



## Approach to the advanced stage cutaneous, tumors of the head and neck: A retrospective analysis of 50 cases

Serhat Sibar\*, Kemal Findikcioglu, Ismail Barut, Ozgur Hurkal

Department of Plastic, Reconstructive and Aesthetic Surgery, Gazi University Hospital, Ankara, Turkey

### ARTICLE INFO

### ABSTRACT

#### Article History

Received 05 / 06 / 2016

Accepted 07 / 09 / 2016

#### \* Correspondence to:

Serhat Sibar

Department of Plastic, Reconstructive  
and Aesthetic Surgery,

Gazi University Hospital,

Ankara, Turkey

e-mail: serhatsibar@hotmail.com

#### Keywords:

Free tissue flap

Head and neck neoplasm

Maxillo-mandibular reconstruction

Palliative surgery

Skin neoplasm

Skin cancer is the most common form of malignancy in the world, the incidence of cutaneous malignancies has increased dramatically over the past several decades. More than 80% of cases involve the head and neck region, resection and latter reconstruction of advanced cutaneous malignancies constitute significant problems due to aesthetic and functional concerns. Aim of this study is to discuss the therapeutic options and challenges usually seen in the treatment course. From 2006 to 2016, 50 patients with advanced stage (TNM stage of 3 or greater) cutaneous head and neck cancers were included in the study. Patients were evaluated according to demographic data and treatment options. The mean age of patients was 61.4 (26-87), 32 were male and 18 were female. Most common tumor type was squamous cell carcinoma (36 patients), most common localizations were mandible (7 patients) and orbita (6 patients). After tumor ablation, most commonly performed reconstruction was free tissue transfer (31 patients). 38 patients received adjuvant therapy (chemotherapy, radiotherapy or interferon) at the postoperative period. Six patients were lost at following one year period. Head and neck region are more exposed to direct sunlight than any other body part. Especially advanced stage cutaneous malignancies can be seen in these region due to patient negligence and previous failed treatment attempts. Surgical therapy is long standing option, usually necessitates 3D reconstruction with free flaps and multidisciplinary approach is crucial in the treatment course. Postoperative rehabilitation is complex and demanding process which requires extra patient and family motivation, also must be individualized for each patient.

© 2016 OMU

### 1. Introduction

Skin cancers form the most common type of malignancy worldwide, the incidence of which has been rapidly rising. The histological subtypes of skin cancer are, in the descending order, basal cell carcinoma (BCC), squamous cell carcinoma (SCC), and melanoma. According to the Turkish National Cancer Registry data, 681 persons were diagnosed with malignant melanoma and 8394 persons with non-melanoma skin cancer in 2013 (Gultekin et al.,

2016). The most relevant risk factor for skin cancers is the amount of cumulative sunlight exposure. In addition, light skin color (Fitzpatrick type I-III), mid-to-advanced age, radiation exposure, certain chemicals and some premalignant skin conditions (eg; actinic keratosis, bowen's disease, keratoacanthoma) have been implicated in the pathogenesis of skin cancers. As head and neck region are more exposed to direct sunlight than any other body part, more than 80% of the skin cancers involve these regions. This study involved

patients with advanced cutaneous malignancies of cutaneous or mucosal origin (lip mucosa) localized in the head and neck region. In this study we aimed to determine the difficulties experienced by both patients and surgeons at preoperative, intraoperative, and postoperative periods, and to address their solutions; we also aimed to determine the role of plastic surgery in this field, and the strategies to select patient-based reconstructive options.

## 2. Patients and method

Our study retrospectively reviewed the medical records of patients presenting to our clinic for cutaneous or mucosal tumors located in the head and neck region between 2006 and 2016. A total of 50 patients with tumors with a TNM stage of three or greater were included. Patients (or a first degree relative if patient in question had deceased) were undertaken with the understanding and written consent of each subject for the study. Each patient's demographic properties, tumor histology and localization, surgical procedure, adjuvant therapy, complications, recurrences, and postoperative follow-up were studied.

## 3. Results

The mean age of the patient population was 61.4 (26-87) years; 32 patients were male and 18 were female. Five patients had previously known Xeroderma pigmentosum (XP). The patient's skin colors varied between Fitzpatrick types I and III, although most of them had a Fitzpatrick type II skin color (n=36). The most common tumor histology was SCC (n=36), with other types including basal cell carcinoma (n=11), malignant melanoma (n=2), and a combination of SCC and malignant melanoma (n=1). All tumors had a TNM stage of three or greater (Fig. 1). The most common tumor localizations were mandible (n=7) and orbital region (n=6) (Table 1, 2). The most commonly performed ablative procedures were neck dissection (n=22) and mandibulectomy (n=7). Following tumor ablation, free flap procedures were performed in 62% (n=31) of the patients; in 30% (n=15) local or regional flap procedures; and in 8% (n=4) skin graft procedures were performed. Radial forearm flap (n=11) and anterolateral thigh flap (n=6) were the most commonly used free flap types. Various major and minor complications developed in 14 (28%) patients at the postoperative period (Table 3, 4). Majority of patients (n=38) received adjuvant therapies (radiotherapy, chemotherapy or interferon) at the postoperative period, while 12 patients did not. Seventeen (34%) patients developed recurrences by the end of two years postoperatively. Of these, 11 patients (22%) had close or positive surgical margin after the primary operation, of whom 6 (12%) died by the end of 1 year.

**Table 1.** Clinical features of patients

Characteristic	No. of patients
<b>Gender</b>	
M	32
F	18
<b>Fitzpatrick skin type</b>	
Type I	7
Type II	36
Type III	7
<b>Tumor histology</b>	
SCC	36
BCC	11
Melanoma	2
SCC & melanoma	1
<b>Tumor stage</b>	
T <sub>2</sub> N <sub>1</sub> M <sub>0</sub> 5	5
T <sub>3</sub> N <sub>0</sub> M <sub>0</sub> 12	12
T <sub>3</sub> N <sub>1</sub> M <sub>0</sub> 7	7
T <sub>4</sub> N <sub>0</sub> M <sub>0</sub> 6	6
T <sub>4</sub> N <sub>1</sub> M <sub>0</sub> 10	10
T <sub>4</sub> N <sub>2</sub> M <sub>0</sub> 2	2
T <sub>3</sub> N <sub>1</sub> M <sub>1</sub> 1	1
TN <sub>1</sub> M <sub>1</sub> 1	1
T <sub>4</sub> N <sub>2</sub> M <sub>1</sub> 5	5
T <sub>4</sub> N <sub>3</sub> M <sub>1</sub> 1	1

**M:** Male; **F:** Female; **SCC:** Squamous cell carcinoma; **BCC:** Basal cell carcinoma

**Table 2.** Tumor localization according to patients

Localization	No. of patients
Mandible	7
Orbita	6
Lower lip	5
Cheek	5
Nose	4
Scalp	4
Ear	3
Upper lip	3
Buccal mucosa	2
Parotid gland	2
Glabella	2
Maxilla	2
Medial canthus	1
Eyelid	1
Neck	1
Nape	1

## 4. Discussion

The management of advanced-stage cutaneous malignancies involving the head and neck region is a complex process requiring a careful preoperative planning and a multidisciplinary approach (Hill and Rinker, 2011). In our series, advanced-stage tumors were a result of a delay in primary therapy due to patient negligence or failed previous treatment attempts. These



**Fig. 1.** **A:** A 57 year old patient with left sided huge squamous cell carcinoma on his face; **B:** After resection and reconstruction with free latissimus dorsi flap, marginal necrosis was seen in the postoperative period; **C:** After debridement, defect was reconstructed with forehead flap; **D:** Final result

patients usually have functional difficulty in mastication, swallowing or respiration or social problems such as (bad odor, persistent bleeding from tumor bed, severe aesthetic deformities, social isolation) at admission (Blackwell et al., 1997) (Fig. 2). Surgical therapy which requires massive tissue resections generally forms the main treatment approach in these patients (Hidalgo et al., 1998). A careful physical examination and thorough investigation of tumor spread with appropriate imaging studies are key steps for planning the surgical procedure and latter reconstruction. A planned surgery may cause both severe deformation in facial aesthetic units and dysfunction in these patients. When planning surgical resection, maintaining the form and function is one of the most important issues, but after the surgery in majority of these cases, patients are usually encountered with loss of vision, hearing, difficulty in speaking or swallowing (Chaukar et al., 2009). Patient age, functional capacity, comorbidities, tumor type, stage, postoperative patient motivation,

and family support are important factors during the surgery. Post-resection defects can be repaired by a spectrum of procedures ranging from primary closure to free tissue transfers. After a resection, it is essential to determine the missing components and to repair like with like (Thorne et al., 2014). Although classical literature data suggests to use the reconstructive ladder principle for the repair of tissue defects, today there is a transition from the reconstructive ladder principle to the reconstructive elevator principle (Gottlieb and Krieger, 1994), thanks to advancements and increased experience in the field of microsurgery. In this way, the experience with the utilization of free tissue transfers as well as postoperative follow-up and outcomes has increased considerably. In our clinic, we preferred graft and/or local flap (e.g rotation flap) procedures for any tumor located in scalp and upper 1/3 of face whereas we selected free tissue transplantations and/or regional flaps (e.g deltapectoral trapezius) to restore anatomic form and functions when a tumor was located

**Table 3.** Performed procedures according to patients

Ablative procedures	Number	Reconstructive procedures	Number
Modified radical neck dissection	11	<b>Free flap procedures</b>	
Supraomohyoid lymph node dissection	11	Radial forearm flap	11
Mandibulectomy	7	Anterolateral thigh flap	6
Maxillectomy	5	Fibula flap	5
Orbital exenteration	5	Latissimus dorsi flap	3
Parotidectomy	4	VRAM* flap	3
Frontal bone resection	1	DIEP* flap	1
Temporal bone resection	1	TFL* flap	1
Dural repair	1	Gracilis flap	1
Radical neck dissection	1	<b>Local &amp; regional flap procedures</b>	
		Forehead flap	6
		Deltpectoral flap	2
		Rotation flap	2
		Trapezius flap	1
		Cervicofacial flap	1
		SCAP* flap	1
		Mustarde flap	1
		Tube skin flap	1
		<b>Other procedures</b>	
		Full-thickness skin grafting	3
		Split-thickness skin grafting	1

\* VRAM: Vertical rectus abdominis myocutaneous flap; DIEP: Deep inferior epigastric artery perforator flap; TFL: Tensor fascia lata flap; SCAP: Supraclavicular artery perforator flap

**Table 4.** Complications seen at the postoperative period

Type of complication	No. of patients
<b>Major</b>	
Anastomotic revision	6 (12%)
Total flap loss	4 (8%)
Partial flap loss	2 (4%)
Myocardial infarction	2 (4%)
Septic shock	1 (2%)
Ischemic encephalopathy	1 (2%)
<b>Minor</b>	
Plate exposure	2 (4%)
Wound dehissence	2 (4%)
Oral incompetence	2 (4%)
Wound infection	1 (2%)
Parotid fistula	1 (2%)
Partial graft loss	1 (2%)
Nostril stenosis	1 (2%)
Xerostomia	1 (2%)

in the middle and/or lower 1/3 of face where three dimensional structure of face is important. A robust vascular supply of the head and neck region is an advantage over other regions of human body (e.g lower extremity) for the use of free tissue transplantation. In our clinic, two separate teams carried out ablative surgery and flap elevation, in cases undergoing free tissue transfer; this practice allowed a shorter operative time in patients having far less than good overall status.

**Fig. 2.** End stage disease due to patient negligence

Facial artery, superior thyroid artery, and superficial temporal artery were used for arterial anastomosis in cases undergoing free tissue transfer, and facial vein, retromandibular vein, thyrolinguofacial trunk were preferred for venous anastomosis. Total flap loss was observed in 4 (8%) cases at the postoperative period (Fig. 3), and flap loss ratio was found to be higher when compared with literature data (Corbitt et al., 2014). This discrepancy may have resulted due to previous





**Fig. 3. A:** Patient with recurrent orbital squamous cell carcinoma; **B:** After resection; **C:** Total flap loss was evident due to previously administered radiotherapy and radiotherapy-induced vasculopathy

neck dissections and radiotherapy applications to the same region in two patients. Low socioeconomic level, advanced age, malnutrition, and additional comorbidities, at admission usually complicate reconstruction and directly affect postoperative outcomes (Posch et al., 2007). However, allocating adequate time for patient preparation at preoperative period, optimization of nutritional status, close postoperative monitoring and patient education usually ensures a successful reconstruction. Some of these patients may have a history of previous neck dissection or radiotherapy. In these circumstances, especially when free tissue transfer is planned, appropriate recipient vessels should be definitely detected by angiographic imaging methods (e.g CT angiography), and when the latter fail to detect them, locoregional flaps should be used as plan B. According to literature,

5-year survival rate of these patients has been reported to range between 20% and 50% (Berktd, 1985), as well as more than half (54%) of patients diagnosed with recurrences were lost within one year in our study, suggesting that tumor-free surgical margins are one of the major factors affecting survival. The high number of recurrent cases and associated subsequent losses in our series is due to performed palliative resections to increase patients' quality of life.

In conclusion, the surgical reconstruction of advanced-stage cutaneous malignancies in the head and neck is a long and demanding process, some of these patients form a group that requires surgical resection for cure and some others require palliative resection for social and functional reasons, in a context of a multidisciplinary approach.

## REFERENCES

- Berktd, R.E., 1985. Carcinoma of the oral cavity. Selective management according to site and stage. *Otolaryngol. Clin. North. Am.* 18, 445-450.

- Blackwell, K.E., Buchbinder D., Biller H.F., Urken M.L., 1997. Reconstruction of massive defects in the head and neck: The role of simultaneous distant and regional flaps. *Head Neck*. 19, 620-628.
- Chaukar, D.A., Walvekar, R.R., Das, A.K., Deshpande, M.S., Pai, P.S., Chaturvedi, P., Kakade, A., D'Cruz, A.K., 2009. Quality of life in head and neck cancer survivors: A cross-sectional survey. *Am. J. Otolaryngol.* 30, 176-180. doi: 10.1016/j.amjoto.2008.05.001.
- Corbitt, C., Skoracki, R.J., Yu, P., Hanasono, M.M., 2014. Free flap failure in head and neck reconstruction. *Head Neck*. 36, 1440-1445. doi: 10.1002/hed.23471.
- Gottlieb, L.J., Krieger, L.M., 1994. From the reconstructive ladder to reconstructive elevator. *Plast. Reconstr. Surg.* 93, 1503-1504.
- Gültekin, M., Boztaş, G., Utku, E.Ş., Ergün Kavak, A., Sevinç, A., Tütüncü, S., Dündar, S., Seymen, E., 2016. T.C Sağlık Bakanlığı Türkiye Halk Sağlığı Kurumu Türkiye kanser istatistikleri. Ankara.
- Hidalgo, D.A., Disa, J.J., Cordeiro, P.G., Hu, Q.Y., 1998. A review of 716 consecutive free flaps for oncologic surgical defects: Refinement in donor-site selection and technique. *Plast. Reconstr. Surg.* 102, 722-734.
- Hill, J.L., Rinker, B., 2011. Microsurgical reconstruction of large, locally advanced cutaneous malignancy of the head and neck. *Int. J. Surg. Oncol.* 2011, 415219. doi: 10.1155/2011/415219.
- Posch, N.A., Mureau, M.A., Dumans, A.G., Hofer, S.O., 2007. Functional and aesthetic outcome and survival after double free flap reconstruction in advanced head and neck cancer patients. *Plast. Reconstr. Surg.* 120, 124-129. doi: 10.1097/01.prs.0000263656.67904.6a.
- Thorne, C.H., Chung, K.C., Gosain, A.K., Gurtner, G.C., Mehrara, B.J., Rubin, J.P., Spear, A.L., 2014. *Grabb and Smith's Plastic Surgery Seventh (Ed)* pp 115.