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The Role of Endolaryngeal Surgery (With or Without Laser) versus Radiotherapy in the Management of Early (T1) Glottic Cancer

Members of the Head and Neck Cancer Guideline Development Group

October 16, 2023

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Phone: 905-527-4322 ext. 42822 Fax: 905 526-6775 E-mail: ccopgi@mcmaster.ca

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Guideline Report History

GUIDELINE VERSION	SYSTEMATIC REVIEW *Search Dates*	SYSTEMATIC REVIEW *Data*	PUBLICATIONS	NOTES AND KEY CHANGES
Original version March 14, 2012	1996 to 2011	Full Report	Web publication Head Neck 2014 Curr Oncol 2013	NA
Current Version 2 October 16, 2023	2011 to 2022	New data found in Section 4: Document Assessment and Review	Updated Web publication	2012 recommendations are **ENDORSED**

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Evidence-Based Series 5-2: Section 1

The Role of Endolaryngeal Surgery (With or Without Laser) versus Radiotherapy in the Management of Early (T1) Glottic Cancer: Guideline Recommendations

QUESTION

In patients with early (T1) glottic cancer, what is the role of endolaryngeal surgery (with or without laser) versus radiation therapy, in terms of survival, locoregional control, laryngeal preservation rates and voice outcomes?

TARGET POPULATION

The target population of this guideline is adult patients with previously untreated early (T1) glottic cancers.

INTENDED USERS

This guideline is intended for use by clinicians and healthcare providers involved in the management or referral of adult patients with early (T1) glottic cancer.

RECOMMENDATION

For patients with early (T1) glottic cancer, recommended treatment options include the equally effective endolaryngeal surgery, with or without laser, or radiation therapy. The choice between treatment modalities should be based on patient and clinician preferences and general medical condition.

October 2023: It is the opinion of the Head and Neck Cancer Guideline Development Expert Panel that the following statement be added:

For patients in the T1a subgroup, treatment with surgery is preferred.

See Section 4 for details.

QUALIFYING STATEMENT

There is currently no well-designed, prospective, randomized controlled trial (RCT) that compares endolaryngeal surgery and radiation therapy. Thus, these recommendations are based primarily on other comparative study designs. Although not substantiated by the evidence, several factors are important considerations when deciding between surgery and radiotherapy for early glottic cancer. Location of disease is one factor. Anterior commissure involvement may be a factor that favours a recommendation of radiotherapy over surgery due to a common opinion that voice outcomes are particularly affected. Tumours localized to the midportion of the vocal fold, and where endoscopic accessibility is uncompromised, may be

considered ideal candidates for surgery. Other important practical considerations include the ability for patients to tolerate a general anaesthetic, which is required for surgery. In contrast, radiotherapy requires patient cooperation for daily treatment for four to six weeks. Partial laryngeal surgery, including revision endoscopic surgery, is possible for local recurrence following surgery. However, re-irradiation is not an option in cases of recurrence.

KEY EVIDENCE

There is a lack of high-quality evidence to explicitly inform the guideline question. Notwithstanding, the recommendation is based on the best available evidence and a consensus of expert clinical opinion of the Head and Neck Cancer Disease Site Group (DSG).

One meta-analysis, fifteen cohort studies and two cross-sectional studies comparing endolaryngeal surgery (with or without laser) to radiation therapy in patients with early glottic cancer comprised the evidence base.

- No statistically significant differences in overall survival or disease–free survival were detected. One retrospective cohort study (1) did report a significant (p=0.003) 15-year cause-specific survival benefit in surgically treated patients (100%) over those treated with radiation therapy (91%). This result was not consistent with four other retrospective cohort studies (2,3-5) that also considered cause-specific mortality and showed no significant differences. The meta-analysis [6] detected no statistically significant laryngectomy-free survival benefits associated with laser surgery when compared to radiation therapy (odds ratio [OR], 0.73; 95% confidence interval [CI], 0.39-1.35).
- One meta-analysis (6) found no statistically significant difference in local control between radiation therapy and laser surgery (OR, 0.66; 95% CI, 0.41 to 1.05). One (7) of eight retrospective cohort studies reported a marginally significant better control rate in surgically treated patients (89%) over those treated with radiotherapy (75%) when only T1a patients were considered (p=0.05). One retrospective cohort study [1] also reported a significant difference in recurrence rates favouring surgery. Thurnher et al (1) found a recurrence rate of 30.5% in those undergoing radiation therapy versus 9.9% in the patients treated with laser excision (p=0.001). The remaining five studies did not report any such significant differences in recurrence rates between treatment groups.
- Laryngeal preservation rates were found to be better with surgery, (with or without laser) as compared to radiation in five studies (1,5,7-9), while one study found a marginally significant better preservation rate with radiation therapy (p=0.051) (10).
- Post-treatment voice and speech quality was assessed by clinician perceptual analysis in one retrospective cohort study (11), which found that the difference between radiation therapy patients and those treated surgically did not reach statistical significance. In five studies that analyzed patient self-perception, three (12-14) found no statistically significant difference between treatment groups, one (15) found radiation therapy patients scored significantly better, and one (16) study reported surgically treated patients scored better. One meta-analysis (6) found conflicting results. It detected significantly better maximum phonation time and fundamental frequency in the radiation therapy patients but reported that the perturbation measures of jitter and shimmer significantly favoured the patients undergoing transoral laser surgery.

FUTURE RESEARCH

Carcinoma of the glottis is usually diagnosed in the early phase, and both modalities of treatment have shown high cure rates. However, controversies in the treatment of early glottic cancer remain because of the lack of high-quality prospective analyses comparing endoscopic

surgery versus radiotherapy. There is no evidence in favour of one treatment modality when considering the likelihood of local control or overall survival. There is a suggestion that radiotherapy may be associated with less measureable perturbation of voice as compared to surgery but no significant differences were seen in patient perception. The likelihood of laryngeal preservation may be higher when surgery can be offered as initial treatment. Future research should focus on conducting RCTs or prospective comparative studies, with ample follow-up time, that focus on functional outcomes of patients with early glottic cancer.

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Contact Information

For further information about this report, please contact:
Dr. Ralph Gilbert, Chair, Head and Neck Cancer Disease Site Group
Princess Margaret Hospital, Toronto
Phone: 416-946-282 Fax: 416-946-2300 E-mail: ralph.gilbert@uhn.on.ca

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