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Role Of Mammosonography In Evaluation Of Palpable Breast Lumps

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ABSTRACT

As malignant breast mass is common diagnostic problem in clinical practice, detection of breast cancer in its earliest possible stage can be done by Mammography and USG. Mammography is considered gold standard to evaluate clinically suspected breast masses and screening for breast cancer and USG is useful adjunctive modality and helps characterizing mammographically detected palpable masses, especially in patients with dense breasts (young women) and as second look procedure where an abnormality has been identified using MRI or scintimammography. To evaluate the diagnostic accuracy of Mammography and USG for detection of benign/ malignant lesions. 50 patients were selected for the study for which they underwent Mammography and USG examination after explaining the entire procedure and the risks involved. In our study of 50 patients, palpable breast lumps were found to be present in 30-39 years age group (23) followed by 40-49 years age group (18). Sensitivity, specificity and accuracy of only mammographic evaluation of malignant breast lumps is 60%, 84.4% and 82% respectively and of only USG evaluation of breast lumps is 80%, 88.9% and 88%. While sensitivity, specificity and accuracy of combined mammographic and USG evaluation of malignant breast lumps is 100%, 91% and 92% respectively. The role of mammography in patients with palpable breast lumps is to show a benign cause for palpable abnormality and to avoid further intervention and of USG as a useful adjunctive modality which helps to characterize a mammographically detected palpable abnormality. The sensitivity and specificity of detection of carcinoma would be increased if both mammography and sonography are combined which will lead to fewer unnecessary biopsies.

Keywords: Palpable breast lumps, Breast cancers, Mammography, USG

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INTRODUCTION

Breast lumps are a common diagnostic problem in clinical practice. Breast carcinoma is the 2nd most common cancer in India and is the major cause of cancer mortality among women. Thus mass in breast whether benign or malignant is a cause of concern to the patient. Detection of breast cancer in its earliest possible stage is the ultimate goal in imaging the breast. Radiology chiefly includes MG (mammography) and USG (ultrasonography) followed by biopsy.

This is because breast changes like asymmetry, neodensity, distortion of fibroglandular architecture and micro calcifications are picked up earlier on imaging than lesions that become clinically palpable, or are sometimes detected by self-examination.^{1,2}

A palpable mass in a woman's breast represents a potentially serious lesion and requires evaluation by clinical examination, mammography and histopathology. The standard triple assessment in evaluating breast lump case done by: Clinical examination, Mammography and Fine Needle Aspiration.³ All these three techniques are complimentary tests together for screening.

Mammography is considered as gold standard for breast screening.⁴ Mammography is widely accepted technique to evaluate clinically suspected breast masses and screening for breast cancer. In these patients Sonography is useful adjunctive modality and helps characterizing mammographically detected palpable masses, especially in patients with dense breasts.⁵

The original role of breast sonography is in the differentiation of cystic and solid lesions. Though this is still a major role, the role of ultrasound complements both clinical examination and mammography. It is also successfully used as a 'second-look' procedure where an abnormality has been identified using MRI or scintimammography. Because it does not use ionizing radiation, it is the examination of choice in young women and is valuable in the assessment of the mammographically 'dense' breast.⁶

MATERIALS AND METHOD

This study was conducted on 50 patients with palpable breast lump. All patients were scanned in the Siemens MAMMOTOME mammography machine and Medium and High frequency transducer on GE Model LOGIQ P5 & Siemens ACUSON S3000 USG machine. The study was conducted in Department of Radiology of Gujarat Cancer Research Hospital and BJ medical college, Asarwa, Ahmedabad.

Patient inclusion:

Following patients were selected,

Patients with palpable breast lumps & and other associated breast symptoms (Nipple discharge, Nodularity, Thickening, Skin changes: redness, puckering etc).

Exclusion criteria:

Following patients were excluded from the study

- Patients having painful breast masses.
- Pregnant patients.
- Patients without palpable lumps having other symptoms: Nipple discharge, diffuse nodularity in breast etc.

For sonographic examination the exclusion criteria would be as follows-

Chest wall infection/infiltration.

RESULTS AND DISCUSSION

The present study included 50 cases of palpable breast lumps which were carried out at Gujarat Cancer and research institute, Ahmedabad with observation made according to age, benign/malignant lesions distribution, Mammography and USG evaluation and comparison with pathological findings and study data were analysed.

Table 1: Age distribution of patients

Age group (Yrs)	Number of Patients
30-39	23
40-49	18
50-59	5
>60	4

Table 2: Assessment of results of palpable breast lumps of 50 patients after mammographic evaluation alone with HPE confirmation.

	Malignancy Present	Malignancy Absent	Total
Test Positive	3	7	10
Test Negative	2	38	40
Total	5	45	50

Test characteristics for mammographic evaluation only shows sensitivity of 60%, specificity of 84.4%, positive predictive value of 30%, negative predictive value of 95% and accuracy of 82%.

Table-3: Assessment of results of palpable breast lumps of 50 patients after USG evaluation alone with HPE confirmation.

	Malignancy Present	Malignancy Absent	Total
Test Positive	4	5	9
Test Negative	1	40	41
Total	5	45	50

Test characteristics for USG evaluation only shows sensitivity of 80%, specificity of 88.9%, positive predictive value of 44.4%, negative predictive value of 97.6% and accuracy of 88%.

Table 4: Assessment of results of palpable breast lumps of 50 patients after combined mammography and USG evaluation with HPE confirmation.

	Malignancy Present	Malignancy Absent	Total
Test Positive	5	4	9
Test Negative	0	41	41
Total	5	45	50

Test characteristics for combined Mammography and USG shows sensitivity of 100%, specificity of 91.1%, positive predictive value of 55.6%, negative predictive value of 100% and accuracy of 92%.

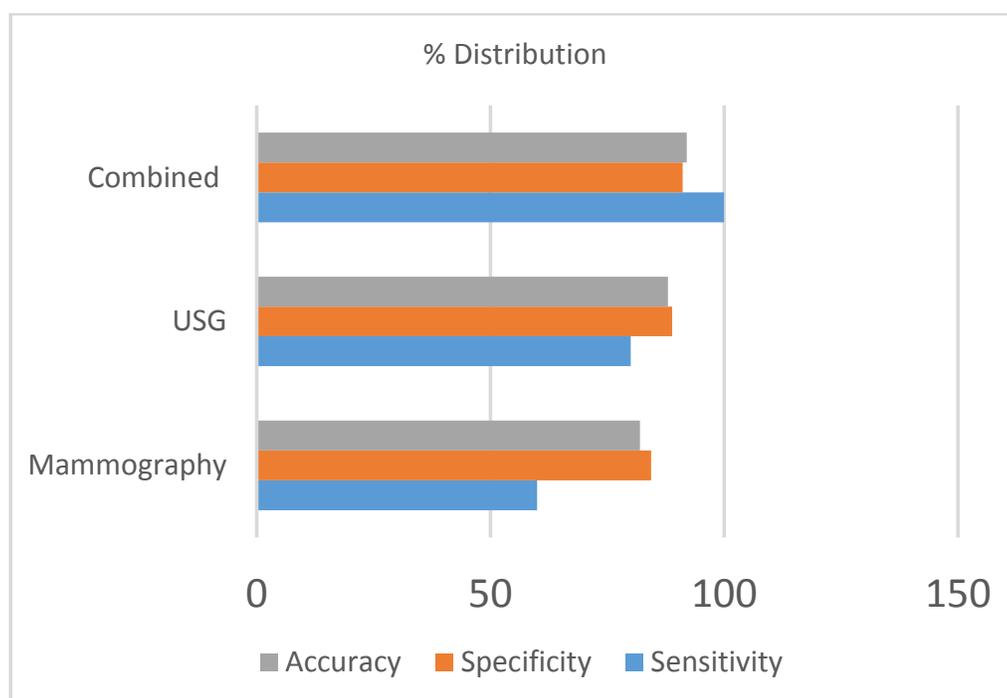
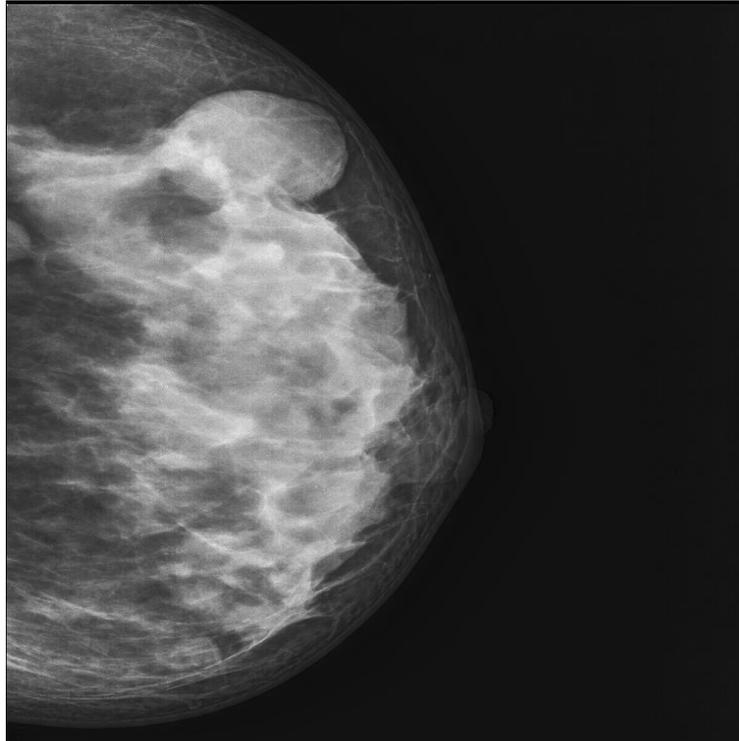
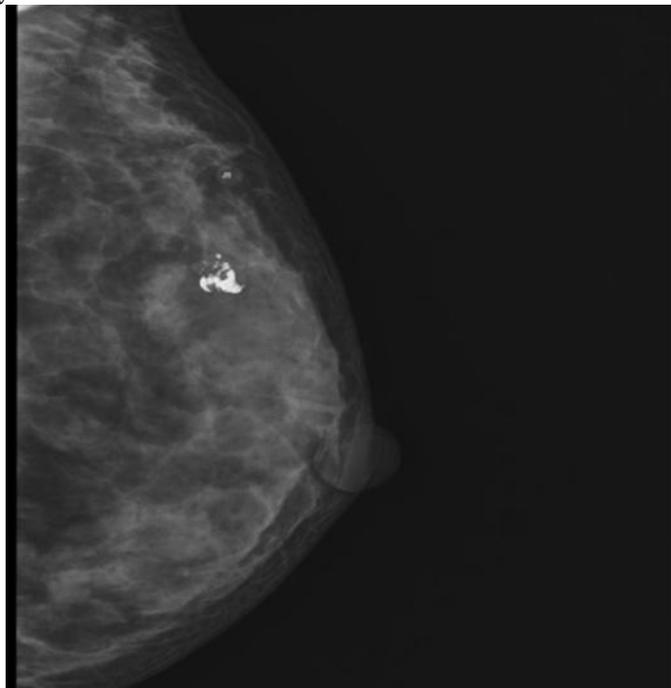


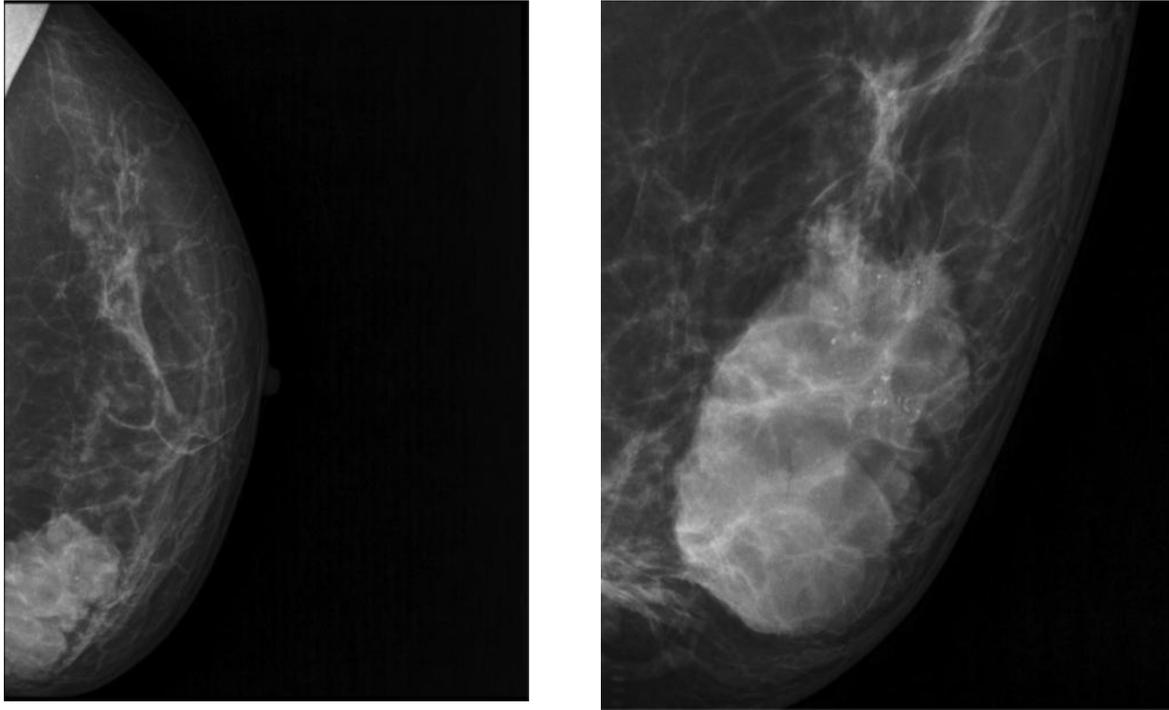
Chart-1: Comparison of sensitivities, specificities and accuracy of mammography, USG and combined mammography and USG study done in assessment of malignant breast lesions.



CASE-1: Well defined round to oval shaped dense mass lesion with smooth margins: BIRADS category II.



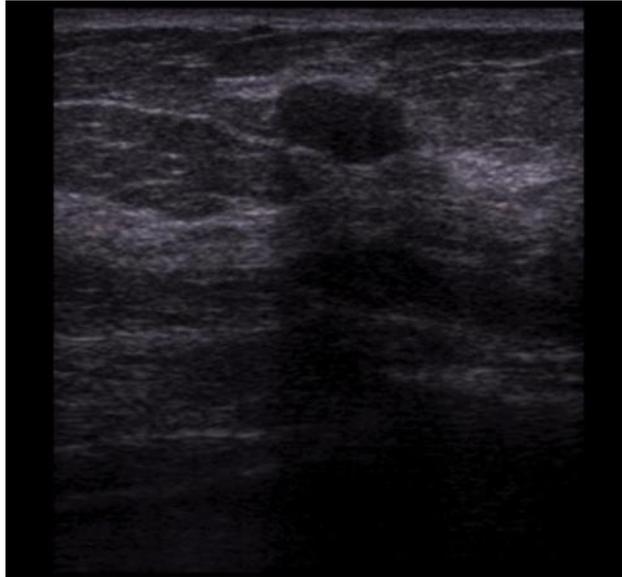
CASE-2: Coarse calcification: Benign calcification.



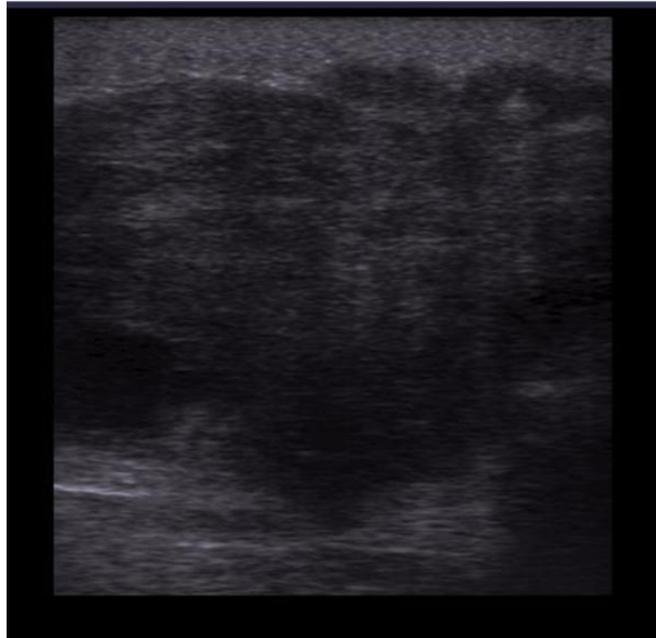
CASE-3: Lobulated mass lesion with spiculated margins and pleomorphic calcifications: BIRADS category V. Diagnosed as malignant lesion on biopsy.



CASE-4: Well defined oval shaped anechoic cystic lesion with posterior acoustic enhancement. Simple breast cyst.



CASE-5: Well-defined hypoechoic mass lesion. Fibroadenoma.



CASE-6: Large lobulated heterogeneous mass lesion with speculated margins and foci of necrosis and calcifications. BIRADS category V.

DISCUSSION AND CONCLUSION

Patients with palpable breast lumps were most common in age group of 30-39 years. Sensitivity, specificity and accuracy of only mammographic evaluation of malignant breast lumps is 60%, 84.4% and 82% respectively and of only USG evaluation of breast lumps is 80%, 88.9% and 88%.

While sensitivity, specificity and accuracy of combined mammographic and USG evaluation of malignant breast lumps is 100%, 91% and 92% respectively. There is low sensitivity of the

mammography in younger women due to dense breast tissue and also low incidence of breast carcinoma in women less than 40 years.⁷

The role of mammography in patients with palpable breast lumps is to show a benign cause for palpable abnormality and to avoid further intervention, to support earlier intervention for a mass with malignant features, screen the remainder of the ipsilateral and contralateral breast for additional lesions, and to assess the extent of malignancy when cancer is diagnosed.⁸

Sonography is the recommended initial imaging modality in women younger than 30 years for characterizing a palpable breast lump. Mammography is performed initially in women older than 30 years primarily to evaluate the breast for clinically occult lesions and secondarily to characterize the palpable lump and breast sonography is a useful adjunctive modality and helps characterize a mammographically detected palpable abnormality, and in patients with dense tissue and mammographically occult palpable lesions. Breast sonography can preclude intervention by identifying benign causes for a palpable abnormality such as cysts, lymph nodes and extra vasated silicon.⁵

The incidence of breast cancer deaths can be reduced by 30% by routine screening of healthy women with mammography as breast changes like asymmetry, neo-density, distortion of fibroglandular architecture and micro-calcifications are picked up earlier than lesions that become clinically palpable.⁹ Combined imaging evaluation leads to fewer unnecessary biopsies.

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