



# Minimally invasive surgical treatment of carcinoma of the papilla of Vater: A case report

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## ABSTRACT

Ampullary cancer is a rare neoplasm of the pancreaticobiliary tract. Most of the ampullary neoplasms require surgical resection. Cephalic pancreaticoduodenectomy (CPD) has been performed laparoscopically at high-volume institutions worldwide. In this paper, we present a 63-year-old patient with painless jaundice, subjected to proximal endoscopy and biopsy of the lesion located in the papilla of Vater, which resulted in a diagnosis of the adenocarcinoma of the papilla of Vater. We performed laparoscopic CPD with appropriate lymphadenectomy. To the best of our knowledge, this complex and technically challenging surgical procedure is the first of this kind in our country and the region.

**Key words:** Ampullary neoplasms; surgical treatment; laparoscopic cephalic pancreatoduodenectomy

## INTRODUCTION

Ampullary carcinoma is a rare malignant tumor originating in the papilla of Vater in the wall of the duodenum wherein ends of the common bile duct and a large pancreatic duct are located. The most common histopathological types of ampullary neoplasms are the intestinal type (47%), pancreatic biliary (24%), and poorly differentiated adenocarcinomas (13%) (1). Although rare, with the incidence rate of 5 in 1,000,000, this type of cancer causes more than 20% of the tumor causing

biliary obstruction (2). The diagnosis is based on the endoscopic, histopathological, and radiological evaluation.

The treatment depends on the tumor size and extent of the disease and includes the endoscopic ampullectomy in the case of a small tumor and small initial lesion, the surgical treatment of non-metastatic disease as well as the oncological treatment of metastatic disease and locally advanced tumor (3,4). The only treatment of ampullary cancer that provides a proven benefit for patients is complete surgical tumor resection with negative margins (R0 resection), either as laparoscopic or classical cephalic pancreaticoduodenectomy (CPD) (5). The laparoscopic methods are implemented in high-volume centers, which are able to develop minimally invasive CPD surgery which is extremely technically demanding. In addition, prognosis and survival depend on the correctness of the resection procedure and radical lymphadenectomy,

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histological type and TNM stage of the disease (6). The aim of this study was to show that adequate radical surgical treatment of the periampullary region cancer can be performed by the laparoscopic method.

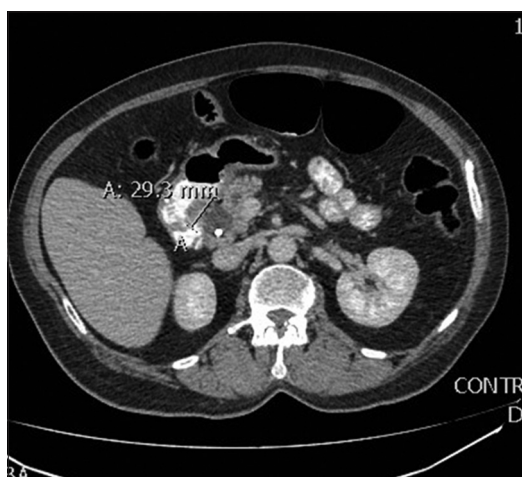
**CASE REPORT**

A 63-year-old female patient presented with painless jaundice was admitted to the Clinic for Gastroenterohepatology in early January 2017. The laboratory test results showed markedly elevated bilirubin (158 mmol/L), but the blood count, serum proteins, and minerals were within the reference range, as well as the levels of tumor markers (carcinoembryonic antigen, alfa-fetoprotein, carbohydrate antigen 19-9 and cancer antigen 125). The proximal endoscopy with endoscopic retrograde cholangiopancreatography was performed, and the lesion in the papilla of Vater was observed. A biopsy sample was taken for pathologic evaluation, and in the same procedure, two biliary stents were placed. Within 5 days of the stents placement, the bilirubin level in the blood decreased to normal levels. Furthermore, the pathological lesion measuring 29 mm × 16 mm was detected by endoscopic ultrasonography in the projection of the pancreas head, appearing attached to the duodenum. Histopathologic analysis of the biopsy samples reported adenocarcinoma of the papilla of Vater. In addition, computed tomography scan of the abdomen and pelvis revealed a periampullary mass (Figure 1), but no metastatic lesions and infiltration of surrounding vascular structures were found.

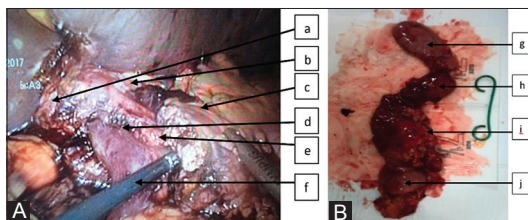
A case was presented at the oncology-surgical consilium which indicated surgical treatment, and on February 8, 2017, the patient was admitted to the Clinic for General and Abdominal Surgery. Laparoscopic resection with pancreaticoduodenectomy was done under general anesthesia. The laparoscopic surgery was performed using five ports. First, a 10-mm umbilical port endo-camera was introduced. One port was placed left paraumbilically to introduce a 12-mm EndoGIA™ (Ethicon Endo Surgery US, LLC) stapler. Then, 5-mm ports were placed right paraumbilically and mutually hypochondriac. Following the presentation of the superior mesenteric arcades and the formation of retropancreatic cleavage, the pancreas was “curbed” with a rubber band. Then, the common hepatic artery arose from the celiac trunk without

anatomical variations. Kocher maneuver was performed as well. Jejunum was separated from the ligament of Treitz and using an endostapler resected approximately 20 cm distally. Moreover, the stomach was resected in the antral region with endostapler. The pancreas was cut with Endo Harmonic (Ethicon Endo Surgery US, LLC) scalpel, followed by dissection of the pancreas head from mesenteric root and portal vein. Choledoch duct was resected at the level of common hepatic duct. In addition, lymphadenectomy of hepatoduodenal ligament and the celiac trunk was carried out (Figure 2A), and surgically resected organs (Figure 2B) were extracted by a 5-cm infraumbilical laparotomy (Figure 3).

After placing a pancreatic stent, a single-layer terminolateral pancreaticojejunostomy was performed



**FIGURE 1.** Periampullary lesion on computed tomography scans of the abdomen.



**FIGURE 2.** (A) Surgical field after resection: (a) Common hepatic duct; (b) common hepatic artery; (c) body of pancreas; (d) portal vein; (e) lienal vein; and (f) superior mesenteric vein. (B) Surgically resected organs: (g) Gallbladder; (h) choledoch duct; (i) head of pancreas; and (j) duodenum.

with Prolene 3/0 (Ethicon Endo Surgery US, LLC) (Figure 4A).

A single-layer terminolateral hepaticojejunostomy was formed with “V lock” suture (Covidien products, Medtronic, Minneapolis, USA) distally from anastomosis of the pancreas on the same part of the jejunum (Figure 4B) that was conducted retrocolically, fixed to the transverse mesocolon, and then the antecolic gastroenteroanastomosis was made using endostapler.

Finally, the subhepatic space was drained. The whole operation lasted for 6 h. On the third post-operative day, the patient was assisted to get to vertical position for a short time, and on the 4<sup>th</sup> day after the operation, she was introduced to oral feeding. The patient was discharged on the 9<sup>th</sup> post-operative day. Histopathological examination of the resection specimen reported Grade II adenocarcinoma of the papilla of Vater (intestinal type), staged as pT2N1, with negative resection margins (R0) and one out of 13 lymph nodes positive for metastasis. Adjuvant oncology treatment was prescribed.

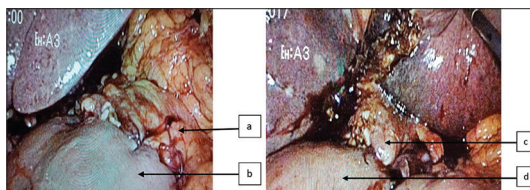
## DISCUSSION

Jaundice due to malignancy is predominantly caused by the cancers of the periampullary region. The real challenge is to diagnose the disease in its early stage. With an average of five CPDs performed per month and a number of other pancreatic surgical procedures, our clinic belongs to a high-volume center for pancreatic (7). Classical Whipple's procedure or pylorus-preserving CPD represents a standardized operation for the treatment of malignant and partly of benign pathologies of the periampullary region and the head of the pancreas. Upper mesocolic radical lymphadenectomy makes an integral part of the operation, due to the clear oncological principles and benefits for patients (8).

In this paper, we present the case of a female patient with carcinoma of the papilla of Vater, who underwent laparoscopic CPD with lymphadenectomy and intracorporeal anastomoses, for the first time in our country and the wider region. The fact that the laparoscopic resection of the pancreatic head is performed exclusively in the highly specialized and high-frequency centers worldwide indicates the level of complexity and technical demands required



**FIGURE 3.** Abdominal wall after laparoscopic pancreaticoduodenectomy.



**FIGURE 4.** (A) Terminolateral pancreaticojejunostomy: (a) Pancreas and (b) jejunum. (B) Terminolateral hepaticojejunostomy: (c) Common hepatic duct and (d) jejunum.

for such procedures (9). The post-operative course was apparently different from the course of conventional open surgical procedures, namely, by the reduced time of patient's recovery due to minimal trauma, and the reduced time to getting the patient to a vertical position. In addition, the time required for the recovery intestinal peristalsis and conversion to oral feeding and reduced use of analgesics were evidently different (10). A sufficient extent of surgical resection and lymphadenectomy can be achieved by laparoscopic access, as proved by the pathological examination of the resection specimen showing a sufficient number of lymph nodes resected and negative resection margins. Blood loss was significantly lower compared to conventional methods (11,12). Operating time was slightly longer with laparoscopic procedures compared to the classical method and the number of post-operative days is lower in the laparoscopic compared to the conventional surgery (13). The

percentage of post-operative complications is significantly reduced due to the non-existence of surgical wound infections (9). A minimally invasive approach is reserved for pathologically well-differentiated cases, with a clear picture of the surrounding infiltrations and anatomical variations. Advanced disease and processes infiltrating hepatic and splanchnic venous vessels still require open surgical methods (8).

## CONCLUSION

Classical Whipple's procedure is one of the most demanding surgical procedures in the abdominal surgery, and its laparoscopic approach is one of the biggest challenges in digestive surgery. Minimally invasive pancreatic surgery represents a safe, comfortable, and oncologically acceptable procedure for treating malignancies of periampullary and cephalic pancreatic region.

## CONFLICT OF INTERESTS

The authors declare no conflict of interest related to this study.

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