Radiol Oncol 1997; 31: 192-4.

Organ-sparing surgery in supraglottic cancer: Functional results and survival in 25 year period

Jeno Czigner

Clinic of Otolaryngology, University Med. School, Szeged, Hungary

This study is to analyse my personal experience in organ-sparing surgery which was done for 348 patients between 1966 and 1990. Simplified (standard) supraglottic laryngectomy was used for T1 and T2 lesions in 245 patients. One hundred and three patients were operated on with extended supraglottic laryngectomy: 61 of those were treated by supraglottic subtotal laryngectomy and 42 patients by supraglottic laryngectomy extended to the base of the tongue. Significant problems with aspiration occurred in 26 patients (7.5%). In four of those, total laryngectomy was required. In three patients, tracheostomy was necessary. Local recurrence was recorded in 23 (6.6%) patients. Overall survival at 5 years was 74% in the first group, 69% in the second group, and 62% in the third group. The survival of patients without metastases in the neck was 84%, and in those with the metastases in the neck nodes was 50%. These results showed that, in supraglottic cancer, a good local control can be achieved by organ preserving surgery.

Key words: laryngeal neoplasms-surgery; laryngectomy-methods; treatment outcome

Introduction

The treatment for supraglottic cancer of the larynx has changed over the years. In Great Britain and North-West Europe, the majority of patients are treated with radiotherapy (RT).[1,2,3] If primary surgery was advocated[4,5,6], mostly total laryngectomy was performed. In the series of 401 patients reported by Meyer *et al.*,[7] supraglottic laryngectomy was performed in less than 10% and total laryngectomy in over 90% of patients.

On the other hand, supraglottic laryngectomy – with or without RT – was advocated by others[8,9] with superior results when compared with RT alone, especially for T2 and T3 lesions.[10]

The purpose of this study was to assess the efficiency of organ-sparing surgery in supraglottic carcinoma (over 50% of all laryngeal cancer) in 25 years and to analyse other prognostic factors on all patients who underwent supraglottic partial laryngectomies (at three centres in Hungary) under my auspices between the years from 1966 to 1990 with a minimum follow-up of 5 years.

Correspondence to: Prof. Dr. Jeno Czigner, SZAOTE University, Department of Head & Neck Surgery, Tisza Lajos krt 111, 6701 Szeged, Hungary.

UDC: 616.22-006.6-089.85

Material and methods

A retrospective review of 648 patients with squamous cell carcinoma of the supraglottic larynx diagnosed and treated from 1966 to 1990 was done. Of the 648 patients, 131 (20%) were treated primarily with RT. Total laryngectomy was required in 169 patients (26%). Organ-sparing surgery was the primary treatment modality in 348 patients (54%). In total, surgery as a primary treatment for supraglottic cancer was used in 517 patients (80%).

The organ-sparing supraglottic surgery techniques reported earlier,[11] were used as follows:

1. Simplified (standard) supraglottic laryngectomy was used for T1 and T2 lesions in 245 patients (38%).

2. One hundred and three patients were operated on by extended supraglottic laryngectomy:

2.1. Supraglottic subtotal laryngectomy was designed for the resection of the entire supraglottic larynx and one true vocal cord with the arytenoid and ipsilateral wing of the thyroid cartilage below the thyro-arytenoid muscles - 61 patients (9%) were treated with this techniques.

2.2. Supraglottic laryngectomy extended to the base of the tongue - 42 patients (7%) were operated on by this method.

Combined surgery and RT were occasionally indicated. I am very cautious to decide to perform these operations after a complete course of RT; in fact, only 3 patients belonged to this group.

The reconstruction was performed carefully in all techniques:

1. The base of the tongue was transversely dissected, producing two layers to cover the cut thyroid cartilage by using two heavy U-shape sutures;
2. Appropriate suturing of the new laryngeal vestibulum;
3. Attention had to be paid that the residual larynx was sinking down and to the reconstruction of a functioning larynx; an important factor was a secure elevation and fixation of the rest-larynx up to the base of the tongue.

Results

Aspiration occurred practically in all patients, but it improved in the first month after surgery in most of them. Aspiration pneumonia occurred in 7.5%, and 3 of them died. Wound break-down and fistula formation were recorded in 4 and 7 patients, respectively. In 7 patients, swallowing could not be restored satisfactorily and a tube for drinking was necessary. In 4 patients, total laryngectomy was required. Prolonged decanulation was more frequent earlier, but only 3 surviving patients had permanent tracheostomy.

Voice was preserved in 326 out of 517 surgically treated patients (63%): both vocal cords were preserved in 269 (52%) and one vocal cord in 57 (11%) of patients. Only 191 (37%) patients lost their larynx.

Five-year actuarial survival rates were as follows:

- Simplified (standard) supraglottic laryngectomy - 74%;
- Supraglottic subtotal laryngectomy - 69%;
- Supraglottic laryngectomy extended to the base of the tongue - 62%.

Of 348 patients, 236 (68%) were alive over five years without evidence of disease. The local recurrence rate was acceptable - 23/348 (6.6%).

Loco-regional failure occurred in 79 (22.7%) patients. The most common site was the cervical lymph nodes. Of the 79 patients with recurrent disease, 56 (71%) developed cervical metastases, and 48 (61%) of them died of carcinoma. Patients with metastases in the neck had lower survival rates (49% - 71/143) than those with N0 disease (80% -165/205).

Conclusions

Organ-sparing surgery for supraglottic cancer provides an effective therapeutic modality. Technically, most of the supraglottic lesions of intermediate size can be resected with preservation of the voice. Primary RT is an effective alternative for many of these lesions. The problems still exist in the control of lymphatic metastases.

References

1. Robin PE, Olofsson J. Tumours of the larynx. In: Scott-Browns *Otolaryngology*. Vol. 5. Ch. 11. London: Butterworths, 1987: 186-234.
2. Price LA, Shaw HJ, Hill T. Larynx preservation in previously untreated advanced head and neck cancer: final analysis after 12 years follow-up. *J Laryngol Otol* 1993; **107:** 211-6.
3. Laccourreye O, Brasnu D, Merite-Drancy A, Cauchois R, Chabardes E, Ménard M, Laccourreye H. Cricohyoidopexy in selected infrahyoid epiglottic carcinomas presenting with pathological preepiglottic space invasion. *Arch Otolaryngol Head Neck Surg* 1993; **119:** 881-6.
4. Mann W, Beck C, Wannemacher M, Fuchs M. Überlebensrate und Funktion bei Kehlkopfhorizontal- und Kehlkopftotalresektion. *Laryngol Rhinol Otol* 1986; **65:** 282-6.
5. Kleinsasser O: *Tumoren des Larynx und des Hypopharynx*. Stuttgart, New York: Thieme, 1987: 77-113, 2-25, 147-52.
6. Glanz H, Kimmich T, Eichhorn Th, Kleinsasser O. Behandlungsergebnisse bei 584 Kehlkopfkarcinomen an der Hals-Nasen-Ohrenklinik der Universität Marburg. *HNO* 1989; **37:** 1-10.
7. Meyer HJ, Terrahe K, Scheu T, Berg H, Scheu T, Berg H. Kritische Rükschau auf die Behandlung von 400 Patienten mit Larynxkarzinom. *HNO* 1992; **40:** 292-9.
8. Bocca E, Pignataro O, Mosciaro O. Supraglottic laryngectomy: 30 years of experience. *Ann Otol Rhinol Laryngol* 1983; **92:** 14-8.
9. Herranz-Gonzáles J, Martinez-Vidal J, Gavilan C. Supraglottic laryngectomy: functional and oncologic results. *Ann Otol Rhinol* 1996; **105:** 18-22.

10. Robbins KT, Davidson W, Peters L J, Goepfert H. Conservation surgery for T2 and T3 carcinomas of the supraglottic larynx. *Arch Otolaryngol Head Neck Surg.* 1988; **114:** 421.

11. Czigner J. Modification of supraglottic resection of the larynx. In: Wigand ME, Steiner W, Stell PM, eds. *Functional partial laryngectomy: conservation surgery of carcinoma of the larynx.* Berlin: Springer, 1984: 197-202.