

Tongue musculomucosal flap for soft palate reconstruction in patients with OSAHS – Clinical experience in technical strategy

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Abstract. – BACKGROUND: With the idea of “replacing lost tissue with similar tissue in kind”, vessel-pedicled palate mucosal flap, pedicled buccal musculomucosal flap and adjacent tongue musculomucosal flap could be the ideal approaches to soft palate reconstruction.

AIM: To assess the adjacent tongue musculomucosal flap for soft palate reconstruction.

PATIENTS AND METHODS: From August 2010 to July 2011, we applied tongue musculomucosal flap for soft palate reconstruction in three patients with Obstructive Sleep Apnoea/Hypopnoea Syndrome (OSAHS) in order to release OSAHS symptom by glossal volume reduction.

RESULTS: All patients recovered from intraoral operations with good objective as subjective speech and swallowing. Suffice it to say that OSAHS symptom was released for these patients.

CONCLUSIONS: Here we provide a case to deal with problems related to OSAHS symptom when one works on oral surgery or reconstructing oral structure.

Key Words:

Soft palate reconstruction, OSAHS, Tongue musculomucosal flap.

Introduction

Generally speaking, soft palate defects generated from tumor resection are very common in our daily life, always leading to dysfunction in speech and swallowing. Small defects could be associated directly with little functional impairment, which result from the elasticity of soft palate mucosa, whilst the dysfunction of myocutaneous flaps, vessel-pedicled flaps and free flaps is considered as large defects which extend to retromolar trigone, sometimes even to buccal mucosa. Thiersch¹ advocated a superiorly basal nasolabial flap to close palatal fistulae in the 19th

century. Intraoral buccal mucosal flaps were initialized by Filiberti² in 1965. Very recently, it was well-documented by Landes et al³ that 7 cases of soft and hard palate are composed of dorsally pedicled buccal musculomucosal flap. All flaps aforementioned provide surgeons options to reconstruct soft palate.

As to the treatment of soft palate defects in those patients with Obstructive Sleep Apnoea/Hypopnoea Syndrome (OSAHS), in our view, one of highly efficient approaches to deal with it is to release their OSAHS symptom during the process of soft palate reconstruction. Endeavors were made to apply tongue musculomucosal flap to reduce glossal volume in an aim to achieve the above purpose.

Patients and Surgical Strategy

We applied tongue musculomucosal flap to soft palate reconstruction for three patients with OSAHS. All these patients were diagnosed with early-stage soft palate cancer by biopsy (Figure 1). The largest lesion was 3 x 3.5 cm. All three patients had OSAHS symptom, for which the highest apnea-hypopnea index (AHI) has reached 108.4. Before lesion resection, some necessary analysis should be made in order to get a better understanding of defects. In addition, pathological and clinical examination also made a great contribution to improving the preoperatively accurate decision. Surgeons had to pay full attention to the depth of the defects, among of which medium size defects could be the indication for reconstruction by tongue musculomucosal flap. However, whole layer soft palate defects would be not suitable for reconstruction by tongue musculomucosal flap.

Then lesion resection was made (Figure 2). Surgeons must pay full attention to margin of



Figure 1. Early-stage carcinoma in left soft palate.

safety, since over-conservative resection could give rise to relapse. After detailed pathological examination of margin of safety, re-analysis of defects should be made including size, depth and surrounding tissue condition. By this step, pre-operative design could be reaffirmed with final modulation.



Figure 3. Tongue musculomucosal flap marked by methylene blue.

We next implemented soft palate reconstruction. Figure 3 showed the blue-marked incision and scalpel cut along it after methylene treatment (Figure 3). Length and width are given, according to the rate of 3:1. The depth of the flap was more than 3 mm, which was modified by depth of the defects (Figure 4).

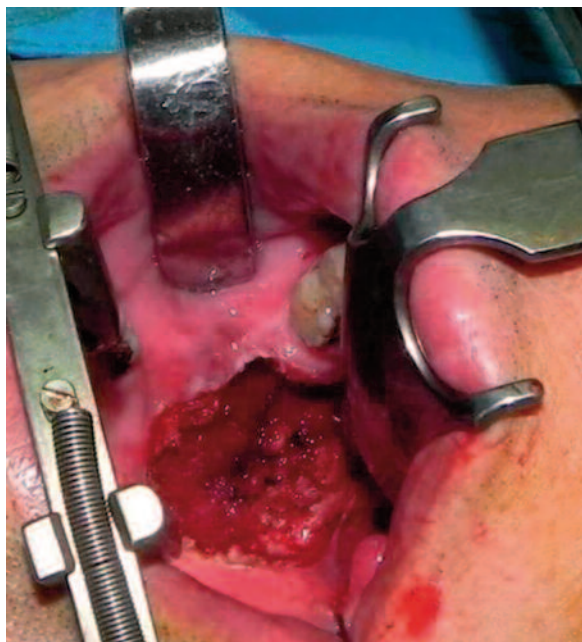


Figure 2. Lesion resection.

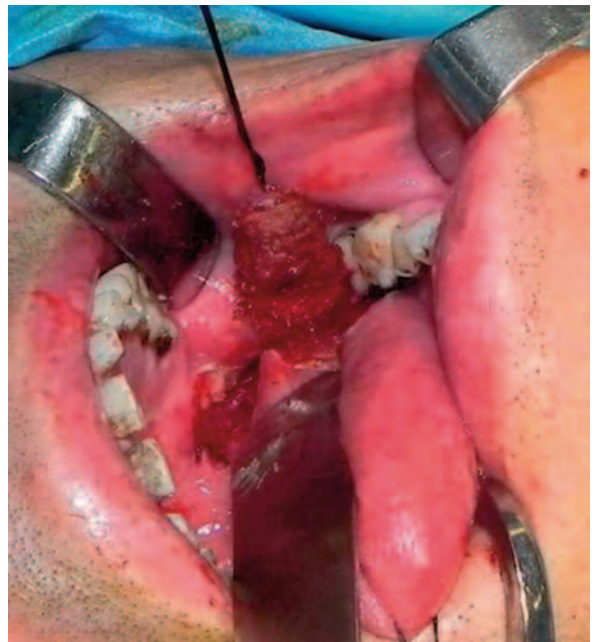


Figure 4. Manipulate the tongue musculomucosal flap.

Follow-up was made after one week, 30 days, 3 months, 6 months and 12 months postoperatively to check healing, the evolution of the wound and possible relapse (Figures 5, 6).

Results

Our experimental results exhibited that all patients recovered from intraoral operations with good objective as subjective speech and swallowing, without injury of lingual nerve, submandibular gland duct. In short, OSAHS symptom was released for these patients.

Discussion

Surgeons have options for soft palate reconstruction. With the idea of “replacing lost tissue with similar tissue in kind”, vessel-pedicled palate mucosal flap, pedicled buccal musculomucosal flap and adjacent tongue musculomucosal flap could be the ideal approach to soft palate reconstruction. A lot of clinical work has been reported to apply palatal island flap for oral defects reconstruction. Since its original descriptions by Veau in the early 20th century and more

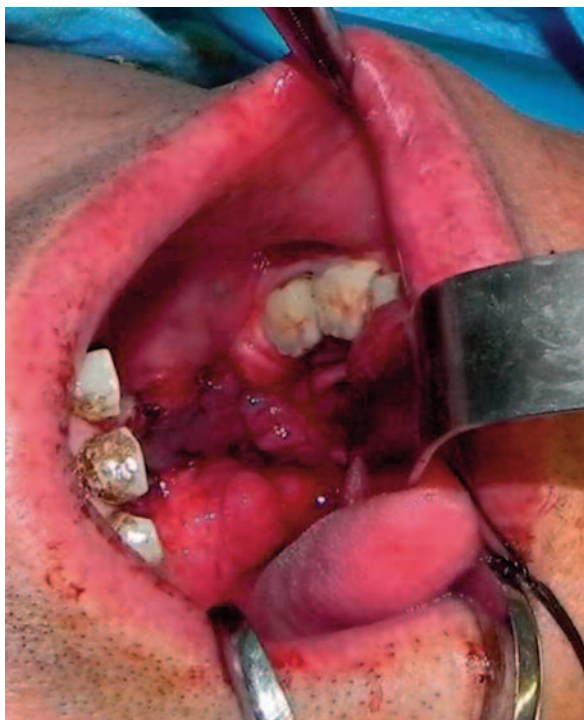


Figure 5. Soft palate reconstruction by tongue musculomucosal flap.



Figure 6. 3-month after operation with an ideal result.

extensively by Millard in 1962 in the repair of palatal clefts, the palatal island flap has been reported recently in the otolaryngology, plastic surgery, and oral surgery⁴⁻⁵. In addition to the repair of palatal defects, the flap has been used to repair oroantral fistulae and reconstruction of the retromolar trigone, tonsillar fossa, and lateral pharynx. In 1985, Gullane and Arena⁶ reconstructed soft palate, tonsillar fossa and lateral pharynx by palatal island mucoperiosteal flap based on the greater palatal artery. Another common flap in oral surgeon is buccal musculomucosal flap. In 1991, moderate-sized tonsillolinguinal defects were reconstructed with a simple, random, buccal mucosal flap described by Maier and Zoller⁷. In 2009, the dorsal pedicled buccal musculomucosal flap was developed to reconstruct medium-sized intraoral defects of mouth floor, oral vestibule, tongue margin, the oropharynx, hard and soft palate by Landes et al³. According to his report, this pedicled buccal flap could be reliable and technically easy for reconstructing lateral intraoral, medium-sized defect, although containing merely risking of occasional buccal muscle weakness, but facilitating the rehabilitation of oral function. Among these flaps, adjacent tongue musculomucosal flap might be less used comparatively. In 1957, Conley et al⁸ applied tongue flap which to repair defects in soft palate, tonsillar fossa and lateral pharynx. This flap was quite useful to re-

construct posterior medium-sized oral defects, whereas it had a weakness of temporarily hindering the mobility of the tongue, but all rehabilitated within one month.

Conclusions

Various methods of tissue replacement come into consideration after resection of carcinomas and each method has its advantages and disadvantages. We applied tongue musculomucosal flap for soft palate reconstruction in 3 patients with OSAHS in order to release OSAHS symptom by glossal volume reduction. All patients recovered from intraoral operations with good objective as subjective speech and swallowing one month after operation. To varying degrees, OSAHS symptom was released in all 3 patients three months postoperatively.

Although these patients still needed further OSAHS treatments, this paper should contribute to deal with problems related to OSAHS symptom when one works on oral surgery or reconstructing oral structure.

Statement of Interests

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Conflict of Interest

None.

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