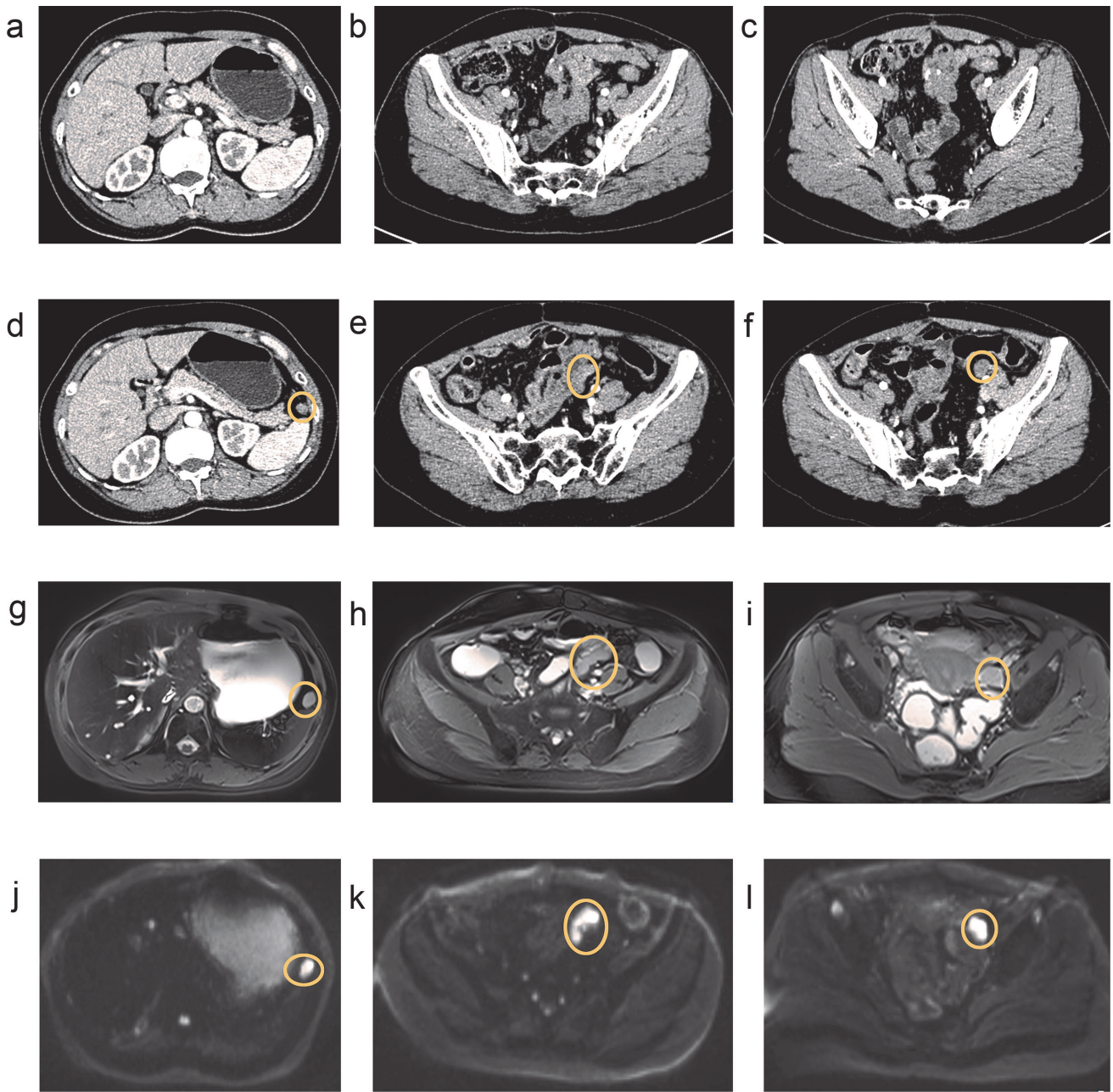


**Figure S1** A 53-year-old male with duodenal GIST. (A) T2WI shows a small, oval shaped, well-defined, exophytic mass with isointense signal intensity. (B) Corresponding DWI shows the same lesion with a region of interest placed for ADC value measurement. (C) The histogram of ADC map. (D) Hematoxylin and eosin (H&E) staining of the tissue demonstrated a low-risk GIST (200 $\times$ ). GIST, gastrointestinal stromal tumor; T2WI, T2-weighted imaging; DWI, diffusion-weighted imaging; ADC, apparent diffusion coefficient.

**Table S1** Detailed CT imaging parameters for the five different CT scanners utilized

Parameter	1	2	3	4	5
Tube current (mA)	Automatic	Automatic	Automatic	180	50
Tube voltage (kV)	100–120	100	120	100	120
Matrix	512 $\times$ 512	512 $\times$ 512	512 $\times$ 512	512 $\times$ 512	512 $\times$ 512
Detector pitch	0.984:1	0.984:1	1.375:1	0.993:1	NA
Slice thickness/interval (mm)	5	5	10	5	5
Rotation time (s)	0.5	0.6	0.6	0.75	0.5
Reconstruction thickness (mm)	1.25	1.25	1.25	1.25	1.0

The corresponding serial number representing different CT scanners was displayed as follows: 1= Discovery CT750 HD, GE healthcare, USA; 2= Lightspeed VCT; GE Healthcare, Milwaukee, WI, USA; 3= Lightspeed 16, GE Healthcare, USA; 4= iCT256; Philips, Netherlands; 5= AquilionOne TSX-301A; TOSHIBA, Japan. CT, computed tomography; NA, not available.

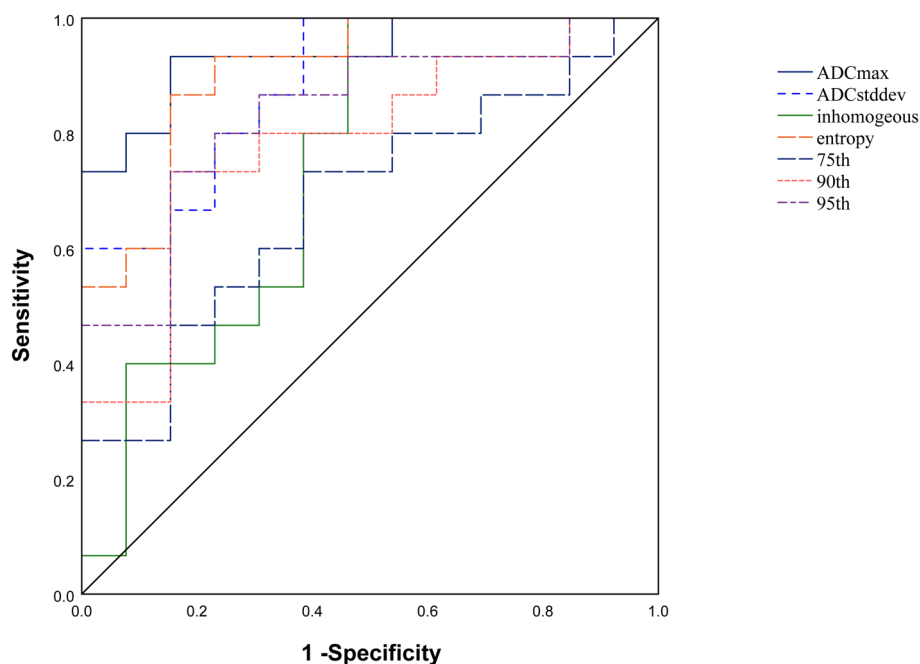


**Figure S2** A 55-year-old woman with primary high risk GIST status post resection and 3-year of adjuvant therapy. (A-C) Three slices of a CT during follow-up 3 months after termination of imatinib therapy show no evidence of recurrent tumor. (D-F) The same three slices 6 months after imatinib therapy termination demonstrate three recurrent and metastases lesions (circle) which only mildly enhance, rendering distinction from the surrounding tissues difficult. (G-I) MRI clearly depicts the recurrent tumor (circle). (J-L) All three lesions (circle) have high signal intensity on DWI. GIST, gastrointestinal stromal tumor; CT, computed tomography; MRI, magnetic resonance imaging; DWI, diffusion-weighted imaging.

**Table S2** MRI parameters

MRI system	Sequences	TR/TE (msec)	NEX	Thickness/gap (mm)	Flip angle	Matrix	Bandwidth
1	T2-weighted SSFSE						
	Coronal	RC/68	NA	4	90°	288×288	83.33
	Axial	RC/68	NA	5	90°	288×288	83.33
	T1-weighted 3D LAVA						
	Coronal	4.2/min Full	1.00	4.2	15°	320×224	166.67
	Axial	4.0/min Full	1.00	4.6	15°	260×210	200.00
	FIESTA						
	Coronal and fs coronal	3.2/minimum	1.00	4.00	45°	256×224	166.67
	Axial and fs axial	3.4/minimum	1.00	5.0	45°	288×288	125.00
	DWI						
Axial	RC/minimum	6	6	90°	160×128	250.0 KHz/Pix	
2	T2-weighted HASTE						
	Coronal and fs coronal	2,000/80	1	4.0	125°	256×240	700
	Axial and fs axial	2,000/81	1	5.0	112°	256×208	575
	T1-weighted 3D VIBE						
	Coronal	4.5/1.31	1	4.0	15°	288×288	915
	Axial	4.5/1.31	1	4.0	15°	232×288	915
	TRUFI						
	Coronal	389.52/1.51	1	4.0	42°	512×512	1,500
	Axial	896.38/1.68	1	5.0	42°	512×440	1,030
	DWI						
Axial	4,700/62	1	5.0	90°	160×128	2,230 Hz/Px	

System 1: HD750 3T (GE Healthcare); system 2: Magnetom Skyra 3.0T (Siemens Healthcare). MRI, magnetic resonance imaging; TR, repetition time; TE, echo time; NEX, number of excitation; SSFSE, single shot fast spin-echo; LAVA, liver acquisition with volume acceleration; FIESTA, fast imaging employing steady state acquisition; DWI, diffusion-weighted image; HASTE, half-fourier acquisition single-shot turbo spin-echo; VIBE, volume interpolated body examination; TRUFI, true fast imaging sequence; 3D, three-dimensional; fs, fat saturated; RC, respiratory cycle; NA, not available.



**Figure S3** The receiver operator characteristic curve for the univariate ADC histogram parameters of GIST on DWI in distinguishing patients with very low to low risk from moderate to high-risk according to the risk classification defined by the modified National Institutes of Health criteria. ADC, apparent diffusion coefficient; GIST, gastrointestinal stromal tumor; DWI, diffusion-weighted imaging.

**Table S3** Diagnostic score of patients with GIST or patients with no evidence of disease for both readers in CECT and non-contrast MRI

Score	Patients with GIST (n=55)					Patients with no evidence of disease (n=28)				
	CECT		Non-contrast MRI		Combined CECT and non-contrast MRI (reader 1)	CECT		Non-contrast MRI		Combined CECT and non-contrast MRI (reader 1)
	Reader 1	Reader 2	Reader 1	Reader 2		Reader 1	Reader 2	Reader 1	Reader 2	
1	0	1	0	0	1	4	6	4	7	12
2	8	6	6	6	2	21	16	21	19	14
3	5	6	3	4	2	3	4	1	0	1
4	12	11	15	9	18	0	2	1	2	0
5	30	31	31	36	32	0	0	1	0	1

Scores 1–5 were given by each of the radiologists for each CT and MRI: 1= definitely without neoplasm, 2= probably without neoplasm, 3= indeterminate, 4= probably with neoplasm, 5= definitely with neoplasm. GIST, gastrointestinal stromal tumor; CECT, contrast enhanced computed tomography; MRI, magnetic resonance imaging.

**Table S4** Detection scores of CECT and non-contrast MRI by reader 1 in primary or metastatic GIST

Sites of GIST	CECT	Non-contrast MRI	Combined CECT and non-contrast MRI
Primary gastric GIST (n=12)			
Seen (score 4–5)	8	10	9
Indeterminate (score 3)	2	0	1
Missed (score 1–2)	2	2	2
Primary small bowel GIST (n=21)			
Seen (score 4–5)	19	18	21
Indeterminate (score 3)	1	2	0
Missed (score 1–2)	1	1	0
Metastases GIST (n=17)			
Seen (score 4–5)	11	13	15
Indeterminate (score 3)	2	1	1
Missed (score 1–2)	4	3	1

Scores 1–5 were given by one of the radiologists for each CT and MRI: 1= definitely without neoplasm, 2= probably without neoplasm, 3= indeterminate, 4= probably with neoplasm, 5= definitely with neoplasm. CECT, contrast enhanced computed tomography; MRI, magnetic resonance imaging; GIST, gastrointestinal stromal tumor.