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Guideline

Evidence-based Guideline on the Standardized Diagnostic Imaging Report for Pancreatic Solid Tumors in China

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Abstract

Pancreatic solid tumors encompass diverse pathological subtypes. Objective, accurate, and comprehensive imaging examinations and diagnostic reports are essential for preoperative staging, treatment planning, and prognostic evaluation. Currently, China lacks corresponding guidelines or consensus documents, leading to prominent issues including subjective diagnostic reports, incomplete descriptions, and inconsistent terminology. The present guideline was developed to standardize diagnostic imaging reporting of pancreatic solid tumors in China. Relevant domestic and international evidence on imaging examination techniques, key reporting elements, and diagnostic criteria was systematically reviewed and synthesized. This guideline was developed by a multidisciplinary expert panel through systematic evidence retrieval and appraisal, GRADE-based recommendation grading, modified Delphi consensus, and external review. A total of 20 evidence-based recommendations, 13 strong and 7 weak, were formulated, in aspects of imaging examination and diagnostic reporting standards, including the measurement of the tumor size of pancreatic solid tumors, assessment of the obstruction of the main pancreatic duct and common bile duct, definition, assessment, and clinical significance of pancreatic parenchymal atrophy, the assessment of obstructive acute pancreatitis, pseudocysts/retention cysts, and peripancreatic vessels, criteria for resectability, regional lymph node assessment, criteria for suspicious lymph nodes and descriptions of their specific location, and detection of hepatic and peritoneal metastases. Implementation of this guideline in clinical practice will help standardize the accuracy and consistency of diagnostic imaging reports for pancreatic solid tumors in China, thereby advancing standardized imaging diagnosis and informing clinical treatment decisions.

Keywords: Pancreatic solid tumors; Diagnostic imaging; Tomography, X-Ray computed; Magnetic resonance imaging; Endosonography; Practice guidelines as topic; Delphi technique; Evidence-based practice.

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Introduction

With advances in imaging technology, the detection rate of pancreatic solid tumors has increased annually. Pancreatic solid tumors represent a heterogeneous group of diseases, primarily including pancreatic ductal adenocarcinomas (PDAC), pancreatic neuroendocrine tumors (pNETs), pancreatic lymphoma, pancreatic metastases, pancreatic acinar cell carcinoma, among others. PDAC and pNETs are the most common pancreatic solid tumors, accounting for the majority of all pancreatic neoplasms.[1]

For both PDAC and pNETs, objective, accurate, and compre-

hensive imaging examinations and diagnostic reports are of paramount importance for preoperative staging, further clinical treatment decisions, and prognostic evaluation.[2]

Standardized imaging techniques and reporting are essential for accurate diagnosis and staging of pancreatic solid tumors. However, current free-text reports rely heavily on individual experience, resulting in significant subjectivity, incomplete descriptions, inconsistent terminology, and poor inter-institutional reproducibility. These limitations lead to discrepancies in disease severity assessment and therapeutic efficacy evaluation.[3]

Structured reporting templates for pancreatic cancer have been developed internationally, most notably the Society of Abdominal Radiology (SAR) and American Pancreatic Association consensus template for PDAC published in 2014,[4] as well as guidelines from the European Neuroendocrine Tumor Society for neuroendocrine tumors.[5–7] The current guideline builds upon these international frameworks while adapting them to the Chinese healthcare context. Key elements such as vascular involvement assessment, resectability criteria, and lymph node evaluation align with the SAR/American Pancreatic Association template,[4] particularly regarding the classification of tumor-vessel contact angles and the National Comprehensive Cancer Network (NCCN) resectability criteria.[8] However, this guideline expands upon international templates by incorporating additional assessment parameters specific to the Chinese clinical environment, including detailed criteria for pancreatic parenchymal atrophy (PPA)—partial pancreatic parenchymal atrophy (PPPA) and upstream pancreatic parenchymal atrophy (UPPA)—as well as recommendations for evaluating obstructive acute pancreatitis, which are particularly relevant for early detection in Chinese screening populations.

To address these challenges and standardize imaging diagnosis of pancreatic solid tumors in China, the National Clinical Research Center for Digestive Diseases (Shanghai), the Professional Committee of Pancreatic Diseases of the Chinese Medical Doctor Association, and the editorial board of the Chinese Journal of Pancreatic Diseases jointly initiated this guideline. Experts in radiology, internal medicine, surgery, oncology, pathology, evidence-based medicine, and related methodological fields were organized. Based on published literature and extensive expert consultation, employing a modified Delphi method through multiple rounds of voting and collective discussion, 20 recommendations were formulated focusing on imaging examination methods, report evaluation indicators, and standards.

The guideline drafting and revision were conducted by the Radiology Department of the First Affiliated Hospital of Naval Medical University. This guideline adopts the GRADE (Grading of Recommendations Assessment, Development and Evaluation) methodology to classify evidence quality into four levels: high (A), moderate (B), low (C), and very low (D), and recommendation strength into two levels: strong and weak.

Materials and methods

This guideline was developed in accordance with the World Health Organization (WHO) Handbook for Guideline Development,[9] referencing the Institute of Medicine definition of clinical practice guidelines,[10] the Chinese Medical Association's "Guiding Principles for Developing/Revising Clinical Practice Guidelines (2022 Edition)",[11] and the WHO International Classification of Diseases (11th edition).[12]

A systematic evaluation and study of issues related to pancreatic solid tumor imaging were conducted, referencing guideline appraisal tools such as AGREE IIand reporting standards including RIGHT,[13,14] to formulate relevant recommendations. The technical roadmap is illustrated in Figure 1.

Guideline initiating and supporting organizations

The National Clinical Research Center for Digestive Diseases (Shanghai), the Professional Committee of Pancreatic Diseases of the Chinese Medical Doctor Association, and the editorial board of the Chinese Journal of Pancreatic Diseases are the initiators of this guideline. The Radiology Department of the First Affiliated Hospital of Naval Medical University is the primary implementing institution. Methodological support was provided by the GRADE China Center. The guideline has been registered on the International Practice Guidelines Registry Platform (http://www.guidelinesregistry.cn/), registration number REPAPE-2023CN473.

Guideline users and target population

The guideline is intended for Chinese-speaking radiologists, multidisciplinary pancreatic disease specialists, and related healthcare professionals. The target population comprises patients with pancreatic solid tumors.

Organizational structure of guideline development

The guideline development involved five main groups: chief experts, chief methodologists, guideline expert committee, external review panel, and guideline working group. Members included experts from radiology, internal medicine, surgery, oncology, pathology, evidence-based medicine, and related methodological fields.

It should be acknowledged that the majority of chief experts, guideline committee members, and working group members are from the First Affiliated Hospital of Naval Medical University, Shanghai, which served as the primary implementing institution. However, to mitigate potential institutional bias, we employed a rigorous modified Delphi process involving multiple rounds of anonymous voting, and convened an external review panel comprising 31 experts from 25 different institutions across China to provide independent evaluation and feedback on the recommendations.

Conflict of interest and disclosure

The guideline development process strictly adhered to WHO conflict of interest policies and ethical standards. All participants and invited experts and consultants completed conflict of interest declarations. Evaluations confirmed no direct conflicts of interest related to this guideline.

Selection and determination of key imaging issues for pancreatic solid tumor reporting

The working group systematically searched literature on imaging assessment of pancreatic solid tumors, including published guidelines, systematic reviews, and original studies, preliminarily identifying 20 imaging assessment questions. Two rounds of modified Delphi consultations with guideline experts were conducted for in-depth discussion. The imaging questions addressed in this guideline are summarized in Table 1.

Evidence retrieval

Systematic searches were conducted in four English databases: PubMed, Cochrane Library, Embase, and Web of Science; and five Chinese databases: Wanfang Data, China National Knowledge Infrastructure, Chinese Biomedical Literature Database, VIP,

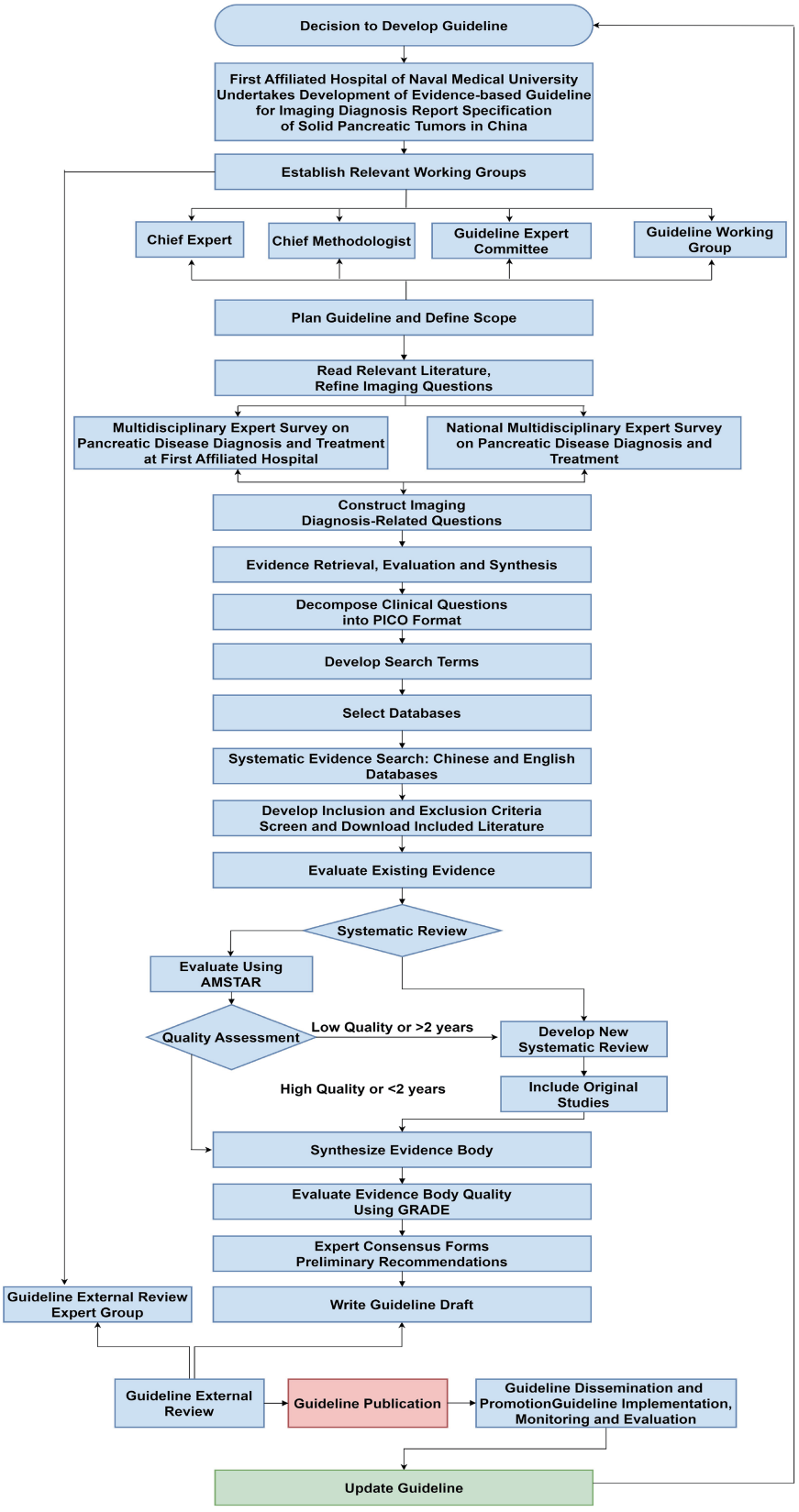

Fig. 1. Technical roadmap for guideline development. GRADE, Grading of Recommendations Assessment, Development and Evaluation.

Table 1. Imaging assessment questions for pancreatic solid tumors

1.What is the preferred imaging modality for patients suspected of pancreatic solid lesions?
2.Should tumor size be measured by CT or MRI?
3.How should pancreatic solid tumor size be measured?
4.Is assessment of the morphology of the main pancreatic duct obstruction point necessary?
5.How should the main pancreatic duct diameter be measured?
6.How is main pancreatic duct dilatation defined?
7.Is assessment of the morphology of the common bile duct obstruction point necessary?
8.How should the common bile duct diameter be measured?
9.How is common bile duct dilatation defined?
10.How is pancreatic parenchymal atrophy defined and what is its clinical significance?
11.How should pancreatic parenchymal atrophy be accurately assessed?
12.Is evaluation of obstructive acute pancreatitis necessary?
13.Is assessment of pseudocysts/retention cysts necessary?
14.What is the preferred imaging modality for peripancreatic vascular assessment?
15.What are the key points in peripancreatic vascular evaluation?
16.What are the imaging criteria for resectability assessment?
17.What is the optimal imaging modality for regional lymph node evaluation?
18.What are the imaging criteria for suspicious lymph nodes?
19.Should suspicious lymph nodes be described with specific anatomical locations?
20.What is the preferred imaging modality for detecting hepatic and peritoneal metastases?

CT, computed tomography; MRI, magnetic resonance imaging.

and Yimai Tong. International clinical guideline websites searched included the National Guideline Clearinghouse, Scottish Intercollegiate Guidelines Network, WHO, and Guidelines International Network. The search cutoff date was December 31, 2023, with language limited to English and Chinese. Reference lists of included studies were also traced.

Evidence screening and extraction

For the 20 imaging assessment questions, 8 relevant guidelines, 12 meta-analyses, and a total of 111 other clinical trials, cohort studies, case-control studies, cross-sectional studies, case series, and case reports were included to provide evidence supporting recommendations. After establishing inclusion/exclusion criteria, the working group underwent comprehensive training. Evidence was collated based on expert selection and provided to the guideline expert committee. Literature search and data extraction were independently performed by two reviewers; discrepancies were resolved by discussion or third-party consultation.

Evidence quality assessment and grading

Methodological quality of systematic reviews/meta-analyses was assessed using AMSTAR (A Measurement Tool to Assess Systematic Reviews[15]; included guidelines were appraised with AGREE II regardless of publication date.[16] High-quality, relevant evidence was updated or newly synthesized by the working group. Risk of bias in randomized controlled trials was assessed using the Cochrane Risk of Bias Tool.[17]

The GRADE approach was applied to grade the body of evidence and recommendations.[18,19] Evidence quality was classified into four levels: high (A), moderate (B), low (C), and very low (D). Recommendations were categorized as strong (1) or weak (2).

Formation of guideline recommendations

The working group synthesized domestic and international evidence, identified key issues and terminology in imaging reports, and classified evidence levels and recommendation grades to draft the first questionnaire. Using a modified Delphi method, expert panel members rated each recommendation on a 5-point Likert scale (strongly agree, mostly agree, partially agree, mostly disagree, strongly disagree). Recommendations with ≥75% of experts responding "strongly agree" and/or "mostly agree" were accepted as appropriate clinical practice guideline statements. Ultimately, 20 recommendations with supporting rationales were formulated.

External review

Following consensus on recommendations, the draft guideline was submitted to an external review panel comprising radiology experts, clinical specialists, and guideline methodologists for evaluation.

Funding sources and role

Funding was primarily provided by the National Natural Science Foundation of China, Shanghai Science and Technology Commission Innovation Action Plan, and Shanghai Shenkang Clinical Research Project. These funds covered research expenses, materials, and project organization related to guideline development.

Guideline dissemination

After official release, dissemination will be conducted via: (1)

multimedia promotion and application; (2) presentations at relevant academic conferences; (3) publication in related journals; (4) training sessions for radiologists and clinicians involved in pancreatic disease diagnosis and treatment.

Results

This guideline focuses on pancreatic solid tumors, primarily pancreatic cancer and pNETs, with ICD-11 codes C25.901 and D37.703, respectively. It addresses two major aspects: selection of imaging examination techniques and evaluation of imaging reports. Following evidence-based methodology, 20 recommendations were developed.

Imaging examination

What is the preferred imaging modality for patients suspected of pancreatic solid lesions?

Recommendation 1: Contrast-enhanced pancreatic computed tomography (CT) is the preferred modality for diagnosing pancreatic solid tumors. When CT cannot definitively characterize the primary pancreatic lesion or hepatic metastases, further evaluation with non-contrast and contrast-enhanced magnetic resonance imaging (MRI) is recommended to assist diagnosis.
Evidence quality: A; Recommendation strength: Strong

Pancreatic contrast-enhanced CT scanning offers excellent spatial and temporal resolution, a wide scanning range, and clear visualization of biliary and vascular anatomy, as well as the relationship between pancreatic masses and surrounding vessels. It enables assessment of local tumor invasion and congenital anatomical variations of vessels and bile ducts,[20] and has become the primary imaging modality for preoperative evaluation of pancreatic solid tumors.[21]

Preoperative diagnosis of local tumor invasion aids clinical treatment planning; accurate preoperative assessment of congenital vascular and biliary anatomical variations helps reduce postoperative complications caused by intraoperative injury.[22] However, CT imaging has drawbacks including radiation exposure and difficulty in clearly delineating lesions when their enhancement is similar to surrounding tissues.[23]

MRI, although inferior to CT in spatial resolution, provides superior soft tissue contrast. Multiparametric and multisequence imaging offers valuable diagnostic information for pancreatic solid lesions, primarily detecting isoattenuating pancreatic lesions on CT or better characterizing indeterminate hepatic lesions found on CT.[23]

Several studies suggest that MRI has comparable sensitivity and specificity to CT in diagnosing pancreatic solid lesions and assessing vascular invasion[24–28]; a meta-analysis including seven studies reported pooled sensitivities for CT and MRI in diagnosing pancreatic solid lesions of 89% (95% confidence interval (CI), CT: 0.82–0.94; MRI: 0.81–0.91), with CT specificity at 90% (95% CI, 0.80–0.95) and MRI specificity at 89% (95% CI, 0.74–0.95)[25]; for vascular involvement assessment, CT sensitivity was 68% (95% CI, 0.55–0.79) and MRI sensitivity 62% (95% CI, 0.48–0.74), with CT specificity of 97% (95% CI, 0.94–0.98) and MRI specificity of 96% (95% CI, 0.93–0.98).[25]

Positron emission tomography-computed tomography (PET-CT) and endoscopic ultrasound-guided fine needle aspiration (EUS-FNA) provide additional metabolic and histological information beyond CT and MRI. A meta-analysis of four studies including 206 patients found that in clinically suspected pancreatic cancer cases undetected by CT, EUS-FNA sensitivity was 85% (95% CI, 0.69–0.94), specificity 58% (95% CI, 0.40–0.74), and accuracy 75% (95% CI, 0.67–0.82).[29]

Another meta-analysis reported that PET/CT has higher specificity than CT for M staging (100% [95% CI, 0.95–1.00] vs. 91% [95% CI, 0.81–0.97]), but current evidence does not support replacing CT or MRI with EUS-FNA or PET-CT.[25]

Moreover, EUS-FNA is invasive and operator-dependent. Therefore, CT's advantages—widespread availability, convenience, time efficiency, and high spatial resolution—make it the preferred initial diagnostic modality for pancreatic solid tumors,[5,8,30,31] with recommendations for centers equipped to perform combined CT and MRI assessments to further improve diagnostic accuracy.[30,32]

Diagnostic reporting standards

The diagnostic report for pancreatic solid tumors should include five key components[6,7,33]: tumor assessment, evaluation of surrounding vessels, regional lymph node assessment, invasion of adjacent organs and distant metastases, and other abnormal imaging findings within the scan range.

Should tumor size of pancreatic solid tumors be measured on CT or MRI?

Recommendation 2: Measurement of the maximum tumor diameter on either CT or MRI images is recommended.
Evidence quality: C; Recommendation strength: Weak

Tumor size determines the T stage, which is a strong prognostic factor for survival in various malignancies including pancreatic cancer.[34,35] However, T staging is pathological, and preoperative prediction relies on imaging. Due to irregular tumor morphology, measuring the maximum diameter on CT or MRI often does not accurately reflect the true tumor size, potentially leading to over- or underestimation,[36–41] which may affect treatment decisions.

Michallek *et al*.[39] reported that CT tends to underestimate tumor size, while MRI correlates better with actual size; however, other studies found that although size measurements on CT or MRI may differ from gross pathology and potentially alter T staging, overall tumor staging is rarely affected.[41]

For pNETs, studies indicate high concordance between CT/MRI measurements and pathological specimens, with no significant difference between CT and MRI results.[28,42]

van Beek *et al*.[43] concluded that preoperative CT and MRI neither overestimate nor underestimate pNET size, but MRI has advantages in consistency and reliability.

Currently, no consensus exists on the optimal modality or method for measuring pancreatic solid tumor size. This guideline recommends that either CT or MRI may be used clinically. For multifocal lesions, each lesion's size should be measured; if the lesion is not clearly visualized (e.g., isoattenuating on CT or isointense on MRI), measurement is not feasible.

How should tumor size of pancreatic solid tumors be measured?

Recommendation 3: For PDAC, measure the maximum diameter on the largest cross-sectional image during the pancreatic parenchymal enhancement phase. For function-

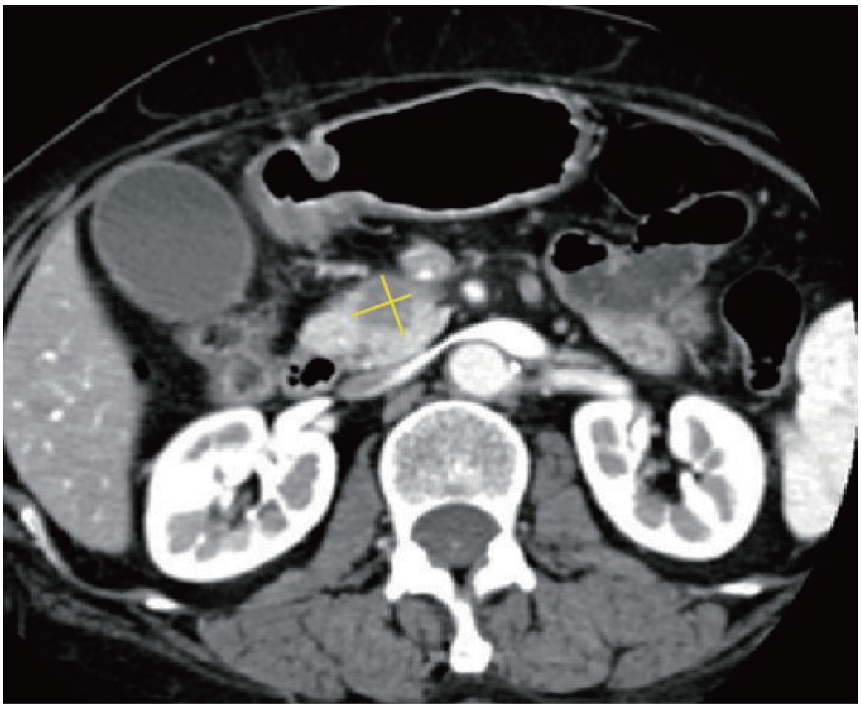

Fig. 2. Measurement of pancreatic solid tumor size. Illustration demonstrating the measurement of the maximum tumor diameter on the largest cross-sectional image during the pancreatic parenchymal phase for pancreatic ductal adenocarcinoma and arterial phase for functional pancreatic neuroendocrine tumors..

al pNETs, measure the maximum diameter on the largest cross-sectional image during the arterial enhancement phase.
Evidence quality: B; Recommendation strength: Strong

According to the Response Evaluation Criteria in Solid Tumors and the structured reporting template for pancreatic cancer proposed by Al-Hawary *et al*.,[33] tumor size should be measured as the maximum diameter on the largest cross-sectional tumor image.[8]

Cocquempot *et al*.[40] found that tumor size measurement during the pancreatic parenchymal phase (~40 seconds post-contrast injection) on CT is most accurate for PDAC, thus recommending measurement during this phase (Fig. 2).

pNETs are heterogeneous tumors; functional pNETs show early, marked, homogeneous arterial enhancement. Studies report higher sensitivity for detecting small functional pNETs in the arterial phase (83–88%) compared to the parenchymal phase (11–76%)[44]; therefore, measurement during the arterial phase is recommended.

Additionally, the European Neuroendocrine Tumor Society consensus guideline recommends that the late arterial phase suffices to evaluate arterial anatomy and its relationship with pNETs.[5]

In most cases, the late arterial phase allows pNET diagnosis, whereas the pancreatic parenchymal phase is optimal for PDAC diagnosis but less favorable for pNET characterization.

Is morphological assessment of the main pancreatic duct (MPD) obstruction site necessary?

Recommendation 4: Morphological assessment of the MPD obstruction site is necessary.
Evidence quality: A; Recommendation strength: Strong

Early pancreatic cancer has a better prognosis but remains challenging to diagnose.[45]

A Japanese multicenter study identified isolated MPD stricture as an imaging feature suggestive of early pancreatic cancer, providing diagnostic clues.[46]

With disease progression, MPD may show abrupt cutoff and upstream ductal dilation,[45,47–50] especially in isoattenuating/signal pancreatic cancers.[51]

Meta-analyses indicate that multiple MPD strictures, duct-penetrating signs, and absence of upstream MPD dilation are important imaging features differentiating autoimmune pancreatitis from pancreatic cancer, with MPD cutoff being the most specific sign for pancreatic cancer.[52,53]

Hypovascular pNETs typically do not cause MPD cutoff or upstream dilation, aiding differentiation from pancreatic cancer.[54,55] However, large pNETs or pancreatic neuroendocrine carcinomas (pNECs) may compress or invade the MPD, causing abrupt cutoff and upstream dilation.[56,57]

Therefore, evaluating MPD obstruction morphology is critical for early lesion detection and differential diagnosis among pancreatic tumors.[58–60]

This guideline recommends that imaging reports clearly state whether MPD obstruction is present; if so, specify the location and characterize the obstruction as stricture or cutoff.

How should MPD diameter be measured?

Recommendation 5: Measure the MPD diameter on magnetic resonance cholangiopancreatography (MRCP), T2-weighted imaging (T2WI), or contrast-enhanced CT during the pancreatic parenchymal or portal venous phase, selecting

the plane perpendicular to the MPD long axis.
Evidence quality: C; Recommendation strength: Weak

MRI/MRCP detection of pancreatic ductal changes is equivalent or slightly superior to CT,[61] though some studies suggest CT curved planar reconstructions can match MRCP quality.[62]

No consensus exists on MPD measurement methodology. Based on current literature, this guideline recommends measuring the maximum MPD diameter on 2D MRCP, T2WI, or contrast-enhanced CT during the pancreatic parenchymal or portal venous phase, selecting the optimal plane perpendicular to the MPD long axis.[63–65]

How is MPD dilation defined?

Recommendation 6: MPD dilation is defined as a maximum diameter >3 mm.
Evidence quality: C; Recommendation strength: Weak

Pancreatic solid tumors can compress or invade the pancreatic duct, causing varying degrees of upstream ductal dilation.

The upper limit of normal pancreatic duct diameter remains debated. A 1976 ERCP study of 35 patients without pancreatic disease suggested an upper normal MPD diameter of 3 mm.[66]

Other studies define dilation as MPD diameters ≥3 mm in the pancreatic head, ≥2 mm in the body, and ≥1 mm in the tail.[67,68]

The 2018 International Consensus Guidelines on Chronic Pancreatitis cross-sectional imaging diagnosis and severity scoring (including MRI and CT) also recommend >3 mm as the threshold for dilation.[69]

A recent population-based cross-sectional study published in Gut found that applying traditional reference values led to up to 11% of healthy volunteers being diagnosed with MPD dilation, prompting unnecessary further testing. It proposed new age-adjusted upper limits for asymptomatic individuals with normal liver function and lipase levels[65]: 3 mm for those <65 years old and 4 mm for those ≥65 years old.

However, whether to update routine MPD reference values remains controversial without consensus.

Therefore, this guideline recommends retaining the definition of MPD dilation as maximum diameter >3 mm in imaging reports.[33,70]

Is morphological assessment of the common bile duct (CBD) obstruction site necessary?

Recommendation 7: Morphological assessment of the CBD obstruction site is necessary.
Evidence quality: A; Recommendation strength: Strong

The CBD obstruction site usually corresponds to the lesion location; studying its morphology aids lesion characterization.

Inflammatory CBD strictures typically show concentric narrowing with smooth walls and a "rat-tail" appearance without abrupt ductal cutoff, whereas malignant strictures often exhibit abrupt cutoff or eccentric "moth-eaten" narrowing.[71]

In periampullary malignancies, up to 50–80% of high-risk patients presenting with clinical or biochemical jaundice and/or imaging-detected masses exhibit biliary and pancreatic duct dilation (double duct sign).[67,72,73]

For pNETs, large tumors or pNECs may compress or invade the CBD, causing biliary dilation.[74]

In non-jaundiced patients, meta-analyses suggest that incidental CBD dilation is mostly due to benign causes (e.g., chronic pancreatitis, biliary stones), with periampullary tumors accounting for only ~5%.[75]

Thus, in jaundiced patients, CBD obstruction with dilation warrants high suspicion for periampullary malignancy.

This guideline recommends that imaging reports specify whether CBD obstruction is present; if so, detail the obstruction location (proximal to pancreatic head, pancreatic head segment, periampullary region) and characterize the obstruction as stricture (concentric or eccentric) or cutoff.

How should CBD diameter be measured?

Recommendation 8: Measure the CBD diameter on MRCP, T2WI, or contrast-enhanced CT images, selecting the largest cross-sectional area perpendicular to the CBD long axis.
Evidence quality: C; Recommendation strength: Weak

A randomized controlled trial demonstrated high correlation between MRI sequences and ultrasound measurements of extrahepatic bile duct diameter, confirming MRI as a reliable method.[76]

CT offers high resolution and multiplanar reconstruction; studies suggest using coronal and oblique sagittal CT reconstructions to select the maximal cross-section perpendicular to the CBD long axis for measurement.[77,78]

No universally accepted CBD measurement method exists. Based on current evidence, this guideline recommends measuring CBD diameter on MRCP, T2WI, or contrast-enhanced CT images, selecting the maximal cross-section perpendicular to the CBD long axis.[65]

How is CBD dilation defined?

Recommendation 9: CBD dilation is defined as maximum diameter >8 mm with gallbladder present, and >10 mm post-cholecystectomy.
Evidence quality: B; Recommendation strength: Strong

Normal CBD diameter is controversial, with studies reporting a range of 4–8 mm.[79]

CBD diameter correlates with age, increasing in healthy individuals as age advances,[80–82] necessitating age-adjusted reference values.

Post-cholecystectomy compensatory CBD dilation is recognized; some studies define dilation as >10 mm in this population,[83,84] though upper limits require further validation.[65]

A recent Gut publication showed that applying traditional reference values led to 18.2% of healthy volunteers being classified as having CBD dilation, causing unnecessary investigations. It proposed new age-adjusted upper limits for asymptomatic individuals with normal liver function and lipase: 8 mm for those <65 years old and 11 mm for those ≥65 years old.[65]

However, updating routine CBD reference values remains debated without consensus.

Currently, most CT and MRI studies continue to define CBD dilation as >8 mm with gallbladder present and >10 mm post-cholecystectomy.[79,83,84]

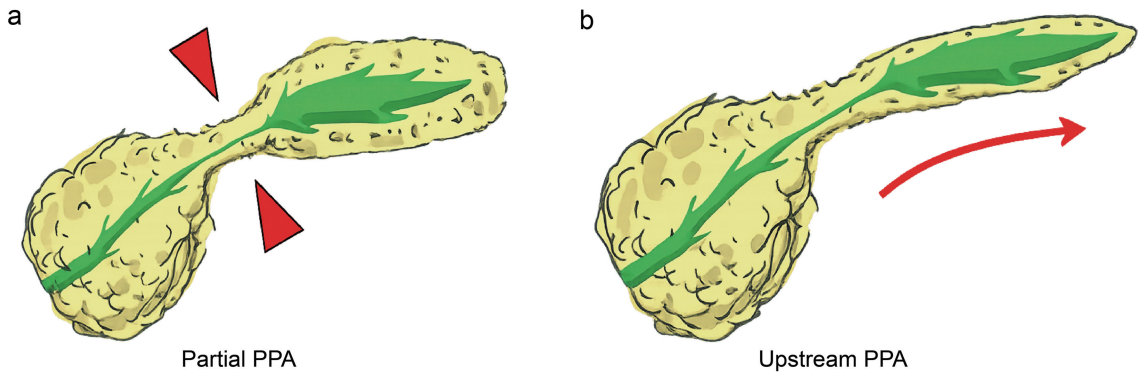

Fig. 3. Schematic illustration of pancreatic parenchymal atrophy (PPA).[73] PPA is classified into partial pancreatic parenchymal atrophy (PPPA) and upstream pancreatic parenchymal atrophy (UPPA). (a) PPPA is defined as localized atrophic change of the pancreatic parenchyma at the level corresponding to the main pancreatic duct (MPD) stricture (red arrow). (b) UPPA is defined as atrophic change of the upstream pancreatic parenchyma secondary to MPD stricture (red arrow).

How is PPA Defined and what is its clinical significance?

Recommendation 10: PPA refers to reduced pancreatic volume and is classified as PPPA and UPPA. PPA is an important indirect imaging sign for diagnosing early and advanced pancreatic cancer.
Evidence quality: B; Recommendation strength: Strong

Early pancreatic cancer has significantly better prognosis than advanced disease,[85] but early-stage tumors (including carcinoma in situ) or isoattenuating pancreatic cancers are often difficult to detect on conventional imaging, requiring indirect imaging signs for diagnosis.

PPA is the most important indirect imaging sign for diagnosing such challenging pancreatic cancers.[50,51]

PPA denotes pancreatic volume loss, with specific classification and quantification methods proposed.[86–88]

Yamao *et al*.[86] classified PPA into PPPA and UPPA: PPPA corresponds to atrophic changes in the pancreatic parenchyma at the MPD stricture site; UPPA refers to atrophy of the upstream pancreatic parenchyma caused by MPD stricture (Fig. 3).[73]

For pancreatic cancers without clear MPD stricture on CT, Koiwai *et al*.[89] defined pancreatic body width ≤10 mm as another form of PPA.

Recent studies suggest PPPA may result from branch duct obstruction or closure caused by pancreatic intraepithelial neoplasia or small pancreatic cancers, leading to local fibrosis or fatty replacement due to impaired pancreatic juice drainage, making PPPA a key early imaging marker.[86–91]

Advanced pancreatic cancer often causes MPD stricture or obstruction with upstream fibrosis leading to UPPA.[50]

PPPA and UPPA correlate with pancreatic cancer development and progression.

This guideline recommends that imaging reports describe the presence or absence of PPPA and UPPA.

How should PPA be accurately assessed?

Recommendation 11: PPA should be primarily assessed on CT/MRI contrast-enhanced parenchymal phase images. PPPA measurement criteria include: (1) partial pancreatic parenchymal indentation with parenchymal edge to MPD wall distance ≤4 mm; (2) PPPA length of 10–25 mm; (3) upstream pancreatic parenchymal width >6 mm. UPPA criteria include parenchymal edge to MPD distances at the stricture and upstream sites both ≤4 mm. For pancreatic cancers without clear MPD stricture, pancreatic body width ≤10 mm defines PPA.
Evidence quality: C; Recommendation strength: Weak

Contrast-enhanced CT or MRI parenchymal phase images provide optimal tumor-to-pancreas contrast and clear venous visualization, making them ideal for thickness measurements.[92]

Current PPA measurement methods are mostly linear, but no consensus exists on absolute thresholds to quantify pancreatic atrophy, especially since parenchymal thickness decreases with age and age-adjusted standards are lacking.

Sandini *et al*.[93] calculated the MPD-to-pancreatic thickness ratio at the widest MPD diameter, finding that a ratio ≥3.5 indicates UPPA and predicts postoperative prognosis.

Nakahodo *et al*.[87,88] defined PPPA as the product of maximal and minimal diameters of the pancreatic indentation exceeding 50 mm^2 or a distance >5 mm under the line connecting the edges of the indentation.

Yamao *et al*.[86] proposed PPPA criteria on CT images: (1) parenchymal edge to MPD distance ≤4 mm at the stricture site, with upstream parenchymal edge to MPD distance >6 mm; (2) PPPA length 10–25 mm; (3) upstream parenchymal width >6 mm (Fig. 4a). UPPA is defined as parenchymal edge to MPD distances ≤4 mm at both stricture and upstream sites (Fig. 4b).[73]

For pancreatic cancers without clear MPD stricture on CT, Koiwai *et al*.[89] defined pancreatic body width ≤10 mm as PPA.

This guideline recommends adopting these criteria for PPA measurement.

Is assessment of obstructive acute pancreatitis necessary?

Recommendation 12: Assessment for the presence of obstructive acute pancreatitis is necessary.
Evidence quality: B; Recommendation strength: Strong

Explanation: Alcohol and gallstones are the most important etiologies of acute pancreatitis. Pancreatic cancer is a relatively uncom-

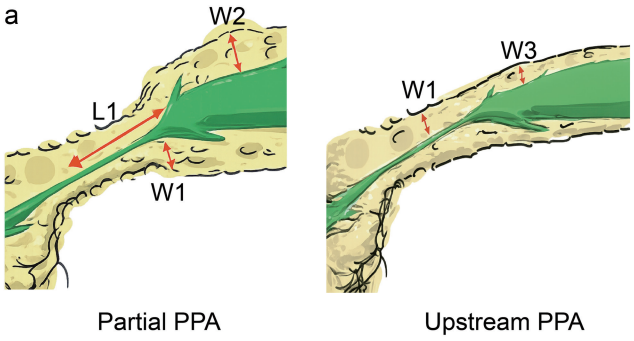

Fig. 4. Criteria for evaluating pancreatic parenchymal atrophy (PPA).[73] (a) Pancreatic PPA: Defined on Computed Tomography when all the following criteria are met: Distance from the parenchymal edge to the main pancreatic duct (MPD) at the stricture site ≤ 4 mm (W1); Distance from the upstream parenchymal edge to the MPD > 6 mm (W2); Length of the atrophic segment at the stricture site between 10–25 mm (L1). (b) Upstream PPA: Defined when both the distance from the parenchymal edge to the MPD at the stricture site (W1) and at the upstream parenchyma (W3) are ≤ 4 mm.

mon cause, with an incidence of 0.9% to 3.6%.[94] Mujica *et al*.[95] hypothesized possible mechanisms by which pancreatic cancer induces acute pancreatitis, including mechanical obstruction of the pancreatic duct, ischemia caused by malignant tumor cells obstructing blood vessels, and direct activation of pancreatic enzymes by tumor tissue. The presence of obstructive pancreatitis is assessed based on suspicious masses, main pancreatic duct interruption with upstream ductal dilation, pancreatic enlargement upstream, blurring of peripancreatic fat planes, and stranding edema.[96,97] Studies have found that 59% of pancreatic cancer cases were initially misdiagnosed as acute pancreatitis due to inflammatory changes masking underlying masses or secondary signs.[98] Tummala *et al*.[99] studied 218 patients with acute pancreatitis undergoing EUS-FNA and identified 38 cases of pancreatic cancer diagnosed promptly after the first episode of acute pancreatitis, with a resection rate of 39%, thereby improving patient survival. Therefore, in patients with acute pancreatitis after excluding common causes such as alcohol and gallstones, careful evaluation of pancreatic imaging is warranted to identify potential underlying malignancy,[50,99,100] and this should be explicitly stated in imaging reports (Fig. 5).

Is evaluation of pseudocysts/retention cysts necessary?

Recommendation 13: Evaluation for the presence of pseudocysts or retention cysts is necessary.
Evidence quality: B; Recommendation strength: Strong

Explanation: Pancreatic cancer originates from ductal epithelial cells and can obstruct the pancreatic duct, causing upstream retention of pancreatic juice and cystic dilation, forming retention cysts lined by ductal epithelium on pathology.[101] When intraductal pressure increases or the pancreatic duct ruptures, pseudocysts may form; these can also develop secondary to obstructive acute pancreatitis. Pseudocysts consist of fluid collections surrounded by non-epithelial tissue within or adjacent to the pancreas.[102] Differentiation between retention cysts and pseudocysts requires pathological examination; radiologically, they are often difficult to distinguish, both typically presenting as unilocular cysts with variably thick walls, commonly located in the pancreatic body or tail without obvious mural nodules.[101] Studies have identified pancreatic cysts ≥5 mm as independent predictors for pancreatic cancer development.[103] In patients with elevated CA19-9 and retention cysts, vigilance for small or isoattenuating pancreatic cancers near-

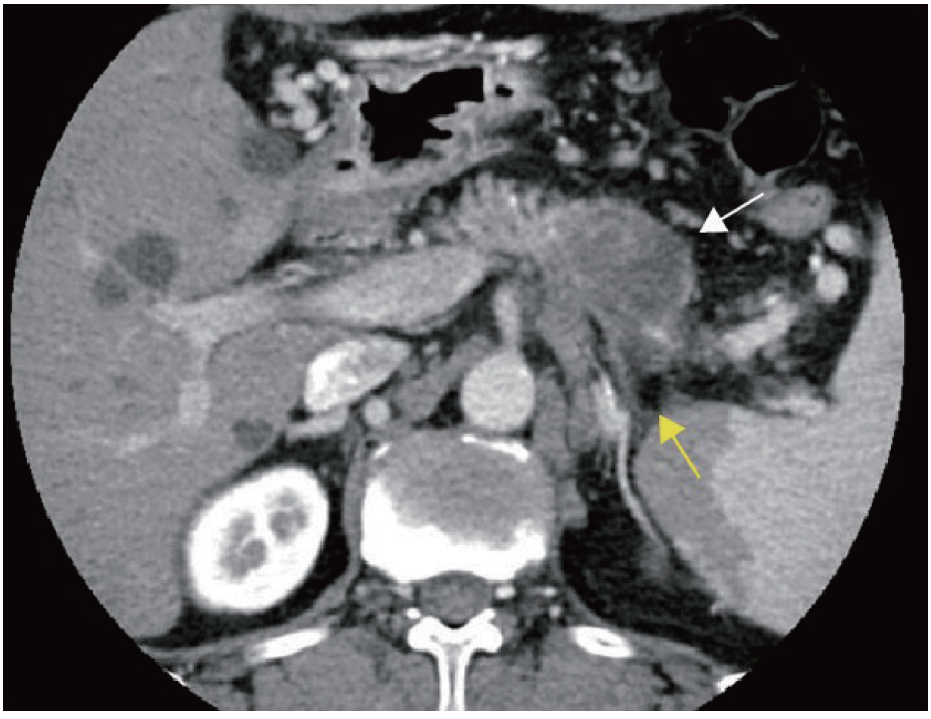

Fig. 5. Pancreatic cancer with surrounding obstructive inflammation. Axial arterial late-phase computed tomography (CT) image shows a hypodense mass in the pancreatic body and tail (white arrow), with patchy peripancreatic inflammatory infiltration (yellow arrow).

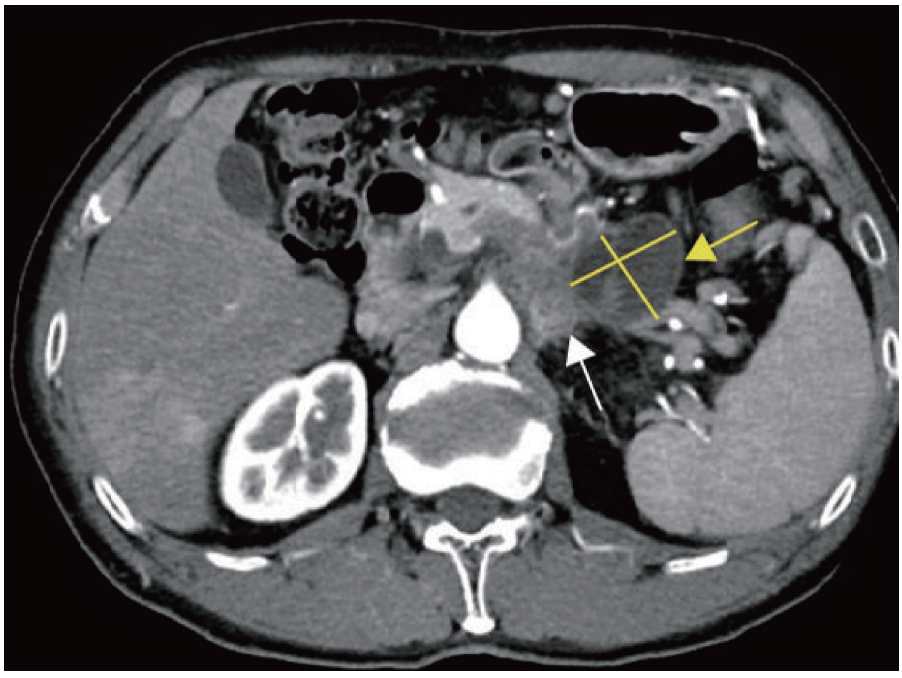

Fig. 6. Pseudocyst formation secondary to pancreatic cancer. Axial arterial-phase computed tomography (CT) image demonstrates a hypodense mass in the pancreatic body (white arrow) and an adjacent lower-attenuation lesion (yellow arrow) representing a pseudocyst. The measurement method is illustrated by the yellow line.

by is warranted.[50,104] This guideline recommends that when retention or pseudocysts are detected, they should be clearly reported with measurements of size and description of location (Fig. 6).

Preferred imaging modality for peripancreatic vascular assessment

Recommendation 14: Contrast-enhanced pancreatic CT is the preferred modality for evaluating peripancreatic vessels. Evidence quality: A; Recommendation strength: Strong

Explanation: In the absence of distant metastases, resectability assessment of pancreatic cancer primarily depends on evaluation of tumor–vascular relationships. According to multiple studies including the NCCN, contrast-enhanced pancreatic CT is the preferred imaging modality for staging and resectability determination of pancreatic cancer.[8,20,33] Although MRI has demonstrated comparable sensitivity and specificity to CT for assessing vascular involvement in pancreatic cancer,[24,25,105,106] CT is more widely utilized due to lower cost and greater availability.[25] Additionally, studies indicate that multidetector CT (MDCT) with three-dimensional reconstruction significantly improves accuracy in assessing vascular invasion compared to MDCT without 3D reconstruction (100%; 95% CI, 91–100% vs. 79%; 95% CI, 64–89%).[25] Evaluation requires separate assessment of arterial and venous peripancreatic vessels and their branches.[33,107]

Key points in peripancreatic vascular assessment

Recommendation 15: Imaging reports should evaluate the degree of tumor contact with peripancreatic arteries and veins (including major branches), presence of vascular deformation, vascular variants, and venous tumor thrombus. Evidence quality: A; Recommendation strength: Strong

Explanation: In 2014, Al-Hawary *et al*.[33] proposed a CT-based vascular involvement classification system based on the 2013 NCCN guidelines, standardizing imaging reporting for pancreatic cancer vascular assessment; this system was adopted by the 2023 NCCN guidelines.[8] Peripancreatic arteries include the celiac axis, superior mesenteric artery, common hepatic artery, and abdominal aorta. Imaging evaluation should clearly describe the tumor–vessel relationship, specifying the contact arc angle (≤180° or >180°) and whether luminal narrowing or deformation is present. When hazy or stranding increased density is observed at the tumor–artery interface, the contact relationship and contact arc angle should be explicitly reported.[8,33] Arterial variants and their relationship to the tumor should also be documented (Figs. 7 and 8).

Peripancreatic veins include the portal vein, superior mesenteric vein (SMV), and inferior vena cava. Venous imaging assessment parallels that of arteries, with additional description of the relationship between the first-order SMV branches and the tumor (contact arc angle ≤180° or >180°), presence of tumor thrombus or bland thrombus, local luminal narrowing, irregular or teardrop-shaped deformation, and signs of portal hypertension with collateral circulation (Figs. 9 and 10).[30]

Imaging criteria for resectability assessment

Recommendation 16: Imaging-based resectability criteria are stratified by tumor location and the degree of tumor

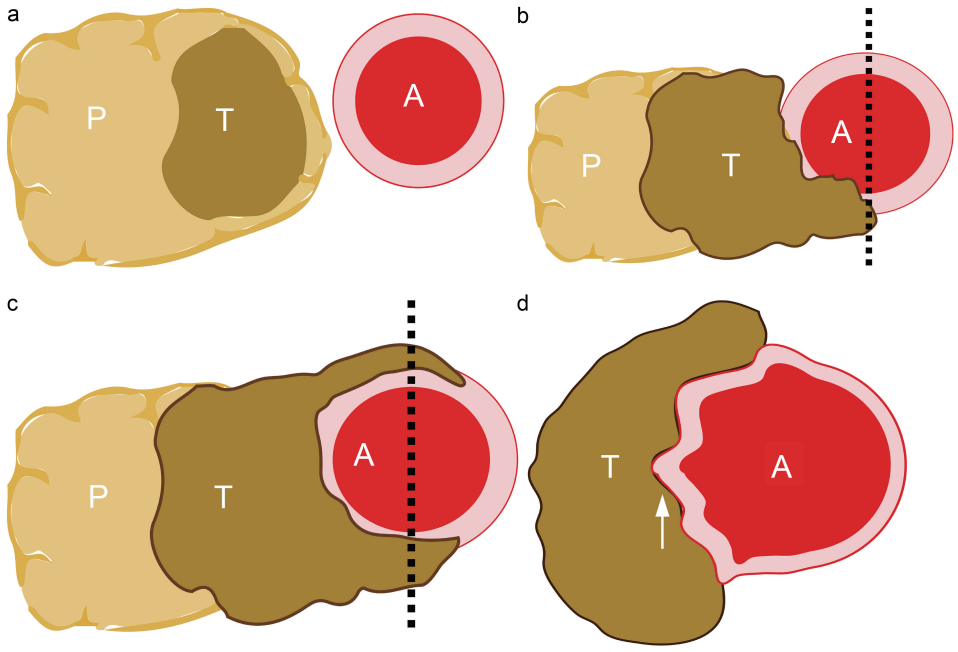

Fig. 7. Schematic illustration of tumor–artery interface. No tumor–artery contact (a); Tumor–artery contact ≤ 180° (b); Tumor–artery contact > 180° (c); Arterial deformity at the site of tumor contact (d, ↑). A, artery; T, tumor.

contact with arteries and veins into resectable, borderline resectable, and locally advanced categories.
Evidence quality: A; Recommendation strength: Strong

Explanation: Imaging assessment of resectability primarily relies on tumor location and the extent of tumor contact with surrounding vessels. This guideline adopts the 2022 NCCN criteria for resectability,[8] categorizing non-metastatic pancreatic cancer into three groups: resectable, borderline resectable, and locally advanced (Table 2).

Optimal imaging modality for regional lymph node assessment

Recommendation 17: Preoperative imaging prediction of lymph node metastasis remains challenging and requires further validation through large-scale, multicenter studies to determine the optimal imaging modality.
Evidence quality: C; Recommendation strength: Weak

Explanation: A meta-analysis including 157 cases of pancreatic and ampullary malignancies concluded that CT has low diagnostic accuracy for extraregional lymph node metastasis, with pooled sensitivity and positive predictive value of only 25% and 28%, respectively; thus, CT alone is not recommended when extraregional lymph node metastasis is suspected.[108] Another meta-analysis found that although CT has a high positive predictive value (81%) for assessing pancreatic cancer resectability, it exhibits a high false-positive rate for regional lymph node metastasis.[109] Despite MRI's superior soft tissue resolution and studies suggesting that diffusion-weighted imaging (DWI) and intravoxel incoherent motion sequences can effectively identify metastatic lymph nodes in

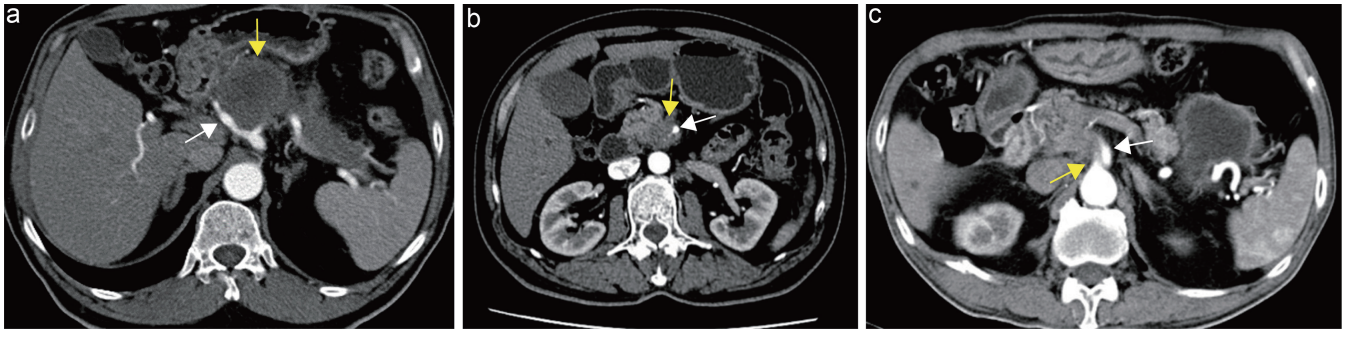

Fig. 8. Evaluation of tumor–artery contact. (a) Tumor in the pancreatic neck (yellow arrow) with >180° contact with the common hepatic artery (white arrow). (b) Uncinate process tumor (yellow arrow) with ≤180° contact with the superior mesenteric artery (white arrow). (c) Uncinate process tumor (yellow arrow) with >180° contact with the celiac axis (white arrow).

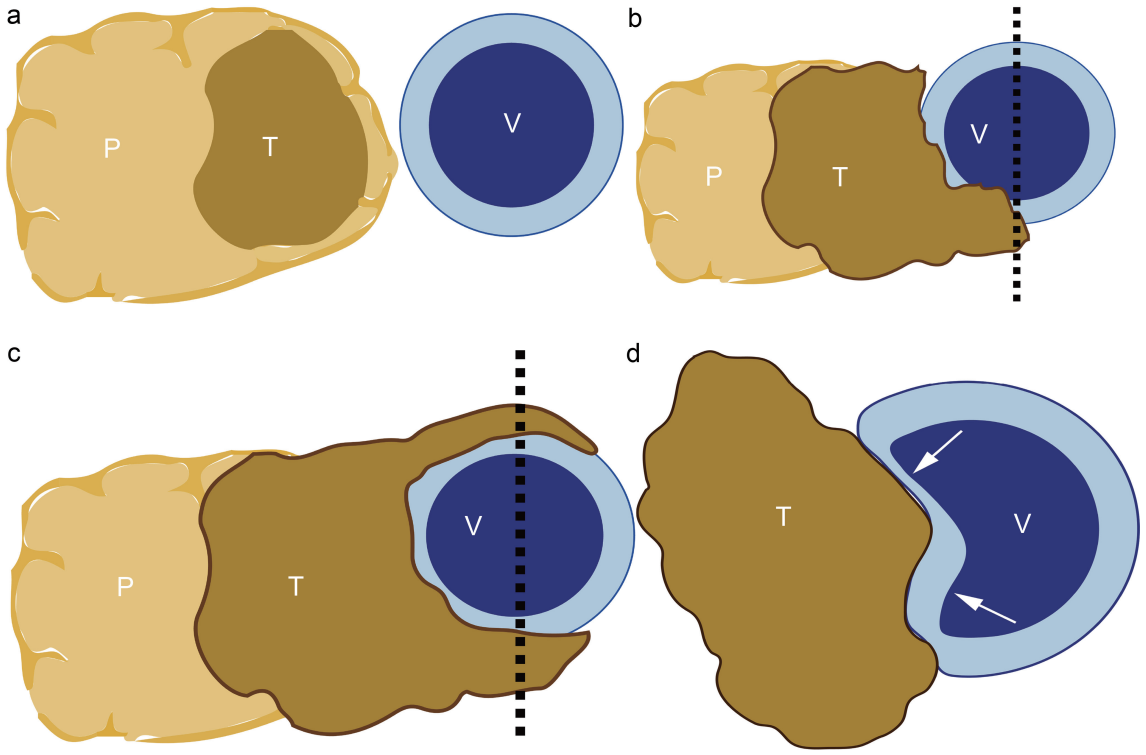

Fig. 9. Schematic illustration of tumor–vein interface. No tumor–vein contact (a); Tumor–vein contact ≤ 180° (b); Tumor–vein contact > 180° (c); Venous contour deformity at the site of tumor contact (d); Teardrop-shaped venous deformity at the tumor–vein interface (d, ↑). T, tumor; V, vein.

pancreatic cancer,[110–112] Adham *et al*.[113] recently reported limited diagnostic value and poor interobserver agreement (kappa = 0.257) for MRI-based lymph node assessment in pancreatic cancer. A meta-analysis found no significant difference between PET/CT and conventional CT in diagnosing regional lymph node metastasis in pancreatic cancer.[114] In a prospective study comparing PET/CT, CT, and MRI, Kauhanen *et al*.[115] found PET/CT sensitivity for metastatic regional lymph nodes was low and comparable to CT and MRI (all approximately 30%). Collectively, these findings indicate that no single conventional imaging modality—whether CT, MRI, or PET—provides adequate accuracy for predicting lymph node metastasis in pancreatic cancer. Consequently, preoperative imaging assessment of lymph node status remains a significant clinical challenge that requires further investigation through large-scale, multicenter studies to identify optimal imaging strategies.

Imaging criteria for suspicious lymph nodes

Recommendation 18: Lymph nodes exhibiting a short-axis diameter >10 mm, heterogeneous density/signal, heterogeneous enhancement, internal necrosis, confluence, indistinct margins, or diffusion restriction on MRI, especially when multiple imaging features coexist, strongly suggest lymph node metastasis. Evidence quality: C; Recommendation strength: Weak

Explanation: Assessing lymph node involvement is crucial for cancer staging, treatment planning, and prognosis. However, mor-

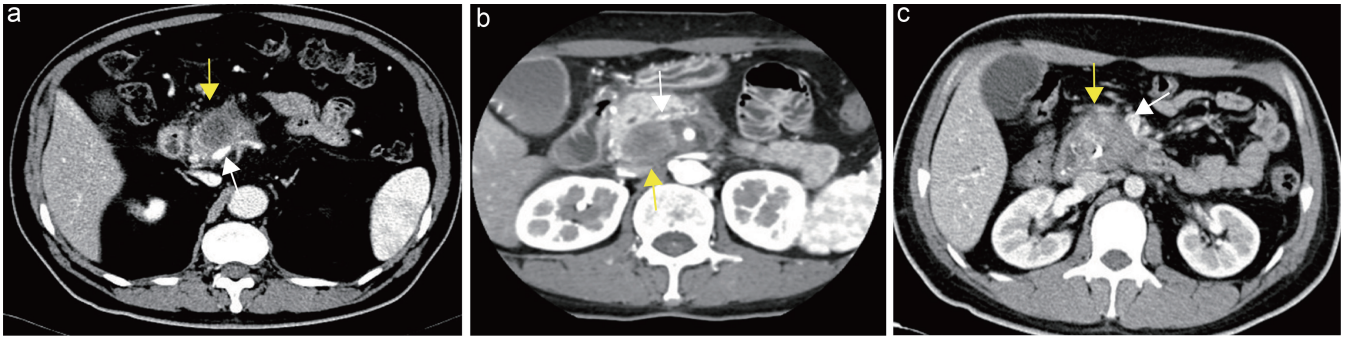

Fig. 10. Evaluation of tumor–vein contact. (a) Pancreatic head tumor (yellow arrow) with >180° contact with the portal vein (white arrow). (b) Uncinate process tumor (yellow arrow) with <180° contact and compression-related deformity of the superior mesenteric vein (white arrow). (c) Pancreatic head tumor (yellow arrow) with <180° contact and teardrop-shaped deformity of the superior mesenteric vein (white arrow).

Table 2. 2023 NCCN clinical practice guidelines for pancreatic cancer (Version 2) resectability criteria

Resectability status	Arteries	Veins
Resectable	Solid tumor with clear fat planes around the celiac axis, superior mesenteric artery, and common hepatic artery	Solid tumor with clear fat planes around the superior mesenteric vein and portal vein; solid tumor contact with SMV or PV ≤180° with smooth contours
Borderline Resectable	[Pancreatic head or groove region:] ① Solid tumor contact with common hepatic artery but not involving celiac axis or hepatic artery branches; ② Solid tumor contact with superior mesenteric artery ≤180°; ③ Presence of arterial variants (e.g., accessory right hepatic artery, replaced right hepatic artery, replaced common hepatic artery, or accessory/replaced arterial origins) with tumor contact and extent should be specified; [Pancreatic body or tail:] Solid tumor contact with celiac axis ≤180°	① Solid tumor contact with SMV or PV >180°, or tumor contact ≤180° with irregular venous contour or venous thrombus, with suitable proximal and distal veins for safe and complete resection and reconstruction; ② Solid tumor contact with inferior vena cava
Locally Advanced	[Pancreatic head or groove region:] Solid tumor contact with SMA or celiac axis >180°; [Pancreatic body or tail:] ① Tumor invasion of SMA or celiac axis >180°; ② Tumor involvement of both celiac axis and abdominal aorta	Due to tumor invasion or thrombosis (tumor or bland thrombus) of SMV or PV, reconstruction is not feasible

PV, portal vein; SMA, superior mesenteric artery; SMV, superior mesenteric vein.

phological criteria for lymph node evaluation based on CT and MRI remain inconsistent. Although lymph node size is widely used as an indicator, its reliability for assessing lymph node metastasis is limited, and measurement standards are not uniform. Combining morphological features of lymph nodes can be somewhat helpful, but currently this approach is restricted to specific diseases and anatomical sites. Studies on regional lymph node morphology have shown that a short-axis diameter >10 mm is not a reliable parameter for evaluating lymph node metastasis in pancreatic cancer patients,[116,117] whereas in pNETs, short-axis size is a reliable predictor of lymph node metastasis.[118]

The Node-RADS (Lymph Node Reporting and Data System), proposed in 2021, addresses these limitations by incorporating lymph node size (short-axis >10 mm) and morphology (texture, margin, shape) into a scoring system.[119] A PubMed search for "Node-RADS" reveals its current application primarily in assessing lymph node metastasis in colorectal, gastric, bladder, lung, and prostate cancers; no studies have yet validated its use in pancreatic cancer lymph node assessment, necessitating further high-quality research to establish its utility in this context.

Currently, most studies consider the following imaging features suspicious for lymph node metastasis: short-axis diameter >10 mm, round shape, heterogeneous density/signal, heterogeneous enhancement, presence of necrosis, node confluence, indistinct margins, and restricted diffusion on MRI. The coexistence of multiple such imaging signs strongly suggests lymph node metastasis (Fig. 11).[111,120,121]

Should the Specific location of suspicious lymph nodes be described?

Recommendation 19: The specific location of suspicious lymph nodes should be described.

Evidence quality: A; Recommendation strength: Strong

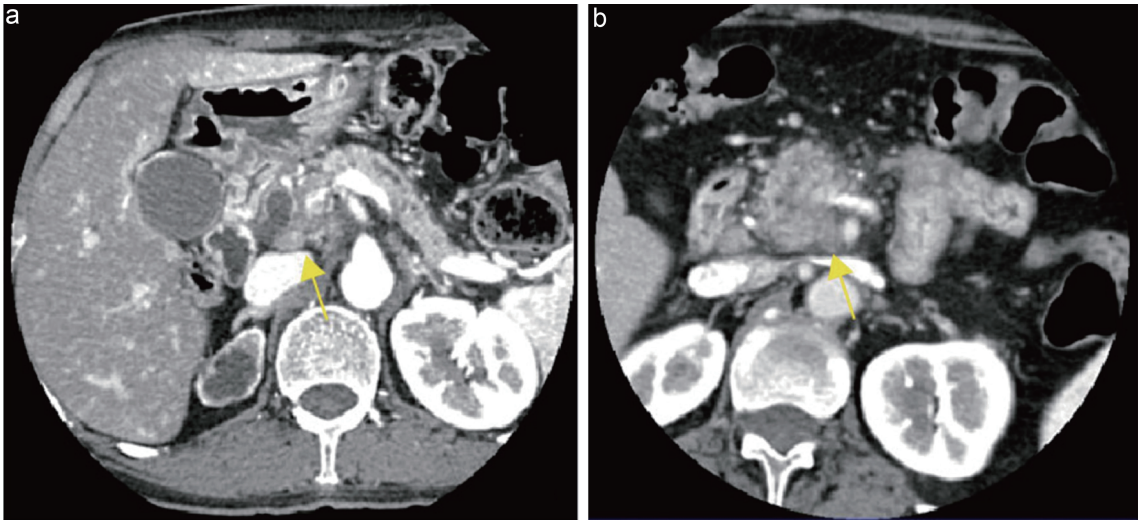

Fig. 11. Imaging evaluation of lymph nodes in pancreatic cancer. (a) Axial arterial late-phase CT image showing a round, well-defined, homogeneously enhancing lymph node (short-axis ~0.8 cm) inferior to the pancreatic head (yellow arrow); pathology was negative. (b) Axial arterial late-phase CT image showing a round lymph node with slightly low attenuation (short-axis ~1.2 cm) inferior to the pancreatic head (yellow arrow); pathology was positive.

Explanation: The Japan Pancreas Society established a lymph node station and grouping system based on the anatomical lymphatic drainage around the pancreas under physiological conditions, and the likelihood of positive lymph nodes in pancreatic cancer. Peripancreatic lymph nodes are divided into 3 stations and 18 groups,[122] each group accompanying specific peripancreatic vessels with distinct distribution patterns. Pancreatic head cancers commonly metastasize to groups 6, 8, 13, 14, and 17, whereas pancreatic body and tail cancers frequently involve groups 8, 9, 10, 11, and 18.[122,123]

Group 13 is the sentinel lymph node for pancreatic head cancer, while groups 9 and 11 serve as sentinel nodes for body and tail cancers.[123,124]

Liu *et al*.[125] analyzed lymph node metastasis patterns in 132 pancreatic head cancer specimens following pancreaticoduodenectomy, finding that lymphatic spread is not skip metastasis but follows a sequential pathway from group 13 to 14 and then 16.

Moreover, metastatic lymph nodes at different locations correlate with prognosis. For example, metastasis to the hepatoduodenal ligament group (group 12) is an independent adverse prognostic factor[126]; involvement of the superior mesenteric artery group (group 14) is significantly associated with shorter disease-free survival[126,127]; para-aortic group (group 16) metastasis is an independent poor prognostic factor[128]; and splenic artery group (group 11) metastasis is an independent adverse prognostic factor for overall survival in pancreatic body and tail cancer patients.[129]

Therefore, this guideline recommends that diagnostic imaging reports specify the location of suspicious lymph nodes. When analyzing images, careful observation along lymph node distribution pathways relative to the pancreatic tumor location can aid in diagnosing suspected metastatic lymph nodes.

Preferred imaging modality for detecting hepatic and peritoneal metastases

Recommendation 20: MRI with DWI is the preferred modality for diagnosing hepatic and peritoneal metastases. Evidence quality: A; Recommendation strength: Strong

Explanation: Approximately 13–23% of pancreatic cancer patients are found intraoperatively to have hepatic or peritoneal metastases, rendering the tumor unresectable.[130] Although multiphasic helical CT with volumetric scanning has improved detection rates of metastatic lesions, contrast-enhanced CT sensitivity for hepatic metastases remains suboptimal (38–76%).[131] MRI with DWI demonstrates high sensitivity (86–97%) for detecting focal hepatic lesions, including subcentimeter metastases (sensitivity 60–91%).[132–134] Meta-analyses indicate that MRI outperforms CT in overall diagnostic accuracy for hepatic metastases in pancreatic cancer, with pooled sensitivity higher for MRI than CT (85% vs. 75%), while pooled specificity is comparable (98% vs. 94%).[135] Another meta-analysis similarly found comparable specificity between CT and MRI (94% vs. 96%) but superior sensitivity for MRI (83% vs. 45%) in diagnosing hepatic metastases.[136] Peritoneal metastases from pancreatic cancer typically manifest as miliary nodules on the omentum and mesentery, irregular peritoneal thickening, and small-volume ascites, all suggestive of peritoneal carcinomatosis or implantation (Fig. 12).[137] CT sensitivity for peritoneal metastases depends on lesion size; Archer *et al*.[138] reported sensitivity of only 25% for lesions <0.5 cm, increasing to 90% for lesions >5 cm. MRI, including DWI sequences, is a sensitive imaging modality for detecting peritoneal metastases.[139] Studies suggest that combining high b-value (b = 800 s/mm^2) DWI with conventional MRI improves preoperative detection sensitivity (from 0.58 to 0.85) and accuracy (from 0.67 to 0.85) for peritoneal tumors compared to conventional MRI alone.[140]

Diagnostic report conclusions

The diagnostic report for pancreatic solid tumors should include the following elements: qualitative diagnosis, tumor-vessel relationship (resectability assessment), lymph nodes, adjacent organ involvement, distant metastases, and other abnormal findings (Table 3).

Discussion

This guideline establishes standardized imaging indicators and reporting frameworks for pancreatic solid tumors, which can be directly integrated into screening workflows for high-risk populations. By standardizing the assessment of key imaging features such as MPD obstruction, PPA, and suspicious lymph node localization, this guideline enhances the consistency and accuracy of early lesion detection, thereby improving the early detection rate of pancreatic solid tumors. Furthermore, to optimize screening precision, we propose that future studies validate these standardized imaging criteria in prospective screening cohorts to establish their predictive value for early-stage pancreatic malignancies.

Prior to this guideline, no standardized framework existed for diagnostic imaging reports of pancreatic solid tumors in China. By integrating domestic and international evidence, this working group developed 13 strong and 7 weak recommendations to establish a structured diagnostic imaging report. This framework standardizes report content, enhances report completeness, improves radiologist-clinician communication, and facilitates cross-institutional report comparability, thereby offering substantial potential for clinical translation and implementation.

This guideline has several limitations. The available evidence for some key questions is still limited and heterogenous, with variations in study design, patient populations, imaging protocols, and reference standards, which may affect the strength of several recommendations. In areas where high-level evidence is lacking, some recommendations were based on multidisciplinary expert consensus, and potential consensus bias cannot be fully excluded. In addition, because this guideline was developed in the context of current clinical practice in China, its applicability may vary across institutions with different expertise and imaging resources. Further prospective studies, multicenter validation, and future updates are warranted.

Future guideline updates will require additional high-quality studies to strengthen the underlying evidence base. Furthermore, with the rapid advancement of artificial intelligence technologies, their integration into pancreatic tumor imaging analysis represents a promising frontier. AI-based approaches can enhance quantitative analysis precision and improve workflow efficiency through automated detection systems, demonstrating considerable potential for advancing the diagnosis and management of pancreatic diseases.

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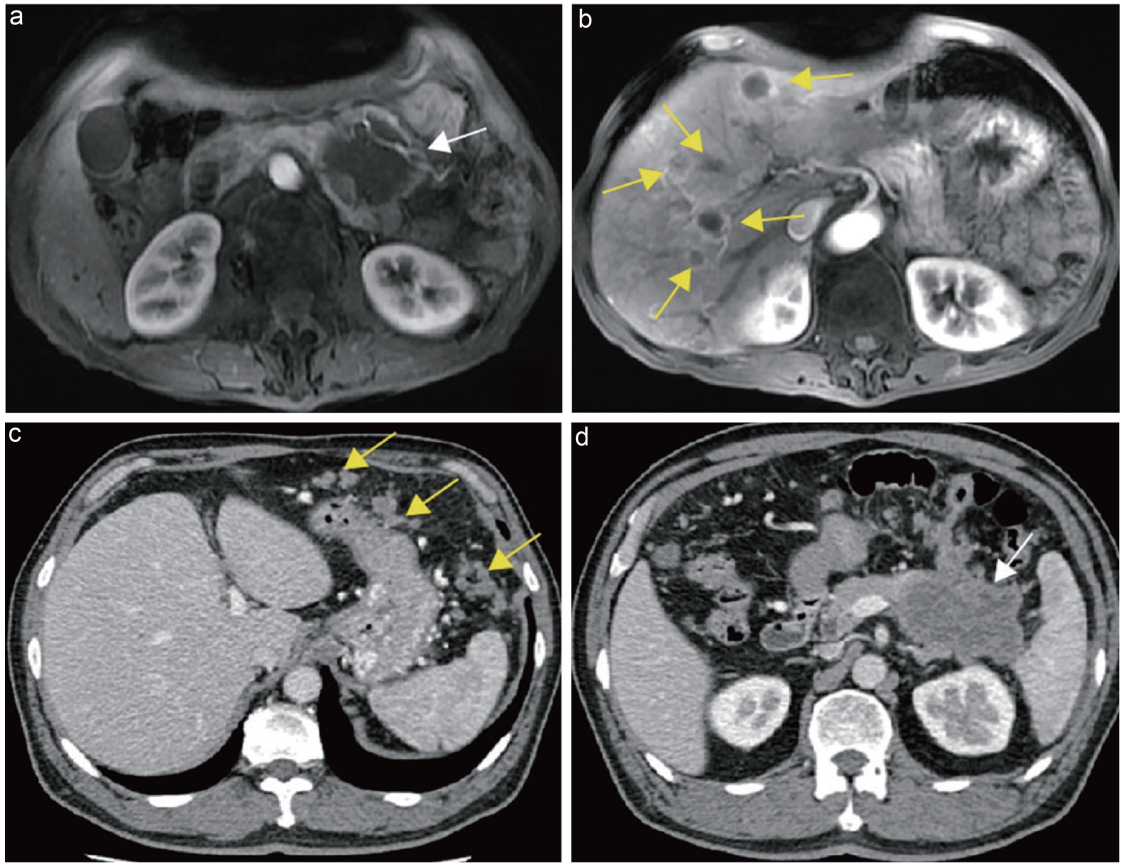

Fig. 12. Evaluation of hepatic and distant metastases in pancreatic cancer. a, b Same patient. (a) Axial portal venous–phase T1-weighted MRI showing a hypointense mass in the pancreatic body and tail (white arrow). (b) Axial portal venous–phase T1-weighted MRI showing multiple ring-enhancing lesions in the liver (yellow arrows), consistent with hepatic metastases. c, d Same patient. (c) Axial portal venous–phase CT showing a hypodense mass in the pancreatic body and tail (white arrow). (d) Axial portal venous–phase CT showing nodular changes of the omentum (yellow arrow), consistent with omental metastases. CT, computed tomography; MRI, magnetic resonance imaging.

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Conflict of interest

Zhaoshen Li serves as the Honorary Editor-in-Chief of *Cancer Screening and Prevention* (CSP). Xun Li, Zhuan Liao, and Bei Sun are members of the editorial board of CSP. All other authors declare no competing interests.

Author contributions

Drafting of the manuscript (YB, JL), conception and design of the guideline, coordination and supervision of the guideline development process, and critical revision of the manuscript for important intellectual content (ZL, JL, CS, SL, MC, XL). All authors approved the final version of the manuscript and agree to be accountable for all aspects of the work.

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Table 3. Structured imaging report template for pancreatic solid tumors

1. Primary tumor assessment
Location (head/uncinate/body/tail)
Size (maximum diameter in mm)
Enhancement pattern
Relationship to pancreatic duct
Presence of calcification
2. Main pancreatic duct (MPD)
Diameter (mm)
Presence of dilation (>3 mm)
Morphology of obstruction point (stenosis vs. abrupt cutoff)
Location of obstruction
3. Common bile duct (CBD)
Diameter (mm)
Presence of dilation (>8 mm with gallbladder, >10 mm post-cholecystectomy)
Morphology of obstruction point
Location of obstruction (suprapancreatic/intrapancreatic/ampullary)
4. Pancreatic parenchyma
Presence of parenchymal atrophy (PPPA/UPPA)
Presence of obstructive acute pancreatitis
Presence of pseudocysts or retention cysts (size and location)
5. Peripancreatic vascular assessment
Arteries:
Celiac axis: contact arc angle, deformation
Superior mesenteric artery: contact arc angle, deformation
Common hepatic artery: contact arc angle, deformation
Arterial variants and tumor relationship
Veins:
Portal vein: contact arc angle, contour, thrombus
Superior mesenteric vein: contact arc angle, contour, thrombus
Inferior vena cava: involvement
Signs of portal hypertension
6. Resectability assessment
Resectable / Borderline resectable / Locally advanced
Rationale based on vascular involvement
7. Regional lymph nodes
Presence of suspicious lymph nodes
Size (short-axis diameter in mm)
Morphological features
Specific anatomical location (JPS group number)
8. Distant metastases
Hepatic metastases: number, size, location

(continued)

Table 3. *(continued)*

Peritoneal metastases: nodules, thickening, ascites
Other distant metastases
9. Other findings
Adjacent organ involvement
Other incidental findings within scan range
10. Conclusion
Primary diagnosis
TNM staging (if applicable)
Resectability status
Recommendations for further evaluation or follow-up

JPS, Japan Pancreas Society; PPPA, partial pancreatic parenchymal atrophy; TNM, tumor-node-metastasis; UPPA, upstream pancreatic parenchymal atrophy.

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