

# **RECENT TRENDS IN THE MANAGEMENT OF PANCREATIC CYSTS**

Essay

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By

**AMR MUHAMMED MUHAMMED EL-ANANY**  
*(M. B. B. Ch)*  
*Cairo University*

Under Supervision of

**Prof. Dr. Alaa Abd Allah Farag**  
*Professor of General Surgery*  
*Faculty of Medicine - Ain Shams University*

**Dr. Hany Said Abd El-Baset**  
*Lecturer of General Surgery*  
*Faculty of Medicine - Ain Shams University*

Faculty of Medicine  
Ain Shams University  
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# List of Contents

Title	Page No.
<b><i>Introduction</i></b> .....	<b><i>1</i></b>
<b><i>Aim of the Work</i></b> .....	<b><i>4</i></b>
<i>Review of Literature</i>	
<b><i>Chapter (1): Embryology</i></b> .....	<b><i>5</i></b>
<b><i>Chapter (2): Anatomy of the Pancreas</i></b> .....	<b><i>9</i></b>
<b><i>Chapter (3): Pathology</i></b> .....	<b><i>28</i></b>
<b><i>Chapter (4): Incidence and Epidemiology</i></b> .....	<b><i>53</i></b>
<b><i>Chapter (5): Diagnosis</i></b> .....	<b><i>63</i></b>
▪ <b><i>Clinical presentation</i></b> .....	<b><i>65</i></b>
▪ <b><i>Investigation</i></b> .....	<b><i>80</i></b>
<b><i>Chapter (6): Management</i></b> .....	<b><i>115</i></b>
<b><i>Summary</i></b> .....	<b><i>166</i></b>
<b><i>References</i></b> .....	<b><i>170</i></b>
<i>Arabic summary</i>	

# List of Tables

Table No.	Title	Page No.
<b>Table (1):</b>	D'Egidio and Schein classification of pancreatic pseudocysts.....	32
<b>Table (2):</b>	Nealon and Walser classification of pancreatic pseudocysts.....	33
<b>Table (3):</b>	The differential diagnosis of mucinous cystic neoplasms and intraductal papillary mucinous neoplasms.....	38
<b>Table (4):</b>	Clinical and Demographic Features of Five Major Cystic Lesions of the Pancreas.....	65
<b>Table (5):</b>	Signs and symptoms in 134 patients with symptomatic pancreatic cysts.....	67
<b>Table (6):</b>	Indications for treatment of Pancreatic Pseudocysts.....	120
<b>Table (7):</b>	Prerequisites and recommendations for the endoscopic drainage of pancreatic pseudocysts .....	129
<b>Table (8):</b>	Surgery for pancreatic cysts.....	165

# List of Figures

Fig. No.	Title	Page No.
<b>Figure (1):</b>	Successive stages in the development of the pancreas.....	7
<b>Figure (2):</b>	Anatomy of the pancreas .....	9
<b>Figure (3):</b>	Pancreatic anatomy as seen on CT.....	10
<b>Figure (4):</b>	Parts of pancreas. ....	11
<b>Figure (5):</b>	Arrangement of pancreatic ducts.....	14
<b>Figure (6):</b>	Major arterial supply to pancreas (anterior view). ....	16
<b>Figure (7):</b>	Major arterial supply to pancreas (posterior view) .....	16
<b>Figure (8):</b>	Venous drainage from the pancreas .....	22
<b>Figure (9):</b>	Innervation of the pancreas. ....	24
<b>Figure (10):</b>	Lymphatic supply to the pancreas.....	25
<b>Figure (11):</b>	Diagrammatic presentation for en bloc resections of stomach.....	26
<b>Figure (12):</b>	Cystic lesions found within the pancreas.....	29
<b>Figure (13):</b>	Pseudocyst.....	31
<b>Figure (14):</b>	Categories of ductal anatomy .....	33
<b>Figure (15):</b>	IPMNs. (macroscopic appearance) .....	35
<b>Figure (16):</b>	IPMNs, adenoma, borderline and carcinoma in situ. ....	37
<b>Figure (17):</b>	Mucinous cystic neoplasm (macroscopic appearance).....	39
<b>Figure (18):</b>	Mucinous cystic neoplasm (microscopic appearance).....	40
<b>Figure (19):</b>	Serous cystadenoma (macroscopic appearance). ....	42
<b>Figure (20):</b>	Serous cystadenoma (microscopic appearance) .....	43
<b>Figure (21):</b>	SPT. Typical macroscopic appearance .....	45

## List of Figures

Fig. No.	Title	Page No.
<b>Figure (22):</b>	SPT. (microscopic appearance).....	46
<b>Figure (23):</b>	Lymphoepithelial cysts (LECs). (macroscopic appearance).....	49
<b>Figure (24):</b>	Lymphoepithelial cyst. (microscopic appearance).....	50
<b>Figure (25):</b>	Pancreatic endocrine neoplasm.....	52
<b>Figure (26):</b>	Typical location for pancreatic cystic lesions .....	66
<b>Figure (27):</b>	Presentation and salient features of the more common pancreatic cystic lesions .....	78
<b>Figure (28):</b>	Schematic presentation of cystic lesions .....	80
<b>Figure (29):</b>	Radiological classification of cystic lesions of the pancreas.....	83
<b>Figure (30):</b>	Pancreatic mucinous cystadenocarcinoma. ....	86
<b>Figure (31):</b>	Serous cystadenoma. Multidetector CT.....	89
<b>Figure (32):</b>	CT scan demonstrating features of a typical MCN .....	90
<b>Figure (33):</b>	MRI demonstrating features of a typical SPPN .....	93
<b>Figure (34):</b>	Pseudocyst by single-shot fast spin-echo MRCP .....	95
<b>Figure (35):</b>	IPMN. <b>(a)</b> Dilatation of the orifice of the papilla of Vater. <b>(B)</b> Branch-duct IPMN by ERCP .....	97
<b>Figure (36):</b>	Pancreatoscopy through the major papilla shows an IPMN lesion.....	99
<b>Figure (37):</b>	Echoendoscope used to perform interventional procedures.....	101
<b>Figure (38):</b>	Cytology of a pseudocyst .....	103
<b>Figure (39):</b>	Cytology of a serous cystadenoma .....	105

## List of Figures

Fig. No.	Title	Page No.
<b>Figure (40):</b>	Thick and viscous cyst fluid from either an intraductal papillary mucinous neoplasm or a mucinous cystic neoplasm .....	107
<b>Figure (41):</b>	Contaminating gastric epithelium may be impossible to distinguish from lesional epithelium of low-grade mucinous cysts.....	109
<b>Figure (42):</b>	A mucinous cystic neoplasm with low-grade dysplasia is shown.....	110
<b>Figure (43):</b>	An intraductal papillary mucinous neoplasm with moderate dysplasia is shown.....	111
<b>Figure (44):</b>	An intraductal papillary mucinous neoplasm with invasive carcinoma is shown. ....	112
<b>Figure (45):</b>	Algorithm for management of pancreatic pseudocysts. ....	119
<b>Figure (46):</b>	Percutaneous pseudocyst drainage .....	123
<b>Figure (47):</b>	Surgical pseudocyst gastrostomy .....	125
<b>Figure (48):</b>	Pseudopancreatic cyst during surgical excision.....	125
<b>Figure (49):</b>	Labaroscopic cystogastrostomy .....	126
<b>Figure (50):</b>	The individual steps in the endoscopic treatment of a large pancreatic pseudocyst.....	131
<b>Figure (51):</b>	Cross section of serous cystadenoma of the pancreas.....	139
<b>Figure (52):</b>	Variation in gross appearance of MCN .....	141
<b>Figure (53):</b>	Schematic representation of classification of intraductal papillary mucinous neoplasm .....	146
<b>Figure (54):</b>	Surgical specimen of a patient with two side branch intraductal papillary mucinous neoplasms.....	148
<b>Figure (55):</b>	The tumor is enucleated by blunt dissection.....	161
<b>Figure (56):</b>	Suggested algorithm for the management of pancreatic cystic lesions.....	164

# List of Abbreviations

<b>ACC</b>	Acinar cell carcinoma
<b>AIPD</b>	Anterior inferior pancreaticoduodenal artery
<b>ARDS</b>	Acute respiratory distress syndrome
<b>ASPD</b>	Anterior superior pancreaticoduodenal arteries.
<b>CBD</b>	Common Bile Duct
<b>CEUS</b>	Contrast-enhanced ultrasonography
<b>CGRP</b>	Calcitonin gene-related peptide
<b>CNP</b>	Cystic neoplasms of the pancreas
<b>CT Scan</b>	Computed Tomography Scan
<b>ERCP</b>	Endoscopic Retrograde Cholangiopancreato-graphy
<b>EUS</b>	Endoscopic ultrasound
<b>IMV</b>	The inferior mesenteric vein
<b>IPMNs</b>	Intraductal Papillary Mucinous Neoplasms
<b>LECs</b>	Lymphoepithelial cysts
<b>LOH</b>	Loss of heterozygosity
<b>MCNS</b>	Mucinous cystic neoplasms
<b>MDCT</b>	Multidetector computerized tomography
<b>MPD</b>	Main pancreatic duct
<b>MRCP</b>	Magnetic resonance cholangiopancreatography
<b>MRI</b>	Magnetic Resonance Imaging
<b>NETs</b>	Neuroendocrine Tumors
<b>NOTES</b>	Natural orifice transluminal endoscopic surgery
<b>PANDA study</b>	The Pancreatic Cyst DNA Analysis study
<b>PAS stain</b>	Periodic acid-Schiff stain
<b>PET</b>	Positron-emission tomography



<b>PFCs</b>	<b>Peripancreatic fluid collections</b>
<b>POPS</b>	<b>Peroral pancreatoscopy</b>
<b>pps</b>	<b>Pancreatic pseudocysts</b>
<b>PSPD</b>	<b>Posterior superior pancreaticoduodenal arteries.</b>
<b>SCA</b>	<b>Serous cystadenoma</b>
<b>SCNs</b>	<b>Serous cystic neoplasms.</b>
<b>SMA</b>	<b>The superior mesenteric artery</b>
<b>SMV</b>	<b>The superior mesenteric vein</b>
<b>SPDP</b>	<b>Spleen-preserving distal pancreatectomy</b>
<b>SPN</b>	<b>Solid pseudopapillary neoplasm</b>
<b>TPN</b>	<b>Total parenteral nutrition.</b>
<b>US</b>	<b>Ultrasound</b>
<b>VHL</b>	<b>Von Hippel- Lindau disease</b>
<b>VIP</b>	<b>Vasoactive intestinal peptide</b>

## INTRODUCTION

Cystic lesions of the pancreas have long posed diagnostic and treatment dilemmas to surgeons and patients. While many identified lesions may prove to be inflammatory pseudocysts or other benign conditions, the possibility of malignancy within a cystic lesion necessitates a thorough diagnostic work up. Advances in the medical disciplines of radiology, Pathology, gastroenterology and surgery have led to a recent reconsideration of the classification of cystic neoplasms of the pancreas, reflecting an improved understanding of diagnosis, prognosis, and treatment of these often challenging lesions (*Christopher Sonnenday et al., 2007*).

Cystic lesions of the pancreas were first described in 1824. And can be either inflammatory or proliferative in nature. The natural history of such cysts has only begun to be fully appreciated in the last 20 years. Due to the Diagnostic uncertainty associated with these lesions, routine Excision of all pancreatic cysts has been recommended by some centers, the rationale for this stance being that differentiation between benign and malignant cysts can be difficult and the dire consequences of missing the window for a curative resection in patients who can tolerate such surgery.

This approach inevitably results in Patients with benign disease being exposed to the potential morbidity and mortality

of pancreatic resection and is becoming untenable with the increasing number of pancreatic cysts detected as an incidental finding on cross-sectional imaging (*Garcea et al., 2008*).

These considerations have led to reports which argue that due to improvement in imaging techniques, identification of a group of patients with an extremely low risk of malignancy is possible and that these patients should be managed by observation alone (*Garcea et al., 2008*).

Pseudocysts make up the majority of all cystic lesions of the pancreas, the remainder comprising cystic tumours and true cysts (true cysts accounting for a very Small percentage of these lesions). Hydatid cysts of the pancreas have also been described and should be considered as a differential diagnosis in countries where Hydatid disease is endemic. Pancreatic cystic tumours fall into one of three major groups; serous tumours (including serous cystadenoma and cystadenocarcinoma), Mucinous tumours (including mucinous Cystadenomas, mucinous cystadenocarcinomas, intraductal Papillary adenomas and intraductal papillary Adenocarcinoma) and solid pseudopapillary tumours (SPT).

The majority of cystic tumours of the pancreas are slow-growing and asymptomatic. When symptoms do occur, they are usually secondary to a mass effect and tend to be vague and poorly localized in nature. Only intraductal papillary mucinous tumours (IPMTS) present with pain and may mimic chronic pancreatitis. Unfortunately, no formal classification of

pancreatic Cysts exists at present and there are other descriptions of them based on the nature of the cyst wall lining (*Garcea et al., 2008*).

Pancreatic Pseudocysts are collections arising from around the pancreas, which lack an epithelial lining, and they occur following acute pancreatitis, chronic pancreatitis or secondary to pancreatic trauma. Pseudocysts normally contain necrotic fat and a mixture of necrotic cells, including Neutrophils surrounded by granulation tissue, which eventually matures to form a fibrotic pseudocapsule (*Garcea et al., 2008*).

Pseudocysts developed in about 2 %of cases of acute pancreatitis, the cysts are single in about 85% of cases and the remaining are multiple (*Gerand and Lawrence, 2003*).

Primary cystic neoplasms of the pancreas are rare neoplasm, comprising about 10 – 15 % of all pancreatic cystic masses and only 1% of primary pancreatic lesions of unknown origin. The Importance of identifying those neoplasms became clear because of their latent or overt malignant potential (*Christopher Sonnenday et al., 2007*).

Although the clinical, radiologic, and pathologic features of cystic pancreatic lesions are well known, preoperative diagnosis is difficult. Differentiation between a pancreatic pseudocyst and a cystic pancreatic neoplasm is crucial in determining the proper treatment. Careful evaluation of the patient's clinical history is important for accurate diagnosis of a pseudocyst (*Kim et al., 2005*).

## AIM OF THE WORK

The aim of this work is to highlight the recent trends in the diagnosis and management of the pancreatic true and pseudocyst.

## Chapter (1)

# EMBRYOLOGY

### **Development of the pancreas:**

**T**he pancreas is of endodermal origin and develops from ventral and dorsal pancreatic buds, the ventral bud arises from the hepatic diverticulum, and the dorsal bud arises from the developing duodenum (*Mulholland et al., 2006*).

At stage 5 weeks differential growth of the wall of the duodenum results in movement of the ventral pancreatic bud and the bile duct to the right side and ultimately to a dorsal position. It is not clear whether there is a corresponding shift of mesenchyme during this rotation; however, the ventral pancreatic bud and the bile duct rotate from a position within the ventral mesogastrium (ventral mesodudenum) to one in the dorsal mesogastrium (dorsal mesodudenum) which is destined to become fixed onto the posterior abdominal wall (*Williams et al., 2005*).

The duodenal wall grows asymmetrically; the opening of the two ducts (the duct of the ventral bud and the duct of the dorsal bud), originally diametrically opposite, are thus carried around into line with each other, and the two parts of the gland fuse into the single adult pancreas (Figure 1) The duct systems of the two buds anastomose and there is eventually some interchange of drainage areas. The end result is that the duodenal end of the dorsal duct becomes the accessory

pancreatic duct, and the duct of the ventral bud joins with the remainder of the dorsal duct to form the main pancreatic duct (*McMinn, 1994*).

During the shift of the ventral bud, the superior mesenteric vessels, which are extending from, the abdominal aorta, become trapped between the head and uncinate process of the pancreas. Initially the body of the pancreas extends into the dorsal mesogastrium and then cranially into the dorsal mesogastrum. As the stomach rotates, this portion of the dorsal mesogastrum is directed to the left forming the posterior wall of the lesser sac. The posterior layer of this portion of dorsal wall (peritoneum) and the pancreas becomes mainly retroperitoneal (*Williams et al., 2005*).