ON MESENTERIC CYSTS

WITH

TWO CASES IN YOUNG CHILDREN SUBJECTED TO OPERATION

BY

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PERCY M—, aged 11 weeks, was admitted to the Evelina Hospital April 23rd, 1896.

History.—The mother stated that the baby was plump at birth, and was brought up on cow's milk and barley water. He had gradually wasted since birth, and from the age of three weeks had not passed solid motions, only dark offensive fluid. There had been frequent vomiting of fluid, which the notes state was fæculent.

Condition on admission.—A pale, marasmic child, temp. $96\cdot8^{\circ}$, pulse 120, resp. 40; organs natural. Abdomen rather full. Occupying the right side of the abdomen, a little below the level of the umbilicus, was a well-defined, smooth, rounded, fluctuating swelling the size

of a small kidney. It could be moved very freely all over the abdominal cavity. The swelling could be felt *per rectum*, and did not appear to be connected with any of the abdominal organs. During the first day after admission the child vomited, and its motions were loose. Subsequently the vomiting ceased, and his general condition improved somewhat. A diagnosis of mesenteric cyst was suggested; and as it appeared probable that the previous abdominal disturbance was due to the tumour, an exploratory operation was determined upon.

Operation (May 1st).—The abdomen was opened in the median line by an incision commencing 1 inch above the umbilicus. The tumour, which occupied the right lumbar region, was drawn out, and found to be a cyst of the size of a Tangerine orange. It occupied the border of the mesentery, and a knuckle of moderately compressed intestine ran over its free surface for about 4 inches. The intestine, in fact, was incorporated in its wall. Numerous enlarged glands were visible in the mesentery. Two ounces of fluid were withdrawn by aspiration, and the puncture was closed with pressure forceps. The coil of intestine was then returned into the abdomen, and the cyst so attached to the parietal peritoneum as to leave a portion of its wall projecting externally. The angles of the wound above and below were closed.

The child was very sick after the operation, and vomiting continued until the 3rd inst. No milk was retained. Sickness was arrested by washing out the stomach. Raw meat juice and nutrient enemata were substituted for the milk. On the morning of the 3rd inst. he was transfused with a pint of saline solution.

May 8th.—No vomiting had occurred since the 3rd inst. Under an anæsthetic the exposed portion of the cyst wall was incised, when the fluid was found to have re-accumulated. The fluid let out was of a reddish-brown colour, odourless, and towards the end of the drainage some solid material of a green and yellow colour came away. The cyst was washed out and a drainage-tube

inserted. No suppuration occurred either in the wound or the cyst. The child's general condition improved, all sickness ceased, and the cyst discharged only a little clear fluid.

He was quite convalescent and continued well until June 5th, when he vomited twice. Next day there was no sickness, but the breathing became bad at 7.50 p.m. At 8.20 the child became convulsed on both sides, the eyes twitching. The pulse after the convulsions was almost imperceptible. The collapse continued, and death took place at 10.30 p.m., nearly six weeks after the operation.

Autopsy.—The peritoneum was perfectly healthy. The cyst lay between the layers of the mesentery of the jejunum, and was intimately connected with the intestine which coursed over it (fig. 1). So close was the relation between the two that the cyst might have originated in the space where the layers of the mesentery divide and surround the intestine. The portion of intestine (about 2 inches in length) attached to the cyst, although not in the least compressed by it, was distinctly smaller in calibre than elsewhere. The diameter of this part was $\frac{3}{8}$ inch, while that immediately above was 1 inch in diameter. This narrowing had the appearance of being the result of arrest of development of the tube from long-continued pressure, and possibly interference with the blood-supply from the constriction of the vessels by pressure of the cyst. In the specimen¹ (fig. 2) it may be seen that where the intestine leaves the wall of the now distended remains of the cyst it is somewhat suddenly bent. The constricted or narrow part in the recent state was blocked with casein, and there is further evidence of pre-existing chronic obstruction in the dilatation of the intestine on the proximal side of the tumour. The cyst is oval in shape, and measures 2 inches in its longest diameter, which lies parallel with the intestine. Its inner surface

¹ Preserved in the Museum of the Royal College of Surgeons.

is smooth, and its walls firm and 3 lines in thickness. Under the microscope (see figs. 3 and 4) it showed no endo- or epithelial lining. Just beneath the surface was a thin layer of unstriped muscle-fibre cut longitudinally, then a thick layer of muscle divided transversely, followed again by another thick layer composed of several fasciculi running parallel to the surface. The contained fluid was turbid serum, in which were white and red corpuscles, with no fatty corpuscles indicative of chyle. There were $\frac{5}{10}$ of albumen. In the neighbourhood of the cyst were many slightly enlarged, but not tuberculous glands, as was proved by microscopic examination. All the abdominal organs were healthy.

It may be fairly claimed that the child had completely recovered from the operation, and that this had accomplished all that was possible. The child had, before admission, suffered with a severe convulsive seizure.

The cause of the fatal convulsion was not apparent. There was no evidence at the post-mortem of torsion or kinking of the gut.

I was indebted for this case to my colleague, Dr. G. Carpenter, to whom it was sent by Dr. R. G. Reid; Dr. Carpenter also suggested the diagnosis of mesenteric cyst after rectal bimanual examination under an anæsthetic.

CASE 2.—Albert G—, aged 3 years and 8 months, was admitted to the Evelina Hospital on June 27th, 1896, with intestinal obstruction. The parents stated that the child had always had a swollen belly, and was in the hospital in September, 1895, for diarrhoea and vomiting. He was discharged as cured in four days. No action of the bowels had taken place since June 23rd, four days before admission. From that date the child had vomited incessantly. He presented the typical abdominal *facies*, and was evidently much exhausted. The abdomen was much distended but flaccid. No tumour could be felt either by palpation or *per rectum*. There was dulness on

percussion in the right flank, extending to within 3 inches of the middle line. No thrill felt. Rectal injections were followed by the expulsion of a few small pellets of fæcal matter.

Operation.—Laparotomy under A.C.E. was performed three hours after admission. On introducing the hand an ill-defined swelling was felt in the right flank; it was drawn out of the wound. This proved to be a thin-walled cyst in the free end of the mesentery. The intestine coursed over and was incorporated with its walls, being here completely empty and flattened like a riband. It was considerably distended on the proximal and empty on the distal side. The cyst was so thin-walled and flaccid, that even with the hand in the abdomen its outline could not be made out; and it could not be differentiated by the touch from distended coils of intestine. Hence the difficulty in recognising its presence except by percussion before operation.

After drawing off 32 ounces of clear straw-coloured serum, I opened the cyst with the intention of shelling it out or excising it. The latter alternative seemed possible, as the walls appeared before tapping to be entirely free from vessels. Enucleation being impossible, nearly the whole of the cyst wall was removed with the exception of the lateral margins, over which the mesenteric vessels ran. The inner surface was cleansed, and the cut edges brought together with continuous sutures of silk. The knuckle of bowel was then returned into the abdomen and the wound closed. After emptying the cyst the bowel on the distal side immediately became filled with the intestinal contents. After the operation, which was not of long duration, the child was very restless, shrieking and starting up. Pulse weak and at times imperceptible.

Enemata of coffee and brandy and hypodermic injections of strychnine were administered. Later on bromide of ammonium was given, with good results in diminishing the restlessness; but the child never rallied, and died

nine hours after the operation, whilst being transfused with saline solution.

Autopsy.—The organs generally were healthy. The cyst was situated 7 feet from the ileo-cæcal valve. The intestine attached to it was not constricted. There was no peritonitis or peritoneal injection. The specimen¹ (fig. 5) shows the remains of the cyst, which have been distended and hardened. The intestine is attached to its surface for a distance of 3 inches to 3½ inches; its proximal end is dilated, and its distal end somewhat contracted. The cyst was evidently formed by a separation of the two layers of the mesentery in immediate contact with the intestine. Its walls were extremely thin and the inner surface smooth. Under the microscope there was no lining. The inner half was composed of connective tissue containing granulation cells, and the outer half of loose connective tissue and fat; no unstriped muscle tissue. The cyst fluid was clear serum, which became solid with albumen on boiling, and contained a large quantity of cholesterine, but no fatty matter.

Remarks.—These two cases illustrate in a striking manner the symptoms associated with mesenteric cyst in the earlier and later stages. In the first case the prominent features were vomiting and diarrhœa with emaciation, amounting to marasmus. These dated from birth. In the absence of an abdominal tumour they would certainly have been ascribed simply to gastro-enteritis. In fact, they were due to this cause, but it resulted not from faulty feeding, but from chronic obstruction high up in the intestinal canal.

In the second case the tumour declared its presence by an attack of complete intestinal obstruction. The only premonitory symptom was the illness with vomiting and diarrhœa a year earlier.

Although it is generally assumed that a mesenteric cyst if left alone will ultimately produce obstruction by

¹ Preserved in the Museum of the Royal College of Surgeons.

MR. EVE, ON MESENTERIC CYSTS.

FIG. I.

FIG. II.

Mesenteric Cyst. Case 1. The Cyst is shown after distension with spirit. A rod is placed in a sinus opening on the surface at the site of the incision.

Mesenteric Cyst. Case 1. The photograph shows the narrowing of the knuckle of intestine where in contact with the Cyst. The size of the intestine above the Cyst may be seen in Fig. I.

FIG. III.

Wall of Cyst from Case 1, showing bands of unstriped muscle. High power.

MR. EVE, ON MESENTERIC CYSTS.

FIG. IV.

Wall of Cyst from Case 1, under low power. The inner half, which is uppermost, is largely made up of unstriated muscle.

FIG. V.

Mesenteric Cyst. Case 2. Showing seat of Cyst which was excised. The sutures have been removed from the side towards the observer.

occluding the bowels, an examination of the recorded cases reveals the fact that this has rarely occurred. A specimen is preserved in the museum of the Royal College of Surgeons, No. 2352 E, from a girl aged nine, who was seized with pain in the abdomen and vomiting, which continued till her death six days later. A patient of Brentano's,¹ a woman aged forty-two, exhibited symptoms of internal strangulation after two attacks of peritonitis. Laparotomy revealed in the left descending mesocolon, a cyst, which was successfully enucleated.

Pain is not usually present, but in a case recently recorded by Dr. J. O'Connor² this was a prominent symptom.

Diagnosis.—With one exception, Case 1 presented all the physical signs characteristic of mesenteric cyst. A spherical, well-defined, distinctly fluctuating tumour was present in the usual situation, viz. on the right side of the abdomen a little below the level of the umbilicus. It was extremely mobile, and separated from the pelvis by a distinct band of resonance. It had no connection with either the liver or the spleen. But the most characteristic symptom of all, the existence of a band of resonance due to intestine passing over the otherwise non-resonant tumour, was absent, probably on account of the small size of the bowel. This symptom was also absent in the second case, on account of compression of the gut.

In Case 2 the tumour was masked by distended coils of intestine. The only indication of its presence was dulness in the right flank, which might have been due to localised peritonitis with effusion; in fact, it is generally admitted that such a condition is in many instances indistinguishable from mesenteric cyst.

It may briefly be mentioned that the conditions, between which and mesenteric cyst a differential diagnosis is most difficult, are cysts of the pancreas, floating

¹ 'Revue des Sciences méd.,' tome xlvii, p. 664.

² 'Brit. Med. Journ.,' Feb. 13th, 1897, p. 391.

kidney, lipoma and myxo-sarcoma of the mesentery or retro-peritoneal tissue, and ovarian, parovarian, and uterine tumours.

I saw lately in a middle-aged woman a small ovarian cyst with so long a pedicle, and so mobile, that it could be pushed all over the abdomen and into the left loin like a floating kidney; and a distinct band of resonance existed between it and the pelvis.

Hahn¹ and Augagneur seem to have been the first to classify mesenteric cysts. Following these authors, Braquehaye,² in an exhaustive article published in 1892, classifies them as follows:

1. Sanguineous cysts. These are usually traumatic, and occur as diffuse hæmorrhages into the mesentery, into pre-existing serous cysts, or into solid tumours.

2. Lymphatic cysts, comprising chylous and most of the serous cysts. These arise in the thoracic duct, in the chyle vessels, or in the lymphatic glands of the mesentery.

3. Congenital cysts, chiefly dermoid, but occasionally cysts of the Wolffian body.

The two cases described above belong to the second variety of lymphatic cysts, and among them fall in the largest group of serous cysts. These are believed to originate in lymphatic glands, and it is stated that remains of lymph-gland tissue have been found in their walls. This could not be demonstrated in the cases related above.

The specimen already mentioned preserved in the Royal College of Surgeons resembles the cyst from Case 1 in that a considerable quantity of unstriped muscle tissue existed in its walls. It also occupies the same position in relation to the bowel. Various suggestions may be made to account for the presence of unstriped muscle. It is present normally in the mesentery; it also exists in the capsules of lymphatic glands and in

¹ 'Berliner klin. Woch.,' 1887.

² 'Archives gén. de Médecine,' vol. ii, 1892, p. 291.

the walls of the larger lymphatic vessels. It is, however, difficult to believe that such a large quantity of unstriped muscle could be derived from any of these sources. Seeing the close proximity of the cysts to the intestinal wall, one is tempted to suggest that they are sometimes derived by some irregularity of development from the mesoblastic portion of the intestinal tube. In discussing the origin of these cysts E. Pagenstecher's case¹ may be quoted. It is that of a girl aged ten, with a lymph-gland cyst of the mesentery stated to be of tubercular origin.

Contrary to all previous observations,² Heinrich records a case of cyst in the ascending mesocolon, which possessed an endothelial lining. He supposed it to have originated from the subcæcal fossa.

Braquehayé asserts that the cysts are situated in the mesentery of the small intestine, usually near the spinal border. But since the publication of his paper several cases have been reported, besides that of Heinrich's above quoted, in which the cyst occupied the mesocolon.

Brentano³ records a cyst of the left iliac mesocolon.

In the museum of the Royal College of Surgeons is a specimen presented by Dr. Bantock (No. 2352 D) ; a cyst 5½ inches in diameter, which he shelled out from the transverse mesocolon behind the stomach.

The patient, a woman aged forty-five, made an excellent recovery.

Treatment.—The manner in which the cyst was dealt with in Case 1 is that recommended by most writers on the subject. This is often spoken of as marsupialisation. Mr. Greig Smith⁴ with others recommended that the cyst should be laid open at the time of operation, and stitched to the parietes.

The practice of allowing the cyst wall to become

¹ 'Revue des Sciences méd.,' tome lxxviii, p. 241.

² Ibid.

³ Ibid., tome xlvii, p. 664.

⁴ 'Abdominal Surgery,' vol. ii, p. 1064.

adherent to the abdominal wound before opening it is perhaps safer, seeing that in many instances the cyst is in close contact with the intestinal wall, and therefore its contents are likely to be infected with micro-organisms. Its contents are, of course, drawn off immediately by aspiration.

The other method of dealing with these tumours is by excision. One of the difficulties besetting this operation is due to the distribution of the mesenteric vessels over the cyst wall. Not infrequently it is surrounded by adherent coils of intestine.

Very exceptionally the cyst can be shelled out. This was successfully done in the cases quoted above of Brentano and Bantock. Its occasional feasibility may be brought forward as an argument in favour of laying open the cyst in the first instance.

The drawbacks of marsupialisation are—

1. That the process of cure is tardy, and a fistula may persist for a long period. In a case of Sir Spencer Wells a fistula still remained at the end of a year.

2. Recurrence may take place, the fluid re-accumulating in the cyst. It is rare, only occurring once in twenty-eight cases tabulated by Braquehay, and can clearly be avoided by keeping the orifice patent for a sufficient time to allow of contraction of the cyst.

3. Yielding of the cicatrix and the formation of a ventral hernia. This accident occurred in three out of the twenty-eight cases, and an additional case has since been published by Brentano. Operation was required in three out of the four cases. Ventral hernia did not occur once in the cases treated by excision.

4. Marsupialisation is also not free from danger, owing to twisting, kinking, or torsion of the proximal side of the gut. In a case published by Rötter in 1895 the cyst, which was situated above the umbilicus, could not be extirpated. It was therefore attached to the parietes. The patient suffered with uncontrollable vomiting, and died on the sixth day.

The cyst occupied the mesentery of the jejunum 10 cm. from the duodenum, and the intestine was obstructed owing to torsion on its axis. In Löhlein's case a second laparotomy was necessary, owing to internal strangulation by adhesions between the cyst and parietes.

When I performed the operation on Case 2 I had not dissected the specimen from Case 1, and thought that kinking might have been responsible for the death of the patient. It was this which chiefly determined me to perform excision in the second case.

5. Another complication is chylorrhagia, which may lead to rapid and marked emaciation. This was very pronounced in Dr. Rasch's case.¹

The statistics of Braquehay have demonstrated that marsupialisation in point of safety is far superior to excision. The former give 93 per cent. of recoveries, the latter 60 per cent.

The above remarks regarding treatment do not apply to the third group of congenital mesenteric cyst. These are mainly dermoids, and could usually be enucleated without difficulty.

All writers are agreed that operation is absolutely necessary in all cases of mesenteric cyst, in view of the persistence and progressive nature of the symptoms. If left alone, death may take place from obstruction, rupture or perforation of the bowel, or emaciation. It may also be said that operation is usually necessary to establish the diagnosis.

Considering the large number of cases of mesenteric cyst which have been collected, chiefly by Continental writers, it is surprising that so little attention has been devoted until recently to this subject in works on surgery and its branches.

Up to 1892, 104 cases had been collected by Delmez, Arekion, and Braquehay respectively. To English surgeons it is of special interest to recall the fact that John Hunter described some cysts in the mesorectum of

¹ 'Trans. Obstet. Soc.,' 1889.

hogs containing air. These had been supplied to him from Somersetshire by Edward Jenner. Dr. W. H. Dickenson described in the 'Pathological Society's Transactions' for 1870-71 one of the earlier cases, a solid and cystic tumour of the mesentery. In this country also cases have occurred in the practice of Sir Spencer Wells, Bantock, Horrocks, Lawson Tait, Thornton, Rasch, and others.

The cases which have occurred in early life are few in number. My own patient (Case 1) aged three months is the youngest I have been able to find, certainly the youngest operated upon. Winiwater records an example in an infant of four months treated successfully by repeated punctures made through the skin; Ducasset one of eleven months found post mortem, and causing death by obstruction.

ADDENDUM.

At the request of the Council I append brief details of the method of transfusion employed in the above cases.

The apparatus employed was that supplied by Messrs. Down Bros., as arranged and described by Dr. Horrocks; but a glass syringe was used instead of a funnel. One of the veins on the front of the elbow is exposed and opened in the usual way, the veins, if necessary, having been rendered prominent by placing a ligature above the elbow.

The fluid used is sterilised water to which $\frac{1}{2}$ per cent. (*i.e.* one teaspoonful to the pint) of common salt has been added to increase the specific gravity. The water is sterilised by boiling, and its temperature is lowered to 102° F. either by adding cold water, previously sterilised; or by allowing a jug of boiling water to stand in a basin of cold water constantly replenished, until the temperature is sufficiently lowered.

In performing the injection it need hardly be said that precautions are taken against the entrance of air. The

tube and cannula are filled with salt solution before inserting the latter ; and the syringe is constantly kept above the level of the cannula.

The speed at which the injection is carried out is of no importance.

The amount necessary must be gauged by the condition of the pulse, which rapidly improves as the injection is continued. The minimum quantity even for very young children may be placed at about a pint.

I have never found any difficulty in transfusing very young children. The age of the patient whose case is described in the foregoing paper was 11 weeks. Quite recently I transfused a child of four months for collapse supervening after excision of the knee-joint, performed on account of suppurative arthritis following the bursting of a tuberculous osseous lesion. Before the injection the child was pulseless; it quickly rallied, and subsequently progressed favorably.

In severe cases of shock and collapse in young children, one or two teaspoonfuls of brandy may advantageously be added to the salt solution. Lately, after amputating the thigh at the hip-joint for a "railway smash" in a young man, I injected into the femoral vein one ounce of brandy with five to six pints of salt solution. Meanwhile my house surgeon amputated, at the ankle, the opposite foot, which was also crushed. The man was quite pulseless before the injection. He quickly rallied and made a speedy recovery.

(For report of the discussion on this paper, see 'Proceedings of the Royal Medical and Chirurgical Society,' Third Series, vol. x, p. 20.)