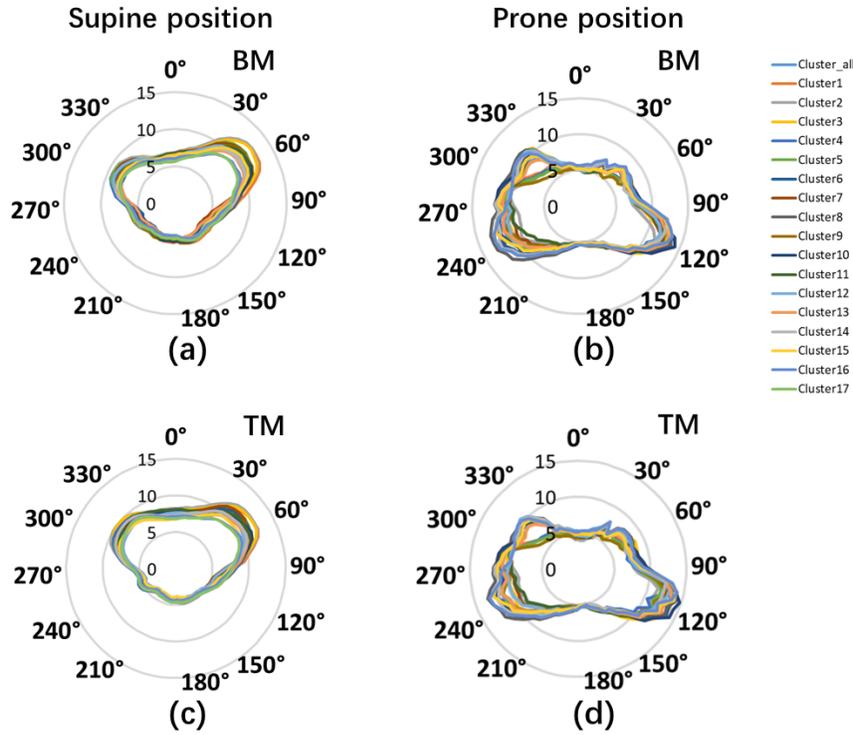


**Figure S1.** An example of the workflow of the WET changes at  $0^\circ$ . (a) and (b): The CT (plan and daily) images and reference coordinate axes. (c), (d), and (e): 2D matrix of WET<sub>plan</sub>, WET<sub>daily with BM</sub>, and TM in the  $0^\circ$  heat map, respectively. The coordinate systems for (d) and (e) were adjusted using BM and TM based on the (c). (f) and (g): 2D matrix of the absolute WET change heat map of the overlapping region with BM and TM in  $0^\circ$  beam pass, respectively.  $\Delta$ WET is the average value of the absolute WET change; red arrows: beam direction. Orange arrows: WET calculation range, yellow line: identified paths. The cross-section of each identified path is equal to the voxel of CT ( $1.07 \text{ mm} \times 1.07 \text{ mm}$ ).



**Figure S2.** The polar plots show the mean  $\Delta$ WET for 18 patient clusters, with bone matching (BM) (a-b) and tumor matching (TM) (c-d) shown separately. Each line in the polar plots represents a different cluster of patients, with a total of 18 clusters used including 17 clusters with 6 patients and one cluster (cluster\_all) with 8 patients. For the cluster including patient 5, the mean values in prone position were calculated using data from the remaining five patients due to the unavailability of CT data for patient 5 in the prone position.

**Table S1.** Beam arrangement with three BCs for each fraction

**Table S1.1** Beam arrangement in the first nine fractions (for CTV1)

Patient number	position	Beam configuration	The first nine fractions								
			1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>
1-8	Supine	BC_original (0° ,90° and 270°)	0°	90°	270°	0°	90°	270°	0°	90°	270°
		BC_fixed (355° ,110° and 255°)	355°	110°	255°	355°	110°	255°	355°	110°	255°
		BC_gantry (345° ,150° and 210°)	345°	150°	210°	345°	150°	210°	345°	150°	210°

**Table S1.2** Beam arrangement in the last three fractions (for CTV2)

Patient number	position	Beam configuration	The three last fractions		
			10 <sup>th</sup>	11 <sup>th</sup>	12 <sup>th</sup>
1-4,6-8	Prone	BC_original (180°)	180°	180°	180°

		BC_fixed (180°)	180°	180°	180°
		BC_gantry (0°)	0°	0°	0°
5	Supine	BC_original (0°)	0°	0°	0°
		BC_fixed (0°)	0°	0°	0°
		BC_gantry (0°)	0°	0°	0°

**Table S2.** Three beam schedules for the BC\_gantry

<b>Beam schedule</b>												
day	<b>Supine position</b>									<b>Prone position</b>		
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
Order 1*	345°	150°	210°	345°	150°	210°	345°	150°	210°	0°	0°	0°
Order 2	150°	150°	150°	210°	210°	210°	345°	345°	345°	0°	0°	0°
Order 3	345°	345°	345°	150°	150°	150°	210°	210°	210°	0°	0°	0°

\* Shown in the main text

**Table S3.** V95% of CTV1 and CTV2 with the BC\_gantry in three schedules

		Accumulated dose					
		TM			BM		
		Order 1	Order 2	Order 3	Order 1	Order 2	Order 3
Case 1	CTV1	72.9%	81.2%	68.1%	79.3%	78.0%	68.0%
	CTV2	77.5%	82.8%	75.2%	76.5%	75.7%	69.6%
Case 2	CTV1	98.1%	97.0%	99.2%	95.7%	95.4%	96.4%
	CTV2	96.3%	96.2%	99.4%	95.7%	96.1%	96.5%
Case 3	CTV1	88.3%	85.1%	92.6%	88.4%	86.4%	90.1%
	CTV2	92.6%	89.2%	91.4%	89.1%	87.2%	89.4%
Case 4	CTV1	94.2%	94.8%	93.7%	94.7%	94.6%	93.7%
	CTV2	93.7%	93.2%	93.4%	93.2%	93.7%	92.6%
Case 5	CTV1	90.3%	87.9%	90.6%	76.9%	73.5%	76.4%
	CTV2	91.8%	87.5%	90.7%	49.8%	48.0%	48.5%
Case 6	CTV1	94.4%	92.8%	92.2%	91.5%	92.2%	91.0%
	CTV2	96.2%	93.6%	97.1%	94.0%	94.7%	94.3%
Case 7	CTV1	93.1%	91.3%	91.1%	86.4%	85.9%	85.5%
	CTV2	94.4%	91.4%	93.3%	91.8%	92.1%	90.5%
Case 8	CTV1	98.6%	99.3%	98.5%	99.1%	99.2%	98.7%
	CTV2	99.8%	100.0%	100.0%	100.0%	99.8%	98.9%

CTV1 is based on the first nine fractions. CTV2 is based on all twelve fractions.