



A brachytherapy imperative

USA use of modality in cervical cancer drops despite clear survival benefits

Three studies¹⁻³ and counting – and the American Brachytherapy Society (ABS)⁴ itself – have reminded the US radiotherapy community that brachytherapy should be a critical component of the definitive treatment of locally advanced cervical carcinoma. Yet the same three studies – one¹ (*Int J Radiation Oncol Biol Phys*) co-authored by ABS chairman, Akila Viswanathan, MD, MPH – not only point to the survival benefits of using a brachytherapy boost in treating cervical cancer, but also discover

an alarming trend of decreasing use of brachytherapy for these cases over the last two decades.

“I don’t think anyone realized how prevalent the use of external beam radiation therapy [EBRT] alone was,” says Dr. Viswanathan, who also serves as Director, Gynecologic Radiation Oncology at Dana-Farber Cancer Institute (Boston, Mass. USA). “This was a shock to us as researchers, to the radiation oncology community, and certainly to the brachytherapy community.”

The seminal 2013 retrospective study¹ on utilization trends for cervical cancer brachytherapy in the United States from 1988-2009 was based on the Surveillance, Epidemiology, and End Results (SEER) database. The researchers identified 7,359 patients with stages IB2-IVA cervical cancer treated with EBRT; 63 percent had received brachytherapy as well, while 37 percent had EBRT only.

“Brachytherapy was associated with higher four-year cause-specific survival (CSS) versus the EBRT cohort; 64.3 percent and 51.5 percent, respectively,” Dr. Viswanathan notes. “Overall survival [OS] for the EBRT plus brachy group was 58.2 percent, while the OS for EBRT alone was 46.2 percent. The results were statistically significant and the study was controlled for many variables, including age, marital status, race, ethnicity and region of country.”

Reinforcing the imperative to use brachytherapy for locally advanced cervical cancer, an editorial⁵, “Curative Radiation Therapy for Locally Advanced Cervical Cancer: Brachytherapy is NOT Optional,” appeared in a subsequent issue of the *International Journal of Radiation Oncology* • *Biology* • *Physics*.

Sharp drop-off in brachy use

Despite the survival advantages of receiving brachytherapy, however, the US brachytherapy utilization rate decreased since 1988 (83 percent in 1988 to 58 percent in 2009), with a precipitous decline to 43 percent in 2003. Dr. Viswanathan attributes the reduced utilization to a number of factors.

“Brachytherapy requires significant resources and it is a technically demanding technique to perform,” she notes. “The sharp drop in brachytherapy use in 2003 was likely due to the rapid implementation of IMRT when it was introduced. Many clinicians thought they could use IMRT instead of brachytherapy, even though there was a lack of published data; there was no evidence that IMRT was contraindicated, but there also was no evidence showing that it was inferior to brachytherapy if used alone. It took about decade for that to come out.”

Ample medical evidence confirms brachytherapy’s clinical value for treating

cervical cancer due to its dosimetric benefits, Dr. Viswanathan adds. Brachytherapy can deliver a locally high and conformal dose to the disease site with a surrounding rapid dose fall-off that spares nearby critical structures, such as the small bowel, rectum, bladder and sigmoid.

“While IMRT can spare the adjacent organs-at-risk [OARs] better than conventional EBRT, brachytherapy remains the only way to deliver very high radiation dose to the center of the tumor with maximum sparing of OARs,” she notes.

Two additional studies²⁻³ published in 2014 confirm Dr. Viswanathan’s findings, both the declining US use of brachytherapy for cervical cancer and the superiority of EBRT with a brachy boost versus EBRT alone.

“Given these data, physicians should use brachytherapy whenever possible,” she says. “Educational programs are available for clinicians who would like to use brachytherapy, but who need more confidence to perform the treatment for patients with cervical cancer. In centers without brachytherapy programs, patients with locally advanced cervical cancer should be referred to a center of excellence.” •

References

1. Han K, Milosevic M, Fyles A, et al. Trends in the utilization of brachytherapy in cervical cancer in the United States. *Int J Radiat Oncol Biol Phys* 2013;87:111-119.
2. Gill BS, Lin JF, Krivak TC, et al. National Cancer Data Base analysis of radiation therapy consolidation modality for cervical cancer: the impact of new technological advancements. *Int J Radiat Oncol Biol Phys* 2014 Dec 1;90(5): 1083-90.
3. Bagshaw HP, Pappas LM, MStat. Patterns of care with brachytherapy for cervical cancer. *Int J Gynecol Cancer* 2014 Nov;24(9):1659-64.
4. Viswanathan AN, Thomadsen BC. American Brachytherapy Society cervical cancer recommendations. American Brachytherapy Society consensus guidelines for locally advanced carcinoma of the cervix. Part I: general principles. *Brachytherapy*. 2012;11:33-46.
5. Tanderup K, Eifel PJ, Yashar CM, et al. Curative radiation therapy for locally advanced cervical cancer: brachytherapy is NOT optional. *Int J Radiat Oncol Biol Phys*. 2014;88(3):537-9.