CLINICAL CASE

Basal cell carcinoma of the posterior neck, reconstructed with lower trapezius island musculocutaneous flap. Case report in an unusual site of occurrence

T. Rapis, S.N. Zanakis, I.F. Letsa, A.P. Karamanos

Department of Oral and Maxillofacial Surgery, General District Hospital of Ioannina, Ioannina, Greece

Summary

Posterior neck is a rather rare site of occurrence for basal cell carcinoma (BCC). A case of an extensive lesion in that site is presented along with a brief comment on BCC epidemiology. Reconstruction was accomplished using the contralateral lower trapezius musculocutaneous flap, which was first introduced in head and neck reconstruction in 1980. Anatomy, blood supply and versatility of the flap are discussed. In addition, we refer to flap losses related to blood supply as well as the advantages and disadvantages of using the above mentioned flap.

Key words: basal cell carcinoma, head and neck cancer, lower trapezius island musculocutaneous flap

Introduction

Non-melanoma skin cancers are the most common cancers in humans. More than 700.000 new cases are diagnosed annually, according to data from the American Cancer Society, and the mortality rate is approximately 2100 per year. Non-melanoma skin cancers are usually seen in fair-skinned persons who have had extensive skin exposure to sunlight and developed actinic keratosis [1,2].

In the majority of the cases skin cancer is detected early and adequate primary treatment is possible. Primary closure, split-skin grafts and local flaps are the reconstruction techniques used more often. Advanced lesions do occur because of ignorance, fear or failure of initial treatment. In these circumstances more elaborated reconstruction techniques, such as regional flaps, are necessary [1,3].

Trapezius musculocutaneous flap is one of those flaps that can be successfully used for reconstruction after major surgical ablation in the head and neck region.

The lower trapezius island musculocutaneous flap (LTIMF) was first introduced in head and neck reconstruction in 1980 by Baek et al. [4]. The initial enthusiasm for this flap had been tempered by reports that showed a high rate of failure and controversy regarding its vascular supply [5,6].

Lower trapezius musculocutaneous flap was originally described as an axial-pattern flap based on the descending branch of the superficial branch of the transverse cervical artery [7,8]. Recent reports have stressed the need to include the dorsal scapular artery by harvesting a segment of the minor rhomboid muscle along with the trapezius muscle.

Three separate trapezius musculocutaneous flaps have been described. The superior trapezius flap is a reliable flap based on the occipital artery and the cervical paraspinous perforators. The lateral island trapezius musculocutaneous flap is based on the transverse cervical artery and vein. The most popular of the three has been introduced with a variety of names such as extended island trapezius musculocutaneous

Author and address for correspondence:

Dr. Thomas Rapis, MD, DMD
Department of Oral and Maxillofacial Surgery
General District Hospital of Ioannina
Makriyanni Avenue
Ioannina 45001
Greece
Tel: +30 26510 80515
Fax: +30 26510 80515

Figure 1. Clinical appearance of the lesion in the posteroinferior neck region.

flap [9], vertical trapezius musculocutaneous flap [10], and inferior trapezius musculocutaneous flap [5].

Case presentation

A 67-year-old woman was referred to our department from another medical center, with a large ulcerous skin defect on her right posteroinferior neck and
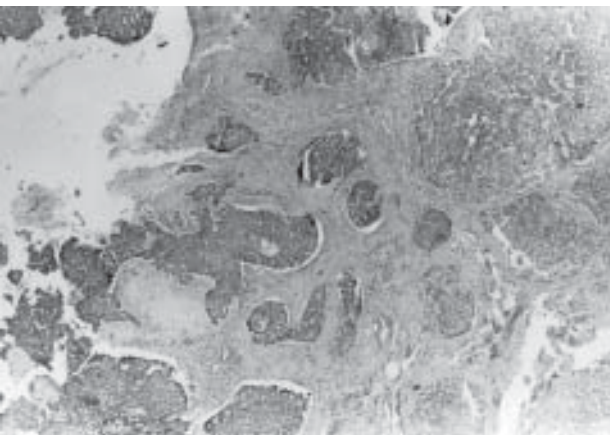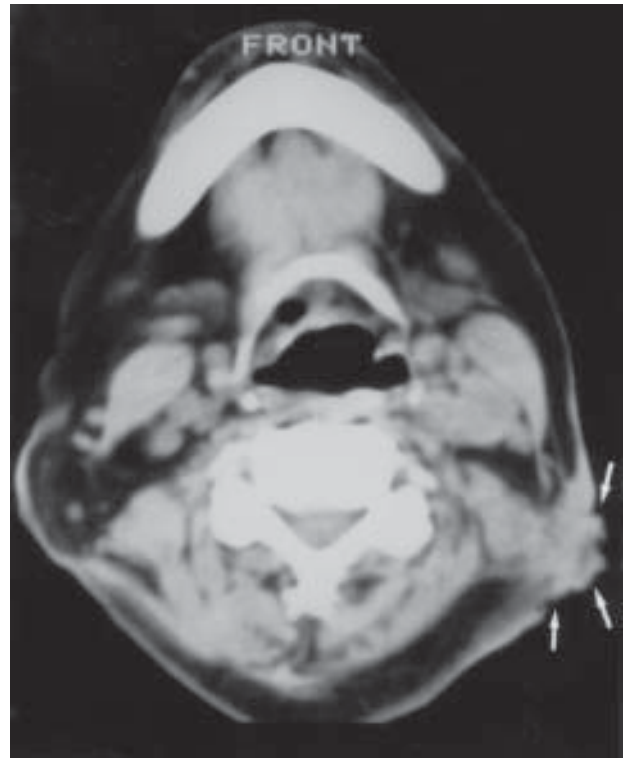

Figure 3. Preoperative CT scan showing muscle infiltration (arrows).

shoulder blade that increased progressively in size over several years (Figure 1). An incisional biopsy was undertaken and the result was of a metatypical BCC (Figure 2). CT scan of the neck showed that the BCC had infiltrated the muscles group in this area (Figure 3).

The patient underwent an extensive resection of 15 cm in the greatest dimension, in the right posteroinferior neck and shoulder blade, followed by neck dissection of the ipsilateral omoclavicular and occipital triangles. Posterior and middle scalenous were infiltrated by the tumor and were also resected (Figure 4).
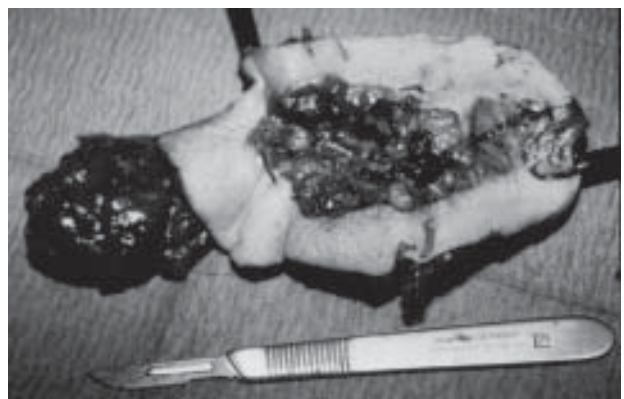
The defect was reconstructed using the LTIMF

Figure 2. Metatypical basal cell carcinoma (H&E ×40).

Figure 4. The resected surgical specimen including the content of homolateral occipital and omoclavicular triangle.

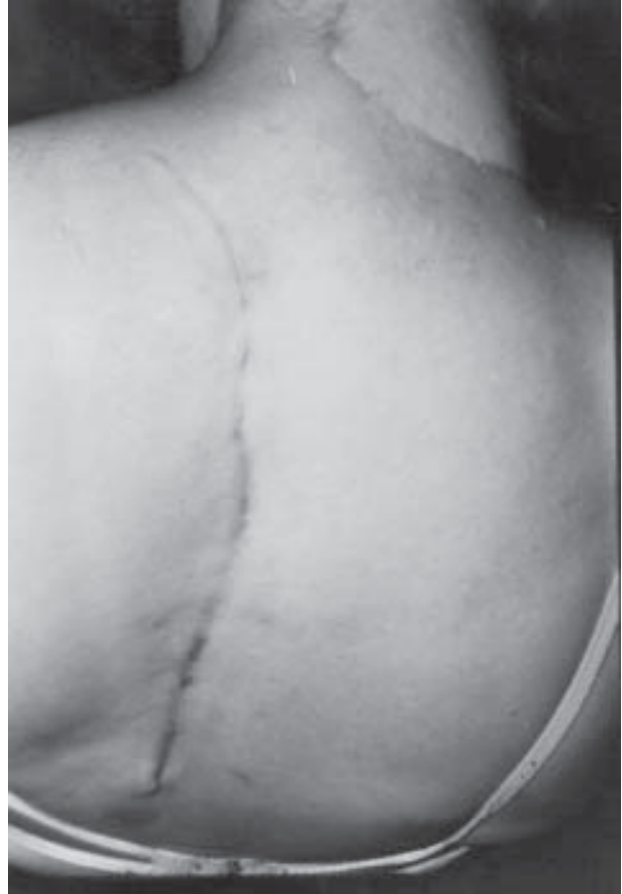**Figure 5.** Flap elevated from the opposite side.

Figure 6. Postoperative appearance.

from the opposite side, because a large part of the ipsilateral upper and middle portion of trapezius had been resected and the transverse cervical artery had been ligated (Figure 5). The donor site was closed primarily.

No minor or major postoperative complications, wound infection or failure developed. The sutures were removed following the usual 2-week period and healing was accomplished by primary intention.

Histologically, the margins of the resected specimen were tumor-free.

Eight years postoperatively, the patient is free of disease and the appearance of the reconstructed posteroinferior neck and shoulder-blade by the LTIMF is satisfactory (Figure 6). The disturbance in shoulder function was minimal because the accessory nerve was preserved.

Discussion

BCC is the most common skin cancer and is estimated to represent 77% of all reported skin cancer cases in the United States [2]. The true incidence of BCC and non-melanoma skin cancers generally is not available because many practitioners treat these forms of skin cancer without reporting them to the relevant cancer registry. BCC is more common in men than in women. The most common sites of occurrence are the face, neck, forearm and dorsum of the hand in elderly white persons with sun-damaged skin, as they are strongly related to UV radiation [1-3].

In the case under discussion, the trapezius flap seemed as the appropriate reconstructive choice, providing the skin and amount of tissue required. In general, LTIMF requires intraoperative position changes and more difficult dissection. These facts, as well as the high incidence of complications, have resulted in drastic limitation of using the flap in the reconstructive surgery of the head and neck region.

Regional pedicled musculocutaneous flaps are the mainstays of head and neck reconstruction [11]. The pectoralis major is the most commonly used flap. However, sometimes this is undesirable because of its bulkiness in certain areas, such as the scalp, and

the resulting chest wall asymmetry, which is of particular concern in women [12]. Alternative regional flaps for head and neck reconstruction include, among others, the latissimus dorsi musculocutaneous flap and the three different trapezius musculocutaneous flaps.

A rather limited number of cases using this method of reconstruction have been reported in the english literature. Urken et al. [13] reported a 21% major and a 36% minor complication rate. Chanrasekhar at al. [5] reported 6 total flap losses and 9 partial flap losses among their 43 cases. However, Urken et al. [13] had 3 (7%) major flap failures and 3 (7%) minor flap failures in their series of 45 cases. Chanrasekhar et al. [5] attributed the majority of their losses to venous outflow problems, but Urken et al. [13] reported that the failures of flaps appeared to be due to arterial rather than venous insufficiency. Weiglein et al. [14] found that the trapezial branch of the dorsal scapular artery was the constant vessel to supply the trapezius muscle, although its origin was found to be very variable. It seems that the answer is found in the work of Taylor et al. [15]. In this study, they define the trapezius muscle as a dual-angiosome muscle with the upper portion supplied by the transverse cervical artery and the lower half of the muscle supplied by the posterior intercostals arteries. A large descending muscular branch, linking to the deep branch of the transverse cervical artery, supplies the lower half of the trapezius muscle, that is the dorsal scapular artery. The area of the skin that can be safely transferred with the LTIMF can now be defined according to this theory. When the flap is based only on the transverse cervical artery, the adjacent angiosome of the lower portion of the muscle can be reliably incorporated. An extension of the skin below the lower border of the trapezius crosses into a third angiosome where the vascular supply becomes less certain, unless the flap is elevated with the dorsal scapular pedicle preserved. In this situation, the adjacent angiosome of the latissimus dorsi muscle (angiosome III) can be reliably transferred [13,16].

In our case we preserved the dorsal scapular artery and were able to elevate well-vascularised skin up to 10 cm below the lower border of the scapula without complications (Figure 7).

The advantage of the LTIMF can be summarized as follows:

a) It can be transferred for immediate reconstruction without special training in microvascular surgery.

b) It provides a long arc of rotation for the head and neck defects.

c) It tends to be thinner and more pliable than

Figure 7. Flap extending well below the lower border of the scapula.

latissimus dorsal flap and pectoralis major island musculocutaneous flap.

d) The donor site has reasonable appearance and can be closed primarily.

The major disadvantage is the inconvenience of changing the patient's position intraoperatively.

We believe that LTIMF has a definite role in head and neck reconstruction.

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