Breast radiation oncology in the modern era: evolution and advancements

Advancements in our understanding of breast cancer biology and behavior have allowed oncologists to push the envelope in treatments offered. Trimodality therapy, with surgery, chemo- and/or endocrine therapy, and radiation, is frequently used to maximize cure. With improvements in systemic therapy and radiation technology, surgeons can now perform more limited surgery in the breast and regional lymph nodes and safely rely on their partners in radiation oncology to complete a patient’s local therapy. This shift has now been reflected in treatment guidelines and practice. In the modern era, breast conservative therapy, rather than mastectomy, has become the standard for treatment of early-stage breast cancer (1). Post-mastectomy radiation therapy and regional nodal irradiation are delivered more frequently now than ever before (2,3). Shorter radiation treatment regimens and smaller treatment fields have been routinely adopted into practice (4-8). By tailoring therapy in this way, oncologists have been able to reduce the morbidity of their treatment without comprising cancer-related outcomes.

In this series, we will explore the applications and practice as well as future directions of breast cancer radiation oncology. Jhawar et al. expertly review the move from conventionally fractionated (long course) to modestly- and ultra-hypofractionated (short course) breast irradiation. Abdelrhman et al. discuss the treatment approach of partial breast irradiation in the setting of early-stage breast cancer. Jones et al. review the evolution of post-mastectomy radiation therapy in the modern era. Seldon et al. evaluate the role of regional nodal irradiation and its application in the setting of sentinel node biopsy. Li et al. explore the role of preoperative therapy as a new treatment paradigm for early-stage breast cancer. Saeed et al. provide a study on the role of salvage radiation in oligometastatic disease. Hentz et al. review future directions for breast radiation therapy in clinical trials. Konski reviews the impact of financial toxicity incurred by breast cancer patients and factors that make patients especially vulnerable to this distress.

Please join us learning more about the current applications and future directions of radiation treatment in breast cancer treatment. Breast cancer afflicts one in eight American women, and is the most common non-cutaneous cancer in women (9). For this reason, efforts to improve efficacy and reduce toxicity of breast cancer treatment are especially impactful and of utmost importance.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the editorial office, Annals of Breast Surgery for the series “Advancements and Opportunities for Breast Irradiation”. The article did not undergo external peer review.

Conflicts of Interest: Both authors have completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/abs-21-11). The series “Advancements and Opportunities for Breast Irradiation” was commissioned by the editorial office without any funding or sponsorship. PNB and WS Jr served as the unpaid Guest Editors of the series. WS Jr serves as an unpaid editorial board member of Annals of Breast Surgery from Aug 2019 to Jul 2021. Dr. PNB reports grants from ACRO New Practitioner Seed Grant, other from Osler Board Review Course, non-financial support from ACRO, other from Skin/Sarcoma Pathways Co-Chair, other from ASTRO, other from Franciscan Health System, Munster, IN, other from SANTRO, outside the submitted work. Dr. WS Jr reports personal fees from Carl Zeiss, other from Varian, other from Merck, other from NRG Oncology, outside the submitted work. The authors have no other conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.
Open Access Statement: This is an Open Access article distributed in accordance with the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 International License (CC BY-NC-ND 4.0), which permits the non-commercial replication and distribution of the article with the strict proviso that no changes or edits are made and the original work is properly cited (including links to both the formal publication through the relevant DOI and the license). See: https://creativecommons.org/licenses/by-nc-nd/4.0/.

References

Parul N. Barry  
*University of Pittsburgh Medical Center, Hillman Cancer Center, Pittsburgh, PA, USA.*  
(Email: barrypn@upmc.edu)  

William Small Jr  
*Loyola University Medical Center, Department of Radiation Oncology, Cardinal Bernadin Cancer Center, Maywood, IL, USA.* (Email: wmsmall@lumc.edu)  

Received: 31 December 2020; Accepted: 28 January 2021; Published: 30 March 2021.  

doi: 10.21037/abs-21-11  

**View this article at:** http://dx.doi.org/10.21037/abs-21-11  

Cite this article as: Barry PN, Small W Jr. Breast radiation oncology in the modern era: evolution and advancements. *Ann Breast Surg* 2021;5:1.

Cite this article as: Barry PN, Small W Jr. Breast radiation oncology in the modern era: evolution and advancements. *Ann Breast Surg* 2021;5:1.

Cite this article as: Barry PN, Small W Jr. Breast radiation oncology in the modern era: evolution and advancements. *Ann Breast Surg* 2021;5:1.

Cite this article as: Barry PN, Small W Jr. Breast radiation oncology in the modern era: evolution and advancements. *Ann Breast Surg* 2021;5:1.

Cite this article as: Barry PN, Small W Jr. Breast radiation oncology in the modern era: evolution and advancements. *Ann Breast Surg* 2021;5:1.