In these cases, the women must undergo a second surgery to have more tissue removed once the additional cancer has been identified. Dr. Chagpar found that routinely removing a small additional amount of tissue all around the tumor during the initial surgery substantially decreased the number of cases with positive margins. Taking the additional step only prolonged the initial operation by an average of 10 minutes. Avoiding a follow-up surgery has an enormous emotional benefit. "When you are faced with a diagnosis of breast cancer, you want that cancer out of you, and you want to go back to your life," said Dr. Chagpar. A second surgery may also delay the start of radiation and chemotherapy.

Dr. Chagpar is doing more research to look into how the change might alter the course of treatment and whether there is any difference in recurrence among women who had additional tissue removed during initial surgery. How to approach margins has been a source of controversy among breast cancer surgeons. Some believed the additional tissue removal, known as cavity shave margins (CSM), would help ensure that all the cancer around the main site was gone. Others, including Dr. Chagpar, thought the CSM practice went too far. After all, surgeons used x-rays to get a good understanding of where the cancer was. Many surgeons were also concerned that removing more tissue could lead to more complications and poor cosmetic results.

Dr. Chagpar is happy to have proved herself wrong. Patients—surveyed before they knew whether they were in the CSM group or not—were equally happy with the appearance of the breast, regardless of the procedure they had undergone. Dr. Chagpar will continue to follow the women to see if their long-term cosmetic results remain good. The CSM group did not have a higher rate of complications.

"Sometimes I think that we have, what I’m going to call hubris of the medical profession, in that we think we already know the answer,” said Dr. Chagpar. “You never do the study until somebody says: I don’t know the answer.”

The study was conducted at Smilow Cancer Hospital with most Yale breast cancer surgeons participating. Dr. Chagpar said that the findings should be widely applicable, because positive margin rates at Yale are consistent with the national average. Nevertheless, additional study is planned incorporating other sites and asking additional questions.

One of the features of the study was that surgeons would not know whether they were taking the CSM until the last minute. All previous margin studies reviewed cases of surgeons who routinely took shavings versus cases of surgeons who did not. In this study, surgeons were asked to do the best job they could using imaging to get good margins. When the surgeon felt satisfied enough to close, a nurse would open an envelope that would instruct the team to finish the procedure or to take shaved margins. Follow-up studies will use this same protocol.

The response to The New England Journal of Medicine paper, published in May, has been enormous, according to Dr. Chagpar, who is scheduled to continue to present on her findings in Japan, Korea, Brazil, and throughout the United States. "This is something that doesn’t solely affect our patients here at Yale,” she said.