The purpose of this work was to evaluate tumor control and side effects associated with fractionated stereotactic radiotherapy (FSRT) in the management of residual or recurrent pituitary adenomas. We report on 37 consecutive patients with pituitary adenomas treated with FSRT at our department. All patients had previously undergone surgery. Twenty-nine patients had nonfunctioning, 8 had hormone-producing adenoma. The mean total dose delivered by a linear accelerator was 49.4 Gy (range 45-52.2 Gy), 5 × 1.8 Gy weekly. The mean PTV was 22.8 ccm (range 2.0-78.3 ccm). Evaluation included serial imaging tests, endocrinologic and ophthalmologic examination. Tumor control was 91.9 % for a median follow-up time of 57 months (range 2-111 months). Before FSRT partial hypopituitarism was present in 41 % of patients, while 35 % had anterior panhypopituitarism. After FSRT pituitary function remained normal in 22 %, 43 % had partial pituitary dysfunction, and 35 % had anterior panhypopituitarism. Visual acuity was stable in 76 % of patients, improved in 19 %, and deteriorated in 5 %. Visual fields remained stable in 35 patients (95 %), improved in one and worsened in 1 patient (2.7 %). FSRT is an effective and safe treatment for recurrent or residual pituitary adenoma. Good local tumor control and preservation of adjacent structures can be reached, even for
large tumors.