

Breast Tomosynthesis May Reduce Recall Rates

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Chicago Bureau

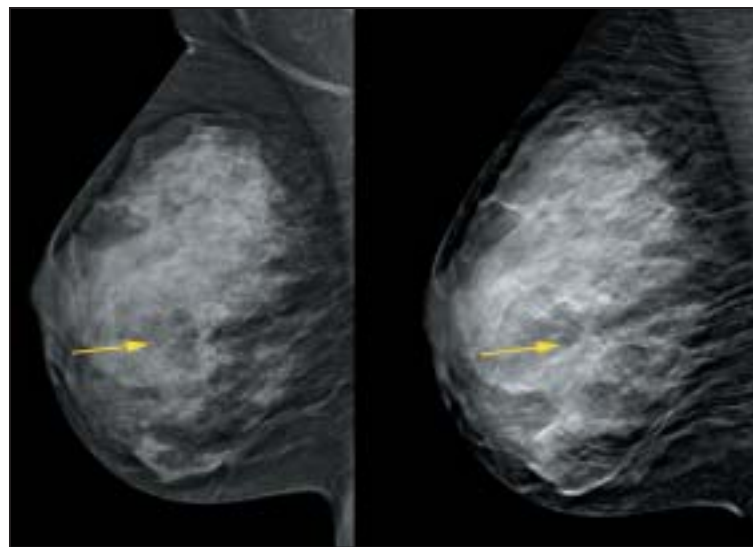
CHICAGO — The addition of digital breast tomosynthesis to digital mammography at screening could improve diagnostic accuracy and reduce recall rates by about 40%, according to results of a multicenter study.

Tomosynthesis creates a single three-dimensional image of the breast by combining data from 11 projection two-dimensional radiographs acquired during a single sweep of the x-ray tube around the patient.

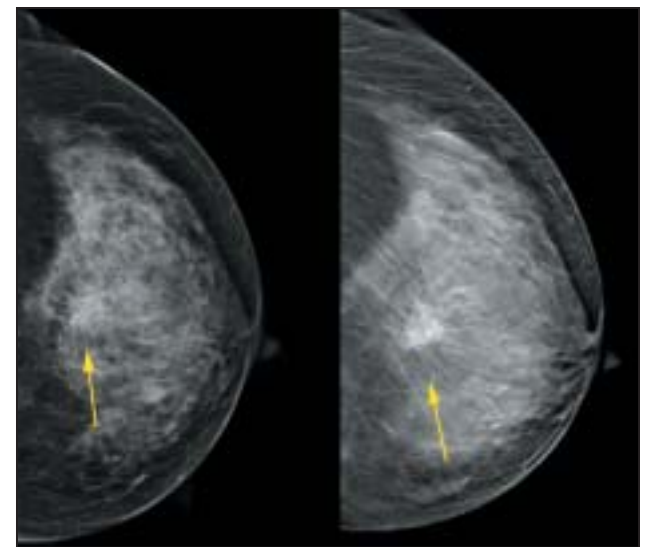
The technique improves breast visualization by reducing the overlap of normal breast structures, Dr. Elizabeth Rafferty reported during a late-breaking session at the annual meeting of the Radiological Society of North America.

As an additional benefit, the total radiation dose of 1.5 mGy is about half that of a single mammographic exposure, she said.

The technique is neither clinically available nor Food and Drug Administration approved, but based on findings from a data set of 316 women, Hologic Inc. (Bedford, Mass.) has petitioned the U.S. Food



Architectural distortion and microcalcifications are clearer in tomosynthesis slices (right) than on digital mammography (left).



A spiculated cancer is better seen in the tomosynthesis slice (right) than on digital mammography (left).

and Drug Administration for approval of the combined modality of tomosynthesis and digital mammography.

"Mammography is a proven winner, and this will only make mammography better," Dr. Rafferty of the radiology department at Harvard University Medical School in Boston, said in an interview. "Tomosynthesis is really the first new thing in

breast imaging in decades, and I believe it will impact mortality rates."

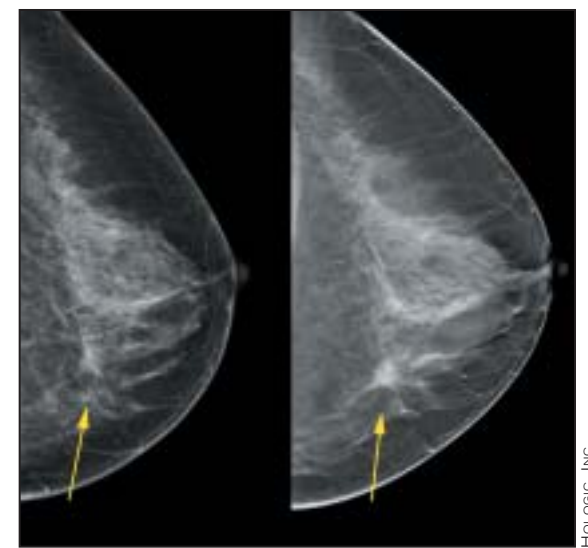
The data set was derived from a study in which 1,083 women, age 18 years or more, underwent two-view, full-field digital mammogram (FFDM) and digital tomosynthesis exams at five U.S. centers. The 316 women in the study included 100 women who presented for diagnostic examinations and 216 women who presented for screening exams, of which 141 were recalled by the site radiologist for additional imaging and 75 had normal exams. In all, 96 women underwent biopsy; 48 benign and 48 malignant lesions were identified.

Twelve board-certified radiologists trained on 200 tomosynthesis imaging cases were asked to score the digital mammography images as Breast Imaging Reporting and Data System (BIRADS) 0, 1, and 2. For those cases scored as a BIRADS 0, the radiologists were asked to give a forced BIRADS score of 1-5 indicating the likelihood of disease in that patient, and to assign a probability of malignancy score rating from 1 to 100.

The combination of FFDM and tomosynthesis resulted in highly significant improvements in the radiologist's performance, as demonstrated by receiver-operator curve analyses, said Dr. Rafferty, who has received research support from Hologic, which sponsored the study. The performance benefits were seen primarily in the analysis of masses, architectural distortion, and focal asymmetries.

A receiver-operator analysis showed that for all 12 readers, the combined modality of tomosynthesis and FFDM was superior to FFDM alone when using the forced BIRADS score and the probability of malignancy scale.

Using multicaser and multireader analyses, the diagnostic accuracy (area under the curve) improved significantly for the forced BIRADS score from 0.83 with FFDM alone to 0.90 with FFDM plus tomosynthesis, with 0.5 representing a worthless diagnostic test and 1 representing a perfect test. The area under the



A spiculated cancer with microcalcifications is more apparent in the tomosynthesis slice (right) than on digital mammography image (left).

Prescribing Information

FOSTEUM™ Capsules
genistein aglycone (27 MG)
citratated zinc bisglycinate (20 MG)
cholecalciferol (200 IU)

FOSTEUM is a specially formulated prescription medical food product for the clinical dietary management of the metabolic processes of osteopenia and osteoporosis. FOSTEUM must be administered under physician supervision.

INDICATIONS AND USAGE

Indications

FOSTEUM is indicated for the clinical dietary management of the metabolic processes of osteopenia and osteoporosis.

Usage

FOSTEUM should be taken with sufficient calcium and vitamin D₃ as directed by a physician. In clinical trials of the genistein aglycone in FOSTEUM, patients also received 1,000 mg of calcium carbonate and 800 IU vitamin D₃ per day in two divided doses. See Dosage and Administration for additional information.

Interactions with Food

FOSTEUM can be taken with or without other foods. FOSTEUM may be taken with any beverage desired.

PRECAUTIONS AND CONTRAINDICATIONS

General

Causes of osteopenia or osteoporosis other than menopause or aging should be considered.

Hypersensitivity

FOSTEUM is contraindicated for anyone having a hypersensitivity to any ingredient in the product. See "Other ingredients" for a full list of ingredients.

Patients with Cancer

Since no studies have been done in these populations, as a precaution, FOSTEUM is contraindicated for patients with a history of cancer of the breast or reproductive organs and should be used with caution by women who have a history of breast or reproductive cancer in first degree female relatives.

Vitamin D Deficiency

FOSTEUM is not intended to treat vitamin D deficiency.

Pregnancy

FOSTEUM is contraindicated in pregnant and lactating women. Women capable of becoming pregnant should use appropriate contraception when taking FOSTEUM. The genistein aglycone in FOSTEUM has not been tested in women capable of becoming pregnant.

ADVERSE EVENTS

Study discontinuation in clinical trial subjects was due to gastrointestinal symptoms, including abdominal and epigastric pain, dyspepsia, vomiting and constipation. The incidence of adverse events was statistically higher in the genistein aglycone group. The major adverse events are shown in the table below without attribution of causality.

Adverse Events	Year 1		Year 2	
	Genistein aglycone + Ca/D (n=178)	Ca/D (n=172)	Genistein aglycone + Ca/D (n=190)	Ca/D (n=172)
Abdominal Pain	4 (2.2%)	2 (1.1%)	2 (1.3%)	1 (0.6%)
Dyspepsia	2 (1.1%)	1 (0.6%)	7 (4.7%)	2 (1.3%)
Constipation	5 (2.8%)	2 (1.7%)	8 (5.3%)	3 (1.9%)

Some of these adverse event occurrences may be attributable to the intake of 1,000 mg per day of calcium carbonate by subjects in both groups. Taking FOSTEUM with food may reduce or eliminate some gastrointestinal symptoms.

Regular monitoring of urine and serum calcium may be indicated in this population.

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U.S. Patent Nos. 5,935,996 and 5,516,925. Patents pending. U.S. Patent No. 5,516,925 is under license from Albion Laboratories, Inc., Clearfield, UT.

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ISS. 1007 #13009

FOS-JAON-01
REV 01/08