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## **Detection and Diagnosis - Breast Imaging-- Other Methods**

# **A Prospective Study of Computerized Digital Infrared Image Analysis (NoTouch BreastScan™) in Biopsy Proven Breast Cancers.**

**N. Nair<sup>1</sup>, M. Thakur<sup>3</sup>, R. Hawaldar<sup>2</sup>, M. Nadkarni<sup>1</sup>, V. Parmar<sup>1</sup> and R. Badwe<sup>1</sup>**

<sup>1</sup> Tata Memorial Hospital, Maharashtra, India

<sup>2</sup> Tata Memorial Hospital, Maharashtra, India

<sup>3</sup> Tata Memorial Hospital, Maharashtra, India

**Introduction:** Early detection of breast cancer is known to have a more favorable outcome. Currently clinical breast examination and imaging modalities, primarily mammography are used for screening purposes. In India, more than 85% of the population is below the age of 50 years, wherein the sensitivity of mammography is at best 64%. Additional drawbacks of the procedure are physical discomfort and ionizing radiation dose to the patient. So newer techniques have been investigated, which detect cancer induced neo-vascularity with digital thermal imaging. The purpose of this clinical study was to determine the efficacy of a software assisted thermal image analysis tool to distinguish between benign and malignant lesions of the breast.

**Methods:** A prospective study was conducted in women who presented to the breast clinic with clinically or mammographically suspicious breast lesions. They also underwent thermal imaging of the breast. All mammographically suspicious lumps were subjected to histopathological confirmation. The mammography and infrared (IR) reports were compared to the histopathology.

**Results:** In 90 women, 180 breasts were independently analyzed by both digital IR software analysis and mammography. Eighty five out of these 180 had suspicious lesions on mammography or clinical examination which were subjected to pathological confirmation. Mammography being the present diagnostic gold standard, all normal mammograms in clinically normal breast were considered as non-malignant. The sensitivity and specificity of digital thermography in detecting malignant lesions was 88.24% and 70.52% respectively with NPV of 87.01% and PPV of 72.82%. While for mammography the sensitivity and specificity were 96.25% and 96.7% with NPV of 96.7% and PPV of 96.25%. In women below 50 years of age (62/90) the sensitivity and specificity of digital thermography was 89.83% and 64.61% with NPV of 87.5% and PPV of 69.74%. Further, in the same subset no statistically significant difference was detected in the sensitivity of digital thermography to that of mammography ( $p = 0.7263$ ).

**Conclusion:** Our initial experience shows that the detection rate by digital thermal imaging is comparable to mammography in clinically palpable breast tumors. We also note that there is no significant difference in sensitivity of thermal imaging in women on either side of 50 making it a potentially testable tool for screening in younger women.

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