Journal of Education and Practice
ISSN 2222-1735 (Paper) ISSN 2222-288X (Online)
Vol.14, No.9, 2023

Right Hepatectomy (Réglée) for Liver Metastasis Post Pancreatic Adenocarcinoma – Case Report

Kolani Henri[1]* Xhelili Eljona[2] Vila Frenki[3] Haxhiu Asfloral[4] Masati Bledi[5] Braholli Eriol[6]
Çili Manser[7] Osmënaj Renato[8] Kananaj Ervin[9] Prendi Urana[10] Qosja Entela[11]
Thomanasto Aleksandër[12] Prendi Kristian[13] Sula Arentin[14]
1. Associate Professor, General Surgeon, "Mother Teresa" University Hospital, Tirana, Albania
2. General Surgeon, Kukës Regional Hospital, Kukës, Albania
3. General Surgeon, Memorial Hospital, Fier, Albania
4. General Surgeon, Lushnje County Hospital, Lushnje, Albania
5. General Surgeon, University Trauma Hospital, Tirana, Albania
* E-mail of the corresponding author: henri.kolani@yahoo.com

Abstract
Background
Metastatic tumors of the liver are the most common hepatic malignant disease, responsible for more than 95% of the total. The size and number of metastases of the liver varies considerably. They maintain the anatomo-pathologic features of the primary cancer, but often are complicated by central necrosis. Pancreatic tumors often metastasize to the liver because of venous drainage to the portal vein. In cases of this occurrence, the disease is considered to be at stage IV with minimal to no consideration for a surgical approach despite the late improvements in liver resection and more efficient chemotherapy. There is a severely limited number of studies for patients undergoing liver resection for liver metastases that arise after a surgical treatment of pancreatic adenocarcinoma. However, these studies, which take in consideration the surgical liver resection versus chemotherapy alone in patients with metachronous metastases of pancreatic cancer demonstrate a significantly longer survival rate.
Case presentation
The 65 y/o male patient was diagnosed one year prior to the current events with an adenocarcinoma of the pancreas tail, for which he underwent the surgical procedure of pancreatic tail resection and splenectomy. Ten months after the surgery he complains of fever and body temperature of 38 - 39°C. Despite taking antibiotics for over a month and a half he has no improvement. He is hospitalized in a febrile state, asthenic and pale skin and mucosa. Following an MRI the diagnosis leans towards a liver metastasis. A right réglée hepatectomy is performed. The patient tolerated the procedure well and was discharged in good health.
Discussion
Determining the amount of liver parenchyma to be removed is an important decision. Anatomic resections mostly include two or more hepatic segments, whereas non-anatomic resection involves the resection of the metastases with a margin of healthy tissue (segmentectomy). The decision concerning the extent of resection is more relevant for the post-operative chemotherapy in colorectal metastasis, where an effort is made to conserve as much as possible remnant liver tissue. A preoperative chemotherapy allows more patients to be considered resectable, but may damage hepatic function and increase the risk of post-operative liver insufficiency.
Conclusion
In conclusion, hepatic resection for metastatic non-colorectal non-neuroendocrine tumors is safe and is linked to better outcomes in chosen patients. However primary tumour type and disease-free intervals seem to be important variables. Sometimes, hepatic resection may be the only option offering a potential cure, so it should be considered in some patients with liver metastases of non-colorectal non-neuroendocrine tumors.
Keywords: General Surgery, Right Hepatectomy, Liver Metastasis, Pancreatic Adenocarcinoma.
DOI: 10.7176/JEP/14-9-07
Publication date: March 31st 2023

1. Introduction

Pancreatic adenocarcinoma remains one of the deadliest tumors, with an increasing incidence over the last decades. Considering the aggressive nature of this type of cancer, its dull, non-specific and late onset clinical signs increase its morbidity and mortality potential. Treatment options are limited to radiation, electrocorporation, chemotherapy, immunotherapy and surgery.

What constitutes a resectable disease however, is a topic of controversy. Surgical approaches depend on tumor location, size, type and regional involvement. For instance, tumors of the right side may require pancreatico-duodenectomy (Whipple's procedure). On the other hand, distal pancreatectomy or pancreato-splenectomy is performed for left sided tumors. Some surgical teams may choose to apply neoadjuvant chemotherapy or chemoradiation to increase the prospect of a R0 resection.

There is a general consensus that better outcomes in terms of survivability and quality of life come from high volume institutions with experienced surgeons, oncologists, pathologists and other crucial staff.

1.1 Liver as a site of metastatic disease

Metastatic tumors of the liver are the most common hepatic malignant disease, responsible for more than 95% of the total. The most common primary sites are cancers of colon, pancreas, lung and breast. The size and number of metastases of the liver varies considerably. They maintain the anatomo-pathologic features of the primary cancer, but often are complicated by central necrosis.

Pancreatic tumors often metastasize to the liver (5% of non-colorectal, non-neuroendocrine tumors) because of venous drainage to the portal vein. In cases of this occurrence, the disease is considered to be at stage IV with minimal to no consideration for a surgical approach despite the late improvements in liver resection and more efficient chemotherapy.

There is a severely limited number of studies for patients undergoing liver resection for liver metastases that arise after a surgical treatment of pancreatic adenocarcinoma. However, these studies, which take in consideration the surgical liver resection versus chemotherapy alone in patients with metachronous metastases of pancreatic cancer demonstrate a significantly longer survival rate.

1.2 Hepatic resection

With the evolution of surgical technique and an improvement of treatment in intensive care, liver resection has changed, from risky labour-intensive to a routinely executed procedure.

Liver resection surgery is based primarily on its segmental anatomic composition. The liver is divided in eight functional segments. Anatomical left and right lobes are divided by the umbilical fissure, however the functional left and right portions are divided by the middle hepatic vein.

As such a right hepatectomy would include the resection of segments V – VIII. The surgical plane of resection (principal plane) can be demarcated anteriorly by the gallbladder lodge and posteriorly by the left side of the inferior vena cava.

A right lobectomy (right extended hepatectomy or right trisegmentectomy) would consist on the resection of the anatomical right lobe, including all segments lateral to the umbilical fissure (IV – VIII, w/wo I).

2. Case presentation

2.1 History of present illness

The patient is a 65 years old male with the following medical history and presentation:
He was diagnosed one year prior to the current events with an adenocarcinoma of the pancreas tail, for which he underwent the surgical procedure of pancreatic tail resection and splenectomy at a foreign country hospital.

Ten months after the surgery he complains of fever and body temperature of 38 - 39°C. Despite taking antibiotics for over a month and a half he has no improvement. He is hospitalized in a febrile state, asthenic and pale skin and mucosa.

An IV contrast CT suggests an abscess of Liver segment VII with irregular borders. At first a liver abscess is suspected, however, following an MRI the diagnosis leans more towards a liver metastasis.

The decision is made to perform an open surgery and patient consent was obtained. He is then adequately prepared for laparotomy.

2.2 Details of the surgical procedure

The procedure begins with a general endotracheal anaesthesia. A median incision was made and peritoneal access is gained. A thorough control of the abdominal cavity is performed. Except for the liver, all other organs appear normal macroscopically.

After the division of the triangular ligament, the liver is mobile and a 5 – 6 cm, firm structure is noted. It involves segments VI, VII and a part of VIIIth segment.

Next, we proceed with the hepatic hilum. After cholecystectomy, we continue dissecting the hepatic hilum, in which the *right hepatic artery* is separated with a rubber loop (Fig. 1). *Right hepatic artery* and *right hepatic duct* are cut and ligated. The *right branch of the portal vein* is evidenced, then it is cut and suture-ligated (Fig. 2,3).

We continue with the preparation of right liver lobe, separating it from *vena cava*, making sure to ligate separately the small vessels that drain in it. The *right suprahepatic vein* is cut and suture-ligated with 3-0 prolene (Fig. 4).

At this stage, we see the demarcation line of ischemic liver tissue that includes segments V, VI, VII and VIII. We begin the resection of the right hepatic lobe at the level of the IVth segment (Fig. 4). Right Réglée Hepatectomy is performed (Fig. 5).

The procedure ends with a T-tube (Kehr drain) inserted in the common bile duct, lavage and an abdominal

drain.

2.3 Post-operative period

The patient tolerated the procedure well, with uneventful post-operative course. He received a total of 2 whole blood transfusion units during the treatment. He was discharged in good health in the 10th day after surgery. The biopsy report confirms a metastasis of pancreatic adenocarcinoma.

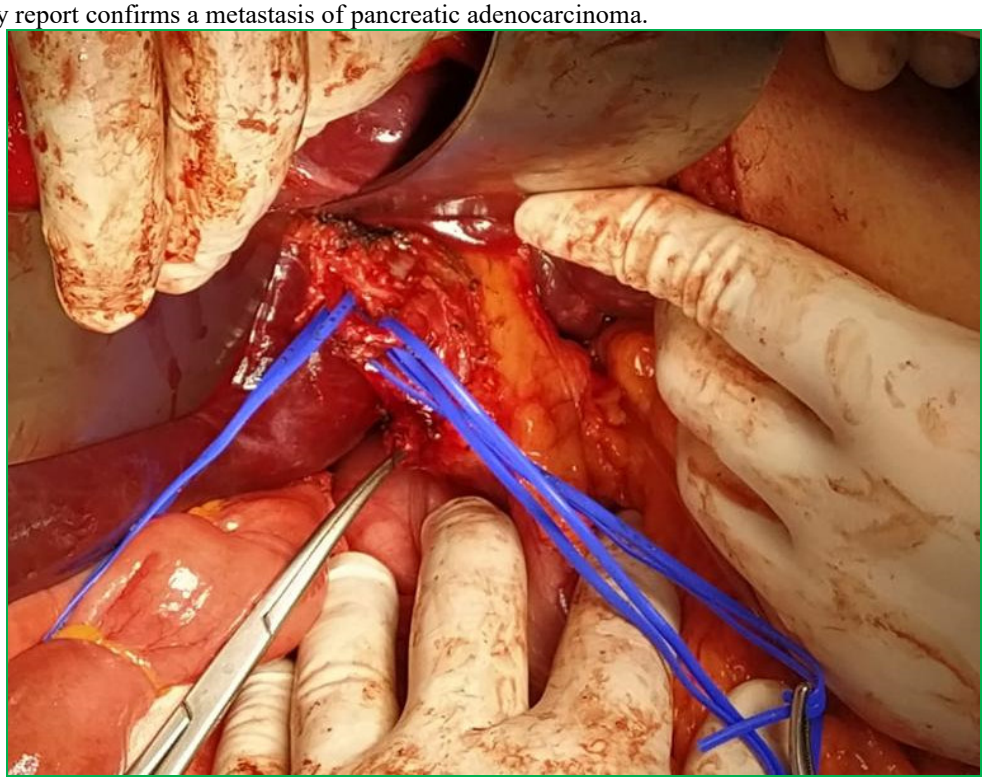

Figure 1. Right hepatic duct (over) and right hepatic artery (under) exposed.

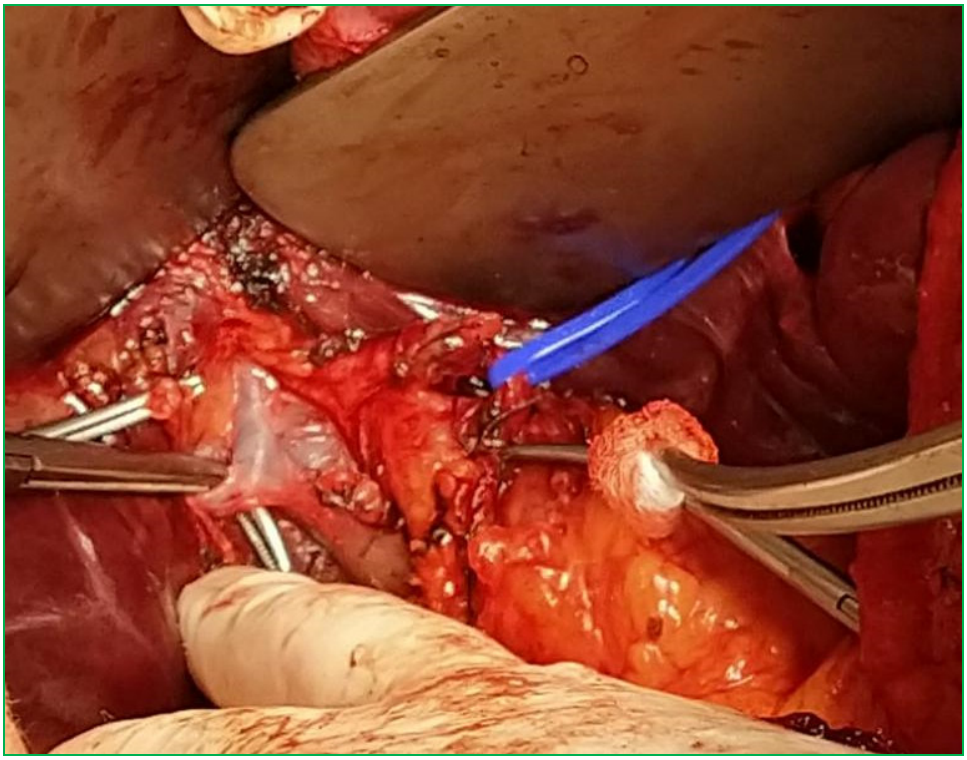

Figure 2. Right branch of portal vein divided.

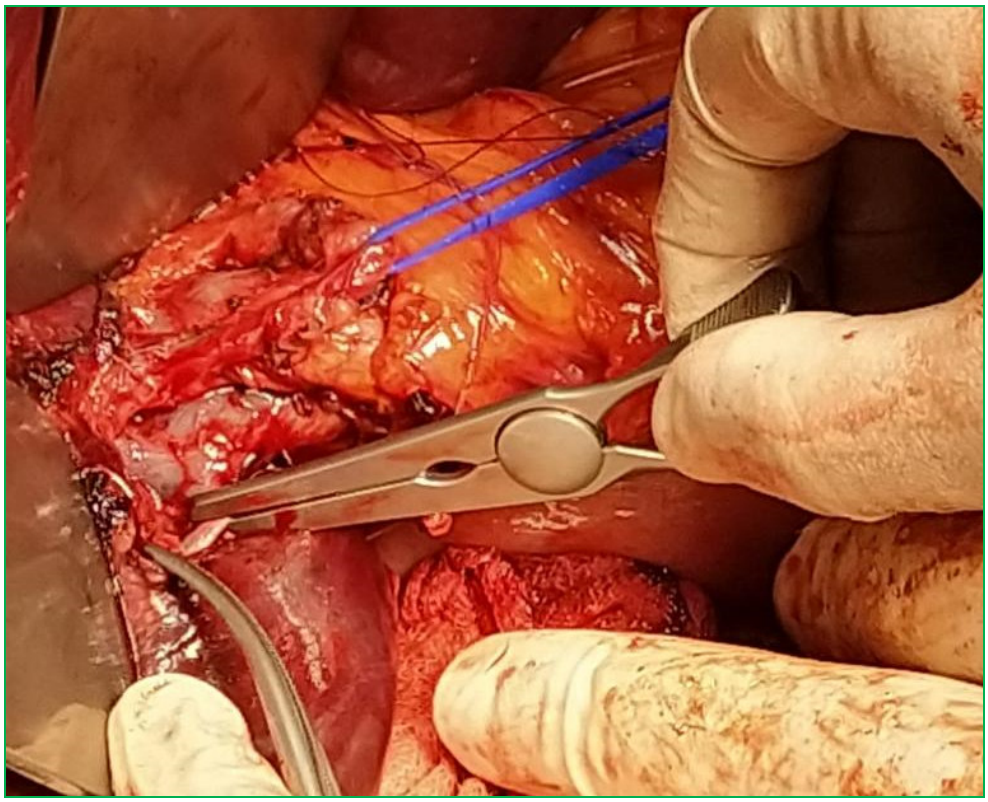

Figure 3. The right branch of the portal vein is clamped, then cut and suture-ligated.

Figure 4. Right suprahepatic vein divided (the inferior vena cava under the clamp).

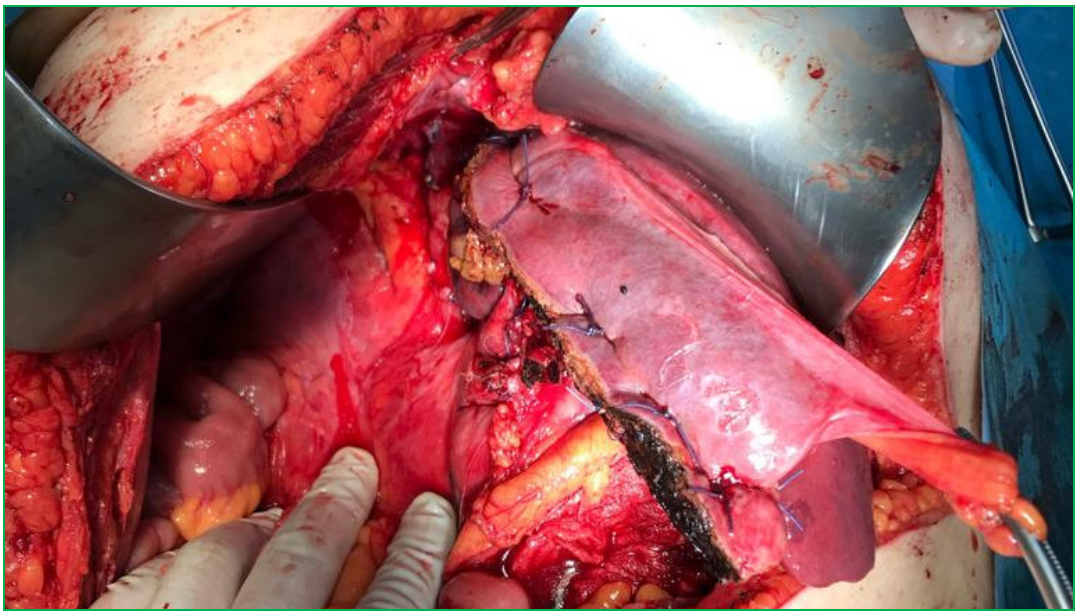

Figure 5. Liver remnant after right hepatectomy procedure is performed.

3. Discussion

Tumors of the pancreas and stomach are known to be a common neoplasm that disseminate liver metastases. Sometimes a biopsy report from liver metastases may reveal an unknown primary origin. Estimating the mitotic index in secondary liver formations is important for prognosis, by somewhat impeded by the heterogenicity within the tumor.

On a macroscopic scale, metastatic formations of the liver are mostly multiple in number, but may appear as solitary masses, nodules or infiltrative lesions that can imitate cirrhosis. Their size varies considerably. The most common aspects are grey nodules, sometimes with a central necrosis. They can be located anywhere on the liver parenchyma. Generally, metastatic lesions do conserve the pathologic features as in their primary location. For example, the feature of desmoplasia is common in metastatic adenocarcinomas from the pancreas, and may not be easily distinguished from cholangiocarcinoma.

During the last years, there has been a change in the standards regarding liver resection for metastases of non-colorectal cancer. It can be best justified with the improvements in neoadjuvant and adjuvant therapy and an increase in surgical expertise in liver resection and better perioperative management.

Recent studies suggest that liver resection for liver only pancreatic metastasis is feasible and may be a beneficial option in chosen patients.

Determining the amount of liver parenchyma to be removed is an important decision. Anatomic resections mostly include two or more hepatic segments, whereas non-anatomic resection involves the resection of the metastases with a margin of healthy tissue (segmentectomy). The decision concerning the extent of resection is more relevant for the post-operative chemotherapy in colorectal metastasis, where an effort is made to conserve as much as possible remnant liver tissue. A preoperative chemotherapy allows more patients to be considered resectable, but may damage hepatic function and increase the risk of post-operative liver insufficiency.

4. Conclusion

The ongoing success of liver surgery is dependent on improved resection techniques and also the advances in perioperative intensive care and anaesthesia. Today we have evolved to using a computer console and direct a robot to remove liver tumors. Technological advancements mostly, have dramatically improved the safety of liver surgery. The more surgeons perform these procedures with the new techniques we would have more data regarding which technique is better.

In conclusion, hepatic resection for metastatic non-colorectal non-neuroendocrine tumors is safe and is linked to better outcomes in chosen patients. However primary tumour type and disease-free intervals seem to be important variables. Sometimes, hepatic resection may be the only option offering a potential cure, so it should be considered in some patients with liver metastases of non-colorectal non-neuroendocrine tumors.

Conflict of interest

The author(s) declare(s) that there is no conflict of interest. The authors alone are responsible for the content and writing of the paper.

Financial disclosure
There is no financial support to this study.

Ethical aspect
Informed consent was obtained from all participants in the study and all procedures were conducted in accordance with the Declaration of Helsinki.

References
1. Aragon RJ, Solomon NL. Techniques of Hepatic Resection. J Gastrointest Oncol 2012;3:28-40.
2. Bismuth H. Surgical anatomy and anatomical surgery of the liver. World J Surg 1982;6:3-9.
3. Skandalakis JE, Skandalakis LJ, Skandalakis PN, Mirilas P. Hepatic surgical anatomy. Surg Clin North Am 2004;84:413-35, viii.
4. Schwarz C, Fitschek F, Primavesi F, Stättner S, et al. Metachronous hepatic resection for liver only pancreatic metastases. Surg Oncol. 2020 Dec;35:169-173.
5. Imai, Katsunori MD, PhD, FACSa; Margonis, Georgios A. MD, et al. Liver metastases from pancreatic ductal adenocarcinoma: is there a place for surgery in the modern era?. Journal of Pancreatology 3(2):p 81-85, June 2020.
6. D.P. Ryan, T.S. Hong, N. Bardeesy, Pancreatic adenocarcinoma, N. Engl. J. Med. 371 (22) (2014) 2140–2141.
7. M.H. Katz, H. Wang, J.B. Fleming, C.C. Sun, R.F. Hwang, R.A. Wolff, et al., Longterm survival after multidisciplinary management of resected pancreatic adenocarcinoma, Ann. Surg Oncol. 16 (4) (2009) 836–847.
8. C. Schwarz, K. Kaczirek, M. Bodingbauer, Liver resection for non-colorectal metastases, Eur. Surg. 50 (3) (2018) 113–116.
9. ImaiK,MargonisGA,Wang J,WolfgangCL, Baba H, Weiss MJ. Liver metastases from pancreatic ductal adenocarcinoma: is there a place for surgery in the modern era?. J Pancreatol 2020;3:81–85.
10. Weitz J, et al: Partial hepatectomy for metastases from noncolorectal, nonneuroendocrine carcinoma. Ann Surg 241(2):269-276, 2004.
11. Fitzgerald TL, et al: The benefits of liver resection for non-colorectal, non-neuroendocrine liver metastases: a systematic review, Langenbecks Arch Surg 399(8):989–1000, 2014.
12. Martel G, et al: Liver resection for non-colorectal, non-carcinoid, nonsarcoma metastases: a multicenter study, PLoS ONE 10(3):e0120569, 2015.