

AbstractID: 9824 Title: Introduction to Extracranial Stereotactic Radiosurgery: (I)  
Physics and Technology

This refresher course on Extracranial Stereotactic Radiosurgery (ESR) will be presented in three parts, including reviews of the current issues of (I) physics, dosimetry, and technology, (II) clinical history and experience, and (III) radiobiological considerations and future directions. The development of software and hardware components applied to radiosurgical treatments for specific extracranial tumors has been dramatic in recent years. In the physics and technology section the focus of the review will be on the high resolution beam delivery systems currently available and the precision patient specific immobilization and verification technologies that have been developed for ESR. A brief review of the novel developments and options in beam delivery systems will be presented, including intensity modulated radiotherapy with micro-multi-leaf collimator systems. Secondly, an overview will be presented of the successful practices of patient immobilization, simulation and relocation/repositioning verification, and organ motion management, including infra-red technology to monitor patient positioning and the potential for optimized delivery with respiratory gating. These developments in beam delivery systems and patient immobilization and verification devices serve to provide the necessary technology for highly escalated doses to well defined gross tumor volumes and minimized damage to surrounding tissue and vital structures.