Dartmouth-Hitchcock Norris Cotton Cancer Center
RESEARCH SUMMARY

Avoiding Repeat Lumpectomies with Personalized Precision Breast Cancer Surgery

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Why we did this research

A big problem for patients undergoing lumpectomy for breast cancer is that about 25% of the time, there is cancer at the edge of the lumpectomy tissue, requiring repeat surgery to completely remove the cancer.

What we did

We invented a 3D printed form called the Breast Cancer Locator™ (BCL), which is generated from MRI images. The BCL is placed on the breast at the start of surgery and allows the surgeon to place wires in the breast to localize the edges of the cancer. An interactive 3D image of the cancer in the breast is also provided to the surgeon to help guide precise tumor removal.

This is a Breast Cancer Locator, which is custom-made for each patient, based on their breast and the location and size of their cancer.

What we have learned so far

We have used the BCL and the 3D image to help surgeons doing lumpectomies. We have the following results from 30 patients:

1. Edges of removed tissue were cancer-free in all patients.

2. Surgeons were able to precisely remove the cancer.

3. Process was safe, efficient, and reduced pain for patients.

4. BCL was easy for surgeons to learn how to use.

5. Healthcare costs were reduced by making additional surgeries unnecessary and by freeing-up hospital staff time.

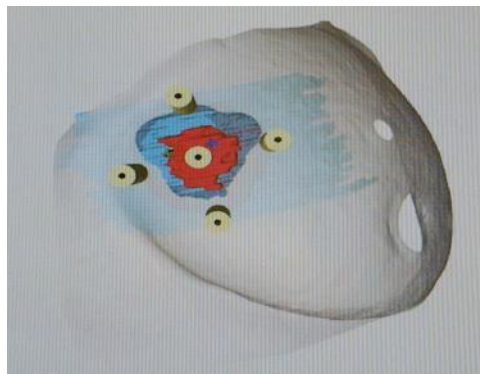This is an example of the 3D image used in the operating room.

Why this is important

Being able to get all the cancer during one surgery is a win for everyone: patients get a better cosmetic result with more confidence in the surgical process, surgeons have more time to help more patients, and hospitals benefit from reduced costs.

Visit https://clinicaltrials.gov/ct2/show/NCT04397185 to learn about our ongoing clinical trial.

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NCI CCC A Comprehensive Cancer Center Designated by the National Cancer Institute