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Original Research

Assessment of surgical management of pancreatic trauma in adult patients

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ABSTRACT:

Background: The management of pancreatic injury depends on the status of main pancreatic duct (MPD) and associated injuries. The present study was conducted to assess surgical management of pancreatic trauma in adult patients. **Materials & Methods:** 45 cases of traumatic pancreas of both genders were included. Parameters such as causes, associated extra-pancreatic injuries and classification of traumatic injury of the pancreas was done according to the American Association for Surgery of Trauma (AAST). Management of pancreatic injury was recorded. **Results:** Out of 45 patients, males were 28 and females were 17. Causes found to be penetrating trauma in 16, fall in 5 and RTA in 24 cases. AAST classificationgrade 1 was seen in 8, grade 2 in 20, grade 3 in 6, grade 4 in 5 and grade 5 in 6 cases. Associated extra-pancreatic injuries were duodenum injuryin 1, isolated pancreatic trauma in 6, liver and spleen injury in 2, vascular injury in 5 and extra-abdominal injury in 12 cases. The difference was significant (P< 0.05). Management performed was surgical drainagein 21, pancreatectomyin 19 and endoscopic treatment in 5 cases. **Conclusion:** Surgical management performed was surgical drainage, pancreatectomy and endoscopic treatment.

Key words: pancreas, extra-abdominal injury, trauma

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INTRODUCTION

The pancreas is an organ located deep in the abdominal cavity, whose anatomical relationship with the digestive and vascular structures explains the complexity and severity of pancreatic trauma which represents less than 5% of abdominal trauma.[1]Injury to the pancreas is uncommon and occurs in less than 5% of blunt and 7% of penetrating abdominal trauma. Several series have reported a rangeof 1.6–4.5 associated injuries per patient.[2] Due to the retroperitoneal location of the organ, symptoms and signs of pancreatic trauma are subtle making diagnosis more difficult and easily missed. Symptoms may be absent, in up to 20% of patients there is neither abdominal pain nor tenderness. Hyperamylasemia is neither a sensitive nor specific marker of pancreatic injury.[3]

The management of pancreatic injury depends on the status of main pancreatic duct (MPD) and associated injuries. However, it can be missed in the early phase of evaluation of trauma patients by contrast-enhanced computed tomography (CECT) scan if the index of suspicion of pancreatic trauma is not kept high in abdominal trauma patients.[4]

An abdominal computer tomography (CT) allows diagnosis and severity assessments of pancreatictrauma, presence of pancreatic duct injury or associated bleeding. A delay in diagnosis or underestimation of its severity may be responsible for serious complications such as intra-abdominal bleeding, pancreatic fistula or intraabdominal collections.[5]The present study was conducted to assess surgical management of pancreatic trauma in adult patients.

MATERIALS & METHODS

The present study comprised of 45 cases of traumatic pancreas of both genders. All gave their written consent for the participation in the study.

Data such as name, age, gender etc. was recorded. Parameters such as causes, associated extra-pancreatic injuries and classification of traumatic injury of the pancreas was done according to the American Association for Surgery of Trauma (AAST). All were

subjected to CT scan. Management of pancreatic injury was recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 45		
Gender	**Males**	**Females**
Number	28	17

Table I shows that out of 45 patients, males were 28 and females were 17.

Table II Assessment of parameters

Parameters	Variables	Number	P value
Causes	Penetrating trauma	16	0.02
	Fall	5	
	RTA	24	
AAST classification	Grade 1	8	0.04
	Grade 2	20	
	Grade 3	6	
	Grade 4	5	
	Grade 5	6	
Associated extra-pancreatic injuries	Duodenum injury	1	0.01
	Isolated pancreatic trauma	6	
	Liver and spleen injury	2	
	Vascular injury	5	
	Extra-abdominal injury	12	

Table II, graph I shows that causes found to be penetrating trauma in 16, fall in 5 and RTA in 24 cases. AAST classification grade 1 was seen in 8, grade 2 in 20, grade 3 in 6, grade 4 in 5 and grade 5 in 6 cases. Associated extra-pancreatic injuries were duodenum injury in 1, isolated pancreatic trauma in 6, liver and spleen injury in 2, vascular injury in 5 and extra-abdominal injury in 12 cases. The difference was significant (P< 0.05).

Graph I Assessment of parameters

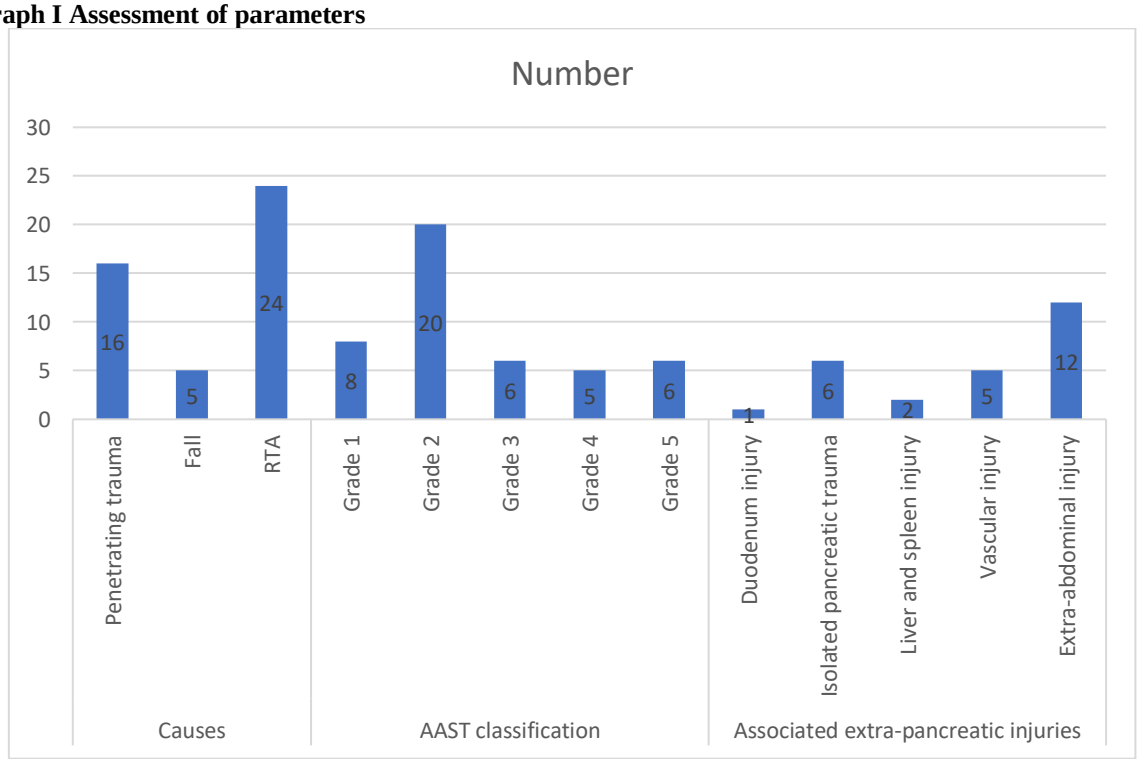

Table III Pancreatic trauma management

Management	Number	P value
Surgical drainage	21	0.04
Pancreatectomy	19	
Endoscopictreatment	5	

Table III shows that management performed was surgical drainage in 21, pancreatectomy in 19 and endoscopic treatment in 5 cases. The difference was significant (P< 0.05).

DISCUSSION

Surgical management of pancreatic injuries should emphasize control of hemorrhage, removal of necrotic tissue, and adequate drainage.Blunt trauma is the main mechanism of pancreatic injury. Early CT may miss pancreatic injury in almost quarter of the patients. Thin sliced CT scan with special views in a dedicated abdominal pancreatic study is recommended.[6] A high index of clinical suspicion, depending on the mechanism of injury, is important for diagnosis of pancreatic injury.[7] Mortality is mainly caused by other associated injuries so that simple procedures should initially be applied for pancreatic injury especially in haemodynamically unstable patients.[8]The present study was conducted to assess surgical management of pancreatic trauma in adult patients.

We found that out of 45 patients, males were 28 and females were 17. Causes found to be penetrating trauma in 16, fall in 5 and RTA in 24 cases. AAST classification grade 1 was seen in 8, grade 2 in 20, grade 3 in 6, grade 4 in 5 and grade 5 in 6 cases. Menaham et al[9]included 30 patients of pancreatic trauma. Traumatic injuries of the pancreas were classified according to the American Association for Surgery of Trauma (AAST) in five grades. Mortality and morbidity were analyzed. Nineteen (63%) patients had a blunt trauma and 12 (40%) had pancreatic injury ≥ grade 3. Fifteen patients underwent exploratory laparotomy and the other 15 patients had nonoperative management (NOM). Four (13%) patients had a partial pancreatectomy [distal pancreatectomy (n=3) and pancreaticoduodenectomy (n=1)]. Overall, in hospital mortality was 20% (n=6). Postoperative mortality was 27% (n=4/15). Mortality of NOM group was 13% (n=2/15) in both cases death was due to severe head injury. Among the patients who underwent NOM, three patients had injury ≥ grade 3, one patient had a stent placement in the pancreatic duct and two patients underwent endoscopic drainage of a pancreatic pseudocyst.

We observed that associated extra-pancreatic injuries were duodenum injury in 1, isolated pancreatic trauma in 6, liver and spleen injury in 2, vascular injury in 5 and extra-abdominal injury in 12 cases. Leppaniemi et al[10] have independently shown that a delay in diagnosis of pancreatic injury has been associated with increased pancreasrelated morbidity and mortality.

We found that management performed was surgical drainage in 21, pancreatectomy in 19 and endoscopic treatment in 5 cases. Bradley et al[11] had reported that serum amylase levels were elevated among 82 % of people with documented pancreatic injuries. Ahmed et al[12] in their study the mechanism, management and outcome of patients who had sustained pancreatic trauma. All eleven patients were males having a median age of 30 years (range 24–52 years).Nine had blunt trauma while two had suffered penetrating injury. Three presented with shock. associated injuries were present in nine patients (head, chest, and extremities) while seven had other intra-abdominal injuries. Only one patient had isolated pancreatic injury. Early serum amylase was elevated in six patients. CT abdomen was diagnostic for pancreatic injury in seven patients. two cases were missed by early CT scan (sensitivity of 78%) while the remaining two patients were taken immediately to the operating theater. All patients underwent laparotomy. Five patients were treated by drainage alone, four had distal pancreatectomy, abdominal packing was performed in one patient and in another gastrocystostomy was carried out. Pancreatic fistula occurred in three patients. median hospital stay was 25 days (range 12–152 days). two patients (18%) died.

The limitation the study is small sample size.

CONCLUSION

Authors found that surgical management performed was surgical drainage, pancreatectomyand endoscopic treatment.

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