A CASE
OF
INTUSSUSCEPTION IN AN ADULT,
WITHOUT SYMPTOMS OF STRANGULATION,
TREATED SUCCESSFULLY BY ABDOMINAL SECTION.

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THE following case is of interest, as showing the value of abdominal section, or laparotomy, as some recent writers prefer to call it, in those cases of intussusception which inflation has failed to cure.

Elizabeth M—, æt. 33, residing at 16, New Street, Bermondsey, applied to Dr. Adcock, of Abbey Street, on June 13th, 1874, on account of a spasmodic pain in the abdomen, just above the umbilicus. She was ordered a mixture containing morphia and aqua anethi. This, however, afforded her no permanent relief, and she continued to attend at the surgery until the 20th. On that day her symptoms were sufficiently urgent to lead Dr. Adcock to advise her to go home and to go to bed, and to take one grain of opium every four hours.

On the 21st Dr. Adcock visited her at her home, and for the first time examined her abdomen. In the right iliac fossa he found a swelling of about the size of a hen's egg, but not very clearly defined. The bowels were open,

but the pain was not much relieved. The opium was now discontinued. She remained in bed until the 23rd, when, feeling better, she got up; but on the following day she was obliged to go to bed again on account of violent pains about the umbilicus. From this time her condition varied; she was sometimes better, sometimes worse. The tumour gradually moved over into the left iliac fossa.

On the 28th Dr. Fagge was asked to see her in consultation with Dr. Adcock. She was then lying in bed. She complained of pain, which came on at intervals, and which she referred chiefly to the umbilicus. She had had some sickness; the vomited matters were not stercoraceous, and, indeed, presented no peculiarities worthy of note.

On examining the abdomen Dr. Fagge was at once struck with the resemblance between the tumour, which could be felt in the left iliac fossa, and that which is observed in cases of intussusception. It formed an ill-defined mass, elongated in the direction of the descending colon. No peristaltic movements could, however, be felt in it: nor did it at that time harden under manipulation. Still, the fact that it had been originally felt in the opposite iliac fossa supported so strongly the view that it really was an intussusception that this view was laid before the patient, and a proposal was made to inflate the bowel. She readily consented, and the nozzle of a pair of bellows was without delay introduced into the anus and air was pumped into the gut. There was no apparent result from this procedure.

On the following day (the 29th) Dr. Fagge saw her again; and at his request Mr. Howse was asked to meet him and Dr. Adcock. Mr. Howse, after examining the patient, agreed in the diagnosis; and inflation was performed for the second time, but with more perfect instruments than at first, so that the air could be pumped in with greater force. It gave her very great pain, and therefore they thought it prudent to desist, before the full power at command had been exerted; the tumour became exceedingly hard at this time. Afterwards it

appeared to be situated at a higher level than before, and to be somewhat softer. In the evening, however, it was found to have disappeared entirely from the left iliac fossa, which could be explored thoroughly and was perfectly empty. The tumour now lay behind the umbilicus, passing across to the right side.

On the 30th inflation was practised for the third time, but with no result. The patient said she felt much better. Her temperature was 99° , her pulse 95. The tongue was clean, as it had been all along. She had had no sickness since the second inflation. Her bowels had not been opened.

On July 1st her symptoms remained almost unaltered. She had had a slight return of sickness in the morning and a little pain. Her pulse was 94; her temperature normal; her tongue clean. The bowels had not been opened.

The hard mass could still be distinctly felt lying behind the umbilicus.

We both, as well as Dr. Adcock, felt perfectly confident about the diagnosis; and the question was now very anxiously discussed whether inflation of the bowel should be repeated, or whether an exploratory operation should be performed. And as inflation had been attended with only partial success, and had given rise to intense pain, fears were entertained lest the repetition of this procedure should lead to rupture of the bowel. The matter was thoroughly explained to the patient. She was told that an operation would afford her a good prospect of recovery; but that, if it were not done soon, fresh symptoms might be expected quickly to develop themselves, which would greatly diminish the probability of success, if the operation should afterwards be undertaken. Both she and her husband readily gave their consent.

Chloroform having been administered, the patient was accordingly placed on the table. All the established precautions of the antiseptic system being in force, an incision about three inches long was made opposite the

umbilicus, and the various layers down to the peritoneum were incised just as in ovariectomy. A small opening was then made into the peritoneum, and a finger immediately inserted so as to plug the aperture. The remainder of the peritoneum was incised upon this finger, and as the aperture was enlarged the other fingers of the same hand were inserted in order to keep the aperture closed. In this way the whole hand was introduced into the peritoneal cavity. But before this could be done it was found necessary to extend the incision to four inches in length. The precaution of plugging the wound was taken to prevent undue quantities of carbolic lotion from flowing into the peritoneal cavity. The hand was then passed into the right iliac fossa, where the intussuscepted mass was readily made out. It was hoped that it would have been possible to reduce the intussusception *in situ*, but all attempts to effect this failed. The intestine was accordingly drawn out from the abdominal cavity and placed on the surface of the abdomen. Even then some difficulty was experienced in reducing it. Pulling at the ends was quite ineffectual, though as much force as was considered justifiable was exerted in this way. Under a kind of kneading movement, however, combined with circular pressure upon the farthest intussuscepted part of the gut, it began to yield, and when once started the process went on readily, until the last part of the intestine was reached. Here a slight check took place, but this again was speedily overcome. More than eighteen inches were in this way drawn out. The bowel was then quickly restored to the abdominal cavity. No lymph was found on the serous surface of the gut, which was quite smooth and shiny. As far as could be seen (for the whole proceeding only occupied a few minutes), the intussusception was of the usual kind, consisting of an involution of the lowest end of the ileum and the beginning of the large intestine into the succeeding part of the colon. During the time that the intestine was outside the abdominal cavity, care was taken to keep it covered with a large

double fold of lint and flannel, soaked in warm carbolic lotion, of a strength of 1-40, so that only just the portion of the intussusception under immediate manipulation should be exposed at one time. The wound was brought together with interrupted sutures in the way practised in ovariectomy, serous surface being applied to serous surface. The deep sutures, viz. those passing through the peritoneal surfaces, were of silk, soaked in carbolic lotion and oil. The superficial sutures, for bringing the edges of the skin together, were of antiseptic gut. The wound was then dressed with two layers of antiseptic gauze, each of eight thicknesses, the first layer soaked in carbolic oil (1-20), the second dry. The carbolic spray (with lotion of 1-40) was kept playing until the dressing was complete. A suppository of morphia was administered immediately after the operation.

On July 2nd the patient was very comfortable, save a certain amount of chloroform-sickness. She was cheerful and almost free from pain. Pulse 98; temperature 98·3°; tongue clean. The bowels had acted slightly, and urine had been passed freely.

On July 3rd the pulse was 112, but the temperature was normal. Tongue clean. She was still very sick, and she was accordingly ordered a mixture containing morphia, bismuth, and prussic acid, to be taken every four hours.

The next day the sickness had abated. She was, however, still kept on milk, ice, and soda water. From this date she rapidly improved. Some of the superficial sutures were removed on the fourth day, and two of the deep ones on the sixth day, but all the sutures were not finally withdrawn until the tenth day. Complete primary union had then taken place along the whole course of the wound; but the dressings, strapping, and bandage were kept on for another week, so as to support the line of incision and allow complete consolidation to take place. After this period a bandage was the only support which the patient wore. The temperature, throughout, never rose above normal, and the bowels acted regularly after

the fourth day. We saw her for the last time at home rather less than three weeks after the operation, but she has once or twice since been up to the hospital either to show herself or to be treated for different ailments. At the present time (November 29th) she is quite well and awaiting her confinement.

In a paper on Intestinal Obstruction, written by Dr. Fagge for the 'Guy's Hospital Reports,'¹ it was remarked that the progress of an intussusception may in many cases be divided into two stages. One of them was defined as being characterised by the presence of a tumour, and by attacks of severe pain, recurring at intervals, between which the patient might appear quite well. The other stage was regarded as coincident with the occurrence of strangulation in, and with the commencement of the changes which lead to the death of, the intussuscepted part of the bowel; the indications of its supervention were said to be that the pain became more or less constant, and that anxiety and constitutional disturbance were present, as well as hæmorrhage from the bowels and tenesmus.

Mr. Jonathan Hutchinson, in his paper read before this Society, in 1873, on the Treatment of Intussusception by Abdominal Section, insisted on the importance of the distinction between those cases of intussusception in which the included part of the bowel is strangulated, and those in which it is not. But he regarded them as belonging to two different forms of the disease, not merely to successive stages of it; and he did not place hæmorrhage from the bowels, nor tenesmus, among the symptoms indicative of strangulation.

Now, it appears to us that neither Mr. Hutchinson's views, nor those which were laid down in the paper in the 'Guy's Hospital Reports,' correspond altogether with the facts.

On the one hand, it is certain that in many cases,

¹ Vol. xiv, 1869, p. 272.

even when the disease runs a chronic course, hæmorrhage is present from the first. Thus in Mr. Hutchinson's case, in which he successfully performed abdominal section, the first attack of pain in the abdomen was quickly followed by a motion containing blood; and the child continued to pass blood-stained mucus for a month. Yet at the operation the intussuscepted mass was pulled out without difficulty, and the opposed serous surfaces did not present a single flake of lymph, and were even congested only in very moderate degree. It is therefore clear that the occurrence of hæmorrhage is not an indication of the commencement of the process of sloughing, and casting off of the invaginated part of the bowel.

But on the other hand, there are cases of intussusception which run on for a great length of time without any blood being passed from the bowel; and in which, when hæmorrhage once occurs, it is accompanied by symptoms of severe constitutional disturbance, which rapidly destroy the patient's life.

A striking instance of this, which came under the observation of Dr. Fagge some years ago, is recorded in the paper to which we have already referred. A child, æt. 5, was admitted on account of an intussusception which had already existed four months; the symptoms were paroxysmal attacks of pain, and the presence of a sausage-like tumour above the umbilicus. The nature of the disease was diagnosed three weeks after admission; but no active interference whether by inflation or operation was attempted, it being feared that adhesions had formed which it would be dangerous to disturb. A week later the child began to pass blood and mucus; and in three days it died. The post-mortem examination showed that there were indeed shreds of lymph between the entering and returning layers, but that there was no ulceration nor gangrene, although the entering layer was much swollen and thickened.

In such a case as this it is natural to speak of the invaginated mass as "strangulated," and to regard the

hæmorrhage as a symptom of the occurrence of "strangulation." But we must consider what exactly is meant by such a use of the term. Now, bleeding from the intestinal mucous surface does not commonly take place in strangulated hernia, nor when a loop of intestine is constricted by a band, although in either case the affected portion of the bowel is very apt to become ulcerated, and even gangrenous. The reason doubtless is that in those forms of disease the neck of the strangulated gut is so forcibly compressed that all flow of blood into it through its arteries is quickly arrested after the strangulation has once commenced. But in an intussusception it may well be that the return of venous blood from the invaginated mass is obstructed for a long time before the pressure is sufficient to cut off its arterial supply. And this appears to us to be the real explanation both of the occurrence of hæmorrhage in such cases, and of the great swelling which is well known to occur in the included part of the bowel.

It seems, therefore, that instead of hæmorrhage being proof of sloughing in a case of intussusception, it actually indicates that the affected part of the bowel is in a different state.

And, in looking through the list of twenty cases of intussusception followed by the shedding of part of the bowel, which Dr. Peacock has collected in the 15th volume of the 'Pathological Transactions,' we find that there is only one out of the whole number in which it is stated that blood was contained in the evacuations; even in that one instance hæmorrhage occurred only at the commencement of the disease, and not for ten or twelve days before the date at which the cast-off portion of intestine came away. It is true that blood is sometimes passed with the sloughing bowel; but this seems to be less frequent than is generally supposed, and it is doubtless the result of ulceration at the neck of the intussusception.

It is important to note that the supervention of severe constitutional disturbance is not, any more than hæmor-

rhage itself, an indication of the occurrence of gangrene. In the case of the boy, æt. 5, already mentioned, death followed within three days from the time when blood was first present in the evacuations. The symptoms during this period were constant pain, vomiting, restlessness, fever, a quick and very feeble pulse, and rapidly increasing distension of the abdomen. But, as we have already stated, the invaginated mass was not sloughing, nor even ulcerated. Indeed it seems to us, after having carefully looked through the notes of the symptoms which were present in the cases collected by Dr. Peacock, that there are not any symptoms which really do indicate the occurrence of gangrene in the included bowel. Cases in which this takes place seem generally to be characterised *rather by the absence of those symptoms which are peculiar to intussusception as compared with other severe intestinal lesions*. There is, indeed, one point which, as Mr. Hutchinson has remarked, positively indicates that sloughing has *not* commenced ;—viz. the fact that the tumour continues to advance further and further in the direction of the large intestine. For such an increase in size is well known to involve a gliding movement in the parts which form the neck ; more and more of the receiving part of the bowel becoming included within the invaginated mass ; and such movement is utterly incompatible with the processes which accompany gangrene.

We have already observed that in many cases hæmorrhage from the bowels is attended with severe constitutional disturbance, and leads rapidly to a fatal issue. These symptoms appear to be the effect of the extreme congestion and swelling of the intussuscepted mass, which take place under such circumstances, and which, as is well known, reach their maximum at its *lower extremity*, or the part which is farthest from its neck.¹

One consequence of this change in the included part of

¹ Dr. Moxon mentions in his work on Pathology that he measured the coats of the bowel in one case at this part, and found them $\frac{3}{4}$ of an inch thick.

the bowel is that there is sometimes great difficulty in effecting complete reduction of the intussusception, even at a post-mortem examination. In a case in which our colleague, Dr. Goodhart, made an autopsy in 1873, and in which death had occurred within two days from the commencement of the disease, he found it impossible to replace the whole of the bowel. Attempting to draw out the invagination led to no result, except that the peritoneum became torn. Squeezing the mass was then tried, and this had the effect of forcing out all but the pouch of the cæcum, which still remained inverted in spite of all the force which could be used, forming a cup-shaped depression on the serous, and a small rounded eminence on the mucous surface of the bowel.¹

It is therefore evident that the occurrence of hæmorrhage from the bowel may be accompanied by, and be indicative of, the supervention of changes in the intussuscepted part, which would interfere with the success of an operation for the cure of the disease, or even of inflation of the bowel with air. And if the disease can be dia-

¹ September, 1876.—Since this communication was read before the Society another case has come under our observation, which shows that the changes in the lower end of an intussuscepted portion of intestine may be still more considerable. A child, æt. 5 months, was brought to the hospital, who had for a month been suffering from abdominal symptoms, and in whom the ileo-cæcal valve had been protruding from the anus for some days. Mucus and blood had been discharged in considerable quantity. The medical man who had been in attendance had mistaken the case for one of simple prolapse of the rectum, and had contented himself with returning into the bowel the extruded mass. The child came under the care of Mr. Howse, who asked Dr. Fagge to see the case with him. Inflation being out of the question, abdominal section was at once performed. A large part of the intussusception was reduced without difficulty; but the last four inches, close to the ileo-cæcal valve, were firmly adherent and so softened by inflammatory action that traction, although most gently performed, caused two considerable rents, from which fæces escaped. As it was clearly hopeless to return the bowel in that condition into the abdominal cavity, the mass which remained intussuscepted was cut away altogether, and the portions of healthy intestine above and below were sewn together. The abdominal cavity was then closed, but the child survived only a few hours. A fatal termination was, in fact, altogether inevitable in this case, whether left alone or treated in whatever way.

gnosed with certainty before this symptom shows itself, it is clearly important that this should be done. From this point of view we think that our case possesses considerable interest.

But perhaps the question may be raised whether the symptoms that were present in that case—paroxysmal pain and tumour—were really sufficient to justify the diagnosis that the disease was intussusception. And hesitation in regard to this point would be the more natural, because such disease is of rare occurrence in grown-up persons. After an experience of many years Dr. Wilks stated that he had seen only one instance of intussusception in an adult. It seems to us, however, that the characters and position of the tumour were of themselves conclusive as to the nature of the case. We were informed that the swelling, when first noticed, had been situated in the right iliac fossa, and that it had moved over to the left, and after inflation we observed that it was absent from the position that it had before occupied, and had passed back towards its original seat. This was proof that the tumour was in the intestine. The only doubt that could remain was whether it could possibly be an accumulation of fæcal matter or of undigested food. There is a case of Dr. Brinton's on record in which a mass of half-chewed filberts formed a swelling of the size of a pullet's egg, situated at first in the right hypochondrium, but which afterwards passed down into the right iliac fossa, and finally disappeared. And in 1870 Dr. Fagge met with a case in which intussusception was suspected, but which proved to be simply one of impacted fæces. A woman, æt. 22, was admitted into the Clinical Ward. She had been seized twelve days before with pain in the limbs and constipation. She had taken an aperient and the bowels had acted twice. After this she had had no motion up to the time of her admission. The abdomen was then flaccid and free from distension; there was no tenderness. The rectum was empty. She had vomiting after food. Subsequently a

tumour was felt to the right of the umbilicus, varying in position and in degree of hardness. Two or three days later a hard cord was discovered in the position of the descending colon and sigmoid flexure. The rectum now contained fæces. An injection was therefore administered, and it brought away some scybalous masses. Eleven days after her admission another large injection was prescribed. The clinical clerk threw up seven pints, the result being that a large quantity of hard fæcal matter came away. The patient, however, became severely collapsed, breathing rapidly and with distress. It appeared that due care had not been taken in the administration of the enema, and that the fluid had been injected more rapidly than was right. She was now ordered six ounces of brandy, and she rallied somewhat. But the bowels continued to act; and she became convulsed and died about six a.m. on the following day. At the autopsy the rectum, as far as the anus, was found to be loaded with round fæcal masses. There was no fluid feculent matter in any part of the intestine. There was no intussusception nor any cause of obstruction except the accumulation of fæces. This had, no doubt, been diminished by the injection, the incautious administration of which appeared to have led to the patient's death.

In that instance, as we have already remarked, it was thought possible before death that an intussusception existed. But the tumour was very far from presenting the definite characters that existed in the case that is the subject of the present communication. In the latter not only did the swelling move from the right to the left iliac fossa and afterwards recede, but its size and hardness underwent variations under manipulation; when a paroxysm of pain occurred it became very much more resistant than before. This peculiarity of the tumour formed by an intussusception was particularly noticed by Dr. Fagge in another case, to which we have already¹ made

¹ See page 91.

some reference, and in which the patient was a boy, five years of age. In that instance the swelling sometimes could not be discovered when the hand was first placed upon the abdomen, but in the course of the examination it would become hard and prominent. More than one writer has described the same thing. In his well-known paper in the 'Mémoires de l'Académie de Médecine' for 1860, Duchaussoy quotes from the 'Archives Générales' (1836, tome xii, p. 240), the account of a case by Dr. John Wood, in which, "when the abdomen was examined, one could at first discover only a fulness and an abnormal resistance in the right iliac region; but if the hand was retained in this position while an attack of pain occurred, an oblong tumour could be felt, which swelled up as if by a *process of erection*. At the same time a gurgling sound was heard." Gasté again (according to Duchaussoy) saw the tumour in his patient increase in size with each new spasm; Nissen felt such a tumour descend; and Phelan observed one which had a vermicular movement that was readily to be recognised. Dr. Brinton met with a case in which there was a long cylindrical tumour, bent into a curve with its concavity upwards, and which was the seat of an active writhing peristalsis.

The only other point that appears to require comment is our having so quickly given up the attempt to reduce the invagination by inflation, and at once submitted the patient to the operation of abdominal section. With regard to this we would observe that the injection of air into the intestine is itself not unattended with danger. In November, 1873, Mr. Howse was asked to see a patient of Dr. Wilks', a child *æt.* 6 months, in whom the intestine had been ruptured and the peritoneal cavity distended with air, as a result of attempted inflation. It had been suffering for less than twenty-four hours under the symptoms of intussusception, including hæmorrhage from the bowels. Dr. Wilks had directed the performance of inflation, and this had been done shortly after the

termination of his visit by the house-physician and the clinical clerk. The abdomen had at first become irregularly distended, but afterwards it suddenly became uniformly full all over. Air then no longer escaped from the rectum, and the child was almost pulseless. Mr. Howse was then sent for with a view to the performance of abdominal section, but the case was evidently unsuitable for the operation. To relieve the distension the peritoneal cavity was punctured with a fine trocar and canula, and a large quantity of air was allowed to escape, but the case soon terminated fatally. At the autopsy it was found that there was much fæcal matter in the abdomen. The peritoneal coat of the bowel had given way at one spot over an area of the size of a split pea; and in the centre of this there was a minute opening in the other coats, through which the contents of the bowel were escaping. In two other places the serous covering of the intestine was alone torn through. And in the case of another child, æt. 7 months, in which inflation had first been used with partial success, and afterwards injection of water, Dr. Moxon found that the colon had partially given way in several places. The peritoneum was cracked through, and the edges of it were folded back and fixed by agglutination in their new positions. One part of the bowel of some length presented a row of transverse fissures corresponding with the sacculi. These extended through the longitudinal muscular fibres, whereas they formed gaps between the transverse fibres.

In the case which is the subject of the present paper the patient complained of great pain while we were working the bellows, especially on the second occasion; and we came to the conclusion that no further good would result from that procedure. Indeed Mr. Hutchinson has summed up both his own opinion and that of the best authorities in the statement that all attempts at replacement of the bowel by injections of fluid or air ought to be abandoned if they do not succeed within a short period.