Surgical Approach to Organ Preservation in the Treatment of Cancer of the Larynx

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The article by Dr. Weinstein is a discussion of the newer surgical options available for the treatment of patients with laryngeal cancer. Several aspects of the article deserve mention.

One positive aspect is that it reviews alternative treatments for laryngeal cancer. However, several misconceptions are presented that warrant discussion. The first misconception is the title of the article, "Surgical Approach to Organ Preservation in the Treatment of Cancer of the Larynx." A more accurate title would refer to limited resection or function-preserving surgery in the treatment of patients with laryngeal cancer. Is removal of "both true and false cords as well as the entire epiglottis and thyroid cartilage," as performed in a supracricoid partial laryngectomy with cricothyroidopexy, truly organ/function preservation?

The belief that the larynx is a "tone generator" can lead to a potential misinterpretation of quality-of-life studies. The author states, "Studies of voice quality after supracricoid partial laryngectomy with cricothyroidopexy have shown that, at 6 months, the phrase grouping and number or words per minute are similar to that of normal speakers, while the fundamental frequency is lower and wider than normal, suggesting voice instability."[1] The significance of the voice instability is unclear.

Furthermore, the author states that the quality of speech after this procedure is superior to that of total laryngectomy patients. This is not a fair comparison—the comparison should be to nonsurgical organ-preserving procedures. The question once again arises, if the true function of the organ is not being preserved, is this truly an organ-preserving procedure?

Other Quality-of-Life Issues

Although the author mentions that "it is the stoma and not the posttreatment voice quality that is the major determinant of quality of life,"[2] there are other determining factors derived from surveys and questionnaires. Patients treated with surgery tend to have a lower quality of life, compared to patients treated with radiation with or without chemotherapy. For example, long-term follow-up from the Veterans Affairs (VA) Laryngeal Cancer Study Group demonstrated a better quality of life in patients randomized to chemotherapy plus radiation vs surgery plus radiation.[3] In another quality-of-life study of head and neck cancers, laryngectomy patients had lower quality-of-life scores than patients treated with radiation alone.[4]

Although there are limited data on the quality of life of patients with early-stage lesions, voice quality appears to be better among patients treated nonsurgically. In a study by Vordonck-de Leeuw, voice quality following radiation therapy became comparable to the vocal performance of control speakers in 50% of patients. Also, voice quality was worse for patients who underwent vocal cord stripping for initial diagnosis instead of biopsies.[5] There is also evidence that voice quality for early laryngeal lesions is better with radiation therapy than with laser excision.[6,7] In other studies, however, as mentioned in the article, voice quality is equivalent. Thus, although there are alternative options for the treatment of early-stage lesions, there is ample evidence to show that radiation alone produces excellent results in early-stage cancers of the larynx, with minimal side effects.

Misrepresentation of Issues
Another deficiency in this article is a lack of balance and accurate reporting of results. Throughout the article, the author reports selected results on selected patients. For example, in the section entitled "Supracricoid Partial Laryngectomy With Cricohyoidepiglottopexy," the author states, "Among 67 patients with T2 lesions... the 5-year local control rate was 95.5%,"[8] and "[i]n 20 patients with T3 glottic carcinoma with vocal cord fixation, the 5-year actuarial local control rate was 90%."[9] However, the author fails to mention that both of these trials used induction chemotherapy. This is an important omission since we know that the use of induction chemotherapy changes the outcome of the disease, as seen in the VA laryngeal cancer study.[10]

The authors also fail to mention the use of radiation therapy in many of the trials. In the section "Supraglottic Partial Laryngectomy," the authors cite five references regarding the outcome of this procedure. However, three of these five series use radiation therapy in a significant number of their patients. In Lee et al, 83% of patients received postoperative radiation therapy[11]; in Spaulding et al, all patients received either pre- or postoperative radiation therapy[12]; and in Herranz-Gonzalez et al, postoperative radiation therapy was administered to node-positive patients.[13]

This important information was not presented in an article on organ preservation, although we know that the addition of radiation to surgery will compromise organ function.[14] Therefore, the question that remains unanswered is: What is the true local control rate for these procedures as a single modality?

Surgical Expertise

One of the difficulties with the surgeries mentioned in this article is that they require a high degree of surgical skill. These procedures are complex and demand significant expertise and experience. The author states, "A resident or fellow in surgical training might have been exposed to few, if any, extended vertical partial laryngectomies and extended supraglottic partial laryngectomies in training, making it difficult to use these procedures in practice." By the same reasoning, physicians-in-training will have little opportunity to master the techniques mentioned in this article, making these procedures impractical and not widely applicable. The fact that most of the references are from single institutions raises similar concerns.

Thus, except for select medical centers with select surgeons, these surgeries will have limited use. Furthermore, only select patients are suitable for these procedures. A majority of patients mentioned in the referenced studies were node negative,[8,9,15-18] and all patients need to be carefully selected for the appropriate procedure.

Lack of Outcome Data

Another criticism of the article is the occasional lack of outcome data. In the section on endoscopic approaches for organ-preserving surgery of carcinomas arising at the glottic level, the author provides minimal data on outcome. He states, "A reasonable approach is to recommend endoscopic excision when the surgeon predicts that the voice outcome will be comparable with radiation therapy." But he does not cite a single reference regarding local control or outcome associated with the use of endoscopic excision.

Thomas reported a 23% (24/106) retreatment rate for local recurrences or new primary lesions for early T1 glottic cancers treated with endoscopic procedures,[19] and Moreau had no local failures in 160 patients treated with endoscopic cordectomies.[20] This suggests that there is a high degree of technique variation and patient selection in these procedures.

Unequivocal Comparisons

A final aspect that deserves comment is that the article compares modern surgical approaches with older nonsurgical approaches. For example, there is evidence that hyperfractioned radiation therapy produces a better outcome than standard fractionation. In a randomized study by the Radiation Therapy Oncology Group (RTOG), hyperfractionation and accelerated fractionation radiation therapy with a concomitant boost were more effective than standard fractionation for locally advanced head
and neck cancer.[21] Also, although the main comparison of surgery vs nonsurgical approaches is based on the VA laryngeal cancer study (which used sequential chemotherapy and radiotherapy), recent evidence suggests that concomitant chemotherapy and radiotherapy may be more effective in organ preservation.

Several phase II studies have demonstrated excellent results for advanced head and neck cancer with concomitant chemotherapy and radiation therapy.[22-25] There is also a phase III study that demonstrated improved 3-year disease-free and overall survival with concomitant chemotherapy and radiation therapy vs radiation therapy alone in advanced-stage oropharyngeal cancers.[26] Furthermore, the addition of hyperfractionated radiation with concomitant radiation therapy is associated with improved 5-year locoregional control and relapse-free survival rates, compared to hyperfractionated radiation therapy alone in advanced head and neck cancers.[27] Therefore, the optimal nonsurgical organ-preservation technique is yet to be determined.

Only a randomized trial in specific subsets of head and neck cancer—ie, early laryngeal or advanced T3 laryngeal cancer—will provide evidence as to which treatments are superior for organ preservation, function, and survival.

References:


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