Results: 215 sentinel nodes were harvested from 125 patients. 28 patients (22.4%) of patients had metastases detectable on H&E staining, warranting completion axillary lymph node dissection. The operating surgeon detected patients with metastatic nodes with a sensitivity of 64.3% and specificity of 87.6% when compared to H&E staining. By contrast the sensitivity and specificity of touch imprint cytology was 75.8% and 100% respectively.

Conclusions: Clinical assessment of sentinel nodes to determine completion axillary dissection fails to detect more than one third of metastatic nodes, and more importantly would result in unnecessary axillary dissection in almost one in eight patients. Touch imprint cytology is modestly more sensitive than clinical assessment, but 100% specific. Use thereof would hence increase the detection of metastases, whilst avoiding unnecessary axillary lymph node dissection. Clinical assessment of sentinel nodes for determination of completion axillary lymph node dissection cannot be advocated due unacceptable specificity.

O-100.   The BASO II trial of primary treatment of tumours of excellent prognosis: 2005 update

Blamey RW, Chetty U, George D, Morgan DAL, Macmillan RD, Pinder SE, Ellis IO, Mallen E, Bates T, Duffy S, Patnick J, Mitchell MJ *on behalf of the BASO II Trialists, Cancer Research UK and NHSBSP*

This trial examined additional treatments to Wide Local Excision with clear margins, in Grade I, node negative tumours of 2cm or less with clear margins (Nottingham Prognostic Index $\leq$ 2.4, predicted 10 year survival 96%. Between 1992 and 2000, 1158 eligible women were randomised to a 2×2 design. The primary outcome measure is local recurrence (LR), defined as tumour in the treated breast.

The median follow up is 77 months (range 39–144). Survival is excellent, only 14 deaths from breast cancer, giving a 10 year actuarial survival of 96%.

LR by randomisation are:

Randomisation	*n*	LR	LR% PA
Radiotherapy (RT) to intact breast	570	13	0.4
No RT	568	37	1.0
Tamoxifen	214	6	0.4
No Tamoxifen	216	15	1.0
RT plus Tamoxifen	98	0	Nil
No RT, No Tamoxifen	96	9	1.4

However for those entering only to the RT or Tamoxifen comparisons, the other therapy could have been given electively, the results by treatment received are:

Received	*n*	LR	LR% PA
Neither therapy	175	24	2.1
RT Only	182	9	0.8
Tamoxifen only	421	17	0.6
RT plus Tamoxifen	380	3	0.1

A local recurrence rate of 2% per annum is too high from surgery alone and 4 of the 14 breast cancer deaths followed local recurrence.

Tamoxifen in the short term is as effective as RT in lowering local recurrence to very acceptable levels. Since around 20% of screen detected cancers fall into this group this result has important cost, waiting times and workload implications for Radiotherapy units, if born out by longer follow up.

O-101.   Increased risk of local relapse and decreased survival after breast conserving therapy (BCT) in the under 40's

Jack W, Kerr GR, Chetty U, Kunkler IH. *Western General Hospital, Edinburgh*

An audit of all patients (1816) treated between 1981 and 1998 by BCT (surgery with radiotherapy to the breast) showed almost identical cause specific survival for patients in their 40's, 50's and 60's, slightly poorer for patients 70 and over, but significantly worse for patients under 40. In order to avoid bias from the effect of screening, the 152 patients under 40 have been compared with the 382 aged 40–49.

Patients under 40 were less likely to have ER rich tumours (51% v 72%, $p < 0.0001$). The younger group appeared to have higher grade tumours (9% v 23% grade 1, 61% v 44% grade 3, $p = 0.0077$) although tumour grade was known for only 59%. There was no difference in tumour size, node positivity, number of nodes involved or in the distribution of the Nottingham Prognostic Index. The younger patients were slightly more likely to have had an axillary clearance (26% v 34%, $p = 0.0731$) and more likely to have received adjuvant chemotherapy (46% v 29%, $p = 0.0007$).

Cause specific actuarial survival at 5 years was 77.6% for the younger group v 93.7%, and 72.4% v 85.4% at 10 years ($p = 0.0002$). Local relapse in the breast was more common in the younger patients; 16.4% v 4.6% at 5 years and 23.90% v 10.2% at 10 years ($p \leq 0.0001$).

Conclusions: These young patients present a problem in management as they have higher relapse rates and poorer prognosis in spite of receiving standard management.

O-102.   The effect on survival of local recurrence (LR) after breast conserving surgery

Macmillan RD, Asgeirsson KS, Blamey RW, Morgan DAL, Robertson JFR, Mitchell MJ. *Nottingham City Hospital*

Cases which suffered prior LR have a worse survival (63% at 10 years) than those which do not (87%). This study is of 687 consecutive cases treated at Nottingham City Hospital in 1990–96 by Breast Conserving Surgery (BCS). Cases were analysed by the Nottingham Prognostic Index (NPI).

LR rates (actuarial) are given to 108 months. Survival was analysed with/without LR:

	n	*n* LR	% LR	% Survival		Death from breast cancer	
				No LR	LR	Relative Risk	*p*
EPG	144	21	15	99	81	19×	0.001
GPG	188	23	12	96	81	5×	0.089
MPGI	218	19	9	82	53	3×	0.003
MPGII	84	7	8	70	43	2×	0.085
PPG	42	9	21	65	7	2×	0.001

The higher rates of LR in the EPG & GPG were brought about by the majority receiving neither RT not Tamoxifen in these groups. In all NPI groups survival was worse in those suffering LR.

The risk of death after LR in every prognostic group and the relative risk being higher in the best NPI groups give strong evidence that it is the occurrence of LR rather than poor prognostic features coding for both death and LR.

Local control is as important as the application of systemic therapies in improving survival.

O-103. Clinical value of CEA, CA 15-3 and TPS in breast cancer

Lee YH, Jung JH, Hwang GH, Park HY. *Kyungpook National University Hospital, Taegu, Republic of Korea*

The purpose of our study was to compare carcinoembrogenic antigen (CEA), the mucin associated tumor antigen (CA15-3), and the tissue polypetide antigen (TPS) in primary breast cancer and gauge the correlation of the prognostic factors. In 321 patients with breast cancer, the level of the serum tumor markers, CEA, CA15-3, and TPS were determined preoperatively and during follow-up. The sensitivity and specificity of tumor markers in patients with breast cancer were CEA 44.6%. 94%; CA15-3 51.8%, 99%; and TPS 66.07%. 94%. CA15-3 and TPS increased with tumor size, the number of involved lymph nodes and progression of grade. CEA, CA15-3 and TPS were not related to estrogen or progesterone receptor status. Tumor markers in cases of organ or multiple metastasis were higher than in cases of local recurrence. Increasing levels of tumor markers were independent of the site of metastasis, where elevated levels of CA15-3 were primarily related to visceral metastasis. The preoperative serum concentration for CA15-3 and TPS appears to have a significant relation to the outcome in patients with early-stage breast cancer and may have a potential role in the rational selection of high risk patients for whom additional treatment and careful follow-up studies should be undertaken. Postoperative serial measurement of plasma CEA, CA15-3, and TPS is a cost-effective method to detect recurrent breast cancer and the association of these tumor markers may provide tumor profiles with a predictive value superior to a single parameter.

O-104. Should computerised tomography (CT) replace abdominal ultrasonography and chest radiography (USG + CXR) as initial staging investigation for visceral disease in patients with metastatic breast cancer (MBC)?

Grant VB, Owers R, Evans AJ, Cheung KL. *Nottingham City Hospital*

CT has been replacing USG+CXR for initial staging and monitoring therapy for MBC. It is costly and may lead to unnecessary radiation exposure. This has prompted investigation into whether a subgroup can be identified where initial USG+CXR may be more appropriate.

A retrospective audit was carried out on all newly diagnosed MBC patients within a 12-month period prior to using CT for initial staging. An index of high suspicion for visceral metastases was defined as having one of the followings: deranged liver function, abdominal or chest symptoms.

Of 119 patients, 64 underwent USG+CXR initially. Further imaging with CT was considered necessary (1) as extrahepatic metastases were identified on USG+CXR ($N = 12$), or (2) for monitoring therapy ($N = 6$). For these 18 patients, CT could have replaced initial USG+CXR. Of the remaining 46 patients who underwent USG+CXR without CT, 21 were found to have visceral metastases and a further 7 had a normal scan but a high index of suspicion. Excluding 6* who were too frail for active treatment, it would have been appropriate for 22 to have further imaging with CT. 18* patients had normal USG+CXR and low index of suspicion and would not therefore require CT. At least 24 (*6 + 18) (37.5%) could have been staged appropriately with USG+CXR.

In patients who have a low index of suspicion of visceral metastases and/or who are considered inappropriate for active treatment, initial USG+CXR appear to be most suitable with further CT imaging if indicated. The selection criteria with the mentioned index of suspicion will be validated in an ongoing audit on using CT for initial staging.

O-105. Bioinformatic analysis using TMAS in breast cancer: age-related heterogeneity within grade 3, node negative disease

Thomas GA, Lewis PD, Riley S, Bartlett JM, Leonard RCF. *Cancer Institute, Swansea & University of Glasgow*

In planning chemotherapy or hormonal therapy for breast cancer, increasing attention is being paid to the use of biomarkers that may predict for treatment response. ER, PgR and Her2 are still the only established predictors. However, regardless of age, there is increasing pressure to tailor therapy according to risk and predicted benefit. It is assumed that the biology of breast cancer is similar irrespective of the age of the patient. The aim of this study was to evaluate the heterogeneity of biomarker expression in two distinct pre and postmenopausal age groups. Representative paraffin blocks were selected on forty-two Grade 3, node negative, ductal carcinoma patients (pts) from the histological archive of Singleton Hospital. 21 pts were under 43 (young) and 21 over 70 (old) at the time of operation. Cores were taken from 3 representative areas of invasive tumour to make a single tissue microarray (TMA). Immunocytochemistry was performed for the following markers: ER, PgR, ki67, mcm-2 and Her2. ER and PgR were scored using the Allred system, the proportion of positive nuclei was scored in each core for ki67 and mcm-2. The standard Her2 scoring system was used. Bioinformatic and statistical analysis revealed clear differences between the two groups. Whereas ER status and ki67 positivity rates showed no significant differences ($p = 0.786$; Mann Whitney test), the young group showed a much higher frequency of Her2 positive cases (6/21 positive young, none in the old group) and a much higher proportion of mcm-2 positive nuclei, particularly in the ER negative subgroup ($p = 0.0323$; Mann Whitney test). Agglomerative hierarchical cluster analysis and principal components analysis is being applied to examine more complex interactions between markers.