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Case Series

Surgery Section

Role of Palliative Duodenojejunostomy in Advanced Pancreatic Carcinoma- A Case Series

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ABSTRACT

Pancreatic cancer is a common gastrointestinal malignancies associated with poor prognosis. Most of the patients present only in late stage with metastasis or locally advanced disease during the time of diagnosis, requiring palliative surgery. At the time of diagnosis, patients usually have a few months of survival. The surgical palliation for such patients is a less explored area; so, here authors present a series of three patients, who presented with symptoms suggestive of Gastric Outlet Obstruction (GOO) or duodenal obstruction. On further work-up, they found to have pancreatic growth infiltrating the duodenum or Duodenojejunal Flexure (DJF). All three patients underwent palliative duodenojejunal bypass with relief of symptoms and improvement in quality of life in postoperative period. Hence, duodenojejunal bypass is an effective surgical procedure for palliation of obstructive symptom for advanced pancreatic cancer involving duodenum to improve the quality of life of the patient.

Keywords: Distal pancreatic tumour, Duodenojejunal anastomosis, Duodenal obstruction, Gastric outlet obstruction, Palliative surgery, Pancreatic adenocarcinoma

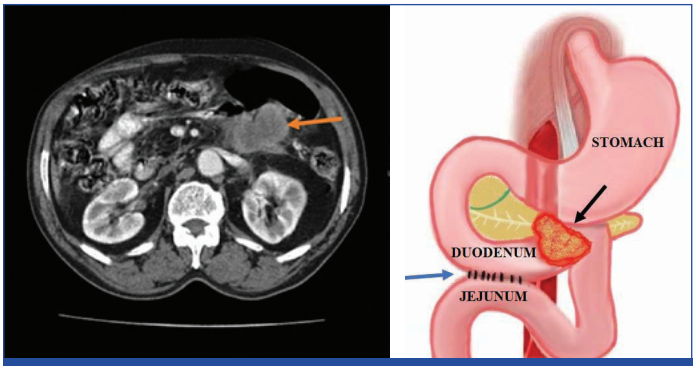
INTRODUCTION

Pancreatic cancer is the seventh leading cause of cancer death and accounts for almost as many as 4,66,000 deaths out of the 4,96,000 cases and carries a poor prognosis [1]. Almost 80% of the patients with pancreatic cancer present with metastasis or locally advanced carcinoma in an inoperable state requiring palliative surgery [2]. According to the World Health Organisation (WHO), palliative care is defined as "an approach that improves the quality of life of patients and their families facing the problems associated with life threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychological and spiritual" [3]. Almost 60-70% of pancreatic adenocarcinoma is found in the pancreatic head and the rest being found in body around 5-10% and in the tail around 10-15% [4]. Duodenal and GOO, obstructive jaundice, and pain due to infiltration of celiac plexus are the common presenting symptoms. All the patients, who present in an advanced disease, palliation of the above mentioned symptoms become essential to improve their Quality of Life (QOL) [2].

CASE SERIES

Case 1

A 65-year-old male patient presented with complaints of left upper quadrant abdominal pain, radiating to the back associated with frequent bilious vomiting for four weeks. Patient had no history of melena, jaundice, or any significant weight loss. Physical examination revealed an ill-defined, firm mass in the left hypochondrium. Blood investigations were normal except for hypokalaemia due to vomiting. Contrast Enhanced Computerised Tomography (CECT) scan of the abdomen showed a 6×6 cm heterogenous mass arising from the body and tail region of the pancreas with loss of fat plane in relation to the DJF, suggesting infiltration by the mass. Also, there was evidence of peripancreatic nodes [Table/Fig-1]. A diagnosis of pancreatic carcinoma with nodal metastasis was made. Patient was planned for curative surgery and preceded with exploratory laparotomy, which revealed a large, hard, and fixed mass arising from the distal body and tail of pancreas with infiltration of the DJF. There were large metastatic nodes at superior mesenteric and celiac axis. In view of these findings, the tumour was deemed inoperable. Patient underwent a palliative duodenojejunal side to side anastomosis (third part of duodenum and jejunum) in view of obstruction at DJF. A biopsy was taken from the mass and sent for histological study [Table/Fig-2]. The patient made an uneventful recovery. Histopathology revealed pleomorphic giant cell type of adenocarcinoma. Postoperative palliative chemotherapy was offered but was declined by the patient. Postprocedure patient was tolerating both fluids and pureed diet. During 4th month of review, patient was able to take oral diet and had no other specific complaints. Later, he was lost to follow-up.



[Table/Fig-1]: The CECT abdomen showing pancreatic tumour arising from body and tail (orange arrow) infiltrating DJ flexure.
[Table/Fig-2]: Duodenojejunal anastomosis (blue arrow) pancreatic growth involving DJ flexure (black arrow). (Images from left to right)

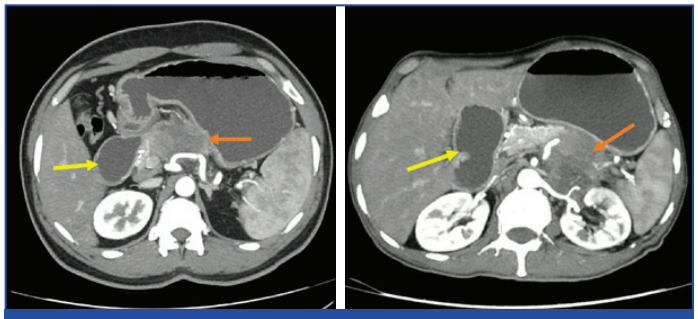
Case 2

A 34-year-old male presented with complaints of upper abdominal pain radiating to the back associated with bilious, frequent, and profuse vomiting for four weeks with recent onset of diabetes mellitus, history of significant weight loss of 8 kilograms over two months with loss of appetite. He had no history of melena or jaundice. On examination, patient had tenderness in the epigastric region with no mass palpable. Proceeded with Upper Gastrointestinal (UGI) endoscopy which revealed growth in the 3rd part of duodenum with residual food in duodenum. Biopsy was taken and histopathology showed features of mucin secreting adenocarcinoma. Patient underwent CECT abdomen which

revealed an ill-defined hyper enhancing lesion of size 4.2×5.3 cm arising from the body of pancreas infiltrating DJF [Table/Fig-3] and splenic vein thrombosis with no evidence of distant metastasis. Surgery was planned and staging laparoscopy was done which revealed surface metastasis in left lobe of the liver, hence planned for palliative bypass procedure and proceeded with laparotomy which revealed carcinoma on the body of pancreas with infiltration into the posterior aspect of stomach, Superior Mesenteric Vein (SMV), and DJ flexure causing obstruction of the third part of the duodenum (D3). Hence, palliative duodenojejunal side to side anastomosis (third part of duodenum and jejunum) was done. Patient was tolerating oral diet in postoperative period. Patient received five cycles of adjuvant chemotherapy injection gemcitabine (1000 mg/m^2) on day one followed by 14 days of oral capecitabine (650 mg/m^2) (GEMCAP regimen) and was symptom free for the rest of his clinical visits and later succumbed to death.

Case 3

A 58-year-old male with recent onset of diabetes mellitus and a chronic smoker presented to the Emergency Department with complaints of bilious vomiting for six days, associated with upper abdominal distention following food intake. He also had history of loss of appetite for 20 days and unintentional weight loss for one month. There was one episode of melena. Patient was admitted, nasogastric tube was inserted and started on Intravenous Fluids (IVF); electrolyte abnormalities were corrected. Initial diagnosis of intestinal obstruction was made and proceeded with CECT of abdomen, which showed a heterogenous mass of size 5.5×5.8×4.5 cm arising from the tail of the pancreas, superiorly infiltrating the left adrenal gland, inferiorly infiltrating the DJF and 4th part of duodenum and a few enlarged lymph nodes in the para aortic regions causing mass effect and upstream dilatation of stomach and duodenum with extensions and infiltration of the DJ flexure, posteriorly infiltrating the retro pancreatic splenic artery and vein, left renal vein and main trunk and segmental branch of left renal artery. There was invasion of the gerotas fascia with reactive thickening and in contact with left kidney with mild renal hypo-enhancement at the site of contact with liver and nodal metastasis was noted [Table/Fig-4]. Hence, the patient was planned for palliative bypass procedure and underwent palliative duodenojejunal side to side anastomosis and had an uneventful recovery. Histopathological analysis of the intraoperative biopsy from the pancreatic growth revealed it to be adenocarcinoma of pancreas. Postoperatively patient was started on Gemcitabine and Capecitabine (GemCap) chemotherapy regimen and received three cycles of it, following which patient was lost to follow-up.



[Table/Fig-3]: The CECT abdomen showing pancreatic growth (orange arrow) infiltrating DJF and posterior wall of stomach with dilated duodenum (yellow arrow).
[Table/Fig-4]: The CECT abdomen showing growth arising from body and tail of pancreas (orange arrow) with dilated stomach and duodenum (yellow arrow). (Images from left to right)

DISCUSSION

The incidence and mortality of pancreatic carcinoma have slightly increased in many countries, mostly due to the increasing prevalence of obesity, diabetes, and alcohol consumption. Also, improved diagnostic modalities and prompt reporting of cancer to registries would contribute to the increasing incidence rate [2]. There are many risk factors associated with pancreatic cancer which are categorised as modifiable risk factors (intestinal microflora, smoking, alcohol, chronic pancreatitis, obesity, dietary factors, infection) and non modifiable risk factors (age, gender, geographic location, blood group, family history and genetic susceptibility and diabetes) [5]. It is estimated that, due to the steady increase in incidence, pancreatic cancer will surpass breast cancer as the third leading cause of cancer death by 2025 in a study done by Ferlay J et al., in 2016 [6].

Pancreatic tumour arises 60-70% in the head of the pancreas, 5-10% in the body and 10-15% in the tail of pancreas. At the time of diagnosis, the average size of the tumour located in the head of the pancreas is approximately around 3 cm, while those in the body or tail are approximately 6 cm [4]. In present case series, all three patients had tumour located in the body and tail and all patients had tumour size of more than 6 cm at the time of diagnosis. Larger size tumour at diagnosis could be explained due to the asymptomatic nature of the tumour owing to its location and symptoms develop only in locally advanced tumour infiltrating adjacent bowel or stomach causing obstruction. All three patients in current series presented with obstruction due to advanced nature of the tumour. Whereas, patients with proximal tumours in the head and neck present earlier due to obstruction of the common bile duct and pancreatic duct causing obstructive jaundice and they have a higher propensity for extra-pancreatic extension. The common sites of distant metastasis include lymph nodes, liver, and peritoneum, the lung and bone are less commonly involved [4].

Patients usually present with duodenal and GOO, obstructive jaundice and pain due to infiltration of celiac plexus. Malignant duodenal or GOO will be precipitated in approximately 10-25% of patients with pancreatic cancer in the course of their disease progression. Symptoms such as vomiting, anorexia, pruritus and jaundice followed by dehydration and malnutrition will impact the QOL and could delay the further treatment with chemotherapy [2].

The gold standard for diagnosing pancreatic carcinoma is by tissue biopsy, which is taken either under endoscopic ultrasound or Computed Tomography (CT) guided or during the time of surgery by laparoscopic or open technique [7]. Most of the carcinomas arising from the pancreas are adenocarcinoma, constituting up to 90% of all the pancreatic carcinomas. Two patients had adenocarcinoma and one had an anaplastic carcinoma which is a rare variety and has a very poor prognosis of an average of 5.2 months [8].

The tumour markers such as CA19-9, CA242, Carcinoembryonic Antigen (CEA), CA125, micro Ribonucleic Acid (micro RNA) and Kirsten Rat Sarcoma Virus (KRAS) gene mutation are used as an adjunct to aid imaging modalities to diagnose pancreatic cancer in early period or as a screening tool in diagnosing [9]. Multidetector CT has now become a part of identification and work-up for pancreatic lesion, its respectability, vascular invasion assessment and to identify metastasis [10]. The other modalities for diagnosis includes endoscopic ultrasound, magnetic resonance imaging, endoscopic retrograde cholangiography [7].

Palliative therapy in pancreatic cancer aims to relieve the symptoms and to improve the QOL [2]. In all those patients who are diagnosed to have a unresectable disease with symptoms of outlet obstruction at presentation or during laparotomy and have a good performance score with a life expectance of at least three to six months, it is ideal to do a bypass surgery to improve the QOL [11]. In patients presenting with GOO restoration of the intestinal continuity is the key goal. There are few techniques to achieve the same, which includes open or laparoscopic gastrojejunostomy and endoscopic placement of metallic stents. Bypass procedure for malignant GOO is a better option for those patients who have a good performance score and have a life expectancy longer than two months, but it is associated with morbidity of 25-35% and complications such as delayed emptying and delay in the restarting oral feeds [2]. On contrary, the endoscopic stent placement has a shorter duration of hospital

stay and there is no delay to start feeds and chemotherapy and is less morbid, but the worrisome feature is that, high recurrence rate necessitating reinterventions within two month of stent placement and also other complications like stent migration, haemorrhage, perforation, aspiration pneumonia, occlusion by tumour ingrowth or food bolus, and stent migration accounting for 2-12% [2].

Role of chemoradiation in locally advanced disease or metastatic disease is proven to have some benefit in median survival ranging from two to four months to 11 months [12]. The first line of palliative chemotherapy for patients with unresectable pancreatic adenocarcinoma is FOLFIRINOX or gemcitabine/nab-paclitaxel. In patients with low performance, score monotherapy with gemcitabine or in combination with erlotinib (immunotherapy) can be used. In case of failure of gemcitabine based therapy, as a second line therapy base on 5-Fluorouracil such as 5-FU, leucovorin, and oxaliplatin (OFF regimen) or lip-irinotecan/5-FU/folinic acid can be tried [13].

Around 30% of patients with cancer receive radiation therapy as part of their first line course of treatment [14]. In locally advanced pancreatic carcinoma, for local control of tumour and to alleviate severe pain due to celiac plexus involvement by tumour, therapies such as stereotactic radiotherapy, radiofrequency ablation, irreversible electroporation, high-intensity focused ultrasound, iodine 125, cryosurgery, photodynamic therapy and microwave ablation are used modalities for better palliation of pain and to improve the QOL [15].

In this series, all three patients presented with duodenal obstruction due to infiltration of the tumour into duodenum or DJ flexure, which was unresectable due to extensive vascular and nodal involvement or liver metastasis. Duodenojejunostomy procedure is an unexplored and a safe procedure of choice for patients requiring palliative procedure in pancreatic tumour involving duodenum. There is no available literature supporting duodenojejunostomy for pancreatic carcinoma involving body. However, literature search revealed, duodenojejunostomy procedure is one of the treatment option performed only for Superior Mesenteric Artery syndrome (SMA/Wilkie's syndrome) with duodenal obstruction, which could be an ideal palliative treatment option for patients presenting with obstruction due to advanced pancreatic cancer involving body and infiltrating duodenum to alleviate the obstruction and to improve the better QOL for the patients [16-18].

CONCLUSION(S)

Pancreatic cancer remains a devastating diagnosis and thus, the bear minimum procedure that can be done for carcinoma for tail and body of pancreas involving duodenum with unresectable and metastatic diseases is to provide a better QOL of life with duodenojejunostomy procedure.

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