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Intra-operative surgical margins planification by ultrasonography − A new tool for the surgeon in conservative breast surgery

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Background: The traditional techniques of subclinical breast tumors localization (ink skin marking, hook wire guided or radioisotope guided) carry some limitations for the surgeon in defining a precise resection because those techniques doesn't allow correct surgical margins delineation.

The use of the ultrasonography (US) in the operative teather, by the breast surgeon, permits a real-time localization of impalpable nodular breast lesions and the subsequent planning of surgical margins, in order to excise the smallest specimen possible with adequate clear histological radial margins.

Material and Methods: We describe and present our intraoperative technical solution of surgical resection planning using, in the operative theatre, the US to target the breast lesion and to delineate, with ink skin lines, the breast volume to excise with precision, preserving the better cosmesis.

Results: With adequate training in breast US, the described technique is easy, not invasive, not time-consuming and cheapest comparing with traditional localization techniques. It only demands a new operating room tool − the US hardware. This solution can be applied not only on impalpable breast lesions, but also on clinical palpable tumors.

During poster presentation, a video of the technique will be available online at YouTube® (www.youtube.com).

Conclusions: The preoperative use of the US by the breast surgeon is an easy, simple, not invasive and satisfactory method to localize impalpable nodular breast lesions and allows intuitive and practical surgical margins delineation, to excise an adequate histological specimen in breast conservative surgery.

Thursday, 25 March 2010 18:15–19:15

POSTER SESSION

Sentinel node − technique, diagnosis and management

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Is intra-operative frozen section assessment of sentinel lymph nodes worth our while?

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Background: Sentinel lymph node (SLN) biopsy is now the standard of care for small invasive carcinomas without clinically palpable lymph nodes. Full axillary nodal dissection (ALND) is reserved for cases where the SLN is positive. Intra-operative SLN assessment therefore has the advantage of allowing ALND to be performed at the same setting. Intra-operative frozen section (FS) assessment is currently used at our institution. However there are concerns regarding its accuracy and the additional operative time required. We therefore reviewed our data to determine whether intra-operative FS prolonged operative times, and evaluated the false negative rate on FS, which would necessitate a second surgery for ALND.

Materials and Methods: A retrospective review was performed. Between 1st January 2006 to 1st July 2009, 225 patients underwent surgery with SLN biopsy. Intra-operative FS was routinely performed in those with a pre-operative diagnosis of invasive carcinoma. SLN biopsy was performed for selected cases of ductal carcinoma-in-situ (namely high grade and large tumours), but FS was not done in these cases.

Results: One hundred and forty-two patients underwent wide local excision (WLE) with SLN biopsy; FS was not done in 14 (9.9%). Eighty-three patients underwent mastectomy and SLN biopsy, FS was not done in 18 (21.7%). SLN was positive in 64 patients of 193 patients (33.2%). In the 32 patients in whom intra-operative FS was not done, none had a positive SLN. The false negative rate for intra-operative FS of SLN was 20.3% (13 of 64 patients). On histological examination of the formalin-fixed paraffin-embedded sections, these cases were found to have micrometastasis. Intra-operative FS was found to have a sensitivity of 79.7% and a specificity of 100%; positive predictive value (PV) was 100% and negative PV was 94.0%. Intra-operative FS did not significantly prolong the surgery. In the WLE group, median operative time without FS was 60min, while that of those including FS was 70min. In the mastectomy group, median operative time without FS was 92.5min compared with 95min with FS.

Conclusion: Intra-operative FS does not significantly prolong the surgery. Intra-operative FS was found to have a high sensitivity and specificity, but was inadequate for the detection of micrometastasis. FS therefore is an efficient method of assessing SLN status intra-operatively, and is useful in helping the surgeon decide whether to proceed with ALND.

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Sentinel lymph node biopsy and immunohistochemical examination of bone marrow for the detection of isolated tumour cells in early stage breast cancer

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Background: Almost a third of breast cancer patients recur and die from the disease in spite of node-negative status. Such adverse events could be explained by early haematogenous spread of tumour cells. The aim of the present study was to correlate axillary lymph node status according to sentinel lymph node biopsy (SLNB) and isolated tumour cells (ITC) in bone marrow (BM) as well as other clinical, pathological and biochemical prognostic factors.

Material and Methods: 104 patients with operable T < 3 cm breast cancer and both clinical and sonographically negative axillary lymph nodes, were scheduled for SLNB. Lymphoscintigraphy was obtained 2 hours after intratumoral administration of 2 mCi (74 MBq) of 99mTc colloidal albumin. SLN was evaluated for the presence of tumour cells by haematoxylin-eosin staining and, if negative, by immunocytochemistry using an anticytokeratine antibody (MNF-116).

BM aspirates were also collected intraoperatively from both iliac crests and mononuclear cell layers were separated by density centrifugation. Slide preparations were then examined for the presence of ITC by anticytokeratine-antibodies (A45-B/B3) immunocytochemistry.

Relevant clinical features and known prognostic factors such as age, clinical and radiological presentation at diagnosis, tumour size, histological type and grading, lymph vascular invasion, estrogen and progesterone receptor status were correlated using univariate analysis.

Results: SNB was positive in 28% of cases. ITCs were found in the BM of 22% of the patients. Even though there were five patients with coincidental SNB and BM ITC positivity, no overall correlation was seen between the two spread pathways ($\chi^2 = 0.232$; $p = 0.63$). Similarly, no single or combined clinical or prognostic features was strongly predictive of haematogenous and/or lymphatic spread. All patients recieved chemotherapy or hormonal treatment and radiotherapy. After a mean follow-up period of 56 months (5−80 months), 8 patients had recurred, and 4 of them had died from breast cancer. No correlation between BM ITC positivity or lymph node status and recurrence has been found.

Conclusions: BM ITCs were detected by immunocytochemistry in a significant proportion of early breast cancer. Also, SNB was positive in a fair proportion of our sample. Ocurrence of BM ITC and lymph node positivity seem to obey to completely unrelated pathways. Perhaps due to the scarcity of follow-up events in a cohort of patients receiving extensive adjuvant therapy, no prognostic power could be shown for either BM ITC positivity or LN status.

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Meta-analysis of predictive factors for non sentinel lymph node metastases in breast cancer patients with a positive SLN

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Background: Over the last years, sentinel lymph node (SLN) biopsy has emerged as the minimally invasive alternative to routine axillary lymph node dissection (ALND) to stage breast cancer. Different clinicopathological variables, predictive of non sentinel node (NSN) metastases, have been identified to select those patients most likely to benefit from ALND when a positive SLN is found. The present study is a meta-analysis of the identified predictors of NSN metastases.

Materials and Methods: A Medline search was conducted which ultimately identified 56 candidate studies. Original data were abstracted