

Deltopectoral flap for Latero-Cervical Defect After Recurrent Squamous Cell Carcinoma and Its Redoubtable Complication – Lymphorrhea

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1. Abstract

We report the case of an elderly Caucasian female patient with concomitance of non-syndromic multiple basal cell carcinoma and a large cervical squamous cell carcinoma. The recurrence of the later was excised 6 months later and was complicated by lymphorrhea. The neck defect was covered with a homolateral deltoid flap. The 6 months follow-up showed submandibular recurrence.

2. Introduction and Background

Skin cancer is a common health issue, especially in the Caucasian population. The incidence of basal cell carcinoma is increasing by 10% each year. Squamous cell carcinoma's incidence is as well on the rise. There are several risk factors associated with both tumor types such as chronic sun exposure, increasing age, radiation therapy, fair skin and personal or family history of skin cancer [1].

Although the presence of multiple basal cell carcinoma in the same patient is a common finding, the concomitance of multiple basal cell carcinoma and squamous cell carcinoma in different anatomical regions is uncommon. The risk of developing a second basal cell carcinoma or a subsequent squamous cell carcinoma is, however, well documented in different population.

Extended neck dissection is often the optimal surgical treatment

method in large cervical squamous cell carcinomas, especially in the recurrent cases. Since the neck abounds in lymphatic structures, there is a chance of disruption of these structures which leads to lymphatic complications such as lymphocele, lymphorrhea or lymphatic fistula or chyloorrhea [2]. Lymphorrhea, although rare, is a redoubtable complication and can trigger malnutrition.

Although it might be considered an old-fashioned method in the era of free tissue transfer, the deltopectoral flap can be a useful tool for covering large antero-lateral neck defects, especially in frail patients. First described in 1917 by Aymard as fasciocutaneous flap based on the intercostal perforating vessels of the internal mammary artery, the deltopectoral flap is a reliable, quick and easy to raise flap. In elderly, frail patients with multiple comorbidities and skin laxity, it might be the first choice flap for covering neck defects, since it does not prolong the operative duration and leaves a relatively inconspicuous donor site scar.

We report the case of an elderly Caucasian female patient with concomitance of non-syndromic multiple basal cell carcinoma and a large cervical squamous cell carcinoma. The recurrence of the later was excised 6 months later and was complicated by lymphorrhea. The neck defect was covered with a homolateral deltoid flap. The 6 months follow-up showed submandibular recurrence.

3. Case Report

An 80-year old Caucasian woman presented to our clinic with multiple cutaneous tumors. She also suffered from diabetes mellitus, high blood pressure and atrial fibrillation. Her skin type was Fitzpatrick II.

The clinical examination revealed on the central lower lip on the vermilion border an ulcerated tumor of 0.5 cm diameter and on the posterior aspect of the left calf a brown ulcerated tumor of 3 cm diameter, highly suggestive for basal cell carcinoma. On the right supraclavicular fossa, in the posterior neck triangle, there was a vegetative tumor of 4 cm diameter with a clinical aspect of squamous cell carcinoma. All the nodules were adherent to the skin, but mobile with the subcutaneous plane, were painless and there were no lymphadenopathies. All lesions were identified as high risk lesions and resection margins were planned accordingly.

Under general anesthesia, we performed excision and direct closure of the tumors on the lower lip and on the posterior aspect of the calf. The supraclavicular tumor was excised with a 6 mm margin and the defect was closed with a split-thickness graft. Graft take was 100%. The patient was discharged 7 days postoperatively and there was no complication.

The pathological examination confirmed the clinical suspicions. The lower lip and calf tumors were diagnosed as nodular basal cell carcinoma whereas the supraclavicular tumor was identified as moderately differentiated squamous cell carcinoma

The five-month follow-up revealed recurrence on the supraclavicular fossa. There was an 8 cm diameter nodule developed on the graft and a 3 cm nodule on the superior aspect of the right clavicle in the middle third. Both nodules were firm, painless, but adherent to the skin and the subcutaneous structures. There were no regional lymphadenopathies.

We planned wide local excision and homolateral deltopectoral flap for covering the defect (Figure 1). The intraoperative exploration revealed adherence of the nodules to the anterior scalene muscle and omohyoid muscle, which were resected en bloc with the nodules. Consequently, the brachial plexus and the large vessels of the anterior neck were exposed.

Neck lymph node dissection was not performed since there were no palpable lymphadenopathies.

The homolateral deltopectoral flap was elevated and inset into the primary defect without any quilting sutures, since underneath there were mostly major vascular and neural structures. Most of the donor site was closed directly and a split-thickness skin graft was applied on the deltoid region.

At 24 hours postoperatively, the flap was viable, but developed a large seroma which was evacuated easily. At 72 hours an even larg-

er seroma (approximately 200 ml) developed, which was also evacuated and a compressive dressing was applied. The liquid was sent for laboratory analyses which diagnosed lymphorrhea.



Figure 1: Intraoperative view

In the first ten days postoperatively, instillations with doxycycline and compressive dressings were employed. The flap remained viable, but there was only a modest reduction in the lymphatic drainage. Afterwards, the negative pressure wound therapy device was applied, which was used for another 10 days in both continuous and intermittent mode with a slight reduction in the lymphatic drainage.

At 20 days postoperatively, surgical reintervention was performed in a mixed team of vascular surgeons. The flap was elevated and the sites of lymphatic leakage were identified. Quilting sutures with 6.0 Prolene were executed on the leakage sites and on the entire flap, closing thus the dead space. Postoperatively, there was no hematoma, seroma, lymphatic drainage or other complications. The flap remained viable (Figure 2).

The patient developed hypoalbuminemia (27.2 g/l) which was corrected with oral supplementation with proteins and human albumin IV in two weeks.

The patient was discharged 7 days after the second surgery and follow-up visit were performed at 2 weeks postoperatively, 1 month and 6 months.

The pathological examination diagnosed the nodules as recurrent squamous cell carcinoma without perineural or perivascular infiltrations. The supraclavicular tumor included two reactive lymph nodes. At six months, the patient developed a submandibular recurrence and started radiotherapy.



Figure 2: Flap aspect after the second surgery

4. Discussions and Conclusion

Even though the supraclavicular tumor was labeled initially as a high risk squamous cell carcinoma and was excised accordingly, it still developed a recurrence within 6 months. Five-year recurrence rate for standard surgical excision is 8.1% whereas for Mohs surgery is 3.1% [3]. Consequently, close follow-ups, every 3-6 months during the first 2 years, every 6-12 months for another 3 years and yearly afterwards are recommended in order to detect recurrence.

Lymphorrhoea after of extended neck surgery represents a rare complication with potential serious consequences. In the left posterior neck triangle, it might be caused by the disruption of the left jugular lymphatic trunk and can lead to serious malnutrition, dehydration, infection, preventing also wound healing. Currently, there no guidelines regarding neck lymphorrhoea treatment. We tried conservative treatment reported to have a success rate of up to 77% [4], sclerosing agents such as doxycycline and negative pressure wound therapy. Ultimately, surgical re-intervention was necessary to ligate the leaking structures and to close the dead space. Protein supplementation was also necessary.

We encountered difficulties in closing the dead space when removing the recurrent squamous cell carcinoma. The infiltration of the anterior scalene muscle and omohyoid muscle required their excision, exposing the large neural and vascular structures of the neck which prevented us from adequately closing the dead space. This might have played also a role in the development of lymphorrhoea. Three weeks postoperatively, the granulation tissue and early fibrosis that occurred permitted the application of fine quilting sutures.

The deltopectoral flap remains a viable option for coverage of neck defects. It has its advantages in the older patient with multiple co-

morbidities that prohibit a long operative time because it can be quickly raised and inset. Also, the donor site scar is often not very conspicuous.

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