

**INTRODUCTION  
AND  
AIM OF THE WORK.**

## Introduction

It is known that effective treatment of breast cancer calls for early detection of cancerous lesions (e.g, clustered microcalcification and masses associated with malignant cellular processes).

Breast mass appear as areas of increased density on mammograms .it is particularly difficult for radiologists to detect and analyze a suspected area where a mass is overlapped with dense breast tissue ,these masses are more readily seen as time progresses ,but the further the tumor has progressed ,the lower the possibility of a successful treatment .therefore ,increasing the chances of early breast cancer detection is of vital importance in breast cancer diagnosis ( **Berry et al ,2008**).

Screening mammography is currently the only quality assured and evidence – based method for the early detection of breast cancer ,however it misses many tumors in dense glandular tissue .this is because mammography is a two dimensional technique degraded by overlying or underlying dense glandular tissues. So, the sensitivity of mammography alone is markedly reduced in women with dense glandular tissue .therefore, improvements of mammography are desirable .(**Stojadinovic et al ,2008**).

**Contrast enhanced digital mammography and digital breast Tomosynthesis are two techniques** that attempt to increase breast lesion conspicuity. Both techniques have been studied independently and in combination. (**Baylleyguer et al, 2005**).

**Contrast enhanced mammography** enables visualization of tumors without interference from superimposed structures, (Diekmann et al, 2005). It involves injecting the contrast agent intravenously while the patient is imaged with a sequence of digital mammograms that show the flow of the contrast agent over time .The contrast agent employed in the study are the same iodine pharmaceuticals commonly used in C.T imaging ,such as omnipaque (**Roberta et al ,2006**).

**Digital breast tomosynthesis** is a new and exciting modality for improving breast cancer detection. The breast image is acquired at different angles allowing reconstruction of a 3-D volume .The process is similar to a film tomogram, but post processing allows reconstruction of any arbitrary slice. The radiation dose is the same as a convention digital dose .The separate slices are 1 mm thick resulting in a high in plane resolution.

Overlapping shadows and structures are eliminated .The image is displayed as static slices or a cine loop and a regular 2-D image is obtained at the same time. **(Shirley, 2008).**

Other potential application for tomosynthesis include the use of contrast media while imaging (combined technique ).While this research is still in its infancy , contrast enhanced tomosynthesis images might allow for even greater malignant tumor to background contrast and visibility ,and could conceivably supplant MRI gadolinium breast imaging **(Diekman et al, 2008).**