

## > Pulmonologists

As a pulmonologist, you encounter a variety of tumors. And providing these patients with viable and effective treatment options is a significant part of your practice. In addition, you know that medically inoperable patients and marginally resectable and unresectable tumors complicate this process, as do the limitations of chemotherapy and conventional radiotherapy.

At CyberKnife of Southern California at Vista, we make it possible to treat patients and tumors inappropriate for invasive surgery. Using stereotactic radiosurgery, which has been treating intracranial tumors successfully since the 1960s, we ablate localized, solid-mass tumors. But while radioablation once required a stereotactic frame, limiting treatment to the cranium, CyberKnife® tracks the tumor's true location during treatment and continually adjusts for movement. This permits radiosurgery on tumors anywhere in the body. CyberKnife's unprecedented accuracy also extends to the treatment of tumors that move with respiration, thanks to technology that "learns" and matches patients' respiratory patterns.

CyberKnife differs from radiation therapy, which irradiates both normal and cancerous tissues. CyberKnife delivers an ablative dose to the tumor with submillimeter accuracy and minimal exposure of normal tissue. As a result, we can treat inoperable patients, shrink tumors for less radical resections, destroy radioresistant tumors and treat patients previously treated with radiation. In addition, patients experience short, painless treatments with far fewer side effects, limited (if any) downtime and an immediate return to activities.

### CLINICAL INDICATIONS FOR CYBERKNIFE.

With CyberKnife, the range of tumors treatable with stereotactic radiosurgical ablation is unprecedented. Which patients can benefit from this advanced method of tried-and-true radioablation? Here are some of the clinical situations for which CyberKnife may serve as a viable and/or less risky alternative to thoracic surgery...

- **Localized, solid-mass tumors** – While conventional radiation therapy doesn't do as well in the treatment of these kinds of lesions, CyberKnife's ablative radiation dose is quite effective in destroying or shrinking them. Although CyberKnife is contraindicated for widespread metastatic disease, it is effective in nonsurgical treatment of certain metastatic tumors or tumors that need to be treated for palliative reasons.
- **Medically inoperable patients** – Because CyberKnife is noninvasive, it can treat patients who can't endure surgery or who have a high risk for postoperative complications. With CyberKnife, patients are treated in one to five hour-long sessions after which patients can immediately return to their lives. All with far less risk, side effects, recovery period, pain, scarring and hospital stay than surgery.
- **Unresectable & marginally resectable tumors** – Many localized solid-mass tumors that are not resectable may still be treatable – and effectively – by CyberKnife. The same is true for those that are marginally resectable. CyberKnife often is used alone to treat these lesions but can also be combined with surgery and other treatments to maximize treatment benefit. CyberKnife can also be used preoperatively to reduce tumor volume to make it more easily resected.
- **Tumors that move** – CyberKnife revolutionizes the treatment of lung tumors by tracking true tumor location and "learning" the patient's respiratory pattern. CyberKnife's delivery source moves with that pattern, maintaining exceptional precision throughout treatment and delivering the ablative radiation beam in synchrony with the tumor's movement.
- **Tumors adjacent to critical structures** – CyberKnife's submillimeter precision means we're able to destroy or shrink tumors near to or involved with critical structures. In some cases, critical structures may be the reason a tumor is considered unresectable or only marginally resectable. Tumor proximity to critical structures also increases risk of surgical complication. With significantly less irradiation of surrounding tissues, CyberKnife can even treat tumors untreatable with convention radiotherapy because of nearby critical anatomy.
- **Prior radiation treatment** – With conventional radiation therapy, previous treatment often precludes future radiotherapy. With CyberKnife, however, high-dose, short-course, focused treatment is so precise that cumulative exposure is significantly less. Therefore, previous radiation treatment is not a contraindication for CyberKnife.
- **Tumors with high risk of recurrence** – For tumor types known to have a high likelihood of recurrence, CyberKnife's low cumulative exposure makes it an ideal treatment option. If the tumor recurs, the patient can be treated with CyberKnife again (and perhaps multiple times) or be treated with other forms of radiation.
- **Radioresistant tumors** – It's true that some tumor types are resistant to the radiobiological effect of conventional radiation therapy. But they aren't resistant to radiosurgical ablation, which destroys the tumor while preserving surrounding tissue.
- **Palliation** – While it isn't indicated for cases of obstructive viscera, CyberKnife can destroy or shrink tumors for reasons of pain relief even if cure is no longer an option.