

# Imaging of Pancreatic Neoplasms



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## KEYWORDS

- Pancreatic adenocarcinoma • Pancreatic neuroendocrine neoplasms • Imaging
- Cystic pancreatic neoplasms • Pancreatic neoplasms • Radiology

## KEY POINTS

- Adenocarcinoma of the pancreas has a high mortality rate. Imaging plays a critical role in determining patients who are surgically resectable.
- Pancreatic neuroendocrine neoplasms encompass diverse clinical entities. These neoplasms show distinctive patterns of spread, which is important to recognize on imaging.
- Pancreatic cysts are increasingly detected because of the increased utility of imaging. Recent updates to management need to be incorporated into the management of these patients.
- Imaging plays a central role in diagnosing and characterizing pancreatic neoplasms. Pre-operative high-quality imaging is essential in planning surgery.

## INTRODUCTION

Imaging is critical in the assessment of all pancreatic neoplasms. Pancreatic neoplasms can be divided into solid and cystic neoplasms. The most common solid neoplasm is pancreatic ductal adenocarcinoma (PDAC) accounting for 85% to 90% of all solid pancreatic neoplasms, and it is the fourth leading cause of cancer-related deaths.<sup>1</sup> PDAC is a diagnostic challenge in terms of early detection, imaging of exact extent of spread, disease response assessment, and postoperative follow-up because of the nonspecific symptoms associated with ductal adenocarcinoma in the early stages of the disease and because of the ill-defined appearance and infiltrative nature of the spread of the disease.<sup>2</sup> The treatment of ductal adenocarcinoma requires multidisciplinary planning so as to optimize the management of patients, especially in the selection of patients to undergo surgery.

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The authors have nothing to disclose.

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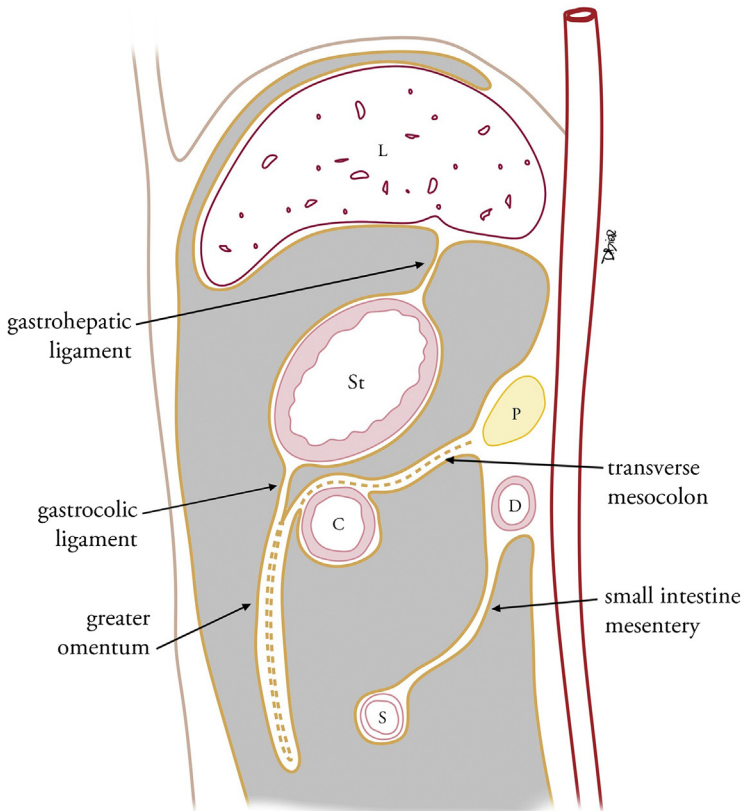
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The next most common solid neoplasm arising from the pancreas is the pancreatic neuroendocrine tumor (PanNET), which accounts for 5% to 10% of all pancreatic solid tumors. PanNETs are a diverse group of tumors and comprise both functional tumors and nonfunctional tumors. Functional tumors produce high levels of different hormones, and this leads to patients presenting with a hormone-related syndrome. On imaging, these tumors typically have a distinct appearance when compared with PDAC. These tumors tend to be well defined and hypervascular. The importance in correctly identifying these tumors is based on the different prognosis of PanNET when compared with PDAC.

Pancreatic cystic neoplasms are increasingly detected as incidental findings.<sup>3</sup> These neoplasms can vary from the benign serous cystadenoma to the premalignant or malignant mucinous neoplasms and intraductal papillary mucinous neoplasms (IPMN). Imaging plays an important role in the surveillance of these cystic neoplasms when they are small and in defining anatomy, additional lesions, and invasive features when they are larger.

## ANATOMY

The pancreas is a J-shaped retroperitoneal organ that is closely associated with peritoneal<sup>4</sup> ligaments (Fig. 1). There is a small portion of the tail of the pancreas that



**Fig. 1.** The relationship of the pancreas to the peritoneum. C, colon; D, duodenum; P, pancreas; S, small bowel; St, stomach.

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