Reviewer's report

Title: True sentinel nodes identified by computed tomography-lymphography accurately stage the axilla in patients with breast cancer

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Reviewer: Timothy L Fitzgerald

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Journal: BMC Medical Imaging

Manuscript Title: “True sentinel nodes identified by computed tomography-lymphography accurately stage the axilla in patients with breast cancer”

Overall:

This to be a well written study with conclusions that are appropriate for the data presented. There are some minor and major criticisms that need to be addressed.

1. Major Compulsory Revision: Although, I think this study was well written I am bothered by the authors reference to the node identified by computed tomography-lymphography as the true sentinel node. I think that the authors can conclude that this node can accurately stage the axilla with fewer nodes excised than traditional sentinel lymph node biopsy. However, I don’t believe it is appropriate to call this the true sentinel node. A better term would be node identified by CT-LG.

2. Minor Essential Revisions: Secondly, the authors in the introduction allude to the fact that there would be cost savings with this technique. This seems unlikely, especially in the United States; as currently performed, most surgical oncologists and surgeons treating breast cancer, inject radionucleotide pre-operatively or inter-operatively omitting lymphoscintigraphy. This technology may be more accurately identify regional nodal metastasis; it is hard to believe it would do so at a cost savings.

Abstract:

1. I would eliminate true sentinel nodes; I think this is an inaccurate depiction of the nodes identified.

2. Background, as mentioned previously, the authors allude to cost and time savings. This seems unlikely and if it is the case the authors need to provide data to support this claim.

Methods:

1. Minor Essential Revisions: The authors indicate that in their selection criteria, that patients with non-palpable tumors were excluded. I would like them to outline why this was done. Would this technology not be appropriate for clinically occult disease? If so, would it be of limited utility?
2. Major Compulsory Revision: When reading the surgical technique, it was unclear to me how the authors would localize these nodes, without radionucleotide. I understand that the CT technology can localize the node on the skin and even give depth. Seems to me in reading this methods section that they also used the gamma-probe to identify the node. How would they localize this without the gamma-probe?

Results:
1. Again I would eliminate the use of true sentinel node.
2. Minor Essential Revisions: Would like the authors to present the median or mean number of nodes identified for both techniques. Are they statistically significantly different from each other?

Discussion:
1. I found the discussion to be very well written and thought provoking.
2. In the second paragraph- I do not like the use of the word true sentinel node.
3. Minor Essential Revisions: Also in the second paragraph, the authors indicate that a single CT could be performed for localization. I think based upon this data, the authors could hypothesize this but further study would be required to validate.
4. Paragraph four on page 12 I was very thought provoking. Role of MR in predicting lymph node positivity to avoid sentinel lymph node biopsy in those who are likely to have microscopic disease has some interesting clinical ramifications.

Conclusion:
1. Minor Essential Revisions: The last sentence should be re-written as it is a little awkward

Overall I would like to commend the authors for a well written, thought provoking article that is hypothesis generating. I will be interested to see the further data based upon these hypothesis generating results; I was particularly intrigued at the possibility of omitting sentinel lymph node biopsy by using a combination of CT- LG and MRI.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
'I declare that I have no competing interests'