

Salvage Subtotal Supracricoid Laryngectomy with Cricohyoidoepiglottopexy for Late Recurrence of Irradiated T1a Glottic Carcinoma Eighteen Years After Radiotherapy: A Case Report and Literature Review

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ABSTRACT

Early glottic carcinoma treated with radiotherapy has excellent local control, but a minority of patients develop recurrence, which classically occurs within the first three years. Late recurrences are uncommon and pose specific diagnostic and therapeutic challenges in a previously irradiated larynx. We report the case of a 72-year-old man with a history of T1aN0M0 glottic squamous cell carcinoma treated with 32 fractions of radiotherapy (completed in 2008) and endoscopic resection of a local lesion in 2014, who presented after a 12-year disease-free interval with progressive dysphonia. Endoscopy revealed a 15-mm polypoid, hypervascular lesion on the anterior and middle thirds of the left vocal fold, sparing the anterior commissure, posterior third, ventricle and subglottis. Biopsy showed a high-grade intraepithelial lesion with post-radiation changes, and computed tomography and neck ultrasound showed no deep invasion or cervical disease. The patient underwent salvage subtotal supracricoid laryngectomy with cricohyoidoepiglottopexy (SSC-CHEP) with 20 mL of blood loss, no intraoperative complications and grossly negative margins. The postoperative course was favorable, and he was discharged with the drain in place for outpatient follow-up, with good postoperative evolution; definitive histopathology is pending. This case, together with a brief review of the literature, supports SSC-CHEP as an oncologically sound, larynx-preserving alternative to total laryngectomy for carefully selected radiorecurrent glottic tumors, even after very long disease-free intervals and in older patients with good functional status.

KEYWORDS: laryngeal neoplasms; glottic carcinoma; salvage therapy; subtotal supracricoid laryngectomy; cricohyoidoepiglottopexy; radiotherapy failure; organ preservation.

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INTRODUCTION

Laryngeal cancer is one of the most frequent malignancies of the head and neck, with approximately 189,000 new cases and 103,000 deaths worldwide in 2022 (1). Squamous cell carcinoma of the glottis is the predominant subsite and is often diagnosed early because even small lesions of the vocal fold produce dysphonia (2). For early glottic cancer (T1–T2N0), radiotherapy and transoral laser microsurgery are the

standard single-modality options, both providing high rates of local control and voice preservation (2).

Despite these results, a proportion of patients experience local failure. Most recurrences appear within the first two to three years after treatment, and the risk decreases considerably thereafter (3). Salvage of radiorecurrent disease has historically relied on total laryngectomy, which offers reliable oncological control at the cost of permanent

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tracheostoma and loss of natural voice (4). In selected patients, open conservation surgery can achieve comparable control while preserving the physiological functions of the larynx (5).

Subtotal supracricoid laryngectomy was first described by Majer and Rieder in 1959 (6) and was later popularized by Jean-Jacques Piquet, who described the cricohyoidoepiglottopexy (CHEP) reconstruction (7), and by Laccourreye and colleagues, who standardized its use for glottic carcinoma (8). In Mexico, the technique and its results were described by Gallegos-Hernández (9). According to the European Laryngological Society, SSC-CHEP corresponds to an open partial horizontal laryngectomy type IIa (10). The procedure removes both true and false vocal folds and the entire thyroid cartilage, preserving at least one functioning cricoarytenoid unit, the cricoid cartilage, the hyoid bone and the epiglottis, which allows phonation, swallowing and breathing without a permanent stoma (8,10).

We present a case of late recurrence of a previously irradiated T1a glottic carcinoma, 18 years after radiotherapy and 12 years after endoscopic resection, successfully managed with salvage SSC-CHEP, followed by a focused review of the literature on this indication.

CASE PRESENTATION

A 72-year-old retired male teacher with a 20-year history of systemic arterial hypertension, controlled with telmisartan and amlodipine, was referred to our head and neck surgery unit with a diagnosis of recurrent laryngeal tumor. He was a former smoker (10 cigarettes per day from age 20 to 40 years) with occasional alcohol intake. His family history included hepatic carcinoma in his mother and a mediastinal tumor of unknown histology in his father.

His oncological history began approximately 20 years earlier with a T1aN0M0 (stage I) squamous cell carcinoma of the glottis, treated with 32 fractions of external-beam radiotherapy between 2006 and 2008; he was discharged from oncological follow-up in 2011. In 2014 he underwent direct laryngoscopy with endoscopic resection of a lesion of the vocal fold, without complications. He then remained disease-free for 12 years. Three months before referral, he developed progressive dysphonia without aphonia, dyspnea, stridor, dysphagia, aspiration or constitutional symptoms. The clinical course is summarized in Table 1.

Table 1. Timeline of the clinical course.

Date	Event
2006–2008	Diagnosis of glottic squamous cell carcinoma T1aN0M0 (stage I); definitive radiotherapy, 32 fractions.
2011	Discharged from oncological follow-up without evidence of disease.
2014	Direct laryngoscopy and endoscopic resection of vocal fold lesion.
2014–2026	Disease-free interval of 12 years.
March 2026	Indirect telarlaryngoscopy: friable, erythematous lesion on the anterior third of the left vocal fold; left fold hypomobile; posterior synechia; glottic stenosis of ~40%.
April 2026	Endoscopy and biopsy: 15-mm polypoid lesion, anterior and middle thirds of left vocal fold. Biopsy: high-grade intraepithelial lesion, post-radiation changes, <i>Actinomyces</i> -like organisms. CT of neck and chest and neck ultrasound: no tumor activity or lymphadenopathy.
April–July 2026	Preoperative assessment: ECOG 1, ASA II, Goldman I, Lee I, moderate Caprini risk.
September 2026	Salvage subtotal supracricoid laryngectomy with cricohyoidoepiglottopexy (SSC-CHEP).

Indirect telarlaryngoscopy (March 2026) showed a friable, erythematous lesion with poorly defined borders on the anterior third of the left vocal fold, producing a 3-mm posterior glottic gap; the left fold was hypomobile, and a posterior synechia with approximately 40% glottic stenosis was noted. Subsequent endoscopy (April 2026) described a 15-mm whitish, polypoid, hypervascular lesion involving the free edge of the anterior and middle thirds of the left vocal fold, sparing the posterior third, the anterior and posterior

commissures, the ventricle, the false fold and the subglottis, with normal contralateral hemilarynx. Biopsy revealed a microscopic focus of high-grade intraepithelial lesion with post-treatment changes and microorganisms morphologically compatible with *Actinomyces*. Contrast-enhanced computed tomography of the neck and chest and cervical ultrasound showed no evidence of tumor, cartilage invasion or cervical lymphadenopathy. Laboratory tests were within normal limits. The case was staged as a recurrent glottic carcinoma

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(rT1aN0M0), and after multidisciplinary discussion a larynx-preserving salvage procedure was planned.

Surgical technique

The procedure was performed following the technique described by our group (9). Under general balanced anesthesia with orotracheal intubation, the patient was positioned supine with cervical hyperextension. Through a midline cervical incision, a subplatysmal flap was raised and the hyoid bone, thyroid and cricoid cartilages and the first four tracheal rings were exposed. The strap muscles were divided and the thyroid isthmus was transected and ligated. A

tracheostomy was performed through the fourth tracheal ring and ventilation was continued through a tracheal tube. The thyroid perichondrium was dissected bluntly, the inferior constrictor muscles were released from both thyroid alae, and the cricothyroid and thyrohyoid membranes were incised (Figure 1). The superior and inferior thyroid horns were divided bilaterally, and the mucosa was incised under direct vision, preserving both arytenoids. The resection line ran inferiorly through the cricothyroid membrane, posteriorly along the aryepiglottic fold, and superiorly below the petiole of the epiglottis through the thyrohyoid membrane.



Figure 1. Intraoperative view of the skeletonized larynx after release of the inferior constrictor muscles and division of the thyroid horns, with the laryngeal lumen exposed before en bloc resection. The tracheal tube is seen entering the tracheostomy (upper right). The specimen, including both vocal folds, both false folds and the entire thyroid cartilage, was removed en bloc with grossly free margins and sent for definitive histopathological examination (Figures 2 and 4). No intraoperative frozen section was performed. Intraoperative findings included scarring of the left vocal fold, with preservation of the aryepiglottic folds and no involvement of the pre-epiglottic or subglottic spaces; no suspicious cervical lymph nodes were identified. Reconstruction was performed with three submucosal Vicryl 1 sutures passed around the cricoid cartilage and through the epiglottis and hyoid bone, tied sequentially to complete the CHEP (Figure 3). A closed-suction drain was placed, the platysma and skin were closed, and a No. 9 tracheostomy cannula and a nasogastric tube were placed. Operative time was 112 minutes, blood loss was 20 mL, and no transfusion was required. There were no intraoperative complications.

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Figure 2. Surgical field immediately after en bloc resection. The cricoid ring with the airway lumen is seen inferiorly, with the preserved arytenoid units and the epiglottis and hyoid bone above, prior to impaction.

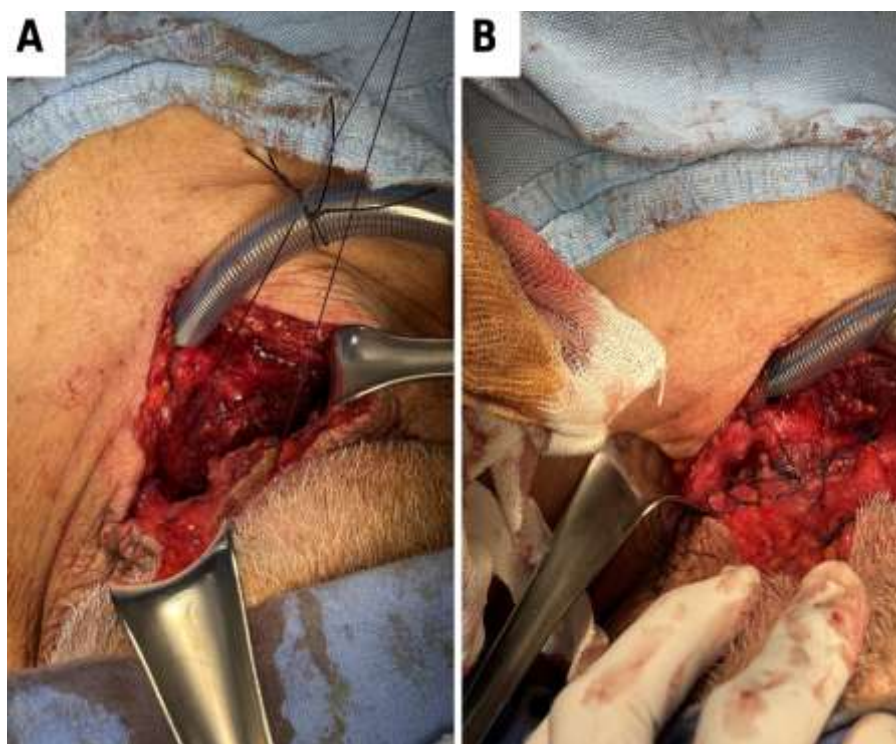


Figure 3. Cricohyoidoepiglottopexy. (A) Submucosal pexy sutures passed around the cricoid and through the epiglottis and hyoid bone. (B) Completed pexy after sequential knotting, with the cricoid impacted against the hyoid bone.



Figure 4. Oriented surgical specimen: the entire thyroid cartilage with both true and false vocal folds, resected en bloc.

Postoperative course

The patient was transferred to the recovery unit breathing spontaneously through the tracheostomy cannula and hemodynamically stable. The postoperative course was favorable, without bleeding, wound complications or respiratory events. He was discharged with the closed-suction drain in place and continued follow-up in the outpatient clinic, where he has shown good postoperative evolution. At the time of writing, the definitive histopathological report of the surgical specimen is pending.

DISCUSSION

This case illustrates three clinically relevant points: the possibility of very late local failure after radiotherapy for early glottic cancer, the diagnostic uncertainty inherent to the irradiated larynx, and the feasibility of an open organ-preserving salvage in an older patient.

In a large cohort, Brandstorp-Boesen et al. showed that the risk of recurrence in laryngeal cancer is highest during the first years after treatment and declines steadily thereafter (3). A new lesion appearing 18 years after radiotherapy and 12 years after endoscopic treatment therefore raises the differential diagnosis between a true late recurrence and a metachronous second primary within a field of tobacco- and radiation-related carcinogenesis. From a practical standpoint, both scenarios are managed as salvage surgery in an irradiated organ, and the distinction does not change the surgical indication, but it underlines the importance of long-

term laryngoscopic surveillance even beyond the conventional five-year window.

Diagnosis in the irradiated larynx is challenging. Radiation-induced edema, fibrosis and synechiae distort the endoscopic and radiological appearance, and superficial biopsies may underestimate the lesion, as occurred in our patient, whose biopsy showed a high-grade intraepithelial lesion with post-treatment changes and *Actinomyces*-like organisms, which usually represent colonization of damaged mucosa. Zbären et al., studying whole-organ sections, demonstrated that recurrent glottic carcinomas tend to be multifocal and to spread submucosally, frequently exceeding the clinically apparent extent (11). This supports an en bloc open resection with wide margins rather than repeated endoscopic procedures when the clinical suspicion of recurrence is high. The discrepancy between the telarlaryngoscopic finding of left vocal fold hypomobility and the normal mobility reported at endoscopy may also reflect post-radiation fibrosis and synechia rather than deep tumor invasion, but it reinforces the risk of clinical understaging in this setting.

Salvage supracricoid laryngectomy was first reported for radiation failure by Laccourreye et al. in 1996, with high local control in carefully selected patients (12). Subsequent series have confirmed these results. Spriano et al. reported favorable oncological and functional outcomes of supracricoid laryngectomy as salvage surgery (13), and in a multi-institutional Italian series of 78 patients, Pellini et al. reported 5-year disease-free survival of 95.5%, successful decannulation and satisfactory swallowing in 97.4% of cases,

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at the price of early complications in 27% and late complications in 17.9% (14). Marchese-Ragona et al. likewise described good long-term oncological and functional results for recurrent early glottic carcinoma after irradiation (15), and the systematic review and meta-analysis by Leone et al. supported supracricoid laryngectomy as a valid salvage option after radiotherapy or chemoradiotherapy

failure (16). Comparative data show that, in appropriately selected patients, conservation surgery does not compromise survival compared with total laryngectomy (17), whereas unselected salvage of recurrent glottic cancer carries a substantial risk of eventual total laryngectomy (4). Table 2 summarizes the main salvage options.

Table 2. Surgical salvage options for radiorecurrent glottic carcinoma. OPHL, open partial horizontal laryngectomy; SSC-CHEP, subtotal supracricoid laryngectomy with cricohyoidoepiglottopexy.

Option	Typical indication	Advantages	Limitations
Transoral laser microsurgery	Small, superficial, well-visualized rT1 lesions	Minimally invasive; no tracheostomy; repeatable	Limited exposure and margin assessment in fibrotic, irradiated tissue; risk of understaging (11)
Vertical partial laryngectomy	Unilateral rT1 lesions without commissure involvement	Preserves contralateral fold; good voice	Higher local failure for recurrent disease with deep or anterior spread (5)
SSC-CHEP (OPHL type IIa)	rT1–rT2 and selected rT3 glottic tumors with at least one mobile cricoarytenoid unit and free subglottis	Wide en bloc margins; no permanent stoma; functional larynx (12–16)	Temporary tracheostomy; aspiration risk; requires good pulmonary reserve and rehabilitation (18)
Total laryngectomy	Extensive recurrence, cricoid or arytenoid fixation, poor pulmonary function	Reliable local control (4,17)	Permanent stoma; loss of natural voice; higher fistula risk after radiotherapy

Patient selection is the key determinant of success. SSC-CHEP requires at least one mobile cricoarytenoid unit, an intact cricoid cartilage, absence of significant subglottic extension, and no invasion of the pre-epiglottic space or hyoid bone (8,10). Our patient fulfilled these criteria, with preservation of the posterior third of the vocal fold, both arytenoids and the subglottis, confirmed intraoperatively. Functional reserve is equally important: aspiration is the most relevant functional complication after supracricoid laryngectomy, and although most patients recover functional swallowing, advanced age and prior radiotherapy are recognized factors associated with slower rehabilitation (18). The patient's good performance status (ECOG 1) and low cardiopulmonary risk supported the decision to preserve the larynx despite his age. Finally, in our case, blood loss was minimal and the procedure was completed without incidents, showing that the technique can be performed safely in an irradiated field when the dissection is carried out in the subperichondrial plane and the pexy is achieved without tension.

CONCLUSION

Late recurrence of early glottic carcinoma can occur many years after radiotherapy, which justifies long-term laryngoscopic surveillance and a high index of suspicion for

new or progressive dysphonia. In carefully selected patients with a mobile cricoarytenoid unit and no subglottic or pre-epiglottic extension, salvage SSC-CHEP offers an oncologically sound alternative to total laryngectomy, preserving the natural airway, voice and swallowing, even in older patients with good functional status.

REFERENCES

I. Bray F, Laversanne M, Sung H, Ferlay J, Siegel RL, Soerjomataram I, et al. Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin.* 2024;74(3):229-63.

II. Steuer CE, El-Deiry M, Parks JR, Higgins KA, Saba NF. An update on larynx cancer. *CA Cancer J Clin.* 2017;67(1):31-50.

III. Brandstorp-Boesen J, Sørum Falk R, Boysen M, Brøndbo K. Risk of recurrence in laryngeal cancer. *PLoS One.* 2016;11(10):e0164068.

IV. Ganly I, Patel SG, Matsuo J, Singh B, Kraus DH, Boyle JO, et al. Results of surgical salvage after failure of definitive radiation therapy for early-stage squamous cell carcinoma of the glottic larynx. *Arch Otolaryngol Head Neck Surg.* 2006;132(1):59-66.

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- V. Motamed M, Laccourreye O, Bradley PJ. Salvage conservation laryngeal surgery after irradiation failure for early laryngeal cancer. *Laryngoscope*. 2006;116(3):451-5.
- VI. Majer EH, Rieder W. Technique de laryngectomie permettant de conserver la perméabilité respiratoire (la crico-hyoïdo-pexie). *Ann Otolaryngol Chir Cervicofac*. 1959;76:677-81.
- VII. Piquet JJ, Desaulty A, Decroix G. Crico-hyoïdo-épiglotto-pexie. Technique opératoire et résultats fonctionnels. *Ann Otolaryngol Chir Cervicofac*. 1974;91(12):681-6.
- VIII. Laccourreye H, Laccourreye O, Weinstein G, Menard M, Brasnu D. Supracricoid laryngectomy with cricohyoidoepiglottopexy: a partial laryngeal procedure for glottic carcinoma. *Ann Otol Rhinol Laryngol*. 1990;99(6 Pt 1):421-6.
- IX. Gallegos-Hernández JF. Cirugía parcial de laringe. Técnicas y resultados. *Cir Cir*. 2010;78(5):451-5.
- X. Succo G, Peretti G, Piazza C, Remacle M, Eckel HE, Chevalier D, et al. Open partial horizontal laryngectomies: a proposal for classification by the working committee on nomenclature of the European Laryngological Society. *Eur Arch Otorhinolaryngol*. 2014;271(9):2489-96.
- XI. Zbären P, Nuyens M, Curschmann J, Stauffer E. Histologic characteristics and tumor spread of recurrent glottic carcinoma: analysis on whole-organ sections and comparison with tumor spread of primary glottic carcinomas. *Head Neck*. 2007;29(1):26-32.
- XII. Laccourreye O, Weinstein G, Naudo P, Cauchois R, Laccourreye H, Brasnu D. Supracricoid partial laryngectomy after failed laryngeal radiation therapy. *Laryngoscope*. 1996;106(4):495-8.
- XIII. Spriano G, Pellini R, Romano G, Muscatello L, Roselli R. Supracricoid partial laryngectomy as salvage surgery after radiation failure. *Head Neck*. 2002;24(8):759-65.
- XIV. Pellini R, Pichi B, Ruscito P, Ceroni AR, Caliceti U, Rizzotto G, et al. Supracricoid partial laryngectomies after radiation failure: a multi-institutional series. *Head Neck*. 2008;30(3):372-9.
- XV. Marchese-Ragona R, Marioni G, Chiarello G, Staffieri A, Pastore A. Supracricoid laryngectomy with cricohyoidopexy for recurrence of early-stage glottic carcinoma after irradiation. Long-term oncological and functional results. *Acta Otolaryngol*. 2005;125(1):91-5.
- XVI. Leone CA, Capasso P, Topazio D, Russo G. Supracricoid laryngectomy for recurrent laryngeal cancer after chemoradiotherapy: a systematic review and meta-analysis. *Acta Otorhinolaryngol Ital*. 2016;36(6):439-49.
- XVII. Holsinger FC, Funk E, Roberts DB, Diaz EM Jr. Conservation laryngeal surgery versus total laryngectomy for radiation failure in laryngeal cancer. *Head Neck*. 2006;28(9):779-84.
- XVIII. Benito J, Holsinger FC, Pérez-Martín A, Garcia D, Weinstein GS, Laccourreye O. Aspiration after supracricoid partial laryngectomy: incidence, risk factors, management, and outcomes. *Head Neck*. 2011;33(5):679-85.