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Pancreas-sparing and superior mesenteric artery first approach in duodenal adenocarcinoma of the fourth portion of duodenum: A case report

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ABSTRACT

INTRODUCTION: Peroperative assessment of resectability in pancreas-sparing duodenectomy for distal duodenal (D3-D4) adenocarcinoma is challenging for surgeons.
PRESENTATION OF CASE: We report a 68-year-old man with biopsy-proven adenocarcinoma of the fourth portion of duodenum which had been diagnosed with upper endoscopy and CT. A pancreas-sparing duodenectomy with loco-regional lymph node resection using the superior mesenteric artery first approach was performed.
DISCUSSION: Adenocarcinoma of the fourth portion of duodenum is rare. It has non-specific symptoms. The diagnosis is difficult and is frequently delayed. Surgery is the only chance of cure. After peroperative assessment of resectability, with intraoperative ultrasound, complete exposition of the duodenum and entire dissection of the superior mesenteric artery (SMA) using the artery-first approach technique should be done to assess for tumor resectability, which should include the possibility of complete lymphadenectomy of the mesenteric root. If technically feasible, a pancreas-sparing resection should be preferred to avoid pancreatectomy-related morbi-mortality. The aim of the surgery is a R0 resection which has a 5-year survival rate between 25% and 75%.
CONCLUSION: Artery-first approach of the SMA should be considered by surgeons in adenocarcinoma of the distal duodenum to identify any contra-indications to proceed further.

1. Introduction

Peroperative assessment of resectability in pancreas-sparing duodenectomy for distal duodenal (D3-D4) adenocarcinoma is a challenging task for surgeons. Duodenal adenocarcinoma is a rare lesion that represents 0.3% of all malignant tumors of the gastrointestinal tract [1,2]. Surgery is the only chance of cure. The lesion usually occurs in patients older than 65 [1,3]. The third and the fourth portions of the duodenum are frequently involved [1,2,4]. As symptoms are uncommon, the diagnosis is generally delayed [3,4]. The prognosis is very poor, regardless of the stage of the disease. The 5-year survival can be as low as 14% for unresectable lesions but can reach to 75% if a complete resection is carried out [4,5]. Here we report a patient who underwent pancreas-sparing duodenectomy of the third and fourth portions of duodenum for a duodenal adenocarcinoma of the fourth portion of duodenum using the superior mesenteric artery (SMA) first approach. The article has been reported in line with the SCARE criteria [6] and PROCESS criteria [7].

2. Presentation of case

A 68-year-old man who suffered from intermittent abdominal pain, nausea, diarrhea and weight loss of 10 kg for 3 months was hospitalized at our University. A fecal occult blood test and abdominal ultrasound previously requested by a general practitioner were normal. On admission, blood tests were within normal ranges. An abdominal computed tomography with intravenous contrast enhancement was then carried out which revealed a 4 cm lesion located between the third and the fourth portions of the duodenum. There was proximal distention of the duodenum and the stomach (Fig. 1).

Upper gastrointestinal endoscopy and histopathology of the biopsied specimens demonstrated a high grade dysplastic tubulovillous adenoma with focal development of adenocarcinoma which had invaded the mucosa. The tumor marker carbohydrate antigen 19-9 (CA 19-9) was slightly increased (52.8kUI/l, normal range lower than 37 kUI/l) whereas the carcinoembryonic antigen (CEA) was within the normal range (2.8 μg/l). 18-FDG PET-CT showed

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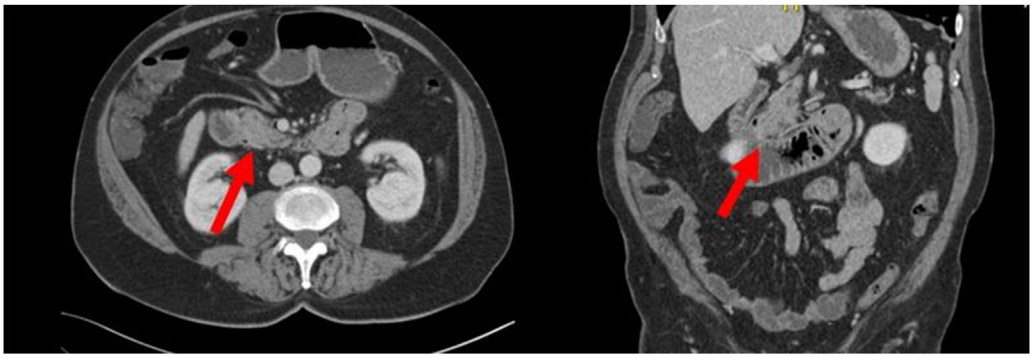

Fig. 1. Portal contrast enhancement abdominal CT revealing a duodenal neoplasia (red arrow).

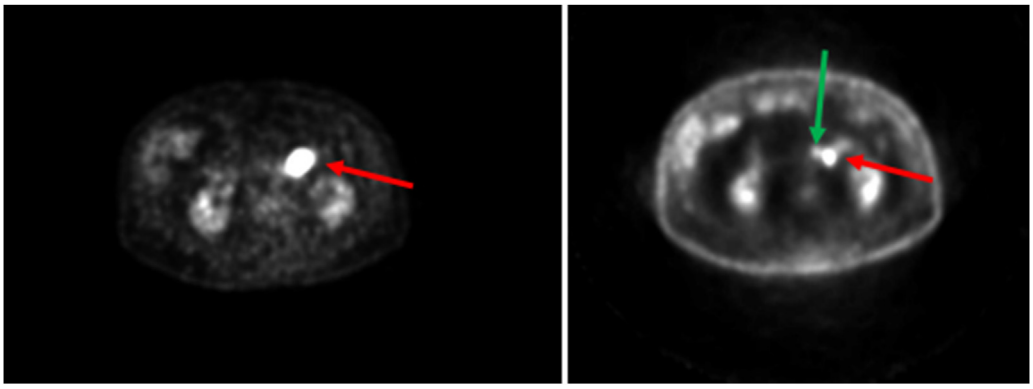

Fig. 2. PET CT showing the duodenal neoplasia (red arrow) and the mesenteric lymph node (green arrow).

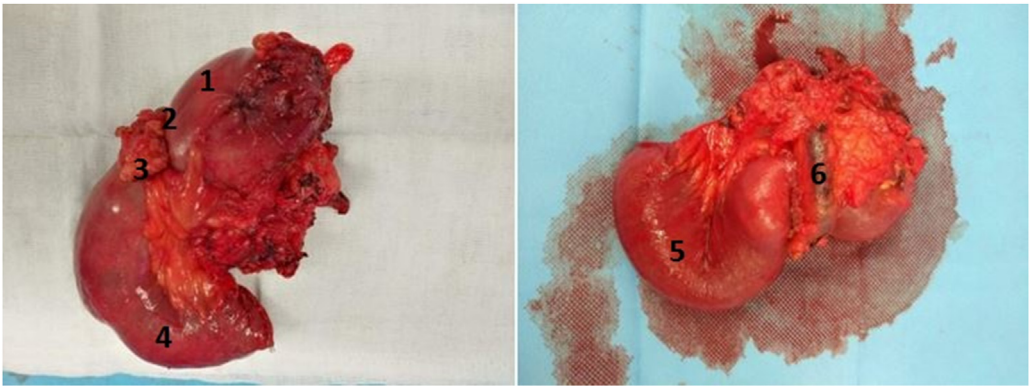

Fig. 3. Resected specimen: Distal duodenum and inferior mesenteric vein.
1: Dilatation of the second and third duodenum; 2: Duodenal lesion; 3: Fourth duodenum; 4: Jejunum; 5: Duodenum; 6: Inferior mesenteric vein.

activities at the last portion of duodenum, in one mesenteric lymph node (Fig. 2), and in two other focal points in the small intestine and the left colon.

Laparotomy was carried out. Resectability was first assessed by the absence of liver metastasis on peroperative ultrasound, followed by exposing completely the third and the fourth parts of the duodenum through a Cattell-Braasch and a Kocher maneuvers. Any SMA involvement was assessed through entire dissection of its proximal part. The serosa of the distal portion of duodenum and the inferior mesenteric vein were found to be invaded. A pancreas-sparing en-bloc resection of a part of the second, the third and fourth portions of duodenum combined with loco-regional lymph node dissection around the portal vein and superior mesenteric artery were performed (Figs. 3–4). A R0 resection were achieved after dividing the first two jejunal arteries. Excision of the lesion was carried out after identification of the major duodenal papilla, which had previously been catheterized by a transcystic drain. The digestive continuity was restored by a side-to-side hand-sewn duodeno-jejunal anastomosis.

Histopathology demonstrated a poorly-differentiated adenocarcinoma with full-thickness invasion and extension beyond the wall with infiltration into the perivisceral fat (Fig. 5). Four of 19 lymph nodes procured were involved by tumor. The resection margins were negative (R0). According to the TNM classification, the adenocarcinoma was pT4N2 Mx.

For the two others FDG uptake lesions shown in the preoperative PET-CT, a grade 1 neuroendocrine tumor invading the submucosal layer of the ileum and a diverticulitis of the left colon were demonstrated.