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Three-stage management of complex pancreatic trauma with gastroduodenopancreatectomy: A case report☆

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ABSTRACT

INTRODUCTION: Severe injuries of the pancreatic head and duodenum in haemodynamically unstable patients are complex management. The purpose of this study is to report a case of complex pancreatic trauma induced by gunshot and managed with surgical approaches at three different times.
PRESENTATION OF CASE: Exploratory laparotomy was indicated after initial emergency room care, with findings of cloudy blood-tinged fluid and blood clots on the mesentery near the hepatic angle, on the region of the 2nd portion of the duodenum and at the pancreatic head. Gastroduodenopancreatectomy was performed with right hemicolectomy and the peritoneal cavity was temporarily closed by a vacuum peritoneostomy. Surgical reopening occurred on the fifth postoperative day, and the patient was subjected to single-loop reconstruction of the intestinal transit with telescoping pancreaticojejunal anastomosis, biliodigestive anastomosis with termino-lateral hepaticojejunal anastomosis with a Kehr drain and gastroenteroanastomosis in 2 planes. The terminal ileostomy was maintained. After 2 days, the patient was subjected to abdominal wall closure without complications, which required relaxing Gibson incisions and wound closure with polypropylene mesh placement in a pre-aponeurotic position closed with multiple stitches.
RESULTS: The patient was discharged on the 40th post-trauma day without drains, with a functioning ileostomy and with a scheduled reconstruction of intestinal transit.
CONCLUSION: In the presence of multiple associated injuries, hemodynamic instability and the need for an extensive surgical procedure such as duodenopancreatectomy, damage control surgery performed in stages as reported here enables the clinical stabilization of the patient for definitive treatment, achieving better survival results.

1. Introduction

Pancreatic and duodenal injuries occur in approximately 2–3% of all traumatic abdominal injuries [1]. Pancreatic trauma is classified according to the magnitude of the injury, ranging from a simple hematoma to rupture of the pancreatic duct and complete destruction of the organ. Isolated pancreatic injury is rare due to the proximity to other vital structures and the intensity of the trauma usually associated with the injury [1,2].

Although most pancreatic and duodenal injuries are low-grade and are treated nonoperatively or with relatively simple surgical techniques, the mortality rate associated with cases of complex injury is high, and such cases often require pancreatic and/or duodenal resection and reconstruction in patients clinically decompensated by the trauma at a single time point or following damage control surgery [3].

In cases involving complex trauma of the pancreatic head involving the duodenum in seriously ill patients, the operative procedure involves different issues related to damage control surgery, resection time and survival after intestinal reconstruction. The objective of this study is to report a case of complex pancreatic trauma with surgical approaches used at different times. This work has been reported in line with the SCARE criteria [4].

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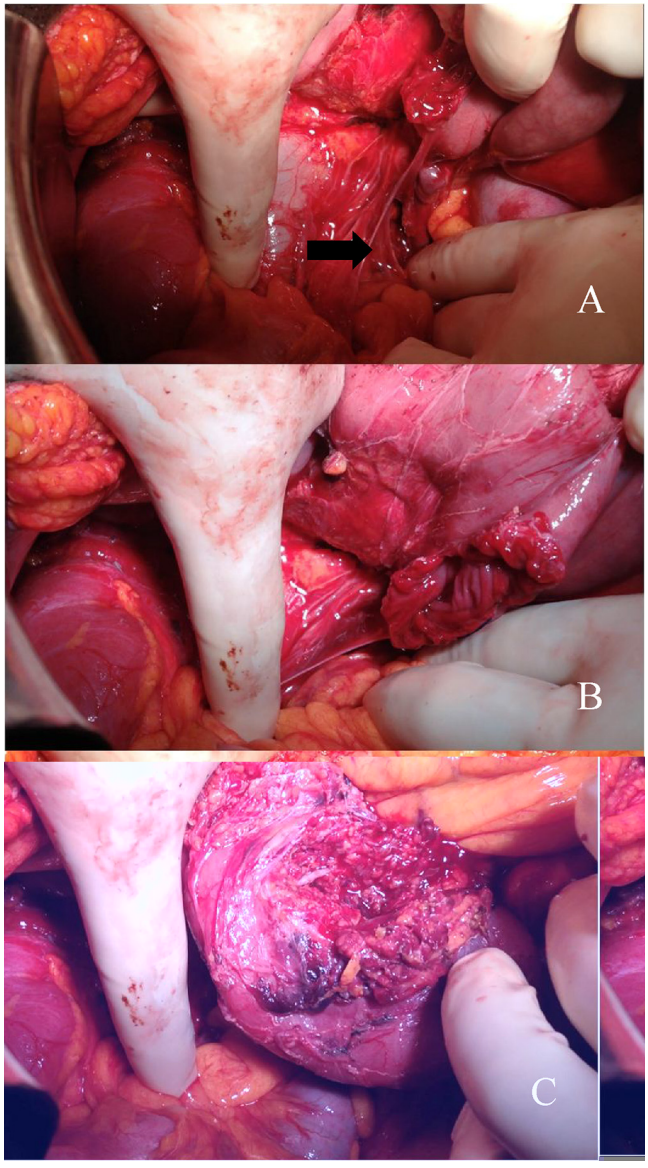

Fig. 1. Gunshot wound trajectory. A – Posterior wound medial to the vena cava (arrow). B – Duodenal injury. C – Pancreatic head injury.

2. Presentation of case

A Nigerian patient, J.A., 40 years of age, suffered 4 gunshot wounds and was brought by firefighters to our institution, 1.5 h after the incident.

An initial examination showed patent airways without changes upon chest examination and 94% oxygen saturation with supplemental oxygen using a non-rebreather mask. The patient was hemodynamically stable with no evidence of active bleeding and conscious, although he was observed to be sleepy and disoriented. The abdomen showed no signs of peritonitis and FAST (Focused Assessment with Sonography for Trauma) was performed. Two likely entry wounds were apparent in the right lumbar region (thoracoabdominal transition), and an exit wound was observed on the right hypochondrium with an eviscerated omentum. An entry wound was also found on the right forearm in addition to entry and exit wounds on the right hand.

Exploratory laparotomy was indicated after initial emergency room care. Access to the abdominal cavity was achieved by supra- and infraumbilical median laparotomy, with findings of cloudy blood-tinged fluid (approximately 2000 ml) and blood clots on the mesentery near the hepatic angle, on the region of the 2nd portion of the duodenum and at the pancreatic head.

Fig. 2. Resected surgical specimen.

The gastrocolic ligament was sectioned to assess the retroperitoneal space, and the celiac and superior mesenteric arteries were inspected. No injuries were found in the middle colic, superior mesenteric or portal veins, followed by Cattell-Braasch and Kocher maneuvers with findings of a complex injury of the pancreatic head with bile duct and Wirsung duct injuries (grade V), and an injury of the second portion of the duodenum with the involvement of a > 75% narrowing and transfixing injury of the transverse colon with local contamination, indicating the need for a gastroduodenopancreatectomy with a right hemicolectomy (Fig. 1).

Resection was initiated by tunneling into the pancreas via the superior mesenteric and portal veins. An antrectomy was performed using a cutting stapler in 2/3 of the stomach. Dissection of the pancreatic head and uncinate process, with the ligature of the tributary vessels of the portal and superior mesenteric veins, was followed by sectioning with a linear cutting stapler. Sectioning with stapling of the proximal jejunum followed the dissection of the 3rd and 4th portions of the duodenum, cholecystectomy and dissection of the hepatic hilum. Immediately afterward, a right hemicolectomy with stapling and sectioning of the transverse colon and distal ileum was performed using a linear cutting stapler (Fig. 2).

After 100 min of surgery, hemodynamic and metabolic parameters were assessed, and worsening of perfusion parameters and hemodynamic instability were observed. Stabilization was difficult even with vasoactive drugs. Therefore, the Whipple surgery was interrupted, and anastomoses were not performed. The hepatic and the Wirsung ducts were catheterized with urethral catheters 10 and 4, respectively, and exteriorized in the right hypochon-