# Comparison between

## KBCT, Breast MRI, Digital Mammography & Tomosysthesis

| Items | | KBCT | Breast MRI | Digital Mammography & Tomosysthesis |
|---|---|---|---|---|
| Technique Specifications | 2D/3D | 3D (isotropic) | 3D (isotropic) | • Digital mammography (DM): 2D<br>• Digital Breast Tomosynthesis (DBT): Partial 3D (nonisotropic) |
| | Spatial Resolution | • Standard: $(0.273\ mm)^3$<br>• High resolution: $(0.155\ mm)^3$ | $(0.700\ mm)^3$<br>[Aurora] | • DM: $(0.070\ mm)^2$ [Hologic, Selenia (DM)]<br>• DBT: $(0.070\ mm)^2$ x 1 mm slice thickness, 1 plane only [Hologic (DBT)] |
| | Contrast Resolution | High (~30X higher than 2D DM due to eliminating structure overlap) | Low-limited | • DM: Low<br>• DBT: Limited due to non-isotropic |
| | Data Acquisition Time | 10 seconds | ~ 20 - 30 minutes<br>[Aurora and General MRI] | • DM: (< 2s/view)<br>• DBT: ≤ 5 seconds |
| | Breast Compression | No | No | Required (93% patients complain the compression pain) |
| | Breast Coverage | Full breast (typical) | Full breast | Full breast (typical) |

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|---|---|---|---|---|
| | Contrast Injection | Supported | Required | Very Limited (due to compression) |
| | Radiographic Dose | In range of diagnostic mammography, whole body effective dose is ~ 2 - 3 months natural background radiation | No ionizing radiation, but long term effect of electro-magnetic radiation is not conclusive | Whole body effective dose is ~ 2 - 3 months natural background radiation |
| | Contraindication | None known | • Metal implants<br>• Claustrophobic<br>• Unable to image very large body (obese) | • Compression pain can be intolerable<br>• Compression is difficult for small dense breasts, especially in China and Asian countries |
| | Calcification Detectability | ~0.2-0.3 mm | No | ~0.2-0.3 mm |
| Functions and Procedures | Screening | It has very high potential to be used as a primary screening tool. | Not suitable as a primary screening tool due to extremely long procedure time, required contrast, being unable to detect calcifications.<br>It can be used as a supplementary screening tool for high risk and high breast density patients. | Yes |
| | Diagnosis | Yes | Yes | Yes |