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\*\*\*Radiotherapy offered as breast-saving alternative.

DALLAS--Small radioactive implants targeting the tumor site offer some women with early breast cancer an alternative to the mutilation of radical or modified mastectomy.

The implant acts as a "booster dose" of radiation that, when combined with limited surgery, shows a local control rate equal to mastectomy, according to doctors at The University of Texas Health Science Center at Dallas. Comparing mastectomy patients at Memorial Hospital in New York City with radiotherapy patients at Foundation Curie in France, five- and 10-year survival rates with no evidence of recurrent or distant disease were the same -- 90 percent.

While the technique has been used in other parts of the country and in Europe it is relatively new in the Dallas area.

In 1982, 120,000 new cases of breast cancer were discovered, making it the most common type of cancer in women.

Mammography and breast self-examination are aiding women in early discovery of breast cancer when the tumor is small and before it spreads to the nearby lymph nodes. In these cases, radical surgery may not provide the only hope for a cure, says radiation oncologist Dr. Phuc Dinh Nguyen, assistant professor of Radiology.

"Surgeons are trained to do surgery and some do not have faith that removal of the tumor and radiation can do the proper job," he says. "Yet, we do have a lot of information from long-term follow-up of five, 10 and 15 years that for early breast cancer, 'lumpectomy' (surgical removal of the tumor) and radiation can bring results as good as those from radical mastectomies.

"The main advantage over mastectomy is breast preservation. And should radiation fail, which it does in approximately 10 percent of the cases, a woman could then have a mastectomy without affecting her survival according to the results of a large study from France."

Dr. Daniel Flynn, assistant professor of Radiology, who performs the procedure with Nguyen, says women do not always have to sacrifice a breast for the treatment of some early breast cancers. "Why do a mastectomy in 100 patients when only 10 need it? Approximately 90 patients will live 10 years without recurrence or evidence of disease using radiotherapy, and the cosmetic results compared to conventional surgery are excellent. Often you can't tell which breast was irradiated and implanted. There's no sense using a cannon to kill a fly."

The implant follows surgical removal of the tumor, axillary sampling to determine lymph node status and 20 to 25 external radiation treatments given over a four- to five-week period. Once the implant site is determined, hollow steel needles are inserted into breast tissue. Hollow nylon tubes are threaded through the needles, and the needles are removed. Doctors use X-rays to localize the implant and a computer to figure the exact dosage of radiation. The patient is then transferred from the operating room to her hospital room where tiny grains of a radioactive isotope sealed in thin plastic rods are inserted into the tubes.

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This "after-loading" technique allows for precise placement of tubes where radiation is most needed. Often the area where the tumor was removed requires a booster dose of radiation that the whole breast can't tolerate. Loading the radioactive sources in the patient's room reduces personnel exposure by reducing the number of staff needed for the procedure, says Nguyen, who performed numerous implants at Mount Sinai Hospital in New York City before joining the health science center.

The implant stays in place two to three days, depending on the tumor characteristics.

"I never expected it to be so easy," says Adrienne Christie, one of Nguyen's patients who received the implant in April. "The implant was left in for 28 hours and I felt no pain."

Upon discovering a lump in her breast last fall, the 37-year-old mother of two says she prepared herself for a mastectomy. "I told my doctor, 'I know you have to remove my breast, but I would rather live, so go ahead.'"

Yet due to her early detection of the tumor, its small size and a mammogram showing only one tumor, she was referred to Nguyen for an implant. Typically, surgeons refer patients for radiotherapy following surgery to remove the cancerous growth.

"Dr. Nguyen told me about radiation treatments and implants, but I didn't really know what implants were until they did it and I saw myself," says Christie, "I had pictured big tubes stuck in me and being locked in my room, unable to move."

On the contrary, she was able to walk around, eat, talk on the phone and perform other routine functions. She did not require pain medication while the implants were in place or when they were removed. And women suffer little nausea or hair loss as a result of the radiotherapy, says Nguyen.

After discharge from the hospital, the patient is then monitored by chest X-ray, blood work and mammograms at regular intervals to detect a recurrent tumor or distant metastasis (spread).

Breast cancer must be found early for any form of treatment to be successful.

"The radiation we offer is only for local control in the breast and axilla (armpit) where lymph nodes are located," says Nguyen. "The aim of mastectomy is about the same. These treatments have no effect in distant areas if the disease has already spread."

In more advanced stages of breast cancer, the tumor can infiltrate the lymphatic system and the bloodstream. Chemotherapy is used to control disease in distant areas or in the bloodstream due to its systemic effect, whereas radiation and surgery have only a local effect.

To screen out women whose cancers are too large or advanced to benefit from two-step radiation, certain guidelines are followed. The primary tumor should be no larger than approximately three centimeters (a little over an inch) in diameter. A mammogram must show only one area of cancer in the breast and the breast should be small to medium in size.

"Breast cancer is known to be multifocal. Instead of having one tumor, we can find others as well. If a mammogram shows multifocal disease or if we can feel it clinically, the patient may not be amenable to conservative management. In such cases, we're dealing with too much disease for the radiation to take care of," says Nguyen.

If lymph nodes are negative for cancer cells, doctors give external radiation to the breast only and insert the implant. If they are positive, external radiation is applied to the breast and peripheral lymph nodes before the implant. Chemotherapy is then recommended as follow-up treatment due to the patient's high risk for metastasis.

"After an implant, all breast cancer patients need careful follow-up for the rest of their lives," Nguyen says. "National studies show even in Stage 1 breast cancer, we may lose 25 percent of the patients due to distant metastases within 10 to 15 years."

Should a tumor reappear, a second implant is not advisable. "If a tumor comes back in the breast, it is conceivable it may stem elsewhere. If there is evidence of recurrent disease I would ask a surgeon to do a mastectomy for better control," he says.