

Preface

Intraoperative Irradiation: Techniques and Results, Second Edition is a comprehensive textbook on intraoperative irradiation therapy (IORT) that covers topics of interest to those who have intraoperative electron radiation therapy (IOERT), high-dose-rate brachytherapy (HDR-IORT) or electronic brachytherapy/low KV IORT capabilities. Issues of basic science and physics are covered in addition to techniques, indications, and results by disease-site. Most disease-site chapters have multinational and multidisciplinary authorship that includes both radiation oncologists and surgeons, which provides a more balanced presentation of techniques and results by disease-site.

The rationale for using IORT as a component of treatment is based on the realization that tolerable doses of external beam radiation therapy (EBRT) are often insufficient to achieve local control of locally advanced abdominal or pelvic malignancies, even with 3-D conformal or intensity-modulated radiation techniques (3-D CRT; IMRT). A preferred treatment approach is to deliver preoperative EBRT of 45–54 Gy in 1.8–2 Gy fractions, often in conjunction with concurrent chemotherapy, followed by maximal surgical resection and IORT. The IORT component of treatment becomes the optimal conformal technique of irradiation, since dose-limiting organs or structures can either be surgically displaced (stomach, small intestine, liver, etc.) or protected by surgical placement of lead shielding or by proper selection of electron energy.

The textbook is again divided into five major sections. The book begins with chapters on the general rationale for and historical perspectives of IORT and the radiobiology of IORT. It then proceeds to a discussion of methods and techniques of treatment and a presentation of normal tissue and organ tolerance to IORT. In the methods and techniques section, a new chapter is included on “Electronic Brachytherapy/Low KV IORT: Physics and Techniques” which is a possible alternative IORT treatment approach. The tolerance chapter is essential reading for any individual or institution contemplating a program in IORT; the implications of tolerance are far-reaching both for the patients who receive IORT as a component of treatment and the physicians who deliver the IORT. The largest section of the text is the presentation of techniques and results by disease-site which includes outcomes data on disease control, survival, and treatment tolerance. Outcomes with non-IORT treatment approaches are compared with those using IORT-containing regimens in many of the chapters. The closing section is a chapter on conclusions and future possibilities that was written by the four coeditors of the textbook.

One of the conclusions of the closing chapter is that long-term experience has shown that the use of IORT as a component of treatment in conjunction with other modalities (EBRT, concurrent and maintenance chemotherapy, maximal surgical resection) is feasible and practical if close multidisciplinary cooperation exists. In addition, the IORT-containing, multimodality regimens appear to improve local disease control, if not survival, in many disease-sites when compared with non-IORT treatment approaches. For patients in whom gross total resection of their cancer is not safely feasible, the ability to achieve central or local control is lessened, thus creating the need for prospective clinical trials that address the addition of radiation dose modifiers during both EBRT and IORT.

Patients with locally advanced or locally recurrent cancers who are candidates for IORT containing regimens often have high systemic risks as well. Prospective trials that address the addition of aggressive systemic therapy to the locally aggressive combined treatment are also necessary. The closing chapter also addresses improvements in technology that make IORT more feasible in a larger number of institutions and thus facilitate the conduct of prospective trials in a multi-institution national or international setting. This technology includes mobile IOERT equipment (Mobetron, Novac-7, LIAC), HDR brachytherapy, and electronic brachytherapy/low-KV equipment that can be used in either an outpatient or operating room setting.

The four coeditors have personally been involved in utilizing IORT as a component of treatment in the care of thousands of patients in a multispecialty, multimodality setting. We are therefore delighted that IORT is becoming available to more physicians and patients worldwide as a result of the changes in technology that are discussed in *Intraoperative Irradiation: Techniques and Results, Second Edition*.

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