The purpose of this study was to analyze the accuracy of patient position by comparing two immobilization devices for pediatric brain tumor patients. We analyzed the data for 99 treatments involving 8 patients. Patients were immobilized with either a relocateable head frame with a dental impression or vacuum bag with or without sedation. Orthogonal portal films were taken once weekly. These verification films were compared to the Digitally Reconstructed Radiographs (DRRs) that were generated by a 3D treatment planning system. Deviations of the patient position from the original planning references were measured using a program called Portal Image Processing System (PIPS). The over-all systematic and random errors were analyzed. The head frame had an average (systematic) deviation ranging from 0.1 mm to 1.1 mm, with a standard (random) deviation from 1.2 mm to 2.3 mm. The vacuum bag had an average (systematic) deviation ranging from –0.4 mm to 0.3 mm, with a standard (random) deviation from 1.6 mm to 2.3 mm. The effect of sedation on the patient position will be reported. This project will be a useful reference for the radiation oncologist to determine the appropriate planning target volume in the context of pediatric oncology.