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**JULIA WHITE, MD:** What's important is that we give you the right treatment for the right disease. And for breast cancer, that's many different types of diseases within that diagnosis.

We know that women who get lumpectomy and radiation compared to mastectomy, their cure rate is the same, the likelihood of cancer recurrence is the same, and in some cases, a little bit better.

Historically, or ever since the 1970s, when we've been doing breast conservation, it's been to the entire breast. It's typically taken up to five to six weeks of breast radiation, but it's Monday through Friday, five days per week.

For women who have young kids at home or who live far from a radiation center, they just end up not having breast conservation because the radiation is just not accessible to them. So how can we give women the same cancer control with breast radiation but not take up so much time? We don't want to omit the radiation, because there's been lots of studies that show when you omit the radiation, the cancer has a four to five times higher chance of coming back.

But then how can we make it easier? Well, research has shown that when you look at women who do get a recurrence in their breast after a lumpectomy, they almost always, 80% to 90% of the time, come back to the same spot in the breast.

So then we said, well, do you really need to irradiate the whole breast? Why don't we go for that site where the tumor was? And that's what partial breast radiation does.

Because it's a smaller area, we can go faster. So instead of it being three to four weeks now, we can get treatment done typically in five days.

Two small trials showed that partial breast radiation was the same as whole breast radiation. But they looked in just one group of patients, those who were over age 50, lymph node negative, and had estrogen and progesterone receptor positive, meaning hormone sensitive breast cancer. And we asked a little bit different question, can we get rid of whole breast radiation completely? Could it be equivalent in every breast cancer patient, the ones with positive nodes, the ones who had negative hormone receptors, or HER2-positive?

So we ran a very large trial of 4,200 women, all types of breast cancer, and randomized them to standard whole breast radiation for 25 treatments or so, or partial breast radiation for five days.

The good news was recurrence rates at 10 year were low. For whole breast radiation, it was about 3.9%, and for partial breast radiation, it was about 4.6%, so less than a percent difference, but statistically different. There were slightly more recurrences in the lymph nodes and slightly more distant metastases in the partial breast radiation.

Now we looked at a subset of women that were that hormone sensitive, over age 50, and there the recurrence rates were nearly identical, 2.3% at 10 years for whole breast radiation, 2.7%.

So think about that. That's tremendous. That means those women are 97.3% and 97.7% cancer free in the breast at 10 years after treatment.

From my standpoint, what I like now is that I can give higher cure rates with less intervention. I can give them a shorter course of radiation. I don't need to treat the whole breast. It really facilitates more women having access to good radiation, so that if they want to preserve their breast, they're able to.

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