

## **Role of Ultrasonography in The Evaluation of Benign and Malignant Breast Lesions**

<sup>1</sup>Dr.Pooja Chaudhari, JR-3, Department of Radiodiagnosis, MGM Medical College and Hospital, Kamothe, Navi Mumbai, Maharashtra

<sup>2</sup>Dr.Sonali Mhaske Kadam, Professor, Department of Radiodiagnosis, MGM medical College and Hospital, Navi Mumbai, Maharashtra

**Corresponding Author:** Dr. Pooja Chaudhari, JR-3, Department of Radiodiagnosis, MGM Medical College and Hospital, Kamothe, Navi Mumbai, Maharashtra

**Citation this Article:** Dr. Pooja Chaudhari, Dr.Sonali Mhaske Kadam, “Role of Ultrasonography in The Evaluation of Benign and Malignant Breast Lesions”, IJMSIR - April – 2025, Vol – 10, Issue - 2, P. No. 40 – 42.

**Type of Publication:** Original Research Article

**Conflicts of Interest:** Nil

### **Abstract**

**Introduction:** Breast lesions are a common presentation encountered in the routine ultrasonography outpatient department. Imaging plays an important role in differentiating benign breast lesions from malignant ones. Ultrasonographic evaluation is usually the first investigation performed. Mammography and MRI are combined with ultrasonography in conferring the BIRADS category of a breast lesion.

**Aims and objectives:** The aim of this study is to predict the sensitivity of ultrasonography in the evaluation of benign versus malignant breast lesions.

**Materials and method:** 115 patients who presented to the ultrasound outpatient department with breast lesions were prospectively evaluated and classified as benign or malignant lesions. These characteristics were compared with mammogram and in few cases with MRI where indicated.

**Results:** In the evaluation of breast lesions in the outpatient setting, Benign ultrasonographic features were detected in 106 (92%) lesions. Of the benign lesions, 2

lesions were eventually confirmed malignant on Mammogram and FNAC.

**Conclusion:** Ultrasonography can be used as the first line imaging modality to detect benign and malignant breast lesions with the advent of higher frequency probes and easier accessibility of ultrasound. Combining Mammography with MRI improves sensitivity and confirms BIRADS Category.

**Keywords:** Benign, Malignant, Fibroadenoma, Hyperechoic, Spiculated margins.

### **Introduction**

Breast neoplasms are a wide spectrum of pathologies from benign lesions, high risk lesions to invasive malignancies.

Breast lesions are highly prevalent and dreaded in the female population. Breast malignancy accounts for the second most common carcinoma in the Indian female population. The incidence of breast carcinoma in India is around 85 per 10,000 women per year.

Since breast carcinoma carries a higher risk of morbidity and mortality, early detection indicates better prognosis overall.

When undiagnosed and thereby untreated, it carries a 20% 5-year survival rate.

Ultrasound in breast imaging plays a key role in Screening, Diagnosis and Intervention if needed. A palpable breast mass and abnormal nipple discharge are the common indications for breast ultrasound

### Aim

To predict the sensitivity of ultrasonography in the evaluation of benign versus malignant breast lesions.

### Methods and Materials

#### Method

This was a prospective study conducted from February 2023 to August 2024. This study was carried out on 115 patients in the outpatient department of the Department of Radiodiagnosis, MGM Medical College and Hospital, Kamothe, Navi Mumbai.

**Study Type** - Prospective Study

**Study Period** - February 2023 to August 2024

**Sample Size** - 115

**Study Population** - All female patients presenting to the outpatient department with breast lesion.

#### Inclusion Criteria

1. Patients presenting with breast lesion / lump and abnormal nipple discharge in the outpatient department.

#### Exclusion Criteria

1. Post operative /Patients treated for malignancy earlier were excluded from the study.

#### Materials

Ultrasound of the breast was performed using linear probe (7- 12 MHz) on Samsung V8 Ultrasound machine. Split screen imaging technique was adopted in a clockwise radial pattern. Informed consent was taken from all the patients prior to the examination.

## Results

### Ultrasound findings of Breast lesions-

Breast Lesion	Number of Patients	Percentage of Cases
Fibroadenoma	44	38 %
Simple Cyst	5	5%
Complicated Cyst	21	18 %
Galactocele	9	7%
Mastitis	12	10%
Intraductal papilloma	1	0.8%
Ductal carcinoma in situ	1	0.8%
Gynecomastia	4	3%
Male breast carcinoma	1	0.8%
Ectopic breast tissue	1	0.8%
Breast lipoma	7	6%
Pagets disease	1	0.8%
Breast hamartoma	2	1%
Malignant (BIRADS 4 and 5 lesions)	6	5%

92 % of lesions were benign with fibroadenoma being the most common benign lesion (38%)and complicated cysts (18%) being the second most common.

Malignant breast lesions accounted for 6% with a prevalence of 5% in females and 1% in males.

### Discussion

The most common breast lesion was fibroadenoma. Among the 115 patients who presented with breast lesions, 44 female patients were diagnosed with fibroadenoma, commonly occurring in the 20-30 years' age group. The characteristic ultrasound finding of a fibroadenoma is a well circumscribed ovoid homogenously dense lobulated wider than taller lesion.

21out of the 115 female patients had fibrocystic breast parenchymal changes presenting as complicated cysts.

These lesions are benign in nature and present as well defined hypoechoic lesions.

5 % of the patients presented with simple cysts which are well circumscribed anechoic lesions with thin imperceptible wall.

Mastitis and galactoceles constituted 17% patients. Galactoceles are benign lesions seen commonly in lactating mothers and are well defined cystic collections on ultrasound. On the other hand, Mastitis is an illdefined altered echotexture area in the glandular breast parenchyma.

Malignant breast lesions (BIRADS 4 and 5) were seen in 6 female patients in the 45-70 years age group and in 1 male patient aged 55 years. It presented as Irregular hypoechoic taller than wider lesion with spiculated margins, microcalcifications, skin thickening and posterior acoustic shadowing.

Phyllodes tumor had a characteristic presentation of a large well defined ovoid hypoechoic lesion with few cystic areas within.

4 patients of gynecomastia were seen with bulky breast and diffuse hyperechoic fibrous retro areolar tissue.

### **Conclusion**

With the advent of efficient high frequency probes and easier accessibility of ultrasound machines, screening and diagnosis of breast lesions on outpatient basis has revolutionized modern radiodiagnosis.

### **References**

1. Ohshika S, Saruga T, Ogawa T, Ono H, Ishibashi Y. *Oncol Lett.* 2021 Apr;21(4):281. Distinction between benign and malignant soft tissue tumors based on an ultrasonographic evaluation of
2. H.e. Liu et al. (2008) Evaluation of breast lesions with contrast-enhanced ultrasound using the microvascular imaging technique: initial observations

3. C. Wan et al. Evaluation of breast lesions by contrast enhanced ultrasound: qualitative and quantitative analysis *Eur. J. Radiol.*(2012)