One-view breast tomosynthesis *vs* two-view mammography: a methodological issue

We read with interest the Article by Sophia Zackrisson and colleagues,[1] which compared the diagnostic accuracy of one-view digital breast tomosynthesis—a potential alternative to breast cancer screening—with standard two-view digital mammography in population-based breast cancer screening. The authors prospectively enrolled 14 848 women from Jan 27, 2010, to Feb 13, 2015. For digital breast tomosynthesis, the sensitivity was 81·1% (95% CI 74·2–86·9) and the specificity was 97·2% (97·0–97·5) for screening malignancy, with a negative predictive value of 99·8% (99·7–99·9) and a positive predictive value of 24·1% (20·5–28·0). By contrast, for digital mammography, the sensitivity was 60·4% (52·3–68·0) and the specificity was 98·1% (97·9–98·3), with a negative predictive value of 99·6% (99·4–99·7) and a positive predictive value of 25·9% (21·6–30·7). The authors concluded that, if cost-effective, one-view digital breast tomosynthesis warrants consideration as the preferred breast cancer screening method.

However, certain issues must be addressed regarding the methods used in this study. First, sensitivity (number of true positives divided by the total number of true positives plus false negatives), specificity (number of true negatives divided by the total number of true negatives plus number of false positives), negative predictive value (number of true negatives divided by the total number of true negatives plus number of false negatives), and positive predictive value (number of true positives divided by the total number of true positives plus false positives), as well as diagnostic odds ratio and the negative-to-positive likelihood ratio, are the most suitable estimates that assess the accuracy (validity) of a test compared with the gold standard. Nevertheless, reporting the diagnostic added value with additional receiver operating characteristic (ROC) curves should also be considered, since all these accuracy estimates could be acceptable, whereas diagnostic added values might well be clinically negligible.[2,3]

From the perspective of Zackrisson and colleagues, they did not use the ROC curve mainly because of dichotomisation. Nonetheless, the ROC curve is a tool that simply describes the range of trade-offs decided by various choices of threshold that can be achieved by the test.[4] So, it could facilitate the procedure of choosing the dichotomising threshold, and thus the reason for not using a ROC is insufficient.

The authors concluded that, if cost-effective, one-view digital breast tomosynthesis is likely to be a preferred screening method over traditional two-view digital mammography. This conclusion would be more fully strengthened when supported by the statistical methods we describe.

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We declare no competing interests.

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1 Zackrisson S, Lang K, Rosso A, et al. One-view breast tomosynthesis versus two-view mammography in the Malmö Breast Tomosynthesis Screening Trial (MBTST): a prospective, population-based, diagnostic accuracy study. *Lancet Oncol* 2018; **19:** 1493–503.

2 Fang X, Kong W, Yu Z, et al. Letter to the Editor regarding can early postoperative FET-PET after the resection of a glioblastoma predict the location of later tumor recurrence. *World Neurosurg* 2018 (in press).

3 Rothman KJ GS, Lash TL. Cohort studies. In: Rothman KJ, ed. Modern epidemiology. Baltimore: Lippincott Williams & Wilkins, 2008.

4 Pepe MS. The statistical evaluation of medical tests for classification and prediction. Oxford: Oxford University Press, 2003.