CANCER HEAD OF PANCREAS DIFFERENT METHODS OF DIAGNOSIS AND MANAGEMEMENT

Thesis

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Master Degree in General Surgery

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Abstract

Despite of many methods of management of cancer head of pancreas still a very bad prognosis disease. The new methods of investigation can be detected the size, vascular invasion and presence of secandries. So, pre-operative staging and prediction of resectablity can be achieved easily.
According to the staging, can be choose the method of treatment between adjuvant therapy, palliative treatment and surgical resection with or without vascular resection and reconstruction. No single method has proven to be satisfactory for all patients. In this study, the methods of management was retrospectively reviewed for evaluation the characters of the disease that determine the methods of investigation and treatment.

Key words:
Pancreas – adenocarcinoma – investigation – treatment – Follow up.

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Dedication

This work is dedicated to my father, my mother and my wife for their great encouragement and support.

LIST OF CONTENTS

	Page
List of abbreviations. **List of tables.** **List of figures.**	
***Introduction.**	**1**
***Aim of the work.**	**2**
***Anatomy, Histology& Physiology.**	**3**
*** Pathology.**	**20**
*** Diagnosis.**	**36**
*** Staging.**	**49**
*** Management.**	**53**
*** Prognosis.**	**65**
*** Patients and Methods.**	**68**
*** Results.**	**76**
*** Discussion.**	**83**
*** Conclusion.**	**93**
*** Summary.**	**94**
*** References.**	**95**
*** Arabic summary.**	

List of abbreviations

ACTH	**Adrenocorticotropic hormone**
AJCC	**American Joint Committee on Cancer**
APC	**Adenomatous polyposis coli**
ASVS	**Arterial stimulation venous sampling**
CA 19–9	**Carbohydrate antigen 19-9**
cAMP	**Cyclic adenosine monophosphate**
CBD	**Common bile duct**
CCK	**Cholicyctokinkine**
CEA	**Chrio-embrionic antigen**
CT	**Computerized tomography**
EGF	**Epidermal growth factor**
EHBR	**Extra hepatic billary radical**
EUS	**Endoscopic ultrasound**
ERCP	**Endoscopic retrograde cholangio-pancreatico-graphy**
ESPAC	**European Study Group for Pancreatic Cancer**
FAMMM	**Familial atypical multiple mole-melanoma**
FDA	**Food and Drug Administration**
FNA	**Fine needle aspiration**
GDP	**Guanosine diphosphate**
GI	**Gastro-intestinal**
GITSG	**Gastrointestinal Tumor Study Group**
GRF	**Growth releasing factor**
GTP	**Guanosine triphosphate**
HNPCC	**Hereditary nonpolyposis colorectal Cancer**
HSV	**Herpes simplex virus**
IAPP	**Islet amyloid polypeptide.**
ICU	**Intensive care unit**
IHBR	**Extra hepatic billary radical**
IORT	**Intraoperative radiotherapy**
IPMN	**Intraductal papillary mucinous neoplasm**
IV	**Intravenous**
MCN	**Mucinous cystic neoplasm**
MEN-I	**Multipal endocrinal neoplasms type- I**
MRA	**Magnetic resonance angiography**
MRCP	**Magnetic resonance cholangio-pancreatico-graphy**
MRI	**Magnetic resonance imaging**
MUC	**Mucin**
NFPTR	**National Familial Pancreas Tumor Registry**

PanIN	**Pancreatic intraepithelial neoplasia**
PET	**Positron emission tomography**
PP	**Pancreatic polypeptide**
PV	**Portal vein**
SCN	**Serous cystic neoplasm**
SMA	**Superior mesenteric artery**
SMPV	**Superior mesenteric portal veins**
SMV	**Superior mesenteric vein**
SRS	**Somatostatin receptors stimulation**
TNM	**Tumor nodal metastasis**
US	**Ultra sound**
VIP	**Vasoactive intestinal peptide**
VIPoma	**Vasoactive intestinal peptide tumors**
ZES	**Zollinger Ellison syndrome**
5-FU	**5-fluorouracil**

List of tables

No	Title	Page
1	**Pancreatic Enzymes.**	**18**
2	**Pancreatic Islet Peptide Products.**	**19**
3	**World Health Organization Classification of Primary Tumors of the Exocrine Pancreas.**	**20**
4	**Pancreatic Exocrine Tumors: the Cells of the Origin and Exocrinal Tumor.**	**21**
5	**Pancreatic Endocrine Tumors: Hormones Produced Clinical Syndromes and the Cells of the Origin.**	**21**
6	**Risk factors.**	**24**
7	**Pathologic Classification of Cystic Neoplasms of the Pancreas: The WHO International Classification of Tumors, 2000.**	**25**
8	**Diagnosis of Insulinoma.**	**41**
9	**Clinical Manifestations of Zollinger-Ellison Syndrome.**	**43**
10	**Causes of Hypergastrinemia.**	**44**
11	**American Joint Committee on Cancer: TNM System for Staging of Pancreatic Cancer.**	**50**
12	**Classification according to age.**	**76**
13	**Classification according to clinical presentation.**	**76**
14	**Laboratory investigations.**	**77**
15	**Compare between abdominal ultrasound and abdominal CTscan.**	**78**
16	**Diagnosis and Procedures.**	**81**
17	**Mortality and Morbidity.**	**82**

List of figures

No	Title	page
1	The duodenum and pancreas	4
2	Pancreatic Regions &Parts	4
3	Anterior Relation	5
4	Posterior Relation	6
5	Arterial supply to the pancreas	8
6	Pancreatic Venous Drainage	9
7	Lymph Drainage	10
8	Innervations of the pancreas	12
9	The pancreatic duct	12
10	Four entities composing sphincter of Boyden	14
11	Acinar cell. Zymogen granules fuse with the apical membrane and release multiple enzymes to digest carbohydrates, proteins, and fat	15
12	Relative incidence of pancreatic endocrine tumors	31
13	The Gastrinoma Triangle—the anatomic triangle in which approximately 90% of gastrinomas are found	33
14	Diagnostic and treatment algorithm for pancreatic cancer	53
15	Localization of insulinomas. EUS = endoscopic ultrasound	59
16	Localization of gastrinomas	60
17	The characteristic necrolytic migrating erythematous dermatitis of the glucagonoma syndrome	63
18	The uncinate process, head of the pancreas, and superior mesenteric artery are palpated between the thumb and index finger. This maneuver enables the surgeon to determine whether the tumor has extended into the uncinate process to involve the superior mesenteric artery	65
19	If one extends the Kocher maneuver of the duodenum along the third portion, the first structure one encounters anterior to the duodenum is the SMV. It can be cleaned	67

	quickly and visualized under direct vision from the posterior aspect of the pancreas (insert), and the dissection can be connected to that of the portal vein from above. Stom., stomach; Duod., duodenum; GB, gallbladder	
20	**The SMV and portal veins are separated from the neck of the pancreas by dissection above and below the pancreas. The dissection should be limited to the anterior surface of these vessels, since there are usually no venous branches in this plane**	**68**
21	**The portal and superior mesenteric veins are dissected from the uncinate process of the pancreas and the small venous branches between the veins and the uncinate process are ligated and divided carefully**	**69**
22	**Biliary-enteric bypass to palliate unresectable pancreatic cancer**	**77**
23	**Diagram showing the standard location of the greater splanchnic nerve as viewed through the right chest in the prone position. It is composed of the rami communicans of the 5th through the 8th thoracic sympathetic ganglia, funneling down toward the diaphragm. The lesser splanchnic nerve is derived from fibers arising from the 9th and 10th thoracic sympathetic ganglia and courses parallel to the greater splanchnic nerve**	**78**
24	**Intraoperative diagram in which the boxed image illustrates a magnified view of the operation from the surgeon's perspective. In this image, through an opening in the mediastinal pleura, the surgeon is dissecting and dividing the small rami communicans from the thoracic sympathetic ganglia to the greater splanchnic nerve while isolating the nerve throughout its length in the chest**	**79**

Surgical Anatomy

Development

Two pancreatic primordial (anlagen), the dorsal and ventral are responsible for the genesis of the pancreas. At the end of the fourth week, on the 26th day, the dorsal pancreatic primordium arises from the dorsal side of the duodenum. The ventral primordium arises somewhat later, on the 32nd day, from the base of the hepatic diverticulum, near the bile duct. Contact between the two pancreatic primordia takes place at about 37 days. Their fusion occurs at the end of the sixth week, the ventral primordium locating below and behind the dorsal. The ventral primordium differentiates into part of the head and uncinate process of the pancreas ***(skandalakis et al., 2004).***

After the fusion of the two primordia, their principal ducts anastomose. This allows the proximal part of the duct of Wirsung from the ventral pancreas to join the common bile duct (CBD), perhaps on the 32nd day, also contributing to the formation of the ampulla of Vater. The terminal portion of the duct of Wirsung is therefore formed by the duct of the ventral pancreas. The distal portion of the duct of the dorsal pancreas is retained as most of the main duct. The duct of Santorini represents the proximal part of the duct of the dorsal pancreas. Remember, the ventral pancreas forms the duct of Wirsung and part of the uncinate process and head ***(skandalakis et al., 2004).***

The dorsal pancreas forms the remainder of the uncinate process and head, plus the body and tail. The secretory acini appear during the third month, and the islands of Langerhans arise from the acini approximately at the end of the third month. Secretion of insulin is taking place around the 5th month. Parenchymal cells are also responsible for glucagon-secreting cells and somatostatin-secreting cells ***(skandalakis et al., 2004).***

The only critical morphologic events are rotation and fusion of the pancreatic primordial. Malrotation of the ventral primordium in the fifth week results in an anular pancreas. Fusion in the seventh week produces several possible variations of ductal patterns. Around the sixth week, the pancreas lies within the dorsal mesentery ***(skandalakis et al., 2004).***

Location

The pancreas lies posterior to the stomach and lesser omentum in the retro peritoneum of the upper abdomen (FIG. 1). It extends obliquely, rising slightly as it passes from the medial edge of the duodenal C loop to

the hilum of the spleen. It lies anterior to the inferior vena cava, aorta, splenic vein, and left adrenal gland ***(Steer, 2004).***

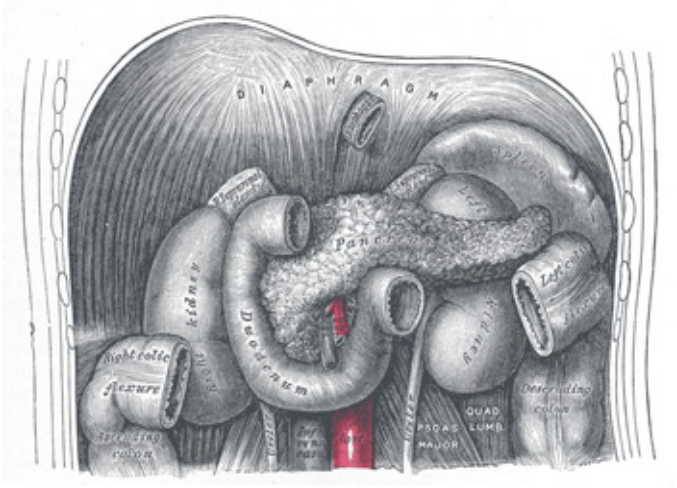

FIG. 1– The duodenum and pancreas (Gray, 2005).

Regions

The pancreas is divided into four regions (FIG. 2): the head/uncinate process, neck, body, and tail. The head lies within the duodenal C loop, and its uncinate process extends posteriorly and medially to lie behind the portal/superior mesenteric vein and superior mesenteric artery. The neck of the gland extends medially from the head to lie anterior to those vessels. The body extends laterally from the neck toward the spleen, whereas the tail extends into the splenic hilum ***(Steer, 2004)*.**

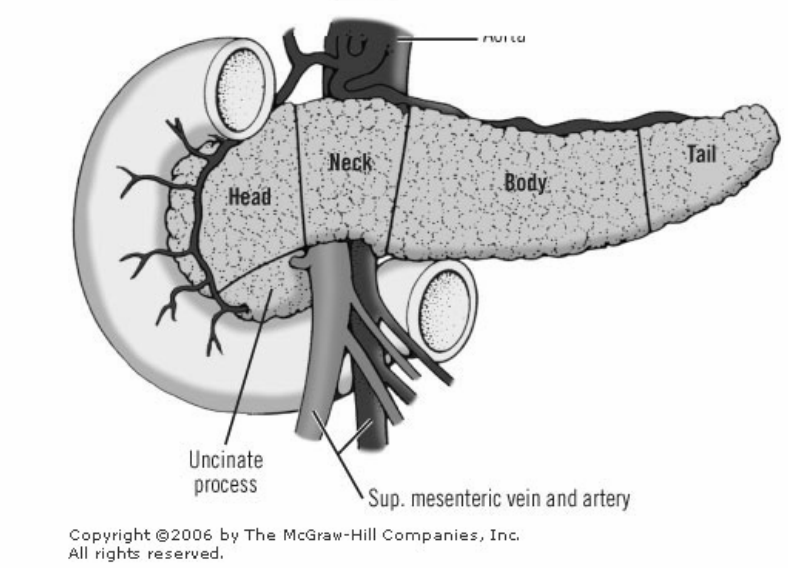

FIG. 2 –Pancreatic Regions &Parts (Skandalakis et al., 2004).

Relations.

1-The Head (*caput pancreatis*) is flattened from before backward, and is lodged within the curve of the duodenum. Its upper border is overlapped by the superior part of the duodenum and its lower overlaps the horizontal part; it's right and left borders overlap in front, and insinuate themselves behind, the descending and ascending parts of the duodenum respectively. The angle of junction of the lower and left lateral borders forms a prolongation, termed the uncinate process. In the groove between the duodenum and the right lateral and lower borders in front are the anastomosing superior and inferior pancreaticoduodenal arteries; the common bile duct descends behind, close to the right border, to its termination in the descending part of the duodenum ***(Gray, 2005).***

*Anterior Surface.

The greater part of the right half of this surface is in contact with the transverse colon, only areolar tissue intervening (FIG. 3). From its upper part the neck springs, its right limits being marked by a groove for the gastroduodenal artery. The lower part of the right half, below the transverse colon, is covered by peritoneum continuous with the inferior layer of the transverse mesocolon, and is in contact with the coils of the small intestine. The superior mesenteric artery passes down in front of the left half across the uncinate process; the superior mesenteric vein runs upward on the right side of the artery and, behind the neck, joins with the lienal vein to form the portal vein ***(Gray, 2005).***

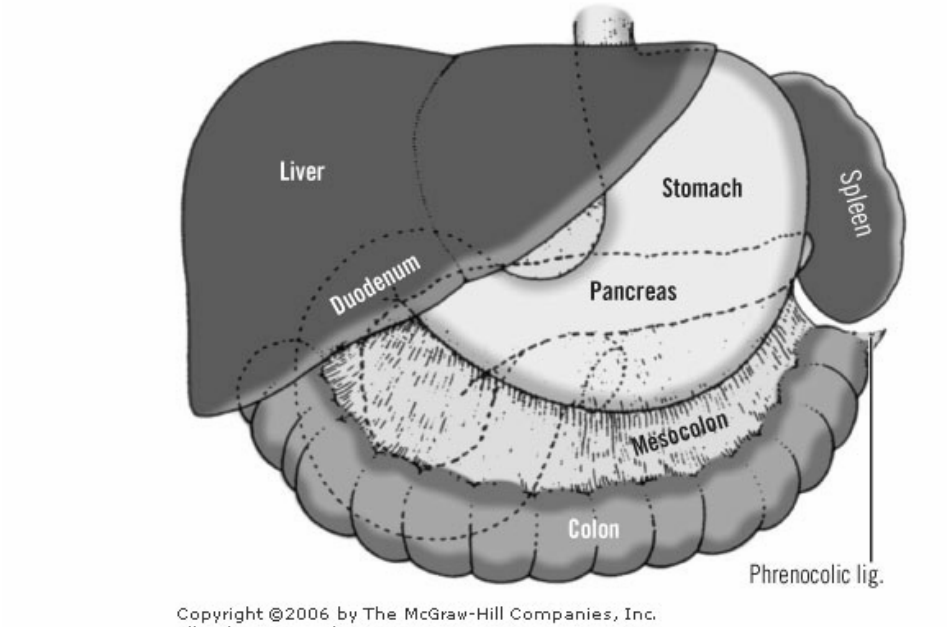

FIG. 3-Anterior Relation (Skandalakis et al., 2004).

*Posterior Surface.

The posterior surface (FIG.4) is in relation with the inferior vena cava, the common bile duct, the renal veins, the right crus of the diaphragm, and the aorta ***(Gray, 2005).***

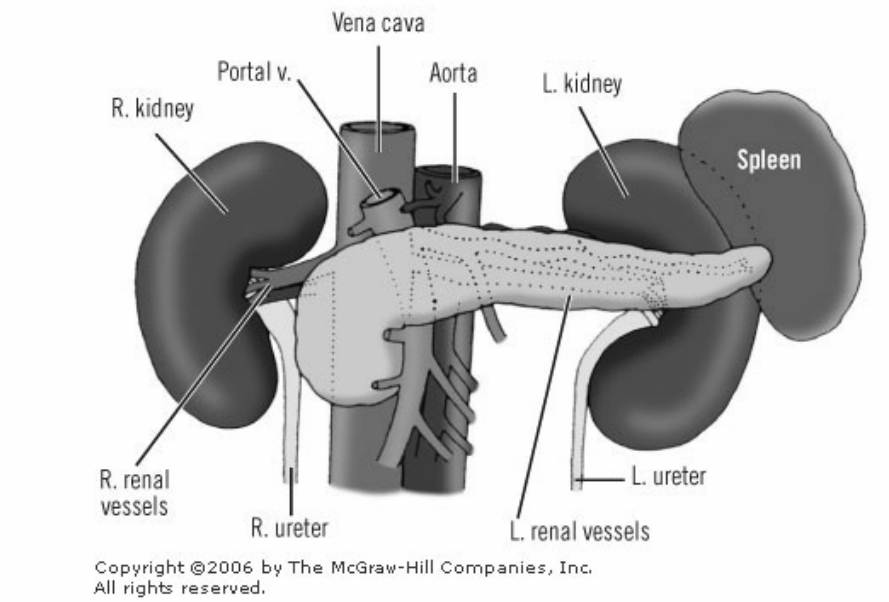

FIG. 4 –Posterior Relation (Skandalakis et al., 2004).

2-The Neck springs from the right upper portion of the front of the head. It is about 2.5 cm. long, and is directed at first upward and forward, and then upward and to the left to join the body; it is somewhat flattened from above downward and backward. Its antero-superior surface supports the pylorus; its postero-inferior surface is in relation with the commencement of the portal vein; on the right it is grooved by the gastroduodenal artery ***(Gray, 2005).***

3-The Body (*corpus pancreatis*) is somewhat prismatic in shape, and has three surfaces: anterior, posterior, and inferior ***(Gray, 2005).***

*The anterior surface (*facies anterior*) is somewhat concave; and is directed forward and upward: it is covered by the postero-inferior surface of the stomach which rests upon it, the two organs being separated by the omental bursa. Where it joins the neck there is a well-marked prominence, the tuber omentale**,** which abuts against the posterior surface of the lesser omentum ***(Gray, 2005).***

*The posterior surface (*facies posterior*) is devoid of peritoneum, and is in contact with the aorta, the splenic vein, the left kidney and its vessels, the left suprarenal gland, the origin of the superior mesenteric artery, and the crura of the diaphragm ***(Gray, 2005).***

*The inferior surface (*facies inferior*) is narrow on the right but broader on the left, and is covered by peritoneum; it lies upon the duodenojejunal flexure and on some coils of the jejunum; its left extremity rests on the left colic flexure ***(Gray, 2005).***

*The superior border (*margo superior*) is blunt and flat to the right; narrow and sharp to the left, near the tail. It commences on the right in the omental tuberosity, and is in relation with the celiac artery, from which the hepatic artery courses to the right just above the gland, while the splenic artery runs toward the left in a groove along this border ***(Gray, 2005).***

*The anterior border (*margo anterior*) separates the anterior from the inferior surface, and along this border the two layers of the transverse mesocolon diverge from one another; one passing upward over the anterior surface, the other backward over the inferior surface ***(Gray, 2005).***

*The inferior border (*margo inferior*) separates the posterior from the inferior surface; the superior mesenteric vessels emerge under its right extremity ***(Gray, 2005).***

4-The Tail (*cauda pancreatis*) is narrow; it extends to the left as far as the lower part of the gastric surface of the spleen, lying in the phrenicolienal ligament, and it is in contact with the left colic flexure ***(Gray, 2005).***

Vascular Supply

1-Arterial supply

The blood supply to the pancreas comes from multiple branches from the celiac and superior mesenteric arteries (FIG. 5). The common hepatic artery gives rise to the gastroduodenal artery before continuing toward the porta hepatis as the proper hepatic artery. The gastroduodenal artery becomes the superior pancreaticoduodenal artery as it passes behind the first portion of the duodenum and branches into the anterior and posterior superior pancreaticoduodenal arteries. As the superior mesenteric artery passes behind the neck of the pancreas, it gives off the inferior pancreaticoduodenal artery at the inferior margin of the neck of the pancreas. This vessel quickly divides into the anterior and posterior inferior pancreaticoduodenal arteries. The superior and inferior pancreaticoduodenal arteries join together within the parenchyma of the anterior and posterior sides of the head of the pancreas along the medial aspect of the C-loop of the duodenum to form arcades that give off numerous branches to the duodenum and head of the pancreas. Therefore