

Sanjay Agrawal
Editor

Obesity, Bariatric and Metabolic Surgery

A Practical Guide

 Springer

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Foreword by President of British Obesity and Metabolic Surgery Society (BOMSS)

Obesity has become a pandemic, with billions of people across the globe now overweight or obese. This not only affects the health and longevity of each overweight person, but it also impacts massively on the economy and healthcare system in each and every country affected. As such, the management of this crisis is one of the greatest challenges facing the healthcare profession across the world.

No really successful pharmaceutical treatment currently exists and preventive measures seem just a pipe dream. This leaves bariatric surgery as the most effective tool that we have at the present time. The clinical value of such surgery is without question, and the number of bariatric operations performed has increased exponentially in recent years and continues to increase year on year.

Many different surgical procedures have been tried in the management of morbid obesity, and many different variations of each operation exist. *Obesity, Bariatric and Metabolic Surgery: A Practical Guide* is a major new surgical textbook, covering all aspects of obesity and its surgical management.

The book deals with the obesity epidemic, the underlying science of obesity and its health consequences. Non-surgical management of obesity is outlined, prior to an in-depth discussion of all aspects of bariatric and metabolic surgery. It describes the historical perspectives of obesity surgery, followed by a detailed discussion of patient selection and perioperative management. All of the different surgical techniques and variations of technique are described, each written by world experts in the field. It deals with the metabolic effects of bariatric surgery, and contains chapters dealing with the training, reporting and practice of bariatric surgery, finishing with many miscellaneous topics related to the field.

Not only is this textbook the perfect guide for the bariatric surgeon, but it will also act as a reference guide for physicians, family doctors and other healthcare professionals, such as dieticians and specialist nurses.

Sanjay Agrawal must be congratulated on putting together and editing what is undoubtedly the most modern and comprehensive textbook on the subject of the surgical treatment of obesity. He has brought together an amazing array of world renowned experts, each of whom has contributed chapters to the book. Looking at the list of authors is like reading a list of Who's Who in Obesity Surgery across the globe!

This book is set to become the worldwide reference guide to obesity and bariatric and metabolic surgery.

Roger Ackroyd, MD, FRCS
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Foreword by President of International Federation of Surgery for Obesity and Metabolic Disorders (IFSO)

It is a great honor for me as the current President of the International Federation of Surgery for Obesity and Metabolic Disorders (IFSO) to be requested to write the foreword for this book *Obesity, Bariatric and Metabolic Surgery: A Practical Guide*.

Obesity has been declared a worldwide epidemic. The etiology of obesity is highly complex and multifactorial encompassing genetic, environmental, physiologic, cultural, political, and socioeconomic factors. This makes it a challenge to develop effective interventions to prevent and manage obesity. The key solution for this epidemic is the prevention of obesity. However, once morbid obesity develops, bariatric or metabolic surgical intervention is the most effective and long-lasting treatment.

The editor of the book, *Mr. Sanjay Agrawal* from Homerton University Hospital, London, United Kingdom, has been able to collaborate with and motivate a large number of experts from around the world to contribute for the contents of the book. He has organized the time-limited submission and painstakingly reviewed all chapters to give the book its final shape.

A total of 152 authors from across the globe with practical experiences in the surgical and endoscopic treatment of obesity have elaborated upon the different aspects of obesity and its surgical management. The ever-increasing number of publications from across the world in the field of metabolic or bariatric surgery is an indicator of the rapid growth of this field of modern medicine.

Through 78 chapters, spread across 14 sections, this book offers a concise summary of obesity and its surgical management for a wide range of healthcare professionals involved within a multidisciplinary team such as surgeons, anesthetists, physicians, dietitians, psychologists, radiologists, and nursing staff. The 14 sections were edited mainly by surgeons and scientists from the United Kingdom. The chapters themselves were written by international experts in the field from 20 countries covering five different continents. This makes the book an excellent reference guide for physicians, surgeons, and general practitioners.

Besides the basic fundamentals, pathophysiology and surgical techniques for morbid obesity, other important practical aspects are also discussed in detail. These include the credentials for training in the field of metabolic surgery, the quality control of bariatric surgery services, and the data management and reporting systems used worldwide. Medico-legal issues that play an important role in metabolic surgery are described in a special chapter. The spectrum of actual procedures in the field of bariatric and metabolic surgery is completely represented in this book. Online videos for many of the procedures make this book an excellent training tool as well.

The well-documented therapeutic effects of metabolic/bariatric surgery on several obesity-related diseases, the increased life expectancy after weight-loss surgery and the fact that surgery is more cost-effective than nonsurgical management are likely to change the indications for such surgeries in the future.

Surgery for morbid obesity involves surgical manipulation of normal body parts to get a biological result that can potentially cause weight loss and arrest weight regain. Hence, such surgery is considered as metabolic surgery. The actual body weight and the body mass index are not the sole indications for surgery. Henry Buchwald, who first coined the term *metabolic surgery* said, "Metabolic surgery is cognitive surgery." The realization that bariatric surgery is

actually metabolic surgery is, however, relatively new. The term *bariatric* is expected to be changed to *metabolic* surgery in the future. The future of this field is extremely bright and rapid advancements likely to happen. Therefore, we can expect a second edition soon.

Rudolf A. Weiner, MD, PhD

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Foreword by Pradeep Chowbey

Obesity is the modern-day scourge of mankind. The obesity epidemic is sweeping across nations, regions, and continents. There are enormous implications of the obesity pandemic for the affected population and health care delivery systems globally. Increasingly large segments of obese population have to contend with declining health parameter, poorer quality of life, and increased costs of health care.

The management of obesity is complex and involves several medical and surgical disciplines. Bariatric is an area of health care that epitomizes importance of teamwork and synergy in providing optimal health care delivery. Bariatric surgery today has evolved into a highly specialized surgical discipline in the short span of a few decades. Bariatric surgeons worldwide are a busy lot and the tribe is expanding in an effort to keep pace with demand.

On browsing through the list of contents of Dr. Agrawal's textbook, it is apparent that this is a textbook that is comprehensive, broad based, and yet exhaustive. The initial section of the textbook comprises an introduction to the problem of obesity and metabolic syndrome, the rationale and case for bariatric surgery, preoperative assessment, anesthetic considerations, and perioperative management of the bariatric patient. The subsequent sections describe the standard bariatric surgical procedures in elaborate detail as also different approaches like single incision bariatric surgery. Also included are complex situations like revisional surgery and some less commonly performed bariatric procedures. Newer endoscopic approaches and pure metabolic surgical procedures are described.

The expanse and scope of this textbook is immense. I cannot think of an important and relevant subject in bariatric surgery that has not been covered. I think this textbook would serve as a useful reference book for the armchair academic, the novice, and the experienced bariatric surgeon. I am impressed with the list of contributors that includes several leading practitioners in bariatric surgery.

I believe Dr. Agrawal's textbook will provide a reference and insight into the state-of-art information and knowledge on bariatric surgery as it exists today. I wish him the best for the current and all future endeavors.

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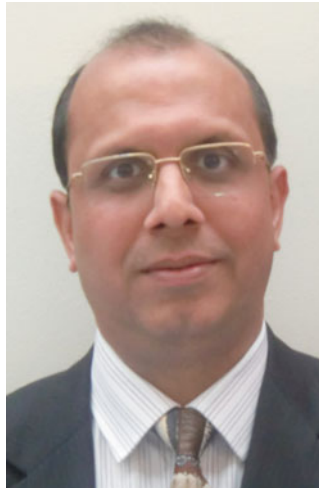
President– International Federation for the Surgery of Obesity and Metabolic Disorders
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Preface



Obesity has become an epidemic worldwide. Bariatric and metabolic surgery is in a state of continuing flux. For the clinicians and other health-care professionals involved in the care of an obese patient, keeping up with all these changes is a challenging task. This new book will offer a comprehensive yet concise summary about obesity and its surgical management, making it an ideal guide for all.

The book's 78 chapters are spread across 14 sections, each with an Honorary Section Editor. Each lead author was carefully selected and is an expert in their chosen subject. Over 150 experts from 20 countries across five continents have contributed to the content of the book.

The book covers all the aspects of bariatric and metabolic surgery including perioperative management, surgical techniques of common as well as newer procedures, complications, and outcomes. There are dedicated sections on revisional surgery, single-incision surgery and innovative endoscopic procedures. The book is well illustrated with photographs and video clips along with step-by-step guidance for a complete range of bariatric procedures. Medical aspects of obesity and metabolic syndrome are included in the introductory sections, and the last two sections cover diverse topics in this exciting field of bariatric and metabolic surgery.

I would like to express my deep appreciation and gratitude to the many people involved in the preparation of this book. First and foremost, the authors, for their timely submission of a high quality content within each chapter of the book. I would like to thank all the Honorary Section Editors who selflessly have invested enormous amounts of their time and energy in this project. I wish to record my special thanks to all the reviewers for their independent review of every chapter in the book. I would also like to mention Dr Natasha Das whose! careful attention to detail as copy editor has been critical to the quality of the finished book. Finally, I would like to thank my family, especially my wife and children who missed me greatly during this time-consuming endeavour and for their encouragement in completing this book.

The book will serve as an excellent manual for a wide range of healthcare professionals including bariatric surgeons, general surgeons, trainees, physicians, anaesthesiologists, dietitians, psychologists, radiologists and nursing staff.

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Obesity and Metabolic Syndrome

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Obesity is one of the greatest twenty first century public health challenges. It is responsible for approximately 5 % of all deaths a year worldwide. Its global economic impact amounts to roughly \$2 trillion annually, which equates to 2.8 % of global gross domestic product. Currently, more than 2.1 billion people, approximately 30 % of the global population, are overweight or obese. More worryingly if the prevalence of obesity continues on its current trajectory, almost half of the world's adult population will be overweight or obese by 2030.

The chapters in this section summarise how obesity is defined and assessed, provide an overview of the biology of energy regulation, the health and economic consequences of obesity and its medical management. Chapter 1 outlines the epidemiologic and economic burdens of obesity, how overweight and obesity are classified and the current methodologies used to assess the degree of adiposity and its distribution. Chapters 2 and 3 summarise the biological basis of energy homeostasis. Chapter 2 outlines the main peripheral short and long-term signals that regulate energy balance, the central homeostatic and reward brain regions upon which these act and the key neurotransmitters implicated. This chapter also summarises how genetic and environmental factors influence body weight regulation. Chapter 3 reviews the physiological effects of the gut-derived orexigenic hormone, ghrelin, and the enteroendocrine L-cell derived satiety hormones peptide YY (PYY), glucagon-like peptide (GLP-1) and oxyntomodulin (OXM). Emphasising how an increased understanding of the biology of enteroendocrine cells may hold the key to novel therapeutic approaches for treating obesity and type 2 diabetes. Chapter 4 summarises the health consequences, societal and economic burdens of obesity and the complex bidirectional interplay between medical problems causing obesity and obesity causing medical problems. The final chapter in this section reviews the medical management of obesity, which aims to reduce morbidity and mortality while improving psychological well-being and social function. This chapter summarises the clinical assessment of obesity, available treatment options and how to target limited resources to those who will gain the greatest health benefits. It also highlights the importance of combined dietary and physical activity interventions, the utility of behavioural interventions for weight loss maintenance and the health benefits of modest (10 %) weight loss.

There is optimism that with continued advances in our understanding of the biology of energy regulation, in particular the mechanisms by which bariatric surgery mediates its beneficial weight loss and metabolic effects that non-surgical therapies, rivalling the health benefits of surgery are on the horizon.