

was left to the discretion of the treating physician. Overall, 39% of patients experienced grade 3–4 pain and 46% grade 3–4 dermatitis. On univariate analysis, there was a significantly increased risk of grade 3–4 dermatitis for smokers, with higher BMI and chest wall separation >20 cm. On multivariate analysis, grade 3–4 dermatitis was significantly associated with higher BMI ( $p = 0.007$ ), smoking ( $p = 0.04$ ) and the use of boost ( $p = 0.04$ ).

**Conclusion:** Severe acute skin toxicity and pain occur in a significant number of women receiving PMR with chest wall bolus. This study continues to accrue patients and a more detailed analysis of the factors influencing skin toxicity is pending. Identification of the factors associated with severe toxicity will help in defining preventive measures.

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#### Isocentric shift in tangential field breast irradiation for three different breath-hold conditions and its impact on surrounding critical structures

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**Background and purpose:** Treatment of early breast cancer by radiotherapy after breast conservative surgery improves the local control, however improvement in treatment outcome must always be balanced with the potential risk of long-term complications such as late cardiac mortality and radiation-induced pneumonitis. The challenging parameters, which interfere in achieving the treatment outcome and complications are organ motion and setup-errors. In this study, an effort has been made to study the planned isocenter for three different breath-hold techniques and its impact on cardiac, lung and other normal structures during the treatment of tangential field radiotherapy.

**Materials and methods:** Twelve patients with early breast cancer who underwent conservative surgery (eight left-sided and four right-sided) were selected in this study. Prior to imaging, the patients were trained to hold their breath in deep inspiration and deep expiration. Thin Copper wires were placed along the medial and lateral field borders during the time of image acquisition, serving as guiding tools for field placement. Spiral CT scans were performed in Siemens Volume Zoom CT for all the three breathing conditions viz. Deep inspiration breath-hold (DIBH), normal breathing (NB) and Deep expiration breath-hold (DEBH). The average time for which the patients were asked to hold their breath was 18 sec. The CT image data sets were pushed to the Eclipse treatment planning through network. For each patient, simple tangential field plans were created for the three different CT data sets and DVH analysis were performed for the following structures: CTV, heart, ipsilateral lung, contralateral lung, liver and contralateral breast.

**Results:** The median cardiac volumes covered by the 50% CTV dose were 10.05 cc, 2.18 cc and 14.84 cc for NB, DIBH and DEBH respectively which clearly states that the cardiac dose was significantly reduced in DIBH. Similarly for ipsilateral lung, DIBH resulted in reduced dose. For right breast cancer, DIBH resulted in excellent liver sparing. The maximum 3D isocentric shift between NB and DIBH was 2cm with a median value of 1cm, which correlated with the cardiac dose.

**Conclusion:** Our results indicate that in carcinoma breast patients, delivering radiation in inspiration breath-hold condition can considerably reduce the dose to the surrounding normal structures, particularly heart and liver with a good correlation with isocenter shift between the three breath-hold conditions.

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#### Value of fine needle aspiration as a rapid diagnostic tool in a one-stop breast clinic

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**Background:** Breast cancer screening in the general population has been extensively studied. However, methods used in order to establish a definitive diagnosis once a breast abnormality has been described, remain highly variable. We have developed a one-stop diagnosis clinic that relies on fine-needle cytology for the immediate diagnosis of solid lesions. We therefore aimed at evaluating the value of cytology as a rapid diagnostic tool in this setting, with the expectation to be able to provide immediate diagnosis in more than 80% of such lesions, with a high reliability.

**Methods:** A median of 33 new patients with breast cancer abnormalities are seen during a dedicated day once a week at the one-stop breast

diagnosis clinic of our institution. A multidisciplinary team takes care of them during that day, which comprises four breast specialists (surgeon, oncologist, cytopathologist, radiologist). All decisions taken are concerted. Data regarding patients and lesions characteristics, as well as results of explorations performed are prospectively recorded. For the purpose of this study, cytological diagnoses given during the one-stop were compared to final consolidated diagnoses obtained either through surgery, complementary biopsy or further surveillance of benign lesions.

**Results:** During the first 12 months of the one-stop clinic, 697 fine-needle aspirations were performed for suspect solid lesions. Two thirds of them were ultrasound-guided. Median age of the patients was 56 (16–92). Median tumour size was 15 mm (2–20). Cytological diagnosis was cancer in 369 (53%), suspect in 59 (8.4%), benign in 247 (35%), and non significant in 22 (3%). Among patients with cytological diagnosis of cancer, only one appeared not to have cancer but a pseudo-tumoural adenosis (correct diagnosis 99.7%). Among patients with suspect diagnosis, 69% had cancer and 7% atypical hyperplasia. Among patients with a benign cytology, 8 had a final diagnosis of cancer (3%), as assessed rapidly because of discordance between cytologic result and clinico-radiologic features. 0% of 14 patients with Birad ACR2, 3.2% of 152 with ACR3, 43% of 171 with ACR4 and 97% of 353 with ACR5 lesions were cancers. The negative predictive value of cytology was 96.3%, while the positive predictive value was 99.7%. An exact definitive diagnosis could be given within the same day in 87% of the patients.

**Conclusion:** Fine needle aspiration appears as a very efficient diagnostic tool for use in one-stop breast clinic.

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#### The prognostic value of lymph node micrometastasis in patients with breast cancer

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**Background:** Since the introduction of the Sentinel Lymph Node (SLN) biopsy for management of breast carcinoma, lymphogenic micrometastases are diagnosed in 15–20% of the patients. These small amounts of tumour in the affected lymph node create confusion due to their unclear prognostic meaning. Is the prognosis comparable to patients with N1 disease and are micrometastasis thus an indication for adjuvant systemic therapy or should patients with micrometastatic tumour deposits be considered as N0-patients?

**Method:** Between 24–06–1999 and 12–09–2003 300 consecutive patients with a cT1/2 N0 breast carcinoma underwent surgery. The presence of lymphogenic node metastasis in the SLN was determined by H&E and immunohistochemistry staining following serial sectioning on the sentinel node with 250 micrometer intervals. Based on the presence of tumour in the SLN patients were divided in to three groups: N0: no metastasis ( $n = 167$ ), N1micro: 1 micrometastasis <2 mm ( $n = 50$ ) en N1: metastasis >2 mm ( $n = 83$ ). The median follow-up was 3 years.

**Results:** At the end of follow-up 16 patients had died and 26 had developed breast cancer recurrence: distant metastasis ( $n = 20$ ), a contralateral breast carcinoma ( $n = 3$ ) and locoregional relapse ( $n = 6$ ). The cumulative 1- and 3-years disease free survival was 97%, and 93% respectively. The 1- and 3-years disease free survival was 99% and 95% in patients with N0 disease, 100%, and 97% in the N1micro group and 91% and 86% for patients with macrometastasis ( $p = 0.008$ ).

**Conclusion:** After a limited follow up, it appears that disease free survival for patients with micrometastasis is comparable to patients without lymphogenic metastasis and consequently more favourable than patients with macrometastasis. The presence of micrometastatic disease in the SLN is in itself no indication for adjuvant systemic therapy.

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#### Outcome of early breast cancer (EBC) after conservative surgery and radiotherapy: a multicenter, observational study on 1176 patients treated in Lombardy (Italy) in 1997

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**Background:** A survey performed in 1996 showed that clinical practices concerning radiotherapy for EBC varied significantly across Lombardy.