

CRITICAL ISSUES TO IMPLEMENT A RADIOSURGERY DIVISION: PHYSICAL AND MEDICAL ASPECTS

Villar, RC; Menegussi, G; Rodrigues LN; Silva, MA; Rubo RA; Furnari L

Institute of Radiology, Radiotherapy Division, Hospital das Clinicas, Medicine School,
University of São Paulo

Background: Radiosurgery is a very specialized radiotherapy technique. The high precision of the fields and the volumes and dose prescriptions have different concepts comparing with non stereotactic treatments. To implement a radiosurgery division it is necessary attention to critical physical and medical aspects.

Purpose: To describe the expected difficulties and to point the critical issues which are important to implement a radiosurgery division.

Methods and results: The ideal condition is a specialized team in radiosurgery. In the medical point of view, the diseases to be treated are different from the ones of the common radiotherapy. The treatment of benign diseases like AVM, acoustic neurinomas, trigeminal neuralgia are specialized medical concepts. It is necessary to exchange experience with recognized and experimented centers of radiosurgery to assimilate all the knowledge involved in those treatments. It is essential to know what we have to draw, which doses are necessary to treat each disease, when it is better to fractionate the dose, which are the expected results, the management of the follow up, the results and side effects, when it is possible to re-treat a patient, which are the constraints used in fractionated, single dose treatments and re-treatments. We recommend that at least one physician does a fellowship as part of the implementation program. In our institution, one physician did the fellowship with AIEA support and it was considered extremely important to develop the protocols of treatment. The physical aspects are also so or more important than the medical aspects. The delivery of the dose with high precision and with stereotactic devices, are so specialized that it is also recommended a fellowship in a recognized and experimented center to learn about the technologies. Dosimetric aspects are very important. The management of the dosimetric protocols frequently induce questions to be answered and exchanged. It is also important to know which are the dosimetric equipments necessary, what is the tolerance of the methods and how to manage specialized devices developed to be used in radiosurgery. In our institution, for example, we received a stereotactic frame with changed coordinates. It was recognized by our physicians in the commissionment. Although the dosimetric and quality assurance are very specialized, the management plannings are also very important. The training of the physicists in these clinical aspects is extremely important. We also have to know how to put the fields, how to avoid the possibility of collisions, what is the ideal grid to calculate, how to acquire and work with the images and the fusion software. In our institution, with the AIEA support, one physicist did a training in dosimetry and two did a dosimetric and clinic fellowship.**Conclusion:** We implemented a radiosurgery division three months ago and in this period, we have treated almost 30 radiosurgery with safety and success. All the doubts that appeared during the implementation and the treatments were easily solved by at least one member of the team. We attribute these results to the experience exchanged during the fellowships and because all the aspects involved were exhaustively tested by the team.