Chapter Overview .................................................. 272
Introduction ...................................................... 272
Pertinent Anatomy .............................................. 272
Role of Radiation Therapy in Breast Conservation Therapy .... 274
  Treatment of DCIS ............................................ 274
  Benefit of Radiation Therapy after Breast-Conserving
    Surgery for DCIS ........................................... 276
  Partial Breast Irradiation for DCIS ........................... 278
  Treatment of Early-Stage Invasive Breast Cancer .......... 279
  Mastectomy versus Breast Conservation Therapy ......... 279
  Benefit of Radiation Therapy after Breast-Conserving
    Surgery ..................................................... 279
  Radiation Therapy in Older Patients ....................... 281
  Partial Breast Irradiation for Early-Stage
    Invasive Cancer ............................................ 282
  Radiation Therapy Technique ................................ 283
  Special Case: Breast Conservation Therapy
    for Advanced-Stage Disease ............................. 286
Postmastectomy Irradiation ..................................... 288
  Patient Selection and Choice of Targets ..................... 288
  Radiation Therapy Technique ................................ 291
  Chest Wall ................................................... 291
  Supraclavicular Fossa ....................................... 294
  Internal Mammary Nodes .................................... 294
  Axilla ....................................................... 295
Treatment of Inflammatory Breast Cancer ..................... 295
Treatment of Local-Regional Recurrence after Mastectomy .... 297
Treatment of Adenocarcinoma in Axillary Nodes
  with Unknown Primary Tumor ................................ 298
Radiation Therapy for Palliation ............................... 299
Side Effects of Radiation Therapy for Breast Cancer .......... 300
Key Practice Points ............................................ 302
Suggested Readings ............................................ 303
Radiation therapy is an important tool in the treatment of women with breast cancer. For patients with ductal carcinoma in situ or early-stage invasive cancer, radiation therapy plays a central role in breast conservation therapy. Similarly, for selected patients with locally advanced disease who have a sufficient response to neoadjuvant chemotherapy, regional radiation therapy is an important part of a breast conservation approach. Patients with intermediate- or advanced-stage disease who undergo mastectomy and are at high risk for local-regional recurrence benefit from postmastectomy irradiation. Radiation therapy also plays an important role in the treatment of inflammatory carcinoma, local-regionally recurrent carcinoma, and axillary nodal disease from unidentified primary tumors. Finally, the judicious use of radiation therapy in patients with symptomatic metastases materially improves quality of life and helps maintain a high level of function.

**INTRODUCTION**

Radiation therapy has a role in the management of nearly every stage of breast cancer. This chapter begins with a brief review of the relevant anatomy, which is central to understanding the choice of treatment targets and techniques. That section is followed by a review of the indications for radiation therapy as part of breast conservation therapy in women with ductal carcinoma in situ (DCIS), early-stage invasive carcinoma, and selected locally advanced cancers treated with neoadjuvant chemotherapy. A brief discussion of treatment planning and delivery is also included. The subsequent sections focus on postmastectomy irradiation in the settings of advanced primary disease, inflammatory cancer, and local-regional recurrence. The special situation of radiation therapy for patients with axillary nodal disease from unidentified primary tumors (presumed to be of breast origin) is then reviewed. The chapter closes with discussions of palliative radiation therapy for patients with metastatic disease and side effects of radiation therapy.

**PERTINENT ANATOMY**

A clear understanding of the anatomy of the breast and its draining lymphatics is required by the radiation oncologist for both initial assessment and subsequent treatment planning. While the majority of glandular breast tissue is located in the protuberant breast mound, thin layers of mammary parenchyma can be found extending medially to