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Supplementary Material

Patient	PCCT CTDI _{vol,32cm} [mGy]	Std. CTDI _{vol,32cm} [mGy]
1	19.5	16.5
2	7.08	9.24
3	18.2	16.2
4	10.2	10.1
5	6.76	8.17

Table S1: The CT Dose Index of the PCCT scan and the standard scan in the radiotherapy department for each patient. The standard scans were dual-energy twin-beam CT for all patients except patient 2, who underwent a rapid kV-switching dual-energy CT.

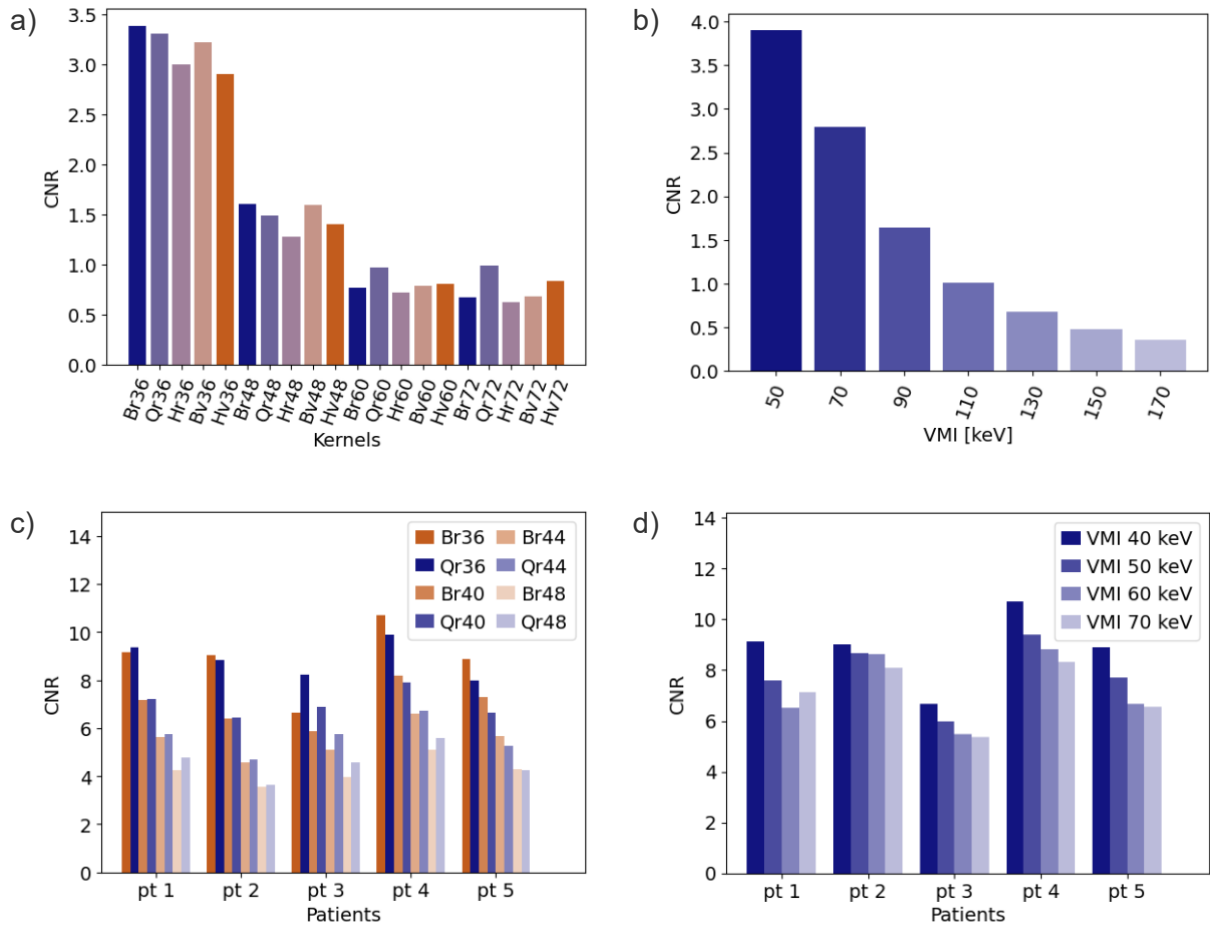


Figure S1: CNR results for both the phantom (a-b), measured between iodine and solid water ROIs, and the individual patients (c-d), measured between prostate and bladder ROIs. a) Phantom CNR values for different reconstruction kernels using the VMI at 40 keV. b) Phantom CNR values for different VMI energies using the Br36 kernel. c) Individual patient CNR values for different reconstruction kernels using the VMI at 40 keV. d) Individual patient CNR values for different VMI energies using the Br36 kernel.

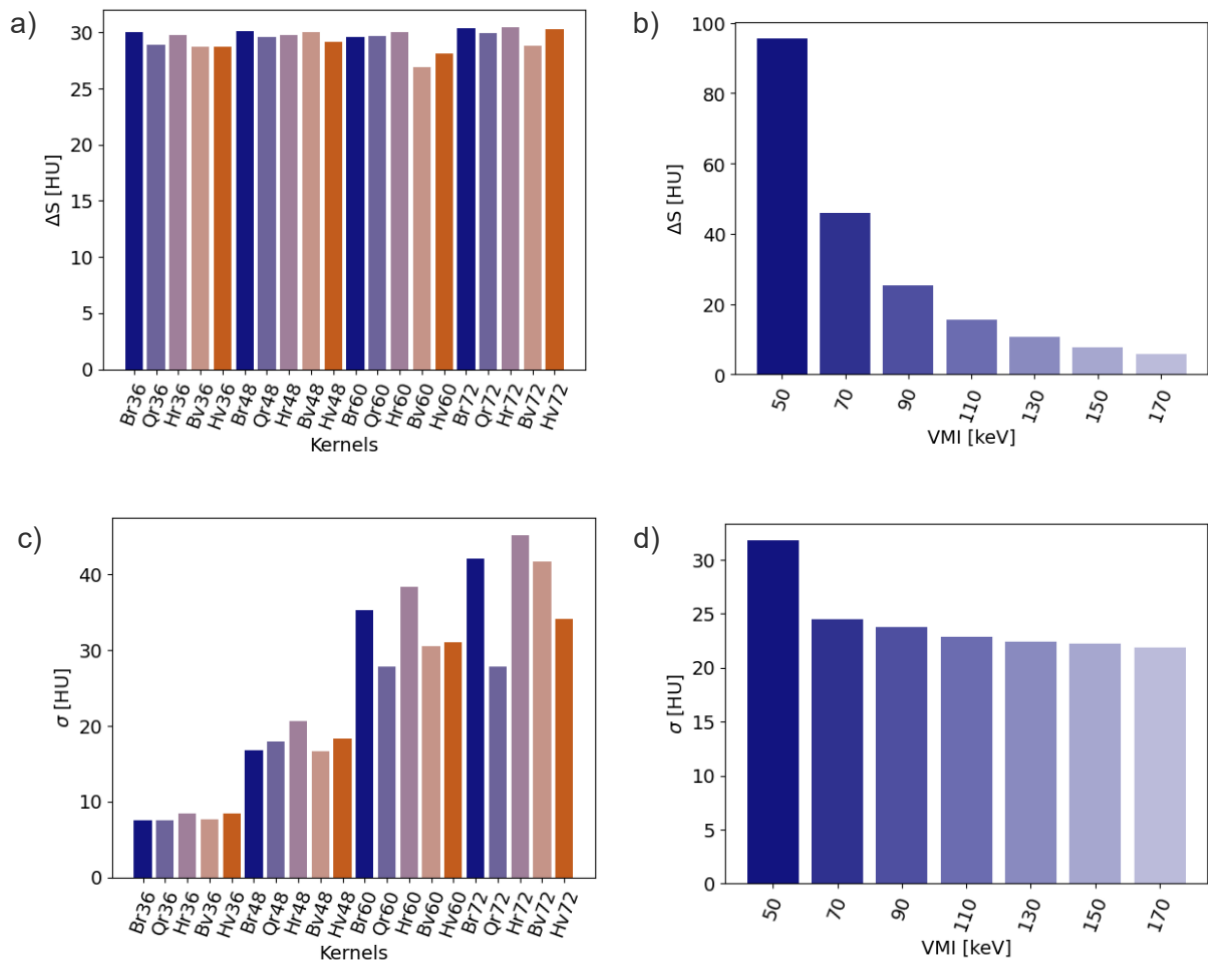


Figure S2: Contrast (ΔS , *a-b*) and noise (σ , *c-d*) results for the phantom. *a)* Contrast between the iodine and solid water ROIs for different reconstruction kernels at the 40 keV VMI. *b)* Contrast between the iodine and solid water ROIs for different VMI energies using the Br36 kernel. *c)* Noise, measured as the standard deviation in the solid water ROI, for different reconstruction kernels at the 40 keV VMI. *d)* Noise, measured as the standard deviation in the solid water ROI, for different VMI energies using the Br36 kernel.

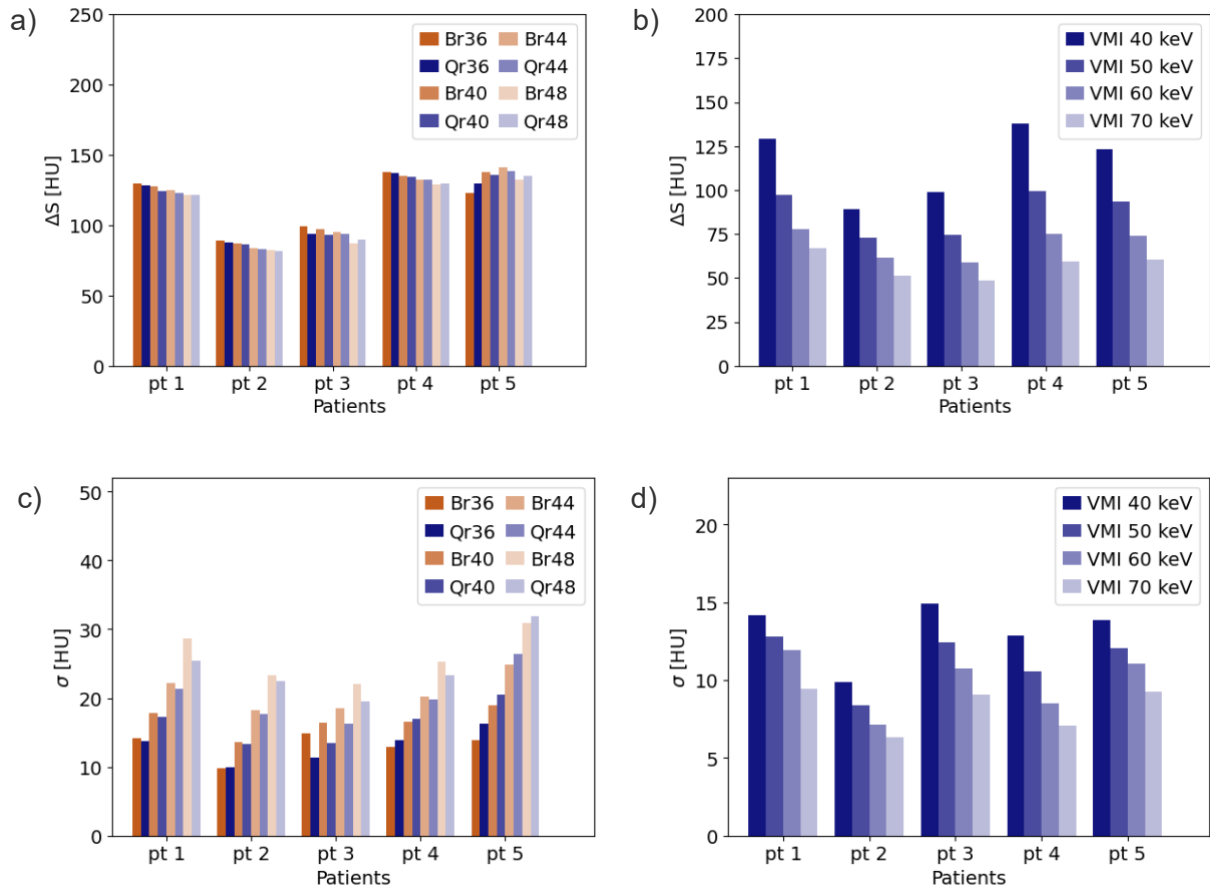


Figure S3: Contrast (ΔS , a-b) and noise (σ , c-d) results for the individual patients. a) Contrast between the prostate and bladder ROIs for different reconstruction kernels using the VMI at 40 keV. b) Contrast between the prostate and bladder ROIs for different VMI energies using the Br36 kernel. c) Noise, measured as the standard deviation in the muscle ROI, for different reconstruction kernels using the VMI at 40 keV. d) Noise, measured as the standard deviation in the muscle ROI, for different VMI energies using the Br36 kernel.