

# Long-term results confirm success of MGH-developed laser treatment for vocal-cord cancer

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The first long-term study of a pioneering endoscopic laser treatment for early vocal-cord cancer, developed at Massachusetts General Hospital (MGH) and previously shown to provide optimal voice outcomes, finds that it is as successful as traditional approaches in curing patients' tumors while avoiding the damage to vocal quality caused by radiotherapy or by conventional laser or cold-instrument surgery. The report in the December *Annals of Otology, Rhinology & Laryngology* describes results for the first 117 patients treated for vocal-cord cancer with the green-light potassium-titanyl-phosphate (KTP) laser by Steven Zeitels, MD, director of the MGH Voice Center and developer of the procedure.

"Use of the KTP laser, which eradicates blood vessels in a process called photoangiolytic, was conceived to treat vascular malformations in infants' delicate skin; but we have demonstrated that this specialized laser is especially effective in treating vocal-cord cancer," says Zeitels. "These tumors have a denser blood supply than the underlying vocal-cord tissue, preservation of which is necessary to retain optimal vocal quality. As reported in this paper, our success in curing patients with small tumors with the angiolytic KTP laser is extremely high and very high for those with mid-sized tumors.

"Since radiation can damage the non-cancerous tissue of one or both vocal cords and conventional laser surgery destroys more delicate vocal tissue than is necessary, KTP [laser treatment](#) typically produces better

vocal results while being more cost-effective," he adds. "And a key issue when selecting a treatment for vocal-cord cancer is that radiation is considered to be a single-use treatment. So it is important to preserve the option of [radiotherapy](#) for treating future, more substantial cancers, the development of which is not uncommon."

Zeitels first reported the use of the yellow-light, pulsed-dye laser to treat early vocal-cord cancer ten years ago, and in 2006 he and his colleagues introduced treatment with the more precise green-light KTP laser. Initial results with the KTP laser, describing the outcomes for 22 patients an average of 27 months after their procedures, were announced at the 2008 American Broncho-Esophagological Association (ABEA) annual meeting and published in *Annals of Otology, Rhinology & Laryngology*. A 2013 paper in the same journal reported excellent vocal outcomes for the first 92 treated patients, but neither paper included the kind of follow-up data required to confirm the treatment's long-term effectiveness in curing the tumors.

The current paper describes results for 117 patients treated with the green-light KTP laser between 2006 and 2010. Some had cancer invading both vocal cords, but none had received radiotherapy before the laser treatment. Of the 82 treated patients with small tumors, 96 percent (79 of 82) have had no recurrence more than three years after treatment, and 80 percent (28 of 35) of those with mid-size tumors also have had no recurrence. Among the 10 patients whose tumors did recur, radiation treatment was successful in controlling the cancer in 5. Overall 96 percent - 112 of 117 patients - of those treated have survived an average of almost four and a half years and are cancer-free without loss of their larynx. At this year's ABEA annual meeting the researchers received the organization's prestigious Broyles Maloney Award for their successful development of this innovative, minimally-invasive strategy for treating vocal cord cancer.

Since 2010, more than 75 additional patients have received pulsed-KTP laser treatment for early vocal-cord cancer at MGH. Zeitels recently treated a 13-year-old boy with vocal-cord cancer, a rare condition in one so young. The first child to receive the KTP laser cancer treatment, he was referred to Zeitels after cancer was discovered in a biopsy of what were originally believed to be benign human papilloma virus (HPV) warts. While in only the first months after treatment for tumors involving both vocal cords, the youth's voice has returned to near normal for a young man of his age.

Another important aspect of the green-light KTP laser approach, Zeitels adds, is that biopsy and treatment of patients whose cancer involves a single vocal cord usually can be accomplished in the same procedure, whereas radiotherapy requires a prior biopsy to determine the extent and location of the [tumor](#), followed by daily radiation treatments over approximately six weeks. For [patients](#) with tumors involving both vocal cords, a planned second-stage KTP [laser](#) treatment is done to optimize their voice outcomes. In addition, Zeitels notes, the treatment's mechanism of eradicating the blood vessels supplying a tumor - highly effective for conventional [vocal-cord cancer](#) - is even more useful for treating tumors caused by HPV infection, which are characterized by an excessive overgrowth of blood vessels.

Provided by Massachusetts General Hospital

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