

Letter to the Editor

Immediate Breast Reconstruction after Skin-Sparing Mastectomy for the Treatment of Advanced Breast Cancer: Radiation Oncology Considerations

To the Editor:

Treatment advances in surgery, medical oncology, radiation oncology, and plastic surgery have significantly improved the outcome of patients with locally advanced breast cancer. However, with these advances, important new questions have developed regarding the sequencing of these interventions. For patients with locally advanced disease, it is critical that all disciplines coordinate their services and work together to provide optimal care for these patients.

In a recent article published in the *Annals of Surgical Oncology*, Foster et al. reported the results of a prospective cohort study investigating the use of skin-sparing mastectomy and immediate breast reconstruction for treatment of patients with advanced stages of breast cancer.¹ Twenty-five patients with stage IIB or III disease who underwent this procedure were the main focus of their report. The authors reported a low local-regional recurrence rate (1 of 25) after a median follow-up of 4 years and a postoperative complication rate of 13%. In their conclusion, the authors encouraged other institutions to consider immediate reconstruction after mastectomy for locally advanced disease.

A major deficiency with this article was the lack of radiation oncology considerations. Previously published data from both our institution and a second series demonstrated that the local-regional recurrence rate after mastectomy and chemotherapy is 20% to 30% for patients with stage II and III breast cancer.^{2,3} Furthermore, compared with the 25 patients reported in the Foster et al. report, these two studies each included over 1000 patients and each had median follow-up periods over 10 years.^{2,3} More importantly, mature randomized prospective trials investigating post-mastectomy radiation in this cohort of patients found that both local-regional recurrence and overall survival were improved with radiation treatment.^{4–6} These data led to consensus statements from the American Society for Therapeutic Radiology and Oncology and the American Society of Clinical Oncology that have recommended postmastectomy radiation as a standard component of care for these patients.^{7,8}

Given that all patients with locally advanced breast cancer should receive radiation, the important question regarding autologous tissue reconstruction is whether it should be done before or after radiation treatment. Despite a consensus at the recent American Society of Plastic Surgeons meeting and several large studies that have discouraged immediate breast reconstruction in patients that will require postmastectomy radiation, articles continue to be published to the contrary. Although immediate breast reconstruction is ideal for many

patients, there are two significant disadvantages with this approach in patients with locally advanced breast cancer.

First, radiation can affect the aesthetic outcome of the reconstructed breast. Investigators from our institution previously reported that late complications after reconstruction were significantly increased in patients who had an immediate autologous tissue reconstruction followed by radiation compared with having radiation with a delayed reconstruction (87.5% vs. 8.6%, respectively; $P < .001$).⁹ Furthermore, 28% of the patients with immediate reconstruction required an additional flap to improve aesthetics. Therefore, adverse effects of radiotherapy to a breast reconstruction should be avoided, and autologous tissues should be reserved until after completion of radiotherapy.

The second major issue with immediate reconstruction concerns the design of radiation fields. The randomized trials showing a survival advantage with postmastectomy radiation included the chest wall, internal mammary lymph nodes, axillary apex, and supraclavicular lymph nodes within the radiation fields. To include these targets and minimize dose to the heart and lung, we typically match a medial chest wall electron beam field to more laterally placed opposed tangent fields. This arrangement is not feasible after reconstruction because the sloping breast contour leads to an imprecise geometric matching of the fields. Alternative field arrangements require either exclusion of the internal mammary lymph nodes as a target volume or acceptance of an increase in the volume of normal tissue irradiated, with a possible increase in the risk of complications.

Given these considerations, our multidisciplinary-determined institutional philosophy is to avoid immediate reconstruction in patients that will require postmastectomy radiation. However, after our multidisciplinary team discusses the potential downsides, some patients still elect to have an immediate reconstruction. At the minimum, we strongly advocate that all patients with locally advanced breast cancer receive comprehensive information about these implications and be treated by a closely coordinated multidisciplinary team whose focus is on avoidance of recurrence, improvement of curability, and maximization of long-term quality of life.

Thomas A. Buchholz, MD
Department of Radiation Oncology

Steven J. Kronowitz, MD
Department of Plastic Surgery

Henry M. Kuerer, MD, PhD
Department of Surgical Oncology
The University of Texas M. D. Anderson Cancer Center
Houston, Texas

REFERENCES

1. Foster RD, Esserman LJ, Anthony JP, Hwang WE, Do H. Skin-sparing mastectomy and immediate breast reconstruction: a prospective cohort study for the treatment of advanced stages of breast carcinoma. *Ann Surg Oncol* 2002;9:462–6.
2. Recht A, Gray R, Davidson NE, et al. Locoregional failure ten years after mastectomy and adjuvant chemotherapy with or without tamoxifen without irradiation: experience of the Eastern Cooperative Oncology Group. *J Clin Oncol* 1999;17:1689–1700.
3. Katz A, Strom EA, Buchholz TA, et al. Loco-regional recurrence patterns following mastectomy and doxorubicin-based chemotherapy: implications for postoperative irradiation. *J Clin Oncol* 2000;18:2817–27.
4. Overgaard M, Hansen PS, Overgaard J, et al. Postoperative radiotherapy in high-risk premenopausal women with breast cancer who receive adjuvant chemotherapy. *N Engl J Med* 1997;337:949–55.
5. Ragaz J, Jackson SM, Le N, et al. Adjuvant radiotherapy and chemotherapy in node-positive premenopausal women with breast cancer. *N Engl J Med* 1997;337:956–62.
6. Overgaard M, Hansen S, Rose P, et al. Randomized trial evaluating postoperative radiotherapy in high risk postmenopausal breast cancer patients given adjuvant tamoxifen: results from the DBCG 82c trial. *Lancet* 1999;353:1641–8.
7. Harris JR, Halpin-Murphy P, McNeese M, et al. Consensus statement on postmastectomy radiation therapy. *Int J Radiat Oncol Biol Phys* 1999;44:989–90.
8. Recht A, Edge SB, Solin LJ, et al. Postmastectomy radiotherapy: clinical practice guidelines of the American Society of Clinical Oncology. *J Clin Oncol* 2001;19:1539–69.
9. Tran NV, Change DW, Gupta A, Kroll SS, Robb GL. Comparison of immediate and delayed free TRAM flap breast reconstruction in patients receiving postmastectomy radiation therapy. *Plast Reconstr Surg* 2001;108:78–82.