The feature pool in this study

In this study, we extracted 491 image features based on tumor volume, including four categories: intensity statistics features, geometry features, texture features, and wavelet features. We extracted 484 image features based on non-tumorous bone region, including three categories: intensity statistics features, texture features, and wavelet features. The feature extraction process was conducted based on open-source Radiomics packages in MATLAB 2017b (MathWorks, Natick, MA, USA).

Table S1 Full names and abbreviations of imaging features in this study

Full names	Abbreviations
Intensity statistics features	
Variance	–
Skewness	–
Kurtosis	–
Mean	–
Energy	–
Entropy	–
Uniformity	–
Geometry features	
Max diameter	MaD
Surface volume ratio	SVR
Compactness1	Cpt1
Compactness2	Cpt2
Surface area	SA
Spherical disproportion	SphDisp
Sphericity	–
Texture features (grey-level co-occurrence matrix)	
Autocorrelation	autoc
Contrast	contr
Correlation	corrm
Correlation2	corrp
Cluster prominence	cprom
Cluster shade	cshad
Dissimilarity	dissi
Energy	energ
Entropy	entro
Homogeneity	homom
Homogeneity2	homop
Maximum probability	maxpr

Table S1 (*continued*)

Table S1 (*continued*)

Full names	Abbreviations
Sum of squares variance	sosvh
Sum average	savgh
Sum variance	svarh
Sum entropy	senth
Difference variance	dvarh
Difference entropy	denth
Information measure of correlation1	inf1h
Information measure of correlation2	inf2h
Inverse difference normalized	indnc
Inverse difference moment normalized	idmnc
Texture features (grey-level run-length matrix)	
Short run emphasis	SRE
Long run emphasis	LRE
Grey-level non-uniformity	GLN
Run-length non-uniformity	RLN
Run percentage	RP
Low grey-level run emphasis	LGRE
High grey-level run emphasis	HGRE
Short run low grey-level emphasis	SRLGE
Short run high grey-level emphasis	SRHGE
Long run low grey-level emphasis	LRLGE
Long run high grey-level emphasis	LRHGE
Grey-level variance	GLV
Run-length variance	RLV
Texture features (grey-level size zone matrix)	
Small zone emphasis	SZE
Large zone emphasis	LZE
Grey-level non-uniformity	GLN
Zone-size non-uniformity	ZSN
Zone percentage	ZP
Low grey-level zone emphasis	LGZE
High grey-level zone emphasis	HGZE
Small zone low grey-level emphasis	SZLGE
Small zone high grey-level emphasis	SZHGE

Table S1 (*continued*)

Full names	Abbreviations
Large zone low grey-level emphasis	LZLGE
Large zone high grey-level emphasis	LZHGE
Grey-level variance	GLV
Zone-size variance	ZSV
Texture features (neighbourhood grey-tone difference matrix)	
Coarseness	–
Contrast	–
Busyness	–
Complexity	–
Strength	–

Wavelet features

The wavelet features were extracted based the imaged decomposed by undecimated wavelet transform. Two kinds of filter of high-pass and low-pass was used in undecimated wavelet transform. By using the filters along three directions (x-, y- and z-direction), we could obtain 8 decomposed images. Then, the textural features were calculated based on the decomposed images. For example, we used the abbreviations 'LLL' to represent the low pass, low pass, and low pass filters in three axes for the original image during the wavelet translation. The same descriptions were used for all other imaged after wavelet translation. The wavelet feature name was defined as the combination of feature name and wavelet filter name. A number of 424 features were obtained through undecimated wavelet transform.

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