

Supplementary Table 1. Radiomics features selected by recursive feature elimination from the 2 nd post-contrast MRI phase	
Feature category	Selected radiomics feature
Morphological	Approximate volume
Morphological	Surface area
Intensity	90 th intensity percentile
Intensity	Intensity histogram variance
Intensity	Intensity histogram standard
Intensity	Maximum grey level
Intensity	Intensity histogram range
Intensity	Entropy log2
GLCM	Difference entropy
GLCM	Inverse difference
GLCM	Inverse difference moment
GLCM	Cluster prominence
GLRLM	Long run high grey level emphasis
GLSZM	Large zone high grey level emphasis
GLCM, gray-level co-occurrence matrix; GLRLM, gray-level run length matrix; GLSZM, gray-level size zone matrix; MRI, magnetic resonance imaging.	

Supplementary Table 2. Radiomics features selected by recursive feature elimination from the 7 th post-contrast MRI phase	
Feature category	MRI phase
Morphological	7 th post-contrast
Morphological	7 th post-contrast
Morphological	7 th post-contrast
Intensity	7 th post-contrast
GLCM	7 th post-contrast
GLCM	7 th post-contrast
GLCM	7 th post-contrast
GLCM	7 th post-contrast
GLRLM	7 th post-contrast
NGTDM	7 th post-contrast
NGTDM	7 th post-contrast
NGTDM	7 th post-contrast
GLSZM	7 th post-contrast
GLSZM	7 th post-contrast
GLCM, gray-level co-occurrence matrix; GLRLM, gray-level run length matrix; NGTDM, neighboring gray-tone difference matrix; GLSZM, gray-level size zone matrix; MRI, magnetic resonance imaging.	

SIGNIFICANT RADIOMICS PARAMETERS FOR 2ND POST-CONTRAST MRI IMAGE		
INTENSITY BASED FEATURES	MORPHOLOGICAL FEATURES	SECOND-ORDER FEATURES
- Intensity Variance - Intensity Skewness - Minimum Intensity 90th Intensity Percentile - Standard Deviation - Maximum Intensity - Intensity Interquartile Range - Intensity Range - Intensity Based Mean Absolute Deviation - Intensity Based Robust Mean Absolute Deviation - Intensity Based Median Absolute Deviation - Intensity Based Coefficient of Variation - Intensity Based Quartile Coefficient of Dispersion - Area Under Curve - Intensity Based Energy - Total Lesion Glycolysis - Histogram Variance - Histogram Skewness - Histogram Minimum Gray Level - Histogram Std - Histogram Maximum Grey Level - Histogram Mode - Histogram Range - Histogram Entropy log 10 - Histogram Entropy log2 - Histogram Area Under Curve - Histogram Uniformity - Histogram Root Mean Square - Maximum Histogram Gradient - Minimum Histogram Gradient	- Volume - Approximate Volume - Voxel Counting - Surface Area - Surface to Volume Ratio - Compactness - Spherical Disproportion - Sphericity - Asphericity - Centre of Mass Shift - Maximum 3D Diameter - Sphere Diameter - Integrated Intensity Neighboring Gray Tone Difference Matrix (NGTDM) - Busyness - Complexity - Coarseness - Strength - Contrast Gray-Level Size Zone Matrix (GLSZM) - Small/Large Zone Emphasis - Small Zone High Gray Level Emphasis - Large Zone Low Gray Level Emphasis - Large Zone High Gray Level Emphasis - Grey Level Non-Uniformity - Normalized Grey Level Non-Uniformity - Zone Size Non-Uniformity - Normalized Zone Size Non-Uniformity - Zone Percentage - Grey Level Variance - Zone Size Variance - Zone Size Entropy	Gray-Level Co-occurrence Matrix (GLCM) - Joint Average - Joint Variance - Joint Entropy log2 - Joint Entropy log 10 - Difference Average - Difference Variance - Difference Entropy - Sum Average - Sum Variance - Sum Entropy - Angular Second Moment - Contrast - Dissimilarity - Inverse Difference - Normalized Inverse Difference - Inverse Difference Moment - Normalized Inverse Difference Moment - Inverse Variance - Correlation - Autocorrelation - Cluster Tendency - Cluster Shade - Cluster Prominence Gray-Level Run Length Matrix (GLRLM) - Short Runs Emphasis - Long Runs Emphasis - Short Run High Grey Level Emphasis - Long Run High Grey Level Emphasis - Grey Level Non-Uniformity - Run Length Non-Uniformity - Run Percentage

Supplementary Material 1. Statistically significant radiomics features identified on the early (2nd) post-contrast breast magnetic resonance imaging images. The figure summarizes intensity-based, morphological, and second-order texture features that showed significant associations with benign–malignant differentiation ($P < 0.05$). Second-order features include parameters derived from the GLCM, GLRLM, GLSZM, NGTDM.

SIGNIFICANT RADIOMICS PARAMETERS FOR 7TH POST-CONTRAST MRI IMAGE		
INTENSITY BASED FEATURES	MORPHOLOGY BASED FEATURES	SECOND-ORDER FEATURES
- Minimum Intensity - Standard Deviation - Maximum Intensity - Intensity Interquartile Range - Intensity Range - Intensity Based Mean Absolute Deviation - Intensity Based Robust Mean Absolute Deviation - Intensity Based Median Absolute Deviation - Intensity Based Coefficient of Variation - Intensity Based Quartile Coefficient of Dispersion - Intensity Based Area Under Curve - Intensity Based Energy - Total Lesion Glycolysis - Histogram Maximum Grey Level - Histogram Range - Histogram Entropy log 10 - Histogram Entropy log2 - Histogram Area Under Curve - Histogram Uniformity - Histogram Root Mean Square - Maximum Histogram Gradient - Maximum Histogram Gradient Gray Level - Minimum Histogram Gradient	- Volume - Approximate Volume - Voxel Counting - Surface Area - Surface to Volume Ratio - Compactness - Spherical Disproportion - Sphericity - Asphericity - Centre of Mass Shift - Maximum 3D Diameter - Sphere Diameter - Integrated Intensity Neighboring Gray Tone Difference Matrix (NGTDM) - Coarseness - Busyness - Complexity - Strength Gray-Level Size Zone Matrix (GLSZM) - Small - Large Zone Emphasis - Small Zone High Gray Level Emphasis - Large Zone Low Gray Level Emphasis - Large Zone High Gray Level Emphasis - Grey Level Non-Uniformity - Normalized Grey Level Non-Uniformity - Normalized Zone Size Non-Uniformity - Zone Percentage - Zone Size Variance - Zone Size Entropy	Gray-Level Co-occurrence Matrix (GLCM) - Joint Average - Joint Entropy log2 - Joint Entropy log 10 - Difference Average - Difference Variance - Difference Entropy - Sum Average - Sum Variance - Sum Entropy - Angular Second Moment - Contrast - Dissimilarity - Inverse Difference - Normalized Inverse Difference - Inverse Difference Moment - Normalized Inverse Difference Moment - Inverse Variance - Correlation - Autocorrelation - Cluster Shade - Cluster Prominence Gray-Level Run Length Matrix (GLRLM) - Short Runs Emphasis - Long Runs Emphasis - Short Run High Grey Level Emphasis - Long Run High Grey Level Emphasis - Grey Level Non-Uniformity - Run Length Non-Uniformity - Run Percentage

Supplementary Material 2. Statistically significant radiomics features identified on the late (7th) post-contrast breast magnetic resonance imaging images. The figure summarizes intensity-based, morphological, and second-order texture features that showed significant associations with benign–malignant differentiation ($P < 0.05$). Second-order features include parameters derived from GLCM, GLRLM, GLSZM, and NGTDM.