

we compared OSNA to histological investigation to determine the suitability of OSNA.

Methods: Surgically obtained SNs were sectioned into three pieces along the major axis. The central piece was sliced into 1 mm wide and sent to a pathologist in an external laboratory for histological investigation with H&E and immunohistochemical staining. The other two pieces were examined with the OSNA method. Both methods were compared in the evaluation of 81 SNs from 52 breast cancer patients.

Result: Both methods yielded the same results in 77 SNs; 63 were metastasis-negative and 14 were metastasis-positive. Two SNs were positive for metastasis on OSNA but negative on histology. Other two SNs were metastasis-negative on OSNA but positive on histology, and these nodes contained only micrometastasis lesion. The concordance rate was 95.1% and specificity was 96.9%. The false positive rate and false negative rate were very low.

Conclusion: OSNA is a very useful technique for the intraoperative analysis of SN metastasis in breast cancer patients. The OSNA analysis results appear to be very reliable. This method is useful not only in major hospitals but also in smaller hospitals where pathologists are not available during an operation.

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POSTER

Biological Features of Primary Tumour as Predictors of Ipsilateral Axillary Node Relapse in Elderly Breast Cancer Patients

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Background: The lymphnode status of the axilla is considered the most important predictive factor of mortality in breast cancer patients and the question on which subgroups could be safely spared from axillary lymphnode dissection is not yet defined. The present study was performed to investigate on the predictive relevance of primary tumour biological markers on the risk of ipsilateral axillary node relapse.

Patients and Methods: The study included 351 elderly breast cancer patients (≥ 70 years) with no-palpable axillary nodes and ER positive tumours, submitted to quadrantectomy (70.1%) or quadrantectomy plus radiotherapy (29.9%), without axillary dissection and followed by adjuvant Tamoxifen for at least 2 years.

ER and PgR were assayed by Dextrane-coated charcoal method and cell proliferation was expressed as 3H Thymidine labelled cells (TLI).

Patient follow-up involved clinical, biochemical and radiological assessments at 6 month intervals, for the first 5 years, and once year thereafter.

Results: At a median follow-up of 16 years, in the overall series ipsilateral axillary relapse was directly and significantly associated with proliferation index: 2.1% (95% CI: 0.8–5.6%) in patients with slowly proliferating tumours vs 11.8% (95% CI: 7.7–18.0%) in patients with rapidly ($p=0.0002$). The difference was consistently observed in patients with pT1 lesions 0.9% (95% CI: 0.1–6.4%) vs 9.3% (95% CI: 4.8–18.1%) ($p=0.003$) and in patients with pT2–4b lesions 3.9% (95% CI: 1.3–11.8%) vs 14.7% (95% CI: 8.5–25.4%) ($p=0.019$). In the present series of elderly patients with a ER+ tumours, PgR status by itself showed no predictive relevance but in association with proliferation index was able to identify two subgroups with statistically significant difference in axillary relapse: 2% (95% CI: 0.6–6.2%) in patients with PgR+ and a low proliferation index vs 13.7% (95% CI: 6.8–27.5%) ($p=0.002$) in patients with opposite biological features.

Conclusion: Cell proliferation of primary breast cancer is an independent predictive factor of ipsilateral axillary relapse risk and could represent a valid, efficacious and low expensive tool to identify patients candidate to axillary surgery.

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POSTER

Ex-vivo MRI of Breast Specimen: an Innovative Procedure to Verify the Surgical Removal of Only MRI Detected Lesions

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Purpose: Besides the increasing development of MRI as a diagnostic problem solving tool, the need to achieve the histologic diagnosis of the only MRI detected lesions rose progressively up. When Open Surgical Breast Biopsy is request as the last opportunity to get a diagnosis of MRI findings, the challenge remains to demonstrate their effective removal. We designed an innovative procedure to demonstrate MRI highlighted nodules within Breast Surgical Specimen (BSS).

Materials and Methods: Before surgery, MRI diagnostic images were reconstructed in orthogonal views to allow the surgeon to evaluate the true extension of the disease.

Ex-vivo MRI was performed within 15' after the surgical resection. Technical procedure provided the study of the BSS by means of a surface coil. Two orthogonal Spair sequences allowing fat signal suppression were applied.

To visualize pre-operative MRI lesions, we injected contrast medium (Gd-DTPA) 1' before surgical incision. Following this procedure, we obtained a BSS where enhancing lesions of former diagnostic examination were newly highlighted and could be visualized on ex-vivoMRI. 27 patients were enrolled in the present study.

Informed consent was requested both before diagnostic pre-operative MRI and before surgery for ex-vivo evaluation.

Results: All MRI detected lesions were retrieved in ex-vivoMRI, including additional foci and dendritic branches not associated with microcalcifications. In 3 cases the further lesions were in another quadrant of the same breast: these patients were submitted to double resection and both BSS were analysed during the same MRI session.

Discussion: Careful assessment of the true extent of the disease in surgical planning for Breast Cancer is mandatory. Several studies report how MRI can improve local staging and depict even conventionally invisible additional foci. Only MRI detected nodules require however pre-operative localization and peri-operatively confirmation of their removal.

Until now, breast lesions were considered to be non-highlightable ex vivo. We succeeded instead in demonstrating the enhanceability of breast cancer by means of the same procedure that previously provided the most accurate staging of the disease.

To our knowledge, our method is the first that visualizes neoplastic lesions inside BSS by means of MRI.

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POSTER

Breast Cancer After Mastectomy – Long Term Results and Prognostic Factors

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Background: The aim of this study was to determine the clinical characteristics, the therapeutic results and factors affecting disease free survival of breast cancer in women who underwent mastectomy followed by radiotherapy from a series of 231 cases treated in our department over one one year period.

Patients and Methods: A retrospective study of 231 patients with invasive BC who received radiotherapy after mastectomy, between January and December 1998, in our department. Survival curves were estimated by Kaplan–Meier methods. Univariate and multivariate analyses were performed using the Cox proportional hazards regression models.

Results: The median age was of 46.8 ± 1.9 years (25–77 years). Nineteen tumours were of stage I (8%), 118 of stage II (51%), 70 of stage III (30%) and 24 of unspecified stage (11%). They were CCI in 88% of cases and CLI in 10% of cases. 59% of cases were SBR I or II grade and 41% GIII. The average of histological tumoral size was of 36.1 ± 2.6 mm (10–95 mm). Seventy patients (30%) have a pT ≥ 35 mm, 176 (76%) of pN+, with an extra capsular extension in 36% of cases and lymphatic vascular embolus in 32% of cases. 87 patients were presented with RH+. 221 patients (96%) received chemotherapy and/or hormonotherapy. With a median follow-up of 77 months (9 to 127 months), we found 95 recurrences (41%) (locoregional relapses, distant and secondary cancer). The 10-year locoregional control (LRC), disease free survival (DFS) and overall survival (OS) rates were 88.7% ($\pm 2.2\%$), 56.6% ($\pm 3.6\%$) and 76.2% ($\pm 3.3\%$), respectively. In univariate analysis, age ≤ 40 years ($p < 10^{-3}$; HR:2,349), T3-T4 ($p=0.001$; HR:2,095), stage III ($p=0.04$; HR:1,554), pT ≤ 35 mm ($p=0.01$; HR:1,872), pN = 1–3 ($p=0.04$; H R:1,911), pN > 3 ($p=0.003$; H R:2,598) and RH- ($p < 10^{-3}$; HR:2,929) had an influence on DFS. In multivariate analysis, DFS was influenced by: tumours classified T3-T4 ($p=0.05$; HR: 2,388), pN = 1–3 ($p=0.02$; HR:5,605), pN > 3 ($p=0.004$; HR:8.9) and RH- ($p=0.02$; HR:2,432).

Conclusion: Our therapeutic results were satisfactory. The study found that T (T3 or T4), N status (PN+) and RH status (negative) are the most reliable predictors of unfavorable events (a poor DFS), from where interest of a therapeutic intensification in order to improve the results.

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POSTER

Intra-operative Specimen Microradiography in Wide Local Excision of Breast Cancer

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Introduction: Methods have been sought to reduce the need for re-excision following wide local excision of breast cancer. Methods include departmental specimen x-ray [1], intraoperative ultrasound [2] and fresh frozen section [3]. Our tertiary referral unit uses a cabinet microradiography system (Faxitron) for intra-operative assessment of tumour margins. This pilot study aims to assess the impact of this method on re-excision rates.

Methods: All breast cancer wide local excisions were eligible for inclusion with data prospectively collected over a six month period from June 2010 to January 2011.

Results: 75 patients underwent wide local excision. 8 specimens did not undergo cabinet x-ray and were therefore excluded from the study. Of the 67 that underwent cabinet x-ray, 52 were needle-localised and 15 were palpable. 20/67 (30%) patients underwent a cavity shave following cabinet x-ray; 6/20 (30%) contained malignancy, of which 4/6 (67%) required a second operation for re-excision. Therefore, only 2/67 (3%) patients avoided further surgery as a result of cabinet x-ray imaging. The remaining 14/20 patients (70%) underwent an unnecessary further shave, as no malignancy was found, and clear margins had already been achieved in all but one case from which tumour cells were identified from a separate margin.

47/67 (70%) patients did not undergo a further shave following cabinet x-ray; 17/47 (36%) subsequently required re-excision of margins.

Conclusions: This study provides no evidence that specimen microradiography with cabinet x-ray is beneficial in reducing re-excision rate following wide local excision of breast cancer. Furthermore, it may encourage excessive removal of healthy breast tissue.

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POSTER

Assessment of Sensory Disturbances of Upper Extremity After Nerve-sparing Axillary Lymph Node Dissection

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Background: Axillary lymph node dissection (ALND) is classically associated with a high rate of morbidity – lymphoedema (6–43%), intercostobrachial neuralgia (58–81%), arm mobility restriction (17–33%), stiffness/weakness of upper extremity (17–33%).

Intercostobrachial nerve syndrome (post-axillary dissection pain syndrome) is the most frequent postoperative complication of ALND due to surgical injury of intercostobrachial (Hyrtl) nerve (ICBN) during ALND.

The ICBN arises as the lateral cutaneous branch of the ventral primary ramus of T₂ and supplies sensory fibers to the medial aspect of the upper arm, axillary skin, and upper lateral breast.

Intercostobrachial neuralgia represents neuropathic pain typically accompanied by remarkable sensory abnormalities in the distribution of the ICBN.

Material and Methods: We conducted a prospective study to evaluate the frequency, character and location of sensory disturbances of upper extremity in two consecutive groups of women who underwent level-2 ALND for operable breast cancer at National Center of Oncology in the period of 2005–2010 years.

In group I (nerve-preserved or experimental group – 110 patients) besides of motor nerves (long thoracic and thoracodorsal nerves) the ICBN was preserved (nerve-sparing or functional ALND). In group II (control or nerve-sacrificed group – 110 patients) the ICBN was transected (conventional ALND).

The ICBN was preserved in the absence of grossly involved nodes. Tactile sensitivity was assessed after 3 months from the surgery by special questionnaire (subjective examination) and using standard neurological methods (objective examination). The mean age of the patients was 47.8±12. Patients' demographic characteristics were alike. The two groups (preserved and sacrificed) were well balanced for TNM, type of surgery, number of nodes dissected and positive, postoperative adjuvant treatment. Statistical differences between the groups were calculated using Pearson chi-square test. A P value of <0.05 was considered statistically significant.

Results: The analyses of results showed, that prevalence rate of sensory disturbances of upper extremity was 12.7% (14/110) in the experimental group, which was significantly different from that of the control group (88.2%, 97/110, p < 0.01).

In the nerve-preserved group sensory changes had character of hypesthesia (diminished sensitivity, 5/14) or paresthesia (numbness, 9/14). Meantime, in the control group, sensory changes had more severe character in the form of dysesthesia (painful paresthesia, 37/97) or anesthesia (loss of all types of sensitivity, 60/97), and in 5 patients the phenomenon of allodynia (painful response to innocuous stimulus) was observed.

A larger area of sensory deficit was measured in women with sacrificed nerves (group II) compared to preserved (group I).

Conclusion: Our study demonstrates, the preservation of the ICBN during ALND produces minimal postoperative alterations in sensitivity significantly improving quality of life of operated patients.

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POSTER

Sentinel Lymph Node Navigation Surgery With Indocyanine Green Fluorescence in Early Breast Cancer

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Background: Sentinel lymph node (SLN) biopsy is a minimally invasive and effective method for assessing axillary lymph node status in breast cancer. Currently dye techniques, radioisotope techniques or combined techniques are used for SLN detection and recently, near infrared fluorescence imaging has been applied clinically in a breast cancer patient to identify SLN. The concept of this technique is to detect the subcutaneous lymphatic flow from the areola toward the axilla in real time and identify SLN as fluorescence spot. Our aim in this study is evaluate the feasibility of SLNB by using the ICG technique and the effect of Body Mass Index (BMI) on the number of SLN identified.

Methods: The study involved ninety eight patients with clinically node negative early breast cancer who were assigned to SLNB, bilateral SLNB were performed on seven of them. A combination of indocyanine green as a fluorescence emitting source and patent blue dyes were injected in the periareolar area and a charge coupled device camera equipped with a cut filter was used, first to trace the subcutaneous lymphatic channels then to identify the fluorescence image of SLN after meticulous dissection. Both of them were seen in real time on a TV monitor. According to their fluorescence imaging and the blue color, the LNs were classified as SLN which is either double positive (ICG+/Dye+) or single positive (ICG+/Dye- or ICG-/Dye+) and para-SLN which is double negative (ICG-/Dye-).

Results: The subcutaneous lymphatic channels were detected precisely in all cases. The identification rate of SLN was 100%, (105/105) with a mean number of 3.7 nodes (range 1–12), double positive nodes were found in 83.8% (88/105) with a mean number of 1.5 (range 0–6). The single positive SLNs, i.e. ICG+/Dye- or ICG-/Dye+ were found in (85/105) and (4/105) respectively. In twenty five cases (23.8%), the SLNs were involved and all of them were ICG positive. BMI is negatively correlated with number of double positive SLN identified (r = -0.2, P = 0.04).

Conclusion: The ICG and patent blue dye technique gives high sensitivity and provides a comparable result to the dye and radioactive technique. Obesity may reduce the number of double positive SLNs identified.

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POSTER

Pre-operative Chemotherapy + Trastuzumab (T) for HER-2 Altered Locally-advanced (LA) Breast Cancer (HER+BC) in Pregnancy

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Background: Induction chemotherapy + trastuzumab produces a high-rate of pathological CR (pCR) in patients (pts) with HER+BC. T is a "Category D pregnancy risk" drug i.e. significant risks, and only to be used during pregnancy when alternatives are worse. Only ten case reports of trastuzumab use in pregnancy have been published. Oligo- or anhydramnios has been reported in approximately 50% of cases, in addition to an increased risk of ectopic pregnancy, fetal and post-natal death, capillary leak syndrome and prematurity. In mice with an erbB2 null allele mutant embryos died before E11, probably due to a lack of cardiac trabeculae. Cardiomyopathy occurs in 0.04% of maternal hearts in otherwise normal pregnancies and erbB2- neuregulin ameliorates cardiac stress. Intercurrent trastuzumab exposure in pregnancy theoretically could pose cardiac risks to mother and fetus. Oncologists traditionally initiate chemotherapy for breast cancer in pregnant women after the end of the first trimester when the risk of teratogenesis is low. We report two additional cases of T in pregnancy, both in the second trimester, for LA Her+BC.

Methods: Series of two pts treated in the same institution with follow-up data.

Results: Case 1: A 35 year old mother was 22 weeks pregnant when diagnosed with LA BC. Treatment induction dose dense doxorubicin+cyclophosphamide chemotherapy sequentially followed by 3 cycles