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Original Article

Bleeding in Pancreatitis and its management

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ABSTRACT

BACKGROUND: Pancreatitis is associated with arterial complications in 4-10% of patients. If untreated, mortality approaches 90%. Timely intervention can reduce the mortality to 15%. We present a single institution experience of open or selective embolization as first line management of bleeding pseudoaneurysms in pancreatitis.
AIM: This Retrospective, hospital based observational study conducted at a tertiary care centre in Assam aims to evaluate the incidence of mortality and rebleeding in patients of serve pancreatitis with bleeding, in cases undergoing open surgery and angioembolization.
METHODS & MATERIALS: 34 patients with pancreatitis and bleeding were identified in a retrospective study from January 2019 to December 2024 from surgical records at Gauhati Medical College & Hospital, Dept. of Surgery. True visceral artery aneurysm and pseudoaneurysm arising as a result of post operative pancreatic & biliary leak were excluded from the study.
RESULTS: Patients were divided into acute & chronic pancreatitis group. All patients had a contrast CT abdomen scan & 12 patients underwent celiac axis angiography. The bleeding affected the splenic artery in 12 patients, Gastroduodenal-8, Superior Pancreatic artery-2, left gastric -3, pancreatico-duodenal-1 and rest cavitary bleeding (source not identified). In the acute group, 14 cases underwent surgery while 6 cases had angioembolization. Mortality rate was 35% in surgery group & 17% in agioembolization group. While in the chronic pancreatitis group, 3 cases underwent surgery and 11 cases had angioembolization. Mortality in Angioembolization group was 9%.
CONCLUSIONS: In pancreatitis, rebleeding & mortality rates are less in angio embolization of visceral vessels than open surgery.

Keywords*: Pseudoaneurysms, Pancreatitis, Vascular complications, surgery, Embolization.*

INTRODUCTION

Pancreatitis is associated with arterial complications in 4-10% of patients, which if untreated mortality approaches 90 %. Timely intervention can reduce mortality to 15%. Pathophysiologically; progressive inflammation within pancreas and surrounding tissues promotes vessel erosion and formation of pseudoaneurysms by extravasation of proteolytic enzymes, formation of pseudocysts, extensive necrosis and abscesses. They may rupture & bleed either into apseudocyst, peritoneal cavity, retroperitoneum or erosions into stomach, pancreatic duct (hemosuccus pancreatitis) or bile ducts (hemobilia). We present a single institution experience of surgery and angioembolization as first line of management in management of bleeding in pancreatitis.

METHODS

Records of 325 patients with pancreatitis were retrospectively reviewed from January 2019 to December 2024 from department of surgery, GMCH, Guwahati, Assam. Of these, 268 were acute cases and 57 were chronic cases with an age range of 9-84yrs (Mean= 46.5yrs) & 9-78 yrs (Mean=43.5Yrs) respectively. Diagnosis was based on USG, CECT and Angiography. Surgery was the primary mode of treatment prior to September 2020, while surgery or angioembolization was performed thereafter depending on patient condition & hospital availability of interventional radiology expertise.

Median follow-up time of the patients was 6 months. True Visceral artery aneurysm and Pseudoaneurysms due to postoperative cause or bile leak were excluded from the study.

CHARACTERISTICS OF ACUTE GROUP:
20 patients of the acute group with a mean age of 46 years (range= 9-84) had bleeding. 14 of them underwent surgery while 6 patients had angioembolization. Of the surgical group, 7 patients had diffuse bleeding into the necrosectomy cavity (cavity bleed), 4 from splenic artery, 2 from gastroduodenal artery (GDA) & 1 from superior mesenteric artery (SMA). In embolization group, 2 bled from SA, 3 from GDA and 1 from SMA.

CHARACTERISTICS OF THE chronic group:
14 patients of the chronic group with a mean age of 41 years (range= 25 -68) had visceral bleeding. Of them, 3 had surgery (2 from SA & 1 from GDA) while 11 patients had angio embolization (4 from SA, 3 from GDA, 3 LGA & 1 from inferior pancreatico duodenal)

Most common symptoms were:
Abdominal Pain (Acute-17, Chronic-17)
Vomiting (acute-15, chronic -19)
Shock (acute-5, chronic-5)
Upper GI bleeding (acute-5, chronic- 4); Malena (acute-15, chronic-12)

MANAGEMENT PROTOCOL:
For surgical exploration, an uniform approach was followed. A midline supra umbilical incision was given & lesser sac entered by dividing the gastrocolic ligament. Necrotic Materials were removed bluntly aided with saline washes. Visible bleeding Vessel was controlled with ligation or in combination with distal pancreatectomy. Uncontrolled bleeding was treated with packing and reassessment after 48hrs.

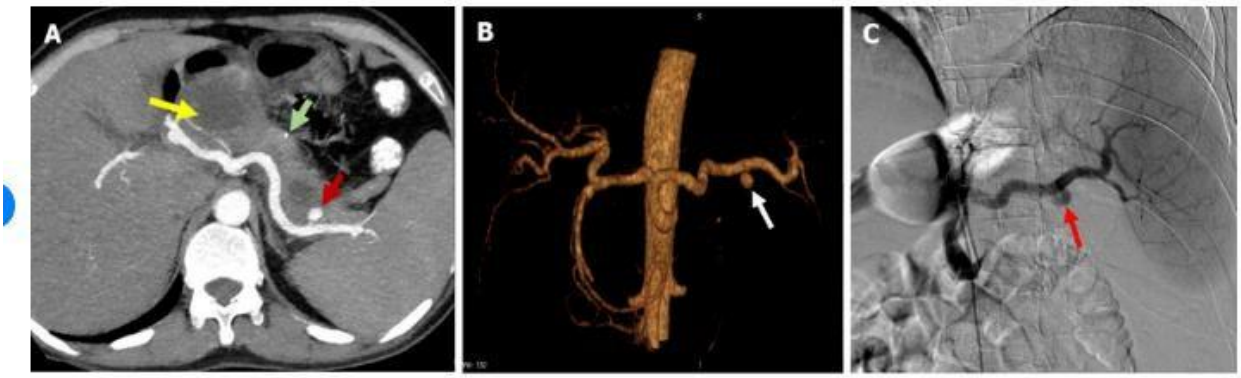

Fig a. Pseudoaneyrysm at splenic artery **b.** Reconstructed angiographic image of the same patient **c**. Digital subtraction angiography of the same patient showing contrast outpouching

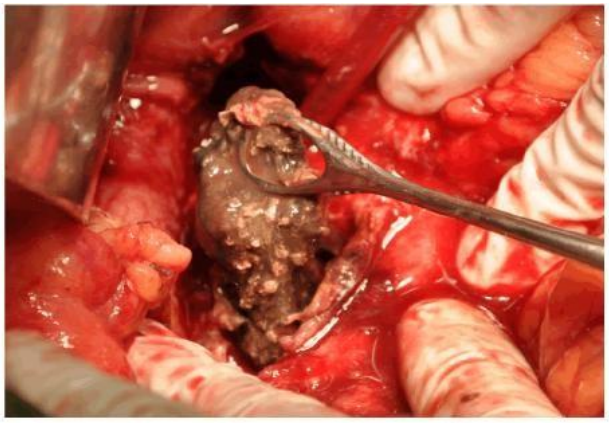

Fig: Intraoperative surgical Necrosectomy

For angio embolization, access was taken through a femoral puncture by interventional radiologist and SMA, Coeliac axis and portal veins were imaged on angiography. A micro catheter was used to selectively catheterize the pseudoaneurysm. Super selective embolization was performed with stainless steel coils (0.18) alone or in combination with polyvinyl alchohol(PVA). Embolization was regarded as successful when cessation of bleeding was demonstrated radiologically.

RESULT

In the acute group, 14 cases underwent surgery while 6 had embolization. Necrosectomy and suture ligation of bleeding vessels were done in open surgery. In the surgery group, 7 patients had cavitary bleed (no vessel identified), 4 from SMA, 2 from GDA and 1 from SMA. Four of the cavitary bleeding had rebleed, which were repacked. Total of 7 patients had rebleed(4-cavitary, 2-SA & 1 SMA), and all 7 expired. Mortality rate was 35%. While in the angio embolization group, there were total of 6 patients. Success rate in angioembolization was 83% and mortality was 17%.

In the chronic group, 3 cases underwent surgery and 11 cases had angio-embolization. 2 of the patients that underwent surgery had rebleeding from SA and1 from GDA. 2 of them had rebleeding and expired. While in the angioembolization group, embolization with coil was done in 10 patients (4-SA, 3-GDA, 3-LGA & 1 Inferior pancreatico duodenal artery). In 1 patient, both coil & PVA was used. In this group,bleeding stopped in 10 patients while 1 patient had rebleeding & expired. Mortality in angio embolization was 9 % and success rate was 91%.

DISCUSSION

Most common clinical presentation in our series included abdominal pain, vomiting, shock & GIT bleeding. Due to low sensitivity of USG abdomen in diagnosing pancreatic bleeding, complications is often ignored even with contrast enhanced USG. CECT abdomen is considered gold standard to evaluate the degree of severity in pancreatitis.

Distribution of visceral artery bleeding has been fairly consistent in literature (SA-40%, GDA-30%, PDA-20%, Gastric artery- 5% & hepatic artery- 2%). Our series also found a similar result with bleeding from SA-39.2%, GDA-26.5%, LGA-5.8%, SMA-5.8% &PDA- 2.9%. It was also seen that source of bleeding are more likely to be identified in angiography (100%) than in surgery (79.4%). The reported success of embolization is 79-100% and the reported mortality rate after embolization is 12-33%, in patients with acute and chronic pancreatic bleeding. Laparotomy for therapy of bleeding should be considered only in haemodynamically unstable patients or unsuccessful coiling. Surgical packing is the procedure of choice in diffuse venous intraabdominal bleeding. In most cases, it seems that angio embolization is sufficient to control bleeding complications. Re- bleeding rate is more in surgical group (35%). Insufficient ligation of a vessel due to surrounding tissue infection, oedema or insufficient control may cause rebleeding.

Mortality seems to be higher in patients of pancreatitis complicated by intra abdominal hemorrhage. In some studies, there is three fold higher probability of a fatal outcome in patients with severe pancreatitis associated with intra abdominal hemorrhage than than those with serve pancreatitis without hemorrhagic complications. However, others suggest that hemorrhagic complication per se have little influence on mortality. Bleeding complications seem to reflect the severity of disease than being the direct cause of mortality.

CONCLUSION

Angiography is valuable in localizing & controlling visceral artery bleeding. Rebleeding & mortality rates are less in angio embolization of visceral vessels, than surgery.

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