A CASE
OF
INTUSSUSCEPTION,
IN WHICH
ABDOMINAL SECTION WAS PERFORMED.

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THE following history may be deemed of sufficient interest to be brought before the Royal Medical and Chirurgical Society, as a continuation of the series of similar cases recorded in vols. lvii and lix.

R. S—, a boy, æt. five years, was admitted into St. Mary's Hospital, under Dr. Handfield Jones, on Dec. 31st, 1877. His mother states he has been ill six weeks, and that one doctor affirmed he had pleurisy, another typhoid. The child has lost flesh very much, and looks wan and weak. He suffers from severe paroxysms of pain in the abdomen lasting some minutes, and occurring every few

hours; in the intervals he seems quite free and is cheerful. On January 7th the abdomen was extensively dull, the bowels were loose, and the stools light coloured. Temperature normal. He was ordered—

℞ Ferri Carb. Sacchar., gr. v. Ter die.
Cod-liver oil. Port wine, 1 oz. Simple diet, milk and rice pudding.

9th.—Attacks of pain in the abdomen occur very irregularly, sometimes there are five or six a day, on other days scarcely any; their duration is very short. Abdomen resonant now. He seems to be improving, takes his food pretty well, and likes his wine.

14th.—Has been suffering much pain all night and this morning; was cheerful yesterday. He had much pain on the night of the 10th, and on the 11th. The pain is relieved by pressure. Abdomen is dull in left side at the depending part, the remaining two thirds are resonant. Ordered—

℞ Tinct. Opii, ℥iv, in enemate, dolore invadente.
And,

℞ Quinæ Sulph., gr. j;
Acid. Sulph. dil., ℥ij;
Sp. Chloroformi, ℥ij;
Aquæ, ʒij. Quater die.

To omit the Ferri Carbon.

17th.—Bowels open twice yesterday, once during the night; more pain occurs after food. Omit the quinine and take—

℞ Hydrarg. c. Cretâ, gr. iij;
Pulv. Rhei, gr. j. Omni nocte.

19th.—Was much better all yesterday, and passed a good night, but is now (2 p.m.) complaining again of his belly, and does not care for food; the whole abdomen is more or less dull, except the stomach region, and a firm mass is felt in the left iliac fossa. He was quite bright and cheerful yesterday. Ordered—

℞ Tinct. Cinchon. flav., ℥xij;
Sp. Ammon. c., ℥vj;
Aquæ, ʒij. Quater die.

21st.—In the evening and night of 19th he had much sickness and pain in abdomen; the tumour in left iliac fossa became very marked; there was no stool. The following day there was much collapse with pain and vomiting. I directed inflation to be performed per anum, which was done efficiently by Mr. Prowse, the house surgeon, the child's body being at the same time inverted. I saw him soon after the operation, he was lying in bed quiet, with a warm hand and a pulse of 128, and the collapse had passed off; to-day he is doing well and has no pain or sickness. Something resembling a cordy band is felt in or near the left iliac fossa.

22nd.—Pain came on again this afternoon, lasted four hours, and was not lessened by an opiate enema. Abdomen is dull, but not distended. Pulse distinct, 120. Tongue natural, no sickness. Ordered—

Adde Potass. Iodid., gr. j, ad ʒij, mist.

24th.—Brows knit; some pain to day, none yesterday. Abdomen resonant all over.

28th.—Aspect cachectic; does not take food well; has slight recurrences of pain.

31st.—Bowels quite regular. Has daily slight attacks of pain. Left side of abdomen notably duller than right. Temperature normal.

Feb. 4th.—The tumour has reappeared in the left iliac fossa, accompanied by pain, sickness, and bloody mucous stools. Inflation was again performed as before, and the tumour completely disappeared. Before inflation was used the child was inverted, his legs being laid across another person's shoulders, and his body well shaken, but without any change in the abdomen. Pulse very feeble.

℞ Tinct. Opii, ℥iv;
Sp. Chloroformi, ℥v;
Aqua, ad ʒij.

7th.—Is doing well; has no pain.

11th.—The left iliac tumour reappeared yesterday, and

was again removed by insufflation. Is complaining of pain to-day. Ordered—

℞ Tinct. Nucis Vom., ℥iij;
Aq. Chloroformi, ʒj. Ter die.

14th.—The tumour reappeared in the usual situation on the 12th, and was attended by pain, but not by sickness; it disappeared without inflation. He is still very thin, but eats well.

18th.—Tumour recurred on the 16th, and was removed by inflation a fourth time. Abdomen is dullish on both sides.

21st.—Has pain in abdomen to-day, and has passed some slightly blood-tinged, flaky fluid.

25th.—Was in much pain this morning. A large tumour was both felt and seen in left iliac fossa, but no bloody mucus was passed. Insufflation was performed for the fifth time, and the tumour again disappeared.

27th.—Is merry this afternoon. His father took him out the next day, though warned that recurrence of the disorder was almost certain. He was readmitted at 9.30 a.m. on March 4th in an alarming condition, the symptoms having returned two days before. He was suffering much pain which he endeavoured to relieve by stooping with his head low, and was very pallid. A large tumour was felt in the left side of the abdomen, extending from the iliac to the umbilical region. The right side was tympanitic, the left dull. At 3.30 p.m. the lower bowel was again inflated, for the sixth time, but not with such satisfactory results as on the former occasions. The tumour became softer, but instead of disappearing only moved higher up. Almost as soon as the influence of the anæsthetic had passed off he was completely doubled up with pain. In the evening the inflation was again performed, and failing, water was injected in large amount, but with no better success. He had great pain, was constantly sick, and passed a quantity of mucus per anum mixed with blood, but no fæces.

March 5th.—No sleep all last night. He looks now very

pale and miserable, is in great pain, vomits immediately after taking anything, and passes much mucus per rectum. Pulse and heart's impulse scarcely perceptible. Tumour extends into epigastrium; right side of abdomen tympanitic. At five o'clock the operation described below was commenced, and was completed at 6.15 p.m. At 6.30 p.m. he was breathing distinctly and regularly, and swallowed the brandy and water given to him well.

The operation, with remarks, by MR. PAGE.

Having learnt from Dr. Handfield Jones that the symptoms had throughout been those of intussusception, and that insufflation, previously successful, had on the last occasion completely failed, I satisfied myself of the presence of a distinct hard lump in the left flank, but made no minute examination, as the child was cold and collapsed, and pulseless at the wrist.

The steam spray and other requisites of antiseptic treatment having been at once prepared, I began the operation at five o'clock in the ward, opening the abdomen in the median line below the umbilicus by an incision rather more than two inches long. It was at once noticeable that there was no general peritonitis. Inserting two fingers I explored the tumour, and felt it to extend from the left iliac region upwards in the course of the colon, and follow that of the transverse part until, about the middle line; it seemed to end deeply towards the posterior part of the umbilical region of the cavity. It was thus obviously of large size, and was so hard as almost to convey the impression of being some new growth connected with one of the viscera. Unable after careful search through this small opening to define the precise commencement of the invagination, I carried the incision upwards to a distance of half an inch above the navel. With the greater room thus given the upper limit of the tumour was distinctly found, and, as before said, was deeply placed. Effort was at once made by

gentle traction, and fixing of the tumour, to drag out the ensheathed part, but without avail. The small intestines were therefore withdrawn from the abdomen, and during their exposure they were either being played on by the antiseptic spray, or were covered with lint soaked in a warm solution of carbolic acid. The small intestines out of the way, it was easier to reach the volvulus, and I was able by simply pulling to extricate about two inches of the ensheathed part, which was found a good deal congested. Failing to get more by traction, my attention was next directed to the lower end of the mass, for I had in mind the experience of Mr. Hutchinson that pulling down the ensheathing part had effected the reduction, which pulling out the ensheathed part could not procure. By neither method could I make any further way, and deeming it necessary to examine more closely the large, hard, and resistant mass, I after some difficulty withdrew it also from the abdomen. It then became clear that the ensheathing part was entirely composed of large intestine, into which ileum was seen to pass. It was much distended, somewhat dark and congested at the upper extremity, but its surface was smooth and glistening, and there was no inflammatory lymph. Attempts at reduction being still unsuccessful, it was found on nearer inspection that the mass of colon was itself composed of an ensheathing and an ensheathed part; that there was, in fact, a second intussusception. In this, however, the order of things was reversed, for the lower part was included in the upper, which thus became the ensheathing portion; the whole forming a sausage-shaped body, the size of the child's ankle, from ten to twelve inches long. Passing a finger along each sheath it could be felt that the extremities of the two intussusceptions overlapped each other about the centre of the mass; and it became evident that this lower invagination must be released before the upper could be withdrawn. Grasping hold, therefore, of each half of this lower intussusception I exerted steady traction upwards and downwards, and slowly and with difficulty drew out some two inches of the ensheathed large

bowel, until such gentle efforts ceased to have avail. More power was evidently necessary. The parts began further to separate, and pulling in opposite directions almost as hard as I could, I gradually drew the lower out of the upper, and simultaneously the upper off the lower part of the invaginated colon. The ultimate point extracted was somewhat rough, and for about an inch slight adhesions were undoubtedly present; but at no point did the consistence or colour of this part of the gut appear markedly altered, so soon as the reduction was complete, and the natural calibre thereby restored. At this moment the state of the child seemed even more immediately alarming than before. It was thought to be dying, but it rallied after brandy had been given by the mouth.

I now returned to the higher or more ordinary intussusception. Dragging on the ensheathed part was without further influence, and I found that by simple traction at the lower end I was unable to draw off, or to start the drawing off of the ensheathing part. I therefore took the far end of the volvulus in my hand, and gently squeezing it, the two portions began at once to glide from one another, the ensheathed part being, as it were, pushed out of the hand in the act of closure, while the ensheathing was retained in the grasp. A repetition of this simple and delicate manœuvre completed the reduction, the vermiform appendix being the last to appear.

Close to the origin of the appendix there was some thickening and congestion of the cæcum. This part of the intestine was lying quite away from its normal site, being above the umbilicus and only just to the right of the middle line. There was not much difficulty in returning the intestines into the abdomen. All fluids poured into the cavity having been taken up with sponges, the parts were accurately brought together by silver sutures passed either through the peritoneum, or through the skin. The operation lasted an hour and a quarter, and during the latter part of it, the steam spray having come to an end, the hand spray was called into service. This was not very well kept up, and

only when the hands of the operator began to feel the numbing effects, was it known that a much stronger solution of carbolic acid, one in twenty, had with it been unfortunately used. To this the intestines were, for a short time exposed. The child was put to bed and hot bottles were applied. It rallied markedly during the evening, took food, spoke, had an action of the bowels and was once sick. When seen at eleven o'clock it was quite warm, and the radial pulse was distinctly perceptible, but the child was restless and seemed to be in pain. It sank exhausted on the following morning at 4 a. m., nine hours and three quarters after the operation.

Mr. Duncan, who made the *post-mortem* examination, reports as follows: "Abdomen only examined. The lips of the wound were found to be adherent to one another, but the adhesions were easily separable. To the anterior abdominal wall at the site of operation part of the great omentum and a few coils of small intestine were adherent. The coils of small intestine were more or less generally adherent to one another, though all the adhesions, above named, were very slight and easily separable. The affected portions of intestines were sticky, slightly injected, and covered with a thin layer of lymph on their free surfaces. Four and a half inches above the ileo-cæcal valve, a portion of the ileum measuring about two inches in length appeared greatly congested. On opening the bowel a circular anæmic stripe extended around the walls, measuring about half an inch, and being at its lower border about three inches above the valve. Above this sharply defined stripe, the intestine for two and a half inches was paler than the succeeding portion which was greatly congested, the mucous membrane being here swollen and the vessels much injected. The cæcum was of a blackish green hue, and its mucous membrane, especially that of the vermiform appendix, was much congested. The meso-cæcum was very lax; the cæcum 'floating,' as it were, and it could be easily drawn over the left iliac fossa. There appeared to be no peritonitis of the large intestine, and no affection of the mesenteric glands."

The several features of the case have been thus recorded in detail, for it is essential that the steps of an operation such as abdominal section, which has the best grounds for establishing itself as a justifiable procedure in surgery, should be told without reserve. The method whereby alone it seemed possible to unfold the upper or more usual intussusception fully confirms the experience of Mr. Hutchinson, recorded in the fifty-ninth volume of the 'Transactions of the Society.' Mr. Hutchinson found that the impediment to reduction was "clearly due to the ensheathing bowel being thrown into folds by traction, and thus constituting a series of strictures which gripped its contents." An endeavour thereupon to prevent this drawing into folds by holding the ensheathing layer straight revealed to him "the true method of reduction, for by pulling this downwards, instead of trying to pull the involved part upwards, he accomplished the replacement with the greatest ease." The remembrance of this was a great help to me. It was, in fact, evident that no amount of traction, at any rate, not so much as it was thought prudent to exert, had any influence in moving the distal end of the invagination. The actual mode of reduction had, indeed, been foreshadowed by Mr. Hutchinson, who, judging from his experience of the case which he records in the paper already named, had an impression that in future operations the "reduction ought to be accomplished by squeezing" the lower end of the invaginated tract.

The existence of a second intussusception, in which the usual order of ensheathing and ensheathed parts was reversed, a condition which Mr. Pollock (Holmes' 'System of Surgery') speaks of as "quite exceptional, even if it ever occur," formed an unforeseen complication in the case. Had it not been there, there seems no reason why the upper invagination should not have been at once reduced with ease; and its presence, moreover, necessitated that which should, as much as possible, be avoided—any long exposure of the intestines outside the abdominal cavity. The great distension of this part of the bowel, and the slight adhesions between the opposed surfaces at the farthest point of the involution,

made the reduction of this intussusception a work of considerable difficulty; and although that was accomplished, as the *post mortem* proved, without damage to the structure of the gut, such forcible traction as was used might itself have been a source of peril.

Viewed from the serous surface at the time of operation, no part of the implicated bowel was in a condition past repair, but the state of the mucous membrane, as described by Mr. Duncan, shows how imperative it is that, when other means have been tried and have failed, there should be no delay in surgical interference. The laxity of the mesocæcum is of interest as throwing light on a possible origin, and predisposing cause, of the intussusception.

Concluding remarks by Dr. HANDFIELD JONES.

The long continuance of attacks of pain in this case before the appearance of tumour or other positive sign of intussusception is very noteworthy. Taking into account the time he had been ailing before admission, these preliminary disorders extended over about eight weeks. The child's cachectic appearance, coupled with the abdominal pain, led me to imagine that some coarse lesion, such as tuberculosis affecting the intestines and peritoneum especially, was present. This, however, was not the case, and we seem to have no choice but to ascribe the pain and subsequent motor derangement to a functional disorder of the abdominal nerves and ganglia. As to the nature of this disorder we can only remark that, inasmuch as a relaxed state of a lower segment must certainly favour the intrusion of an actively contracting part above, it is most probable that the essential condition of intussusception is a local paralysis of the portion of the intestine which becomes the sheath of the volvulus. Neuralgic pain in other parts is often associated with motor paralysis, and probably is so in the abdominal organs. The frequent recurrences of intussusception were evidently dependent on the persistence of the morbid condition of the intestinal innervation.

The next point for notice is the existence of an ascending intussusception, the lower part of the sigmoid flexure of the descending colon being intruded into the transverse portion. There were, therefore, two volvuli coexisting and proceeding in opposite directions. The possibility of such an occurrence has been questioned by no less an authority than the late Dr. Brinton, who says that the existence of a single case of backward intussusception rests on no better evidence than that which establishes the reality of the sea-serpent, and such like marvels.

The third point is the absence of peritoneal inflammation and adhesions, after so many occurrences of intussusception. It was not until the sixth recurrence that inflation failed, and there is no reason to doubt that the procedure would have been equally successful on this occasion as on the preceding, had not the removal of the child from the hospital interposed a considerable delay to its performance, during which adhesions had time to form. This puts in a strong light the necessity of having early recourse to inflation, as soon as symptoms indicative of intussusception are present.