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# Current updates on biophysical techniques in Breast cancer diagnosis: A review

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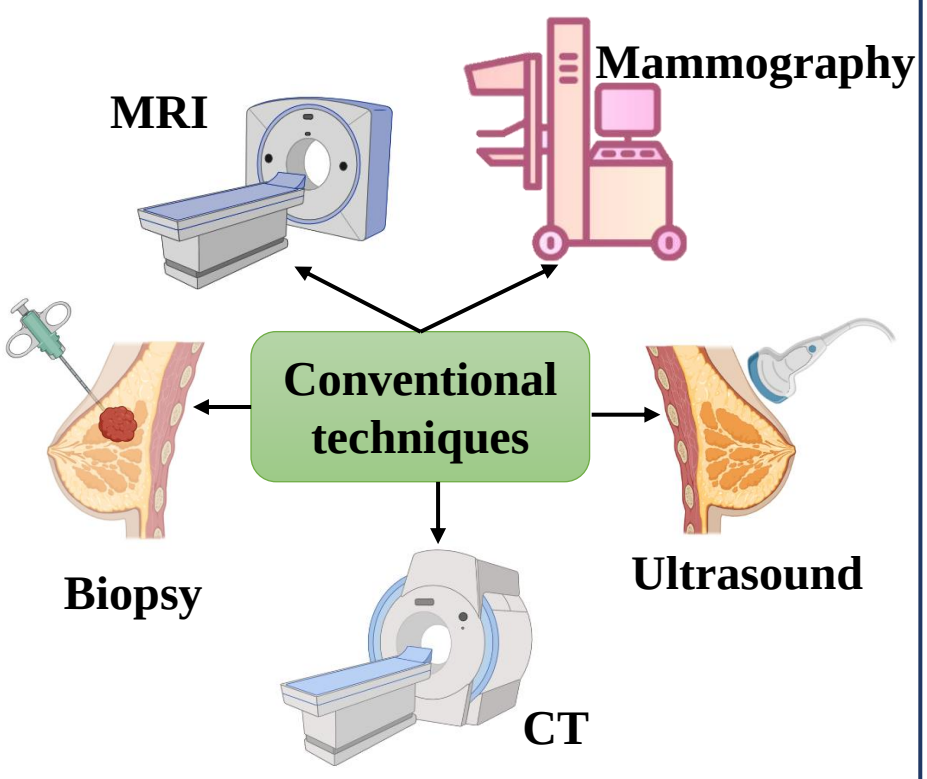
## Introduction

- Breast cancer has surpassed lung cancer with its high incidence(11.7%) and mortality(6.9%) rate ranking first among all other cancers.
- By 2020 it is estimated that in India 178361 new cases with 90408 deaths due to breast cancers.
- Irrespective of age and gender, it's society's most prevalent mortal carcinoma.
- Continuous screening and early cancer detection can reduce mortality.




- These conventional techniques are limited due its false positive results, sensitivity & accuracy in detection and diagnosis of Breast cancer.
- Autofluorescence is the fluorescence emission detected when endo-fluorophores are stimulated by suitable wavelength UV or visible light

- **Fluorescence signal alterations**
  - **Fluorophore Concentration**
  - **Tumor Microenvironment**
  - **ECM modulations**

## Objective

- To Review the advancements of autofluorescence based diagnosis of breast cancer compared to conventional techniques in detecting breast cancer.

## Method

- The literature from the year 2002 to 2022 on current Biophysical techniques for detection & diagnosis of breast cancer, were reviewed by PubMed of NCBI.

## Results

- **Detection of PROCR in TNBC patients**
- **AFS**
  - **Diagnosis, metastasis & tumor growth**
  - **With AI & ML Improved accuracy in diagnosis**
  - **Detection of occult precursor lesions(In-Vivo)**
- **Evaluation of Breast surgical margin**

## Conclusion

According to speed, safety, and sensitivity, auto-fluorescence spectroscopy outperforms other light-based approaches and advances in breast cancer diagnosis, detection, and prognosis. Collaborative usage with conventional techniques can improve early detection and reduce breast cancer mortality.

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