

Patients opt for 3-D simulation for breast augmentation—but it doesn't improve outcomes

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Three-dimensional image simulation is popular among women planning breast augmentation surgery. But while this evolving technology may enhance communication, it doesn't improve patient satisfaction with the results of the procedure, reports a paper in the August issue of *Plastic and Reconstructive Surgery* official medical journal of the American Society of Plastic Surgeons (ASPS).

"Patients are likely to use novel technology like three-dimensional photography with computer simulation if they perceive it to enhance their understanding of their final outcome," write ASPS Member Surgeon Terence Myckatyn, MD, and colleagues of Washington University School of Medicine, St. Louis. However, 3-D stimulation "did not lead to clinically meaningful changes in patient-reported outcomes." Bo Overschmidt, BSc, and Ali A. Qureshi, MD, were the lead authors of the new report.

3-D Simulations Help Patients Visualize Cosmetic Outcomes

The study evaluated the impact of 3-D imaging with computer simulation on the outcomes of [breast augmentation](#). In this technique, the plastic surgeon obtains digital photographs, then uses imaging software to create a 3-D simulation of how the patient's breasts will look after surgery. The surgeon and patient can adjust different variables,

such as cup size and implant volume, to help in procedure planning and decision-making.

The study included 100 women undergoing [breast](#) augmentation over a three-year period. Twenty-three women agreed to participate in a randomized trial, where they were randomly assigned to 3-D simulation (10 patients) or conventional "tissue-based" planning (13 patients).

But after the first few months, all of the women enrolled in the study opted for 3-D simulation—perhaps reflecting increased awareness of this preoperative planning option via the Internet and word of mouth.

The researchers used two approaches to evaluate how 3-D simulation affected breast augmentation outcomes. A standard questionnaire called the BREAST-Q was used to assess patient satisfaction and various domains of quality of life. In addition, a detailed set of "mammometric" measurements was obtained to evaluate objective results.

On the BREAST-Q questionnaire, breast augmentation led to substantial improvements in satisfaction with breasts, sexual well-being, and psychosocial outcomes. However, the use of 3-D simulation had no significant effect on any of these patient-reported outcomes, compared to tissue-based planning. In both groups, on a 0-to-100 scale, average score for satisfaction with breasts increased from about 20 before surgery to 85 after surgery.

The mammometric measurements were also similar between groups, with no significant correlations between the patient-reported and mammometric results. There was also no significant difference in the volume of implants chosen by women undergoing 3-D simulation versus tissue-based planning.

Previous studies have shown that 3-D simulation can facilitate

communication and preoperative planning in women undergoing breast augmentation. The new study finds that this technology is popular with patients—almost all of whom choose to undergo 3-D simulation, if made aware of its availability. "These patients may seek out practices specifically offering such technology," Dr. Myckatyn and coauthors write.

The researchers discuss some limitations of their study, including the reasons why 3-D simulation doesn't necessarily improve patient satisfaction with breast augmentation. They note that many factors may affect patient satisfaction, and that a range of implant sizes and styles may help [patients](#) achieve their aesthetic goals.

Dr. Myckatyn and colleagues also point out that, while 3-D simulations may provide a useful communication tool, plastic surgeons already achieve excellent cosmetic results using conventional tissue planning techniques. The authors write, "Any potential impact of [simulation](#) of postoperative [patient satisfaction](#) may have been of insufficient magnitude to move the needle on already high scores."

More information: Bo Overschmidt et al. A Prospective Evaluation of Three-Dimensional Image Simulation, *Plastic and Reconstructive Surgery* (2018). [DOI: 10.1097/PRS.0000000000004601](https://doi.org/10.1097/PRS.0000000000004601)

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