

## Optimizing craniospinal radiotherapy delivery in a pediatric patient affected by supratentorial PNET: a case report

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### ABSTRACT

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New advances in radiation therapy for children allow increased conformability and reduced doses to non-target tissues. We report our experience in treating a 4-year-old child with craniospinal tomotherapy after surgery of the primary tumor, a supratentorial primitive neuroectodermal tumor. The tomotherapy plan was compared with conventional craniospinal irradiation, 3D conformal radiation therapy, and intensity-modulated radiation therapy plans. The possible disadvantages of tomotherapy related to the radiation dose to organs at risk, treatment planning, and anesthesia should be carefully considered as the use of the technique is not suggested in a general manner, but selectively, in critical pediatric radiotherapy cases. **Free full text available at [www.tumorionline.it](http://www.tumorionline.it)**

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**Key words:** tomotherapy, pediatric tumors, IMRT, craniospinal irradiation, integral dose.

### Abbreviations

3D-CRT: three-dimensional conformal radiation therapy; TOMO: tomotherapy; IMRT: intensity-modulated radiation therapy; MV: megavolt; CT: computed tomography; MVCT: megavoltage computed tomography; CSI: craniospinal irradiation; PNET: supratentorial primitive neuroectodermal tumor; MRI: magnetic resonance imaging; PTV: planned target volume; OAR: organ at risk; ID: integral dose; DVH: dose-volume histogram; Convent: conventional therapy.

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