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Selective lateral neck dissection for laryngeal cancer with limited metastatic disease: is it indicated?

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Abstract

The most important prognostic factor in cancer of the larynx is the presence of cervical metastatic disease, which is the most common type of recurrence in such patients. Because micrometastases cannot be detected pre-operatively at present, selective lateral neck dissection is increasingly recommended as the standard treatment for patients with a clinically negative neck in order to reduce the recurrence rate. In cases of N+ disease, selective lateral neck dissection can be as valid as modified radical neck dissection, providing patients have only limited, occult metastatic disease.

Key words: Laryngeal neoplasms; Neoplasm metastases; Surgery, operative

Patients with cancer of the larynx are potentially curable, but a significant proportion of them develop loco-regional recurrences and many subsequently die of their neoplastic disease (Johnson, 1994). In fact, the most important single prognostic factor in cancer of the larynx is the presence of cervical metastatic disease. Metastasis to cervical lymph nodes is the most common type of recurrence in patients with laryngeal cancer.

Subsequent therapy is useful, but most patients with extracapsular spread have a poor prognosis and the recurrence is often inoperable. Post-operative radiation is indicated in patients undergoing selective lateral neck dissection with histologically-confirmed lymph node metastases and extracapsular spread.

The risk of recurrence and death is higher when there is a macroscopic extracapsular extension of the tumour (de Carvalho, 1998). The risk of distant metastases is also greater in patients whose neck is not treated surgically.

Several institutions are adopting and recommending selective neck dissection as the standard treatment for patients with a clinically negative neck in order to reduce the recurrence rate (Spiro *et al.*, 1993; Houck and Medina, 1995; Ambrosch *et al.*, 1996; Pellitteri *et al.*, 1997; Pitman *et al.*, 1997; Clayman and Frank, 1998; Ferlito and Rinaldo, 1998).

If a treatment defined as *selective lateral neck dissection* is recommended for the 'clinically negative' neck in patients with cancer of the larynx, this stems from the assumption that the lymph nodes on levels II–IV may well be metastatic, because otherwise a surgical treatment on the neck would not even be taken into consideration.

If we are dealing with a cancer that does not metastasize to the cervical lymph nodes, e.g. verrucous carcinoma (Ferlito *et al.*, 1998), or if we are absolutely certain that there are no metastases to the neck (though we can never really be *that* certain because micrometastases cannot be detected pre-operatively at present), then there is no valid reason for implementing any kind of dissection, however functional or selective it may be.

Selective lateral neck dissection is not indicated simply to obtain important information for the staging procedure, it is also just as valid as a modified radical neck dissection in the treatment of patients with limited cervical metastases. We have to treat lymph nodes that are at risk, or already metastatic—not all the lymph nodes in the neck (Ferlito and Rinaldo, 1998).

Since the pattern of metastasis is largely predictable in cancer of the larynx, the application of selective lateral neck dissection represents a well-accepted modality for patients clinically defined as N_0. Despite meticulous investigations (palpation of the neck supplemented by modern imaging techniques and ultrasound-guided fine needle aspiration cytology, etc.), pre-operative assessment of the lymph nodal status shows limited levels of accuracy. The detailed histopathological assessment of all lymph nodes removed during a neck dissection is the most reliable method currently available for diagnosing the actual status of the lymph nodes.

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There is extensive evidence that micrometastases cannot be detected at present by non-invasive methods, so it is essential to dissect the neck in order to reduce the rate of regional recurrence and its related mortality. Selective lateral neck dissection thus also serves a precautionary purpose.

Another concern for all head and neck cancer surgeons is whether selective lateral neck dissection is an adequate treatment for N+ neck in laryngeal cancer patients. The topic is currently undefined and opinions are divergent. Several observations can be made on this matter.

It is important to emphasize that, although the spinal accessory nerve, the internal jugular vein and the sternocleidomastoid muscle are preserved in the majority of cases of this kind of dissection, there is no reason why one of the three structures cannot be sacrificed (Pellitteri *et al.*, 1997). When it is necessary to do so, the structure most frequently lost is the internal jugular vein.

Not all N_1 lesions are the same, in the sense that there is a considerable difference between a small metastatic lymph node, with no rupture of the capsule, and one that is fixed, nearly 3 cm in diameter, with macroscopic infiltration of the capsule and maybe even signs of necrosis. The fifth edition of the TNM appearing in 1997 (International Union Against Cancer, 1997) defines N_1 as 'Metastasis in a single ipsilateral lymph node, 3 cm or less in greatest dimension'. Both the above-described lymph nodes would be labelled as N_1, but we would be dealing with two totally different pathological and clinical situations. In dealing with a neck defined as N_1, therefore, it is up to the clinician to assess in each case whether it is best to proceed with one or other type of neck dissection.

Another aspect concerns the fact that even patients undergoing selective neck dissection may require additional treatment (including post-operative irradiation) in cases of multiple nodes or extracapsular spread.

The application of selective lateral neck dissection represents an adequate and valid modality for laryngeal cancer patients providing they have only limited, occult metastatic disease (i.e. when their metastases involve one or two nodes, small in size, mobile, and with no macroscopic extracapsular extension).

Selective lateral neck dissection has generally not been advocated for the management of a more advanced nodal status, though some authors have employed selective neck dissection for metastatic disease staged as N_1, N_{2a} or even N_{2b} (Shah *et al.*, 1993).

It is difficult to compare the results achieved with selective lateral neck dissection at various institutions (Byers, 1985; Spiro *et al.*, 1993; Houck and Medina, 1995; Ambrosch *et al.*, 1996; Pellitteri *et al.*, 1997; Pitman *et al.*, 1997) because of differences in patient seletion (N_0 and N_1; laryngeal and hypopharyngeal cancers), the different extent of the dissection (Steiner – cf. Ambrosch *et al.*, 1996 – advocates clearing only levels II and III), and the post-operative radiotherapy variable. Some studies report results that include both lateral and supra-omohyoid neck dissections (Pellitteri *et al.*, 1997).

Cervical failures often occur in the undissected neck, so it seems more advisable to perform selective lateral neck dissection. As Myers pointed out (1996), 'while it is certainly true that some patients can be salvaged after recurrence of lymph nodes in the neck, the fact is that not all patients who have a recurrence can be cured'.

There is a high incidence of recurrence on the contralateral side of the neck in supraglottic cancer patients treated with unilateral neck dissection who have a histologically positive neck specimen. In these patients, bilateral neck dissection is therefore indicated to improve survival and loco-regional control. Bilateral neck dissection in patients with supraglottic cancer has reduced neck recurrences from 20 per cent to nine per cent (Weber *et al.*, 1994).

Despite its name, *radical* neck dissection fails to dissect pretracheal and paratracheal lymph nodes (which may be metastatic in subglottic and advanced glottic carcinomas), while it includes level I lymph nodes which are seldom involved – or, if they are, this is usually a case of patients with N_2 or N_3 neck disease (any such involvement only regards the submandibular triangle, never the submental triangle!). There is no longer any reason to dissect levels I and V in N_0 and N_1 laryngeal cancer because involvement of the lymph nodes on these levels is virtually non-existent (Skolnik *et al.*, 1976; Davidson *et al.*, 1993; Gallo *et al.*, 1996; Li *et al.*, 1996; Ferlito and Rinaldo, 1998).

Conclusions

Selective lateral neck dissection is as effective as modified radical neck dissection and radical neck dissection for the treatment of a neck with clinically negative or limited occult cervical metastases. The choice of this type of dissection depends on the primary tumour and its pattern of regional spread. The combined goal of minimizing morbidity and avoiding overtreatment may be achieved by selective neck dissection, which can optimize cure rates as well as functional and cosmetic results (Ferlito and Rinaldo, 1998).

Micrometastases are difficult to evaluate and their reported incidence varies according to the methods used for their detection (e.g. semi-serial sections and/or histochemistry for cytokeratins). Their high incidence in cancer of the larynx would strongly support the use of selective lateral neck dissection.

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