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REVIEW ARTICLE

The Current Role of Partial Surgery As a Strategy for Functional Preservation in Laryngeal Carcinoma☆

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Abstract With the current advances and recent organ preservation protocols for intermediate or advanced stage laryngeal cancer, based on chemotherapy, the role of surgery seemed replaced except for surgical rescue of tumours not responding to these treatments, total laryngectomy being the surgical option. This type of non-surgical treatment is offered as a strategy for organ preservation, as opposed to total laryngectomy. However, we believe that there are two organ-preservation strategies, surgical and non-surgical. A wide spectrum of surgical techniques is available and such techniques lead to excellent results, both oncological and functional (speech and swallowing). The aim of this paper is to present options for organ-preserving surgery for laryngeal cancer. A review of surgical techniques available for functional preservation in cancer of the larynx at intermediate or advanced stage is presented. In addition to the classic approaches, such as vertical partial laryngectomy and horizontal or supraglottic laryngectomy, options for conservative laryngeal surgery have improved significantly over the past two decades. Minimally invasive surgery, transoral laser surgery, and supracricoid partial laryngectomy have become important laryngeal preservation approaches for patients with laryngeal cancer. Surgery must define its role in the multidisciplinary treatment of advanced cancers of the larynx, which at present often favours (chemo)radiotherapy protocols.

PALABRAS CLAVE
Cáncer;
Laringe;
Organopreservación;
Laringectomía

El papel actual de la cirugía parcial como estrategia de preservación funcional en el carcinoma de laringe

Resumen Con los actuales avances y los últimos protocolos de preservación de órgano para el cáncer de laringe en estadio intermedio o avanzado, basados en la quimioradioterapia, el papel de la cirugía parecía relevado únicamente al rescate quirúrgico de los tumores que no respondían a estos tratamientos, siendo la opción quirúrgica la laringectomía total. Este tipo de tratamientos no quirúrgicos, se ofrecen como estrategias de preservación de órgano, en contraposición a la laringectomía total. Sin embargo, nosotros consideramos que hay dos estrategias de

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preservación de órgano, no quirúrgica y quirúrgica. Un amplio espectro de técnicas quirúrgicas están disponibles y dan lugar a unos excelentes resultados tanto oncológicos como funcionales (habla y deglución). El objetivo de este artículo es presentar las opciones para la cirugía de conservación de órgano para el cáncer de laringe. Se realiza una revisión de las técnicas quirúrgicas disponibles para la preservación funcional en los carcinomas de laringe en estadio intermedio o avanzado. Además de los abordajes clásicos, como la laringectomía parcial vertical y la laringectomía supraglótica u horizontal, las opciones para la cirugía con-servadora laríngea han mejorado significativamente en las últimas dos décadas. La cirugía mínimamente invasiva y la cirugía transoral laser, y la laringectomía parcial supracricoidea se han convertido en importantes abordajes de conservación laríngea para los pacientes con cáncer de laringe. La cirugía debe definir su papel en el tratamiento multidisciplinario de los cánceres avanzados de laringe, que actualmente favorece a menudo a los protocolos de (quimio) radioterapia.

Introduction

For years, total laryngectomy was the only treatment option for patients with laryngeal cancer in intermediate or advanced stages. In the past two decades, there have been great advances in the management of this disease with multimodal approaches aimed at laryngeal preservation to change the treatment options. In response to the widespread use of total laryngectomy, non-surgical approaches are often referred to as organ preservation strategies. Since chemoradiotherapy is not the only option for functional laryngeal preservation, what other options are available? At many institutions, it seems that strategies for organ preservation are on one side and surgery is on the other. However, we believe that there are two strategies for organ conservation, non-surgical organ preservation and surgical preservation. The key is that in both approaches the aim is to preserve the function of the larynx. A new paradigm has emerged in which both surgical and non-surgical approaches are of equal value in terms of preserving a functional larynx. A wide range of surgical techniques for functional conservation of the larynx are currently available; these offer excellent oncological results, as well as excellent functional results in terms of speech and swallowing. The aim of this work was to present surgical options for function preservation in cases of laryngeal cancer in intermediate and advanced stages.

Surgical Options for Preserving Laryngeal Function

In addition to the already-established approaches, such as partial vertical laryngectomy or supraglottic or horizontal laryngectomy, surgical options for laryngeal preservation have improved significantly over the past two decades. Minimally invasive transoral surgery and supracricoid partial laryngectomy (SCPL) have become important techniques in relation to the preservation of laryngeal function in patients with laryngeal cancer.

Vertical Partial Laryngectomy (VPL)

Vertical hemilaryngectomy (or VPL) comprises a spectrum of procedures ranging from laryngofissure to extended hemilaryngectomy. A feature common to all these procedures is vertical transection of the thyroid cartilage and resection of the glottis extended into the paraglottic space. In VPL, the vertical incisions are made through the thyroid cartilage near the anterior commissure and just in front of the posterior edge of the thyroid cartilage. The resulting resection therefore includes the vocal fold and neighbouring subglottis, the ventricle, band and aryepiglottic fold. In general, the posterior part crosses just in front of the vocal process of the arytenoid (Fig. 1). This area may extend around the anterior commissure to include the anterior third of the contralateral vocal fold if necessary. When the anterior commissure is eliminated, the procedure is called frontolateral hemilaryngectomy. This procedure is indicated for T1 and T2 glottic tumours. Some authors believe that patients with vocal fold fixation (T3) caused by direct invasion of the thyroarytenoid muscle by the tumour may still be candidates for a vertical hemilaryngectomy procedure. However, in patients with vocal fold fixation from invasion of the cricoarytenoid joint, a hemilaryngectomy should not be considered. Other contraindications are involvement of the posterior commissure or the thyroid cartilage, and extension above the aryepiglottic fold.

With this technique, the rate of local control and laryngeal preservation ranges between 82% and 95% for T1-T2 cases and the survival rate at 5 years is over 90%.[1,2] However, in a large study conducted in France, the rate of local control in T1 cases was very good (91%), but decreased to 74% in cases with involvement of the anterior commissure

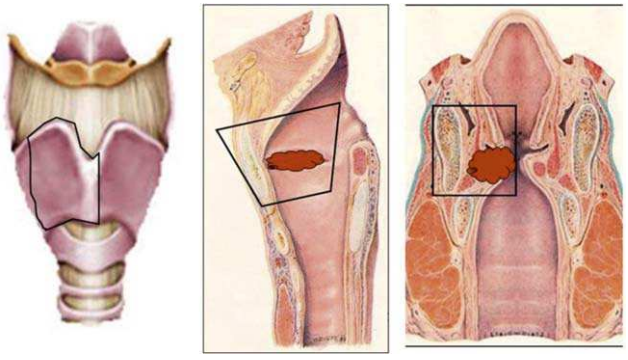

Figure 1 Schematic anatomy of the area removed when carrying out a vertical partial laryngectomy.

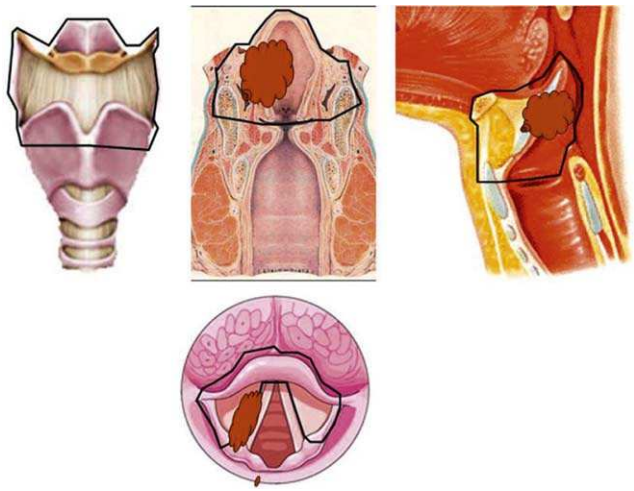

Figure 2 Schematic anatomy of the regions removed when carrying out a supraglottic laryngectomy.

and to 69% in T2 cases.[3] The rate of local control and survival at 5 years were significantly lower in T3 tumours, with local control rates between 73% and 85%.[4,5] Due to these high recurrence rates in T2 and T3 cases, VPL was replaced by supracricoid laryngectomy at many centres.[6]

These results reflect the value of VPL in selected cases. However, with the present advancement of laser surgery, the role of VPL is questionable. For the majority of patients with lesions treatable by VPL, laser surgery offers identical rates of local control, with better voice quality and swallowing function, and lower complication rates.[7]

Supraglottic Laryngectomy

Supraglottic laryngectomy was first described in 1947 by Alonso[8] and subsequently modified into its present technique by Ogura.[9] Understanding the anatomy of the supraglottic larynx and the possible routes of tumour extension, in addition to the observation that cancer in its first stages tends to remain localized within the limits of the supraglottis, formed the basis of supraglottic laryngectomy.[10] Supraglottic laryngectomy involves resection of the epiglottis, the bands, the aryepiglottic folds, the hyoid bone (in most cases), the top of the thyroid cartilage and the contents of the pre-epiglottic space (Fig. 2). The resection can be extended to include an arytenoid, the base of the tongue or the pyriform sinus. As a result, the patient has an almost normal voice, but a major challenge in the development of normal swallowing from the loss of the protective mechanisms (epiglottis and bands). Since a temporary tracheostomy and a feeding tube (usually nasogastric) are required in all patients, rehabilitation is achieved within the first month after surgery in most patients, with the removal of the feeding tube and closure of the tracheostomy. The rehabilitation process is complicated by the administration of preoperative or postoperative radiotherapy, as well as by the extent of surgical resection when it includes the base of the tongue, the arytenoid cartilage or the pyriform sinus.

Supraglottic laryngectomy is not only indicated in all T1-T2 supraglottic cancers, but also in patients with T3 and T4 supraglottic tumours affecting the pre-epiglottic space or one of the arytenoids, or that extend to the pyriform sinus or the base of the tongue. On the other hand, large tumours with cartilage erosion, subglottic extension or involvement of the lateral wall of the pyriform sinus remain candidates for total laryngectomy. In addition, the patient must have adequate pulmonary function to be a candidate for supraglottic laryngectomy.

With regard to local control, it is best for tumours confined to the endolarynx (>90%), but is described nearly at 80% for other locations, and laryngeal preservation rates are also described at approximately 80%.[11–18] In general, overall survival rate at 5 years is comparable to that obtained with total laryngectomy, ranging between 67% and 90%. This rate is over 85% for patients in Stages I and II, between 75% and 80% for Stage III, and between 55% and 70% for patients in Stage IV.[11–18] The survival rate for these tumours is more dependent on the presence and extent of lymph node metastases than on primary tumour size.[11–18] The data on laryngeal preservation with this technique are very good, with overall rates being described at over 85%. However, these figures are lower (60%–80%) in T3–T4 tumours. In addition, the functional results are very good, with over 90% of patients achieving decannulation and oral diet.[11,13,14,16]

In conclusion, the general rule after supraglottic laryngectomy is postoperative recovery of laryngeal function, which can be achieved with excellent local and regional control of the disease. Consequently, it can be considered as a valid option in the management of selected cases of advanced and intermediate supraglottic cancer. However, conventional supraglottic laryngectomy is being replaced by laser supraglottic laryngectomy; this is because the oncological results of transoral laser surgery for early and moderately advanced tumours appear to be comparable to those of the classic supraglottic laryngectomy, and the endoscopic approach offers functional advantages.[19]

Supracricoid Partial Laryngectomy

This laryngectomy procedure was originally conceived in 1959 by Majer and Rieder in Vienna.[20] The SCPL is an alternative to (chemo)radiotherapy, supraglottic laryngectomy, and near-total and total laryngectomy in selected cases of supraglottic and transglottic carcinoma. This procedure is a technique for function preservation and should be considered as a laryngeal preservation technique, as it preserves the physiological rehabilitation of speech, swallowing and breathing without the need for a permanent tracheotomy.

The supracricoid partial procedure consists of resecting the following structures (Fig. 3): the vocal folds, the bands, the aryepiglottic folds, the epiglottis (in varying degrees), the part of the subglottis corresponding to the upper surface of the cricoid cartilage, the thyroid cartilage and the contents of the preglottic and paraglottic spaces. The resection may include an arytenoid, but must preserve the hyoid bone. Two different types of reconstruction are possible depending on the degree of involvement of the epiglottis. In cases where the bottom of the epiglottis is involved, the suprahyoid epiglottis can be preserved and used in the

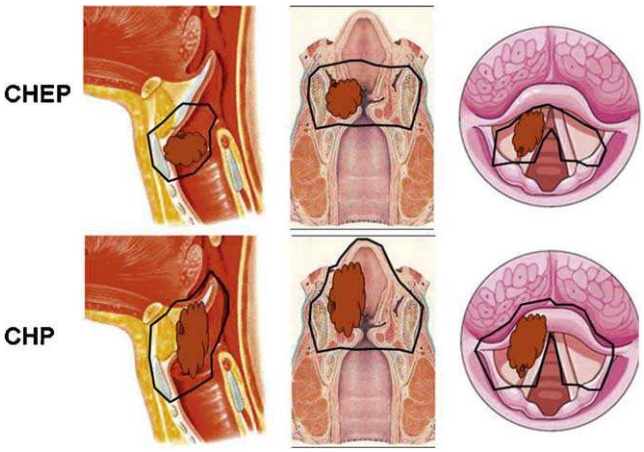

Figure 3 Schematic anatomy of areas involved in supracricoid partial laryngectomy with cricohyoidoepiglottopexy (CHEP) or cricohyoidopexy (CHP).

reconstruction (cricohyoidoepiglottopexy, CHEP). In cases where the preservation of the epiglottis is not oncologically feasible, the reconstruction will involve the impaction of the base of the tongue/hyoid complex to the cricoid cartilage (cricohyoidopexy, CHP).

Supracricoid partial laryngectomy with cricohyoidoepiglottopexy (SCPL-CHEP) is indicated for glottic tumours: T2 (especially with involvement of the anterior commissure), T3 and selected cases of T4 (limited invasion of the thyroid cartilage). It is contraindicated in cases with fixation of the cricoarytenoid joint, invasion of the posterior commissure, invasion of the cricoid, extralaryngeal spread of the tumour or poor lung function.

Supracricoid partial laryngectomy with cricohyoidopexy (SCPL-CHP) is also indicated in T2–T4 larynx tumours: for supraglottic tumours extending to the vocal cord or anterior commissure and for transglottic tumours. The limitations are the same as for SCPL-CHEP, along with the invasion of the hyoid bone.

The rates of local control and organ preservation of SCPL as primary treatment in patients with certain T2 and T3 lesions are over 90% and are comparable to (if not better than) the rates observed with chemotherapy and radiotherapy, and also with total laryngectomy.[21–25] As expected, a higher T, N and global stage classification affect survival adversely, but the results are similar to those obtained with total laryngectomy.[26]

Regarding functional results, speech and swallowing are restored after the SCPL; however, voice quality is substantially different after the operation, despite an overall ''acceptable'' result for patients and physicians in a subjective analysis.[26,27] The restoration of normal swallowing may take several weeks and requires intensive rehabilitation; between 80% and 90% of patients are expected to recover swallowing function within the first year.[28]

Transoral Laser Surgery

Transoral laser surgery (TLS) is minimally invasive and is performed by direct laryngoscopy using suspension, with a surgical microscope, microsurgery instruments and a CO_2 surgical laser. Along with SCPL, it has been one of the two areas of greatest development in larynx conservation surgery in recent years.

This approach violates one of the basic surgical principles, because the tumour is sectioned and then removed part by part, through a laryngoscope. However, sectioning of the piece reveals the depth of tumour penetration and allows a clear view of the oncological surgical margins during the procedure.

In contrast to open larynx surgery, the cartilaginous edges of the larynx and infrahyoid muscles are preserved during endoscopic resection, which is thought to improve postoperative function. Furthermore, the concept of adequate margins is viewed differently in endoscopic resections: the goal is to preserve as much of the adjacent normal tissue as possible, while ensuring tumour-free margins.

With regard to patient selection, exposure through a laryngoscope dictates which tumours can be managed by TLS. It is a well-established procedure for supraglottic or T1–T2 glottic carcinomas. Some authors also use this technique in selected T3 glottic tumours (vocal fold fixation due to direct invasion of the thyroarytenoid muscle by the tumour), T3 supraglottic tumours (invasion limited to the pre-epiglottic space), and also in some T4 cases (limited invasion of the tongue base).

Several studies have shown good oncological results in intermediate and advanced laryngeal cancer. In a study of 595 patients including T1-T3 tumours, the disease-specific survival, disease-free survival, local control with laser and organ preservation rates were 99%, 81.3%, 92.7%, and 97.1%, respectively.[29] Statistical analysis showed a significant impact of the primary tumour (pT) category on local control with laser and organ preservation: local control at 5 years with laser alone and laryngeal preservation rates were 95% and 98%, respectively for T1 tumours, 85.6% and 95% for T2 tumours, and 71.6% and 72.7% for T3 tumours.[29] In a retrospective analysis of 147 consecutive patients with T3 laryngeal cancer, Vilaseca et al.[30] showed overall survival at 5 years, disease-specific survival and laryngectomy-free survival rates of 53.1%, 70.2%, and 62.3%, respectively.

Disease-specific survival differs between glottic and supraglottic tumours (86.3% versus 61.8%) and is not related to vocal fold fixation or to focal cartilage infiltration.[30] In a multicentre study of TLS in Stage III-IV larynx tumours with 5 years of follow-up, Hinni et al. found a laryngeal preservation rate of 86% and a disease-specific survival at 5 years of 58%. Up to 3% of the patients died from causes related to treatment, 3% had permanent tracheotomies and 7% required a feeding tube.[31] Rudert et al.[32] examined the results of transoral laser surgery in 34 patients with T1–T4 supraglottic tumours. The overall survival for T3 and T4 tumours was 47%.[32] Motta et al.[33] reported on resections of supraglottic cancer by TLS in 124 patients. The actuarial local control and laryngeal preservation rate at 5 years were 77% and 93.7% in T3 patients.[33] These results are comparable to those of the standard supraglottic laryngectomy.

In an effort to evaluate the oncological efficacy of TLS in supraglottic cancer, Cabanillas et al.[34] compared a group of 26 patients treated with laser surgery with a stage-matched group treated through a cervical approach. A total of 15 patients (58%) from each group suffered T3 tumours,

and 69% were classified as Stage III-IV. The rate of disease-specific survival at 5 years was 80% for the laser group and 72% for the transcervical group. The rate of laryngeal preservation at 5 years was 86% in the laser group and 80% in the transcervical group, with no significant differences between the two groups. In both groups, all patients classified as T1 and T2 who survived 5 years after surgical tumour treatment retained their larynx, but the rate of larynx preservation at 5 years in T3 tumours was 60% in the TLS group and 54% in the transcervical group.[34] These results suggest that when complete resection is technically feasible, endoscopic supraglottic laryngectomy can be carried out, even in moderately advanced cases (T3), with local control rates comparable to those of open supraglottic laryngectomy. Regardless of the surgical technique employed, negative margins are essential for limiting local recurrence. Tumour involvement of surgical margins after TLS has been associated with higher rates of local recurrence and distant metastases, lower rates of disease-specific survival, and the need for rescue surgery.[35]

Functional results after TLS for laryngeal cancer are excellent. By maintaining the valve effect of the larynx, the airway is protected, and both voice and swallowing can be restarted with proper rehabilitation. Aspiration occurs in most patients shortly after surgery, but recovery takes place within 1–6 months, with earlier recovery in patients with partial resections.[36] Functional results depend on the extent of resection. Consequently, results regarding postoperative swallowing and social feeding are lower in complete supraglottic laryngectomy patients than in patients who underwent a partial resection. The recovery of voice quality also depends on the depth and extension of the resection.[36]

Functional results with TLS are generally better than those of conventional open surgery, in terms of time needed to restore swallowing, tracheotomy rates, incidence of pharyngeal fistulae and shorter hospital stays.[37,38] These functional benefits may be attributed to the more conservative nature of the endoscopic technique, since normal tissues are not interrupted during the procedure. With open procedures, the thyroid cartilage, soft tissues and infrahyoid and suprahyoid muscles are divided, and the hyoid bone is often resected. There is invariably a compromise of the airway and therefore a need for temporary tracheotomy. With endoscopic resection, tracheostomy is very rarely indicated. Avoiding tracheotomy and preserving the prelaryngeal muscles can facilitate a quick, safe recovery of long-term swallowing. Sectioning of the upper laryngeal nerves during cervical approach results in a local sensory defect that interferes with bolus recognition and detection, as well as a weakening of the glottic closure response.[19]

Transoral Robotic Surgery

The concept of robot-assisted surgery is gaining popularity in many different specialties, and more recently in minimally invasive head and neck surgery. The main advantages proposed by the supporters of robot-assisted surgery are its excellent three-dimensional visualisation and surgery with 2 or 3 hands through the minimally invasive approaches made possible by the device. Both a wider angle of vision and wide-angle lenses increase the range of vision of the endoscopic surgical field, as compared to the ''straight view'' visual field granted by microscopes. The two-dimensional visualisation provided by single-channel optical systems of current endoscopes leads to a loss of depth perception in the 3D vision provided by the binocular optical systems used in standard microsurgery. The commonly used 5 mm robotic endoscope is fitted with a dual-channel optical system, including a dual double-load device, which enables 3D visualisation of the surgical field at the console. Another advantage of the technology used in the instrumentation of the da Vinci robot is its ability to provide movement at the tip of the instrument, with 7° of freedom and 90° of rotation and movement scale. This allows the surgeon, who sits at the console with an adjustable arm, to perform precise tremor-free movements in a limited and deep space, with working angles that cannot generally be achieved using non-robotic instruments.

Weinstein et al.[39] and O'Malley et al.[40] had previously published studies on the development and perfection of a new procedure called transoral robotic surgery (TRS) in preclinical experimentation models. These foundation studies established the technical feasibility of TRS to approach the oral cavity, oropharynx, hypopharynx, supraglottis and glottis, while also introducing basic concepts on patient safety and methods to control active bleeding. Although current literature reports preliminary results, without long-term oncological results, these results are encouraging. In fact, some institutions have shown that TRS programs can be successfully established, offering excellent clinical results.

In laryngeal and pharyngeal tumours, TRS is used in conjunction with flexible CO_2 laser, which provides precise incisions with excellent haemostasis and minimal peripheral tissue damage.[41] Recently, 20 patients with tumours affecting the pharynx and larynx were enrolled in a prospective study using the da Vinci surgical robot, to determine the technical feasibility, safety and efficacy of TLS. None of the patients required tracheostomy and there were no intraoperative or postoperative complications.[42]

Functional outcomes after TRS have been evaluated in a series of 54 patients with head and neck cancer, most of them with tumours of the larynx and oropharynx. After an average of 12 months follow-up, 17% of patients required feeding tubes. The persistence of tube feeding was associated with the need for a preoperative nasogastric tube, a higher T stage, lesion site in the oropharynx or larynx, and with recurrent/second primary tumours.[43]

Partial Surgery in Functional Laryngeal Preservation Protocols

The past decade has seen a shift towards non-surgical management of laryngeal cancer, with a special increase of schemes that combine chemotherapy and radiotherapy.[44–48] This decrease in initial surgical treatment is particularly evident in moderately advanced laryngeal cancer (Stage III cancers). The precise time of publication of the laryngeal cancer study by the Department of Veterans Affairs[48] correlates with an increase in the use of chemoradiotherapy, as well as radiotherapy alone, for the treatment of laryngeal cancer in the United States. However, this moment in

time also correlates with a lower survival of laryngeal cancer patients.[49] According to the Surveillance, Epidemiology and End Results (SEER) programme, there was an increase in survival at 5 years for 23 of the 24 types of cancer evaluated in the previous period (1983–1985) and the subsequent period (1992–1999). The only type of cancer that showed a decrease in survival over these time periods was laryngeal cancer. The relative survival at 5 years for patients with laryngeal cancer decreased from 68.1% to 64.7%.[50]

The revised figures from the National Cancer Data Base confirm the previously mentioned trend towards decreasing survival of patients with laryngeal cancer from the mid-1980s until the mid-1990s.[49] The initial treatment patterns in the same period showed an increase in the use of chemoradiotherapy with a decreased use of surgery, despite an increase in the use of endoscopic resection. The most notable decrease in the relative survival at 5 years was between glottic tumours in advanced stage, early stages of supraglottic cancer and supraglottic tumours classified as T3N0M0.[49] This decrease in survival recorded for patients with laryngeal cancer may have been related to changes in management guidelines, particularly the use of non-surgical treatments, but also to the use of less aggressive surgery.

This change in the initial treatment is reflected in current guidelines for the treatment of laryngeal cancer. In the initial stage with limited disease (T1, T2), the guidelines from NCCN[51] and ASCO[52] both recommend organ-preserving surgery or radiotherapy, although the ASCO guidelines indicate that in some T2 cases (a deeply invasive tumour in the imaging tests, with reduced fold mobility), chemoradiotherapy is better than radiotherapy alone. However, in advanced stages of primary disease (T3 and T4 tumours), the only recommended option for the preservation of the larynx is chemoradiotherapy, with the exception under some ASCO guidelines, of T3 supraglottic tumours with invasion limited to the pre-epiglottic space, in which organ-conserving surgery is presented as a viable option.[51,52] From these guidelines, it could be thought that, if the chosen treatment is surgery, all T3 and T4 laryngeal tumours would require a total laryngectomy.

Consequently, based on these guidelines, it appears that in locally advanced tumours (T3, T4), there are strategies for organ preservation and then there would be surgery. However, we believe that there are both surgical and non-surgical strategies for organ preservation. The key is that, in both approaches, the aim is to preserve the function of the larynx. We might call this approach ''functional preservation of the larynx'' (Fig. 4).

Although the non-surgical approach uses the T classification system to plan treatment, this T classification is insufficient to properly evaluate which surgical options for organ preservation can be applied to a given tumour. The spectrum of surgical options for functional preservation goes beyond the scope of the T classification system, to provide a plausible range of cancer types and the corresponding range of surgical possibilities available.[53]

As presented in this article, there is a wide range of function-preserving surgical techniques available, leading to excellent oncological results, as well as excellent functional results in terms of speech and swallowing, and with good comparison with the results from non-surgical functional preservation protocols. In addition to traditional approaches

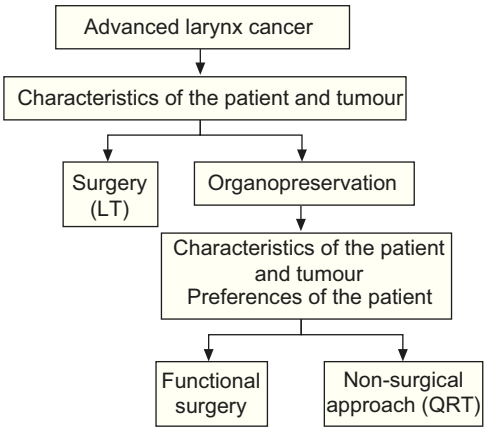

Figure 4 Treatment algorithm that we propose for laryngeal cancer.

such as vertical partial laryngectomy and horizontal or supraglottic laryngectomy, the options for the preservation of laryngeal functions have improved significantly over the past two decades. Minimally invasive transoral surgery and SCPL have emerged as important function-preserving surgical approaches for patients with intermediate and advanced laryngeal cancer. Moreover, in patients without lymph node involvement (N0) or limited involvement (N1-N2a), postoperative radiotherapy can be avoided, which considerably diminishes the morbidity of the treatment.

The researchers of the RTOG 91-11 trial expressed the views that ''concomitant radiotherapy with cisplatin should be considered as the standard option for patients wishing to preserve the larynx'' and ''that laryngectomy should only be performed as rescue surgery''.[44] These views are challenged by the results presented, given that their main premise is that surgery for advanced laryngeal cancer is equal to total The view. In the analysis of the patients included in the RTOG 91-11 study, at least 40% of them (tumours classified as T2 and T3 without fold fixation) could be candidates for function preserving surgery.

In the era of chemoradiotherapy, greater attention should be directed at preserving laryngeal function, not simply towards ''organ preservation''. Surgery must define its role in the multidisciplinary treatment of advanced laryngeal cancers, which currently often favours chemoradiotherapy protocols. We need to establish risk criteria based on the selection of treatment and functional results, rather than using a single treatment modality over any other, be it surgery, radiotherapy or chemotherapy.

Conclusions

There are currently many treatment options available for laryngeal cancer. Clinical evidence dictates standards of treatment, but patient-specific factors and their individual preferences should also be considered when planning treatment. Patient comorbidities and functional status are also important factors when considering the development of a treatment plan.

Functional surgery (partial) should be considered as a viable option in the definitive management of many laryngeal tumours, regardless of their stage. Since there are no

differences in survival between surgical and non-surgical treatments for most clinical scenarios, each patient should undergo a multidisciplinary evaluation, to discuss all possible options before deciding upon a therapy.

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