


CASE REPORT

Usefulness of intraoperative contrast-enhanced ultrasonography in laparoscopic enucleation of small pancreatic metastases from renal cell carcinoma: A case report

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Abstract

Pancreatic metastasis from renal cell carcinoma (RCC) is relatively rare. Surgical resection of the lesion is recommended if no residual tumor remains. Although there is no clear standard for surgical procedures, enucleation can be considered for small lesions. Lesion identification is important for enucleation, and contrast-enhanced ultrasound which takes advantage of the characteristics of hypervascular lesions was useful in a 68-year-old woman who underwent a left nephrectomy for RCC 11 years ago that was pathologically diagnosed as clear cell carcinoma. Recent computed tomography checkup showed a hypervascular tumor of 6 mm in the uncinate process and 10 mm in the pancreatic tail. Endoscopic ultrasonography-guided fine-needle aspiration was performed for the tail lesion, a diagnosis of clear cell carcinoma was made, and laparoscopic enucleation of the pancreatic tumors was performed aided by intraoperative contrast-enhanced ultrasound. The postoperative course was uneventful, and no pancreatic fistula occurred.

KEYWORDS

intraoperative contrast-enhanced ultrasonography, laparoscopic enucleation, pancreatic metastasis from renal cell carcinoma

1 | INTRODUCTION

Renal cell carcinoma (RCC) is a common malignant tumor in the kidney. Approximately 25% of RCCs are diagnosed as having distant metastasis, and approximately 25% metastasize after nephrectomy. Several

retrospective comparative studies reported that surgical resection of pancreatic metastases from RCC can prolong overall survival.¹ We present a patient with laparoscopic enucleation of two small pancreatic metastases from RCC in the uncinate process (UP) and pancreatic tail (Pt). Intraoperative contrast-enhanced ultrasonography

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(CEUS) was useful for identifying the small intra-pancreatic lesion, which was essential for completing safe and reliable enucleation.

2 | CASE PRESENTATION

A 68-year-old woman underwent left nephrectomy for RCC 11 years ago which was pathologically diagnosed as clear cell carcinoma. Abdominal enhanced computed tomography (CT) at a recent periodic checkup showed a hypervascular tumor of 6 mm in the UP and 10 mm in the Pt (Figure 1A,B). As shown in Figure 1C, an image reconstructed by SYNAPSE VINCENT® (Fujifilm Global) shows the metastatic lesions in the UP and the Pt and the relationship of each mass to the surrounding structures. Notably, the lesions in the UP were found on the right dorsal side of the superior mesenteric vein (SMV), and inferior pancreaticoduodenal artery was running nearby. Endoscopic ultrasonography (EUS) revealed an 8.4 mm

hypoechoic mass with capsule formation and high contrast effect by perflubutane (Sonazoid®) in the Pt and a 8.9 mm hypoechoic mass in the UP. EUS-guided fine-needle biopsy (FNB) with a 22-gage Acquire™ (Boston Scientific Japan, Tokyo, Japan) was performed at the Pt mass for histologic confirmation. However, EUS-FNB was not performed at the UP mass since the main pancreatic duct was visualized in the puncture route.

Questions regarding treatment strategy were raised. First: should she undergo standard pancreatectomy with lymph node dissection, total pancreatectomy, or enucleation for the small lesions? Second: could the intra-pancreatic lesions be identified intraoperatively? We considered total pancreatectomy to be too highly invasive because the frequency of peripancreatic lymph node metastases in pancreatic metastases from RCC is controversial in previous reports.²⁻⁶ However, enucleation requires that the lesions could be identified intraoperatively. With the informed consent of the patient, we planned to perform intraoperative CEUS

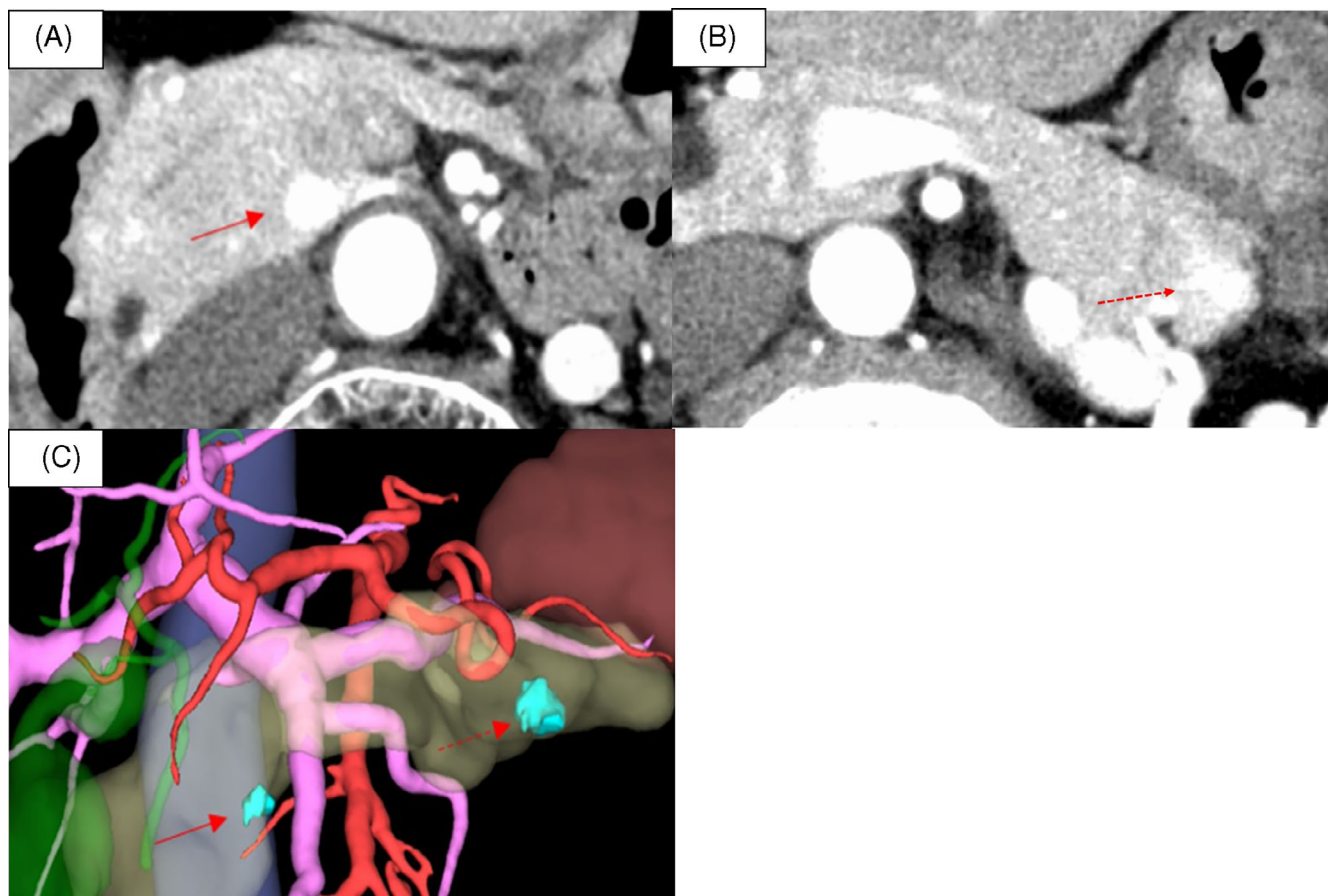


FIGURE 1 Computed tomography image of the pancreas shows a hypervascular mass measuring 6 mm in the uncinate process (A: red arrow) and 10 mm in the pancreatic tail (B: dashed arrow). An image reconstructed by SYNAPSE VINCENT® (Fujifilm Global) shows the metastatic lesions in the uncinate process (arrow) and the tail (dashed arrow) of the pancreas and the relationship of each mass to the surrounding structures (C)

and laparoscopic enucleation of the two lesions if they could be identified.

The operation began with insertion of a sub-umbilical 12-mm port. Then, four ports were inserted in the epigastrium under direct vision. The hepatic flexure was mobilized, and the gastrocolic ligament was opened, allowing entrance into the greater sac. The gastrocolic trunk was divided, and vessel loops were placed around the SMV. The UP of the pancreas was exposed, but the known lesion in the UP could be identified by observation from the surface (Figure 2). The lesion was identified using intraoperative CEUS (Figure 3), which confirmed a strongly enhanced tumor without extension into the portal vein or bile ducts. Enucleation was completed with a Harmonic® scalpel. Enucleation of the Pt lesion was similarly performed after confirming with intraoperative US that the metastatic tumor was 5 mm away from the main pancreatic

duct. The incision was closed after inserting two Blake drains around the defect spaces in the UP and Pt. Total operation time was 458 min, and estimated blood loss was small.

The patient's postoperative course was uneventful and she was discharged on postoperative day 6. Although diagnosed as having a pancreatic fistula based on the International Study Group of Postoperative Pancreatic Fistula,⁷ she could be managed conservatively with no infectious symptoms resulting from biochemical leakage. The resected UP and Pt specimens revealed expansive lesions with capsule formation of 5 and 12 mm in size, respectively (Figure 4). Histology revealed clear cell renal carcinoma and R0 surgery. There was no extracapsular invasion or lymphovascular invasion. There was no evidence of residual tumor or lymph node metastasis on abdominal enhanced CT at 6 months postoperative follow-up.

FIGURE 2 Intraoperative photograph. Laparoscopic enucleation was performed, and the uncinated process of the pancreas and the surrounding vessels (superior mesenteric vein: SMV; superior mesenteric artery: SMA; inferior pancreaticoduodenal artery: IPDA) are exposed but the known lesion in the uncinated process could be identified by observation from the surface

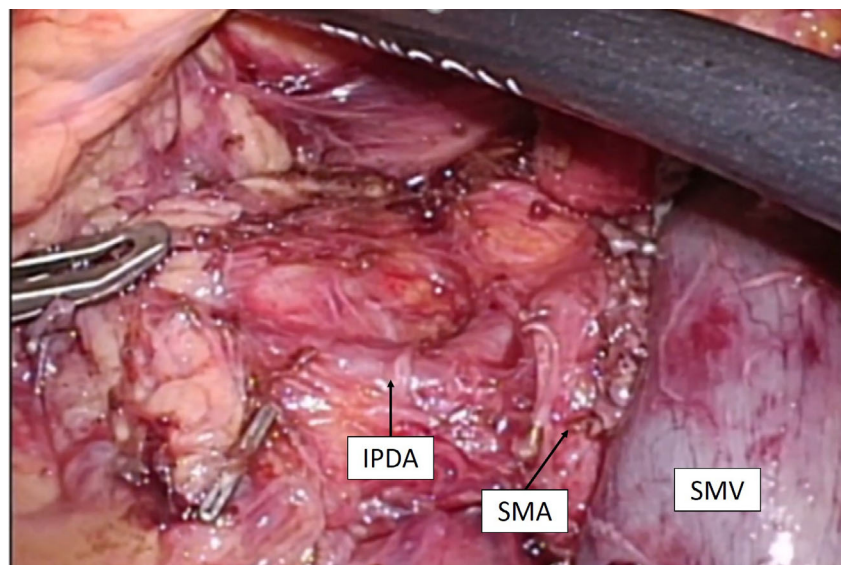
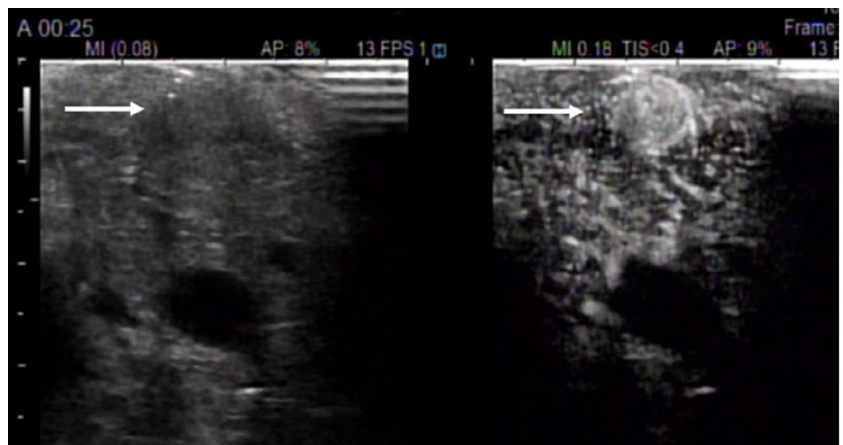


FIGURE 3 Intraoperative contrast-enhanced ultrasound with perflubutane (Sonazoid®) apparently identifies the intrapancreatic small metastasis (arrow) from renal cell carcinoma



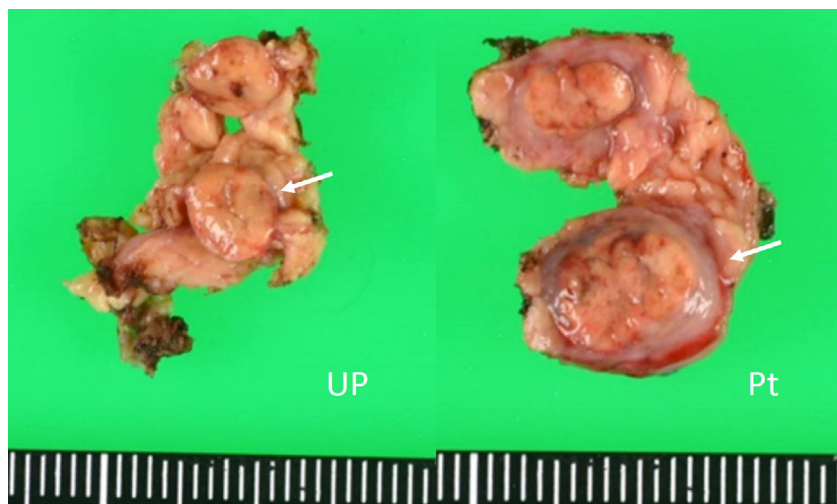


FIGURE 4 The resected uncinated process (UP) and pancreatic specimens revealed expansive lesions with capsule formation of 5 and 12 mm in size, respectively. Pt: pancreatic tail

3 | DISCUSSION

RCC metastasizes to lung in 57.7%, bone in 49.3%, skin in 11.3%, liver in 8.4%, and pancreas in only 2.8% of cases.⁸ Pancreatic metastases are often recognized in the terminal phase of malignant tumors and are rarely targets of surgical treatment aimed at long-term prognosis. However, resection can provide a sufficient prognosis for pancreatic metastasis from RCC. Tanis et al⁹ reported 5-year overall survival of 72.6% after resection of pancreatic metastases from RCC, clearly better than the 14% rate in non-resected cases.

Previous reports show that standard pancreatectomy with lymph node dissection is selected in most cases of pancreatic metastasis from RCC.¹ However, atypical resections aimed at preservation, such as enucleation, were limited. Standard pancreatectomy is advantageous in that curability may be enhanced by dissecting the lymph nodes around the pancreas and ensuring a sufficient margin from the lesion. Importantly, when performing surgery for metastatic lesions, many patients will likely be elderly as this disease frequently shows late recurrence. Thus, options for less invasive surgery are important, but, in fact, we could find no similar case reports of patients treated with laparoscopic enucleation in our search.

Enucleation as a less invasive surgery for pancreatic metastasis of RCC requires the resolution of two issues: (1) the difficulty in identifying small lesions intraoperatively and removing them without any residual tumor; and (2) the possible decrease in curability by omitting lymph node dissection. The ability to clearly reveal the UP lesion using intraoperative CEUS was of great help in ensuring successful enucleation. As structures such as duodenum, superior mesenteric artery and vein around the UP need to be preserved, intraoperative

CEUS helped minimize detachment to prevent injury of these structures. This is an option to consider when performing enucleation for pancreatic metastasis from RCC, especially a UP lesion.

The significance of lymph node dissection for pancreatic metastasis of RCC remains controversial. Previous case series reported the positive rates of lymph node metastasis from RCC around the pancreas of 3%–15%,^{2–6} and the reports' conclusions were divided between recommending lymph node dissection and considering it unnecessary. Recently, Hirashita et al reported meta-analyses of treatment for pancreatic metastasis from RCC, in which limited resection was not inferior to radical resection in terms of complications and prognosis.¹⁰ However, it is difficult to draw a definitive conclusion as to the appropriate surgical procedure because of the low prevalence of this disease. Nevertheless, it is necessary to provide sufficient information to the patient regarding the advantages and disadvantages of each surgical procedure.

4 | CONCLUSION

Laparoscopic enucleation aided by intraoperative CEUS was safely performed for small pancreatic metastases from RCC.

ACKNOWLEDGMENTS

Not applicable.

CONFLICT OF INTEREST

The authors have no conflicts of interest to declare.

AUTHORS CONTRIBUTIONS

All authors were involved in the management of the patient and in the conception of the manuscript. KK

drafted the case report. All authors read and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

ETHICS STATEMENT

We wrote this case report in accordance with the Declaration of Helsinki and the Ethical Committee of University of Miyazaki Faculty of Medicine.

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review from the Editor-in-Chief of the journal.

DATA AVAILABILITY STATEMENT

This manuscript describes a case report. The majority of the data is contained within the manuscript itself.

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