

A Prospective Study of Triple Assessment in Evaluation of Breast Lump

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Abstract

Both benign and malignant etiologies can cause breast lumps. Even though the majority of lumps are benign, breast cancer is the second most frequent cancer in women and the second greatest cause of cancer death. The purpose of the study is to evaluate the enhanced and unique dependability of modified triple testing in pre-procedural breast lump diagnosis. 150 patients who regularly attended the surgery outpatient department were chosen at random. Most of the 150 patients who presented with breast lumps were painless. Eighty-one percent (n=122), 10% (n=16), and 8% (n=12) of the lumps were accompanied by discomfort or nappy discharge. Experienced radiologists, a cytologist, and a clinician must work well together. When ultrasound replaces mammography, it is more thorough and serves as an imaging modality for breast masses that can be felt. The direction to the representative area provided by ultrasound breast assists biopsy techniques rather than improving yield. When FNA is inconclusive, CNB is a good backup and may provide more details. Therefore, it is deserving of adoption and further development to employ the Modified Triple Test (MTT) to supplement data in the differential diagnosis of a lesion in a symptomatic woman seeking medical attention. This might result in less treatment holdup when cancer is suspected and less surgical examination when a lesion is thought to be benign.

Keywords: Breast Lump, Malignant, Biopsy, Triple Assessment, CNB, MTT

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Introduction

The second most common kind of cancer in women globally is breast cancer, however benign breast lesions are much more common than malignant ones [1]. The diagnosis of a benign breast disease can be made without surgery with the help of breast imaging and thorough needle biopsies. In order to choose the best treatment option, it is necessary to differentiate between in situ

and invasive breast cancer. The three components of the triple test for breast illnesses are clinical evaluation, mammography imaging, and fine-needle aspiration biopsy/cytology [2-4]. The modified triple test only uses ultrasound instead of mammography. When all three diagnoses are in accord, a decisive diagnosis can be made utilising the triple evaluation,

proving its high sensitivity and specificity. The preferred method for detecting breast cancer is mammography. However, additional imaging tests are frequently needed to more clearly define the characteristics and location of the mass when mammography indicates a non-palpable breast lesion [5].

Both benign and malignant etiologies can cause breast lumps. Even though the majority of lumps are benign, breast cancer is the second most frequent cancer in women and the second greatest cause of cancer death. The most frequent benign breast lump is a fibroadenoma, while the most frequent malignancy is invasive ductal carcinoma. Women under the age of 40 have shown a sharp increase in the disease's incidence [6,7]. Ten years after diagnosis, only 50% of breast cancer patients are still living and disease-free [8]. Maximizing cancer detection and reducing pointless tests and procedures are both possible with an effective and accurate evaluation [9]. A multidisciplinary approach to management is crucial.

The study's use of the triple assessment exam to diagnose palpable breast masses prior to surgery. The purpose of the study is to evaluate the enhanced and unique dependability of modified triple testing in pre-procedural breast lump diagnosis.

Ultrasound and the clinical examination were the components. FNAC/CNB.

Materials and Methods

In this cross-sectional study, 150 patients who attended the surgery outpatient department at Darbhanga Medical College and Hospital in Laheriasarai, Bihar, between September 2021 and August 2022 were randomly selected. All patients who arrived at the OPD with a breast lump that could be felt had their clinical examination, ultrasonography, and FNAC/CNB performed, women patients. The complainant described a breast bulge that was palpable and distinct from the surrounding breast tissue. The Triple test is administered to every patient. Malignant and benign masses are distinguished from one another based on inspection.

Results

After obtaining consent, the study was carried out on all patients who had breast lumps when they first appeared. Out of the 150 patients, 53 patients, or more than one third of those with breast lumps, are between the ages of 21 and 30.

Out of the 150 patients who had breast lumps when they first presented, 81.3% (n=122) had no pain, 10% (n=16) had pain, and 8% (n=12) had nipple discharge (Table 1).

Table 1: Showing varied clinical presentation (n=150)

Clinical Presentation	No. of cases (%)
Exclusive Lump	122 (81.3%)
Lump with Pain	16 (10.6%)
Lump with nipple discharge	12 (8.0%)

Out of the 150 patients, 128 patients (85.3%) had breast lumps that could move freely, 16.1% (n=16) had restricted mobility (the lump can only move in a few directions or its mobility is hindered when the underlying muscle is contracted), and 4% (n=6) had fixed breast lumps (Table 2).

Table 2: Showing mobility of the lumps (n=150)

Mobility	No. of cases (%)
Mobile	128 (85.3%)
Restricted	16 (10.6%)
Fixed	6 (4%)

78.5 % of the surfaces (n=118) were smooth, 17.3 % were uneven, and 4 % were nodular. Among the lumps, 81.3% (n=122) had a firm consistency, 8.6% (13) had a medium to soft consistency, and 10% (n=15) had a hard consistency. 70% (n=105) of the lumps were found to be hypoechoic, 9.3% (n=14) to be heteroechoic, 14% (n=21) to be fibrocystic, and 6.6% (n=10) to be merely cystic upon ultrasonography (Table 3).

Table 3: The consistency of the lump (n=150)

Consistency	No. of cases (%)
Firm	122 (81.3%)
Cystic to Soft	13 (8.6%)
Hard	15 (10%)

According to the BIRADS system for categorising breast lumps, BIRADS II breast lumps accounted for 53.3% (n=80) of all breast lumps. BIRADS III accounted for 23.3% (n=35) of the breast lumps, BIRADS IV for 6.6% (n=10), BIRADS V for 10% (n=15), and BIRADS I & II for 3.3% each (n=5). According to the FNAC report, fibroadenoma accounts for 55.3% (n=83), fibrocystic diseases for 14.6% (n=22), breast abscesses for 6.6% (n=10), and galactocele and phylloides for 2.6% each (n=4). Malignancies were 14.6% and TB mastitis was 3.3% (n=22) (Table 4).

Table 4: Report of Pathology (n=150)

FNAC/CNB	No. of cases (%)
Fibroadenoma	83 (55.3%)
Fibrocystic	22 (14.6%)
Breast abscess	10 (6.6%)
Galactocele	4 (2.6%)
Phylloides	4 (2.6%)
TB mastitis	5 (3.3%)
Malignancy	22 (14.6%)

Following the completion of the triple examination, the following diagnoses were made: fibroadenoma 83, fibroadenosis 12, fibrocystic lesions 6, breast abscess 10, and cancer 22. (Table 5).

Table 5: Detail of Final Diagnosis (n=150)

Diagnosis	No. of cases (%)
Fibroadenoma	83 (55.3%)
Fibroadenosis	12 (8%)
Fibrocystic lesions	6 (4%)
Breast abscess	10 (6.6%)
Antibioma	4 (2.6%)
Phylloides	4 (2.6%)
Galactocele	4 (2.6%)
Tb mastitis	5 (3.3%)
Ca breast	22 (14.6%)

When the final diagnosis from the triple assessment test is compared to the clinical diagnosis, the specificity of CE is shown to be 96.88% higher. The CE has an 81% positive predictive value and a 96% negative predictive value. 94% of the time, CE is accurate.

The findings are consistent with the findings of numerous further investigations. The MTT was used to compare the USG diagnosis to the final diagnosis, and the outcomes were as follows.

The USG's sensitivity was determined to be 90% and its specificity to be 98%.

The USG has a 90% positive predictive value and a 98% negative predictive value. The ultra sound is 97% accurate.

Although there is a strong correlation between the FNAC/CNB results and the triple assessment results, this does not indicate that the other two procedures should be skipped because without the other two tests, it would be impossible to determine the size, extent, and consistency of the lump or swelling. Therefore, the sensitivity of the test may be increased from 81% in CE, 90% in USG, to 100% in MTT by combining all three CE, USG, and FNAC. Specificity might be increased to 99% in MTT from 98% in USG and 98% in CE. demonstrating that the MTT's sensitivity and specificity are substantially higher than the average values of the independent tests.

Discussion

Self-examination of the breast and public awareness of the basics of cancer are key components in the early diagnosis of breast illness. There aren't many clinical indicators of primary breast cancer. The vast majority of the time, a painless breast mass is present, and nipple discharge of erosion, skin retraction, or an axillary mass are less common.

The diagnosis process for a palpable breast lump involves the use of a physical examination, mammography, ultrasonography, core needle biopsy, open excision biopsy, thermography, and fine needle aspiration cytology to varying degrees. Studies on various combinations of these methods have shown that they improve sensitivity and specificity compared to using just one test. In situations of suspected breast cancer, a variety of diagnostic methods are used, such as the well-known triple evaluation, which was first published in 1975 and significantly lowers the need for open biopsies. It was mostly used to assess palpable breast masses. Clinical evaluation, mammography or ultrasonography, and tiny needle aspiration make up the triple test (FNA).

By combining the results of imaging, clinical examination, fine needle aspiration cytology (FNAC), and/or core biopsy, a triple approach can yield the highest levels of diagnostic accuracy in the non-operative diagnosis of breast illness. When the findings from all three modalities concur, the diagnosis accuracy is greater than 99%. It's interesting to note that impalpable lesions, for which a clinical examination is not necessary, have also produced similar levels of accuracy. The inspection of cells found in nipple discharges and those drawn out of solid and cystic lesions using a tiny needle is the focus of cytopathology's function in the diagnosis of breast illness. Aspiration cytology is a more recent diagnostic tool that is now finding its place in the breast surgeon's diagnostic toolbox. It is a well-established diagnostic test for carcinoma of the bigger ducts, with or without Paget's disease of the nipple, presenting with a blood coloured discharge.

Instead of attempting to combine tissue diagnosis and mastectomy at the same operation, preoperative diagnosis using a combination of clinical examination,

mammography, and either biopsy, using a wide bore cutting needle, or aspiration cytology, using a narrow hypodermic needle, has gained more importance in recent years. This is because the role of the rapid frozen section in the diagnosis of breast cancer has diminished in importance.

Accurate preoperative diagnosis is crucial due to the realisation that potentially less invasive surgery will result in equal to or improved survival as well as reduced postoperative morbidity, the development of more accurate tests for metastatic disease that will eliminate the need for extensive surgery, and finally the rising trend of patients choosing their own treatments. There is a wealth of research on the examination of breast lumps in the medical literature that highlights the idea that "every palpable mass must be examined and defined."

In 1987, Hermansen C. *et al.* [1] prospectively evaluated 650 breast cancers and coined the name "Triple test" to describe the three diagnostic methods of a physical examination, mammography, and FNAC. He came to the conclusion that the triple test's diagnostic efficacy is on par with a histological investigation. According to Hardy JR *et al* evaluations of 143 individuals with palpable breast lumps using clinical examination, FNAC mammography, ultrasound, and magnetic resonance imaging (MRI), the best method for accurately identifying malignancy was the combination of cytology and ultrasound.

In a study conducted over an eight-year period, Lawrence N. Bassett *et al* [3] evaluated the value of mammography and sonography in 1016 women under the age of 35. According to this study, mammography is not helpful for women under the age of 35. However, sonography proved helpful in preventing pointless biopsies, which is why younger women underwent the initial

screening. However, it proved ineffective in identifying benign from malignant solid tumours or detecting nonpalpable carcinomas.

55 women who were younger than the recommended age for screening mammography were investigated by Vetto JJ *et al* [4] in 1996 using the three components of the Modified Triple Test (C/E, Usg, and FNAC/CNB). The test exhibited a 100% malignancy specificity and negative predictive value. They came to the conclusion that MTT can diagnose palpable breast lesions in younger women with high diagnostic accuracy without the requirement for a standard open biopsy, which lowers overall patient costs.

Purasri P *et. al.* retrospectively assessed 603 patients with breast lumps using the Quadruple test– C/E/USG/ Mammography/ FNAC. A stepwise logistic discriminant analysis was used to derive a novel diagnostic index. This predicted the diagnosis in 98% of women <35 years correctly.

In a retrospective analysis of 114 lesions, Hatada T *et al.* (2005) reported that the diagnostic accuracy of regular FNAC and ultrasound-guided FNAC was 65% and 86%, respectively, when compared to surgical results. They came to the conclusion that FNAC with ultrasound guidance enhances preoperative diagnosis, particularly in individuals with tumours less than 2 cm.

In a prospective investigation of office-based breast ultrasound on 660 breast lesions, Heiken TT *et al.* discovered that 75% of suspicious lesions indicated by USG had a likelihood of being malignant, while only 5% of lesions resembling fibroadenomas were indeed cancerous. Jill S. Montrey made an effort to evaluate the value of ultrasound as a breast cancer screening tool in women under 35 with

ambiguous mammography, persistent symptoms, and a high risk family history.

Conclusion

An ideal atmosphere for interpretation, the appropriate utilisation of clinical data, technically superior imaging technologies, effective interpretation of the findings, and patient suggestions are necessary for the detection and therapy of breast masses. Our findings demonstrate that combined physical examination breast USG and FNA/CNB have diagnostic accuracies comparable to histological examination.

Experienced radiologists, a cytologist, and a clinician must work well together. When ultrasound replaces mammography, it is more thorough and serves as a useful imaging technique for palpable breast masses. The direction to the representative area provided by ultrasound breast assists biopsy techniques rather than improving yield.

When FNA is inconclusive, CNB is a good backup and may provide more details. Therefore, it is deserving of acceptance and further development to employ MTT to support results in the differential diagnosis of a lesion in a symptomatic woman seeking medical attention. This might result in less treatment holdup when cancer is suspected and less surgical examination when a lesion is thought to be benign.

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