Commentary—Surgical Decisions after Breast Cancer: Can Patients Be Too Involved in Decision Making?

Nananda F. Col, Christine Duffy, and Carol Landau

In this month's *Health Services Research* Lantz Janz, and Fagerlin et al. explore patient satisfaction with decisions about surgical treatments for early stage breast cancer among a population-based sample of women. Deciding whether to undergo breast conserving therapy (BCT) or mastectomy remains difficult for women diagnosed with early stage breast cancer. Despite the substantial differences in the side effects of these treatments, no survival differences have been shown up to 20 years later among women with stage I and II cancer (Veronesi et al. 1981; Fisher et al. 1985; Sarrazin et al. 1989; Blichert-Toft et al. 1992; Lichter et al. 1992; Early Breast Cancer Trialists' Collaborative Group 1995; Morris et al. 1997; van Dongen et al. 2000; Fisher et al. 2002). Although randomized trials suggested higher quality of life (QoL) and satisfaction among women receiving BCT as compared with mastectomy (Moyer 1997; Curran et al. 1998), a substantial percentage (36 percent) undergo mastectomy. Despite the psychosocial benefits associated with reconstruction after mastectomy, most women (60 percent) do not choose reconstruction (Cancer Statistics Review 1973–1989; Mueller et al. 1988; Sorrentino et al. 1988; Handel et al. 1990; Brown 1991; McKenna et al. 1991; Schain 1991; Dowden and Yetman 1992; Noguchi et al. 1993; Corral and Mustoe 1996; Street and Voigt 1997).

How do we explain such decisions? Decisions about surgery are made at a time of heightened anxiety when it may be difficult for patients to understand complex information regarding treatments (Jefford and Tattersall 2002). Women may not be aware of the evidence favoring BCT, or the quality of the evidence may be lacking. The beliefs and practices of the patient's oncologist or surgeon may influence the decision, as evidenced by geographic variations in surgical practices (Foster, Farwell, and Costanza 1995; Steele et al. 1995; Goel, Iscoe, and Sawka 1996; Kotwall et al. 1996). Factors such as the cost and availability of the procedures and insurance coverage may also influence these decisions (Roetzheim et al. 2002). The federal Women's Health Rights and Cancer Act of 1998 mandated that insurance companies

cover breast reconstruction surgery but there have been some difficulties in implementation.

Although decisions about surgical treatments for breast cancer are characterized as preference-based, up to 29 percent of women in parts of the U.S. do not receive adequate discussion of the different surgical treatments for breast cancer, and fewer than half achieved their preferred level of participation (Degner et al. 1997; Keating et al. 2002).

In the present study, the authors use three measures of satisfaction among women who underwent either BCT, mastectomy, or mastectomy with reconstruction: satisfaction with the type of surgery received, satisfaction with the process by which the surgery decision was made, and feelings of regret concerning the type of surgery received. Although overall levels of satisfaction were high among women in all surgical treatment groups, approximately one in four women scored low on at least one measure of satisfaction. Ethnic minority groups and women of lower socioeconomic status (SES) were more likely to report decision regret, while woman who reported at least some involvement in the decision-making process were less likely to report regret. While other studies have suggested that women of lower SES and some ethnic/minority groups are more likely to prefer a more passive role in clinical decision making (Benbassat, Pilpel, and Tidhar 1998), the finding that women of lower SES and racial/ethnic minorities were at increased risk of dissatisfaction with their breast cancer treatment decision has not been reported in a large population-based study.

Surprisingly, this study found that patients who were more involved in decision making were more likely to undergo mastectomy. This finding appears inconsistent with previous research suggesting that patients who are more informed in treatment decisions are less likely to choose more intensive surgical treatments (O'Connor et al. 1999); one study reported a statistically significant reduction in major elective surgery when using a decision aid compared with usual care (RR 0.76, 95 percent CI: 0.6–0.9) (Murray et al. 2001). It also runs counter to the prevailing view that BCT is what women would choose if given the opportunity by their physicians (Masood 2003).

Address correspondence to Nananda Col, M.D., M.P.P., M.P.H., Associate Professor of Medicine, Department of Medicine, Brown Medical School and Rhode Island Hospital, MPB-1, 593 Eddy St., Providence, Rhode Island 02903. Christine Duffy is Assistant Professor of Medicine, Department of Medicine, Brown Medical School and Rhode Island Hospital, Providence, Rhode Island. Carol Landau is with the Department of Psychiatry and Human Behavior and Rhode Island Hospital, Brown Medical School, Providence, Rhode Island.

Although women more involved in the decision making were more likely to undergo mastectomy, the present study also shows that women who chose BCT were less likely to report low satisfaction or decision regret than women who received mastectomy (with or without reconstruction). However, these differences were small and of uncertain clinical significance. Clearly, being involved in decision making is not sufficient to ensure that women are satisfied with their decisions, nor does being involved entail being informed.

Consistent with previous research, the authors report that having too little involvement in the decision-making process can increase dissatisfaction. Unexpectedly, they also find that having too much involvement increases dissatisfaction. Nearly 30 percent of women who had at least one negative satisfaction outcome are reported as having more participation than desired, leading the authors to conclude that “Attempting to foster greater patient participation in treatment decisions could further decrease satisfaction and increase decision regret among these women.” They also suggest that it is the “match” between the desired and actual level of decision-making participation that matters most in decision satisfaction. But how well is this conclusion supported by the data presented?

Patients in this study were never asked directly whether they felt they were more involved than they preferred in the decision. Rather, this was inferred by comparing responses to two questions, collected at different times, asking women to first assess their perception of involvement in the surgical treatment decision, and then how they would have preferred the surgical treatment decision to have been made. For both these questions, responses ranged from: “My doctor made the surgery decision with little input from me” to “I made the surgery decision with little input from my doctor.” A woman who reports “I made the surgery decision with little input from my doctor” but later reports having preferred “My doctor made the decision with little input from me” was considered as having too much involvement. However, this mismatch could also be interpreted as the patient wanting additional or better information concerning the treatment decision from their doctor.

Physicians are often reluctant to involve patients in clinical decisions because of lack of training (Elwyn et al. 1999), pessimism about patients’ ability to assume a more active role (Spangler 2001), and concerns that it may take more of their time (Elwyn, Edwards, and Kinnersley 1999). Translating population-based trial evidence to individual decisions can be difficult for physicians. The benefits of therapy are often expressed as a relative reduction in the odds of recurrence as opposed to absolute reductions. For example, a physician may inform patients that chemotherapy will reduce the risk of

recurrence by 30 percent. However, the absolute benefit of this treatment will depend on an individual's baseline risk. A woman who has a 60 percent chance of recurrence will experience a 20 percent reduction in risk, whereas a woman who has a 10 percent chance of recurrence will experience a 3 percent reduction. Patients need to understand the impact of treatment choice on their personal risks and symptoms, over a relevant time horizon. However, physicians might not be able to provide this information, because of lack of time, training, or clinical tools. Without this information, how can a patient attach her preferences and values to the decision?

Informed decisions require good data. Available data on differences in QoL associated with surgical treatments for breast cancer suffer from several flaws: small sample sizes, inconsistent methods for assigning treatments, differences in time elapsed since treatment, and different definitions of QoL (McKenna et al. 1991). Additionally, data comparing BCT and mastectomy did not separately examine mastectomy with reconstruction. Reconstruction techniques have improved over time with markedly improved cosmetic results, making older data less relevant to patients today. At the time women were making this decision in these older studies, long-term follow-up data on the impact of treatment on recurrence and survival was not yet available (data describing 20 year follow-up was first reported in 2002) (Lantz et al. 2005). In addition to QoL differences between treatment options, patients' attitude towards risk and uncertainty could influence treatment choice. More aggressive surgery (mastectomy) may be seen as a way of reducing uncertainty and avoiding risk of future local recurrence. The authors report that women < 50 years of age receiving mastectomy were more likely to report concerns about recurrence of disease or radiation exposure, although in this study, risk aversion or fear of recurrence was not directly reported. In other studies, women treated with mastectomy continued to fear recurrence to at least the same degree as women treated with BCT (Schover 1991). This could reflect a selection bias: women who were more fearful or risk averse might be more likely to choose mastectomy over BCT. Patients who are more risk averse may also be more likely to have more information-seeking behaviors, yet be dissatisfied by the quality or quantity of information available on which to base their decisions.

Close scrutiny of the study's findings reveals some interesting associations that perhaps deserve more attention. Being poor, of an ethnic minority, being single, divorced, or widowed, or being less educated were consistently associated with being less satisfied with the surgery received than higher income, white, married, or more educated women; the effect size of these associations

were much larger than those reported across surgery type or concerning participation levels. This suggests that the specific measures used for satisfaction with surgery might be proxies for global dissatisfaction with life. Women who are less satisfied with life in general might also be more likely to report more or less participation in the decision (regardless of actual level of participation). Alternatively, socioeconomic variables might predict women who are less equipped to make informed decisions, less able to negotiate on their own behalf, and hence experience poorer outcomes. The available data do not inform either of these hypotheses, but the patterns of associations reported raise questions concerning the specificity of their measures of satisfaction.

Because few would chose a more invasive procedure (i.e., mastectomy) over a less invasive procedure (i.e., BCT) if there were no advantage to doing so, patients who elect the more invasive mastectomy are likely to gamble on future gains in either QoL or survival. Whether or not one regrets the decision made is likely affected by whether they experienced adverse effects perceived as resulting from the treatment selected, raising the issue of whether it is possible to disentangle the processes of the decision making from the outcome of the decision made. Satisfaction with the process at the time the decision is being made does not necessarily infer satisfaction with the treatment choice at a latter point in time, especially when the decision is irreversible, the full consequences of the decision may not manifest for decades, and the evidence upon which the original decision was made is rapidly evolving.

Some of the complications associated with the surgical treatment chosen may not be apparent until many years after the treatment decision has been made. Indeed, a patient who elected the less invasive lumpectomy who had no surgical complications but who experienced a recurrence several years later might attribute the recurrence to the less intensive surgery undertaken and experience decisional regret only after the time of recurrence. Additionally, the QoL implications of different treatment choices vary over time (McKenna et al. 1991). The present study's choice of evaluating QoL approximately 7 months after diagnosis may be late enough to capture most of the surgical morbidity associated with a simple mastectomy, but may not capture that associated with reconstruction (which may be delayed), nor the long-term adverse consequences of radiation therapy accompanying BCT, which may take years to manifest. This study's findings represent a single snapshot taken at an arbitrary point in time; were satisfaction or regret measured earlier or later, findings might be quite different.

When is the appropriate time to measure decisional regret? Many of the scales used to measure the quality of a decision or regret have not been

subjected to scrutiny concerning when they are best applied. Logically, regret should only be measured after sufficient time has passed to be able to capture all of the important consequences of the decision. Understanding how satisfaction with decisions changes over time could provide valuable information for women who are struggling with the decision and trying to factor in the expected consequences of treatment on their own lives.

In other studies, the strongest predictor of whether a women underwent BCT or mastectomy was what patients perceived to be their surgeons' preferences and the patients' concerns regarding breast loss and local tumor recurrence (Molenaar et al. 2004). But little is known about the factors that influence the surgeon's preference. One study found that treating surgeons felt that 30 percent of lumpectomy patients remain disfigured in some way, and that only 20–30 percent of reconstruction patients were moderately restored (Thompson et al. 2000). In addition, relatively little is known about how medical and radiation oncologists influence treatment decisions, though some evidence suggests that consultation with an oncologist is associated with increased rate of mastectomy (Keating et al. 2003), while consultation with a radiation-oncologist is associated with increased rate of BCT (Baldwin et al. 2004). Future research regarding decision making in breast cancer patients should address the respective roles of various specialties.

Patients who are more involved in their care are more satisfied and have better outcomes (Greenfield, Kaplan, and Ware 1985; Greenfield et al. 1988). However, the extent to which patients want to be involved in treatment decisions remains uncertain, with some studies finding that patients wish to be informed but not necessarily involved in treatment decisions (Strull, Lo, and Charles 1984; Ende et al. 1989). Clinical decision making can be separated into problem solving tasks (requiring expertise) and decision-making tasks (selecting the most desirable outcomes); most patients want the problem solving carried out by their physician while retaining decision-making autonomy (Deber, Kraetschmer, and Irvine 1996). Although the level of desired involvement also varies according to characteristics of the individual and the nature of the decision being made, most patients want more involvement in decisions than their doctors are willing or able to provide. Presumably, the more informed the decision, the better the decision; this is one instance where a U-shaped curve would not be expected.

Physicians often lack the skills needed to involve patients in decision making, and patients often lack the framework for understanding how to incorporate their preferences and values into complex health decisions. Future research needs to address the development of tools for both patients and

medical providers to improve the decision-making process. Investigating who is at risk of having decision regret, as the present authors have done, is an important first step. Future research should investigate the nature of the regret, and how satisfaction with the decision changes over time. What are the essential elements of a good decision? Importantly, the decision process can be burdensome to both patients and providers. Patients are often overwhelmed at the time when they are required to make a decision. Physicians generally have inadequate training and tools available to help ensure that patients are informed and comfortable with their role in decision making. Decision aids in surgical treatment decisions (Whelan et al. 2004) as well as facilitators to assist patients with the consultative process (Sepucha et al. 2000) show promise in assisting patients and providers in this complex process and in improving the quality of the decision-making process.

Regardless of the extent to which patients want to be involved in clinical decision making, informed decisions are always better than uninformed or misinformed decisions. Decisions that are truly preference-based need to be based on the clear preferences, expectations, and values of those involved; a substituted physician judgment will always be inferior to one based on patient preferences (Seckler et al. 1991; Hare, Pratt, and Nelson 1992). But involving patients in decision making will not lead to informed decisions unless there are good data on all relevant endpoints to inform these decisions. To make informed decisions, women need to know the expected consequences of each treatment option on all outcomes that are important to them. The present study is an important first step, but data on satisfaction and QoL over time are critically important. The take-home message from this study should not be that too much involvement is harmful to patients, but rather that we have not yet succeeded in providing patients with the information they need to make informed decisions, and we have not adequately trained physicians with the skills they need to help patients effectively participate in important decisions concerning their health.

REFERENCES

- Baldwin, L. M., S. H. Taplin, H. Friedman, and R. Moe. 2004. "Access to Multidisciplinary Cancer Care: Is It Linked to the Use of Breast-Conserving Surgery with Radiation for Early-Stage Breast Carcinoma?" *Cancer* 100: 701–9.
- Benbassat, J., D. Pilpel, and M. Tidhar. 1998. "Patients' Preferences for Participation in Clinical Decision Making: A Review of Published Surveys." *Behavioral Medicine* 24: 81–8.

- Blichert-Toft, R. C., J. A. Andersen, M. Overgaard, C. K. Axelsson, K. W. Andersen, and H. T. Mouridsen. 1992. "Danish Randomised Trial Comparing Breast Conservation Therapy with Mastectomy: Six Years of Life-Table Analysis." *Journal of National Cancer Institute Monographs* 11: 19–25.
- Brown, H. G. 1991. "Patient Issues in Breast Reconstruction." *Cancer* 68 (suppl 5): 1167.
- Cancer Statistics Review 1973–1989. NIH Publication No. 92-2789. Bethesda, MD, National Cancer Institute.
- Corral, C. J., and T. A. Mustoe. 1996. "Controversy in Breast Reconstruction." *Surgical Clinics of North America* 76: 309.
- Curran, D., J. P. van Dongen, N. K. Aaronson, G. Kiebert, I. S. Fentiman, F. Mignolet, and H. Bartelink. 1998. "Quality of Life of Early-Stage Breast Cancer Patients Treated with Radical Mastectomy or Breast-Conserving Procedures: Results of EORTC Trial 10801." *European Journal of Cancer* 34: 307–14.
- Deber, R. B., N. Kraetschmer, and J. Irvine. 1996. "What Role Do Patients Wish to Play in Treatment Decision-Making?" *Archives of Internal Medicine* 156: 1414–20.
- Degner, L. F., L. J. Kristjanson, D. Bowman, J. A. Sloan, K. C. Carriere, J. O'Neil, B. Bilodeau, P. Watson, and B. Mueller. 1997. "Information Needs and Decisional Preferences in Women with Breast Cancer." *Journal of the American Medical Association* 277: 1485–92.
- van Dongen, J. A., A. C. Voogd, I. S. Fentiman, C. Legrand, R. J. Sylvester, D. Tong, E. van der Schueren, P. A. Helle, K. van Zijl, and H. Bartelink. 2000. "Long-Term Results of a Randomized Trial Comparing Breast-Conserving Therapy with Mastectomy: European Organization for Research and Treatment of Cancer 10801 Trial. [Clinical Trial. Journal Article. Multicenter Study. Randomized Controlled Trial]." *Journal of the National Cancer Institute Monographs* 92: 1143–50.
- Dowden, R. V., and R. J. Yetman. 1992. "Mastectomy with Immediate Reconstruction: Issues and Answers." *Cleveland Clinic Journal of Medicine* 59: 499.
- Early Breast Cancer Trialists' Collaborative Group. 1995. "Effects of Radiotherapy and Surgery in Early Stage Breast Cancer." *New England Journal of Medicine* 333: 1444–55.
- Elwyn, G., A. Edwards, R. Gwyn, and R. Grol. 1999. "Towards a Feasible Model for Shared Decision Making: Focus Group Study with General Practice Registrars." *British Medical Journal* 319: 753–6.
- Elwyn, G., A. Edwards, and P. Kinnersley. 1999. "Shared Decision Making: The Neglected Second Half of the Consultation." *British Journal of General Practice* 49: 477–82.
- Ende, J., L. Kazis, A. B. Ash, and M. A. Moskowitz. 1989. "Measuring Patients' Desire for Autonomy: Decision Making and Information-Seeking Preference among Medical Patients." *Journal of General Internal Medicine* 4: 23–30.
- Fisher, B., S. Anderson, J. Bryant, R. G. Margolese, M. Deutsch, E. R. Fisher, J. H. Jeong, and N. Wolmark. 2002. "Twenty-Year Follow-up of a Randomized Trial Comparing Total Mastectomy, Lumpectomy, and Lumpectomy Plus Irradiation for the Treatment of Invasive Breast Cancer." *New England Journal of Medicine* 347: 1233–41.

- Fisher, B., M. Bauer, R. Margolese, R. Poisson, Y. Pilch, C. Redmond, E. Fisher, N. Wolmark, M. Deutsch, and E. Montague. 1985. "Five-Year Results of a Randomized Clinical Trial Comparing Total Mastectomy and Segmental Mastectomy with or without Radiation in the Treatment of Breast Cancer." *New England Journal of Medicine* 312: 665–73.
- Foster, R. S. Jr., M. E. Farwell, and M. C. Costanza. 1995. "Breast-Conserving Surgery for Breast Cancer: Patterns of Care in a Geographic Region and Estimation of Potential Applicability." *Annals of Surgical Oncology* 2: 275.
- Greenfield, S., S. Kaplan, and J. E. Ware. 1985. "Expanding Patient Involvement in Care. Effects on Patient Outcomes." *Annals of Internal Medicine* 102: 520–8.
- Greenfield, S., S. H. Kaplan, J. E. Ware, E. M. Yano, and H. J. L. Frank. 1988. "Patients' Participation in Medical Care: Effects on Blood Sugar Control and Quality of Life in Diabetes." *Journal of General Internal Medicine* 3: 448–57.
- Goel, V., N. A. Iscoe, and C. Sawka. 1996. "Breast Cancer Surgery: Hospital-Specific Information." In *Patterns of Health Care in Ontario. ICES Practice Atlas*. 2d ed., edited by V. Goel, J. I. Williams, G. M. Anderson, P. Blackstien-Hirsch, C. Fooks, and C. D. Naylor. Ottawa: Canadian Medical Association.
- Handel, N., M. J. Silverstein, E. Waisman, and J. R. Waisman. 1990. "Reasons Why Mastectomy Patients Do Not Have Breast Reconstruction." *Plastic and Reconstructive Surgery* 86: 1118.
- Hare, J., C. Pratt, and C. Nelson. 1992. "Agreement between Patients and Their Self-Selected Surrogates on Difficult Medical Decisions." *Archives of Internal Medicine* 152 (5): 1049–54.
- Jefford, M., and M. H. N. Tattersall. 2002. "Informing and Involving Cancer Patients in Their Own Care." *Lancet Oncology* 3: 629–37.
- Keating, N. L., E. Gaudagnoli, M. B. Landrum, C. Borbas, and J. C. Weeks. 2002. "Treatment Decision Making in Early-Stage Breast Cancer: Should Surgeons Match Patients' Desired Level of Involvement?" *Journal of Clinical Oncology* 20: 1473–9.
- Keating, N. L., M. B. Landrum, J. Z. Ayanian, E. P. Winer, and E. Guadagnoli. 2003. "Consultation with a Medical Oncologist before Surgery and Type of Surgery among Elderly Women with Early-Stage Breast Cancer." *Journal of Clinical Oncology* 21: 4532–9.
- Kotwall, C. A., D. L. Covington, R. Rutledge, M. P. Churchill, and A. A. Meyer. 1996. "Patient, Hospital, and Surgeon Factors Associated with Breast Conservation Surgery: A Statewide Analysis in North Carolina." *Annals of Surgery* 224: 419.
- Lantz, P. M., N. J. Janz, A. Fagerlin, K. Schwartz, L. Liu, I. Lakhani, B. Salem, and S. J. Katz. 2005. "Satisfaction with Surgery Outcomes and the Decision Process in a Population-Based Sample of Women with Breast Cancer." *Health Services Research* 40 (3): 745–768.
- Lichter, A. S., M. E. Lippman, Danforth Jr., T. d'Angelo, S. M. Steinberg, E. Demos, H. D. McDonald, C. M. Reichert, M. Merino, and S. M. Swain. 1992. "Mastectomy versus Breast-Conserving Therapy in the Treatment of Stage I and II Carcinoma

- of the Breast: A Randomized Trial at the National Cancer Institute." *Journal of Clinical Oncology* 10: 976-83.
- Masood, S. 2003. "Why Most Women with Breast Cancer Still Undergo Mastectomy." *The Breast Journal* 9: 69-70.
- McKenna, R. J. Jr., T. Greene, L. C. Hang-Fu, D. E. Hayes, E. F. Scanlon, R. J. Sweitzer, P. Strax, D. P. Winchester, and W. C. Wood. 1991. "Implications for Clinical Management in Patients with Breast Cancer: Long Term Effects of Reconstruction Surgery." *Cancer* 68 (suppl 5): 1182.
- Molenaar, S., F. Oort, M. Sprangers, E. Rutgers, E. Luiten, J. Mulder, and H. de Haes. 2004. "Predictors of Patients' Choices for Breast-Conserving Therapy or Mastectomy: A Prospective Study. [Journal Article. Multicenter Study]." *British Journal of Cancer* 90 (11): 2123-30.
- Morris, A. D., R. D. Morris, J. F. Willson, J. White, S. Steinberg, P. Okunieff, R. Arriagada, M. G. Le, M. Blichert-Toft, and J. A. van Donger. 1997. "Breast-Conserving Therapy vs Mastectomy in Early-Stage Breast Cancer: A Meta-Analysis of 10-Year Survival." *Cancer Journal from Scientific American* 3: 6-12.
- Moyer, A. 1997. "Psychosocial Outcomes of Breast-Conserving Surgery versus Mastectomy: A Meta-Analytic Review." *Health Psychology* 16: 284-98.
- Mueller, S. C., M. Cioroiu, R. D. LaRaja, and R. E. Rothenberg. 1988. "Postmastectomy Breast Reconstruction: A Survey of General and Plastic Surgeons (Letter)." *Plastic and Reconstructive Surgery* 82: 555.
- Murray, E., H. Davis, S. S. Tai, A. Coulter, A. Gray, and A. Haines. 2001. "Randomized Controlled Trial of an Interactive Multimedia Decision Aid on Benign Prostatic Hypertrophy in Primary Care." *British Medical Journal* 323: 493-6.
- Noguchi, M., H. Kitagawa, K. Kinoshita, M. Earashi, L. Miyazaki, S. Tatsukuch, Y. Saito, Y. Mizukami, A. Nonomura, and S. Nakamura. 1993. "Psychologic and Cosmetic Self-Assessments of Breast Conserving Therapy Compared with Mastectomy and Immediate Breast Reconstruction." *Journal of Surgical Oncology* 54: 260.
- O'Connor, A. M., A. Rostom, V. Fiset, J. Tetroe, V. Entwistle, H. Llewellyn-Thomas, M. Holmes-Rovner, M. Barry, and J. Jones. 1999. "Decision Aids for Patients Facing Health Treatment or Screening Decisions: Systematic Review." *British Medical Journal* 319: 731-4.
- Roetzheim, R. G., E. C. Gonzalez, J. M. Ferrante, N. Pai, D. J. Van Dorme, and J. P. Krischer. 2002. "Effects of Health Insurance and Race on Breast Carcinoma Treatments and Outcomes." *Cancer* 89: 2202-13.
- Sarrazin, D., M. G. Lê, R. Arriagada, G. Contesso, F. Fontaine, M. Spielmann, F. Rochard, T. LeChevalier, and J. Lacour. 1989. "Ten-Year Results of a Randomised Trial Comparing a Conservative Treatment to Mastectomy in Early Breast Cancer." *Radiotherapy and Oncology* 14: 177-84.
- Schain, W. S. 1991. "Breast Reconstruction: Update of Psychosocial and Pragmatic Concerns." *Cancer* 68 (suppl 5): 1170.
- Schover, L. R. 1991. "The Impact of Breast Cancer on Sexuality, Body Image, and Intimate Relationships." *CA Cancer Journal for Clinicians* 41: 112-20.
- Seckler, A. B., D. E. Meier, M. Mulvihill, and B. E. Paris. 1991. "Substituted Judgment: How Accurate Are Proxy Predictions?" *Annals of Internal Medicine* 115: 92-8.

- Sepucha, K. R., J. K. Belkora, D. Tripathy, and L. J. Esserman. 2000. "Building Bridges between Physicians and Patients: Results of a Pilot Study Examining New Tools for Collaborative Decision Making in Breast Cancer." *Journal of Clinical Oncology* 18: 1230–8.
- Sorrentino, P., U. Baccaglini, M. T. Ruffatto, F. Noventa, E. Schoos, M. C. Melloni, C. Castoro, T. Boccanegra, F. Mazzoleni, and C. Tremolada. 1988. "Mastectomized Woman's Acquired Knowledge about and Attitude towards Breast Reconstruction: A Prospective Survey on 100 Cases." *Italian Journal of Surgical Science* 18: 17.
- Spangler, N. 2001. "Member Behavior Change. Chapter 34." In: *The Managed Care Handbook*, 4th ed., edited by P. Kongstvedt. Gaithersburg, MD: Aspen Publishers, Inc.
- Steele, G. D., J. M. Jessup, D. P. Winchester, G. P. Murphy, and H. R. Menck. 1995. National Cancer Data Base Annual Review of Patient Care. Report no. 95: 15M-No. 0319.95. Atlanta, GA, American Cancer Society.
- Street, R. L. Jr., and B. Voigt. 1997. "Patient Participation in Deciding Breast Cancer Treatment and Subsequent Quality of Life." *Medical Decision Making* 17: 298.
- Strull, W. M., B. Lo, and G. Charles. 1984. "Do Patients Want to Participate in Medical Decision Making?" *Journal of the American Medical Association* 252: 2990–4.
- Thompson, T. A., A. Pusic, C. L. Kerrigan, R. Sargeant, S. Slezak, B. W. Chang, K. J. Helzlsouer, and P. Manson. 2000. "Surgeon Perspectives on Surgical Options for Early-Stage Breast Cancer." *Plastic and Reconstructive Surgery* 105 (3): 910–8.
- Van Dongen, J. A., H. Bartelink, I. S. Fentiman, T. Lerut, F. Mingolet, G. Olthuis, E. van der Schueren, R. Sylvester, J. Winter, and K. van Zijl. 1992. "Randomized Clinical Trial to Assess the Value of Breast-Conserving Therapy in Stage I and II Breast Cancer, EORTC 10801 Trial." *Journal of National Cancer Institute Monographs* 11: 15–18.
- Veronesi, U., R. Saccozzi, M. Del Vecchio, A. Banfi, C. Clemente, M. DeLena, G. Gallus, M. Greco, A. Luini, E. Marubini, G. Muscdino, F. Rilke, B. Salvadori, A. Zecchini, and R. Zacali. 1981. "Comparing Radical Mastectomy with Quadrantectomy, Axillary Dissection, and Radiotherapy in Patients with Small Cancers of the Breast." *New England Journal of Medicine* 305: 6–11.
- Whelan, T., M. Levine, A. Willan, A. Gafni, K. Sanders, D. Mirsky, S. Chambers, M. A. O'Brien, S. Reid, and S. Dubois. 2004. "Effect of a Decision Aid on Knowledge and Treatment Decision Making for Breast Cancer Surgery: A Randomized Trial." *Journal of the American Medical Association* 292: 435–41.