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Traumatic Pancreatic Pseudocysts : Personal Experience and Review of Current Management

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Summary:

Posttraumatic pseudocysts of pancreas are rare and presentation at times masquarads acute abdominal emergencies leading to untimely laparotomy. Critical analysis of the patients and review of literatures will be helpful in grading and managing traumatic pancreatic conditions. Retrospective review of case reports is done. Six patients with pancreatic pseudocysts were treated. Elective surgery in two patients gave excellent result; one patient improved with conservative treatment. Three patients underwent emergency surgery. One of these patients had uneventful recovery, another developed pancreatic fistula and the other expired in the third week due to DIC.

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Introduction:

Traumatic pseudocysts of pancreas are uncommon clinical entity and constitute only 1 to 2% of all abdominal injuries[1]. High index of suspicion can help in making early diagnosis and to avoid untimely laparotomy. Deep location of the organ in the retroperitonium may make the diagnosis difficult and therefore delayed. Considerable force is necessary to traumatize pancreas such force often damage other organs. Release and activation of enzymes can cause auto digestion of pancreas and surrounding structures. Associated major vascular and visceral injury result in high mortality. Experience of any one surgeon in managing traumatic pancreatic pseudocysts will be small. Successful management of pancreatic trauma will therefore be based on accrued published experiences of others. Experience with the management of six such patients of pancreatic pseudocyst developed following blunt abdominal trauma is reported.

Materials and method:

The case records of six patients diagnosed and managed as traumatic pancreatic pseudocysts were reviewed. Patients with pseudocysts presented to hospital at seven days, three weeks and seven months after blunt abdominal trauma. Elective treatment in these three patients was based on clinical diagnosis supported by ultrasonography (USG) in all and ERCP in one patient (Fig.-1). In other three patients, pancreatic trauma was noticed at emergency laparotomy. Fall from height, kick, bicycle handle bar, fall on projecting object and road traffic accidents were different injury agents. Details of patient are given in Table-I.

Table-I

Patient characteristics of traumatic pancreatic pseudocysts (n=6)

Pt. no.	Sex	Age (year)	Trauma agent	Delay at presentation	Size	Site	Name of operation	Outcome
1	M	16	Fall from height	3 weeks	20 x10 cm	Head	Cysto-gastrostomy	No recurrence. Asymptomatic at 6 months follow up.
2	F	29	Kick	7 months	20x 10 cm	Body	Cysto-gastrostomy	Asymptomatic at 1 year follow up.
3	M	13	Bicycle handle bar	8 hours	10 x 20 cm	Body	Exploratory laparotomy.	Cyst disappeared spontaneously
4	M	16	Fall on projecting ends of fencing	7 days	10 x 8 cm	Body	Expectant	Improved
5	M	32	Road traffic accident	3 days	12 x 8 cm	Body	Distal pancreatectomy and splenectomy	Pancreato-cutenous fistula that resolved spontaneously
6	M	30	Road traffic accident	4 hours	12 x 8 cm	Body	External drainage only	Expired on 14th postoperative day due to uncontrolled bleeding from wound site, haematemesis and melaena

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Case one:

A 16 year old boy was admitted with a painful swelling in the left upper abdomen which developed following fall from a mango tree, from about 20 feet height. The swelling grew very rapidly over a period of four days. Nausea and vomiting accompanied the swelling. Scratch mark of trauma was evident on the skin overlying a bulge occupying the left hypochondrium measuring about 20cm/10cm in dimension. It was tender, outline not sharply demarcated, firm and did not move with respiration. Plain abdominal radiography showed a large soft tissue mass with displacement of colonic loops towards the right side. Ultrasonogram confirmed the diagnosis of pancreatic pseudocyst. His pseudocyst required cysto-gastrostomy, done four weeks after diagnosis. He was well one year postoperatively.

Case two:

A 29 year old housewife presented with a painful swelling in the epigastrium of four months' duration. Seven months back her husband kicked her in the upper abdomen. The swelling gradually enlarged to occupy the epigastrium, umbilical and left hypochondriac region. She also had complaints of loss of appetite, weight loss and vomiting after taking meals.

Ultrasonography of upper abdomen showed an echolucent mass in the pancreatic region suggestive of pancreatic pseudocyst. ERCP showed obstruction of main pancreatic duct with leakage of contrast into the cyst. (Fig.-1). Elective cysto-gastrostomy gave excellent result with relief of pain, swelling and vomiting. Her appetite improved and she was able to take adequate meals.

Case three:

A 13 year old boy presented with abdominal pain, fever and respiratory distress developed following a blunt abdominal trauma sustained 36 hours back by bicycle handlebar, which he was riding.

He had tachycardia, tachypnoea and raised temperature (102ºF). His abdomen was distended, tense and tender along with positive rebound tenderness and absence of bowel sound.

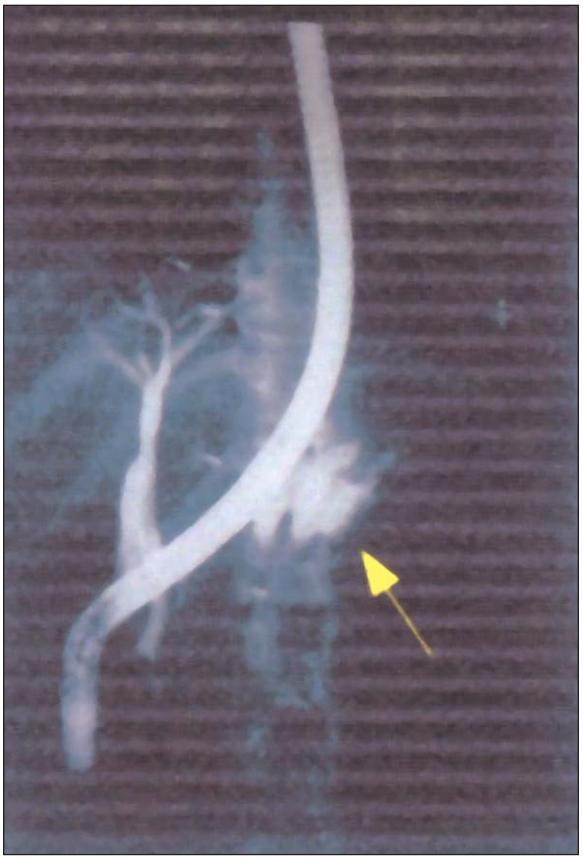

Figure-1: *ERCP showing obstruction of main pancreatic duct with leakage of contrast into the pseudocyst.*

Plain abdominal x-ray was unremarkable. Exploratory laparotomy revealed about 600 ml of haemorrhagic non-smelling intraperitoneal fluid and a large (10 cm x 8 cm) pseudocyst in the region of the swollen oedematous pancreas. Other viscous were intact. His recovery was good and the cyst disappeared by six weeks post-operatively.

Case four:

A 16 year old boy fell down by the abdomen on the projecting ends of a roadside bamboo fencing while his rickshaw was knocked from behind by a babytaxi. About a week after the incidence, he presented with a diffuse tender swelling involving epigastrium and umbilical region. USG showed swollen head of the pancreas along with a pseudocyst (10cm x 8cm) in that region. He improved with conservative treatment and was well at his follow up at six months.

Case five:
A 32-year-old man sustained blunt abdominal trauma 3 days back from road traffic accident. On admission tachycardia, fever and distended tender abdomen demanded urgent laparotomy. His peritoneal cavity contained plenty of haemorrhagic fluid and a large retroperitoneal haematoma. Pancreas was exposed in all surfaces. It was found severely lacerated at the level of body on the left of the vertebral column (type-II injury). Distal pancreatectomy with splenectomy was done. On the first postoperative day intraperitoneal drainage tube drained about 600 ml of foul smelling dirty white fluid. In the subsequent days, efflux reduced to about 100 ml per day. The drain tube was removed on the second week. The fistula persisted for another week there after and stopped draining spontaneously without additional measure.

Case six:
A 30-year-old public bus driver sustained steering wheel injury to the abdomen and compound fracture of right femur. He was resuscitated with blood transfusion and intravenous fluids. Laparotomy, done four hours after admission, revealed a large retroperitoneal haematoma in the region of the pancreas and haemorhagic intraperitoneal fluid. Pancreas appeared swollen and contused, particularly in the head region (type-III injury). Only external drainage was done using urine drainage bag. In the early postoperative days the drainage bag contained nonsmelling dirty white fluid in an amount close to one liter per day. Later his high output pancreatic fistula used to drain about 300 ml/day. His initial postoperative improvement was soon masked by malnutrition resulting in gross weight loss, abdominal wound dehiscence and sepsis. On the twelvth postoperative day he had haematemesis, melaena and abdominal wound-site bleeding. He developed DIC with altered prothrombin time, raised FDP and thrombocytopaenia. He died on the fourteenth day after operation from uncontrolled gastrointestinal and wound-site bleeding.

Discussion:
Isolated pancreatic injury is rare, seen only in 0.4% of trauma victims, 20% of them may develop pseudocyst[2]. Posttraumatic pseudocysts are usually associated with pancreatic duct injury and may present late[3]. Duct injury was noted in four of six patients. Two of the patients presented late at three weeks and seven months after injury. Successful surgical management of pancreatic trauma depends on precise delineation of duct injury. Either transduodenal cannulation of papilla of Vater or cannulation of the duct at pancreatic tail can obtain per-operative pancreatogram. Duodenal fistula from transpapillary pancreatography is potentially not a real problem. Bernie et al has reported reduction in mortality rate after the introduction of operative pancreatography[4]. Others have judged this procedure to be complicated and unnecessary in acute situation[5,6]. Preoperative ERCP is recommended in stable patients to avoid potential complication of duodenotomy, but wide spread use is limited by logistic and technical factors, particularly in trauma situation[7,8]. Preoperative ERCP in the second patient showed the precise site of major pancreatic duct injury with leakage of contrast into the pseudocysts and non-visualization of the duct in the body and tail i.e. distal to head region (Fig.-1) indicating obstruction at this level.

The basic plan of management of pancreatic trauma have remained unchanged. In the presence of signs of peritoneal irritation in a trauma victim there is no reason to delay laparotomy to perform pancreatic imaging. At operation, all surfaces of the pancreas should be fully exposed which is sufficient to demonstrate any significant injury. Lucas has divided isolated pancreatic injury into three groups to plan appropriate management[9]: superficial contusion with minimum damage (grade-I), deep laceration or trans-section of left pancreas (grade-II) and severe injury of the head of pancreas (grade-III). Combined pancreatic and duodenal injury is classified separately and variety of procedures have been described based on diverting gastric contents away from the injured pancreas and draining or debriding pancreatic tissue[9,10]. This type of injury is more severe because of inevitable contamination and activation of leaking enzymes. External tube drainage should be the usual treatment in grade-I and grade-II injury, although distal resection may occasionally be required. Grade-III and more complex injury require skilled surgical management. The mortality rate associated with resection of head of pancreas should be prohibitive and patient with grade-III injury should undergo

external or Roux en Y drainage or duodenal exclusion as deemed necessary on an individual basis. Nevertheless unless resection appears inevitable and safe the primary management probably is external drainage. A fistula may result but this will often close spontaneously or with addition of octreotide (long acting somatostatin) therapy and any of which persists may be diverted into Roux en Y loop.[11] Few patients now die as a direct result of pancreatic injury.Among those who die, three-quarter die of haemorrhage from liver or major vessels and of the remainder half die from organ failure or other miscellaneous causes of trauma[12]. The sixth patient had type-III injury involving the head of the pancreas. He expired on the fourteenth post-operative day due to DIC and multiple organ failure.

Post-trauma pseudocyst often presents late. USG and CT scan fail to diagnose duct Injury[3,1]. ERCP demonstrates site and severity of duct injury and can help in planning management. Posttraumatic pseudocyst in adult and in children due to peripheral duct injury may resolve spontaneously[13]. Percautenous aspiration or continuous catheter drainage can be used to treat those associated with distal duct injury. Early reports indicate endoscopic drainage with or without placement of nasocystic drainage tube or stent in selected patient is feasible and safe.[3] Proximal duct injury however requires surgical intervention either in the form of resection or internal drainage depending on maturity of the cyst wall.

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