Current Science
CS 5 (3), 2122-2125 (2025)
Received 10 Feb 2025 | **Revised 13 March** 2025 | **Accepted 15 April**. 2025 | **Online Available 3 May** 2025
https://doi.org/ 10.52845/CS/2025-5-3-6

Current Science

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OPEN ACCESS

ISSN(O)2795-8639

Case Report

Local Resection of an Intraductal Papillary Mucinous Neoplasm of the Pancreas: A Case Report

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Abstract:
This article retrospectively analyzes the surgical treatment of a 68-year-old male with pancreatic intraductal papillary mucinous neoplasm (IPMN) in the neck and head, involving laparoscopic robot-assisted resection. Post-surgery, he experienced pancreatic and biliary leakage, successfully treated with drugs and nasobiliary drainage. He has recovered well during follow-up. The article discusses local resection challenges, complication management, intraoperative bile duct dissection techniques, and the importance of precise tumor-pancreatic duct relationship judgment and postoperative drainage monitoring, offering insights for IPMN surgical treatment.

Keywords: Intraductal papillary mucinous neoplasm;Treatment;Local resection surgery;

Introduction

Intraductal papillary mucinous neoplasm (IPMN) is an intraductal epithelial tumor composed of mucin-producing cells, originating from the main pancreatic duct and its branches. Based on cellular differentiation, IPMN is classified into gastric, intestinal, and pancreatobiliary types. The gastric type is the most common (approximately 70%), often occurring in branch ducts, with tall columnar cells with nuclei at the base, lightly stained cytoplasm rich in mucin. Most gastric-type IPMNs are low-grade lesions[1,2]. Some scholars have found that IPMN is an important precancerous lesion of pancreatic ductal adenocarcinoma (PDAC)[3,4]. This article aims to explore the difficulties of local resection, management of complications, and techniques and experience in intraoperative bile duct dissection by retrospectively analyzing the surgical treatment process of a patient with IPMN located in the neck and head of the pancreas.

Clinical Data

A 68-year-old married male patient presented to the 940th Hospital of the Joint Logistics Support Force of the Chinese People's Liberation Army (hereinafter referred to as "our hospital") on February 20, 2024, due to a "pancreatic mass found on a physical examination one day ago." Routine blood tests, biochemistry, and other laboratory examinations upon admission showed no significant abnormalities. CT scans revealed(Fig.1): 1. A cystic mass in the pancreatic head, considered as an intraductal papillary mucinous neoplasm (branch duct type); 2.dilation of the main pancreatic duct. Abdominal MR scans showed(Fig.2): 1. Abnormal signal intensity in the pancreatic head, most likely an intraductal papillary mucinous neoplasm (branch duct type); mild dilation of the main pancreatic duct; 2. A small cyst in the upper segment of the posterior right lobe of the liver. After completing preoperative preparations, the patient underwent laparoscopic robot-assisted "pancreatic lesion resection, vascular crisis exploration, and abdominal drainage" on February 29, 2024. Postoperative pathology confirmed an intraductal papillary mucinous neoplasm of the pancreas(Fig.3).

On the first day after surgery, approximately 50 ml of dark brown drainage fluid was collected from the drainage tube on the pancreatic cut surface, and about 10 ml of pale red drainage fluid was collected from below the pancreatic cut surface. Laboratory tests showed a mild increase in amylase levels to 211 IU/L, suggesting iatrogenic pancreatitis. On the third day after surgery, the amylase level in the abdominal drainage fluid was found to be significantly elevated at 13,324 IU/L, although the volume was small, indicating mild pancreatic leakage. On the seventh day after surgery, about 100 ml of dark green drainage fluid was collected from the drainage tube on the pancreatic cut surface, while about 10 ml of pale red drainage fluid was collected from below. Monitoring of the drainage tubes revealed dark green drainage fluid from the surgical area, and combined with the intraoperative findings, mild postoperative bile leakage was considered. Due to postoperative bile leakage and pancreatic leakage, medications such as "somatostatin" and "gabexate mesylate" were administered to inhibit pancreatic secretion, and gastrointestinal decompression was performed to reduce biliary pressure. Simultaneously, a jejunal feeding tube was placed for enteral nutrition support. On March 21, 2024, the patient's drainage tubes were stable and patent, with no drainage fluid from the pancreatic cut surface, indicating that the patient's pancreatic and bile leakages had healed, and the abdominal drainage tubes were subsequently removed. The patient experienced bile leakage for a total of 11 days and pancreatic leakage for a total of 14 days. The patient was discharged from the hospital on April 1, 2024, in a state of improved recovery. Follow-up visits since then, up to eight months later, have shown that the patient has recovered well postoperatively with no significant discomfort.

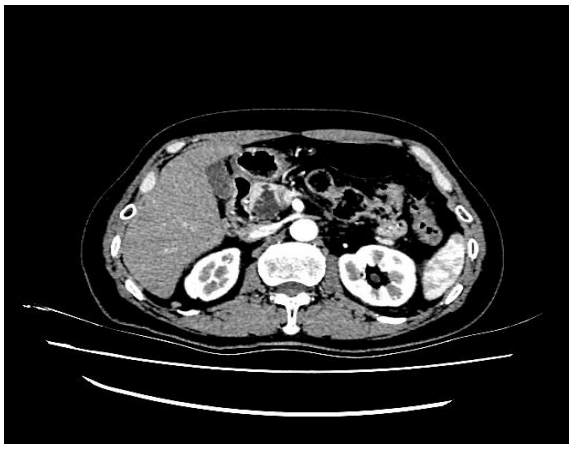

Figure 1: CT Findings: 1. Cystic lesion in the pancreatic head, suspected to be an intraductal papillary mucinous neoplasm (branch duct type); 2.dilation of the main pancreatic duct.

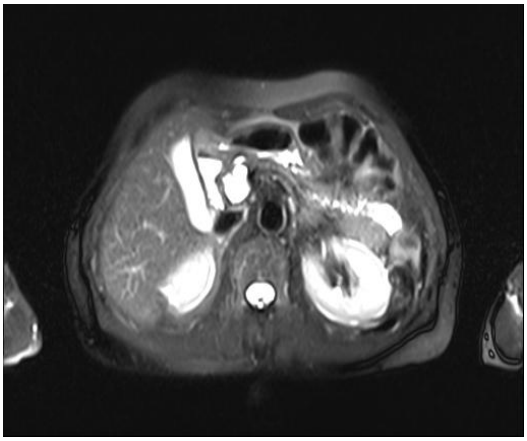

Figure 2: Abdominal MR Examination Findings:1.Abnormal signal intensity in the pancreatic head, most likely due to an intraductal papillary mucinous neoplasm (branch duct type),mild dilation of the main pancreatic duct.2.Small cyst in the superior segment of the right posterior lobe of the liver.

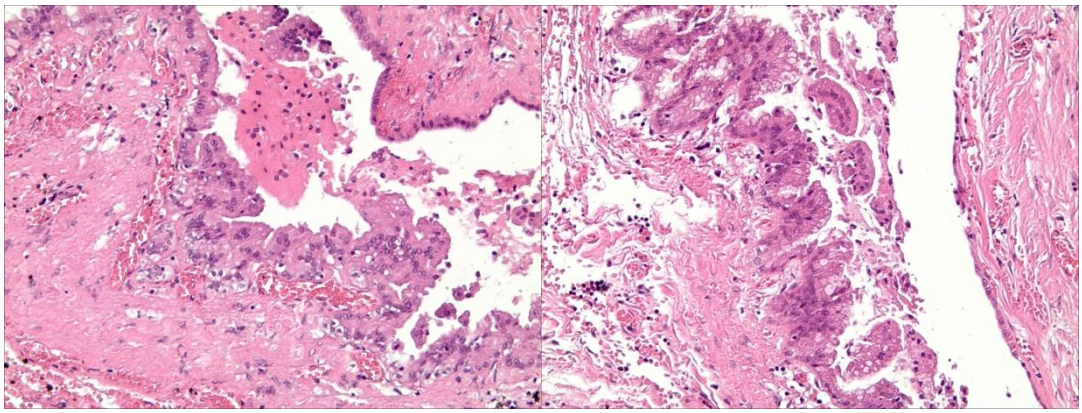

Figure 3: Microscopic findings: The tumor tissue is papillary and distributed within the cyst, with focal enlargement of nuclei.Postoperative Pathological Diagnosis: Intraductal papillary mucinous neoplasm of the pancreas.

Discussion

IPMN, an intraductal papillary mucinous neoplasm, represents a potentially malignant epithelial tumor within the ductal system. Its incidence has been rising in recent years, establishing it as a distinct category within pancreatic cystic tumors, accounting for approximately 20% of such cases[5]. IPMN predominantly affects older males, with a male-to-female incidence ratio of 3:2 and an average age of onset at 60 years, earning it the nickname "grandfather's tumor" [6,7]. For benign pancreatic tumors located far from the pancreatic duct, local resection is an effective therapeutic approach[7,8].

Compared to pancreatoduodenectomy or total pancreatectomy, local resection offers lower surgical risks and faster postoperative recovery times[9]. However, the challenge lies in ensuring tumor removal while minimizing damage to surrounding tissues, particularly the pancreatic duct and vital blood vessels[10]. Intraoperatively, meticulous separation of the tumor from adjacent tissues, especially the pancreatic duct, is crucial to prevent severe complications such as pancreatic fistula and obstructive pancreatitis[11].

Despite the relatively low complication rate associated with local resection, pancreatic fistula remains one of the most common postoperative complications[11].On the other hand, even if no obvious bile duct injury is observed intraoperatively, postoperative bile leakage can still occur.

In short, for IPMN patients with lesions in the neck and head of the pancreas, intraoperative bile duct dissection should be performed meticulously to avoid damaging the bile duct wall. If bile duct injury occurs intraoperatively, immediate repair should be carried out. Postoperative monitoring of drainage should be rigorous to promptly detect and manage complications such as bile leakage, thereby enhancing surgical success rates and patients' quality of life.

Funding

This work was supported by the Natural Science Foundation of Gansu Province (22JR5RA014).

Competing Interests

The authors declare that they have no competing interests.

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