ORIGINAL ARTICLE

Oncological results of surgical treatment of malignant tumors of the nasal vestibule

Nazal vestibül malign tümörlerinin cerrahi tedavisinde onkolojik sonuçlar

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Objectives: We evaluated functional results of surgical treatment for squamous cell carcinoma of the nasal vestibule.

Patients and Methods: A retrospective review of 2,763 patients treated for head and neck cancers between 1991 and 2000 revealed 10 cases of nasal vestibule tumors, with an incidence of 0.36%. All the patients were males with a mean age of 64.8 years (range 58 to 72 years). Based on the classification system of the AJCC 1992 for skin cancers, and the UICC classification for neck metastasis, three patients had T_2, three patients had T_3, and four patients had T_4 tumors. Lymph node metastasis was present in three patients. Nine patients were treated with surgery as the primary treatment. One patient underwent surgical salvage following radiotherapy failure. The mean follow-up period was 3.65 years (range 6 months to 12 years).

Results: Three patients with metastatic neck disease and four patients with advanced tumors underwent radical neck dissection and selective supraomohyoid neck dissection, respectively. Seven patients underwent reconstruction with paramedian forehead flap (n=3), nasolabial flap (n=2), aural composite graft, or split thickness flap. Including the one with radiotherapy failure, two patients died within the first postoperative year due to local and neck recurrences. Another patient died in the postoperative third year due to metastatic squamous cell carcinoma of the lung. No cosmetic or functional complaints were observed in patients with early stage lesions. Two patients with advanced tumors had nasal ventilation problems and a secondary revision procedure was required in one.

Conclusion: Surgery is a successful therapeutic modality for carcinoma of the nasal vestibule, especially when applied in conjunction with proper reconstruction techniques and, when necessary, neck dissection procedures.

Key Words: Carcinoma, squamous cell/surgery; nose neoplasms/surgery.

Amaç: Nazal vestibül yassı epitel hücreli karsinomunda cerrahi tedavinin fonksiyonel sonuçları değerlendirildi.

Hastalar ve Yöntemler: 1991-2000 yılları arasında baş-boyun kanseri nedeniyle tedavi edilen 2763 hastanın geriye doğru taranmasında, 10 hastada nazal vestibül tümörü nedeniyle cerrahi tedavi uygulandığı görüldü (sıklık %0.36). Tüm hastalar erkekti; ortalama yaş 64.8 (dağılım 58-72) idi. AJCC 1992 deri kanserleri için sınıflandırma sistemi ve boyun metastazı için UICC sınıflandırma sistemine göre, üç hastada T_2, üç hastada T_3, dört hastada T_4 tümör; üç hastada ise boyun metastazı vardı. Dokuz hastada primer tedavi yöntemi cerrahi idi; bir hastada ise radyoterapi başarısızlığı nedeniyle kurtarma cerrahisi uygulandı. Ortalama takip süresi 3.65 yıl (dağılım 6 ay-12 yıl) idi.

Bulgular: Boyun metastazı saptanan üç hastaya radikal boyun diseksiyonu, ileri evre tümörü olan dört hastaya supraomohiyoid selektif boyun diseksiyonu uygulandı. Yedi hastanın rekonstrüksiyonunda paramedian alın flebi (n=3), nazolabial flep (n=2), aural kompozit greft ya da split thickness cilt grefti kullanıldı. Radyoterapi başarısızlığı nedeniyle tedavi edilen hasta da dahil, iki hasta lokal ve boyun nüksleri nedeniyle ameliyat sonrası ilk yıl içinde, bir hasta ise üçüncü yılda metastatik yassı epitel hücreli akciğer karsinomu nedeniyle kaybedildi. Erken evre tümörü olan hastalarda kozmetik ve fonksiyonel yakınma görülmedi. İleri evre tümörü olan iki hastada ciddi nazal ventilasyon sorunu yaşandı; bunlardan birinde sekonder revizyon girişimine ihtiyaç duyuldu.

Sonuç: Nazal vestibül tümörlerinde cerrahi, özellikle beraberinde uygun rekonstrüksiyon tekniği ve gerektiğinde boyun diseksiyonu uygulandığında başarılı bir tedavi yöntemidir.

Anahtar Sözcükler: Yassı hücreli karsinom/cerrahi; burun neoplazileri/cerrahi.

Nasal vestibule is the part of the anterior nasal cavity extending from the nares to the ridge of the limen nasi. It consists of the columella, anterior cartilaginous septum, sill, and internal lower cartilaginous regions. The lymphatic drainage is mainly through the submandibular, facial, and nasolabial nodes.[1] The drainage is most commonly ipsilateral, but may be bilateral, particularly when the tumor involves the basis of the columella, floor of the nasal vestibule and the upper lip.[2]

It is a rare tumor site and squamous cell carcinoma (SCC) is the most common histological type, accounting for less than 1% of all malignant tumors.[3]

The most important predisposing factor for nasal vestibule tumors is tobacco smoke.[4-6] The prevalence in the white population points to a possible solar contribution in the development of these cancers.[5,7] Patients are usually male with an average age of 60 to 65 years.[2,8-10]

The purpose of this paper is to provide information about nasal vestibule tumors which are uncommon in clinical applications. In the early stages of nasal vestibule carcinoma, surgical treatment yields satisfactory results from both oncological and functional perspectives. However, in the advanced stages, due to the need for combined therapy (surgery+radiotherapy) and the difficulties in the reconstruction of the operated area, employing surgery as the primary therapeutic approach remains controversial. To aid this discussion, the indications for surgery of the metastatic neck disease are examined.

PATIENTS AND METHODS

Between 1991 and 2000, a total of 2,763 patients with head and neck cancers were treated at Istanbul University, Istanbul Medical Faculty, Ear Nose Throat Clinic. A retrospective review of follow-up charts revealed 10 cases of nasal vestibule tumors. The incidence of nasal vestibule cancer among all head and neck cancers was 0.36%, showing the rarity of cancer originating from the nasal vestibule.

All tumors were identified according to the classification system proposed by the American Joint Committee on Cancer (AJCC-1992) for skin cancers (Table I), and the UICC classification was used for neck metastasis.[11]

Surgery was the preferred therapeutic approach. Reconstructive techniques included primary closure or the use of split thickness skin graft, melolabial flap, aural conchal cartilage composite graft, and paramedian forehead flap. Neck dissection was not performed in patients with early-staged primary lesions (T_1-T_2) having a low likelihood for neck metastasis; instead, they were kept under close follow-up. Patients with advanced primary lesions (T_3-T_4) without overt clinical neck metastasis underwent bilateral supraomohyoid selective neck dissection, those with metastatic neck disease underwent radical neck dissection. As opposed to the standard neck dissection, primary attention was paid to the pre- and post-vascular level I neck dissection.

RESULTS

All the patients were males with a mean age of 64.8 years (range 58 to 72 years). All patients were moderate to heavy smokers. Any possible solar effect was eliminated in all the patients.

Based on the classification system of the AJCC 1992 for skin cancers, and the UICC classification for neck metastasis, three patients had T_2, three patients had T_3, and four patients had T_4 tumors (Table I). Lymph node metastasis was present during initial diagnosis in three patients (2 N_1, 1 N_{2b}).

Nine patients were treated with surgery as the primary mode of therapy. One patient, following radiotherapy failure, required surgical salvage for local recurrent disease and associated metastatic neck disease (Table II).

Neck dissection was not performed in three patients in stage T_2, due to clinically uninvolved necks. Bilateral modified radical neck dissection type II was performed in two patients with clinically overt neck metastasis. The patient who was referred to our clinic as radiotherapy failure underwent radical neck dissection on the clinically involved side, and functional neck dissection was performed on the other side. The remaining four N_0 patients were treated with bilateral supraomohyoid

TABLE I

STAGING FOR SKIN CARCINOMAS

Stage	Size or involvement
T_1	Lesion smaller than 2 cm
T_2	Greater than 2 cm, smaller than 5 cm
T_3	Greater than 5 cm
T_4	Cartilage, bone or nerve involvement

TABLE II

PATIENTS' CHARACTERISTICS

Patient no.	Age	Stage	Treatment	Reconstruction modality	Follow-up
1	58	T_3N_{2a}	Tumor resection+ bilateral MRND type II	Primary closure	Healthy (postoperative 12th year)
2	72	T_3N_1	Tumor resection+ bilateral MRND type II	Primary closure	Died in the postoperative 3rd year from metastatic squamous cell carcinoma of the lung
3*	65	T_4N_1	Tumor resection+ right RND+left FND	Primary closure	Died due to local and regional recurrence in the postoperative 6th month
4	63	T_2N_0	Tumor resection	Nasolabial flap	Healthy (postoperative 5th year)
5	66	T_2N_0	Tumor resection	Split thickness skin graft	Healthy (postoperative 4th year)
6	66	T_4N_0	Tumor resection+right partial maxillectomy+bilateral SOHND	Paramedian forehead flap	Died in postoperative first year due to locoregional recurrence on the facial pedicle
7	68	T_4N_0	Tumor resection+medial maxillectomy+bilateral SOHND	Paramedian forehead flap	Healthy (postoperative 4th year)
8	58	T_4N_0	Tumor resection+bilateral SOHND	Paramedian forehead flap	Healthy (postoperative 3rd year)
9	67	T_2N_0	Tumor resection	Aural composite graft	Healthy (postoperative 3rd year)
10	67	T_3N_0	Tumor resection+bilateral SOHND	Nasolabial flap	Healthy (postoperative 6th year)

*Radiotherapy failure; MRND: Modified radical neck dissection; RND: Radical neck dissection; FND: Functional neck dissection; SOHND: Supraomohyoid selective neck dissection;

selective neck dissection due to the advanced stage of their primary lesions.

Primary closure rather than a reconstruction technique was applied to the first three patients with stages T_3N_{2a}, T_3N_1 and T_4N_1, respectively (Table II). Nasolabial flap and split thickness skin flap were performed in two patients with primary lesions at an early stage. The other reconstruction techniques employed to improve postoperative cosmetic results were aural conchal cartilage composite graft (1 patient) and paramedian forehead flap (3 patients). One patient required functional revision nasal surgery.

The mean follow-up period was 3.65 years (range 6 months to 12 years). Including the one with radiotherapy failure, two patients died within the first postoperative year due to local and neck recurrences. Another patient died in the postoperative third year due to metastatic squamous cell carcinoma of the lung. The remaining patients were alive and healthy.

Crusting was frequent in the early postoperative period, but showed regression with the development of mucosal lining on the inner side of the flap. No cosmetic or functional complaints were observed in patients with early stage lesions. Two patients with advanced tumors had nasal ventilation problems and a secondary revision procedure was required for one. No other primary focus of head and neck carcinoma was detected in any of the patients.

DISCUSSION

Squamous cell carcinoma of the nasal vestibule is uncommon, most series are relatively small. Patel et al.[9] reported a series of 30 cases from a total of 4,797 head and neck tumors treated over a 15-year period. Samaha et al.[5] reviewed 2,852 head and neck tumors treated in a period of 14 years and found only 14 cases. Similarly, our study consisted of nine cases out of 2,763 head and neck tumors over 10 years.

Although nasal vestibule tumors are of obvious visibility, their diagnosis is usually delayed because the lesion is frequently mistaken for crusting after local trauma or furuncle. In most of the reported series, the disease was diagnosed at early stages (frequently smaller than 5 cm in diameter) and without cartilage or bone invasion.[8,9] In contrast, none of our patients were at T_1 and mostly the disease had already advanced to T_3 and T_4 at the time of diagnosis. The reasons for the late diagnosis may be inadequate primary health care, prolonged period between diagnosis and treatment due to a congested schedule, and postoperative aesthetic concerns.

Since carcinoma of the nasal vestibule stems from a complex anatomical structure and is uncommon, a consensus does not exist on its staging and therapy, and an internationally accepted TNM classification is currently unavailable. Wang[10] developed a staging system which was found feasible only by a small number of radiotherapists.[9,10,12,13] As with the majority of studies, we prefer the more frequently utilized

staging system of AJCC 1992 for skin carcinomas because Wang's staging system does not present any additional therapeutic and follow-up advantages or differences.

Because of their rarity, therapeutic approach for nasal vestibule tumors is controversial. Although some authors prefer external beam radiotherapy or brachytherapy as the treatment of choice, others regard surgery as effective in both early and advanced stages.[12] Many authors suggest that the effectiveness of surgery may be increased when it is combined with adjuvant radiotherapy.[2,12,14] The success rates of different treatment modalities in early stages are similar, ranging between 80% to 90%.[2,4]

It is widely accepted that primary radiotherapy has a limited effect on lesions with cartilage, bone, or nerve involvement.[7,9,12] The hypervascular and lymphatic-rich configuration of the area facilitates invasion of even tiny and superficial tumors to the underlying bone and cartilage structures. Moreover, surgery has many advantages for the follow-up period. Because the disease stems from an area with a complex and rich flora, it is very difficult to differentiate postradiotherapy edema and cellulite from the recurrence of the disease following radiotherapy as the primary treatment. The occurrence of intensive local complications due to radiotherapy such as optic neuritis is another disadvantage. For recurrent tumors following radiotherapy, surgery remains the only therapeutic modality because of the low radiation resistance of the area. Since surgical margins become indistinct after radiotherapy, aggressive surgery is required, as in one patient in this series in whom radical salvage surgery was performed due to indistinguishable tumor boundaries following radiotherapy failure. Unfortunately, the patient died from locoregional recurrent disease.

Nasal vestibule tumors with clinically N_0 necks at the time of presentation have less than 10% probability of developing nodal metastases.[5,15] This rate is significantly correlated with histological differentiation. Some authors claim that regional node disease at the time of presentation is not an unfavorable prognostic indicator.[2,5,7] This is in contradiction with the results obtained from our series. We believe that the presence of neck metastasis worsens the prognosis considerably. In our series, six (6/7) patients without neck metastasis survived (85.7%), whereas two (2/3) patients with neck metastasis died. In par-

ticular, T_1-T_2 primary lesions with clinically N_0 necks may not necessitate neck dissection because of the low incidence of metastasis.[8] Selective treatment of the neck should be performed in all advanced primary lesions (T_3-T_4) and in all patients with poorly differentiated tumors. Usually, supraomohyoid selective neck dissection is satisfactory.[16] Due to the fact that lymphatic drainage of the region is mainly to the first level of the neck, special care must be taken during neck dissection, especially along the pre- and postvascular compartments of the facial pedicle. The presence of clinically overt neck disease necessitates a modified radical neck dissection. Both sides of the neck should be treated immediately since development of metastasis is bilateral in half of the patients.[1]

In conclusion, carcinoma of the nasal vestibule is an uncommon pathology, with prognosis better than other carcinomas of the nasal and paranasal cavity. Surgery is a successful therapeutic modality especially when applied in conjunction with proper reconstruction techniques.

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