

Quality and Safety in Stereotactic Radiosurgery Stereotactic Body Radiotherapy

Stereotactic radiosurgery (SRS) has been an effective modality for the treatment of benign and malignant cranial disease for over 50 years. Increasingly, the stereotactic approach is being applied in a number of extracranial disease sites. Stereotactic body radiation therapy (SBRT) holds significant potential for improving tumor control rates across a range of locations and histologies. SRS / SBRT are fundamentally different from conventional radiotherapy in that the intent is to deliver an ablative dose that overcomes all of the abilities of a cancer cell to defend itself. It is inherently aggressive, much like a surgical approach, and therefore an increased rate of acute complications compared with conventional radiotherapy could be expected. Both SRS and SBRT require specialized technology, meticulous procedures, and dedicated personnel. Several recent high-profile medical radiation events have generated considerable attention within the media, and serve to remind the profession that close attention to safety and ongoing quality improvement is a fundamental responsibility. The main aim of this symposium will be to address safety and quality in SRS and SBRT, highlighting the errors that have occurred in the past and determining how they can be minimized in a systematic way, starting from patient simulation, to planning and verification, immobilization and localization, delivery, and patient follow-up, and to provide some recommendations for SRS / SBRT processes and procedures that may be beneficial in understanding and reducing risks inherent to the modalities. Specific issues to be addressed include:

- An overview of the accuracy requirements and the need for high levels of safety and quality in SRS/SBRT, as summarized in recent AAPM, ASTRO and ACR reports.
- Highlights from recent media events related to SRS, examining what went wrong and why; what could go wrong; and what nominal safety procedures, commissioning and routine QA and testing are needed for SRS and SBRT programs to ensure errors are minimized.
- Verification requirements for accurate image-based localization and delivery in both rigid sites (e.g. CNS, spine) and moving targets (e.g. thorax (lung), liver, pancreas, etc.).