

Predictive Factors of Carcinological Outcomes for Glottic Cancer Treated With Transoral Laser Cordectomy

Z. Alj¹, N. Benmansour^{1,2}, M. N. Alami^{1,2}

¹Department of otorhino laryngology, University Hospital Hassan II, Fez, Morocco.

²Faculty of Medicine and Pharmacy, University Sidi Mohamed Ben Abdellah, Fez, Morocco.

*Corresponding author: ALJ zineb, Department of oto rhino laryngology, University Hospital Hassan II, Fez, Morocco.

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Abstract

Tran's oral laser surgery is at the forefront of the therapeutic arsenal of epidermoid glottic cancer, but its indications for certain local extensions are controversial.

We have analyzed through a retrospective study of 37 patients with T1 or T2 epidermoid glottic carcinoma, treated with transoral laser surgery, the post-surgical outcomes regarding the relapse-free survival, local control rate, laryngeal preservation rate and overall survival, correlated to the initial local extension.

This study aimed at clarifying further the clinical behavior of early glottic cancer following transoral laser surgery and to determine, using retrospective analysis, and the predictive factors of carcinological outcomes.

Key words: laser; surgery; glottis; cancer; outcomes; predictive; factors.

Introduction

Early glottic carcinoma (T1N0M0 and T2N0M0) is the most common head and neck cancer after skin cancer, and is responsible for 2 % of the total cancer risk. It is essentially localized and highly curable by radiotherapy or surgery [1, 2].

Endoscopic Laser surgery of epidermoid glottic cancer is the gold standard treatment at the early stage of the disease. It has developed in recent years into a surgical method that combines a minimally invasive approach with the surgical precision of laser and microscope [3].

The aim of this study is to determine the predictive factors of the oncological results of patients with early vocal folds cancer and treated with a laser cordectomy.

Materiels Et Methodes

This is a retrospective study involving 37 patients with T1 or T2 epidermoid glottic carcinoma, treated by trans oral laser surgery, between January 2016 and January 2018.

Age at the diagnosis, sex, smoking intoxication, clinical stage T, vocal fold mobility, and clinical and CT infiltration of the anterior commissure were assessed preoperatively.

The type of cordectomy performed was classified according to the European laryngological Society classification [4].

The analysis of the results was based on the evaluation of the local control rate, the laryngeal preservation rate, the survival rate without recurrence and the overall survival according to the tumor extension to the anterior commissure and the anatomopathological findings of the excisional specimen.

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Our study included 37 patients treated with Tran's oral laser surgery for early glottic cancer during the study period.

Mean age was 51 years (range 35–77 years). Male gender predominated with 35 men compared to 2 women.

The majority of patients had a history of cigarette smoking (94 %). 67% of our patients had a history of increased alcohol consumption.

The main reason for consultation was dysphonia justifying the systematic practice of direct laryngoscopy for all patients to explore the local extension of the lesion and to practice a biopsy for anatomopathological confirmation.

All patients with a confirmed early glottic cancer had a CT scan to study the extension and limits of the lesion objectified on the endoscopic exploration (figure 1, 2, 3), and to seek cervical lymph nodes.

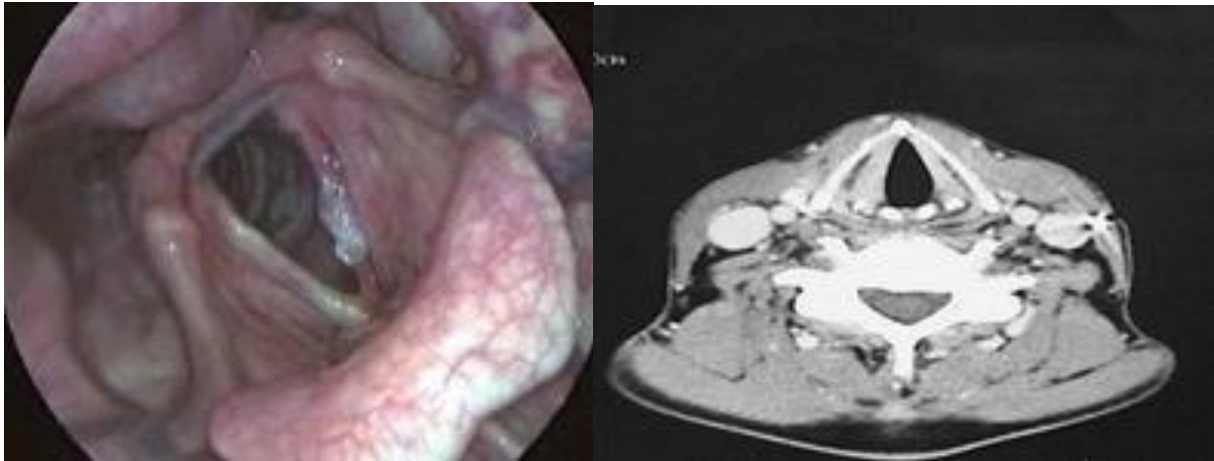


Figure 1: Right Image-Direct laryngoscopy: tumor of the anterior 1/3 of the right CV without reaching the CA. Mobility is preserved. Left image-CT scan: normal (false negative).

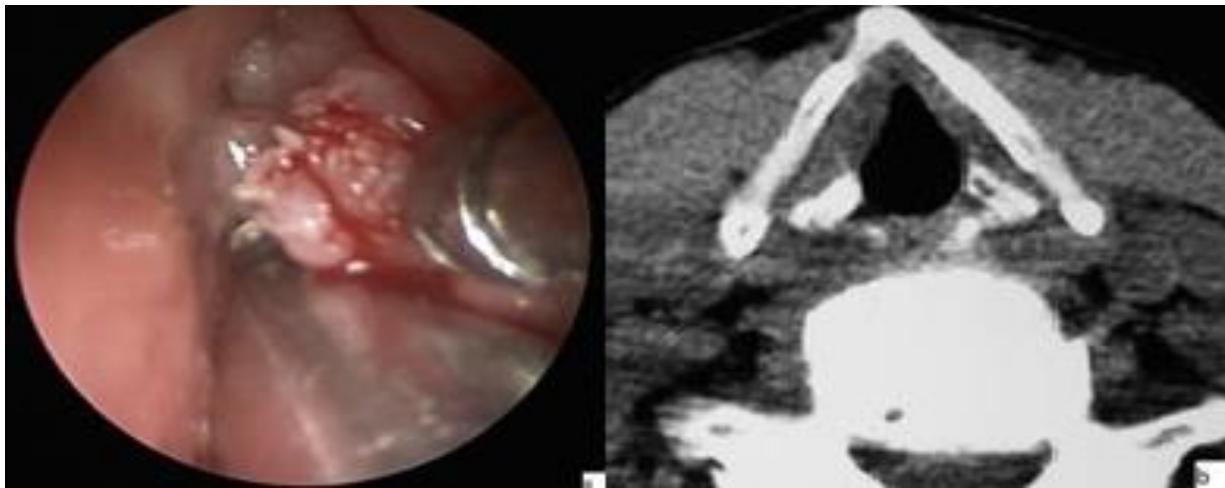


Figure 2: a- budding tumor of the right vocal cord without infiltration of the AC with preserved laryngeal mobility. b- Heterogeneous lesion of the right vocal cord with infiltration of the anterior commissure (False positive).

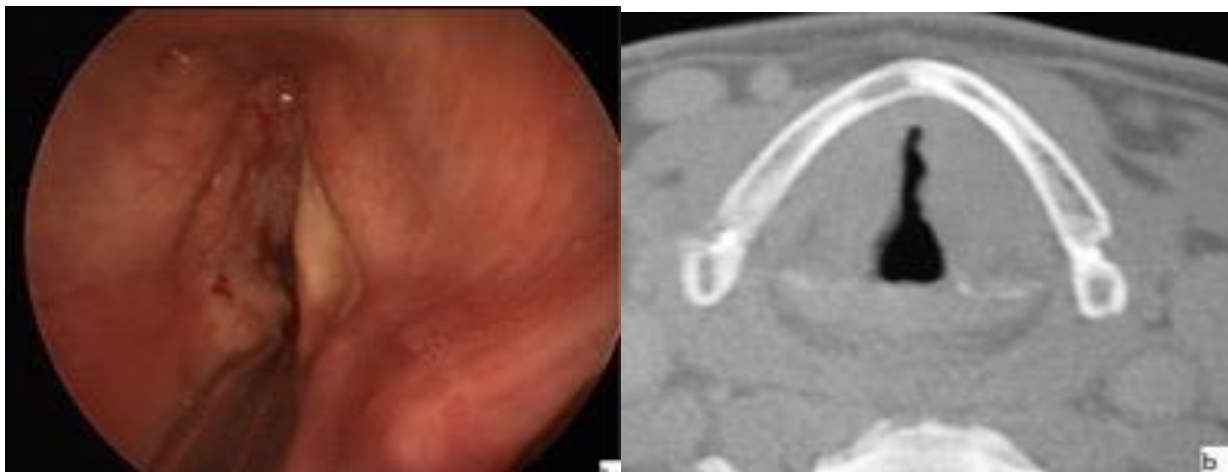


Figure 3: a-Direct laryngoscopy: ulcerated tumor of the left CV with CA involvement and conserved mobility. b- CT scan: Irregular hypodense lesion of the right vocal cord with thickening of the anterior commissure.

All patients underwent different types of laser cordectomy according to the European Laryngological Society (ELS) classification [4].

Nineteen patients underwent type IV cordectomy, ten underwent type Va cordectomy and eight patients underwent type Vb cordectomy.

Following surgery all patients returned to normal everyday activities and diet.

We studied the impact of some factors on the carcinological outcomes therefore we compared relapse-free survival, local control rate, laryngeal preservation rate and overall survival between patients with infiltrated anterior commissure to patients without infiltration of the anterior

commissure, patients with invasiveness of resection margins to patients with clean resection margins.

Patients presenting a tumor with infiltration of the anterior commissure (n = 10) had a less relapse-free survival (81.6% vs. 94.7%), a local control rate (79.1% vs 92%) and a laryngeal

Preservation rate (91.6% vs 100%) compared to patients with a tumor without infiltration of the anterior commissure. There was no significant difference in overall survival rates at 3 years (86.6% vs 90.5%).

In our study, the invasiveness of resection margins also appeared to be a pejorative factor of local control (p <0.05) (table 1).

	AC (-), margins (-)	AC (+), margins (-) n= 10	AC (-), margins (+) n= 5
Overall survival at 3 years	90.5%	86.6%	75%
Relapse free survival	94.7%	81.6%	64%
Local control rate	92%	79.1%	54%
Laryngeal preservation rate	100%	91.6%	72%

AC (-): anterior commissure non-infiltrated.

AC (+): infiltrated anterior commissure.

Margins (-): clean resection margins.

Margins (+): positive resection margins.

Table 1: comparison of post-surgery prognosis parameters between different groups of patients.

Discussion

The endoscopic laser surgery remains the first line treatment for early stage glottis cancer. In our study its post-operative results are excellent in local control and overall survival and similar to the results published in the literature (table 2).

study	Overall survival	Relapse free survival	Local control rate	Laryngeal preservation rate
Mortuaire (5)	87%	75%	84%	90%
Peretti (6)	87,5%	81,3%	92,7%	97,1%
Lee (7)	92,2%	87,9%	94,2%	96,2%
Hoffmann (8)	84,6%	70,6%	86,7%	96,8%
Our study	88,5%	88,15%	85,5%	95,8%

Table 2: comparison of prognosis parameters of our study to the results published on the literature.

The postoperative results of endoscopic laser surgery for glottic cancers are essentially conditioned, both in our study and in the studies reported in the literature, by the initial status of the tumor and the infiltration or not of the anterior commissure, which constitutes a point of laryngeal weakness.

The unanimity of the authors also asserts the importance of the exposure of the lesion to ensure a control of the margins of resection because their invasiveness significantly influences the postoperative results.

A study by Mizrachi et al. [9] concludes that the most important prognostic features that have a robust impact on tumor recurrence are higher histological grade, anterior commissure involvement and anterior tumor spread pattern along the vocal fold. Closer and meticulous

Follow up on these patients at risk, specifically those with poorly differentiated carcinoma that involves the anterior portion of the vocal cord even without anterior commissure involvement, is recommended.

This is also suggested by the study of Vilaseca et al. [10], which investigated the impact on the AC involvement in patients with T1–T4a that were treated with transoral laser surgery. They found that AC

involvement was an independent factor for local recurrence. Half of their patients with recurrence were finally salvaged with endoscopic surgery alone, suggesting that surgical experience could have played a role in local recurrence as a large proportion of patients were still amenable to laser surgery. In our study, patients with positive resection margins underwent open surgery to secure the complete local control.

Furthermore, a review published by Hendriksma and Sjögren [11] showed that laryngeal control may be lower in tumors with involvement than tumors without involvement in the AC.

Recently, a classification was proposed by Piazza et al. [12]. It contains six isoprognostic zones in early-intermediate tumors (T1-T3) treated with laser surgery according to the location and the extent of the tumor, and describing different growth patterns and possible pathways of recurrence. They concluded that the vertical extension across the AC leads to a decreased local control rate and lower laryngeal preservation.

Conclusion

Although anterior commissure involvement and positive resections margins have a significant impact on outcomes, laser cordectomy remains

a valuable option considering its high organ preservation and survival rates, but requires careful selection of patients, and Closer and meticulous follow up on patients at risk.

In cases of local recurrence, all standard further treatment options remain available.

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