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## Ampulla of Vater and Head of Pancreas Carcinoma

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### I. GROSS DESCRIPTION

#### **Specimen**

- pancreatic and ampullary cancers classically present with painless obstructive jaundice and investigation includes liver function tests, serum CA19-9, and OGD/ERCP with cytology and biopsy. Ultrasound can confirm duct obstruction and staging for local and distant disease also includes magnetic resonance cholangiopancreatography, CT scan chest, abdomen and pelvis and PET scan. Staging laparoscopy may also be done prior to consideration of radical surgery. Pancreatic endocrine tumours more often present as a consequence of a functional hormonal syndrome and localization of the primary lesion and metastases is by octreotide and CT scans. Treatment entails complete local excision of the primary tumour with a combination of surgery and medical treatment for metastatic disease.
- endoscopic brushings or biopsy/transduodenal or percutaneous fine-needle aspirate (FNA) or needle core biopsy.
- Whipple's procedure (partial gastrectomy, duodenectomy and partial pancreatectomy). A pylorus-preserving pancreaticoduodenectomy may be used for small peri-ampullary tumours, thus maintaining the storage and release functions of the distal stomach and proximal 3 cm of duodenum.
- total pancreatectomy (partial gastrectomy, duodenectomy, total pancreatectomy and splenectomy).
- weight (g) and size/length (cm), number of fragments.

Carcinomas of the ampulla and head of pancreas are considered together because of their anatomical juxtaposition, overlap and common potentially operative resection (Whipple's procedure). A majority of ampullary cancers are operable but only a minority of pancreatic carcinomas.

#### **Tumour**

#### **Site**

- non-ampullary duodenal mucosa/duodenal papilla/ampullary mucous membrane/muscularis/pancreatic head (60–70% of pancreatic carcinomas)/terminal common bile duct/multifocal.

**Size**

- length × width × depth (cm) or maximum dimension (cm).

Ampullary cancers >2.5 cm diameter have a decreased 5-year survival. Pancreatic exocrine cancers >3 cm are often inoperable. Pancreatic endocrine tumours >2–3 cm show greater local and vascular invasion and metastatic potential.

**Appearance**

- polypoid/nodular/diffuse/ulcerated: ampullary tumours.
- scirrhous/mucoid/cystic: pancreatic exocrine tumours.
- circumscribed/pale: pancreatic endocrine tumours.

**Edge**

- circumscribed/irregular.

**2. HISTOLOGICAL TYPE****Ampulla**

- adenocarcinoma. 80% of cases are usually of well to moderately differentiated intestinal pattern arising from adenomatous dysplasia in the peri-/intra-ampullary mucosa. Endoscopic biopsy underestimates the nature and extent of disease yielding a positive diagnosis of malignancy in only about 40% of cases. It samples the surface dysplasia but not the underlying carcinoma, which is better demonstrated as a mass lesion on imaging (ELUS, CT).
- papillary adenocarcinoma. Exophytic, well differentiated of better prognosis and can be multifocal in the extrahepatic biliary tree.
- mucinous adenocarcinoma—mucin in >50% of the tumour.
- signet ring cell adenocarcinoma.
- metastatic carcinoma, e.g. direct spread: stomach, pancreas, terminal common bile duct. Some 10–15% of ampullary adenocarcinomas arise from the terminal portion of either of the main ducts and, therefore, have a biliary phenotype making distinction from invasion by pancreatic adenocarcinoma difficult.

**Pancreas****(a) Exocrine**

- ductal adenocarcinoma (80–90% of cases):
  - tubulo-acinar pattern of malignant ductal epithelium in a desmoplastic stroma with perineural invasion and dysplasia of the adjacent duct epithelium (20–30%). Pancreatic intraepithelial neoplasia (PanIN) is a microscopic papillary or flat, non-invasive epithelial neoplasm (dysplasia) comprising cubocolumnar epithelial cells with variable degrees of cytoarchitectural atypia. It usually arises in pancreatic ducts <5 mm diameter, is multifocal and seen adjacent to existing carcinoma, being regarded as a precursor to it. High-grade PanIN is