

Theme: Clinical

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Abstract Title:Comparison of Setup Accuracy Between Two Immobilization Techniques for Proton Radiotherapy of Brain Tumors

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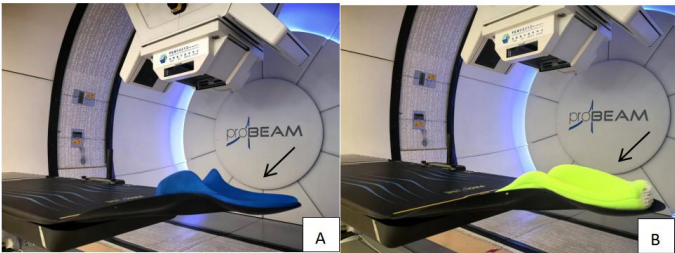
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Background / Aims:

- This study compared the setup accuracy between two immobilization techniques: standardized headrest and customized thermoplastic padding for head support.
- The aim was to provide clinical reference for selecting a more accurate technique in proton radiotherapy for brain tumors.

Subjects and Methods:

- We retrospectively analyzed 24 patients who underwent proton radiotherapy for brain tumor treatment at our center.
- Among these 12 patients used a standardized headrest with a low-temperature thermoplastic facemask (Group A), and the remaining 12 patients used a customized thermoplastic padding headrest with the same facemask (Group B).
- Daily position correction data were retrieved from the image guidance system based on the191°cone-beam CT equipped in the Varian ProBeam system.
- And compared between the two groups in six dimensions: vrt, lng, lat, pitch, roll, and rtn.
- Figure.1.Two Head support techniques.



Result:

- T-test showed that Group B had significantly lower values of position correction than Group A in the lng , pitch, and roll directions ($p < 0.05$).
- Table.1.GroupA and B setup errors data

	N	VRT (cm)	LNG (cm)	LAT (cm)	PITCH (°)	ROLL (°)	RTN (°)
GROUP-A	376	0.08±0	0.15±	0.12±	0.82±	1.1±0.	0.72±
		.07	0.12	0.11	0.68	76	0.52
GROUP-B	366	0.08±0	0.13±	0.11±	0.98±	0.94±	0.74±
		.08	0.11	0.10	0.85	0.74	0.68
	<i>t</i>	0.493	2.56	0.651	2.996	2.992	0.575
	<i>P</i>	0.62	0.01	0.52	0.002	0.002	0.56

Conclusion:

- The customized thermoplastic padding headrest demonstrates better reproducibility of patient head position than the standardized headrest for proton radiotherapy of brain tumors.