HEMIGASTRECTOMY IN WHIPPLE'S RESECTION FOR DELAYED GASTRIC EMPTYING

Thesis

Submitted for partial fulfilment of M.D. Degree

In

SURGICAL ONCOLOGY

Presented by

WAEL ABDEL WAHAB ALI EL SAIED GHONEIM

M.B.B.Ch., M.Sc.

Under supervision of

Prof. Dr.

MEDHAT MOHAMED KHAFAGY

Professor of Surgical Oncology,

National Cancer Institute

Cairo University

Prof. Dr.

MOHAMED GAMIL ABDEL MONEM

Professor of Surgical Oncology

National Cancer Institute

Cairo University

Prof. Dr.

AYMAN ABDEL WAHAB AMIN

Assistant Professor of Surgical Oncology

National Cancer Institute

Cairo University

National Cancer Institute
Cairo University
2009

بسم الله الرحمن الرحيم

﴿ قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا
إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ ﴾

(البقرة : الآية ٣٢)

TO
MY FATHER,
MY MOTHER,
MY SISTER AND HER HUSBAND
AND
MY BROTHERS

Acknowledgements

I would like to express my immense gratitude and appreciation to Professor **Dr. Medhat Mohamed Khafagy**, Professor of Surgical Oncology, National Cancer Institute, Cairo University, for suggesting the topic of this thesis, and his constructive ideas, valuable comments, intensive effort and guidance during all steps of this thesis.

My deep sincere thanks and appreciation goes to Professor **Dr. Mohamed Gamil Abdel Monem**, Professor of Surgical Oncology, National Cancer Institute, Cairo University, for the benefit of his extensive experience and knowledge. It goes without saying that whatever the amount of thanks I do express; it will be too little to pay back the great and generous support, fatherly guidance and indispensable advice during all steps of this work.

I am similarly grateful for the support and trust of Assistant Professor **Dr. Ayman Abdel Wahab Amin**, Assistant Professor of Surgical Oncology, National Cancer Institute, Cairo University, for his valuable guidance, keen suggestion and valuable supervision throughout the whole work.

Very special words of thanks must be made to Professor **Dr. Mohamed Akram Nouh**, Professor of Pathology, National Cancer Institute, Cairo University, who's wise comments were always on target.

I also acknowledge the help and guidance, which I received from Professor **Dr. Magdy Hassan Kotb**, Assistant Professor of Nuclear Medicine National Cancer Institute, Cairo University, for his great help in the practical part of the work and in the following the work to ensure its valuable level.

Special thanks are to be given to **Dr. Samera Ezzat Abou El-khair**, Lecturer of Statistics and Epidemiolgy, National Liver Institute, Menoufiya University, for her great help and her encouragement.

I cannot also fail to forget the kind, great help and valuable cooperation of my senior and junior colleagues in the Pathology and Radiodiagnosis Departments at National Cancer Institute, and my great thanks are also sent to staaff member, colleagues and my patients for their help and cooperation.

Last but certainly not least, I would like to express my heartfelt appreciation to my mother, my father, my sister, my brothers,and my friendes for their patience and unwavering support.

Wael Abdel Wahab

Contents Page

List of Table **Page**

List of Figures **Page**

List of Figures **Page**

List of Figures **Page**

List of Figures **Page**

Introduction
&
Aim of the Work

Introduction

The incidence of pancreatic cancer appears to have increased steadily in many countries for most of the 20th century. It is the fourth and fifth most common cancer in men and women respectively ***(Jemal et al., 2006)***.

Pancreatico-duodenectomy (PD) has become accepted as a safe and appropriate surgical treatment providing the possibility of cure for patients with carcinoma of head of pancreas. But it can also be performed for other pathologies as periampullary cancers, distal cholangiocarcinoma, carcinoma of the ampulla, carcinoma of duodenum, large neuroendocrine tumors of pancreatic head and also sometimes for severe chronic pancreatitis involving the head of the pancreas complicated by bile duct strictures ***(Williamson and Usatoff, 2000)***.

Both the operative mortality and postoperative morbidity following PD has improved by the development of specialized units with increased experience and the necessary resources for optimal care. The postoperative mortality in non specialized centers often exceeds 20% but is around 6% or less in specialized centers. However, the morbidity rate even in specialized centers is still high between 30-60 percent ***(Kingsnorth, 1997; Neoptolemos et al., 1997 and Halloran et al., 2002)***. The relatively high incidence of postoperative complications refers to the complexity of surgery with multiple anastomoses of different types and the rather poor nutritional status and high background comorbidity of the patient group ***(Halloran et al., 2002)***.

It is noteworthy that although the morbidity varies from centre to centre, the median hospital stay is of a very similar order (13-18 days). This suggests that some centers with an average hospital stay are under reporting their complications ***(Halloran et al., 2002)***.

The most common postoperative complications following (PD) is delayed gastric emptying (DGE) occurring in 25 % - 70 % with an average of 30% of

patients ***(Ohwada et al., 2001)***, pancreatic fistula in 8-30% of patients ***(Sampaio et al., 1998 and Sato et al., 1998)***, gastrointestinal haemorrhage in 5-10 % of patients, operative site haemorrhage in 2% of cases, biliary leakage, intra-abdominal abscess, wound infection and pain ***(Chew et al., 1997 and Rumstadt et al., 1998)***. The main systemic complications are organ failure (cardiac, hepatic, pulmonary and renal) and pancreatitis ***(Spanknebele and Conlon, 2001)***.

In the last two decades, delayed gastric emptying (DGE) has come on the front scene as the leading cause of postoperative complications following pancreatic surgery. For many years after Warshaw's and Torchiana first description of this clinical entity in seven out of eight patients undergoing PD, pessimistic approaches for pancreatic cancer arising from dismal prognosis of the disease, as well as from high mortality and morbidity rates of PD, prevented the attendance of surgeons to "secondary" matters, such as DGE ***(Miedema et al., 1992 and Gudjonsson, 1995).***

Although DGE is not associated with mortality, it can jeopardize nutritional status and increases the postoperative hospital stay and costs. The wide range of occurrence of DGE in the different studies can be explained partially by differences in the definition of this complication ***(Ohwada et al., 2001)***. A variety of definitions have been reported, such as the inability to tolerate a regular diet by the 10^{th} postoperative day ***(Braasch et al. ,1984)*** or 14^{th} postoperative day ***(Miedema et al., 1992)*** or the start of a liquid diet after ≥7 days ***(Patel et al.,1995)***. But in recent years, the most widely acceptable definition for DGE is gastric stasis requiring nasogastric intubation ≥10 days following the procedure or when a solid diet cannot be tolerated on or before the 14^{th} postoperative day ***(Van Berge Henegouwen et al., 1997)***.

A wide range of causative mechanisms has been proposed to be the culprit for the occurrence of DGE. These include absence of hormonal stimulation (motilin) due to resection of the duodenum ***(Tanaka and Sarr, 1988)***, ischemia

of the pylorus and antrum after ligation of the right gastric and gastroduodenal arteries ***(Itani et al., 1986)***, denervation of the stomach and duodenum due to radical resection of the surrounding tissue ***(Tanaka et al., 2000)***, postoperative pylorospasm ***(Kim et al., 2005)*** and gastroparesis secondary to postoperative intra-abdominal complications ***(Miedema et al., 1992)***. Other functional abnormalities include pancreatic fibrosis ***(Murakami et al., 2002)***, preoperative cholangitis ***(Park et al., 2003)***, postoperative pancreatitis ***(Lin and Lin, 1999)***, alternation of the endocrinologic millieau ***(Kim et al., 1987)*** and torsion or angulation of the reconstructed alimentary tract ***(Ueno et al., 1995)***.

The ill-defined etiologies in combination with the absence of a uniform definition for DGE comprise the basis of the existing debate. In addition, as a result of the tendency most surgeons have to preserve anatomic and functional structures in an attempt to improve the quality of life of the patient, various modifications of PD have emerged that make comparative studies difficult to interpret ***(Seiler et al., 2005)***.

Various techniques are available to study gastric emptying, all of them having specific advantages and disadvantages. Since the introduction of radionuclide gastric emptying tests, considerable improvement has been achieved in both methodology and operational equipment, and scintigraphy has become the 'gold standard' for measurements of gastric emptying in research and in the clinical setting ***(Hellstrom et al., 2006)***.

The standard treatment of early delayed gastric emptying after PD was largely supportive, incorporating prolonged nasogastric tube decompression combined with nutritional support by parenteral or enteral routes. The presence of mechanical obstruction at duodeno-jejunostomy or gastro-jejunostomy must be excluded by upper gastrointestinal series or endoscopy ***(Yeo et l., 1995)***. Prokinetic agents as motilin agonist (erythromycin) and 5HT4-agonists (cisapride) have been used frequently with a variety of success ***(Conlon et al., 1996)***.