



Chicago International Breast Course The Westin Chicago River North November 1-3, 2019

Breast Cancer Screening Using Tomosynthesis in Combination With Digital Mammography wald, MD; Elizabeth A. Rafferty, MD; Stephen L. Rose, MD; Melissa A. Durand, MD; Donna M. Plecha, MD; Julianne S. Greenberg, MD; Mary K. Hayes, MD; Debra S. Copit, MD; Kara L. Carlson, MD; Thomas M. Cink, MD; Lora D. Barke, DO; Linda N. Greer, MD; Dave P. Miller, MS; Emily F. Conant, MD Retrospective Trial (March 2010-Dec 2012) 454,850 exams at 13 sites (academic and Compared mammography interpresition 15% decrease in False Positives with TOMOSYNTHESIS performance 1 year prior to 3D imp mentation to performance after 3D implementati +NorthShore +NorthShore **Results: Radiation Dose** 454,850 examinations performed in total , the FDA mandate was that FFDM was Original 281,187 2D exams 173,663 2D +3D exam: nned in addition to DBT Increased Dose Exposure by 100% compared to FFDM Following 3D tomosynthesis implementation: Recall rate: down 15% More recently, a substitution of a <u>synthesized</u> Cancer Detection Rate: 41% up (invasive image for the FFDM image was approved by the FDA DCIS detection rate: no change *Using the synthesized image, the dose is practically PPV for recall: 49% up equivalent to a standard FFDM PPV for biopsy: 21% up +NorthShore g with Synthetically Reconstructed : Comparis vith Digital Breast Tomosynthesis with Full-Field Summary Digita ammographic Images ms interpreted prospectively and pening ev 2D synthetic images (C-View)/3D combo reduces y by radiologists in two modes: radiation exposure by half compared to 2D/3D FFDM plus DB1 and C-view with DBT. combination C-View + DBT FFDM + DBT <u>Compression force reduced</u> with 3D 5.3% 5.3% tomosynthesis 2.4% 2.2% 7.8/1000 women 7.7 /1000 women • Easier to compare with prior 2D images 32% 35% • C-View retains much info from key 3D slices No significant difference in PPV and CDR (cancer detection rate)

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wo View Digital

12,271 s

independer

Positive Scores

Cancer Detection

Recall Rates

PPV

Projection In

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Limitations of Prone Stereotactic Biopsy

- · Difficult to reach chest wall/axillary tail lesions
- Body habitus
- Limited mobility
- Procedure time 30-60 minutes
 - Difficult to add on
 - Patient tolerance
 - Workflow limitations to add on/change procedures due to length of the procedure

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Mixed environment:

DBT and conventional stereotactic equipment

- Lesion detection on DBT without sonographic correlate
- · Management options:
 - Tomosynthesis guided wire localization for surgical excision

 - » Surgical excision- more invasive, co » If lesion malignant, patient may requi
 - additional imaging for proper staging increase in
- » Possibly warranting addition treatment time, cost

- Advantages of DBT guided biopsy
- · Enhanced lesion visualization
- · Access hard to reach lesions- posterior
- Procedure time
 - Streamlined procedure
 - seamless transition from the ability to target, biopsy, place tissue marker and visualize specimen. Proceed can take less than 10 minutes
- Decreased exposure times
 - improved image quality and lesion conspice
 - Single 3D image for targeting
- Patient tolerance

DBT-gr

Init

205 patient

Evaluated



» Lesion non visualization or inaccessible

- Overall time: DBT 13 min; PS 29 min
- Targeting time: DBT 4 min; PS 15 min

 - » No triangulation
- Complications: no major, 1 vasovagal in each group

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ny disad antages of DBT guided biopsy?

Operati nal considerations

- mits use of machine for screening or diagnostics - Can be overcome with batching of biopsies and
- creating DBT biopsy slots in the schedule
- Inferior approach requires lateral decubitus positioning or scheduling on prone system
- Vasovagal response- negligible with careful technique

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Comparison of Upright DBT-guided biopsy vs Prone stereotactic guided biopsy

439 PS VAB's in 408 patients; 706 DBT-guided VABs in 682 patients

	DBT guided VAB	Stereo Guided VAB
Technical Success	99.3%	95.1%
Mean procedure time	12 minutes	27 minutes
Exposures	3	12
Biopsy of non- calcified lesions	29.2%	3.4%
Histologic features	No difference	No difference
Complications	No major complications	No major complications
Bahi M, Maunglay M, D'Alessandro H, Lehman C, Comparison of Upright Digital Breast Tomosynthesis guided vienus Prone Sterectactic Vacuum-assisted Breast Bopsy		
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DBT Guided Biopsy

 Crucial to provide follow through of findings seen with DBT

Case 1

• 74 year old woman who presents for

· Focal asymmetry in the right breast

screening mammogram

- DBT warrants ability to perform DBT guided biopsies
- Best Practice



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Upright and Prone Stereotactic Biopsy

- Stereotactic and 3D biopsy capabilities
- Target lesions in challenging locations
- Upright and prone
- Lateral arm
- Rapid positioning

 Decrease in biopsy time



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DBT Guided Biopsy Procedure

- · Identify lesion and approach
- Tomosynthesis view obtained
- Replaces scout and 15 degree stereo pair
- One click targeting (large field of view facilitates easy targeting)
- Skin prepped, lidocaine administered, skin nick
- Biopsy performed
- Tomo view and clip placement
- Helpful to note that biopsy cavity and Nip ar site of abnormality
- 33







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Architectural Distortion



becimen Radiographs

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Improved Access for Challenging Lesion Location and Patient Factors

360 degree access

Biopsy from any approach

Needle angled slightly towards chest wall

Access to far posterior lesions

Lateral needle approach

• Biopsy breast with minimum thickness 1.2 cm

400 lb weight limit for patients

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Conclusions

- MAMMOGRAPHY is the GOLD STANDARD FOR BREAST CANCER SCREENING
- o DBT is the FUTURE of mammography
- Better lesion detection with DBT warrants D^{*} a guided biopsy for localization and biopsy c lesions not seen on any other imaging modality