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Rapid HTA: Can Automated Breast Ultrasound replace Hand-Held Ultrasound as an adjunct to Mammography?

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Introduction

Breast cancer is the commonest cancer among Singapore women and the incidence is increasing at an average of 3% annually.

Given that treatment at an early stage of the disease is effective and lead to better outcomes, there is a strong emphasis on breast screening in Singapore.

Ultrasonography has been widely used as an adjunct to mammography in the screening of breast cancers. Ultrasonography has been established to be more sensitive in women with radiographically dense breasts. However, manual ultrasound is known to be operator dependent, requiring skilful probe manipulation and lack reproducibility. Moreover, local experience has shown that time required to perform an ultrasound per patient could be longer than 30 minutes, pending on the number of lesions detected and size of the breasts.

The ultrasound system has since been further improved over the last twenty years and automated ultrasound machines are now available. .

Objective

The objective of this rapid HTA is to evaluate the evidence for and against the use of automated breast ultrasonography to replace manual (hand-held) breast ultrasonography in the screening of breast cancer.

Population	Women who present for breast ultrasound screening
Intervention	Automated breast ultrasonography (ABUS)
Comparison	Hand-held breast ultrasonography (HHUS)
Outcomes	Accuracy, Sensitivity of Detection. Scan Time

Results

8 primary studies (of which 3 were grey literature) and 1 review article were identified. Only one of the primary studies involved the use of a control group. Different models and specifications of ABUS machines were evaluated in the 9 studies; hence results were incomparable. Two studies that evaluated the same model of ABUS, reported that images made with ABUS and HHUS produced images with similar visibility and resulted in similar Breast Imaging Reporting and Data System (BIRADS) assessments. In other studies, ABUS was not preferred to HHUS due to lower sensitivity and image quality.

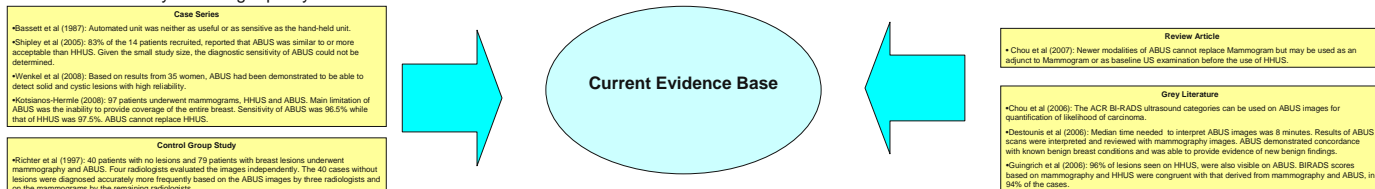


Figure 1: Main Findings of Studies

Conclusion

No high quality, published, comparative trials of ABUS vs HHUS was found. However, results of individual case series have demonstrated the potential of newer versions of ABUS as an adjunct to mammography.

Technology

One current modality of automated breast ultrasonography involves an automated transducer arm being placed firmly on the patient's breast, with the patient lying supine. The transducer then automatically performs a sweeping breast scan. The acquisition process then allows the technologist to select the individual diagnostic planes that are captured on a display workstation.



Figure reproduced from medgadget.com/archives/2009/03/siemens_releas...

Methodology

A systematic search was conducted through PubMed, Medline, Embase and bibliographies of published articles.

Search Terms:

[Automated] or [Automatic] and [Breast] and [Ultrasonography] or [Ultrasound]

Inclusion criteria:

- Available in the English Language
- Clinical Studies

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