

## **MEDICAL BREAKTHROUGHS** **RESEARCH SUMMARY**

TOPIC: MOZART 3D IMAGING FOR BREAST CANCER  
REPORT: MB #4803

**BACKGROUND:** Lumpectomy is a surgical procedure in which a surgeon removes cancerous or other abnormal tissue from the breast. The lumpectomy procedure is also referred to as a breast-conserving surgery or a wide local excision or excisional biopsy due to the fact that unlike a single or double mastectomy where one or two full breasts are completely removed, only a portion of the breast tissue is removed in lumpectomy. During a lumpectomy procedure, surgeons will also remove an area of normal tissue around the lump or cancerous tissue to ensure that all of the abnormal tissue is removed. Lumpectomy can also be used to confirm or rule out a cancer diagnosis. It is the first treatment option for patients with early stage breast cancer. In the case that a lumpectomy confirms a cancer diagnosis, radiation therapy typically follows to greatly reduce the chances of recurrence in the remaining tissue. Michele Blackwood, MD, FACS, director of breast surgery at Robert Wood Johnson Barnabas Health says, "lumpectomy and radiation is equal to mastectomy in survival."

(Source: [https://www.mayoclinic.org/tests-procedures/lumpectomy/about/pac-20394650#:~:text=Lumpectomy%20\(lum%2DPEK%2Dtuh,lumpectomy%20as%20an%20excisional%20biopsy.\)](https://www.mayoclinic.org/tests-procedures/lumpectomy/about/pac-20394650#:~:text=Lumpectomy%20(lum%2DPEK%2Dtuh,lumpectomy%20as%20an%20excisional%20biopsy.))) Michele Blackwood, MD, FACS, director of breast surgery at Robert Wood Johnson Barnabas Health)

**DIAGNOSING:** About one in eight, or twelve percent of Americans will develop invasive breast cancer over the course of a lifetime. In 2020 it was estimated that there were about 276,480 new cases of invasive breast cancer expected to be diagnosed and 48,530 new cases of non-invasive breast cancer. And as of January 2020, there are more than 3.5 million patients with a history of breast cancer in the U.S. The best ways to understand your breast cancer risk and receive a diagnosis is to seek out preventative care for early detection. Breast exams are the most common and entail a doctor checking both of a patient's breasts and lymph nodes in the armpit feeling for lumps or abnormalities. Mammograms are an x-ray of the breast and detect abnormalities through screening. Breast ultrasounds use sound waves to produce images that can be used to determine the difference between solid masses and cysts. And in the most severe cases of diagnosis, a biopsy is taken of the breast tissue to test a suspicious area.

(Sources: [https://www.breastcancer.org/symptoms/understand\\_bc/statistics](https://www.breastcancer.org/symptoms/understand_bc/statistics), <https://www.mayoclinic.org/diseases-conditions/breast-cancer/diagnosis-treatment/drc-20352475>)

**NEW TECHNOLOGY:** During a lumpectomy it is imperative that all cancerous tissue is removed. But tumors sometimes are mixed and have invasive cancer and pre-cancerous tissue. This pre-cancerous tissue particularly can be on the outside of the tumor and it is not felt or seen by the naked eye. Michele Blackwood, MD, FACS, director of breast surgery at Robert Wood Johnson Barnabas Health says, "So after I get the tumor out, I put six different colored inks on that specimen, I mark it with these charms that tell me which margins are which, and then I take an X-ray of it right in the operating room. And that X-ray is done with the Kubtec and it looks beautiful. And then I can tell how close each margin is, I can actually tell if I've gotten the specimen that I need out because many of these cancers we can't feel. So, you're using radiology guidance to find these, and it's very reassuring when you've gotten the whole tumor out." The Mozart Kubtec system photographs the specimen itself and goes through the piece of tissue in very small increments to ensure the totality of tumor and pre-cancerous cells are removed.

(Source: Michele Blackwood, MD, FACS, director of breast surgery at Robert Woods Johnson Barnabas Health)

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**If this story or any other Ivanhoe story has impacted your life or prompted you or someone you know to seek or change treatments, please let us know by contacting Marjorie Bekaert Thomas at [mthomas@ivanhoe.com](mailto:mthomas@ivanhoe.com)**