

**Table S1** Interobserver agreement in the measurements of all CT attenuation values and subjective evaluation of image quality

Scan	Tumor	Normal colorectum	Muscle	Subcutaneous fat	Abdominal aorta	Portal vein	Liver	Spleen	Renal cortex-L	Renal cortex-R	Subjective score
TNC	0.896	0.889	0.879	0.895	0.884	0.884	0.893	0.879	0.889	0.891	0.804
VNCA	0.894	0.888	0.882	0.896	0.862	0.879	0.891	0.888	0.891	0.890	0.827
VNCp	0.896	0.889	0.889	0.894	0.863	0.886	0.891	0.885	0.890	0.888	0.868

CT, computed tomography; TNC, true non-contrast; VNCA, virtual non-contrast image from the arterial phase; VNCp, virtual non-contrast image from the portal venous phase; Renal cortex-L, left renal cortex; Renal cortex-R, right renal cortex.

**Table S2** Comparison of the mean CT attenuation (HU) values and imaging noise (SD) between TNC and VNC images

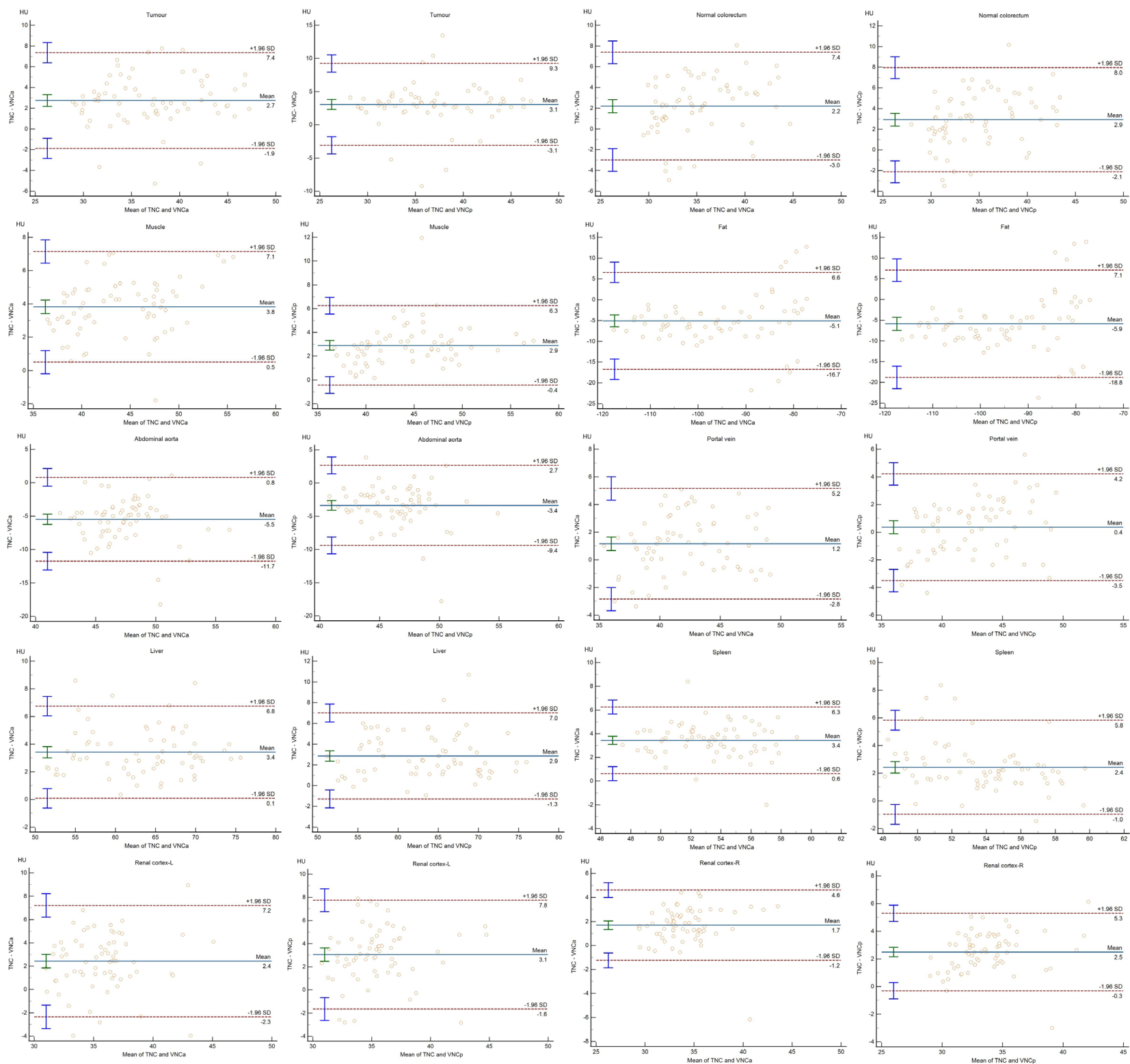
Scan	Tumor		Normal colorectum		Muscle		Subcutaneous fat		Abdominal aorta		Portal vein		Liver		Spleen		Renal cortex-L		Renal cortex-R	
	Attenuation	SD	Attenuation	SD	Attenuation	SD	Attenuation	SD	Attenuation	SD	Attenuation	SD	Attenuation	SD	Attenuation	SD	Attenuation	SD	Attenuation	SD
TNC	37.67 (34.47–42.55)	23.31±2.40	35.67 (32.27–40.00)	21.95±2.17	46.00 (41.03–49.53)	15.81±2.84	-97.74±12.38	19.27±2.53	44.70±2.95	17.66±3.12	42.65±3.94	16.40 (15.35–17.48)	64.83 ± 6.37	15.84±1.52	55.01±2.81	14.04±1.92	37.23 (34.47–38.68)	16.52±2.98	34.90 (33.27–36.25)	16.02±2.84
VNCA	35.60 (30.52–39.58)	18.58±2.20	33.73 (30.96–36.37)	17.55±3.06	40.93 (38.06–46.02)	10.60 (9.75–12.03)	-92.68±11.19	15.20±2.95	50.03 (48.33–50.98)	15.03 (13.47–16.15)	40.30 (39.12–44.37)	14.33 (13.02–15.50)	62.27 (54.82–66.03)	12.46±1.38	51.57±2.91	11.47 (10.40–12.60)	34.47 (32.20–35.73)	14.37 (13.18–15.63)	32.90 (31.45–34.88)	13.03 (11.77–14.48)
VNCp	34.93 (31.05–39.88)	19.80±2.31	32.53 (30.25–35.77)	17.60 (16.43–19.42)	42.00 (38.88–46.32)	12.93 (11.95–13.83)	-91.87±10.75	12.50±1.71	48.60 (45.33–49.60)	14.87 (13.03–16.28)	42.29±3.27	15.40 (14.65–16.00)	61.87 (55.72–66.38)	13.57±1.22	52.59±3.33	13.77 (12.17–15.22)	33.47 (32.02–35.08)	13.78±2.47	31.93 (30.68–33.52)	13.73±2.38
P*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
P <sup>†</sup>	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.135	<0.001	<0.001	<0.001	<0.001	0.524	<0.001	<0.001	<0.001	<0.001
P <sup>‡</sup>	0.041	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.394	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	0.003	0.045	<0.001	0.169

Data are expressed as the mean ± standard deviation or median (interquartile range). \*, comparison of TNC and VNCA; †, comparison of TNC and VNCp; ‡, comparison of VNCA and VNCp. CT, computed tomography; HU, Hounsfield units; SD, standard deviation; TNC, true non-contrast; VNC, virtual non-contrast; VNCA, virtual non-contrast image from the arterial phase; VNCp, virtual non-contrast image from the portal venous phase; Renal cortex-L, left renal cortex; Renal cortex-R, right renal cortex.

**Table S3** Comparison of the SNR and CNR between TNC and VNC images

Scan	Tumor		Normal colorectum		Muscle		Subcutaneous fat		Abdominal aorta		Portal vein		Liver		Spleen		Renal cortex-L		Renal cortex-R	
	SNR	CNR	SNR	CNR	SNR	CNR	SNR	CNR	SNR	CNR	SNR	CNR	SNR	CNR	SNR	CNR	SNR	CNR	SNR	CNR
TNC	1.59 (1.46–1.86)	-0.46±0.45	1.67±0.27	-0.59±0.43	2.90 (2.79–3.12)	NA	-5.23±1.28	-9.01±1.79	2.52 (2.26–2.89)	-0.04±0.39	2.55±0.41	-0.18±0.39	4.15±0.68	1.29±0.68	3.98±0.46	0.64±0.45	2.31±0.41	-0.54±0.35	2.25±0.39	-0.68±0.33
VNCA	1.95±0.36	-0.57±0.62	2.00±0.39	-0.71±0.53	3.83 (3.57–4.23)	NA	-6.37±1.66	-12.35±1.91	3.38±0.47	0.77±0.50	2.80 (2.59–3.22)	-0.04±0.50	4.99±0.77	1.81±0.83	4.52±0.70	0.91±0.53	2.46±0.49	-0.65±0.53	2.60±0.49	-0.78±0.47
VNCp	1.81±0.34	-0.59±0.57	1.87±0.34	-0.74±0.49	3.17 (2.94–3.63)	NA	-7.47±1.23	-10.33±1.67	3.14 (2.94–3.74)	0.38±0.44	2.68 (2.56–2.97)	-0.06±0.41	4.61±0.60	1.46±0.60	3.88±0.57	0.75±0.47	2.54±0.46	-0.69±0.48	2.44±0.46	-0.81±0.44
P <sup>†</sup>	<0.001	0.003	<0.001	0.002	<0.001	NA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.011	0.005	<0.001	0.003
P <sup>‡</sup>	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.052	0.001	<0.001	<0.001	0.019	<0.001
P <sup>§</sup>	<0.001	0.52	<0.001	0.283	<0.001	NA	<0.001	<0.001	0.479	<0.001	0.007	0.456	<0.001	<0.001	<0.001	<0.001	0.217	0.136	0.009	0.367

Data are expressed as mean ± standard deviation or median (interquartile range). †, comparison of TNC and VNCA; ‡, comparison of TNC and VNCp; §, comparison of VNCA and VNCp. SNR, signal-to-noise ratio; CNR, contrast-to-noise ratio; TNC, true non-contrast; VNC, virtual non-contrast; Renal cortex-L, left renal cortex; Renal cortex-R, right renal cortex; VNCA, virtual non-contrast image from the arterial phase; VNCp, virtual non-contrast image from the portal venous phase; NA, not applicable.



**Figure S1** Bland-Altman plots of the measurement agreement of the CT attenuation on the TNC images and VNC images in all regions. TNC, true non-contrast; VNC, virtual non-contrast; VNCa, virtual non-contrast image from the arterial phase; HU, Hounsfield units; SD, standard deviation; VNCp, virtual non-contrast image from the portal venous phase; Renal cortex-L, left renal cortex; Renal cortex-R, right renal cortex; CT, computed tomography.