PANCREATIC TRAUMA: PREDICTION AND MANAGEMENT

ESSAY

Submitted for Partial Fulfillment for the Master Degree (M.S.C) In General Surgery.

By.

Feisal Mohamoud Goda.
M.B.B CH, Faculty of Medicine
Ain Shams University

Supervised By:

Prof.Dr: Hassan Sayed Tantawy
Professor of General Surgery
Faculty of Medicine
Ain Shams University

Dr: Yaser Abd EL Raheem Hassan
Assistant Professor of General Surgery
Faculty of Medicine
Ain Shams University

Dr.: Amr kamel EL Fiky
Lecturer of General Surgery
Faculty of Medicine
Ain Shams University

Faculty of Medicine
Ain Shams University
2006

بسم الله الرحمن الرحيم

قالوا سبحانك لا علم لنا إلا ما علمتنا إنك أنت العليم الحكيم

صدق الله العظيم

(سورة البقرة)

الآية (32)

Acknowledgement

Thanks to "Allah" from the start to the end, that this work has been completed.

I would like to offer my great thanks to* ***prof. Dr. Hassan Sayed Tantawy* *, Professor of General Surgery, Faculty of Medicine, Ain Shams University, for his keen advice, expert assistance, valuable help, persistence support and kind supervision during this study.*

** My deepest thanks and appreciation are presented to* ***Dr. Yaser Abd EL Raheem Hassan,*** *Assistance Professor of General Surgery, Faculty of Medicine Ain Shams University for his kind support, I have learned much from him and only wish I have learned more.*

I wish to present plentiful thanks to* ***Dr. Amr kamel EL Fiky,* *Lecturer of General Surgery, Faculty of Medicine, Ain Shams University for his kind support and keen advice.*

Lastly I wish to thank all staff members of General Surgery, faculty of medicine, Ain Shams University.

List of tables

List of figures

List of abbreviations

***FAST**	***Focused assessment with sonography for trauma.***
***US**	***Ultrasonography.***
***DPL**	***Diagnostic peritoneal lavage.***
***LS**	***Laparoscopy.***
***DL**	***Diagnostic laparoscopy.***
***CT**	***Computerised tomography.***
***ED**	***Emergency department.***
***GSW**	***Gun shot wound.***
***SW**	***Stab wound.***
***Mph**	***Mile per hour.***
***EMS**	***Emergency medical services.***
***ALTS**	***Advanced life trauma support.***
***ABCs**	***Airway-Breathing-Circulation.***
***OR**	***Operating room.***
***ERCP**	***Endoscopic retrograde cholangiopancreatography.***
***MRCP**	***Magnetic resonance cholangiopancreatography.***

Contents

Introduction

Trauma is the principal public health problem in every country regardless the level of socio economic development. In the United States, trauma is the leading cause of death, in children and adult up to 44 years and kills more Americans age 1 to 34 years than all diseases combined. The total cost of injury in the United States is estimated at approximately $ 200 billion per year and these costs continue to increase. [Hoyt DB.etal 1999].

The abdomen is frequently injured after both blunt and penetrating trauma. Approximately 25٪ of all trauma victims require an abdominal exploration, so rapid diagnosis is essential in order to minimize morbidity and mortality. [Hoyt DB.etal 2001].

The pancreas is injured in fewer than 2٪ of patient with abdominal trauma. Two thirds of pancreatic injuries are associated with penetrating abdominal trauma and one third associated with blunt abdominal truma. As a consequence of retro peritoneal location of the pancreas many patient with pancreatic trauma has injuries to adjacent organs and major vascular structures. [Gupt A.etal 2004].

In penetrating pancreatic trauma the lowest mortality is associated with stab wounds.(approximately 5 to 10%),with intermediate mortality associated with gun shots wounds and the highest mortality; 50% observed with closed range shot gun wounds. Blunt pancreatic trauma is associated with mortality rates of 15 to 50%.In most fatal cases, early death is the result of hemorrhage from near by vascular structures, while the second most common cause of death involves delayed mortality from intra-abdominal sepsis. [Yeo CJ and comenon J L 2001].

Pancreatic trauma is rare in children and management strategies are diverse and controversial.In general, management of pancreatic injuries should be individualized depending on the site of injury, timing of referral, presence of associated injuries and institutional expertise [Stringer MD 2005].

Iatrogenic injury of the pancreas occurs due to inexperience, Inadequate exposure of the relevant anatomy and faulty technique. Open surgery of the spleen,stomach,duodenum and colon is associated with pancreatic injury.Also,main pancreatic duct injury is liable to occur during endoscopic sphincterotomy.[Russel R.C.G etal 2004].

Pancreatic injury can be categorized into four classes in order of increasing severity. Class I pancreatic contusion without capsular rupture and without injury to the main pancreatic duct. Class II pancreatic capsular and parenchymal rupture without injury to the main pancreatic duct. Class III sever pancreatic parenchymal injury with rupture of main pancreatic duct. Class IV combined sever pancreatic and duodenal injury. More than 2/3 of pancreatic injury are class I&II [Vasquez JC etal 2001].

Accurate and early diagnosis of pancreatic injury is important and imaging plays akey role in election. History of mechanism of injury, type of injury, Meticulous clinical evaluation and the role of various imaging modalities is essential for prompt accurate diagnosis.[Gupta A.etal 2001].

The value of ultrasonography is often limited by the presence of air and fluid filled loops of bowel overlying and obscuring the pancreas, and computed tomography was found to be superior to the ultrasonography in diagnosis of pancreatic trauma.[Sato M. and Yoshii H. 2004].

Computed tomography(C.T)can demonstrate pancreatic parenchymal injuries, suggest disruption of pancreatic duct and diagnosis a lot of complications as abscess , fistula , pancreatitis and pseudocyst.Magnitic resonance cholangiopancreatography allows direct imaging of pancreatic duct and the site of disruption [Gupta A.etal,2004].

The goals of operative therapy for pancreatic injury, after resuscitation and thoroughly abdominal exploration, include control of hemorrhage debridment of non viable tissue with maximal preservation of viable pancreatic tissue, and adequate drainage of exocrine secretions. operative therapy depends on the degree of pancreatic injury.[Yeo CJ and Cameron JL 2001]

Aim of the work

This work aims at better understanding of pancreatic trauma,Accordingly, its prediction early diagnosis and proper treatment will, of course, reduce the morbidity, mortality and improve the out come of pancreatic trauma.

ANATOMY OF THE PANCREAS

The name pancreas is derived from the Greek "Pan" : (all) "Kreas" (flesh). The pancreas occupies a retroperitoneal position in the abdomen immediately behind the peritoneum of the posterior abdominal wall, by lying posterior to the stomach and lesser omentum . It extends obliquely from the duodenal C-shaped loop to a more cephalic position in the hilum of the spleen. The adult pancreas varies in weight from 75 to 125 g, and varies in length from 10 to 20 cm.In the anteroposterior axis,the pancreas is thickest at the head and it is thinnest at the tail. The gland has a distinctive Yellow-tan-pink color and is multilobulated. ***(Frey CF et al., 2001)***

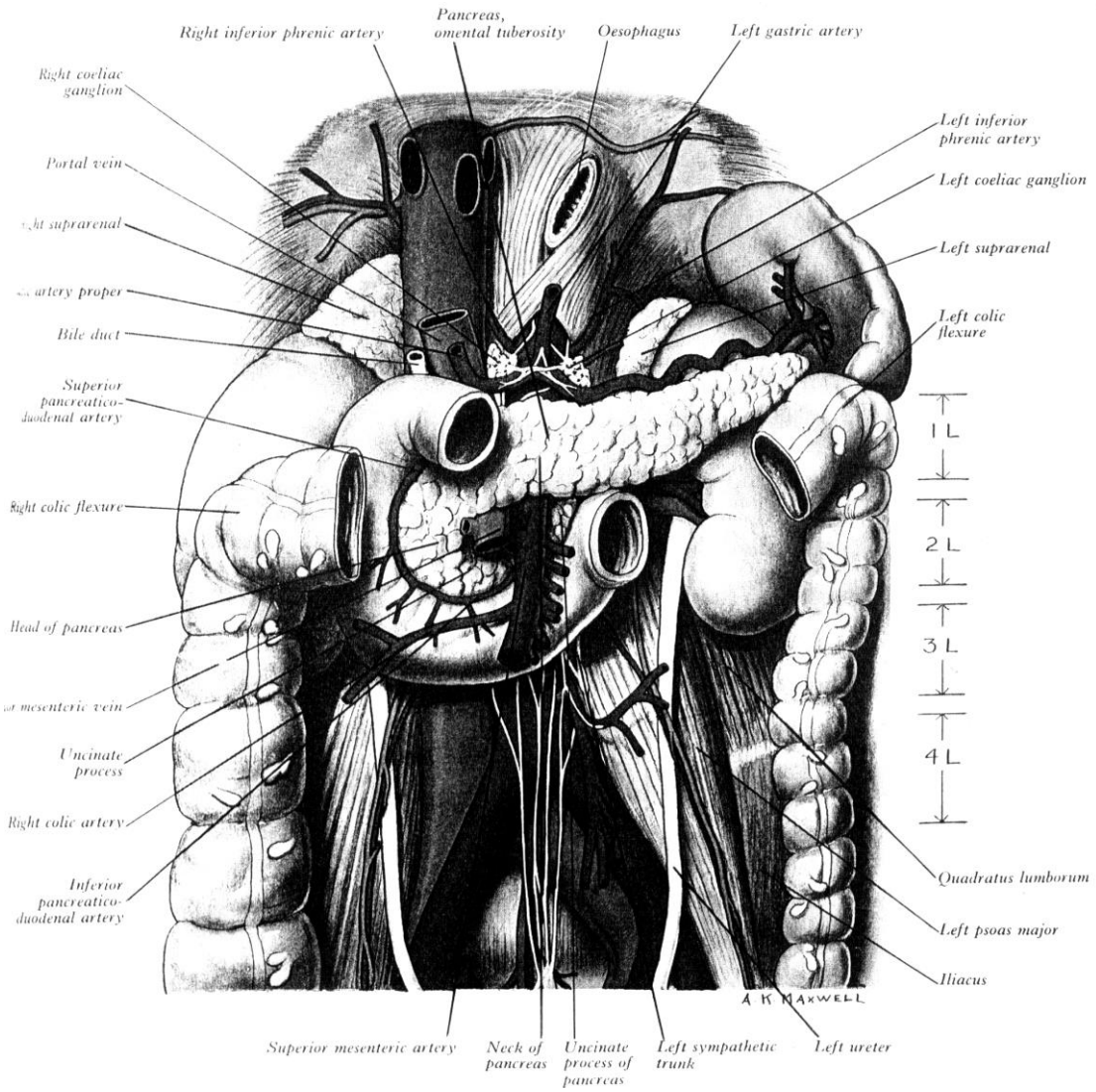

Figure 1. Anatomic relationships of the pancreas with adjacent viscera

(Skandalakis et al., 2000)

DEVELOPMENT

The pancreas develops as two separate buds, each an outgrowth of the endoderm at the junction of foregut and midgut .A ventral bud grows into the ventral mesogastrium in common with the outgrowth of the bile duct and a dorsal bud grows independently from a separate duct into the dorsal mesogastrium .The duodenal portion of the gut subsequently rotates and becomes adherent to the posterior abdominal wall, lying with the pancreatic outgrowths, behind the peritoneum.The duodenal wall grows asymmetrically; the openings of the two ducts 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 . 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 reminder of the dorsal duct to form the main pancreatic duct. ***(Sinnatamby, 1999).***

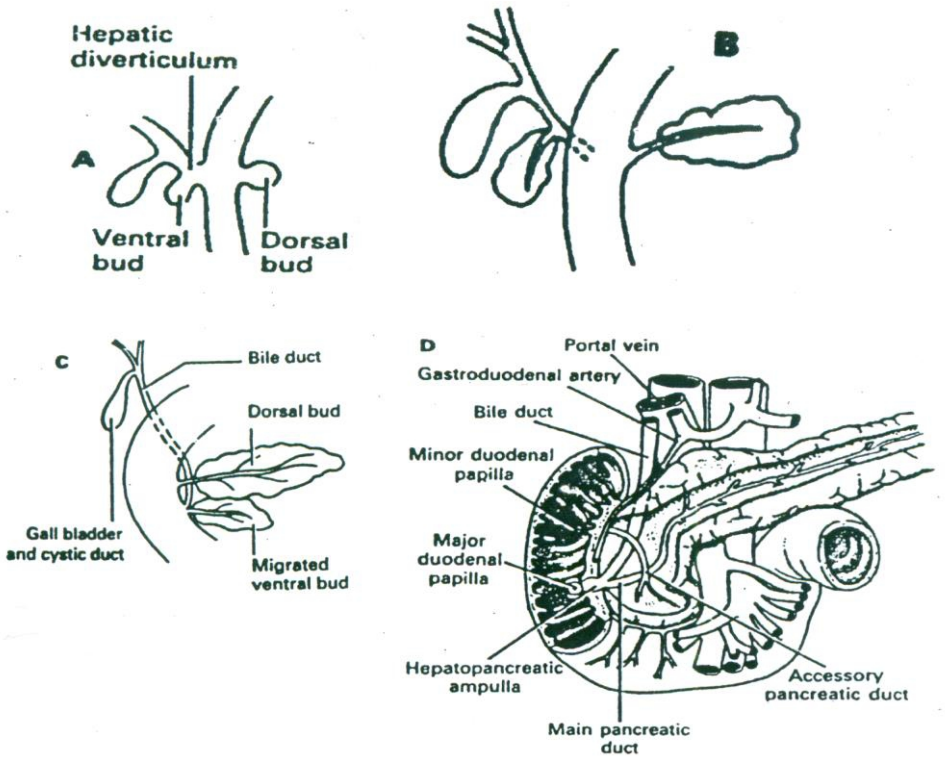

Figure 2 .Development of pancreas. A ventral and dorsal pancreatic bud. B the site of the original hepatic diverticulum and ventral pancreatic bud migrates dorsally, so that in C it becomes to lie below the opening of the dorsal pancreatic bud. D the pancreatic duct systems anastomos and eventually the main pancreatic duct comes to be formed from the ventral bud duct and the distal part of the dorsal bud duct and the proximal part of the dorsal duct becomes the accessory duct ***(Sinnatamby,1999).***