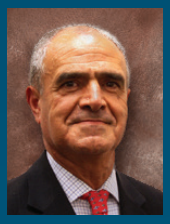
Issue 40: February 2020

AccuBoost®
for image guided breast irradiation

BOOSTER CLUB

CEO'S CORNER



The challenge in breast radiation therapy is to maintain the right balance: treat adequate margins around the tumor bed, but be mindful that the volume taken to high dose is responsible for toxicity and adverse cosmetic outcomes. AccuBoost with its real-time mammographic imaging platform immobilizes the breast, pushes healthy tissue away from the radiation field and allows for external applicators to be placed close to the tumor bed. The design provides adequate, but not excessive margins, while substantially reducing radiation exposure to the heart and lungs. These trade-offs are the main focus of this issue.

INSIDE THIS ISSUE:

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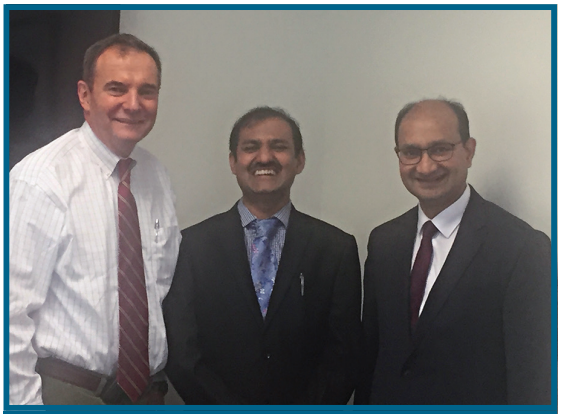
ACCUBOOST FOR OVERSEAS MARKETS

There is an increasing demand for the AccuBoost product line in markets outside of the US. Not only is the procedure sought after for accurate targeting but it is also unique as it has all the benefits of HDR brachytherapy. The HDR modality makes the procedure simple and easy to use and maintain. AccuBoost is now offered in more than a dozen countries outside of the US by independent distributors. To support the sales efforts, we facilitate site visits for overseas customers to witness live AccuBoost procedures. A partial list of foreign visitors in the last quarter of 2019 included delegations of breast cancer specialists from India and the Kingdom of Jordan. Both groups travelled to Rhode Island Hospital and were hosted by Drs. David Wazer and Jaroslaw Hepel providing tours of the facility and lectures regarding the state-of-the-art procedures and the latest equipment updates.



From Left: Drs. David Wazer Rhode Island Hospital, S. P. Somashekhar, Professor and Chair of Surgical Oncology, Manjunath Vadhiraja, Radiation Onocologist

Visitors from Manipal Hospital, India

Visit us at ACRO
Fort Lauderdale, FL
February 27-29

Visit us at ESTRO
Booth: S14
Vienna, Austria
April 3-7

Reduced Treatment Time: A Significant Improvement

"Rhode Island Hospital decided to upgrade the AccuBoost equipment as it was clear that the new digital platform would improve the patient experience.

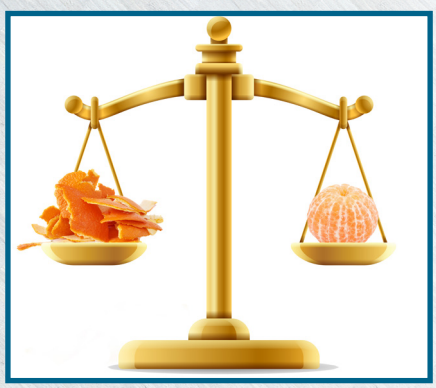
We see many technical benefits in the new AccuBoost Digital platform; the image quality combined with instant image display, have a substantial impact in reducing the treatment time, benefitting both patients and staff. Implementation has been among the most streamlined installations we have experienced-with virtually no disruptions."

David Wazer, MD
Medical Director
Rhode Island Hospital
Providence, RI

Did You Know?

For a 5 cm orange with a 5 mm peel, the volume of the peel and the orange are roughly the same.

In treating a tumor bed, a margin reduction by only 2 mm reduces the volume by nearly 25%!



PBI TRADE-OFFS FOR SMOKERS

Andrea McKee, MD

"For early-stage breast cancer patients who meet the requirement for partial breast irradiation, I more heavily weigh the PBI option to avoid exposure to the lungs, considering the odds of secondary malignancies," states Andrea McKee, Radiation Oncologist at Lahey Clinic.

She continues, "As the cure rate for early-stage breast cancer is about 98%, we need to start thinking about the quality of life and long-term health issues. This parallels our experience with the treatment of Hodgkins where we cure the patients from the disease, often 15 years down the road we find, they are more likely to die of some other radiation-induced complications."

RADIATION THERAPY MAY NOT BE OF MUCH HELP TO SMOKERS ACCORDING TO OXFORD UNIVERSITY RESEARCH

Remember the advice that "smoking is not good for your health"? This message particularly rings true for breast cancer patients in need of radiation therapy.

In women diagnosed with early stage breast cancer, lumpectomy followed by radiation has been shown to be as effective as mastectomy for preventing recurrence. Radiation therapy is believed to destroy any cancerous cells that may have been left behind after surgery, making recurrence less likely.

The benefits of preventing recurrence must be weighed against potential collateral damage caused by radiotherapy. In the past, numerous studies have implicated radiation as the cause of the higher risk of subsequent heart and lung complications in breast cancer survivors but, smokers were not singled out as a special class.

A recent British publication, reviewing the results of a number of other studies has found that smokers have a disproportionate risk of dying from lung cancer following breast radiation therapy. The so-called meta-analysis has revealed that smokers are at a much higher risk of developing lung cancer. In the research, the results of more than 40,700 patients reported on, between 2010 and 2015 (the era of modern radiotherapy), were randomly analyzed based on surgery and radiation or surgery alone. Because modern breast cancer radiation therapy techniques are better in avoiding exposure of the lungs and heart, the finding that women in the radiation therapy arm were more likely to be diagnosed with lung cancer, leukemia, esophageal cancer and heart disease is a significant finding and a major cause of concern. The study singles out the risk of modern radiation therapy for smokers and concludes that the risks of complications from radiotherapy outweigh the benefits for this group.

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"For non-smokers, the absolute risk of death from the side effects of modern radiation therapy is only 0.5 %, which is much less than the benefit, believed to be about 4.5%. But for smokers, the risk is 5% which is comparable to the benefit," states Carolyn Taylor, MD, radiation oncologist at the University of Oxford, the lead author of the study. "Stopping smoking at the time of radiotherapy may avoid most of the lung cancer and heart disease risks from radiotherapy."

New partial breast treatment options, such as AccuBoost, that virtually eliminates exposure to the lungs would be a preferred approach for smokers. The recent findings strongly suggest that it makes sense to modify treatment options for individual patients who do not heed the advice to stop smoking. This may also apply to those with lung vulnerability including ex-smokers and those exposed to second hand smoke.

Q & A: BRITISH STUDY ON RADIATION THERAPY FOR SMOKERS

with Scot Ackerman, Medical Director at Ackerman Cancer Center

Scot Ackerman, MD

Q: Is there a direct impact of smoking on radiation for breast cancer patients?

A: The fact that the subject has been studied is a good indication that experts in the field have suspected that there may be a cause and effect. Until recently, there has been a paucity of hard evidence. Most of the historical data were discounted as they relied on older, less reliable data.

Q: What is striking in the recent British publication?

A: The recent publication analyzed the actual survival statistics in the modern era, using contemporary techniques. It reviewed the historical records of some 40,000 patients reported on, since 2010 with reasonable years of follow up.

Q: In simple words, what does the research show?

A: Simply stated, the benefit of radiotherapy to prevent breast cancer recurrence in smokers is outweighed by the finding that breast radiation is responsible for the subsequent lung cancer. The British study suggests that the gains in survival rates are offset by the losses.

Q: What is the takeaway from the study?

A: There can be no doubt that smokers constitute a distinct group, separate from ordinary breast cancer patients. When treating these patients extreme care must be exercised to avoid unintentional exposure to the lungs. As always, the number one priority for radiation oncologists is "to do no harm".

Q: If there is a cause-and-effect, why has it taken so long to establish the fact?

A: The complications associated with smoking in the treatment of breast cancer patients, like other cancer causing agents, requires many thousands of patients and many years of follow up to accumulate enough statistics to be able to make a definitive statement. Equally, the period of follow-up is critical with diagnoses of secondary malignancies rising dramatically, 10 or 15 years post treatment.

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AccuBoost®

Q & A (CONT.)

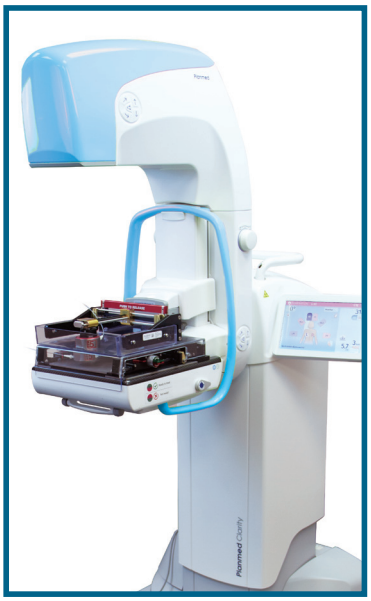
Q: Has this research changed the way you treat breast cancer patients?

A: Knowledge is power; knowing that smokers' lungs are vulnerable to radiation dictates that we minimize lung exposure in this group. We find technologies such as AccuBoost and proton therapy that avoid radiation to the lungs particularly well suited for the cohort of smokers.

ACCUBOOST DIGITAL ADVANTAGE

As a part of continuous effort to upgrade the equipment, AccuBoost has recently rolled out the new AccuBoost Digital Advantage. The design is a significant engineering accomplishment as it enables the mammography detector plate to function in the high-dose environment of an HDR brachytherapy vault. The design includes an intermittent radiation shield that allows for unimpeded exposure during x-ray imaging but fully protects the ultra-sensitive semiconductor image acquisition plate against the high energy rays of the HDR source.

In addition to the instantaneous digital images with higher quality, the new design includes major mechanical advancements including: ultra-low profile positioning accessory, electronic target designation, as well as simplified load and release of the applicators as described in the following Table.



AccuBoost Digital Advantage

AccuBoost Digital *Advantage*

Feature	Benefit
Instant image acquisition	Shorter treatment time
Digital imaging	Higher resolution
Ultra-low profile design	Streamlined patient setup
Simplified load and release	Reliable applicator placement
Touch screen side panel	Enables quick repositioning

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