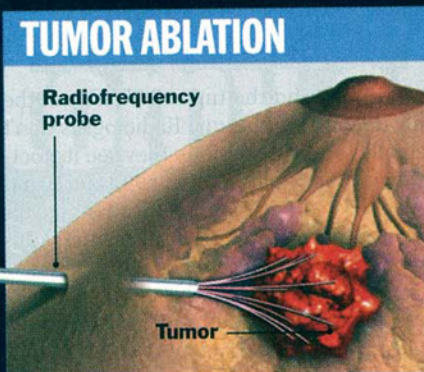


THE CUTTING EDGE OF CANCER TREATMENT

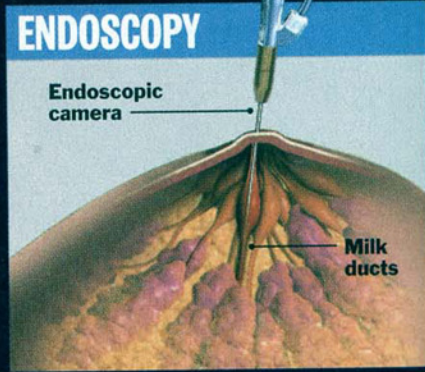
Surgery, radiation and chemotherapy are still the first line of defense against breast cancer. But exciting new techniques are entering clinical trials and, if they work, may eventually replace the old standards with kinder, gentler treatments

TIME Graphic by Ed Gabel Sources: Acelity, Proxima Therapeutics, M. D. Anderson Cancer Center, Rosetta Inpharmatics



■ HOW IT'S DONE
Cancers can be frozen or vaporized with lasers or high-energy radiowaves delivered by a probe through a tiny incision. In one technique, the probe opens like an umbrella inside the breast

■ AVAILABILITY
Already used for liver tumors. Clinical trials for breast cancer are under way, but could take five years to complete



■ HOW IT'S DONE
Tumors can be examined with a miniature fiber-optic camera that is inserted through the nipple and into a milk duct. Eventually surgeons may be able to treat tumors through the same tiny probe

■ AVAILABILITY
The fiber-optic scope was okayed by the FDA last summer. Using it for treatment may be less than five years away

catheter and contents are removed.

Don't have five days to spare? Doctors in the U.S. and Europe think they may be able to deliver all the radiation that's needed while a woman is still on the operating table. In an experiment conducted on 40 women in England, physicians inserted a special sphere into the cavity created by the removal of a tumor. The breast tissue was stretched around the sphere and the radiation was emitted from its center. The device delivered a full course of radiation treatment at once. After 25 minutes, the sphere was removed and the wound closed as usual. In 26 months of follow-up, none of the breast cancers have recurred.

"It is probably unnecessary to treat the whole breast in all patients," says Jayant Vaidya of University College London Medical School, who led the research

team that developed the sphere technique. "If we can treat with radiotherapy around the primary tumor after excision, that would do it. This approach, if proven, will save time, money—and breasts."

Unfortunately, some cancers do reappear, sometimes far from their original site. This is where chemotherapy can make a difference. Once again, it's not always clear who will benefit most. A concrete example helps explain: many doctors would recommend chemotherapy to a woman whose tumor measures 2 cm across, even if it has shown no sign of spreading to the lymph nodes. Why? There is always the possibility that some cancer cells have already escaped to the rest of the body through the bloodstream. How often does that happen? Statisticians estimate that 20 of every 100 women who get only mastectomy (or lumpectomy plus radia-

tion) for a 2-cm tumor that has not spread to the lymph nodes would, all other things being equal, suffer a recurrence sometime in the next five to 10 years. Fourteen of those tumors would have come back regardless of whether any additional therapies had been tried. The remaining six would have been prevented by chemotherapy. "For a 6% improvement, that's a lot of women who have to accept chemotherapy," says Dr. Gralow at the Fred Hutchinson Cancer Research Center in Seattle. But there is no way to figure out in advance which six tumors actually needed to be treated.

That may change as scientists learn more about the genetic alterations that transform a normal cell into a malignant one. Earlier this year a group of scientists from the U.S. and the Netherlands published a paper in the research journal *Nature*

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PREVENTION

Estrogen: A Villain and a Possible Savior

There is no single cause for breast cancer, but one major factor is estrogen. The same hormone that softens our skin, thickens our hair and fills out our hips and breasts also feeds disfiguring tumors. Rates of breast cancer are highest in developed nations, in part, scientists believe, because with better nutrition we reach menopause earlier and menopause later, allowing estrogen to course through our bodies for that much longer.

Estrogen is now pointing the

way to new breast-cancer treatments. A new class of drugs called aromatase inhibitors is already in use against late-stage tumors and may prove even more effective when tumors are caught early. Aromatase inhibitors block the action of an enzyme that these women need to produce estrogen. Two new studies suggest that the drugs can shrink tumors before surgery and also perhaps prevent breast cancer from recurring. More than 20,000 women are enrolled in clinical trials designed to show just

how effective the aromatase inhibitors are. In a study presented at the European Breast Cancer Conference in March, women with early disease taking one such drug, Arimidex, reduced their risk of developing a new tumor in the other breast by more than 50% compared to those taking tamoxifen.

Tamoxifen is routinely given to women at high risk for recurring tumors, and raloxifene, a newer drug that was originally designed to prevent osteoporosis, also appears to block breast cancer. These drugs

work by taking the place of the body's natural estrogen on the surface of breast-cancer cells, preventing the real thing from stimulating tumor growth.

Five years ago, doctors and their patients hailed tamoxifen, which was the first drug approved in the U.S. for reducing the risk of getting breast cancer. At the European Conference, experts were not prepared to recommend the drug to healthy women, as it remained unclear if tamoxifen's benefits outweighed the side effects. It increases the risk of uterine cancer and potentially fatal blood clots. Raloxifene appears to

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