sequences of dynamic frames. Time-(radio)activity curve (TAC) analysis was performed when visual interpretation was problematic.

Critical study of the dynamic dataset showed all AO image information is present within the first 15 minutes post injection. In 90% of patients, the first 5 minutes imaging was adequate. In 8 patients, additional active foci were identified as second sentinel nodes (SN) or echelon nodes. This was achieved by interpreting the dynamic images alone (6) or by additional TAC analysis (2). In 6 patients, sites of uptakes were confirmed as transient.

Dynamic image acquisition does not required to extend beyond 15 minutes. 1 min. framing offers optimal imaging format. The role of dynamic imaging is to distinguish true SNs from transient hotspots and second echelon nodes.

O-52. INTRA-OPERATIVE FROZEN SECTION RELIABLY PREDICTS SENTINEL NODE STATUS IN PATIENTS WITH BREAST CANCER

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Aims: Routine histology of the sentinel lymph node (SLN) reliably predicts axillary node status in patients with breast cancer but a key clinical question is whether the technique can be used intra-operatively to decide if axillary node clearance (ANC) is required. We have performed frozen section analysis of SLNs to see if this can be used to reliably predict the necessity for ANC.

Methods: 114 SLN from 85 patients underwent frozen section analysis. A formal level I and II ANC was then completed and all harvested nodes including the remains of the sentinel node were analysed by routine paraffin histology.

Results: Frozen section was positive in 31 SLN from 27 patients and all of these were confirmed positive by paraffin histology. Frozen section was negative in 83 SLN from 58 patients but in 3 SLN from 3 patients the paraffin histology was positive, giving a false negative rate of 11% These results therefore represent a sensitivity of 90% (NPV 95%) and specificity of 100% (PPV 100%).

Conclusions: Intra-operative frozen section reliably predicted the status of the SLN in 96% of patients and based on these results, 68.2% of patients would have been spared an ANC with 3.5% requiring a delayed ANC due to a false negative result.

O-53. SENTINEL LYMPH NODE BIOPSY IN BREAST CANCER – IS LYMPHOSCINITIGRAPHY REALLY NECESSARY?

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Aim: Lymphoscintigraphy is regarded as a useful tool in sentinel lymph node (SLN) biopsy in breast cancer. The aim of this study was to ascertain its value in axillary SLN detection.

Methods: Axillary SLN biopsy was undertaken using the combined method of patent blue dye and gamma probe detection. Lymphoscintigraphy was performed but the operating surgeon was blinded to the results of the lymphoscintigram. Following SLN biopsy and prior to closure of the axillary wound the lymphoscintigram was reviewed. Internal mammary node dissection is not performed in this unit.

Results: Of 52 patients who underwent lymphoscintigraphy, 42 (81%) had successful scans. Of these, 33 (79%) had axillary nodes, 4 (10%) internal mammary nodes and axillary nodes and 5 (12%) internal mammary nodes on lymphoscintigrams. All of these patients had axillary sentinel nodes identified intra-operatively by gamma probe or visual detection of blue-stained lymphatics and node(s). Review of the pre-operative lymphoscintigrams demonstrated that they would not have influenced intra-operative axillary SLN detection in any patient.

Conclusion: Lymphoscintigraphy does not contribute to axillary SLN biopsy in women undergoing surgery for breast cancer.

O-54. THE ALMANAC TRIAL – EARLY RESULTS FROM THE AUDIT PHASE

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The ALMANAC trial (Axillary Lymphatic Mapping Against Nodal Axillary Clearance) is a two-phased, multicentre, randomised trial in progress in the United Kingdom, comparing Sentinel Node Biopsy (SNB) with standard axillary treatment in the management of breast cancer.

We present our early data of the audit phase, which includes 11 surgeons who performed a SNB, followed by the standard axillary procedure in 40 consecutive patients. All the surgeons involved in this trial attended a course on SNB and in addition were proctored in the procedure by the Principal Investigator of the trial. The SN was localised using a standard protocol involving a combination of a radiopharmaceutical and patent blue V dye. A lymphoscintiscan was performed around 3 hours after the administration of the radiopharmaceutical (Nanocoll 40 MBq or 20 MBq). Peroperatively, a gamma probe was used to identify the sentinel node. Standard H&E staining was used to assess the SN.

Of the 440 patients (436 female and 4 male) in this study 365 patients had palpable lesions, of which 150 were screen detected. The mean tumour size was 21 mms (range 1.7–100 mms). On the scintiscan, 68% had axillary drainage and 8% had internal mammary drainage. A SN was successfully identified in 425 patients (96.6%) and the mean no of SN's removed was 2.2 (range 1–8). There were 125 patients (34.8%) with positive axillae, 9 of these patients had a false negative SN resulting in a false negative rate of 5.9%.

The above results confirm that the SN in breast cancer can be accurately localised with an acceptable false negative rate if surgeons are adequately instructed in the procedure. The above

surgeons have proceeded to the randomised phase of this trial, which compares SNB to conventional axillary treatment.

O-55. PREDICTING SENTINEL NODE INVOLVEMENT: MANCHESTER EXPERINCE

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Axillary lymph node status remains the most important predictors of prognosis in breast cancer patients. The introduction of sentinel node biopsy (SNB) in breast cancer management promises to confine the need for therapeutic axillary procedure to patients who have a positive SNB. Identification of patients preoperatively with positive nodes would avoid the need for a second operative procedure

Aim: To determine whether nodal status and tumour size, grade and lymphovascular (LVI) invasion predicts sentinel node involvement.

Methods: We have performed SNB procedure using a combination of isosulfan blue and radioactive isotope injection in 108 patients and have been able to localise the sentinel node in 106 patients. In 2 cases sentinel node was falsely negative.

Results: Of the 106 who had sentinel node identified, 53 had a palpable tumour and 53 had impalpable tumour. 30 patients had positive sentinel nodes. Tumour size and LVI but not tumour grade showed significant correlation with true node involvement. (Chi square test $p < 0.005$ and $p < 0.0008$ respectively.)

Size	Node +ve*	Node −ve	LVI +ve**
<10	1	26	1
11–15	4	27	7
16–20	13	15	14
>20	12	10	8

LVI = Lymphovascular invasion, *$p < 0.005$, **$p < 0.0008$

Conclusion: Lymphovascular invasion predicted for sentinel node positivity, and sentinel node biopsy is inappropriate in these cases, particularly in tumours > 2 centimetres in size.

O-56. THE CLINICAL SIGNIFICANCE OF INTERNAL MAMMARY SENTINEL NODES IN PRIMARY BREAST CANCER

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Introduction: Axillary lymph node status is the strongest prognostic determinant in breast cancer. Although historical studies have demonstrated the importance of internal mammary node involvement in breast cancer prognosis, internal mammary node biopsy is seldom performed. Lymphatic mapping, using lymphoscintigraphy and sentinel node biopsy (SNB) may play a role in re-defining the application of internal mammary node biopsy and primary breast cancer. The aim of this study was to determine the clinical significance of sentinel nodes (SN) identified in the internal mammary chain.

Patients and Methods: Between August 1995 and November 2000, 236 women with clinically lymph node negative primary operable breast cancer, underwent successful lymphoscintigraphy, followed by SNB in conjunction with axillary clearance. The median duration of follow-up was 21 months. The internal mammary nodes were demonstrated as the SN's in 15 cases (6.4%). Internal mammary SNB was successfully performed in 12/13 cases. The SN's were submitted for histological assessment using H and E sections and immunohistochemistry. The axillary dissection specimen was submitted for standard H and E histological sections.

Results: The prevalence of internal mammary SN's for lesions of the superior, medial, inferior and central quadrants of the breast ranged from 12–16%. Tumours situated in the lateral aspect of the breast were less likely to have SN's in the internal mammary chain (2.2%, $p < 0.005$). Access to the internal mammary chain was achieved through the lumpectomy incision in all but one case, where a separate incision was made after obtaining consent from the patient. There were no intraoperative complications relating to internal mammary SNB. In all 12 cases, the internal mammary SN's failed to demonstrate evidence of metastatic tumour involvement. In one case where both internal mammary and axillary SN's were identified, the axillary SN alone was positive for tumour. During the follow up period, one woman developed an isolated internal mammary node recurrence after 12 months. In this particular case, the SN was identified in the axillary region and did not contain metastatic tumour.

Conclusion: Although it is possible to demonstrate internal mammary SN's using lymphoscintigraphy, the clinical impact of identifying and removing these nodes appears small in this series. Further evaluation in a larger series of cases is required.

O-57. FAILURE TO IDENTIFY SENTINEL NODES AT OPERATION FOR SCREEN DETRECTED BREAST CANCERS

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Introduction: Sentinel node biopsy is likely to have its greatest clinical impact for small screen detected breast cancers where the prevalence of axillary lymph node metastasis is low. The aim of this study was to determine the efficacy and accuracy of sentinel node biopsy for screen detected breast cancers compared with symptomatic cancers.

Patients and Methods: Between August 1995 and March 2000, 236 women underwent sentinel node biopsy in conjunction with a level II axillary clearance for clinically lymph node negative primary operable breast cancer. Of these, 113 were screen detected lesions, of which 96 were impalpable. Patients underwent lymphatic mapping using lymphoscintigraphy, blue dye and intraoperative gamma probe. The symptomatic and screen de-