To compare treatment plans obtained with Cyberknife (CK) to those of other commonly used radiosurgical modalities, such as gamma knife (GK), linac multiple arcs (LMA) and conformally shaped static fields (CSSF) and intensity modulated radiotherapy (IMRT). An ellipsoid simulated target was chosen centrally located in a 3-D model of a patient head acquired with MR or CT images. It was 25 mm in diameter and 35 mm in length. Treatment plans were evaluated using dose a volume histogram and other commonly used radiosurgical parameters such as: target coverage (CO), homogeneity index (HI) and conformity index (CI). All selected treatment modalities were equivalent in providing full target coverage. For dose homogeneity, all modalities except for multiple isocenter plans for GK (HI = 2.0) were similar (HI $\approx$ 1.25). Dose conformity was essentially equivalent for all treatment plans except for IMRT, which had a slightly higher value (CI $\approx$ 1.27). There was a substantial variation in the radiation dose to normal tissue between the studied modalities, particularly at the lower dose levels. For a target of limited volume and essentially of any shape, one could obtain similarly good conformal dosimetry with CK and GK. For a regular-shaped but other than spherical target, homogenous dose distribution could be obtained with all selected modalities except for multiple isocenters LMA or GK. Both IMRT and CSSF offered good alternative treatment modalities to CK, GK, or LMA radiosurgery, with slightly inferior dosimetry in conformity (IMRT).