A CASE OF SUBCUTANEOUS RUPTURE OF THE PANCREAS

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Fusilier J., a recruit of one month's service, was admitted to the Royal Herbert Hospital, Woolwich, about 3 p.m. on September 6, 1937, with the following history:—

Half an hour after his breakfast on the day of admission, he ran into a single strand of fencing wire, whilst engaged in physical training. He attributed the accident to the glare of the sun in his eyes, which prevented him from seeing a taut strand of plain wire, that struck him transversely across the upper abdomen. The injury was followed by acute colicky pain in the affected region, accompanied by vomiting. He was transported to hospital from his depot at Hounslow by ambulance the same afternoon.

On arrival in hospital, the patient looked pale, but otherwise displayed no evidence of shock. At times he rolled on his right side when gripped by a spasm of pain; and a small amount of vomit, brought up during examination, contained bile and partially digested food. Running transversely across the epigastrium, from one subcostal angle to the other, could be seen a red wheal on the skin, where the wire had struck him. His temperature was 98.4 F. and his pulse 56 beats per minute. On inspection the abdomen moved normally with respiration, and the superficial reflexes were present. On palpation, there appeared to be tenderness and resistance in the epigastrium, which was most marked in the region of the gall-bladder. The lower abdomen was quite soft. On percussion, there was a suspicion of dullness in the right flank.

The patient's condition was recorded on an hourly pulse chart. Hypnotics were forbidden, and only sips of water were allowed by mouth. A contusion of the stomach wall was considered to be the most likely cause of his symptoms.

At 10 a.m. the following day it was noted that the pulse-rate had risen slightly to between 72 and 80 beats per minute. Intermittent vomiting and epigastric pain, colicky in type, continued. The lower abdomen was still quite soft, but resistance in the upper abdomen appeared to have increased.

By 1 p.m. the pulse-rate was 100, and at 2.30 p.m. it had increased to 120. Examination now showed obvious distension of the upper...
abdomen, and definite dulness to percussion in the right flank. The urine was normal in all respects. After premedication with alopon and scopolamine, an emergency operation was begun at 3.15 p.m. under nitrous oxide, oxygen and ether anaesthesia.

The upper abdomen was opened through a right paramedian incision and exposure of the peritoneal cavity was followed with such an alarming amount of haemorrhage that none of the contents could be inspected, and there seemed to be every prospect of the patient bleeding to death on the table undiagnosed.

In sheer desperation the pedicle of the spleen was seized between thumb and fingers, and the bleeding suddenly stopped.

The stomach, duodenum, gall bladder and visible portions of the liver appeared to be intact. The lesser sac was distended with blood, which was emerging through the foramen of Winslowe. The distribution of the haemorrhage resembled that occurring in a case of ruptured pedicle of the spleen, which had been under my care two months earlier and had made a successful recovery after splenectomy.

In order to obtain access to the spleen, a transverse incision was made from the original incision, dividing the left rectus muscle. Delivery of the spleen out of the wound, after mobilization, showed the body to be intact, but as the pedicle was suspect, splenectomy was proceeded with and accomplished without difficulty.

Now, with the spleen removed and the lesser sac widely opened, it was appreciated for the first time that there was a large circular tear in the middle of the anterior surface of the body of the pancreas, which involved the peritoneal covering derived from the posterior layer of the lesser sac. The size of the lesion was that of a half-crown piece.

As far as possible, the opening was reduced in size by means of a purse-string suture, but it could not be completely closed on account of the friable nature of the tissues. For greater security, the posterior wall of the stomach was sutured over the site of rupture by two or three stitches introduced through the sero-muscular coats. One end of a large india-rubber drainage tube was inserted down to the lesser sac, and the abdomen was closed in layers.

Operation was followed by intravenous infusion of one and a half pints of gum-saline solution in order to tide the patient over the period pending the arrival of the blood donor.

Five hundred cubic centimetres of citrated blood were transfused at 6.15 p.m., and subsequent progress was satisfactory, though intermittent hiccough and epigastric pain were troublesome for the first few days.

Michel’s clips were removed on September 13, 1937; skin sutures on the 15th; and the drainage tube on the 18th, on which date discharge from the wound had practically ceased.
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Daily examination of urine following the operation showed no trace of glycosuria, but analysis of the fat content of the stools on September 15 was as follows: Total fat, 33.93 per cent; unsplit fat, 19.35 per cent; split fat, 14.58 per cent.

On September 21, by which time the patient's temperature and pulse rate had been normal for ten days, a slight cystic swelling was noted behind the transverse portion of the abdominal scar. The patient's general condition remained good during the succeeding week, but the swelling and tension in the epigastrium and left hypochondrium became daily more marked, and on September 28 a diagnosis of pancreatic pseudo-cyst was arrived at. A note written on this date reads: "There is a prominent cystic swelling behind the upper half of the left rectus muscle, which extends into the flank. The swelling is dull to percussion. Aspiration of the characteristic fluid with an exploring needle confirms the diagnosis."

Second Operation.—As the most prominent part of the swelling coincided with the upper fibres of the left rectus muscle, the abdomen was opened on October 4 under intratracheal anaesthesia, through a left paramedian incision. Incision into the peritoneum passed directly into the cavity of a large cyst containing greenish brown viscous and somewhat opalescent fluid, which escaped under tension and was collected for examination. Excision of the sac wall, where possible, is put forward as the ideal treatment for this condition, but in this particular case it was frankly impossible. The wall of the sac, though \( \frac{1}{2} \) to \( \frac{1}{2} \) in. thick, was rough on the inside, and so friable that it tore away on the gentlest handling, and some of the contained fluid escaped into the general peritoneal cavity, in spite of elaborate packing off with gauze rolls. A supra-pubic drainage tube was inserted into the peritoneal cavity for safety, and the original incision was closed, except for a large drainage tube which fitted tightly into the marsupialised opening of the cyst. The fluid evacuated amounted to three or four pints, and the pathological report on the fluid was as follows:

"Diastatic index—3300. Trypsin present. Reaction is faintly alkaline. Microscopy shows red and white cells, epithelial cells and fatty acid crystals."

On October 6 the pelvic drainage tube was removed and the patient had his worst day since the onset of his illness. He presented all the signs and symptoms of the onset of paralytic ileus, but eventually responded to intravenous and rectal salines and repeated stomach wash-outs. An injection of heroin a \( \frac{1}{2} \) of a grain at midnight on this date was followed by sleep and a very marked improvement when he awoke on the following morning. No more vomiting occurred. On October 10 the tube draining the cyst was expelled by coughing. Digestion of the abdominal wall was becoming marked by October 13
and there was a large funnel-shaped ulcer where the drainage tube had been. An effort had been made to protect the skin in this neighbourhood by painting with white of egg, but on this date a plasmon oats poultice was employed instead and continued twice daily.

On October 14 it was evident that the cyst had re-collected and an X-ray film of the chest taken on this date was reported on as follows:—

"The heart is displaced upwards and to the right. The left cupola of the diaphragm is raised to the level of the 5th rib in front. The left lung shows some increased density in its lower half due to compression."

**Third Operation.**—On October 15 an exploring needle introduced upwards, forwards and medially, through the left costo-vertebral angle tapped fluid. Under local anaesthesia, assisted by administration of gas and oxygen, an oblique incision in this region was gradually deepened until the exploring needle could be traced into the cyst wall, which was then incised between two fixation sutures and drained of two or three pints of fluid. In appearance, the fluid was lighter in colour than on the first occasion, but the contents on analysis were much the same, and pancreatic ferments were present.

The depth of the cyst wall from the skin surface on this occasion made the introduction of a long rubber drainage tube a matter of some difficulty. Eventually closed drainage was established, the tube being stitched to the cyst wall and the skin, and brought out through the dressing. The distal end was later inserted into a bottle of lysol attached to the bed. For the first few days, ten to twelve ounces of fluid drained into the bottle in each twenty-four hours.

At this stage in the illness the patient had wasted to mere skin and bone, and some means of combating pancreatic deficiency seemed to be a matter of necessity. Parke Davis and Co. recommended their panteric tablets as the most suitable preparation. Beginning on October 13, two tablets were given three times a day until, in all, ninety had been consumed. On October 20 a second transfusion of 500 cubic centimetres of citrated blood was given with much apparent benefit.

Closed drainage had to be discontinued the following day (i.e. on the seventh day) as the patient became restless in consequence of being chained so long to his mattress by means of a long tube emerging from his back. The tube was cut short, and thereafter the wound surrounding it was dressed twice daily with about two ounces of plasmon oats (freshly boiled) to stay digestion of the abdominal wall. This was completely successful, and it was remarkable to witness the complete disappearance of the porridge between successive dressings. By this time the excavation in the anterior abdominal wall was healing well.
A severe attack of diarrhoea on November 4 was easily controlled by oral administration of hot alum and milk, and discontinuance of the pancreatic tablets on the following day.

The posterior drainage tube was removed on November 9, and all discharge finally ceased on November 22.

Even now the patient was not out of the wood, as he suffered from a troublesome cough accompanied by a low-grade evening pyrexia and a rapid pulse beat, varying between 90 and 120 beats per minute.

Eighty cubic centimetres of a clear pleural effusion were aspirated from the left pleural cavity on November 15, and thereafter a definite milestone of progress was passed. His weight two days later was 6 stones 11½ pounds, and he steadily gained until he weighed 8 stones 5½ pounds on discharge from hospital on February 12, 1938.

The analysis of the fat content of the stools on the date of discharge showed: Total fats, 26.4 per cent; split fats, 11.36 per cent; unsplit fats, 15.04 per cent.

The urine was free of sugar, and all wounds had been completely healed since January 8, 1938.

Points of interest arising out of this case appear to be:

1. The possibility of subcutaneous rupture of the pancreas occurring half an hour after a meal, when presumably the stomach was comparatively full.

2. The insidious onset of really severe signs and symptoms corresponding to the period which elapsed between injury to the pancreas and rupture into the lesser sac through the posterior layer of peritoneum (about twenty-four hours).

3. The control of pancreatic haemorrhage at the operation by obliteration of the splenic pedicle. This is explained anatomically by the fact that the area injured owes its blood supply to four or five branches supplied direct from and to the main splenic artery and vein.

4. The formation of a traumatic pseudo-cyst in spite of free drainage of the lesser sac for twelve days.

5. The rapid reformation of the cyst, when anterior drainage failed after seven days.

6. The success of posterior drainage through the left costo-vertebral angle and preservation of the abdominal wall from erosion by pancreatic juices when plasmon oasts were used as a dressing.

7. The extreme emaciation which appeared to be checked by the oral administration of Parke Davis and Co.'s pancreatic tablets.

8. The complete absence of glycosuria throughout.

9. The appearance of permanent scars on the back of the patient resembling the linea gravida rum on the abdomen of multiparous women. These were caused by the action of enzymes contained in the pancreatic
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discharge, which, collected in the creases of the dressings, were in contact with portions of the skin for many hours on end.

SUMMARY.

A case of traumatic subcutaneous rupture of the pancreas is described, occurring in a young male, aged 18, and treated by splenectomy associated with the repair of the pancreatic lesion, followed by blood transfusion.

The formation of a traumatic pseudo-cyst, occurring as a sequela, in spite of free drainage of the lesser sac, is worthy of note. The advantage of posterior over anterior drainage of such a cyst is well illustrated. The technique employed in both cases is given in detail.

The complications encountered in the treatment of this case included wasting, diarrhea, paralytic ileus, low grade pneumonia, pleural effusion and digestion of the abdominal wall.

The eventual recovery of the patient after five months in hospital. His weight on discharge registered 3½ pounds less than that shown on enlistment one month before the accident.

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My thanks are also due to Major A. Mears and Major S. M. Burrows, R.A.M.C., for pathological and radiological investigations respectively; to the nursing staff for their care, interest and skill, and to the management of Parke, Davis and Co., for recommending and supplying “panteric tablets.”

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