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Matching Innovation to Clinical Need

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Advances in imaging and treatment delivery have given radiation oncology increasingly sophisticated tools to account for respiratory motion and limit dose to healthy tissue. The challenge is not simply whether these technologies are available, but when their added complexity provides a meaningful clinical advantage.

The review articles in this issue of *Applied Radiation Oncology* address that question from complementary perspectives. “Respiratory Motion Management in Lung Cancer Radiation Therapy: A Practical Review and Decision Framework for Technique Selection and Treatment Delivery” examines approaches to respiratory motion management, including breath hold, respiratory gating, abdominal compression, and surface-guided monitoring, emphasizing selection of the least complex strategy that maintains target coverage and can be reproduced and verified throughout treatment.

“4DCT Ventilation Functional Avoidance in Lung Cancer Radiation Therapy: Clinical Evidence, Workflow, and Quality Assurance” shifts the focus from how the lung moves to the functionality of its different regions. Four-dimensional CT ventilation imaging may help identify better-functioning lung for preferential sparing, but current evidence supports selective rather than routine use.

The importance of translating evidence into practice is also reflected in this issue’s research article, “Practice Changes and Geographic Reach of Post-Prostatectomy Radiation Therapy After NRG-GU003.” At a multisite institution, the use of moderately hypofractionated regimens increased substantially after the trial was published, along with patient volume. The findings illustrate how clinical trial results can alter practice relatively quickly, while also raising important questions about whether greater treatment efficiency translates into broader access to care.

Our radiation oncology case, “Stage 1A NLPHL Complete Response to 4 Gy VLDRT,” also explores whether more conservative treatment can achieve the desired outcome. A young adult with stage 1A nodular lymphocyte-predominant Hodgkin lymphoma received 4 Gy in 2 fractions rather than the initially recommended 30 Gy, with no acute toxicity and complete metabolic response at 3 months. The case highlights the potential of carefully selected dose de-escalation to reduce treatment burden and long-term toxicity.

Technology is also viewed through an educational lens in this issue’s Resident Voice editorial, “Augmented Reality Can Improve Real-World Brachytherapy.” The authors explore how augmented reality may enhance brachytherapy training by allowing residents to visualize anatomy, applicator placement, and procedural steps in a more immersive and interactive environment. Their perspective highlights the potential for these tools to supplement hands-on experience and mentorship, while helping trainees build procedural understanding and confidence before entering the treatment suite.

The future of radiation oncology will undoubtedly bring more powerful and precise technologies, more detailed imaging, and increasingly personalized treatment. Our responsibility is to ensure that innovation remains grounded in evidence, pragmatism, and the needs of the patients we serve.

Thank you for your continued support of *Applied Radiation Oncology*.