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CyberKnife Offers Alternative in Head and Neck Cancer



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The acquisition of CyberKnife by Aurora St. Luke's Medical Center has offered additional treatment opportunities for many patients who might have otherwise had none. In the specialty of otolaryngology, CyberKnife is first and foremost a cancer treatment tool. Keep in mind, however, CyberKnife also offers treatment capabilities for non-malignant tumors; these will be discussed in future articles of this newsletter.

In the arena of head and neck cancer, CyberKnife offers an additional option for our most unfortunate patients who are stricken with multiple recurrences. Recurrence in head and neck cancer is not uncommon and in the past options for failed surgery were full-field radiation therapy or localized boosts.

Salvage surgery, when possible, was an option for primary radiation failures as well as primary surgical failures. The real problems arose when surgery was no longer an option due to the involvement of vital structures, and additional full-field radiation therapy was not advisable because the risks to specific structures were too great. CyberKnife allows us to give radiation therapy with surgical precision to protect all the vital structures that would otherwise be at risk. These next cases are some representatives of what was made possible by CyberKnife.

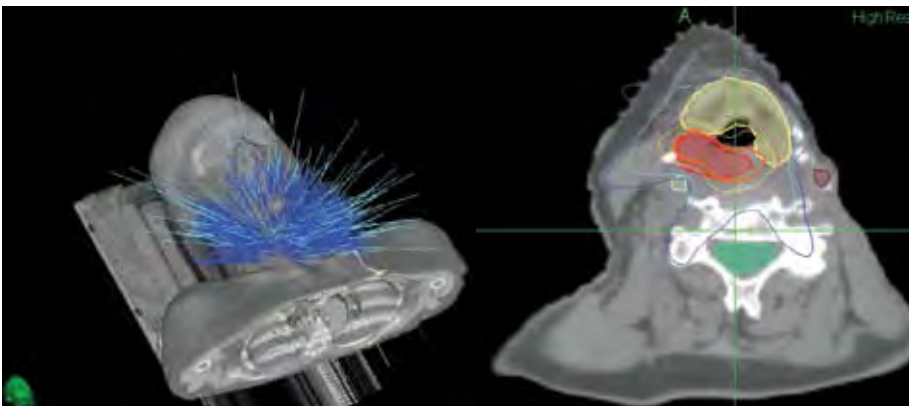
Case Study A

Patient A had a history of ethmoid sinus cancer that had been treated initially with surgery. Unfortunately, a recurrence occurred approximately three years later and he underwent more extensive surgery involving both a naso-orbital and cranial approach with resection of all gross identifiable disease.

The patient had radiation many years ago for a pituitary tumor and was not felt to be a safe candidate for standard post-operative radiation. The complexity of the location would have made standard-field radiation unlikely even if he had not had prior cranial radiation. The key here was to try and protect the eyes, optic nerves and brainstem, yet cover all the potentially involved areas left after surgery.

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Beam configuration and radiation dose distribution for a typical CyberKnife neck treatment.



CyberKnife allowed careful, detailed, 3D surgical mapping of all the vital structures as well as the tumor bed. Treatments were given over three days with minimal sequelae and no discomfort.

Case Study B

Patient B had a history of cancer arising from the ear, which then spread to the temporal bone and neck. He initially underwent a local resection of the ear. With the first recurrence, he then underwent a temporal bone resection along with a neck dissection and radiation therapy. Unfortunately a second recurrence occurred and a revision neck dissection was done with additional boost radiation therapy. The patient did well but developed a third recurrence in the neck around the carotid artery and underwent chemotherapy. The lesion did not respond to chemotherapy.

This patient was then referred to Aurora St. Luke's to consider further options. Standard radiation was not an option as

he had already received maximum doses to vital areas, specifically the carotid artery. Surgery at this point would most likely result in a carotid rupture, inadequate resection, a non-healing wound with a fistula or, possibly, death.

CyberKnife allowed for protection of the carotid artery and spinal cord and delivered additional therapy localized to the areas of recurrence with surgical precision without creating a wound. This was performed in three convenient treatment sessions without any discomfort.

It is important to realize that although CyberKnife may not always offer curative options for head and neck cancer, it does now offer additional treatments for patients with recurrent recalcitrant cancer who previously had no hope. This containment of disease, even if for a short time, is being offered with little or no side effects.