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Case Report

Transbiliary intravascular ultrasound-guided diagnostic biopsy of an inaccessible pancreatic head mass

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ABSTRACT

Percutaneous image-guided biopsies of pancreatic malignancies may prove challenging and nondiagnostic due to a variety of anatomic considerations. For patients with complex post-surgical anatomy, such as a Roux-en-Y gastric bypass, diagnosis via endoscopic ultrasound with fine-needle aspiration may not be possible because of an inability to reach the proximal duodenum. This report describes the first diagnostic case of transbiliary intravascular ultrasound-guided biopsy of a pancreatic head mass in a patient with prior Roux-en-Y gastric bypass for which a diagnosis could not be achieved via percutaneous and endoscopic approaches. Transbiliary intravascular ultrasound-guided biopsy resulted in a diagnosis of pancreatic adenocarcinoma, allowing the initiation of chemotherapy.

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Introduction

Pancreatic cancer is the fourth leading cause of cancer death in the United States, and its high mortality is related to the late stage of diagnosis for the majority of patients [1]. Tissue samples are often obtained via endoscopic retrograde cholangiopancreatography, percutaneous image-guided fine-needle aspiration biopsy or core biopsy sampling, or endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA).

While brushing cytology and intraductal forcep biopsies with endoscopic retrograde cholangiopancreatography have a low sensitivity of 45% and 48.1%, the diagnostic sensitivity of fine-needle aspiration biopsy and EUS-FNA has been reported to be 98.4% and 88.8%, respectively [2–5]. For some patients with complex postsurgical anatomy, such as a Roux-en-Y gastric bypass, diagnosis via EUS-FNA is not possible because of an inability to reach the proximal duodenum.

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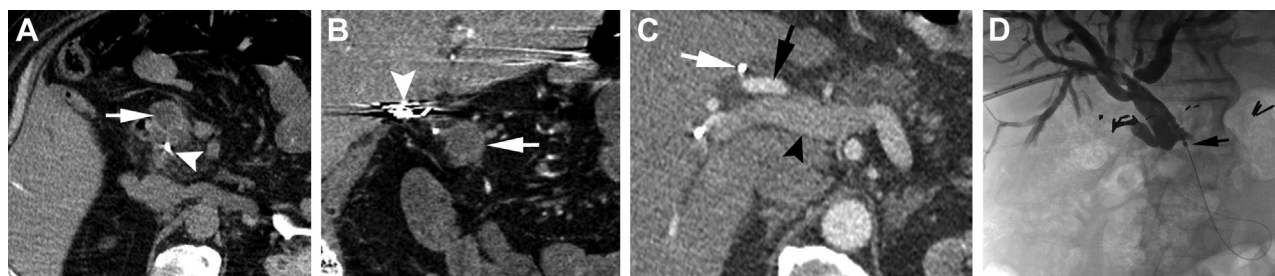


Fig. 1 – (A) Axial image from computed tomography with contrast demonstrating a hypodense, enhancing mass in the head of the pancreas (white arrow). A biliary tube is noted within the common bile duct, posterior to the pancreatic head mass (white arrowhead). **(B)** Coronal image from computed tomography with contrast showing the pancreatic head mass (white arrow) and biliary tube (white arrowhead). **(C)** Magnified axial image illustrating relationship of anterior biliary tube (white arrow), hepatic artery (black arrow), and posterior portal vein (black arrowhead). This relationship was utilized when identifying structures on IVUS. **(D)** Radiograph from cholangiography showing dilated biliary tree with abrupt cutoff of the common bile duct at the tip of the IVUS probe, correlating to the mass (black arrow). IVUS, intravascular ultrasound.

This report describes the first diagnostic case of trans-biliary intravascular ultrasound (IVUS)-guided biopsy of a pancreatic head mass in a patient with prior Roux-en-Y gastric bypass for which a diagnosis could not be achieved via percutaneous and endoscopic approaches.

Case report

Institutional review board approval was not required for preparation of this report. Informed consent was obtained prior to this procedure. Signed consent was obtained from the patient for preparation and publication of this manuscript. A 61-year-old male with history of obesity and Roux-en-Y

gastric bypass presented to an outside institution with painless jaundice. Total bilirubin was 19 mg/dL (normal range: 0.3–1.9 mg/dL). Computed tomography (CT) of the abdomen and pelvis with intravenous contrast material demonstrated a 2.4×1.9 cm pancreatic head mass (Fig. 1) as well as moderate extrahepatic and intrahepatic biliary ductal dilation. Three prior percutaneous CT-guided biopsies were performed at the outside institution, including multiple 18-gauge core samples and 21-gauge FNAs, which were all nondiagnostic due to narrow window of access and proximity of adjacent critical structures.

The patient was transferred to this institution for management of jaundice, pruritus, and possible biopsy of pancreatic head mass. Upon presentation, total bilirubin was 21 mg/dL (normal range: 0.3–1.9 mg/dL). Interventions were performed under general anesthesia administered by an attending anesthesiologist. All procedures were performed by an attending interventional radiologist. Procedures were

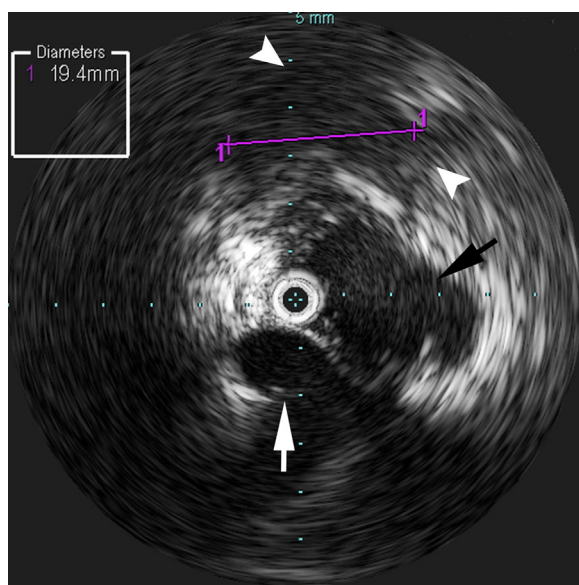


Fig. 2 – Axial image from IVUS at same position as Figure 1D revealing a hypoechoic mass (between white arrowheads) anterior to the common bile duct (black arrow). Also noted is the hepatic artery (white arrow), which was used for orientation of the IVUS. IVUS, intravascular ultrasound.

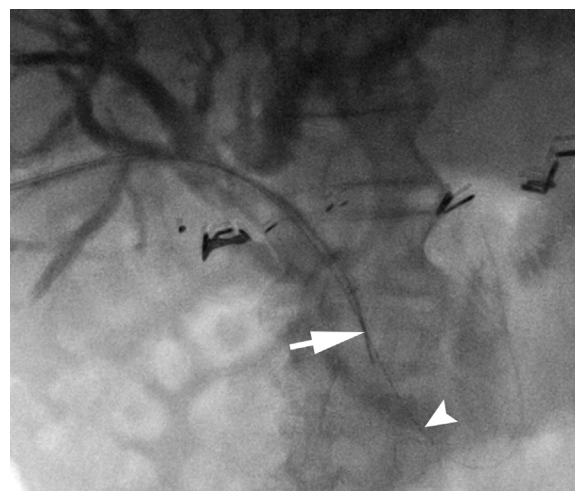


Fig. 3 – Fluoroscopic image during transbiliary biopsy demonstrating location of the core biopsy needle (white arrow) which was directed by IVUS reference. Note a safety wire within the proximal bowel (white arrowhead). IVUS, intravascular ultrasound.

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