

# Clinical potential of microbeam radiosurgery

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Stereotactic radiosurgery is a powerful non-invasive treatment bridging the gap between radiotherapy and surgery. Accurate delivery of high energy millimetric beams using frame-based or recently developed frameless robotic devices provides a safe and highly effective treatment option for a variety of benign and malignant lesions. The convergence of hundreds of beams from multiple directions concentrates a high dose on the target with a 80% to 20% fall-out of less than 3 mm. Irradiation is usually performed in single stage and can deliver doses as high as 120 Gy . For decades radiosurgery has been confined to the treatment of intracranial lesions due to the inability to irradiate accurately targets located in moving parts of the body. Robotic image-guided radiosurgery is now able to treat fixed or moving lesions located anywhere in the body. Frameless delivery provides also the ability to treat radiosensitive targets such as the optic nerve and the spinal cord using hypofractionation. Stereotactic microbeam radiosurgery could add to current techniques the tissue sparing properties of microscopic beams as well as even steeper dose fall-outs. The development of stereotactic microbeam radiosurgery might prove to be extremely challenging due to a series of technical drawbacks but it's clearly an interesting and potentially applicable technique with wide and unexplored clinical potentials .