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Case report

Laparostomy in acute pancreatitis

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Acute necrotizing pancreatitis is a severe disease with a mortality often greater than 50 per cent. Partial or total pancreatectomy in this condition is a major surgical procedure with a hospital mortality in excess of 40 per cent. Recently there has been a move towards limited resection and open drainage. We report a case which illustrates the new technique in the treatment of necrotizing pancreatitis of necrosectomy (local debridement of obviously necrotic tissue leaving the intervening recoverable tissue) and laparostomy (leaving the abdominal cavity open, to heal by granulation).

CASE HISTORY

A 36-year-old seaman was admitted with a twenty-four hour history of severe epigastric pain with vomiting. Two similar but milder episodes were reported in the recent past. There was no history of dyspepsia. He smoked forty cigarettes and drank ten units of alcohol daily. He was not on any medication.

On examination he was pale, distressed and sweating. His abdomen was rigid with marked tenderness and rebound in the epigastrium. There were no palpable masses and scanty bowel sounds were present. Initial investigations showed a haemoglobin of 17·2 gms/dl, white cell count of $13{\cdot}4 \times 10^9$/l, normal serum urea and electrolytes, serum amylase 341 iu/l, plasma glucose 13·8 mmol/l and an arterial blood pO_2 77 mmHg. X-rays revealed no free sub-diaphragmatic gas, localised ileus or gallstones.

He was taken to theatre on the night of admission because of continuing severe pain and peritonism. In spite of the normal serum amylase, laparotomy revealed pancreatitis with a swollen pancreas and typical "prune juice" peritoneal fluid (amylase content 1570 iu/l). The stomach and duodenum were normal and there were no gallstones. The peritoneal cavity was lavaged with normal saline and then closed.

Initial post-operative management included intravenous fluids, naso-gastric suction, oxygen by facemask and opiate analgesia. Over the following forty-eight hours his condition deteriorated, he developed the adult respiratory distress syndrome and required transfer to the intensive care unit for intubation and ventilation. He had continuing signs of intra-abdominal sepsis, a swinging pyrexia up to 39°C and a palpable abdominal mass. Abdominal CT scan twelve days

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after operation showed a markedly swollen pancreas with focal necrosis and several large peripancreatic fluid collections.

Laparostomy was performed two days later. The pancreas was explored, necrotic areas resected and the peripancreatic abscesses drained. The greater omentum was detached from the stomach, draped over the viscera and sutured to the wound edges inferiorly and laterally. The resulting gap between the stomach and omentum afforded wide access to the lesser sac while protecting the colon and small bowel from evisceration. Three corrugated capillary drains, each 5 cm wide, were inserted behind the stomach and the abdomen only partially closed. A tracheostomy was also carried out to facilitate the necessarily prolonged ventilation.

In the intensive care unit the level of anaesthesia was deepened every forty-eight hours to allow the insertion of a sterile gloved hand deep into the abdomen through the laparostomy (Figure). This allowed adequate breaking down of all loculi in the peripancreatic area. Fluid and necrotic debris were aspirated and the cavity irrigated with saline and tetracycline solution. This regime continued for a further 12 days during which his condition gradually improved. His temperature returned to normal, blood pO_2 rose and he required decreasing inotropic support. After 46 days of respiratory support he returned from the intensive care unit. His only problem was mild hyperglycaemia which was easily controlled with a 2000 calorie diet. Over the following two weeks his drain was removed and repeat CT scan revealed only an oedematous pancreas with no abscess formation. His wound granulated and contracted and he was fit for discharge 72 days after admission. Total alcohol abstinence was strongly advised. On review eight weeks after discharge, he was well, off all alcohol and his wound was much smaller. He will require repair of the muscle defect at a later date.

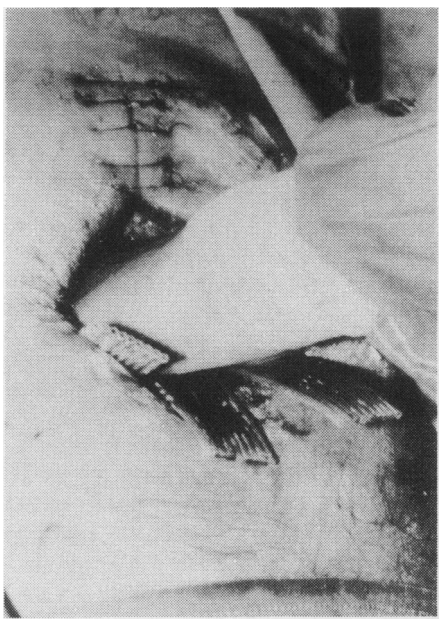

Figure. Insertion of a sterile gloved hand through the laparostomy to break down loculi.

DISCUSSION

Acute pancreatitis encompasses a spectrum of disease. It ranges from interstitial pancreatitis, a self-limiting disease with a low morbidity and mortality to necrotizing pancreatitis with persistent intra-abdominal necrosis and a high frequency of pulmonary, renal, cardiovascular and gastrointestinal complications.[1] Necrotizing pancreatitis occurs in 8–15 per cent of patients with acute pancreatitis and has a mortality rate with conservative management of 50–80 per cent. Indications for surgery in acute pancreatitis include uncertain diagnosis, correction of associated biliary tract disease, progressive clinical deterioration despite maximal supportive care and development of peripancreatic sepsis.[2]

The most controversial aspect is the role of surgery in patients with severe pancreatitis. Operative intervention has been advocated to reduce the high mortality in those who fail to respond to supportive measures in an intensive care unit. Pancreatic drainage was widely used during the early part of the century but fell out of favour.[3] There has been renewed interest in operative drainage over the past fifteen years,[4] sometimes combined with peritoneal lavage, although the latter alone has not been shown to be effective[5] because most of the necrosis is retroperitoneal.

There is controversy over both the timing and extent of pancreatic resection. Previously proposals for timing of operative intervention varied from one to seven days from the onset of symptoms.[6, 7] We believe that operation should be deferred until the second or subsequent weeks of the illness by which time areas of necrotic tissue will be clearly demarcated. Although the criteria of Ranson,[8] Imrie[9] and of McMahon[10] indicate severity and prognosis, they are not accurate pointers to which patients will require surgery. Clinical judgement based on the patient's overall wellbeing, abdominal tenderness and increased swelling, pyrexia, leucocytosis and need for increasing respiratory and inotropic support are the best guides to intervention.

Computerised tomographic scanning with enhancement has a higher sensitivity and specificity than either ultrasound or indium-labelled leucocyte scanning in evaluating the extent of pancreatic and peripancreatic necrosis. It avoids the risk of overlooking a fluid collection which should be drained at laparotomy,[11] but it is not accurate in defining whether infection is present. Fine needle aspiration under ultrasound control with fluid culture is more accurate in diagnosing sepsis.

Recommendations for the extent of resection range from total pancreatectomy to the more limited procedure of necrosectomy. The mortality rate for the major operative procedures varies from 35 per cent after distal pancreatectomy to 40 per cent after subtotal pancreatectomy and 67 per cent after pancreaticoduodenectomy.[12] Beger and colleagues[1] showed in a prospective trial that treatment by necrosectomy and post-operative local lavage reduced their mortality rate from an overall 24 per cent to six per cent.

The treatment of pancreatic abscess is prompt surgical drainage and removal of devitalized tissue followed by irrigation with saline and antibiotic solution. Wide sump drainage, or more recently, open packing of the lesser sac or prolonged post-operative irrigation of the pancreatic bed have been recommended.[13, 14] The mortality of untreated pancreatic abscess approaches 100 per cent. Laparostomy has been used in a few centres in Europe over the last ten years but has not been widely adopted. Mughal and colleagues[15] reported a series of 18 patients with intra-abdominal sepsis treated by laparostomy (including four with pancreatitis). They considered necrotizing pancreatitis to be the only indication for laparostomy as a primary procedure. Some have suggested the use of silastic sheeting or suturing of a zipper to the wound edges to reduce the risk of visceral trauma in laparostomy.[16] In the present case the use of wide corrugated drains placed over the omentum and transverse colon had the triple function of protecting the viscera, facilitating entry to the peripancreatic area as well as providing a drainage route. We believe that this case illustrates a technique which could markedly decrease the mortality rate from necrotizing pancreatitis, and have successfully treated two further patients by necrosectomy and laparostomy.

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