Stereotactic Radiosurgery (SRS)

Stereotactic radiosurgery (SRS) is a non-invasive therapeutic procedure that delivers **high-dose ionizing radiation** to a precisely defined intracranial target with **sub-millimeter accuracy**, typically in **one to five fractions**.

Unlike conventional radiotherapy, SRS relies on:

- Stereotactic localization systems (frame-based or frameless)
- Advanced imaging techniques (CT, MRI, PET)
- Steep dose gradients to spare surrounding healthy tissue

SRS is most commonly used for:

- Brain metastases
- Arteriovenous malformations (AVMs)
- Vestibular schwannomas
- Meningiomas
- Functional disorders (e.g., trigeminal neuralgia)

Despite the term "surgery," no incision is made. The "surgical" aspect refers to the **precision and therapeutic intent**, akin to resection.

Key Concepts

- Single-session (classic SRS) vs. Hypofractionated stereotactic radiotherapy (HSRT)
- Delivered using systems such as Gamma Knife, CyberKnife, or LINAC-based platforms

Clinical goal: Maximize tumor control or lesion ablation while minimizing damage to adjacent critical structures.

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