

Laparoscopic Enucleation of a Peripheral Branch Intraductal Papillary Mucinous Neoplasm Situated in the Pancreatic Head. A New Alternative[☆]

Enucleación laparoscópica de una neoplasia intraductal papilar mucinosa de ramos periféricos localizada en la cabeza del páncreas. Una nueva alternativa

The surgical strategy for treating intraductal papillary mucinous neoplasm (IPNM) of the peripheral branches continues to be controversial.¹ The extension of the surgical resection is still under debate, especially in patients with non-invasive lesions.² In these patients, the objective is to preserve as much of the remaining parenchyma as possible.

We present the case of a 39-year-old man with a history of recurring episodes of acute pancreatitis. Multislice computed tomography (MSCT) and magnetic resonance cholangiopancreatography (MRCP) showed a pancreatic cyst located in the posterior region of the head of the pancreas, which probably communicated with the main pancreatic duct (Fig. 1). The size of the tumor was 19 mm. Serum levels of CA 19.9 and CEA were normal. The preoperative evaluation was completed with endoscopic ultrasound, which ruled out the presence of other nodules. With the diagnosis of IPNM of the peripheral branches, we decided to resect the lesion.

The patient was taken to the operating room with the intention of performing a laparoscopic Whipple procedure. An extended Kocher maneuver was done with complete mobilization of the head of the pancreas. Intraoperative ultrasound enabled us to precisely locate the lesion, which was protruding from the posterior side. At that time, we decided to perform enucleation with preservation of the pancreatic parenchyma and the duodenum.

The cyst was dissected with an electroscalpel, and the communicating duct was identified and ligated while preserving the main pancreatic duct and enucleating the tumor (Fig. 2). The frozen histology sections of the cyst showed low-grade dysplasia. The patient recovered without complications and was discharged from the hospital on the fifth day post-op. The definitive pathology report determined the lesion to be a borderline IPNM. The patient has been symptom-free after 4 months of follow-up.

The extension of the pancreatic resection for the surgical treatment of peripheral branch IPNM continues to be a topic of debate.³ In patients with non-invasive tumors, the long-term results in terms of endocrine and exocrine pancreatic insufficiency should be taken into special consideration.⁴

Conservative procedures seem to be an alternative to major pancreatic resections in this type of disease. Central and distal spleen-preserving pancreatectomies have become common treatments in cystic tumors and IPNM of peripheral branches without suspected malignancy.⁵ But preservation of the pancreatic parenchyma can be difficult for lesions located in the head of the pancreas or in the uncinate process, for which pancreaticoduodenectomy continues to be the traditional approach. For this reason, enucleation can be useful in these difficult locations.

Little has been published in the international literature with regards to the enucleation of benign peripheral branch

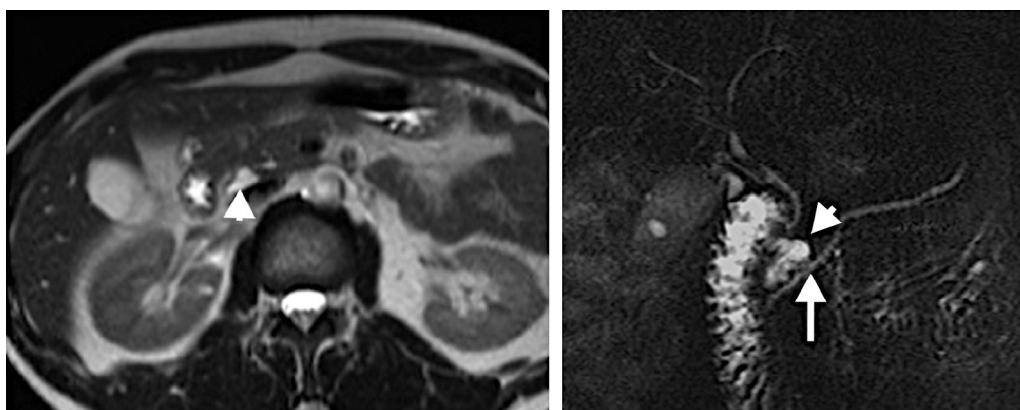


Fig. 1 – Nuclear magnetic resonance (sequence T2) showing a cystic image located in the posterior region of the head of the pancreas that communicated with the duct of Wirsung.

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Fig. 2 – Intraoperative photograph demonstrating the lesion in the head of the pancreas that is partially dissected. White arrows: margins of the lesion. Black arrow: neck of the lesion.

IPNM. Hwang presented 14 patients with small IPNM (<3 cm) in the head of the pancreas. Four of them were enucleated and 10 patients underwent pancreaticoduodenectomy. A significant decrease was seen in surgical time, as well as in blood loss in the enucleation group, with no differences in disease recurrence between the 2 groups.⁶

Turrini has also demonstrated shorter operative time and less blood loss in patients with IPNM of the peripheral branches that were enucleated when compared with those who underwent pancreaticoduodenectomy. Although it is not statistically significant, the enucleated patients in this series tend to present a greater incidence of postoperative pancreatic fistulas. Nonetheless, other studies have shown that grade B or C pancreatic fistulas are uncommon after enucleation.^{7,8} This group proposes certain criteria for selecting patients with IPNM who would be candidates for enucleation:

1. No previous pancreatic surgery.
2. IPNM of the peripheral branches located in the head of the pancreas or uncinate process.
3. No dilation of the main pancreatic duct.
4. No mural nodules or thickening of the cystic wall.
5. The main pancreatic duct can be preserved.

In order to avoid a pancreatic fistula, the identification and ligation of the communicating duct is essential. Intraoperative ultrasound is necessary for this purpose as it aids in identifying and preserving the integrity of the main pancreatic duct.

The largest series of IPNM treated with enucleation was published by Blanc. This series reported 26 cases that had been treated with open enucleation for patients with IPNM of peripheral branches. When performing enucleation, special attention should be paid to the intra-surgical evaluation of the

resection margins.⁹ If the pathologist detects an invasive or carcinoma *in situ*, the resection should be completed with oncologic criteria.¹⁰

The laparoscopic approach is an option for performing this surgery. To our knowledge, there are no publications that mention laparoscopic enucleation of an IPNM of the peripheral branches. This approach could be beneficial for these patients, since it adds the benefits of minimally invasive surgery to the preservation of the pancreatic parenchyma.

Appendix. Supplementary data

Supplementary data associated with this article can be found, in the online version, at [doi:10.1016/j.cireng.2012.10.002](https://doi.org/10.1016/j.cireng.2012.10.002).

REFERENCES

1. Crippa S, Partelli S, Falconi M. Extent of surgical resections for intraductal papillary mucinous neoplasms. *World J Gastrointest Surg.* 2010;2:347–51.
2. Kiely JM, Nakeeb A, Komorowski RA, Wilson SD, Pitt HA. Cystic pancreatic neoplasms: enucleate or resect? *J Gastrointest Surg.* 2003;7:890–7.
3. Tanaka M, Fernandez-del Castillo C, Adsay V, Chari S, Falconi M, Jang JY, et al. International consensus guidelines 2012 for the management of IPMN and MCN of the pancreas. *Pancreatology.* 2012;12:183–97.
4. Sperti C, Beltrame V, Milanetto AC, Moro M, Pedrazzoli S. Parenchyma-sparing pancreatectomies for benign or borderline tumors of the pancreas. *World J Gastrointest Oncol.* 2010;2:272–81.
5. Tien YW, Hu RH, Hung JS, Wang HP, Lee PH. Noninvasive pancreatic cystic neoplasms can be safely and effectively treated by limited pancreatectomy. *Ann Surg Oncol.* 2008;15:193–8.
6. Hwang HK, Park JS, Kim JK, Park CM, Cho SI, Yoon DS. Comparison of efficacy of enucleation and pancreaticoduodenectomy for small (<3 cm) branch duct type intraductal papillary mucinous neoplasm located at the head of pancreas and the uncinate process. *Yonsei Med J.* 2012;53:106–10.
7. Crippa S, Bassi C, Salvia R, Falconi M, Butturini G, Pederzoli P. Enucleation of pancreatic neoplasms. *Br J Surg.* 2007;94:1254–9.
8. Talamini MA, Moesinger R, Yeo CJ, Poulouse B, Hruban RH, Cameron JL, et al. Cystadenomas of the pancreas: is enucleation an adequate operation? *Ann Surg.* 1998;227:896–903.
9. Blanc B, Sauvanet A, Couvelard A, Pessaux P, Dokmak S, Vullierme MP, et al. Limited pancreatic resections for intraductal papillary mucinous neoplasm. *J Chir (Paris).* 2008;145:568–78.
10. Nara S, Shimada K, Sakamoto Y, Esaki M, Kosuge T, Hiraoka N. Clinical significance of frozen section analysis during resection of intraductal papillary mucinous neoplasm: should a positive pancreatic margin for adenoma or borderline lesion be resected additionally? *J Am Coll Surg.* 2009;209:614–21.

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Treatment of a Hemocholecyst[☆]

Tratamiento laparoscópico de un hemocolecisto

Hemocholecyst is a term introduced in 1961 that defines gallbladder hemorrhage.¹ It is a rare pathology that has been associated with several disease processes, such as gallbladder neoplasia, cholecystitis,² aneurysm of the cystic artery, hemobilia, trauma, coagulation disorders including renal failure, cirrhosis of the liver and anticoagulant treatment.³ We present a new case of hemocholecyst in a patient who had been preoperatively diagnosed and safely treated by laparoscopic cholecystectomy. We also analyze different diagnostic and therapeutic aspects of interest.

The patient is a 39-year-old male with a medical history that included consuming more than 150 g of ethanol/day, hypertriglyceridemia, chronic ethyl-toxic hepatopathy and implantation in December 2009 of a metallic aortic prosthesis due to aortic failure, with anticoagulation therapy since then with acenocoumarol. He came to the Emergency Department due to symptoms that had been developing over the previous 3 h after trauma that included “dark-colored vomit and dizziness”; he also reported having “dark-colored feces”. On physical examination, the patient was hemodynamically stable. Mild jaundice of the skin and mucus membranes was observed, as well as abdominal pain and abdominal wall hematomas located in the left flank. A mass was also detected in the right hypochondrium, with no guarding or rebound tenderness. The rectal exam demonstrated dark, bloody feces. Laboratory analysis showed: leukocytosis 18,500; 91.1% neutrophils; Hb 9.82; platelets 209,000; prothrombin rate 65.8%; urea 116; GOT 127; GPT 108; GGT 1.229; FA 786 and BT 2.7.

Gastroscopy diagnosed esophagitis, cardial incompetence and duodenitis, with no signs of bleeding during the examination. Abdominal ultrasound revealed a distended gallbladder with solid heterogeneous content, which ruled out hematoma in the gallbladder (Fig. 1A). Computed tomography (CT) demonstrated collateral circulation and distended gallbladder with abundant heterogeneous content in its interior, probably related with internal gallbladder bleeding, with no dilation of the bile duct (Fig. 1B). The patient then underwent laparoscopy, which revealed a hemocholecyst (Fig. 2), and

laparoscopic cholecystectomy was performed with no complications. The patient was discharged on the seventh day after the analytical parameters had improved. The pathology study reported that the mucus membrane of the gallbladder wall had extensive ulcers and bloody material on its surface.

Since 1948, when Sandblom⁴ published the cases of 9 patients with post-traumatic hemobilia, there have been few manuscripts about hemocholecyst published in the literature. In clinical practice, it can be difficult to differentiate between hemocholecyst and hemobilia; moreover, hemocholecyst may cause hemobilia, or vice versa.¹

Gallbladder trauma is a rare entity (particularly when it is not associated with other lesions) that represents only 0.5–0.6% of intra-abdominal trauma. Factors that predispose patients toward these gallbladder lesions include a thin gallbladder wall, postprandial distension and alcohol consumption.⁵ In our patient, there were several possible causes leading to the pathology: treatment with anticoagulants, cirrhosis of the liver and previous trauma. Hemocholecyst is a rare cause of abdominal pain, and its characteristic clinical findings include abdominal pain in the right hypochondrium, fever and leukocytosis in addition to symptoms indicating gastrointestinal hemorrhage due to hemobilia, such as melenas or hematemesis after the blood drains from the gallbladder into the gastrointestinal tract.⁶ Furthermore, it can exceptionally cause obstruction of the main bile duct, inducing cholangitis.³

The diagnosis of hemocholecyst can be difficult and evaluation with imaging tests plays a crucial role. Ultrasound findings include gallbladder wall thickening and non-mobile intraluminal echogenic material,⁷ which is difficult to distinguish from gallbladder neoplasm or gangrenous cholecystitis.⁸ Few studies have evaluated the role of CT in the diagnosis of hematoma in the gallbladder. Hemorrhage inside the gallbladder is seen on CT as a high-density fluid and may demonstrate extravasation of the contrast in the lumen during the arterial phase.⁹ Eco-Doppler may help distinguish a clot from a neoplasm since the presence of flow within a mass usually indicates tumor neovascularization.¹⁰ ERCP can show

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