



A Fast and Cheap Method for Orienting Breast Lumpectomy Surgical Samples Before Specimen Mammography

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Dear Editor,

We are conducting a project (ethics code in the Ethics Committee of Tehran University of Medical Sciences: IR.TUMS.SINAHOSPITAL.REC.1399.119) on samples excised during breast lumpectomy for breast cancer with the aim of comparing the specimen mammography as performed usually, with the surgical sample placed in a vacuum bag and then undergoing mammography. We will compare the free margin detected in the standard specimen mammography, the vacuum specimen mammography, and the histological assessment of the specimen margins.

According to the methodology, we had to orient the specimens after excision by marking the margins with surgical clips for the X-ray and with sutures for the histologic assessment. However, while in the initiation phase of the project, we could not afford to carry it out, because the sanctions had caused an unexpected rise in the price of the surgical metal clips that we used to put on the specimens, and the clips were also hardly available due to sanctions [1]. Therefore, we planned another trick.

We got two ordinary staplers (used for papers and sheets), made of metal only, in order to be sterilizable; we sterilize them and their staples before our projected operation. Then, the nurse scrub prepares four small pieces of thin sterile cardboard (around 1 × 1 cm or slightly more) and, according to our predetermined plan for the number of clips, places one to four staples on

each. We then suture them to the four peripheral margins by the same sutures that we use to orient the specimen for the pathologist: one short suture for one staple, two short sutures for two staples, one long suture for three staples, and two long sutures for four staples for the superior, medial, inferior, and lateral margins, respectively.

The results of images are very good with the new method (Fig. 1), because the cardboards help the radiology technician to orient the specimen properly between the plates of the mammography device. Therefore, this method has at least four advantages; it is fast and cheap, allows better visualization of the image, and saves an apparently small but rather expensive and not always accessible part of medical resources in deprived regions. We now use this method for any breast specimen that has to be X-rayed, because there is no point to use expensive surgical clips for orientation of a tissue that is out of the human body.

In this study, as per our local protocol for breast-conserving surgery, the deep margin is excised up to and including the pectoral fascia, and the superficial margin is excised including the skin above the tumor, or at least the hypodermis above the tumor, based on the type of the conserving or oncoplastic technique. Therefore, we do not mark the deep and superficial margins, which can be considered a limitation of the method when these two margins are excised less radically. However, even in those cases, we think that these margins can also be marked with the same protocol using more stitches for orienting the histology assessment and more staples for the specimen mammography and then taking two images from two different views; this of course can be assessed in another study.

Although intraoperative imaging of breast specimens is now carried out by cutting-edge equipment as Faxitron (Faxitron X-Ray LLC, Lincolnshire, IL, USA) [2, 3] or other facilities in advanced medical settings, we propose this technique for specimen orientation not only to surgical

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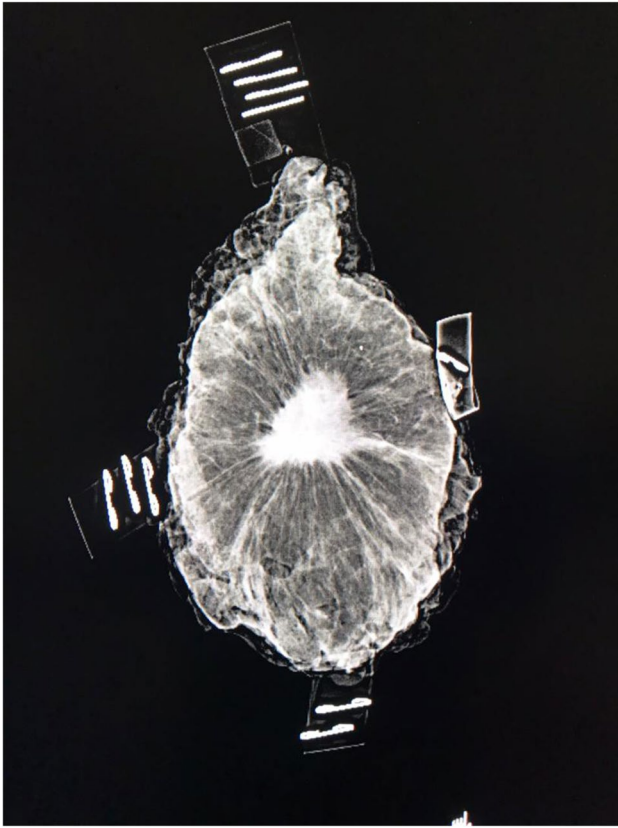


Fig. 1 Specimen mammography oriented with staples

centers with low resources but also to any facility that performs breast surgery and specimen mammography by any technology.

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Author Contribution All authors contributed to the study conception and design. Material preparation was performed by MT and SA. The first draft of the manuscript was written by SA, and all authors commented on the first draft and reviewed the final manuscript.

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Data Availability Data are available upon reasonable request from the corresponding author.

Declarations

Ethics Approval The main ongoing study has been approved by the Ethics Committee of Tehran University of Medical Sciences, ethics code: IR.TUMS.SINAHOSPITAL.REC.1399.119). Informed consent was obtained from all individual participants included in the study.

Conflict of Interest The authors declare no competing interests.

References

1. Akbarialiabad H, Rastegar A, Bastani B (2021) How sanctions have impacted Iranian healthcare sector: a brief review. *Arch Iran Med* 24(1):58. <https://doi.org/10.34172/aim.2021.09>
2. Bathla L, Harris A, Davey M, Sharma P, Silva E (2011) High resolution intra-operative two-dimensional specimen mammography and its impact on second operation for re-excision of positive margins at final pathology after breast conservation surgery. *Am J Surg* 202(4):387–394
3. Chagpar AB, Butler M, Killelea BK, Horowitz NR, Stavris K, Lannin DR (2015) Does three-dimensional intraoperative specimen imaging reduce the need for re-excision in breast cancer patients? A prospective cohort study. *Am J Surg* 210(5):886–890

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