

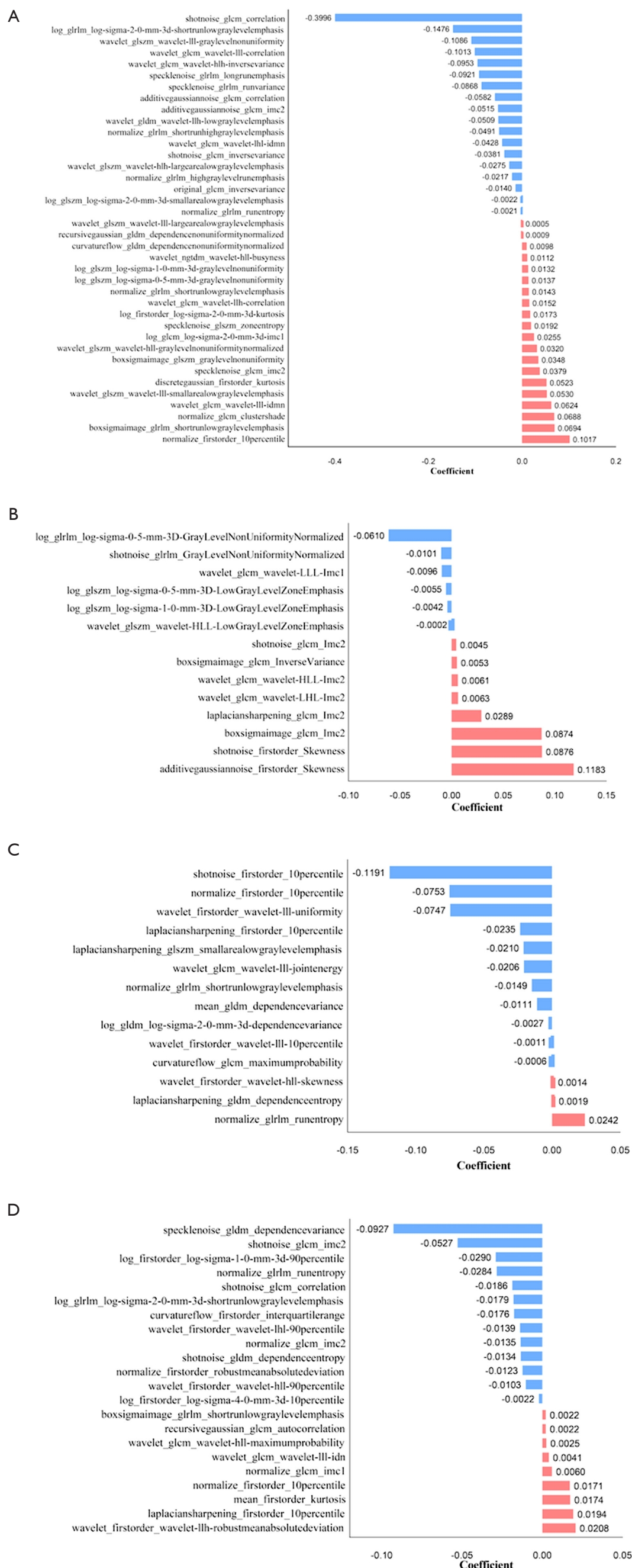


Figure S1 Bar charts of the selected radiomic features and their corresponding coefficients. (A) FCM. (B) Classifier 1 in the TBCM (calcified *vs.* non-calcified components). (C) Classifier 2 in the TBCM (calcified plaque *vs.* mixed plaque). (D) Classifier 3 in the TBCM (non-calcified plaque *vs.* no plaque). FCM, four-class classification model; TBCM, two-level binary classification model.

Table S1 Classification and quantification of plaques in all included patients

Classification	Training set	Internal test set	External test set
Non-calcified plaque	299	58	38
Calcified plaque	223	29	39
Mixed plaque	279	46	36
No plaque	737	132	40

Table S2 Performance metrics of the FCM across five machine learning algorithms in the internal test set

Method	Internal test set					
	AUC	Sensitivity	Specificity	ACC	Precision	F1 score
DT	0.920	0.720	0.912	0.735	0.701	0.703
GP	0.963	0.814	0.968	0.863	0.856	0.829
LR	0.956	0.769	0.949	0.821	0.784	0.776
RF	0.961	0.781	0.956	0.830	0.803	0.789
SVM	0.962	0.765	0.941	0.813	0.766	0.765

FCM, four-class classification model; DT, decision tree; GP, Gaussian processes; LR, logistic regression; RF, random forest; SVM, support vector machine; AUC, area under curve; ACC, accuracy.

Table S3 Performance metrics of the TBCM across five machine learning algorithms in the internal test set

Method	Internal test set					
	AUC	Sensitivity	Specificity	ACC	Precision	F1 score
Calcified components vs. non-calcified components						
DT	0.996	0.991	1.000	0.997	1.000	0.996
GP	1.000	0.991	1.000	0.997	1.000	0.996
LR	1.000	0.991	1.000	0.997	1.000	0.996
RF	1.000	0.991	1.000	0.997	1.000	0.996
SVM	1.000	0.991	1.000	0.997	1.000	0.996
Calcified plaque vs. mixed plaque						
DT	0.803	0.781	0.780	0.781	0.820	0.800
GP	0.892	0.875	0.760	0.825	0.824	0.848
LR	0.878	0.859	0.820	0.842	0.859	0.859
RF	0.883	0.875	0.800	0.842	0.848	0.862
SVM	0.877	0.875	0.800	0.842	0.848	0.862
Non-calcified plaque vs. non-plaque						
DT	0.859	0.827	0.761	0.807	0.894	0.859
GP	0.944	0.936	0.746	0.881	0.900	0.918
LR	0.929	0.879	0.789	0.852	0.910	0.894
RF	0.943	0.925	0.761	0.877	0.904	0.914
SVM	0.939	0.890	0.831	0.873	0.928	0.909

TBCM, two-level binary classification model; DT, decision tree; GP, Gaussian processes; LR, logistic regression; RF, random forest; SVM, support vector machine; AUC, area under curve; ACC, accuracy.

Table S4 Classification performance metrics for the models in the internal test set

Method	Class label	Internal test set			
		Recall	Precision	F1 score	Overall accuracy
GP	Non-calcified plaque	0.746	0.828	0.785	0.863
	Calcified plaque	0.760	0.826	0.792	
	Mixed plaque	0.862	0.824	0.843	
	Non-plaque	0.936	0.894	0.915	
RF	Non-calcified plaque	0.761	0.806	0.783	0.866
	Calcified plaque	0.800	0.833	0.816	
	Mixed plaque	0.875	0.848	0.861	
	Non-plaque	0.924	0.898	0.911	
GP + RF	Non-calcified plaque	0.845	0.810	0.827	0.885
	Calcified plaque	0.860	0.827	0.843	
	Mixed plaque	0.859	0.887	0.873	
	Non-plaque	0.919	0.935	0.927	

GP, Gaussian processes; RF, random forest.

Table S5 Performance metrics for the models in the external test set

Method	External test set					
	AUC	Sensitivity	Specificity	ACC	Precision	F1 score
Calcified components vs. non-calcified components						
GP	1.000	1.000	1.000	1.000	1.000	1.000
RF	1.000	1.000	1.000	1.000	1.000	1.000
GP + RF	1.000	1.000	1.000	1.000	1.000	1.000
Calcified plaque vs. mixed plaque						
GP	0.902	0.500	1.000	0.760	1.000	0.667
RF	0.939	0.667	1.000	0.840	1.000	0.800
GP + RF	0.939	0.944	0.846	0.893	0.850	0.895
Non-calcified plaque vs. non-plaque						
GP	0.993	1.000	0.526	0.796	0.690	0.816
RF	0.998	1.000	0.632	0.821	0.741	0.851
GP + RF	0.999	1.000	0.974	0.987	0.975	0.987

GP, Gaussian processes; RF, random forest; AUC, area under curve; ACC, accuracy.

Table S6 Classification performance metrics for the models in the external test set

Method	Class label	External test set			
		Recall	Precision	F1 score	Overall accuracy
GP	Non-calcified plaque	0.526	1.000	0.689	0.765
	Calcified plaque	1.000	0.684	0.812	
	Mixed plaque	0.500	1.000	0.667	
	Non-plaque	1.000	0.690	0.817	
RF	Non-calcified plaque	0.632	1.000	0.775	0.830
	Calcified plaque	1.000	0.764	0.866	
	Mixed plaque	0.667	1.000	0.800	
	Non-plaque	1.000	0.741	0.851	
GP + RF	Non-calcified plaque	0.974	1.000	0.987	0.941
	Calcified plaque	0.846	0.943	0.892	
	Mixed plaque	0.944	0.850	0.895	
	Non-plaque	1.000	0.976	0.988	

GP, Gaussian processes; RF, random forest.