Supplementary figures

**Radiomics and *MGMT* promoter methylation for prognostication of newly diagnosed glioblastoma**

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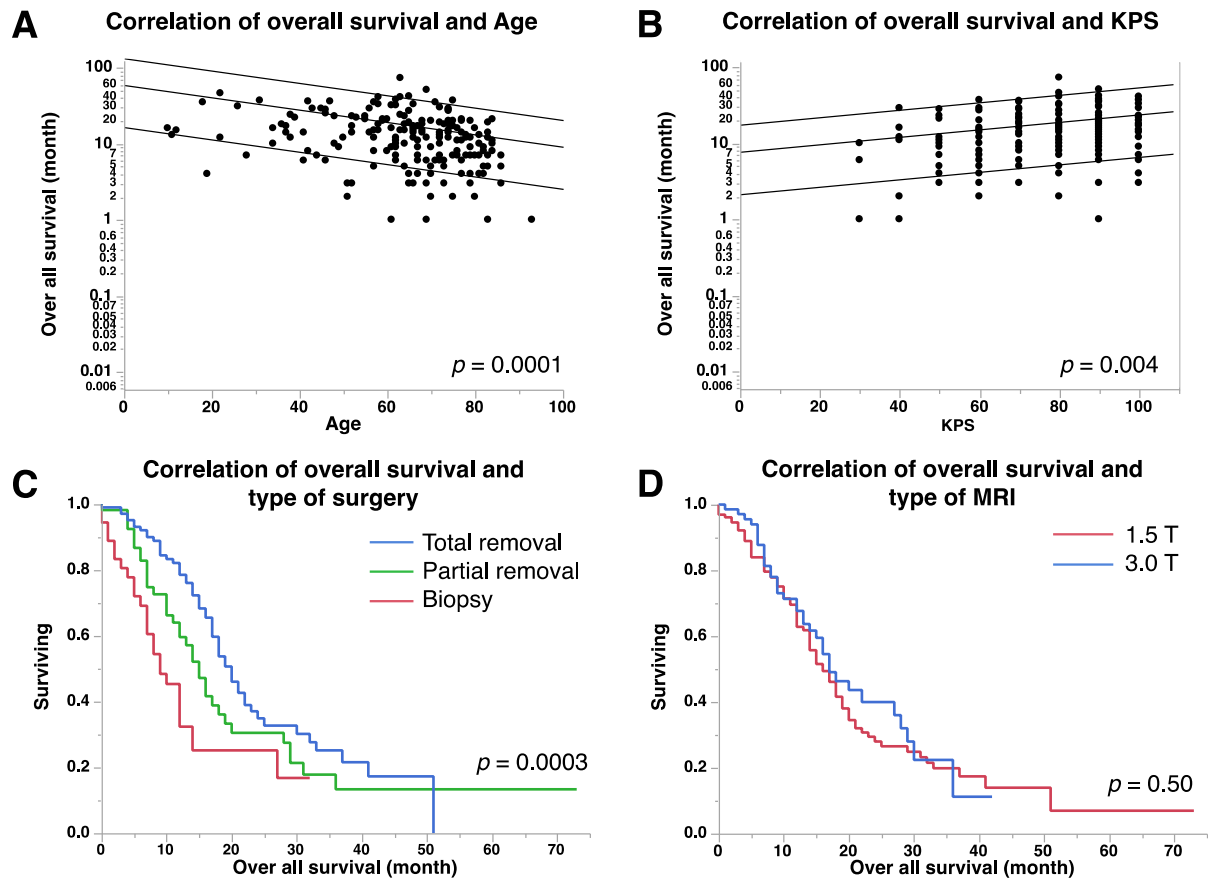
Supplementary figure 1

Correlation of overall survival and 5 radiomic factors identified as significant both in supervised PCA and LASSO
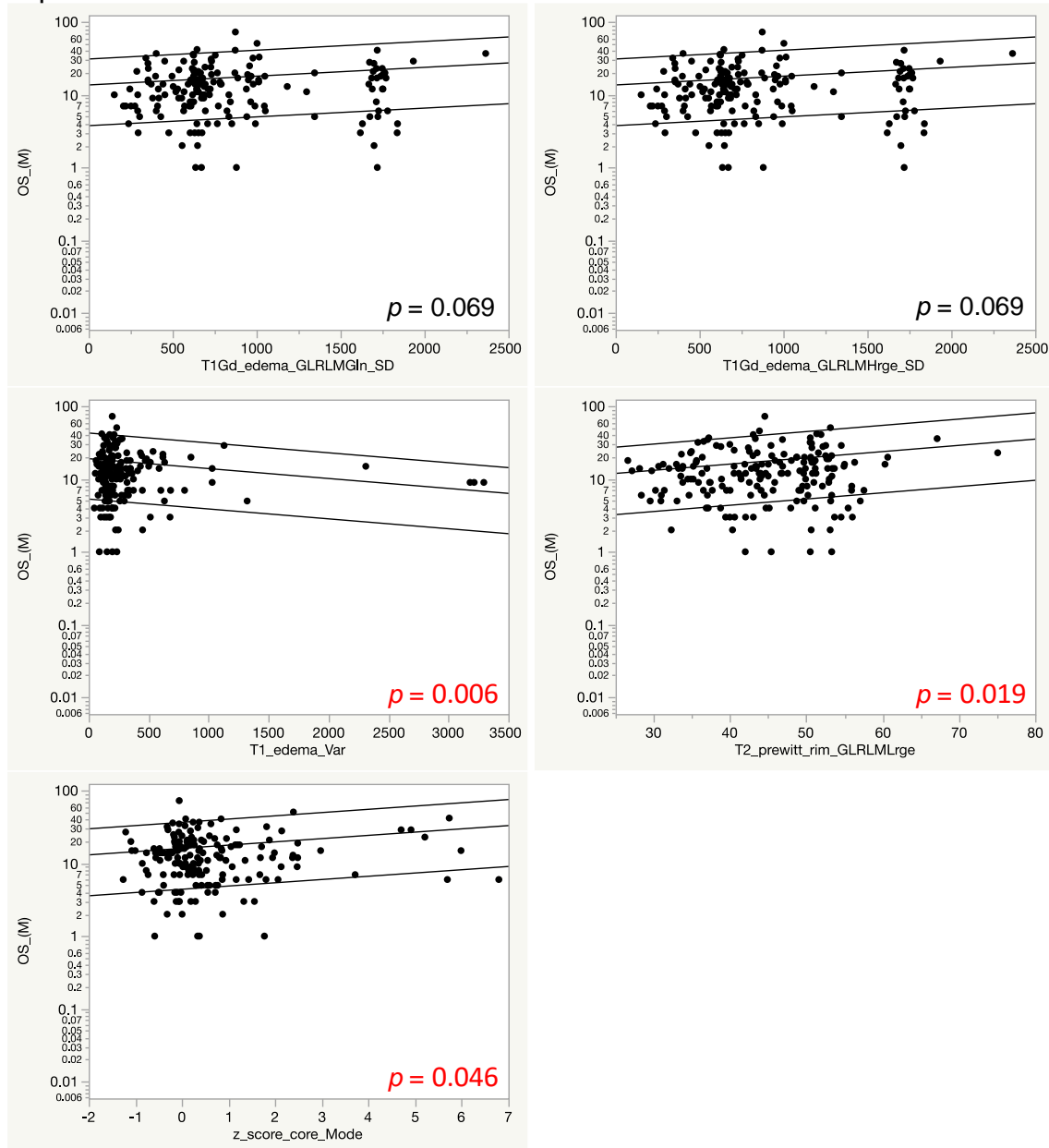

Univariate analysis of factors that were identified to be significant radiomic factors both in supervised PCA and LASSO was performed. As univariate predictors, only T1_edema_Var, T2_prewitt_rim_GLRLMLrge and z_score_core_Mode were identified as statistically significant. All p values were calculated by Wald Test.

Supplementary figure 2

A Correlation of overall survival and Age

B Correlation of overall survival and KPS

C Correlation of overall survival and type of surgery

- Total removal
- Partial removal
- Biopsy

$p = 0.0003$

D Correlation of overall survival and type of MRI

- 1.5 T
- 3.0 T

$p = 0.50$

Univariate analysis of factors that potentially affect overall survival was performed. Both Age **(A)** and pretreatment KPS **(B)** significantly correlated with overall survival ($p = 0.0001$ and $p = 0.004$ respectively, Wald Test). Type of surgery **(C)** also affected overall survival ($p = 0.0003$, Log-Rank). Type of MRI used for radiomic analysis **(D)**, however, did not have any impact on overall survival ($p = 0.50$, Log-Rank).

Supplementary figure 3
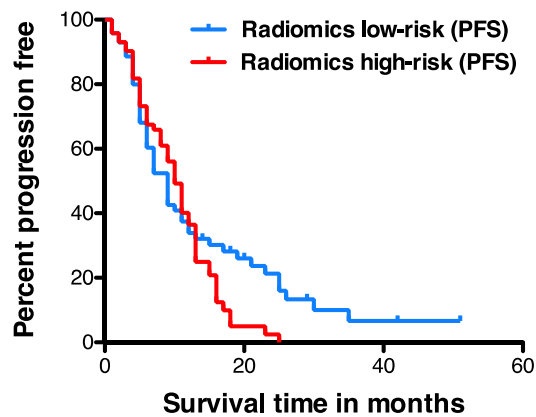
Median survival	
Radiomics low-risk (PFS)	9.000
Radiomics high-risk (PFS)	10.00
Ratio	0.9000
95% CI of ratio	0.2097 to 1.590

Hazard Ratio	
Ratio	0.7853
95% CI of ratio	0.5245 to 1.176

Log-rank Test	
P value	0.2407

/	Importance-score	Raw-score	Name	/
[1,]	"-138151.874"	"-2.192"	"T1Gd_core_Mode"	
[2,]	"-56722.813"	"-2.856"	"T2_core_Median"	
[3,]	"-55035.691"	"-2.541"	"T2_core_RMS"	
[4,]	"-54012.356"	"-2.551"	"T2_core_Mean"	
[5,]	"-44526.242"	"-2.873"	"T2_core_Max"	
[6,]	"-19501.782"	"-1.789"	"T2_edema_Max"	
[7,]	"-10286.364"	"-2.002"	"T2_core_GLRLMLre_SD"	
[8,]	"4125.706"	"1.738"	"T1_edema_GLRLMLrge_SD"	
[9,]	"1260.572"	"-1.885"	"T2_prewitt_rim_Kurtosis"	

Radiomics risk stratification focusing on progression free survival was performed using the Superpc package in R. The threshold for constructing a survival prediction was searched by 10-fold outer-loop-cross-validation using Superpc and a threshold parameter of 1.65 was achieved as the best tuned parameter for the Supervised Principal Component Predictor model. Importance score of each radiomic feature was calculated with the threshold hold of Supervised Principal Component Predictor model set as 1.65, enabling visualization of significant radiomic features predictive of patient survival. Finally, a binary radiomic risk classification was achieved using the default and parameters as suggested in the Superpc reference manual of the superpc.predict function. More specifically, n.components of 1 and prediction.type of discrete were used with the threshold set to 1.65 as mentioned above. As can be appreciated in the Kaplan-Mayer survival curve, radiomics risk stratification was unsuccessful when progression free survival was used as endpoint. This was also supported by the fact that stratified two groups did not differ in Log-rank test.