



Review

The place of nasolabial flap in orofacial reconstruction: A review

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HIGHLIGHTS

- Majority of nasolabial flaps have random pattern blood supply.
- Nasolabial flap can have different thicknesses from full thickness cheek to thin dermis and epidermis variants.
- Nasolabial flap for facial reconstruction can transfer in three ways including; advancement, rotation and transposition.

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ABSTRACT

Background: The use of Nasolabial flap (NLF) to reconstruct orofacial soft tissue defects is one of the oldest methods for reconstruction in the medical literature. Despite widespread use of this invaluable flap, there are still controversies over the terms used for the description of this flap.

Materials and methods: A search was run in PubMed for articles in English language on nasolabial flap in oral cavity/facial reconstruction, between 1960 and 2016. Inclusion criteria was case series that focused on the anatomy, flap design, blood supply, composition, flap motion, and the reconstructed area and donor site complications.

Results: 560 articles were found in PubMed search for nasolabial flap (between 1960 and 2016). 84 articles with case series structure and available full text were included. The results of the search in this topic for anatomy, flap design, blood supply, NLF composition, flap motion, reconstructed area and donor site morbidity are presented.

Conclusion: Nasolabial flap is an old flap for reconstructive purposes. Over time different modifications have been introduced to expand its usage. Clear definition of the terms used with this flap is given.

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1. Introduction

Replacement of the soft tissue loss after traumatic injuries or surgical excision requires soft tissue flaps. Nasolabial flap (NLF) cover is one of the oldest techniques to replace orofacial soft tissue defects [1]. Sushruta, an Indian surgeon in 600 BC described a soft tissue flap very similar to what we know today as “Nasolabial flap” [2]. The skin reservoir lateral the nasolabial fold can be used for oral cavity or facial reconstructions. NLF and melolabial flap can be used interchangeably but the latter term is used commonly by the dermatologists.

The ease of surgery, probability of carrying out the procedure under local anesthesia in co-morbid patients and inconspicuous scar are the advantages of this flap [3]. Despite widespread use of this invaluable flap, there are still controversies about the terms used for describing this flap and there is not any comprehensive review about nasolabial flap [4]. In this article, all terms related to nasolabial flap are explained with cases from author's personal experience to clarify this topic.

2. Materials and methods

A search was run in PubMed for articles in English language on nasolabial flap in oral cavity/facial reconstruction, between 1960 and 2016. Inclusion criteria was case series that focused on the anatomy, flap design, blood supply, composition, flap motion, and the reconstructed area and donor site complications.

3. Results

560 articles were found in PubMed search for nasolabial flap (between 1960 and 2016). 84 articles with case series structure and available full text were included.

3.1. Anatomy

The Anatomy of the nasolabial region is complex. Nasolabial crease run obliquely from approximately 1 Cm superior to the lateral alar rim to approximately 1 Cm lateral to the corner of the mouth. Four expression muscles present in this region including part of levator labi superioris, levator labi superioris alaque nasi, zygomatic major and minor muscles (Tan et al., 2013). Facial artery passes deep to the risorius and zygomatic major muscles but superficial to the buccinator muscle. It also gave off a superficial branch to the zygomaticus major muscle and other small perforating branches to the overlying skin [5]. Extensive subdermal vascular plexus in this region supplies from four arteries; facial, angular, infraorbital and transverse facial [6]. The Buccal and zygomatic branches of the facial nerve innervate the expression muscles of the face from below (Fig. 1) [7].

3.2. Flap design

This flap can be used unilaterally or bilaterally in the form of superiorly, inferiorly or centrally based pedicle flap (Fig. 2) [8]. The terms upper pedicled and cranially based have also been used for description of superiorly based NLF [9,10].

The flap is commonly designed lateral to the nasolabial fold with the medial limit of the flap 2–3 mm lateral to this fold [11].

In the superiorly based NLF, the base of the flap is near the ala and the apex is in line with the oral commissure [12]. Sometimes when an extra length (10–12 cm) is needed, it can be extended to the skin over the mandibular border. This variant of the superiorly based NLF is called extended NLF (Fig. 3) [13]. In the inferiorly based nasolabial flap the apex of the flap is 5–7 mm lateral to the medial canthus [14].

Occasionally NLF is designed medial to the nasolabial fold. This has two indications, first: When the nasolabial flap is used for reconstruction of the upper lip (lateral subunit) and lateral limit of the resected skin falls medial to the nasolabial fold [15] and second: When it is used for nasal floor reconstruction in cleft patients [16].

3.3. Blood supply

The majority of the NLFs are random pattern [17]. Some NLFs can be designed to have an axial pattern blood supply. These include: Inferiorly based axial nasolabial flap that is nourished by facial artery [18]. Superiorly based reverse flow NLF containing angular artery [19]. The other name for this axial pattern flap is

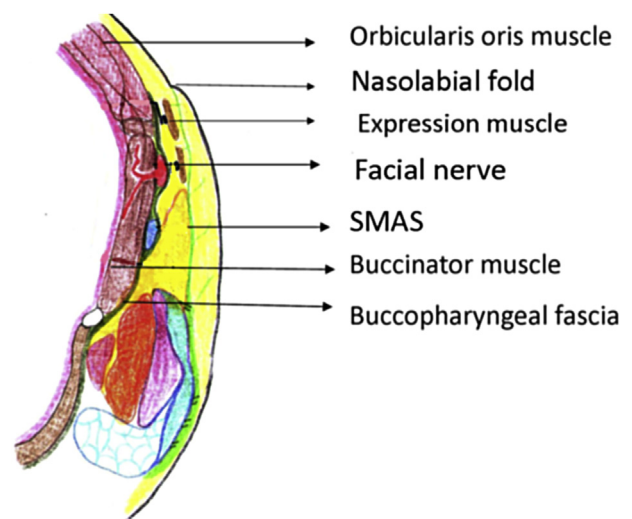


Fig. 1. Schematic picture: Anatomy of the nasolabial region. Incisions deep to the expression muscles will cut the end branches of the facial nerve without clinical significance.

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