

# Central pancreatectomy - an oncologically safe option to treat metastases of other neoplasms of the mid-portion of the pancreas?

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**Backgrounds/Aims:** Standard pancreatic resections are the current approach for patients with resectable, isolated pancreatic metastases of other neoplasms. However, the role of parenchyma-sparing pancreatectomies for such pathology is poorly investigated. The aim of the present study is to assess the oncological safety of central pancreatectomies for pancreatic metastases of other neoplasms. **Methods:** A literature search was performed in order to identify patients with central pancreatectomies for pancreatic metastases of other neoplasms. The available data of the patients were extracted and analyzed. **Results:** A total number of 16 patients were identified. Renal carcinoma was the primary origin for the largest number of these patients (11 patients - 69%). The mean overall survival time was 109 months, with 1-, 5- and 10-year survival rates of 100%, 84%, and 60%, respectively. **Conclusions:** Although not often performed, a central pancreatectomy appears to be an oncologically safe surgical procedure in select patients with pancreatic metastases of other neoplasms of the pancreatic body and isthmus. However, no definitive conclusions should be drawn, based on the data provided in the present study, due to the limited number and heterogeneity of the patients. (*Ann Hepatobiliary Pancreat Surg* 2017;21:76-79)

**Key Words:** Central pancreatectomy; Pancreatic metastases; Survival

## INTRODUCTION

A central pancreatectomy is a conservative surgical procedure that preserves the spleen and pancreatic parenchyma. It was proposed as alternative to distal/extended distal pancreatectomies.<sup>1,2</sup> The advantage of a central pancreatectomy is better preservation of both endocrine and exocrine pancreatic function, compared with a distal pancreatectomy,<sup>2</sup> an extended distal pancreatectomy,<sup>3</sup> and a spleen-preserving distal pancreatectomy.<sup>4</sup> The major drawbacks of a central pancreatectomy are high morbidity and non-nil mortality rates,<sup>1,5,6</sup> particularly in aged and obese patients with diabetes.<sup>7</sup> Pancreatic fistulae represent the main source of morbidity after a central pancreatectomy, being reported in up to 63% of the patients.<sup>1</sup>

The majority of the reported central pancreatectomies worldwide were performed for a benign/low-grade malignant tumor of the mid-portion of the pancreas.<sup>1,2</sup> Thus, cystadenomas and pancreatic neuroendocrine tumors were

the main indications for a central pancreatectomy.<sup>1,2</sup> However, the role of a central pancreatectomy for pancreatic malignancies, such as pancreatic metastases of other neoplasms, is poorly investigated.

The aim of the present study is to assess the oncological safety of central pancreatectomies for pancreatic metastases of other neoplasms, based on data reported in the literature.

## MATERIALS AND METHODS

### Patients

Patients were extracted from articles identified by electronic searching in PubMed-Medline and Google Scholar and by reviewing the references of the identified articles. The searched words were “central pancreatectomy”, “medial pancreatectomy”, “median pancreatectomy”, “meso-pancreatectomy”, “middle pancreatectomy”, “segmental resection of the pancreas”, “middle segmental resection of the

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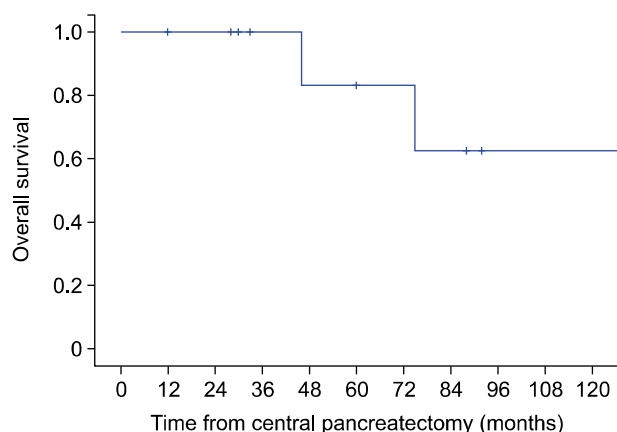
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**Table 1.** The long-term outcomes of the patients with a central pancreatectomy for pancreatic metastases of other neoplasms reported in the literature

Reference	Primary neoplasm	Long-term outcomes
de Clavière, 2002 <sup>9</sup>	Renal carcinoma	Pancreatic, liver and lung recurrence at 58 months; DOD at 75 months
Sauvanet, 2002 <sup>15</sup>	Renal carcinoma	Alive with pancreatic recurrence at 60 months
Müller, 2006 <sup>14</sup>	Renal carcinoma	Alive with no recurrence at 33 months
Crippa, 2007 <sup>8</sup>	Renal carcinoma	Postoperative death due to hemorrhage (day 10)
	Melanoma	Alive with no recurrence at 137 months
Dumitraşcu, 2008, <sup>12</sup> updated	Melanoma	Pancreatic and peritoneal recurrence at 30 months; DOD at 46 months
Hirono, 2009 <sup>13</sup>	Renal carcinoma	NA
Deguchi, 2009 <sup>10</sup>	Renal carcinoma	Alive with no recurrence at 12 months
Cataldegirmen, 2010 <sup>3</sup>	Renal carcinoma	NA
	Renal carcinoma	NA
	Breast carcinoma	NA
Shikano, 2010 <sup>16</sup>	Hemangiopericytoma	NA
Goudard, 2014 <sup>6</sup>	Renal carcinoma	Pancreatic recurrence at 58 months - distal spleno-pancreatectomy; alive without recurrence at 92 months
	Renal carcinoma	Pancreatic recurrence at 59 months - distal spleno-pancreatectomy; alive without recurrence at 88 months
Dumitrascu, 2015 <sup>11</sup>	Colon carcinoma	Peritoneal recurrence at 18 months; DOD at 28 months

DOD, died of the disease; NA, not available



**Fig. 1.** The Kaplan-Meier overall survival curve in patients with central pancreatectomies for pancreatic metastases of other neoplasms.

pancreas”, “intermediate pancreatectomy”, and “isthmectomy”. No language restrictions were made. The available survival data of patients with a central pancreatectomy for metastases of other neoplasms were extracted. The study was approved by the Ethics Committee at our institution.

#### Statistical analysis

Statistical analysis was performed with SPSS (Statistical Packages for Social Sciences; SPSS Inc.; Chicago, IL, USA), version 17.0 software. The mean overall survival

time was estimated using the Kaplan-Meier curve.

## RESULTS

A total number of 16 patients with central pancreatectomies for pancreatic metastases of other neoplasms were identified worldwide,<sup>3,6,8-16</sup> as shown in Table 1. Renal carcinoma was the primary origin for the largest number of patients (11 patients - 69%). The mean overall survival time of the patients was 109 months, with 1-, 5- and 10-year survival rates of 100%, 84%, and 60%, respectively (Fig. 1).

## DISCUSSION

Isolated pancreatic metastases of other neoplasms represent an uncommon pathology and accounts for 2%-5% of all pancreatic malignancies.<sup>17,18</sup> Thus, the reported series includes a relatively small number of patients;<sup>18-21</sup> with most of the patients having had a renal carcinoma as the primary tumor,<sup>17,18,21</sup> as was the case in the present cohort of patients. Furthermore, pancreatic metastases of other neoplasms represent only 0.01%-1.8% of the indications for pancreatic resections.<sup>22,23</sup>

Given the rarity of such pathology, an evidence-based

surgical approach is not available. Standard pancreatic resections (i.e., pancreaticoduodenectomy, distal spleno-pancreatectomy, total pancreatectomy) are the common approaches for patients with a resectable disease.<sup>17,18,21</sup> However, it is not clear if pancreatic metastases of other neoplasms should share the same oncological principles as ductal adenocarcinoma of the pancreas. Negative resection margins can be achieved in some patients with central pancreatectomies for pancreatic metastases of other neoplasms but a standard lymph node dissection cannot be accomplished with this conservative surgical procedure.

The role of a systematic, loco-regional lymph node dissection for pancreatic metastases of other neoplasms remains controversial. Some studies did not find any survival differences between the standard pancreatic resections and atypical pancreatectomies for pancreatic metastases of other neoplasms and, thus, these studies do not support the routine use of systematic, loco-regional lymph node dissection.<sup>22,24,25</sup> However, there is a study showing that atypical pancreatic resections are associated with high recurrence rates.<sup>26</sup> Nevertheless, there are also studies that identified metastatic lymph nodes in patients with standard pancreatectomies for isolated pancreatic metastases of other neoplasms in up to 35% of the cases.<sup>20,22,27</sup>

After standard pancreatic resections for isolated pancreatic metastases of other neoplasms the reported median/mean survival time varied between 19 to 119 months, with 5-year survival rates between 36.2% and 88%.<sup>17-21,23</sup> These results are comparable with those reported in the present study. Consequently, a central pancreatectomy appears to have similar oncological outcomes to standard pancreatic resections.

Pancreatic metastases of other neoplasms are widely considered to be a part of a systemic oncological disease.<sup>18</sup> These patients are likely to receive chemotherapy. Chemotherapy in a patient with diabetes can be challenging because some chemotherapeutic agents can lead to or exacerbate potential renal, cardiac or neuropathic complications.<sup>28</sup> Thus, sparing the pancreatic parenchyma represents an important issue in these patients and has the potential to mitigate the complications of chemotherapy by reducing the risk of postoperative diabetes.<sup>21,24</sup> It is widely accepted that a central pancreatectomy, of all of the pancreatic resections, has the lowest potential of developing postoperative diabetes.<sup>1,2</sup>

Nevertheless, corticosteroids, that are often used to prevent chemotherapy-induced nausea and vomiting, may also induce diabetes in approximately 20% of the non-diabetic patients.<sup>28,29</sup>

The results of this study should be regarded with caution because there are important limitations. The study includes a small number of patients, coming from many surgical centers, with different approaches and criteria selection, for a parenchyma-sparing surgical procedure. Furthermore, the group included patients with different primary tumors, and no data are available for the adjuvant/neoadjuvant treatments. It is worth mentioning that a recent multicenter study has shown no survival benefit of pancreatectomies for isolated metastases from renal carcinoma, compared with chemotherapy with tyrosine kinase inhibitors.<sup>30</sup>

In conclusion, although rarely performed, a central pancreatectomy appears to be an oncologically safe surgical procedure in select patients with pancreatic metastases of other neoplasms of the pancreatic body and isthmus. Sparing the pancreatic parenchyma represents an important issue in patients with such pathology because they are likely to receive chemotherapy. A conservative pancreatectomy has the potential to mitigate the complications of chemotherapy by reducing the risk of postoperative diabetes, which is the lowest after a central pancreatectomy, compared with standard pancreatic resections. However, no definitive conclusions should be drawn based on the data provided in the present study due to the limited number and heterogeneity of the patients.

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