SURGICAL ONCOLOGY

Theory and Multidisciplinary Practice

SECOND EDITION

EDITED BY
GRAEME POSTON
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Dedication

Surgical Oncology: Theory and Multidisciplinary Practice, Second Edition, is dedicated to our patients across Europe in the hope that we will not fail them. This textbook has been written by a global multidisciplinary team of cancer experts from across Europe and beyond in the hope that it will inspire a new generation of surgeons to strive toward best practice and outcomes in cancer surgery.


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Foreword

THE MULTIDISCIPLINARY CANCER CARE TEAM

It is timely that the European Society of Surgical Oncology (ESSO) gathers highly recognized cancer care professionals to write this outstanding book on surgical oncology with a focus on multidisciplinary practice. Personalized cancer care does involve several different disciplines, and surgery has a central role in both curative and palliative treatment. At early stages of a cancer disease curative surgery is often enough, but at later stages multimodality treatments are mostly preferred and must be considered.

A prerequisite for optimal decision making at the multidisciplinary tumour board is high-quality pretreatment diagnostics. Here as well as for optimal treatment the competence by different cancer specialities is crucial. The radiologists and pathologists have important roles to provide relevant diagnostic information. The surgeon must understand the strengths of other treatment options, and radiation oncologists, medical oncologists and interventionists must know the strengths and weaknesses of the surgical procedures. Only then can a multidisciplinary team deliver quality decisions to benefit patients.

Surgical Oncology: Theory and Multidisciplinary Practice, Second Edition, provides not only residents and specialists in surgery but also other cancer specialities and professions the fundamental knowledge necessary for optimal cancer care.

Peter Naredi
ECCO President

I was delighted to be invited, as a medical oncologist, to provide a foreword to *Surgical Oncology: Theory and Multidisciplinary Practice,* Second Edition, as this reinforces the true spirit of collaboration and multidisciplinarity that is now the cornerstone of excellent cancer care across Europe.

As the treatment and care of cancer patients becomes more complex, their optimal management requires the expertise of specialists from many different disciplines, including, but not limited to, surgery, radiation therapy, medical oncology, cancer nursing, pathology and imaging. This has inevitably led to the development of both a multidisciplinary approach and multidisciplinary teams (MDTs). The advantages of working in an MDT environment include management consistency, coordination and communication, educational opportunities and, potentially, improved outcomes. Despite the fact that cancer treatment given through an MDT is logical and has become the 'standard of care' in many leading cancer centres in the world, it is disappointing to find only scarce evidence showing that such an approach is imperative [1,2].

One of the first studies that clearly showed that the MDT may improve patient outcome was a retrospective study from Scotland [3]. This study was performed following the observation of large differences in the survival outcome of patients with ovarian cancer and showed that management by an MDT at a joint clinic improved patient survival, even after adjustment for other clinical and pathological parameters ($p<0.001$).

Later, other studies suggested that there is an outcome and survival advantage across the various settings of different cancer sub-specialities, ranging from primary surgery to the palliative treatment of stage IV cancers. However, most of these studies were observational and retrospective in nature [4–8]. In reality, the practical implementation of the MDT demonstrates a paradox in cancer treatment: we demand evidence-based medicine for the individual, but not for general cancer care platforms [6]. Prospective studies demonstrating the already broadly accepted added value of the MDT are desirable, especially in a challenging economic environment.

Breast cancer is one example where the MDT has become imperative, especially for primary early stage treatment. Since the time when the 'Halsted procedure' – involving removal of the entire breast, axillary nodes and chest muscles – was considered the standard and the only treatment modality for breast cancer, major advances have been made.

First, it was shown that adding radiation therapy (RT) to lumpectomy was as effective as a mastectomy and far less disfiguring [9]. Later, the sentinel node biopsy (SNB) procedure, which can spare patients without nodal involvement from axillary lymph node dissection (ALND), was introduced [10]. Recently it has even been shown that patients with a positive SNB can – in some clinical situations – be spared ALND, as long as they receive radiation [11,12].

Radiation treatment has also evolved over time. While post-lumpectomy radiation is standard, the exact indications of post-mastectomy RT are still a matter of controversy. Given the emergence of new RT techniques, current efforts focus on minimizing RT. New techniques such as intense modulation radiotherapy (IMRT), partial breast irradiation (PBI) and intraoperative RT or brachytherapy have become available. However, it is crucial to select the right patients for these modern treatments [13,14].

Systemic treatment decisions for breast cancer are clearly influenced by data gathered from pathology, imaging and surgical procedures. Hormonal therapy is generally provided to treat estrogen receptor (ER) positive tumours, while trastuzumab is given only for HER2 positive tumours [15,17]. Neoadjuvant or adjuvant chemotherapy treatment decisions are also directly influenced by clinical and pathological data gathered by MDT.

Because the various treatment modalities are influenced by each other in the treatment of breast cancer, it is undisputed that all personnel involved in the care of one specific individual should discuss and treat the person in an MDT setting. For example, if the surgeon considers sparing ALND in a patient whose SNB is positive, this will result in a lack of formal nodal staging, which may in turn impact decisions on hormonal and chemotherapy treatment. Moreover, it will require post-surgical RT, which may lead to changes in the timing or modality of reconstructive plastic surgeries.

After MDT discussions, the treating physician can go back to the patient with more solid options to discuss, leading to more confidence in the patient–doctor relationship. Interestingly, in a recent survey, 63% of the investigators from western Europe declared that the MDT was a mandatory part of breast cancer care in their country [18]. Similar conclusions are likely to be reached for the treatment and care of all other cancer types.

Lastly, the MDT is likely to expand in the following years, given the gradual implementation in the clinic of powerful diagnostic technologies such as next-generation sequencing designed to move from 'precision medicine' to 'personalized medicine'. These technologies will call for additional experts – such as geneticists and bioinformaticians – to enrich the MDT. The human being residing within the patient will need to be remembered in all treatment decisions.

Marine Piccart
ECCO Past-President

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THE UEMS Section of Surgery

EUROPEAN SOCIETY OF SURGICAL ONCOLOGY

It is with great pleasure that I have agreed to write a foreword for this textbook, which is the work of the most prestigious group of authors in the field with experience and expertise which are second to none.

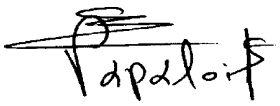
This textbook is a must read for any colleague involved in the field of surgical oncology for the following reasons:

- The entire width and depth of the field are covered comprehensively; each chapter has a wealth of scientific and clinical information provided in a clear, robust and fluent way.
- Each topic is covered holistically from the relevant elements of basic science to complex and innovative clinical practice, always enriched with most helpful examples reflecting the experience of the authors and aiming to stimulate the critical thinking of the readers.
- The textbook really focuses on a sound multidisciplinary approach reflecting the overall philosophy of the authors regarding the character of modern practice in surgical oncology. I am confident that the educationally superb way with which this approach is presented in the book will be 'game changing' even for those who still believe that they can practice within the narrow boundaries of their own specialty.
- The authors give emphasis to patient-centred care; this is of course of paramount importance for all patients, but even more so for cancer patients. A thorough analysis of issues related to quality of care, quality of outcomes, and above all, quality of life is clearly evident in the whole book.
- The overall content of the book mirrors the syllabus and core curriculum of the European training requirements in surgical oncology as they have been developed by the Division of Surgical Oncology of the Section of Surgery of the European Union of Medical Specialists (UEMS) and the European Society of Surgical Oncology (ESSO). The textbook is an invaluable tool for the preparation of the relevant European exam in surgical oncology.

As president of the UEMS Section of Surgery, I feel particularly proud that this truly excellent textbook reflects the superb work that has been done over the last few years by the executive and all the members of the UEMS Division of Surgical Oncology in collaboration with ESSO; they have our grateful thanks and most sincere congratulations.

I am sure that all colleagues who are involved in the truly challenging and ever-changing field of surgical oncology will find this textbook a most helpful companion and powerful ally in their day-to-day practice.

Enjoy reading it!



Vassilios Papalois
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Preface

Surgery is the oldest form of effective cancer treatment and 60% of people cured of cancer are cured by surgery alone [1]. The diagnosis and treatment of cancer has rapidly evolved over the past quarter of a century, with advances in screening and surveillance, diagnostic accuracy, effective systemic therapies and accuracy of radiation therapies, in addition to those in surgical oncology. Furthermore, for those whose cancer remains incurable, these advances significantly contribute to prolonged good quality of life that can now be frequently measured in years, rather than months. Lastly, the morbidity and mortality risks of these treatments have markedly improved, in particular those associated with the more complex cancer operations.

The advances in cancer surgery over the last 25 years (minimal access surgery, enhanced recovery, anaesthesia and intensive care), associated with better use of perioperative (neoadjuvant, adjuvant and conversion) therapies (systemic and radiation), have led to ever-improving outcomes in terms of both disease-free and overall survival. Furthermore, other medical disciplines allied to surgery, such as interventional radiology and nuclear medicine, now allow us to effectively treat patients previously thought beyond the scope of standard care [2]. This observation is especially true for the elderly, a group in which the majority of cancers occur in western society.

These advances are encapsulated in the application of multidisciplinarity: the principle that all disciplines are now essential in the management of patients suffering from cancer. All are equally important, and none pre-eminent. Multidisciplinary team working is now the standard of care in most countries, and a legal requirement in many.

Clinical trials in surgical oncology remain challenging [3]. However, advances in cancer surgery need surgeons who can conduct careful prospective evaluations of new operative techniques and technologies, in addition to the application of new adjunctive therapies to improve operative outcomes. It is, however, essential that surgeons pay meticulous attention to quality assurance, in particular operative technique, when conducting such studies.

Lastly, the most significant recent advances relate to greater understanding of molecular medicine, in particular the genetic mutational markers of better or worse prognosis, so allowing more appropriate uses of increasingly scarcer resources targeted at those whose potential benefit is greater: the age of precision medicine. We would hope that the next 10 years will see the application of precision surgery to the ever-increasing benefit of our cancer patients.

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PART 1

Basic principles of oncology


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