good precision. The implementation of FSMW into clinical practice may improve early detection, prognosis and therapy monitoring of BC patients. The method may also allow the molecular analysis of the captured cells, with the possibility of establishing more personalized treatment regiments.

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Comparison of Axillary Nodal Status Between Clinical, PET Scan and Pathological Staging in Breast Cancer

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Background: Axillary lymph node dissection in breast cancer patients poses significant morbidity. Even though sentinel lymph node can determine the earliest metastases and guide in avoiding axillary dissection, still it is an invasive procedure. We have studied the sensitivity and specificity of PET scan in determining the axillary nodal metastases.

Materials and Methods: All breast cancer patients non metastatic at presentation were evaluated. Patients who found to have distant metastases/supraclavicular nodes during workup were excluded. Over a period of one year 45 patients without any distant metastases at presentation were worked up with 18-FDG PET scan. Those who had distant metastases or N3 disease were excluded. The clinical axillary nodal status was then compared with PET scan status of the axillary nodes. All the 45 patients then underwent modified radical mastectomy and axillary nodal clearance from level I−III. Standard histipathological examination was carried out in all the patients and this pathological N status was compared with clinical and PET scan results.

Results: The above results were then analyzed with Bayesian statistical analyzer. The sensitivity and specificity of clinical examination alone in detecting pathological nodes was 54% and 74% respectively whereas that with PET scan was 83% and 82%respectively.Two of the false positive PET patients were with h/o autoimmune disease.

PET and Path. N status

PET SCAN	pN +	Pn−	Total
Positive	19	4	23
Negative	4	18	22
Total	23	22	45

Conclusion: 18-FDG PET scan has high sensitivity and specificity in detecting pathological axillary nodes compared to clinical examination alone. Future studies comparing sentinel lymphnodes and PET scan are required to find their exact specificity. Results in patients with autoimmune disorders have to be interpreted with caution.

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Breast Lesion Excision System for Diagnosis of Suspicious Non-palpable Breast Lesions: Does Thermal Tissue Damage Affect Diagnosis and Outcome?

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Background: The Breast Lesion Excision System ® (BLES) is an image-guided percutaneous biopsy device that utilizes radiofrequency in order to retrieve an intact, suspicious, non-palpable breast tissue specimen for pathologic diagnosis. An acceptable size of thermal artifact varies between 0.1 mm and 1 mm. The purpose of this study is to determine the effects of radiofrequency on the specimen tissue analysis due to thermal damage.

Materials and Methods: This prospective clinical study included 226 consecutive patients with suspicious, non-palpable mammographic lesions (BIRADS $\geqslant$ 4) that underwent 234 stereotactic, vacuum assisted breast biopsy procedures from June 2008 to December 2010 at Breast Unit, Hippocrateion Hospital of Athens with the use of BLES. Inclusion criteria consisted of suspicious breast lesions and in particular microcalcifications, solid lesions and radial scars. In order to retrieve an intact biopsy specimen, a 12 mm, 15 mm or 20 mm tissue basket was used, depending on the size of the lesion. The biopsy in all cases was performed under local anesthesia by the same team. According to the pathology report, we classified thermal damage in 3 categories: severe (recognition of malignant cells but inability to make definite diagnosis due to thermal damage), medium (ability to make diagnosis but either circumferential thermal damage >2 mm or diffuse areas of thermal damage) and mild (circumferential thermal damage 1−2 mm). The follow up period for all patients was 6 months.

Results: The procedure was considered successful in all cases with mammographic (specimen and patient) confirmation of proper excision. In three cases the basket initially failed to deploy and a second basket had to be utilized in order to complete the biopsy. Thermal damage of the specimen occurred in 12 cases (3.59%). The damage was severe in 4 specimens (3 benign, 1 IDC), medium in 4 specimens (4 benign) and mild in 4 specimens (3 benign, 1 IDC). Among the patients with severe specimen damage, those with benign lesions were followed up at 6 months, and the patient with IDC received appropriate surgical treatment. Among the patients with medium specimen damage, those with benign lesions were typically followed up at 6 months. The patients with mild thermal damage and benign diagnosis were also followed up at 6 months, and the patient with IDC received appropriate surgical treatment.

Conclusions: In summary, although thermal damage is of concern during breast biopsy with the use of BLES, the incidence is very low. Even severe cases of thermal damage do not seem to affect the outcome of the pathology report. When medium or severe thermal damage occurs, patients with lesions diagnosed as benign should be followed up closely, although repeating the biopsy with alternative methods (e.g. open biopsy) should also be considered, in case of any clinical suspicion.

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An Innovation in Breast Cancer Care in Ottawa, Canada: the Evaluation and Validation of a Rapid Diagnostic and Support Clinic for Women Assessment for Breast Cancer

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Background: The diagnostic phase of care is an extremely anxiety-provoking and stressful experience for the potential breast cancer patient and her family. Early detection and treatment are the best options for improving outcomes in breast cancer. A multidisciplinary team of breast cancer specialists in a regional referral center embarked on a new initiative to improve breast care by setting up a *Rapid Diagnosis and Support (RADS) Clinic* to coordinate the diagnostic imaging workup, needle biopsy and pathological diagnosis for women with suspicious initial diagnostic mammogram findings. A prospective study was performed to evaluate the effectiveness this innovative service delivery model aimed wait times, decreasing the fragmentation of care and enhancing a patient's overall breast care experience.

Methods: Consecutive patients with initial diagnostic mammograms classified as BIRADS 5 were invited to participate in the study. Interventions in the model included prioritizing biopsy appointments, initiating followup diagnostic imaging, providing support and coordination of care by a nurse navigator. Wait times (measured in business days) were evaluated at three different intervals; from a) diagnostic imaging to biopsy b) biopsy to pathology report verification, and c) diagnostic imaging to MRI. Patient satisfaction surveys were completed. All data post intervention were compared to historical data at our breast center. Statistical analysis was performed with paired and Wilcoxon t test analysis.

Results: A total of 88 BIRADS 5 patients consented to the study between March and Sept 2011. Eighty-two (93%) patients had either invasive carcinoma or DCIS that necessitated surgery. All wait times significantly improved after initiation of the RADS Clinic. Biopsy wait times improved from a mean of 6 to 2 days ($p < 0.0001$); pathology verification from 4 to 3 days ($p = 0.03$); and MRI wait times from 9 to 7 days ($p = 0.017$). Eighty-five (97%) patients rated the care and support they received from RADS clinic as 'excellent' or 'very good', and 97% of patients felt completely satisfied that they were cared for in a timely manner.

Conclusion: The Rapid Access and Diagnostic Clinic significantly improved diagnostic wait times and overall experience for patients with a highly probable diagnosis of breast cancer and can serve as an innovative service delivery model for other breast care centers.

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Trends in and Pattern of Breast Diseases Diagnosed by Core Needle Biopsy − an 8-years Experience of a Breast Unit

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Background: With advances in imaging techniques, percutaneous core needle biopsy (CNB) has become the standard of care in the diagnosis

of most breast tumors. Among them, benign breast disease (BBD) has a high prevalence and a noticeable impact on women's quality of life and for certain histological types, increases breast cancer (BC) risk. Epidemiological studies of BBD faced major difficulties since they included a wide range of pathological conditions that are associated with varying risks of BC. In recent years, attempts have been made to improve the standardization of histological classification for CNB including high risk lesions.

Aim: Hence, the objective of this study was to examine the pattern of breast diseases diagnosed by CNB using the B-classification for histopathological categorization.

Methods and Results: The studied population included asymptomatic and symptomatic women with breast imaging abnormalities who were referred to the Saint Pierre University Hospital for CNB after clinical and radiological examination between 2002 and 2010 (n total:2214). CNB was performed by stereotactic- or ultrasound guided automated gun method. Years 2002 and 2010 were compared.

Results of CNB (according to the B classification system)

Year	CNB/total radiological examination (%)	B1 (normal/No diagnosis)	B2 (benign)	B3* (uncertain malignant potential)	B4 (suspicious of malignancy)	B5 (malignant)
2002	45/512 (11.38%)	17/45 (37.8%)	14/45 (31.1%)	0	0	14/45 (31.1%)
2010	449/6070 (13.49%)	75/449 (16.7%)	200/449 (44.5%)	18/449 (4%)	0	156/449 (34.7%)

*B3 lesions included atypical intraductal epithelial proliferations, lobular neoplasia, papillary lesions, radial scars, and potential phyllodes tumors.

In women aged 50 or less, B2 lesions were diagnosed in 11 cases (45,8%) and 132 (55,9%) during the years 2002 and 2010 respectively; B3 in 13 (5,5%) for year 2010; B5 in 5 (20,8%) and in 49 (20,8%) for years 2002 and 2010 respectively.

Conlusion: Our results show a gradual increase in the number of CNB performed in our breast unit in parallel with the radiological examinations carried out. Observed increase in CNB rates reinforces the need to carefully select patients amenable for biopsy to achieve efficient, efficacious, and cost-effective programs for early detection of BC. The increase in CNB results of 'uncertain malignant potential' (B3) stresses the importance of applying a decision-making algorithm for diagnosis and treatment in order to decrease BC risks in this increasing population.

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Health-related Quality of Life After Stereotactic Vacuum Assisted Breast Biopsy System Utilizing Radio Frequency − Breast Lesion Excision System (BLES)

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Background: Breast Lesion Excision System by Intact® (BLES) is a novel stereotactic, vacuum-assisted breast biopsy device that utilizes radiofrequency in order to excise suspicious non palpable mammographic lesions according to the BI-RADS system, for histologic diagnosis. The impact of BLES assisted breast biopsy upon Health-related Quality of Life (HRQoL) remains an open field for investigation and this study aims to evaluate short-term responses in terms of HRQoL after BLES.

Material and Methods: This study included 107 consecutive women with suspicious non palpable mammographic lesions in a 8-month time frame. Inclusion criteria were microcalcifications, solid lesions and asymmetric densities, all classified as BI-RADS⩾4. All patients were informed about the method by reading the same leaflet that has an informed consent purpose. HRQoL was measured using the EQ-5D questionnaire and all patients were asked to complete the questionnaire just before the BLES procedure and four days after, prior to obtaining the pathologic diagnosis. The EQ-5D questionnaire encompasses five parameters: mobility, self-care, usual activities, pain/discomfort and anxiety/depression. Each one of these factors has three levels: no problems, some problems and extreme problems/unable. Furthermore, EQ-5D contains a visual analogue scale for patients to rate their own health from zero to 100 (EQ-5D VAS 'thermometer').

Results: Evaluation of patients' responses the morning before the BLES assisted biopsy and four days after the procedure showed that there was no alteration in mobility and self-care. One patient (0,9%) switched from 'some problems' to 'no problems' concerning usual activities and ten patients (9.3%) reported that pain/discomfort increased whereas six (5.6%) that pain/discomfort decreased. None of these differences was statistically significant. Comparison of the values concerning anxiety/depression and own health showed that there was statistically significant difference between the responses before and after the procedure. Anxiety/depression was significantly ($p < 0,0001$) reduced while eight (7.5%) patients reported that their anxiety/depression increased and 31 (29%) that anxiety/depression decreased. Self-assessed health was significantly improved ($p < 0,0001$) while using the visual analogue scale, 57 patients (53.3%) rated their own health as better than before the procedure of B.L.E.S. assisted biopsy and only 14 (13.1%) as worse.

Conclusions: Vacuum assisted breast lesion excision system (BLES) for biopsy of suspicious non palpable mammographic lesions is a safe and effective diagnostic method which seems not to influence in a negative way the HRQoL of patients, in a short-term period after the procedure. Moreover, the use of BLES seems to positively affect self-assessed health and reduce the patients anxiety/depression. These statements indicate that, in the future, BLES assisted biopsy could become a first-line biopsy method.

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Correlation Between FDG-PET/CT and Pathological Features in Primary Breast Cancer

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Goal: We evaluated the usefulness of preoperative FDG-PET/CT(positron emission tomography/computed tomography) examination to predict the pathological features and select the treatment strategy in primary breast cancer. Especially we evaluate correlation between SUVmax (max standard uptake value) of FDG-PET/CT and Ki67 expression in invasive carcinoma, and Van Nuys Prognostic Index (VNPI) in DCIS.

Methods: Primary breast cancer patients operated between March 2009 and November 2010 in Okayama University Hospital were enrolled. We evaluated correlation the SUV max with postoperative pathology (diameter of invasive lesion (pT), histological grade, vessel invasion), status of ER, PgR, HER2 and Ki67 and node status. Status of Ki67 expression was classified 0−5%, 5−15%, 15−50% and >50%. DCIS and predominantly DCIS which have micro invasive component (<5 mm) were evaluated total tumor size and VNPI (low, intermediate, high).

Results: 86 patients with primary breast cancer were enrolled. Invasive cancers and DCIS were 78 (8 patients with predominantly DCIS) and 8. The median SUVmax in invasive ductal carcinomas was 3.35 (range: 0–52.57). In univariate analysis, SUV max related significantly with pT ($p = .0001$), Grade (3 > 1.2; $p = .001$), ly (0,1 > 2,3; $p = .024$), ER (negative > positive; $p < 0.0001$), PgR (negative > positive; $p = .0007$) and Ki67 (high > low; $p = .0051$). pT ($p = .0024$) was significant relative factor of SUVmax in multivariate analysis. The DCIS patients with high VNPI had comparatively higher level of SUVmax than those with low VNPI. In the evaluation of node status, sensitivity and specificity of preoperative PET/CT were 43% and 100%.

Conclusion: The preoperative FDG-PET/CT of the primary breast cancer had significantly relation with pathological status. pT was the strongest relative factor of FDG-PET/CT.

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18F-FDG PET-CT Compared to Conventional Staging Procedures in Patients with Advanced Breast Carcinoma

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Purpose: To compare the diagnostic yield of standard dissemination investigations according the Dutch Guidelines (chest X-ray, ultrasound of the liver and bone scintigraphy) in patients with advanced breast cancer with total-body18F-FDG PET-CT.

Methods and Materials: In all patients with advanced breast cancer between march 2009 and june 2011 18F-FDG PET-CT and conventional imaging procedures were performed. All investigations were done within a 14 daystime frame. Suspected lesions, found in either modality, were confirmed by additional imaging techniques and/or pathology.

Results: 51 patients, all women, mean age 59.9 year (min-max 31−85 y)) were included in the analysis. Dissemination investigations were indicated preoperatively in 34 patients (13 patients with primary tumors (>cT4, N2) and 21 with suspicion of recurrent disease), and postoperatively in 17 (>pN2).In the 34 patient's no metastasis were found in both modalities in 21 cases. Conventional imaging showed metastasis in 4, and PET-CT showed metastasis in 9 additional patients. These were metastasis in bone (n = 2), pulmonary (n = 1) andsupraclavicular (n = 6). In the 17 patients that were investigated direct postoperatively because of >pN2 status, 10 patients had no metastasis in both modalities, conventional imaging showed metastasis in 2, PET CT scan showed metastasis in 5 additional patients. These were metastases of bone (n = 3), pulmonary (n = 1), axillary (n = 3) andsupraclavicular (n = 1).All suspected lesions on