Case Report

Opportunistic use of naturally expanded neck skin for a buccal mucosa defect

ABSTRACT

A 77-year-old female presented with an ulceroproliferative lesion of the left buccal mucosa extending to the commissure, diagnosed with squamous cell carcinoma on biopsy. She also had a large thyroid swelling, with expanded skin, diagnosed with a multinodular goiter. The patient underwent buccal mucosa wide local excision with left-sided selective neck dissection and total thyroidectomy. The naturally expanded skin over the anterior neck overlying the goiter was used for the reconstruction of the buccal mucosa defect based on the perforator unexpectedly arising directly from the external carotid artery instead of superior thyroid artery. The venous drainage was to an internal jugular vein tributary, multiple dilated veins on the flap were draining into this vein. We describe the innovative use of locally expanded skin for buccal mucosa reconstruction and thereby avoiding the morbidity of a free flap transfer and associated donor site morbidity.

Keywords: External carotid artery perforator flap, naturally expanded skin, superior thyroid artery perforator flap

INTRODUCTION

Moderate to large skin buccal mucosa defects of the buccal mucosa need a flap replacement. Free tissue transfers are now established as the modality of choice for such defects when replacement is needed. Rarely local fasciocutaneous options can be employed such as nasolabial, submental, and superior thyroid artery perforator flap. They suffer from the drawback of limited tissue availability, lack of mobility, and uncertain peripheral perfusion. The loco-regional flaps from the neck, when available provide locally matched tissue with minimal morbidity. The innovative use of naturally expanded skin due to goiter for reconstruction avoided the morbidity of free flap in this case. The use of redundant neck skin for head and neck reconstruction has additional advantage of neck skin tightening and well healed scar.

CASE REPORT

A 77-year-old female presented with a left buccal mucosa squamous cell carcinoma. Wide local excision of the lesion and selective neck dissection of level 1–4 was planned. Incidentally, she had a large thyroid swelling (multinodular goiter [MNG]) (right lobe 12 cm × 6 cm × 3 cm, left lobe 5 cm × 3 cm × 2 cm, and isthmus 3.2 cm × 2 cm × 1.5 cm). Fine-needle aspiration cytology of the thyroid showed benign thyroid lesion Bethesda category 2 [Figure 1a and b].

Ultrasonography revealed multiple hetero-echoic predominantly hyperechoic nodules in both lobes of thyroid with increased vascularity and coarse calcifications. Nodules were reaching up to suprasternal notch. Decision to perform a total thyroidectomy was taken. The buccal mucosa excision was planned intraorally. The challenge was to plan neck skin incisions in a way to give access to lower neck for thyroid

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swelling and upper neck for the selective neck dissection. Taking two long incisions, one above for neck dissection and one lower down for thyroid surgery, risked ischemia of skin flaps, and possible necrosis. This was a real possibility as we were dealing with an aged patient, very thin long flap and a neck dissection plus thyroid surgery which would hamper vascularity of the flaps.

A plan was formulated to utilize the expanded skin over the thyroid swelling for the buccal mucosa defect, as a superior thyroid artery perforator flap. The flap was designed on left side; over the most prominent part of the thyroid swelling guided by a hand-held Doppler 8 MHz. The neck donor site would close primarily and give adequate access for both neck dissection and thyroidectomy. In case the perforator flap did not work or reach where needed, a free radial artery forearm flap (RAFF) was planned for the buccal mucosa defect.

Surgical procedure

Flap harvest was planned first, followed by the thyroidectomy and then the neck dissection. A 17 cm × 5 cm flap was planned from the expanded skin over the anterior neck [Figure 2a and b]. Flap was raised in the sub-platysma plane. On flap harvest, the arterial perforator was arising directly from the external carotid artery rather than the superior thyroid vessels [Figure 3]. The venous outflow was based on a superiorly directed internal jugular vein tributary. There were abundant dilated veins over the skin flap. Flap harvest was uneventful with good perfusion at completion. Thyroidectomy, neck dissection was followed by the excision of the primary tumor.

The flap was checked for its reach, part of the flap destined to stay in the neck was de-epithelized [Figure 4]. Flap inset was completed intraorally, followed by neck closure.

The postoperative period was uneventful. No total or partial flap necrosis occurred. No oro-cutaneous fistula, serous collection, or parotid fistula happened.

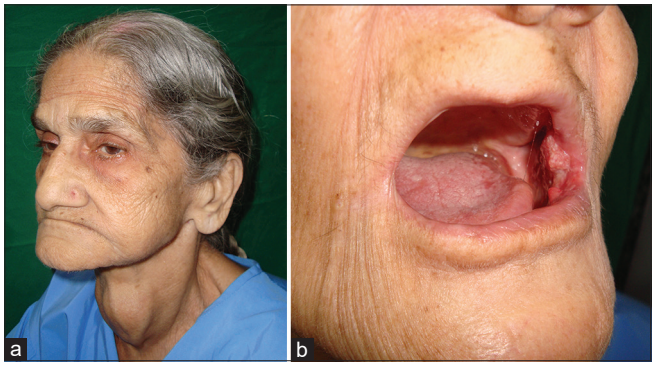

Figure 1: Pre operative (a) Thyroid swelling (b) Malignant lesion involiving Left buccal mucosa and commisure

The flap and neck skin were well settled and unremarkable at 4 years of follow-up [Figure 5a and b].

Cosmetic outcome of the neck scar was excellent. Mouth opening was 28 mm at follow-up.

DISCUSSION

Loco regional options for head and neck reconstruction are meager and associated with morbidity and disfigurment. Since the advent of free flaps, they have been the mainstay of head and neck reconstruction and have climbed up the reconstruction escalator. Free flaps provide the advantage of abundant tissue, single stage surgery, lesser donor site morbidity, early postoperative mobilization, and superior functional results. However, if local options are available, they would provide ideal color and texture match for the resected tissue.

Fascio-cutaneous flaps from the redundant neck skin, especially in the elderly can be utilized for reconstruction of the head and neck region. Such flaps would provide ideal skin match for the resected tissues. In addition, it would result in neck skin tightening at the donor site and well concealed scars in transverse neck skin crease. Conventionally, external carotid and subclavian arteries were identified as blood supply to the anterior neck skin.[1] Recent studies have shown that, the dominant perforator to anterior neck skin arises from superior thyroid artery in the majority of cases.[2,3]

In this case, the skin overlying the MNG was naturally expanded. After total thyroidectomy, there would have been excess redundant skin left over the anterior neck. This excess skin was utilized to reconstruct the intraoral defect left after resection. The blood supply was seen to be arising directly from the external carotid artery perforator contrary to the recent studies. Final reconstruction resulted in excellent, pliable, matching tissue at the recipient site, single linear scar over the neck and avoidance of extensive free flap surgery.

In the literature search for the use of naturally expanded skin for reconstruction, we came across only a single

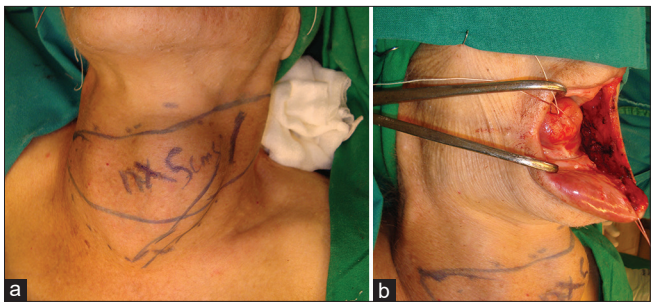

Figure 2: (a) Flap marking (b) Left buccal mucosa defect

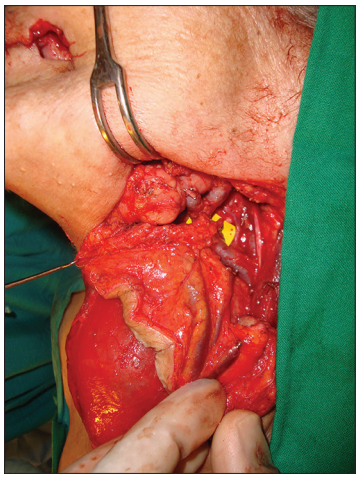

Figure 3: Perforator arising directly from the Left external carotid artery

Figure 4: De-epithelized part of flap

Figure 5: Follow-up at 4 years (a) Neck scar (b) Adequate mouth opening

case. In this case, the expanded skin over the abdomen due to pregnancy was utilized for reconstruction after burn contracture release over the abdomen.[4] No cases of use of naturally expanded skin for head and neck reconstruction were found. The present case highlights how the innovative use of naturally expanded tissues prevent the morbidity of free flap. At the same time, providing the benefits of matched skin, well concealed neck scar and neck skin tightening resulting in esthetically pleasing outcome.

CONCLUSION

The excess skin due to the expansion by the thyroid swelling was utilized for the buccal mucosa defect. This spared the use of a free RAFF, the associated time of surgery, and donor site morbidity. A perforator-based approach enabled preservation of blood supply even when it was from an unexpected source (external carotid directly instead of superior thyroid artery).

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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