Ann Surg Oncol (2011) 18:S265
DOI 10.1245/s10434-010-1436-y

Annals of
SURGICAL ONCOLOGY
OFFICIAL JOURNAL OF THE SOCIETY OF SURGICAL ONCOLOGY

LETTER TO THE EDITOR

Comparing Prediction Models: The Distinction Between Clinical and Statistical Significance

TO THE EDITORS:

Zendejas et al. validated several models designed to predict the finding of ≥4 tumor-positive axillary lymph nodes (LN).[1] Given that patients with ≥4 positive LNs are offered postmastectomy radiotherapy (PMRT), and that plastic surgeons are loath to perform immediate breast reconstruction if radiotherapy is planned, prediction of ≥4 positive LNs is of clinical significance intraoperatively. Zendejas et al. found good calibration in the Rivers, Katz, and Chagpar models, but they criticized the latter, stating, "The Chagpar model is limited by the fact that it does not take into account T3 patients and does not include other factors that have been extensively shown to be predictive of extensive nodal disease in multivariate analysis, such as lymphovascular invasion [LVI] and extranodal extension [ENE]."[2–4] We wish to clarify this; the clinical utility of such models rests with their ability to inform intraoperative decision making.

Patients with T3 tumors already have an indication for PMRT according to ASCO/ASTRO guidelines. Therefore, it makes little sense to include them in a model designed to determine the need for PMRT. LVI, ENE, and size of the largest focus of nodal metastasis are not generally known intraoperatively. Therefore, while inclusion of these factors may improve the statistical performance of models, it virtually eliminates their clinical utility. Omitting these factors from our model is therefore a strength, not a limitation.

It is not surprising that the Rivers and Katz models outperformed ours—both include LVI, ENE, and size of metastatic deposit; Katz further included T3 tumors. Although there may be some situations in which these models are clinically useful, such as in patients with a false-negative intraoperative sentinel LN result, or those with tumors ≤5 cm in size who undergo sentinel LN biopsy before neoadjuvant chemotherapy, they are of limited utility for intraoperative decision making. Werkoff et al. validated both our model and the Katz model in a prospective study.[5] Although generally the Katz model performed better, when data not available intraoperatively were excluded, the Katz model fared worse.

Our model is not perfect—it identifies a small subset of patients at the lowest risk of extensive disease; other models that include more data are more robust. These models, however, have different intents, one geared toward intraoperative decision making and the other aimed at improving statistical reliability. This distinction is important in comparing the utility of each model.

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Published Online: 23 November 2010

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