A Retrospective Analysis of Patient Satisfaction with Immediate Postmastectomy Breast Reconstruction: Comparison of Three Common Procedures

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Background: The authors aimed to quantify overall patient satisfaction with three breast reconstruction techniques and identify factors that have influenced satisfaction.
Methods: Two hundred sixty-eight questionnaires were mailed at least 6 months after immediate breast reconstruction to consecutive breast reconstruction patients over a 3-year period. A second questionnaire was sent out 9 months later to the tissue expander/implant group of patients.
Results: The initial questionnaire demonstrated that overall satisfaction was significantly greater in the transverse rectus abdominis myocutaneous (TRAM) flap patients as compared with the tissue expander/implant patients ($p < 0.05$). However, the number of patients willing to repeat the procedure and recommend their procedure to a friend was similar among all three reconstructive techniques. A significantly greater number of tissue expander/implant patients as compared with TRAM flap patients felt they had not received sufficient information to make an educated decision ($p < 0.05$). This finding correlated with the lower satisfaction rate among the tissue expander/implant patients. The second questionnaire sent only to the tissue expander/implant patients revealed that the majority felt uninformed about the final aesthetic outcome and the frequency and pain associated with the expansion process.
Conclusions: All three groups may claim to be satisfied with their own personal choices. Many patients will continue to choose tissue expander/implant reconstruction in an effort to avoid scars and more extensive surgery. Being less satisfied is not wrong or bad, provided it is known. Tissue expander/implant patients should be thoroughly informed in the preoperative setting about the final aesthetic outcomes and the immediate perioperative expansion period, which may involve a considerable amount of patient commitment and discomfort in some women. (*Plast. Reconstr. Surg.* 119: 1669, 2007.)

In recent years, the external demands on medical and surgical treatments stress the importance of patient satisfaction particularly when patients are presented with more than a single viable option as a solution to a problem. The area of postmastectomy breast reconstruction is no stranger to these demands, and for years, plastic surgeons have been designing and undertaking studies attempting to identify the best breast reconstruction technique.[1–6] Older studies tended to use surgeon assessment of the final aesthetic outcome or lowest incidence of complications as the determining factor of technique superiority.[1,2,5] Although these are clearly critical variables that do impact a patient's overall satisfaction, a more logical method is to validate procedures on the basis of retrospective patient satisfaction. More recent studies are doing just that, and the information from these studies is clearly empowering surgeons when making recommendations to patients between different procedures that ultimately have the same goal.[3–6]

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Received for publication July 16, 2005; accepted November 17, 2005.
Presented at the 71st Annual Scientific Meeting of the American Society of Plastic Surgeons, in San Antonio, Texas, November 2 through 6, 2002, and at the 41st Annual Scientific Meeting of the Midwestern Association of Plastic Surgeons, in Chicago, Illinois, April 20 through 21, 2002.

DOI: 10.1097/01.prs.0000258827.21635.84

This is such a study, with its goal being to assess overall patient satisfaction with the three most commonly performed immediate breast reconstruction procedures at our institution: tissue expander/implant reconstruction, latissimus dorsi with implant reconstruction, and transverse rectus abdominis myocutaneous (TRAM) flap reconstruction. Immediate breast reconstruction was the focus for this study, as this is the most commonly performed type of reconstruction at the current time.[4,6]

A patient's overall satisfaction with a particular procedure stems from the combination of the events they experience in the preoperative, perioperative, and postoperative recovery periods and the final aesthetic outcome. In this study, each of these areas was addressed in a questionnaire. In addition, external influences that were thought to possibly affect overall patient satisfaction were identified and also included in the questionnaire. These included prior breast cancer in a friend or family member, spousal influence, social and family demands on the patient that may have influenced choice, positive or negative prior surgical encounters, patient occupation, work demands, patient health, exercise status, patient body mass index, and breast size.

PATIENTS AND METHODS

Study Population

A total of 268 women that had undergone immediate postmastectomy breast reconstruction by the senior authors (T.A.M., N.A.F.) during the years 1996 through 1999 were included in this study. During the preoperative appointment, all patients were presented with the three reconstructive options and the potential risks and benefits associated with each. An investigational review board–approved questionnaire and consent form were mailed to each patient at least 6 months after mastectomy and the initial reconstructive procedure (range, 6 months to 3 years). Each patient had undergone either tissue expansion/implant reconstruction, latissimus dorsi with implant reconstruction, or TRAM flap reconstruction at Northwestern Memorial Hospital. Patients who had undergone more than a single reconstructive procedure, on the same breast or on the contralateral breast, were asked to answer the questionnaire with regard to their first reconstruction.

Data Collected

Two questionnaires were mailed to patients in this study. A first questionnaire was mailed to all 268 patients, and a second was mailed out 9 months later to only the subset of tissue expander/implant patients who had responded to the first questionnaire.

The first questionnaire, mailed to all 268 patients, consisted of 64 quantifiable questions. Questions were designed to be answered in a yes or no fashion, and degrees of satisfaction, pain, and so forth, were rated on scales. These 64 questions focused on obtaining information from the patient regarding the following aspects of their breast reconstructive surgery: (1) demographic information; (2) type of breast cancer and options presented for mastectomy versus breast-sparing surgery by the oncologic surgeon; (3) types of breast reconstruction options presented and sufficiency of information in the preoperative setting presented by the reconstructive surgeon; (4) perioperative experience including length of hospital stay, postoperative pain (on a scale of 1 to 10) at two time points (postoperative days 1 and 7), time to resuming daily activities, presence of complications, and the need for reoperation; and (5) assessment of patient satisfaction with their procedure consisting of overall satisfaction (on a scale of 1 to 6), whether they would undergo the same procedure again, and whether they would recommend the procedure to a close friend or family member.

In addition, an attempt was made to identify possible external influences that may have had an impact on the patient's breast reconstruction choice, such as a procedure recommended by a friend or family member, prior breast cancer in a friend or family member, spousal influence, social and family demands on the patient that may have influenced her choice, positive or negative prior surgical encounters, patient occupation, work demands, patient health, exercise status, patient body mass index, and breast size. A final question in this first questionnaire allowed patients to subjectively explain their choice for breast reconstruction and voice their opinions about their experience and overall satisfaction with the procedure in a subjective manner.

The second questionnaire was mailed 9 months later to all tissue expander/implant reconstruction patients who had responded to the first questionnaire. This questionnaire was mailed out in response to a finding from the first questionnaire's data that not only were tissue expander/implant reconstruction patients significantly less satisfied with their reconstruction as compared with TRAM flap patients, but that significantly fewer tissue expander/implant patients felt well informed about their procedure

preoperatively as compared with TRAM flap patients. The questionnaire's purpose was to identify what information was missing from the preoperative consultation. Patients were asked whether they had felt adequately informed preoperatively about potential complications associated with tissue expansion/implant reconstruction, the rate of recovery, the pain with expansion, the frequency of expansion, the need for reoperation for implant placement or revisions, the length of time until completion, and the final aesthetic result. They were then once again asked to rank their degree of satisfaction with their reconstruction on a scale of 1 to 6 and once again indicate whether they would undergo the same procedure again and whether they would recommend the procedure to a close friend or family member.

Statistical Analysis

Comparison of dichotomous variables (yes or no answers) across reconstructive groups was performed using a Fisher's exact test. Rating scales were compared across reconstructive groups using one-way analysis of variance. Overall patient satisfaction was related to other factors using the correlation coefficient, the independent samples t test, or Fisher's exact test. Statistical significance was indicated for values of $p < 0.05$.

RESULTS

First Questionnaire

Patient response to the first questionnaire was 64 percent, with 172 completed questionnaires returned. This group included 90 TRAM flap patients, 25 latissimus dorsi with implant reconstruction patients, and 57 tissue expander/implant patients. Ten of the initial 268 patients were identified as having died as a result of their disease and were not included for this reason.

With regard to satisfaction, the responses to the question of overall satisfaction ("How do you feel about your breast reconstruction at this point in time?") revealed that TRAM flap patients were significantly more satisfied as compared with tissue expander/implant patients ($p < 0.001$). On a scale of 1 to 6, with 1 being "very disappointed" and 6 being "highly satisfied," TRAM flap patients averaged 5.1 ± 1.1, latissimus dorsi with implant reconstruction patients averaged 4.66 ± 1.2, and tissue expander/implant patients averaged 4.2 ± 1.5 (Figs. 1 and 2). In contrast, the additional questions that analyzed patient satisfaction, which included "Would you undergo the same procedure again?" and "Would you recommend the procedure to a close friend or family member facing mastectomy?" did *not* demonstrate any significant difference between the three reconstructive groups (Fig. 3). An additional question, focusing on identifying any perceived complications by the patient, also demonstrated *no* significant difference between the three reconstructive groups.

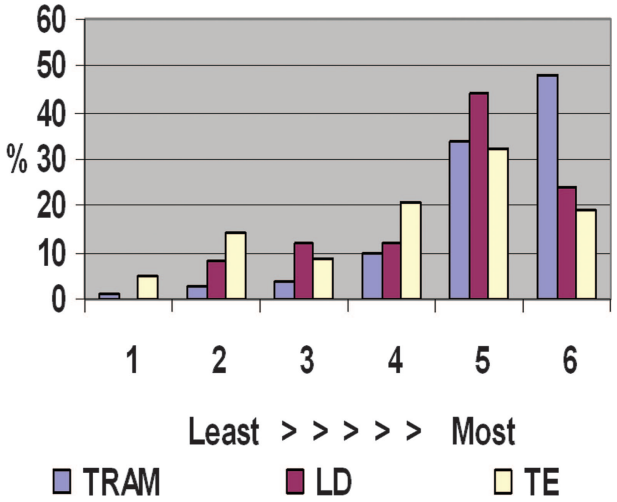

Fig. 1. Overall satisfaction with three types of breast reconstruction procedures, transverse rectus myocutaneous flap (*TRAM*), latissimus dorsi with implant (*LD*), and tissue expander/implant (*TE*) reconstructions, ranked on a scale of 1 to 6 showing the two highest rankings, 5 and 6.

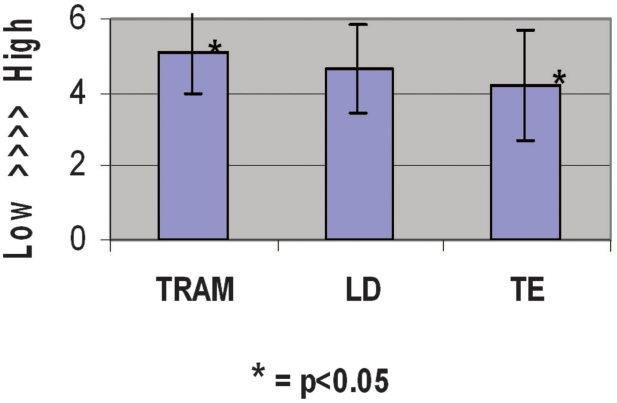

Fig. 2. Overall satisfaction averages for the three types of breast reconstruction procedures: TRAM flap (*TRAM*), latissimus dorsi with implant reconstruction (*LD*), and tissue expander/implant (*TE*). Significance was identified between the TRAM flap group and the tissue expander/implant group ($p < 0.05$) (mean values with superimposed brackets showing 1 SD above and below the mean).

Adequate preoperative information was assessed by asking the patients, "Did you feel you had sufficient information preoperatively to make an

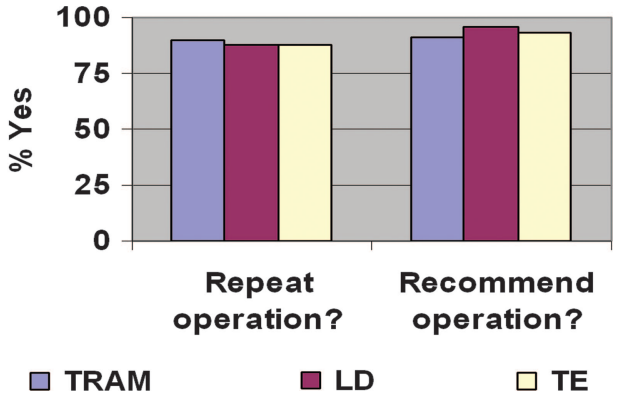

Fig. 3. Other parameters of patient satisfaction: a willingness to repeat their operation and/or recommend it to a friend of family member. No significant differences were identified among the three types of reconstructive procedures for either parameter (*TRAM*, TRAM flap; *LD*, latissimus dorsi with implant reconstruction; *TE*, tissue expander/implant).

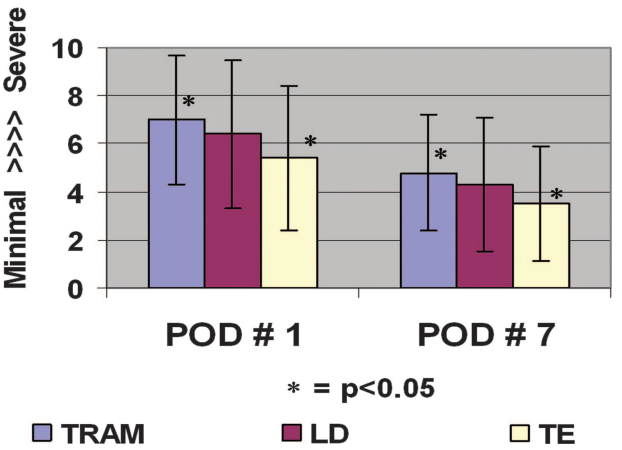

Fig. 4. Patients' recollections of the severity of postoperative pain on postoperative days 1 and 7 were ranked on a scale of 1 to 10, with 1 representing no pain and 10 representing severe pain. Patients reported significantly greater pain in the TRAM flap group as compared with the tissue expander/implant group for postoperative days 1 and 7 ($p < 0.05$) (*TRAM*, TRAM flap; *LD*, latissimus dorsi with implant reconstruction; *TE*, tissue expander/implant).

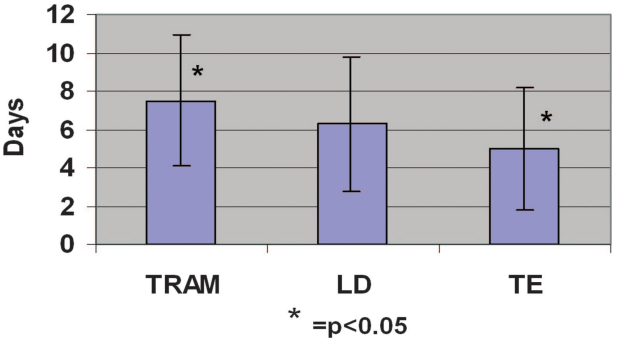

Fig. 5. Patients' recollection of postoperative narcotic use after each type of reconstructive procedure (*TRAM*, TRAM flap; *LD*, latissimus dorsi with implant reconstruction; *TE*, tissue expander/implant). The TRAM flap patients reported a significantly longer use of narcotic use in the postoperative period as compared with the tissue expander/implant patients ($p < 0.05$).

educated decision in choosing which type of reconstructive procedure was best for you?" A significantly fewer number of tissue expander/implant as compared with TRAM flap patients felt they had received sufficient preoperative information ($p < 0.001$).

Significant differences between tissue expander/implant patients and TRAM flap patients were also identified in the perioperative period. TRAM flap patients reported a significantly greater degree of pain on a scale of 1 to 10 on both postoperative day 1 and postoperative day 7 as compared with tissue expander/implant patients (Fig. 4). Length of hospital stay and length of postoperative narcotic use was significantly greater for TRAM flap patients as compared with tissue expander/implant patients (Figs. 5 and 6). Time to recovery of daily activities was also significantly greater for TRAM flap patients as compared with tissue expander/implant patients (Fig. 7).

The only significant differences identified with regard to latissimus dorsi with implant reconstruction was a significantly shorter hospital stay as compared with TRAM flap patients, a significantly longer hospital stay as compared with tissue expander/implant patients (Fig. 6), and a significantly shorter time to recovery of necessary daily activities as compared with TRAM flap patients (Fig. 7).

Correlation analysis identified a positive correlation between adequate preoperative information and overall patient satisfaction in the TRAM flap and tissue expander/implant patients. No other correlations were identified.

Second Questionnaire

The patient response to the second questionnaire was 70 percent, with 40 of the 57 tissue expander/implant patients completing this questionnaire. Fifty-five percent of these patients ($n = 22$) indicated they felt they had been well informed preoperatively and 45 percent of these patients ($n = 18$) indicated that they had felt poorly informed in the preoperative consultation. Of the well-informed patients, 64 percent ($n = 14$) were highly satisfied, 32 percent ($n = 7$) were satisfied, and only 5 percent ($n = 1$) were disappointed (Fig. 8). All of these women (100 percent)

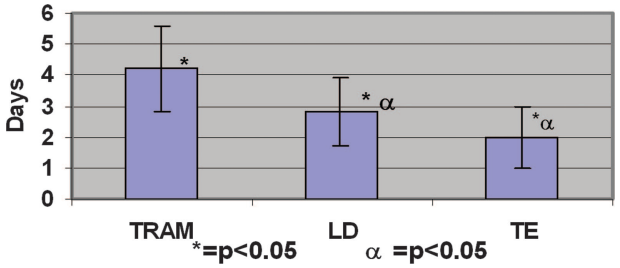

Fig. 6. The average number of days spent in the hospital in the postoperative period was reported as significantly longer for the TRAM flap patients (*TRAM*) as compared with both the latissimus dorsi with implant reconstruction (*LD*) and tissue expander/implant (*TE*) patients ($p < 0.05$). The latissimus dorsi with implant reconstruction patients reported a significantly shorter stay as compared with TRAM flap patient and a significantly longer hospital stay as compared with the tissue expander/implant patients ($p < 0.05$) (mean values with superimposed brackets showing 1 SD above and below the mean).

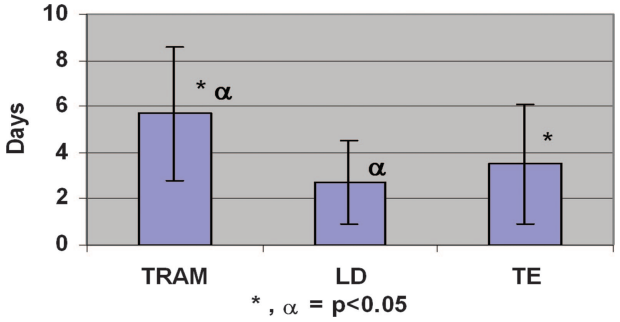

Fig. 7. The average number of days required to resume independent control over necessary daily activities was significantly longer for TRAM flap (*TRAM*) patients as compared with latissimus dorsi with implant reconstruction (*LD*) and tissue expander/implant (*TE*) patients ($p < 0.05$). There was not a significant difference between the latissimus dorsi with implant reconstruction and tissue expander/implant groups (mean values with superimposed brackets showing 1 SD above and below the mean).

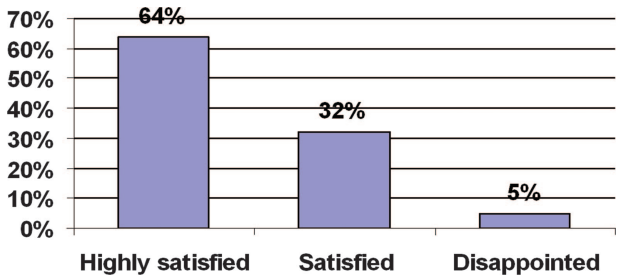

Fig. 8. In response to a second questionnaire directed only to patients having undergone tissue expander/implant reconstruction, 22 indicated they were well-informed in the preoperative consultation. Of these 22 patients, 64 percent indicated they were highly satisfied with the outcome, 32 percent indicated they were satisfied with the outcome, and 5 percent indicated they were disappointed with the outcome of the tissue expander/implant reconstruction (mean values with superimposed brackets showing 1 SD above and below the mean).

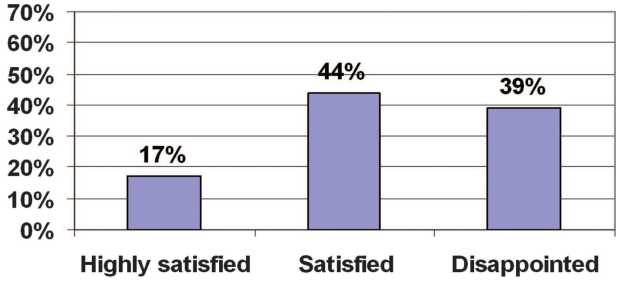

Fig. 9. In response to a second questionnaire directed only to patients having undergone tissue expander/implant reconstruction, 18 indicated they were poorly informed in the preoperative consultation. Of these 18 patients, only 17 percent indicated they were highly satisfied with the outcome, 44 percent indicated they were satisfied with the outcome, and 39 percent indicated they were disappointed with the outcome of the tissue expander/implant reconstruction.

indicated they would undergo the same procedure again and recommend the procedure to a close friend or family member.

Of the poorly informed patients, only 17 percent ($n = 3$) were highly satisfied, 44 percent ($n = 8$) were satisfied, and 39 percent ($n = 7$) were disappointed (Fig. 9). Of these 18 poorly informed patients, only 17 percent ($n = 3$), all part of the disappointed group, indicated they would *not* undergo the operation again and would *not* recommend the operation to a close friend or family member. Conversely, four of the disappointed and poorly informed patients still felt they *would* undergo the procedure again and *would* recommend it to a close friend or family member. As with the first questionnaire, overall patient satisfaction was positively correlated to having received adequate preoperative information.

With regard to what information had been missing from the preoperative consultation, patients were given a list of six points of which "all that apply" could be checked. Only the poorly informed tissue expander/implant patients indicated that any information had been missing in the preoperative consultation. Within this group of patients, 84 percent felt information about the final aesthetic quality was lacking, 55 percent felt information about the frequency and pain with expansion was lacking, 44 percent felt information about the immediate and later recovery periods was lacking, 39 percent felt information about the

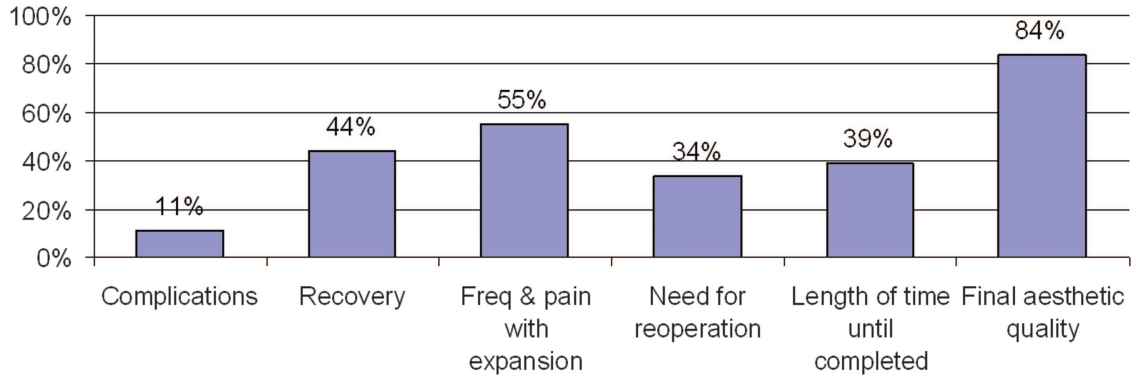

Fig. 10. In response to a second questionnaire directed only to patients having undergone tissue expander/implant reconstruction, 18 of 40 total responders indicated they were poorly informed in the preoperative consultation. Of these 18 patients, 84 percent indicated they were poorly informed about the final aesthetic quality of the reconstruction, 55 percent about the frequency and pain associated with the expansion process, 44 percent about the recovery period, 39 percent about the length of time until the reconstruction was completed, 34 percent about the need for revision surgery, and 11 percent about the associated complications.

length of time until completion of reconstruction was lacking, 34 percent felt information about the need for revision surgery was lacking, and 11 percent felt information about the potential complications was lacking (Fig. 10).

DISCUSSION

In today's medical climate, patient satisfaction has become an important variable used to establish quality-of-care parameters. Furthermore, there is no area of medicine so dependent on ensuring our patients are happy and satisfied with their choices as plastic surgery. This is attributable mostly to our plethora of elective procedures from which patients can often choose what they feel is the right option for them. A good decision can only be made if the patient has been given all of the information. It behooves the plastic surgeon to gain information from their patients in whatever manner and better understand their true perception of a particular procedure. By better understanding what prior patients have experienced and perceived, a plastic surgeon can then relay this information to prospective patients, who often request that the surgeon assist them in choosing the right procedure for them.

For a patient with a recent diagnosis of breast cancer, breast reconstruction options can be overwhelming. These women are often much more concerned with the oncologic aspect of their disease and consider the reconstructive aspect as secondary. They often present to the plastic surgeon on recommendation of the oncologic surgeon and in some cases have never even heard of the options open to them for breast reconstruction. Explaining their options and clearly defining the details related to each procedure is critical. It is also critical to be repetitive and supply patients with material that can be reviewed at their leisure that reiterates what was discussed about each procedure. Other specialties, such as general surgery, ophthalmology, and head and neck surgery, have published on the low levels of patient retention of information in the postoperative setting after having received the typical preoperative consultation and review of informed consent.[7–11] Two of these studies demonstrated a significant increase in patient postoperative information retention by providing take-home literature for the patients and having the patient verbalize the information back to the consulting physician when finalizing decisions for surgery or obtaining informed consent.[7,8] There is little question that a poorly informed patient may easily become unsatisfied in the postoperative setting if presented with unexpected surprises or complications. That being said, it is important to realize that a patient's well-informed decision about a particular type of breast reconstruction does not guarantee she will be 100 percent satisfied with the resulting outcome of the reconstruction. There is also no guarantee she will be happy when recalling the perioperative recovery period or the complication(s) she may have had to experience. Despite the inability to satisfy every patient encountered, plastic surgeons should strive to inform their patients as well as possible about the process of each procedure, the potential complications they may face, and the final aesthetic outcome. The goal of the preoperative consultation should be to obtain the greatest degree

of satisfaction possible by ensuring the patient is properly informed about her choices, and that her expectations of the entire process and final outcomes are consistent with the actual experience she will or may encounter.

In this study, various aspects of patient satisfaction were analyzed. One aspect was to identify degrees of overall satisfaction with the entire experience, including the final aesthetic outcome. Additional aspects of satisfaction were identified by asking whether a patient would repeat the same operation or recommend it to a close friend or family member. These latter two questions hone in on whether the patient chose the best operation for herself.

This study demonstrates that the TRAM flap patients reported significantly greater overall satisfaction as compared with the tissue expander/implant patients. Alderman et al. also demonstrated similar findings with regard to overall satisfaction when comparing TRAM flap patients to tissue expander/implant patients.[4] Analysis of the other measures of satisfaction, which included the willingness to repeat the procedure again or recommend it to a friend, demonstrated no differences between the three reconstructive groups. These additional parameters of satisfaction demonstrate that, although tissue expander/implant patients were less satisfied overall, they were just as willing to repeat the procedure or recommend it to a friend as the TRAM flap patients, indicating that ultimately these patients had made the correct decision for themselves and for their needs. Latissimus dorsi patients were noted to not be significantly different in satisfaction during this 3-year time period.

The positive correlation identified between lower overall patient satisfaction and having not received sufficient preoperative information in the tissue expander/implant patients as compared with the TRAM flap patients was very interesting. The fact that the tissue expander/implant patients felt significantly less well informed than the TRAM flap patients was unexpected given the lengthy nature of the TRAM procedure and the many complications that can ensue in the perioperative and postoperative periods. One can conclude from these data that perhaps some patients may opt for the easier and faster operation at the time of mastectomy (i.e., tissue expander/implant reconstruction) without really understanding the commitment they have made when choosing tissue expander/implant reconstruction. They may not hear or comprehend the part of the preoperative discussion describing the need for weekly expansions, the potential for pain associated with tissue expansion, the additional operations for tissue expander/implant exchange or implant repositioning, or the possibilities of symptomatic capsular contracture or implant deflation. Pain associated with tissue expansion is a well-known side effect of the procedure. For years, surgeons have been trying to minimize the discomfort associated with this technique.[12–15] The fact that 55 percent of the poorly informed patients within the tissue expander/implant group felt this information was lacking from the preoperative consultation was surprising. This finding indicates that this is a part of the procedure that needs to be reiterated a few times in the preoperative consultation to ensure that women choosing tissue expander/implant reconstruction are aware that they may experience some pain or discomfort with the expansion process. Stressing this and the other tissue expander/implant information points that were identified through the second questionnaire as lacking from the preoperative consultation will possibly help future tissue expander/implant patients feel their choice was one they were well informed about.

The use of a postoperative questionnaire to assess surgical outcomes of subjective parameters involving breast reconstruction has both advantages and disadvantages. The primary advantage is women make their own interpretation of how they feel about subjective issues, including the following: How good is the result? How hard was the recovery? and Was the process worthwhile? The study is limited by the women's ability to recall past events and weigh options that they have no experience with. How is a woman to know whether she would have been better served with a procedure she did not have? Also, every survey represents a snapshot in time. This is a particular concern with evaluating the results of expander implant reconstruction and, to a lesser degree, latissimus dorsi with implant patients. This study included women who were surveyed from 6 months to 3 years after the insertion of their tissue expander. Women who were early in the process may not have completed all aspects of their reconstruction, and women who were farthest out from surgery may have had difficulty recalling how quickly they recovered or the details of their preoperative consultation. Both groups may not yet have had difficulties with capsular contracture or diminishing aesthetic results caused by tissue thinning or weight fluctuation not matched because of the unchanging nature of implant volume. A longi-

tudinal study following women over time would be optimal.

CONCLUSIONS

The best breast reconstructive procedure for a particular patient is ultimately based on the patient's needs and goals. A reconstructive surgeon is responsible for supplying the patient with adequate information about her options to allow her to make an informed decision. Minimizing the perioperative and postoperative surprises and ensuring that patient expectations are reasonable are ways of ensuring increased patient satisfaction.

The three reconstructive groups in this study indicated that they had made the correct choices for themselves by stating they would repeat their operation again or recommend it to a friend. The fact that the tissue expander/implant patients felt less satisfied overall as compared with the TRAM flap patients and the fact that this finding correlated with a sense of inadequate preoperative information only reinforces the importance of adequately informing patients in the preoperative setting about the details of their breast reconstruction options.

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ACKNOWLEDGMENTS

The authors acknowledge the contributions of Preeya Kshettry, M.D., and Bing B. Fung, Ph.D., for help in gathering and preparing the data submitted in this article.

DISCLOSURE

None of the authors has a financial interest in any of the products, devices, or drugs mentioned in this article.

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