. The fistula, which was constantly discharging, was about midway between navel and pubis, and a little to the right of the middle line. The skin of the abdomen was raw and soaked with discharges, and any attempts to cleanse it merely rubbed off more epidermis. A crescentic flap of skin and subcutaneous tissue was therefore dissected up from the right rectus, the fistula being covered with a gauze swab, and the flap turned back over swab and fistula, and stitched to the skin of the left side of the abdomen. A split sterile towel was then stitched, one edge to the right margin of the wound and the other edge to the raw surface of the flap. A fairly aseptic surface was thus secured over the right rectus, and the abdomen opened through this. The afferent and efferent limbs of the fistulous bowel were clamped and divided, and an end-to-end anastomosis made. An inverted V-shaped piece of bowel now hung from the edges of the fistula, the end of each limb of the V being secured by a stout ligature left long. Bypassing the eyed end of a probe through the fistula and the wall of a limb of the V, and threading the eye with the ligature, the limbs were in turn drawn inside out through the fistula to the outside of the abdomen, when they were ligatured and cut off. The wound was closed in the usual way and healed well.

The case was in the end satisfactory, but one cannot help feeling that the price paid for twenty-four hours' delay was a heavy one. Had the boy been opened on the Monday morning, before distension took place, there would have been less difficulty in finding the obstruction—probably no need to open the bowel—no turning out of distended and congested coils, with consequent formation of dangerous adhesions, and probably no further operation would have been needed. I may contrast with this the following case:

CASE VI.

A little boy, aged 4, was admitted for paroxysmal pain, followed by vomiting and intervals of ease. His bowels had not been opened since the previous day, when the illness began. The stomach was distended upwards; the abdomen was perhaps slightly full, and there appeared to be some tenderness in the right iliac fossa. The temperature was normal.

On opening the abdomen, the small intestine was seen to be slightly injected and distended. Two coils of the lower ileum were found to be looped into a kind of rosette by a tightly constricting band. This was divided and the child got quickly well. We had not waited for distension in this case.

Case v occurred before I had fully realized the danger of distension. If distension is present to any extent at the time of operation, either distended bowels must be handled and probably turned out of the abdomen before the obstruction is found, and, even so, an enterostomy will probably be necessary, or, as so ably advocated by the late Mr. Greig Smith, an emergency enterostomy only may be done in a prominent coil, the obstruction being left until later. The former line of practice usually produces immediate and often fatal shock, and, if the patient survives, is liable to be followed by dangerous adhesions; while the simple enterostomy can only be satisfactory when the obstruction is single in the continuity of the gut. For, where a loop of bowel is shut off by an obstruction, it is difficult to see how a simple enterostomy can save life. The moral is, I think, that cases of acute obstruction should be diagnosed and submitted to operation before distension has occurred—provided, of course, they are seen sufficiently early.

I venture to make these remarks because I am that thing—neither flesh, fowl, nor good red herring—a general practitioner, holding a surgical appointment; and because I think the hospital surgeon proper rarely sees these cases in the earliest stage. As a rule the early diagnosis of acute intestinal obstruction is a matter for the general practitioner, and to my brother general practitioners I would venture to submit the following suggestions:

That every case of recurrent paroxysmal abdominal pain, followed by vomiting and succeeded by intervals of ease, more especially if the stomach resonance be increased upwards, should be considered as presumably a case of obstruction. If the onset has been accompanied by shock the presumption is still stronger. External hernia should be at once searched for. If this be absent, then enemata should be carefully and thoroughly given and repeated and the stomach washed out, *morphine being absolutely withheld*, and hot applications used to relieve pain. If, after this treatment has been carefully carried out, relief from both pain and vomiting does not occur *and continue*, whether or not there may have been motion or flatus passed after the enemata, then operation should be arranged for without waiting for the signals of the third stage—namely, the dry tongue, quick pulse, anxious face, and, above all, the distended abdomen. For dry tongue, quick pulse, and anxious face mean that toxic absorption from an infected peritoneum has already sapped the patient's power of withstanding shock, and the distended abdomen implies either an incomplete and unsatisfactory operation or one around which nearly all the elements of shock are sure to be assembled.

A distended abdomen in those cases which survive operation usually means a long and distressing illness, too often complicated by the effects of adhesions, and frequently to be followed by a second operation for the closure of the enterostomy. As general practitioners we are all of us, I suppose, agreed that it is little less than criminal to watch and wait while a glaucomatous eye becomes blind and stony, or a cancerous breast contracts obvious adhesions and develops palpable masses in the axilla. None of us would advise postponing operation till extravasation should take place from an impassably strictured urethra, nor should we put off turning till an arm presentation had become firmly impacted. About such cases as these we have fully made up our minds, and I believe that before long we shall consider it not less criminal in cases of intestinal obstruction to wait for the distension and peritoneal infection, which—rather than the obstruction itself—are too often the true causes of unsuccessful operation and fatal results.

A METHOD OF INTESTINAL DRAINAGE.

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It is well recognized nowadays that it is a fatal mistake to return over-distended bowel into the abdomen in cases of intestinal obstruction.

The usual method for evacuating the intestinal contents and the one which is the most effective is to incise the most distended loop after protecting the rest of the coils with towels or gauze. This practice, however, has many disadvantages. To begin with, it has to be carried out by an assistant. Secondly, it is practically impossible, one way or another, to prevent infection being conveyed into the peritoneal cavity. Furthermore, it entails a great deal of trouble for the surgeon and his assistants, as it necessitates frequent change of gloves and cleansing of hands.

To obviate all these drawbacks I have thought of a simple method which has been used with success in this hospital, and which consists in utilizing the well-known Murphy button with a piece of soft rubber tubing (about a yard or more long) as follows: A purse-string suture of silk is passed round one of the ends of the rubber tube, the male or female half of the button is introduced into the lumen and the thread tightened so as to grip the neck of the button. Next, a segment of the distended bowel is clamped and a linear purse-string suture inserted. The gut is incised, the other half of the button placed in position, and, finally the two sections of the instrument united in the usual way. The anastomosis between bowel and rubber tube is complete, and on removing the clamp there is no leakage and the faecal contents pass out of the tube into a jar containing some kind of deodorant well away from the area of operation. The purse-string on the bowel need only be secured by a temporary knot so that the suture may be tightened and the incision instantaneously

closed after the withdrawal of the button, the bowel being reclamped before the button is removed. If one opening does not give satisfactory drainage, the process can be repeated with as many coils as the surgeon desires, or a piece of drainage tubing can be passed up the soft tube through the button into the bowel and the intestines "milked" without the hands coming into contact with faecal matter.

This method is perhaps more serviceable in cases which require immediate colotomy. The use of the Murphy button would be found to be in every way superior to Paul's tubes, as it involves no danger of detachment or leakage. The soft tube with half the button in position being ready the operation can be completed in a few minutes. The button, as a rule, remains *in situ*, affording good drainage for at least four days, during which time there is no necessity to even inspect the wound. When the button comes away the peritoneal cavity is completely shut off and the wound partially healed. The artificial anus thus made leaves nothing to be desired.

With the kind permission of Dr. Thomas Clifford, Surgeon to this hospital, I am able to cite the following case which illustrates the twofold use of the method:

Mrs. D., admitted on October 10th, suffered from intestinal obstruction. Immediate laparotomy. There was great distension of bowels rendering palpation difficult. The most distended coil (upper sigmoid) was secured and emptied by Murphy button and tubing. There was good drainage. At this stage the hand could easily be introduced into the abdomen and the nature and extent of the obstruction ascertained, which turned out to be a carcinoma of the lower part of the sigmoid flexure. As the patient was very collapsed by this time, the small loop of bowel to which the button was attached was fixed to the lower angle of the incision and the rest of the wound rapidly closed. The dressings remained dry till October 15th when the button became detached, leaving a perfect artificial anus. The wound healed by first intention. The rubber tube was also utilized for introducing large quantities of saline solution into the large intestine.

SEVERE ECLAMPSIA IN EARLY PREGNANCY: RECOVERY.

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THIS case presents some points which I venture to think may be of interest. First, it is somewhat rare for eclampsia to occur so early in pregnancy. In this case the patient was between four and a half and five months pregnant as nearly as could be judged by the menstrual history. It is also generally taught that in severe cases of eclampsia the fits usually persist till the completion of labour. Here the last fit occurred twenty-six hours before delivery.

Mrs. J. K., primipara, aged 30, married in August last year had previous to becoming pregnant enjoyed excellent health. She had never had scarlet fever. Menstruation commenced at the age of 15, was of the usual twenty-eight day type, the flow lasting five days. Menstruation occurred last on New Year's Day, 1909, but she had one day's bleeding on January 30th. I was called to her at 2.30 p.m., on June 3rd. I was told that she had been sitting in a chair when she suddenly became unconscious and began to twitch all over. She had been complaining of headache and slight swelling of the ankles for several weeks previous, but had always been able to go about. Had never been troubled with sickness.

Condition on Arrival.—The patient was lying in bed deeply comatose. The conjunctivæ were sensitive, but she could not be roused. There was slight swelling of both ankles. The fundus of the uterus lay midway between the pubis and the umbilicus. Vaginal examination showed the cervix to be tightly closed.

Treatment.—Morphine, croton oil, hot packs, and the usual remedies were applied.

Subsequent Course.—After I had been in the house twenty minutes a second fit, characteristic of the usual eclamptic seizure, occurred. A sample of urine obtained by the catheter went practically solid on boiling. After this fit the patient became partially conscious for a few minutes and was able to recognize her sister. At 3.50 p.m. she had another severe fit. The bowels opened freely and the skin reacted, but no diminution took place in the severity of the fits. Between 3 p.m. and 11 p.m. the patient had nine fits, the last four of which had to be controlled by chloroform.

At 11 p.m. Professor Kynoch saw her in consultation with me. As there was no sign of labour setting in, and as the