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Flaps for Neck and Facial Reconstruction: Experience of Stomatology and Maxillofacial Surgery Department of Sylvanus Olympio Teaching Hospital in Lome (Togo)

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Abstract

Introduction. Flaps are very contributive to reconstructive surgery of the face. The aim of this study was to present our experience in the management of neck and face reconstruction, using musculocutaneous or myomucosal flaps at Sylvanus Olympio Teaching Hospital in Lome (Togo) **Patients and Method.** We conducted a retrospective descriptive study of pedicled musculocutaneous and myomucosal flaps performed in Stomatology and Maxillofacial surgery department from 1st january 2013 to 31 december 2022. **Results.** As the department does not have an operating microscope, we retrieved 15 cases. Flaps were performed on 14 patients, 06 male and 08 female, giving a sex ratio of 0.75. The mean age was 47.36 ± 18.49 years. Tumours were found in 12 cases, 85.72% of loss of substance aetiologies. Tumours were malignant in all cases, with Squamous Cell Carcinoma (SCC) as the histological type. The oral cavity was the location in 9 cases (64.29%), the face in 3 cases (21.43%), and the neck in 2 cases (14.28%). The pectoralis major muscle-myocutaneous flap was used in 5 cases (33.33%), the infra-hyoid flap in 3 cases (20%). In the follow-up, we had 3 partial necrosis, 2 cases of tumour progression and one case of tumour recurrence at the flap recipient site. **Conclusion.** Flaps are very contributive to reconstructive surgery of the face. A wide range of flaps was used with satisfactory results. An improvement of the technical platform would make it possible to extend the possibilities of reconstruction of cervico-

facial loss of substance using flaps.

Keywords

Neck, Facial Flaps, Loss of Substance, Pectoralis Major Flap, Infrahyoid Flap, Togo

1. Introduction

The face and neck can be subject to various injuries that can disrupt anatomical, aesthetic, and functional harmony, including tissue loss. This tissue loss can be traumatic, infectious, or tumoral in origin [1]. The problem of tissue loss coverage of the face and neck arises when the tissue loss no longer allows direct suturing or directed healing. Flap reconstruction is a surgical technique that provides tissue to repair tissue loss. This living tissue structure retains vascularization via a pedicle. This pedicle is either permanently or temporarily maintained in continuity with the donor site, or is immediately anastomosed to vessels close to the recipient site [2] [3]. The use of flaps as a reconstructive procedure is well known. Although it was initially a matter of simply filling a hole, management techniques have undergone many refinements in recent years, with reconstructions having to take into account the various changes in plane and focusing on making scars less visible [4] [5]. Advances in anatomy have made it possible to improve grafts and flaps; this has led to a revolution in head and neck cosmetic surgery, among other areas. While several studies conducted in Africa have addressed flap removal in men, mainly at the limb level, few have focused on flaps performed in head and neck surgery, where the essential challenge remains restoration and integrum, the issue being to reconstruct as cosmetically and functionally as possible [6] [7]. We set ourselves the objective of presenting our experience in the management of head and neck PDS using musculocutaneous or myo-mucosal flaps at the Sylvanus Olympio University Teaching Hospital (CHU-SO) in Lomé.

2. Patients and Methods

This study was conducted in the Stomatology and Maxillofacial Surgery (MFS) Department of the CHU-SO. The Stomatology and MFS Department has, among other facilities, an operating room, a treatment room, and a 19-bed inpatient capacity, which it shares with the ENT and Head and Neck Surgery Department. The department does not have an operating microscope. This was a descriptive retrospective study conducted from January 1st, 2013, to December 31th, 2022. We included in our study the records of all patients, regardless of age or gender, who underwent a myocutaneous or myomucosal flap for cervicofacial reconstruction in Stomatology and MFS on the one hand and ENT on the other hand at the CHU-SO of Lomé, from January 2013 to December 2022. Flap reconstructions were often performed in a double team with ENT doctors, due to the fact that some exci-

sion of the initial tumor was performed by one or the other team. Records of patients who underwent local single-tissue or cutaneous flaps and incomplete records were not included. Data collection was based on operating room report registers and patient medical records, after approval from the ethics and protection of persons committee. The variables studied were: sociodemographic data, flap indication, site of substance loss, flap type, and postoperative flap evolution.

3. Results

Over a 10-year period, 15 flaps were performed in Stomatology and Maxillofacial Surgery in 14 patients out of a total of 4206 surgical procedures, representing 0.35% of all surgical procedures. Eight cases were female, and the sex ratio was 0.75. The mean age of the patients was 47.36 ± 18.49 years, with a range of 6 to 77 years. The age groups of 30 to 40 years, 40 to 50 years, and 60 to 70 years, with 3 cases each, were the most common. Three of the 14 patients were HIV-positive, one had oculocutaneous albinism, and one was malnourished. One patient had a history of lower lip tumor resection.

Five flaps were performed in 2022 and 4 in 2021 (Figure 1).

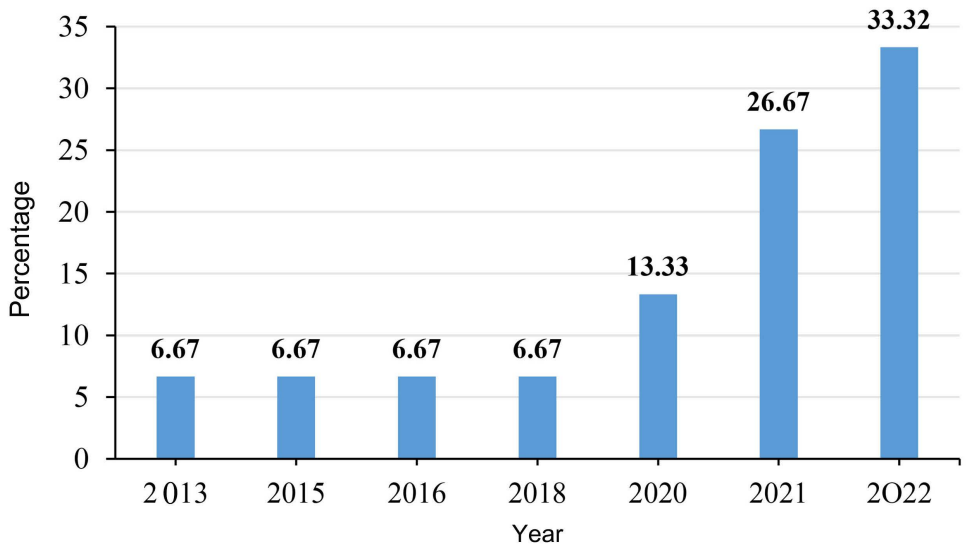

Figure 1. Distribution of flaps by years.

Malignant tumor pathology was found in 12 cases of flap indications and concerned only squamous cell carcinoma (SC). The SC of the tongue was found in 4 cases and the SC of the lower lip in 3 cases. Two (02) SC of the left hemitongue were classified cT3N0M0. Infectious pathology and traumatological pathology each represented one case of flap indications. This was a case of left jugal sequela of noma and a case of human bite of the lower lip. Substance losses in the oral cavity represented 9 cases; the face 3 cases and the neck 2 cases. Substance losses at the face level were located on the cheek in 2 cases and at the tip of the nose in 1 case. The tongue and the lower lip represented respectively, 5 cases and 4 cases of

substance losses at the oral cavity level. Thirteen patients underwent general anesthesia with orotracheal intubation and 2 with intubation through the tracheostomy port. Local and locoregional flaps represented 10 cases and remote flaps, 5 cases. Remote flaps consisted of the pectoralis major flap (n = 5) (Figure 2 and Figure 3). Locoregional flaps consisted of the infrahyoid flap (n = 3) (Figure 4 and Figure 5), the Abbé-Eslander flap (n = 2), and the FAMM (Figure 6), submental, Rieger, Karapandzic (Figure 7), and Camille-Bernard flaps (Figure 8) in 1 case each, respectively.

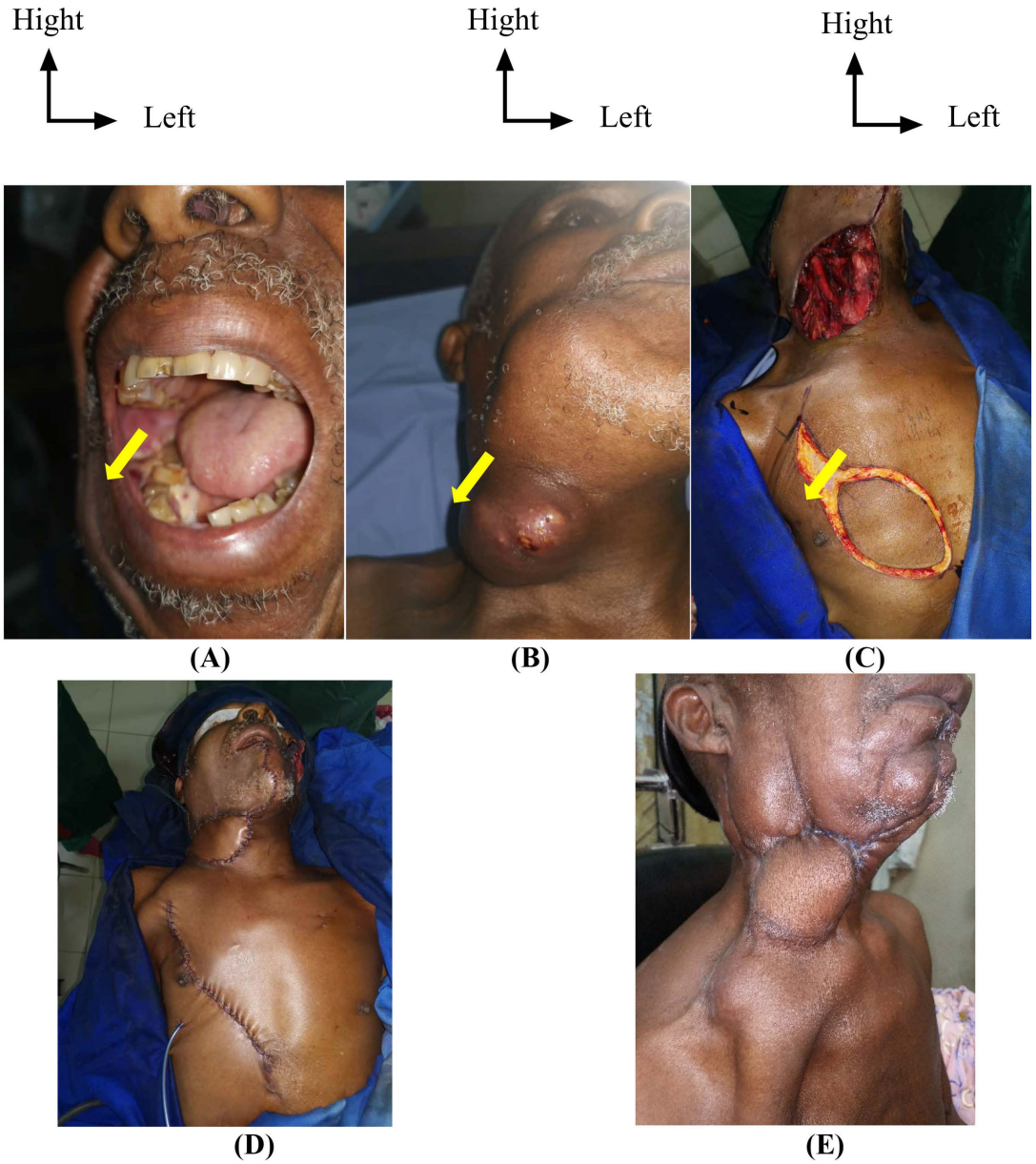

Figure 2. Pectoralis major flap; Right gingivomandibular tumor (A) with subdigastric adenopathy with skin permeation (B); (C): loss of substance after radical right lymph node dissection modified type I indicated by a yellow arrow and the skin incision of the flap indicated; (D): pectoralis major flap after suture; (E): progressive continuation above and behind the flap + infiltration of the flap.

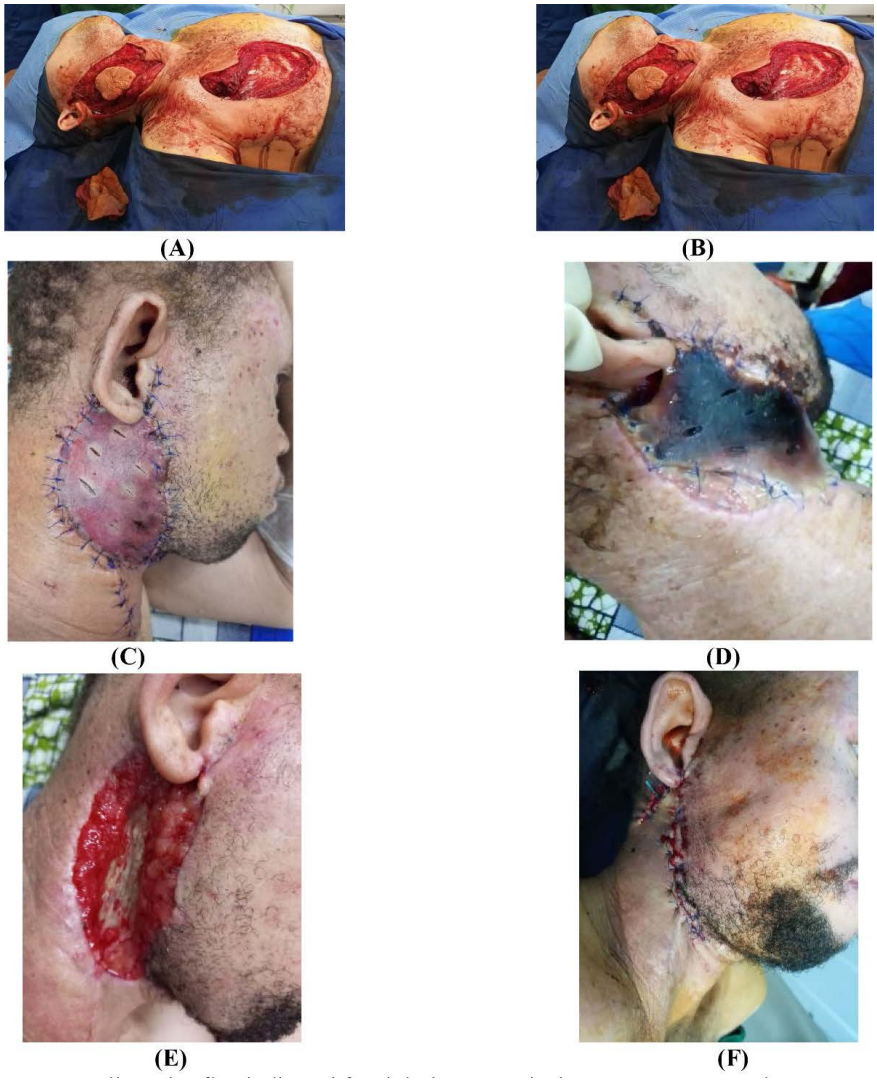

Figure 3. Pectoralis major flap indicated for right laterocervical cutaneous CE; (A): placement of the flap in the cervical PDS exposing the large vessels; (B): Pectoralis major flap after suture; Suffering due to lack of venous return (C) then necrosis of the skin paddle (D) of the pectoralis major flap; Flap left in directed healing (E) then secondary closure (F).

Postoperative outcomes were favorable in 6 cases. Partial necrosis occurred in 3 cases. These necroses involved the skin palette in two cases (1 case of pectoralis major flap indicated for cervical cutaneous CE, 1 case of infrahyoid flap indicated for a tongue tumor) and in 1 case of Camille Bernard flap. The evolutionary continuation of the tumor at the recipient site of the flap was found in 2 cases: these were two cases of pectoralis major flap indicated for a tumor of the lower lip and for a gingivomandibular tumor with fistulized subdigastric adenopathy. A tumor recurrence at the base of the tongue was found more than 6 months after the placement of the infrahyoid flap, indicated for a mobile tongue tumor. No complications were noted at the donor sites. The partial necrosis of the Camille Bernard flap required its replacement by an Abbé-Estlander flap. The other cases of partial necrosis underwent directed healing and secondary suturing. For cases of

suppuration, patients received antibiotic therapy and dressings. Suture releases underwent secondary suturing.

A summary of the clinical history, management, and outcome of some patients who underwent flaps is presented in Figures 2-8.

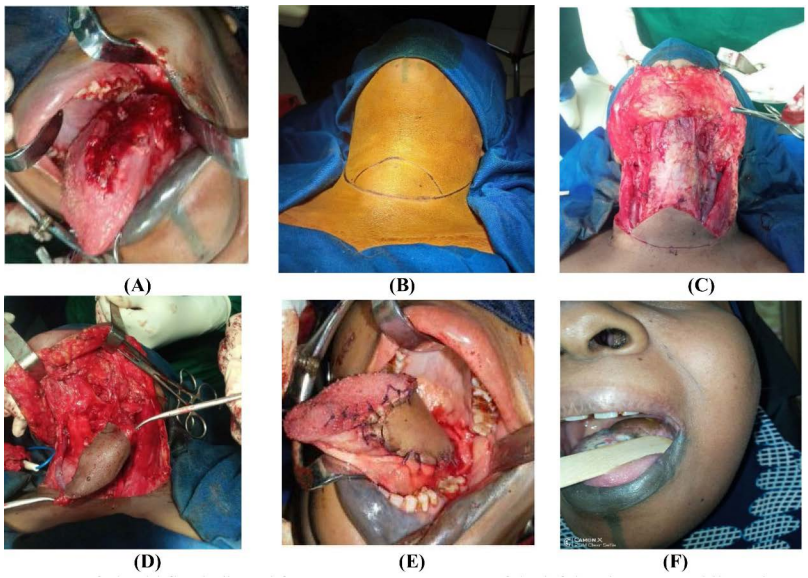

Figure 4. Infrahyoid flap indicated for a tongue tumor; (A): CE of the left hemitongue; (B): bilateral André L-shaped tracing circumscribing the flap; (C): infrahyoid flap (view after curettage); (D): lifting of the infrahyoid flap pedicled on the left superior thyroid pedicle; (E): placement of the flap; (F): postoperative appearance at D30.

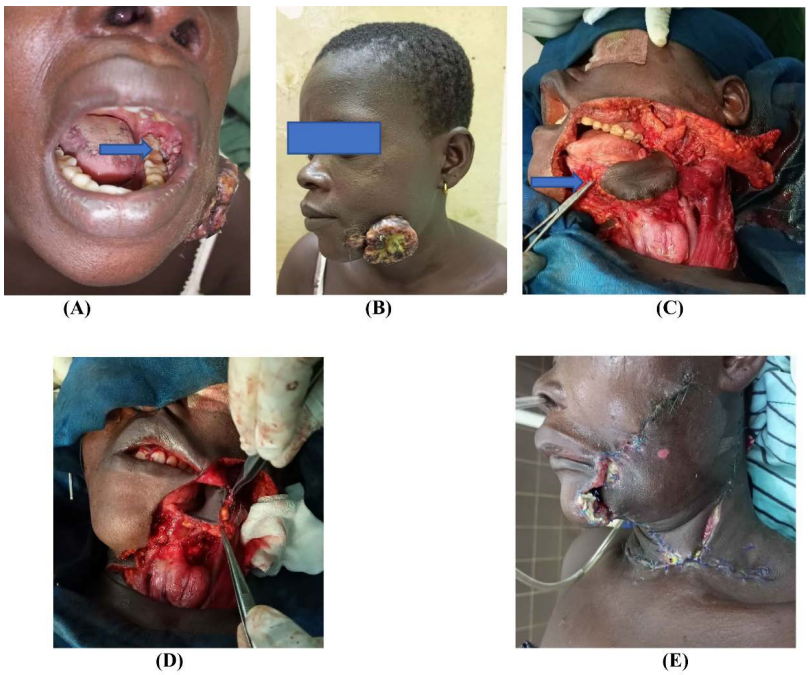

Figure 5. Infrahyoid flap indicated for loss of cheek substance after tumor excision; left gingivomandibular CE indicated by a white arrow (A) with infiltration of the homolateral cheek (B); (C): flap lifting; (D): flap placement; (E): Suppuration and release of stitches.

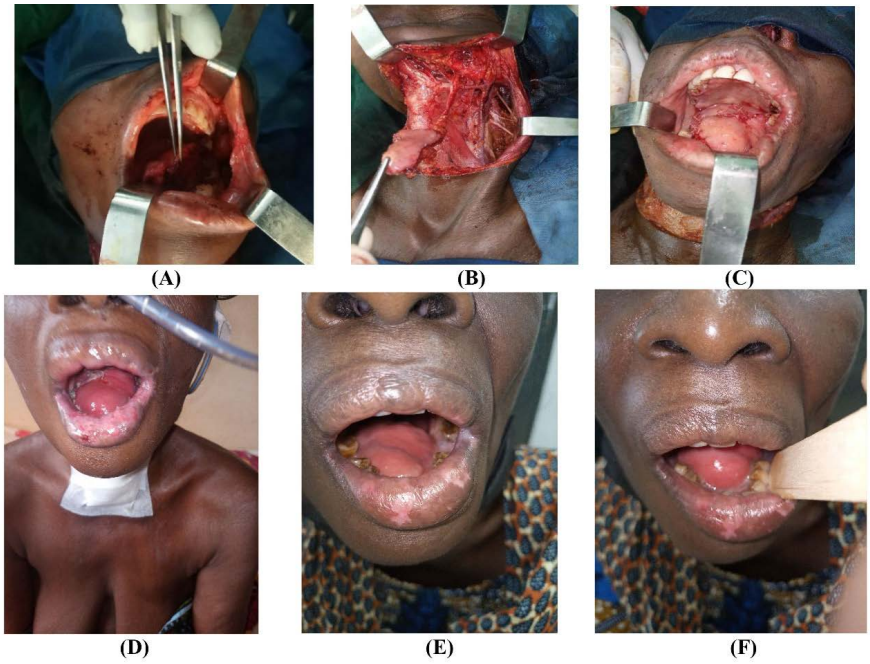

Figure 6. FAMM flap with inferior pedicle; (A): flap harvesting (buccinator + mucosa); (B): dissection of the facial pedicle (yellow arrow) allowing the flap to be placed (white arrow) via the cervical route; (C): flap suture; Postoperative appearance of the FAMM flap at post-operative day 2 (D); and at postoperative day 30 (E).

Figure 7. Karapandzic flap; (A): loss of substance of the lower lip following a human bite; (B): outline of the flap; (C): lifting of the flap then jugal detachment; (D): placement of the flap; (E): appearance at the end of the operation; (F): appearance on postoperative day 7.

Figure 8. Camille Bernard flap; (A): CE of the lower lip; (B): loss of substance after tumor excision; (C): outline of the flap; (D): advancement and suture of the flap; (E): scar appearance after partial necrosis of the Camille Bernard flap; (F): suppuration and release of the thread of the Abbé Estlander flap performed after partial necrosis of the Camille Bernard flap; (G): secondary suture of the Abbé Estlander flap after suppuration; H: postoperative appearance of the Abbé Estlander flap at D30.

4. Discussion

Our study had limitations due to the retrospective nature of any study, including the incompleteness of medical records, which reduced the sample size. Furthermore, the lack of an operating microscope in the department reduced the possibilities of free flap reconstruction, which is an important option for reconstructing substance losses.

Several techniques have been described for reconstructive flaps in head and neck and facial plastic surgery [4] [5]. Knowledge of reconstructive options using the facial artery system in oral cavity surgery expands reconstructive options for head and neck surgeons, enabling safe, high-quality, and efficient reconstructions with limited resource consumption [2]. The deltopectoral flap represents a reconstructive option for the head and neck. It is a fasciocutaneous flap that rises from the anterior chest wall below the clavicle. Its role has partially diminished with the advent of free flaps. However, it still remains a valid option in patients who cannot

undergo reconstruction with free flaps [6]. The FAMM flap, indicated after tumor resection, allows for reconstruction of the tongue or floor of oral defects, easy acquisition, and a high survival rate with minimal donor-site morbidity [7]. The infrahyoid musculocutaneous flap is a versatile, reliable, and practical flap suitable for the repair of small and medium-sized defects; it can be used in combination with other flaps, and in some cases, avoids the need for a microvascular radial aortic flap or a maxillofacial prosthesis [8].

The lip plays a vital role in facial aesthetics, eating, and speaking. Lip injury due to trauma or surgical excision requires appropriate reconstruction to preserve its function. Lip carcinoma is one of the common malignant lesions of the head and neck, requiring wide local excision with an appropriate margin and neck clearance. When the size exceeds two-thirds, it becomes a challenge to reconstruct and preserve its functionality and poses aesthetic problems. The Karapandzic flap appears to be the best indication for lip lesions [9]. With the Camille Bernard flap, patient satisfaction increases with improvement in lip competence, scar discoloration, and facial appearance. Sufficient oral access, preservation of sensation, oral competence, and muscle integrity are essential for functional lower lip reconstruction. Using this technique, functional rehabilitation appears to be improved with muscle transposition. The advantage of this technique is its ability to reconstruct almost the entire lower lip in a single stage. An obvious disadvantage is the reduction in the size of the oral cavity orifice and a "permanent smile" deformity of the lips, especially in edentulous patients [10]. The temporal region is a great source of vascularized flap, offering extremely variable and versatile options for reconstruction in head and neck surgery. Temporal flaps are very flexible and pliable, providing adequate volume to obliterate dead spaces and improve graft take, thus facilitating healing. The need to access different anatomical compartments, often far from the original anatomical flap site, has led surgeons to develop techniques to enlarge pedicles and volume, by turning and dividing flap contents, as well as performing partial mandibular and zygomatic resection [11].

Postoperative outcomes were favorable in 6 cases but partial necrosis occurred in 3 cases. These necroses involved the skin palette in two cases (1 case of pectoralis major, 1 case of infrahyoid flap) and in 1 case of Camille Bernard flap. No complications were noted at the donor sites. The partial necrosis of the Camille Bernard flap required its replacement by an Abbé-Estlander flap. These cases of necrosis of the skin palette of the flaps could be explained by insufficient cutaneous vascularization by the flap. The Abbé Estlander flap was used to replace the necrotic Camille Bernard flap, because this flap better restores labial substance losses, because it provides tissues of the same nature. However, when the substance loss is total, this flap may be insufficient for repair. The other cases of partial necrosis underwent directed healing and secondary suturing. For cases of suppuration, patients received antibiotic therapy and dressings. Suture releases underwent secondary suturing.

Our evolving complications could be avoided by practicing modified ap-

proaches [12] adapted to resource-limited conditions with a short hospital stay for patients.

5. Conclusion

Flaps are very contributive to reconstructive surgery of the face. A wide range of flaps was used with satisfactory results. Improving the technical platform, particularly the acquisition of microsurgery equipment, could enable the implementation of free flaps. In addition, continuing medical training on flap surgery for surgeons could bring them up to date on new current procedures and extend the possibilities of reconstruction of neck and face loss of substance using flaps.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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