Updates in Surgery

Ugo Boggi *Editor*

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In collaboration with:
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Forewords by
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*To the loving memory of my wonderful father*
*To my mother, who raised three boys*
*To my wife, who shared with me the heavy weight of "a surgeon's life"*
*To my daughters, who make every day a brighter day*

# Foreword

It's with great pleasure that I have accepted to introduce this important and exhaustive monograph by Ugo Boggi and coworkers dealing with a hot and current topic as the minimally invasive approach to pancreatic surgery is.

After the first anesthesia performed in 1846 by Bigelow and the spread of antiseptic procedures due to the work of Joseph Lister in the second half of the 19th century, surgeons were finally able to extend their "invasivity" and perform new and more complex types of resections, further pushing the limit of surgical trauma.

After having managed the most difficult and unthinkable procedures with a traditional laparotomic approach, surgeons faced a new revolution with the beginning of the laparoscopic era. In the early 1990s, after the increasing adoption of laparoscopic surgery, a minimally invasive approach to pancreatic diseases began to be performed and progressively utilized. In 1994, Cuschieri reported the first laparoscopic distal resection and, in the same year, Gagner and Pomp reported the first laparoscopic pancreatoduodenectomy.

Pancreatic surgery has greatly improved in recent years leading to reduced operative mortality, at least in high-volume centers, and more effective treatment of postoperative morbidity and complications, unfortunately still common, with a consequent reduction in reoperation rate.

Despite this, a report from Italian national database demonstrated that pancreatic surgery still remains a demanding field for surgeons, with many unsolved problems. In this scenario, the role of the laparoscopic approach, above all in major resective pancreatic surgery, is still debated. New fire was added to the already hot discussion with the introduction of the da Vinci robotic system, which gave some Italian authors the opportunity to become real innovators, reaching remarkable results and significant experiences.

Ugo Boggi has to be commended for having put together a great number of distinguished authors from all over the world to discuss the most controversial topics in this field.

In an era of "enhanced postoperative recovery" this monograph can help us refine our insight into this intriguing topic, thanks to the great efforts, meticulous research and extensive experience of some of the leading international groups.

Milan, September 2017

Marco Montorsi
President, Italian Society of Surgery

# Foreword

The first successful local resection of a periampullary tumor was performed by Halsted in 1898. A German surgeon from Berlin, Kausch, performed the first regional resection of a periampullary cancer and reported it in 1912. Whipple in 1935 popularized the operation. However, for the next 50 years the operation was performed only infrequently because of a hospital mortality rate in the range of 25%. In the middle 1980's, several high-volume centers developed, that reported mortality rates for pancreatoduodenectomy of less than 5%. Now the operation is performed with substantial frequency throughout the world. The first laparoscopic pancreatoduodenectomy was performed by Gagner in 1994. Little more was accomplished with minimally invasive surgery for pancreatic diseases, however, until the last decade.

During the last decade, there has been surprisingly rapid growth in many institutions throughout the world. The current status of minimally invasive surgery on the pancreas is very nicely documented in this current text that is edited by Professor Ugo Boggi from the University of Pisa. The text is comprised of international contributors, but the majority are Italians, many of whom have made important contributions to this field. All topics from evolving technologies, to training in simulation laboratories, to documenting a variety of important outcome measures in pancreatic surgery are discussed. A variety of minimally invasive procedures are described varying from thoracoscopic splanchnicectomy for severe pancreatic pain, biliary bypass, gastric bypass, to percutaneous necrosectomy and sinus tract endoscopy for infected pancreatic necrosis. The main procedures for pancreatic neoplasms, pancreatoduodenectomy, the variety of distal pancreatectomies, and central pancreatectomy performed minimally invasively are also discussed in detail. Many of the chapters have outstanding illustrations that complement the written text very nicely. Not only laparoscopic, but also robotic minimally invasive procedures are covered.

In our institution, we do approximately 500 pancreatectomies per year, including pancreatoduodenectomy (350) and distal pancreatectomies (150). Fifteen percent are done minimally invasively. Both laparoscopic and robotic

techniques are utilized. For the young surgeon in training, and just starting his or her career, who is interested in pancreatic surgery, it is essential that they learn minimally invasive techniques. Even though today the vast majority are done open, ten years from now the majority will be done with minimally invasive techniques.

This book is an ideal text for surgeons of all stages to be brought up to date on the various techniques for all pancreatic procedures using minimally invasive techniques. It will be the reference text for many years to come. It is to be recommended for all individuals who are interested in pancreatic diseases.

Baltimore, September 2017

John L. Cameron, MD
Alfred Blalock Distinguished Professor of Surgery
Johns Hopkins University, School of Medicine

# Preface

This book comes five years after the text edited by Fulvio Calise and Luciano Casciola on minimally invasive surgery of the liver and published in the same editorial series promoted by the Italian Society of Surgery. Like its predecessor, this monograph is meant to provide an overview of current knowledge and future developments of minimally invasive techniques for pancreatic surgery, a surgical branch considered until recently the realm of open surgery.

The challenges posed by minimally invasive pancreatic surgery (MIPS), however, are unique. Indeed, in most abdominal procedures including liver resections, implementation of minimally invasive surgery was confronted by the safety of open operations, but could also rely on the lessons learned from open procedures, for which standardized techniques had been developed. MIPS, instead, is confronted by the unique challenge of improving the outcome of still imperfect open procedures, with little agreement, and low level of evidence, on which techniques should be preferred. Additionally, MIPS requires extensive and meticulous dissection in the deep and narrow retroperitoneal space with its large and fragile vasculature, and it may require complex digestive reconstructions, making the inherent technical limitations of laparoscopy even more evident. The aggressive biologic behavior of most pancreatic tumors also poses concerns about the oncologic adequacy of MIPS.

The Italian contribution to the development of pancreatic surgery has deep historical roots in the contributions of Giuseppe Ruggi (1889: pancreatic tumor enucleation), Domenico Biondi (1894: duodenum-sparing partial head resection), and Alessandro Codivilla (1898: pancreatoduodenectomy), and was recently revived by Pier Cristoforo Giulianotti (2003: robotic pancreatoduodenectomy) and Ugo Boggi (2010: robotic pancreas transplantation). The current generation of Italian pancreatic surgeons has a high international reputation thanks to the demonstrated ability to couple excellent levels of clinical practice with a somewhat “new” scientific mentality that has produced hundreds of scientific papers published in high-impact journals and has brought some of us to play major roles in international hepato-pancreato-biliary societies.

The high reputation of Italian pancreatic surgery is also witnessed by the list of international authors who have contributed to this text. All of them are acknowledged authorities in the field in which they have written.

The book provides an overview of MIPS starting with a summary of the recent State of the Art Conference held on April 20th, 2016 in São Paulo (Brazil) and going all the way through every aspect of MIPS, including robotic pancreas transplantation, an operation that until recently would probably have been considered impossible. Indeed, there is probably no pancreatic operation that cannot be duplicated using minimally invasive techniques, and there is now little doubt that MIPS has a role in the treatment of pancreatic diseases. What remains to be clarified are the indications to MIPS in terms of which pancreatic diseases could be treated and which patients should be selected. Indications are also expected to vary with the type of pancreatic resection, being probably more restrictive for pancreatoduodenectomy and more permissive for distal pancreatectomy. Training and credentialing are other challenges that pancreatic surgeons will face in the near future. This renewed effort towards education, although demanding, will result in an additional improvement in the competency and proficiency of the future generations of pancreatic surgeons. Indeed, if pancreatic surgery in general accepts no compromise on education, MIPS requires even higher educational levels. Pancreatic surgery, perhaps more than any other surgical branch, requires knowledge, dedication and specific practical training. The real hazard of MIPS is that non-dedicated surgeons could embrace it too enthusiastically, potentially ending up with poor, or sometimes even embarrassing, outcomes that could compromise the still fragile reputation of MIPS and slow down its final development and wider use.

Finally, I wish to thank the Italian Society of Surgery for the honor of editing this book and sincerely hope our readers will be inspired from reading this monograph.

Pisa, September 2017 Ugo Boggi

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