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The Karapandzik Flap For Reconstruction Of A Lower Lip Defect: A Good Option

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Abstract

The perioral region, comprising the upper and lower lips, plays crucial functional and aesthetic roles, making reconstruction of postoperative defects challenging. Reconstruction can involve local, distant, and free flaps. Our patient is a 54-year-old women presented with a skin tumor located on the mid-lower lip, which upon biopsy, was identified as infiltrative squamous cell carcinoma. Dermatological excision of the tumor with a 1cm margin resulted in a central full thikness defect of two-thirds of the lower lip. The defects were covered using a bilateral Karapandzic flap for functional considerations. The patient was satisfied with its aesthetic appearance, and no functional deficits were observed This article showcase the effectiveness of Karapandzic flap for lower lip reconstruction after squamous cell carcinoma excision.

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I. Introduction

Reconstructing medium and large lip defects is a challenge, requiring a balance between functional restoration and aesthetic outcomes. These defects disrupt the oral sphincter muscle and involve multiple lip subunits, impacting speech and facial expression. Local rotational flaps risk compromising sensory nerves, leading to salivary incontinence and speech difficulties.

The Karapandzic flap, described in 1974, offers effective reconstruction for such defects. Unlike the Gillies fan flap, it preserves neurovascular structures, maintaining sensation and muscle function. The Karapandzic flap, based on labial arteries, is designed around facial subunit borders, preserving lip mobility and oral competence. Though ideal for large lower lip defects, it may cause philtrum deviation in lateral upper lip defects. Microstomia is a common complication, particularly in larger defect reconstruction. Overall, the Karapandzic flap provides functional and aesthetic benefits in lip reconstruction, with considerations for potential complications.

II. Case Presentation

A 54-year-old woman was referred to the plastic surgery department because of a skin tumor on the medial lower lip that had gradually increased in size over the past 2 years. The patient had a history of diabetes Type 2 and was a non-smoker. She was previously hesitant to seek treatment; however, the tumor had become ulcerated causing recurrent bleeding, motivating the patient to seek medical evaluation.

The lesion measured 15 × 21 mm in size, and included the skin of the lower lip and the vermilion border. Additionally, the lesion had ulceration in the center and induration over the entire area immediately below the ulceration, which involved the mucous membrane. Based on a preoperative skin biopsy, the patient was diagnosed with squamous cell carcinoma

The tumor was excised with a safety margin of 1 cm. This resulted in a large defect involving approximately two-thirds of the lower lip (FIG. 1). Owing to the size of the defect, primary closure was not feasible, and the use of a Karapandzic flap was planned after confirmation of good margins excision. A Karapandzic flap was designed bilaterally along the nasolabial creases extended from the nasal base to the mental crease (FIG2).

Nasotracheal intubation was performed to prevent distortion of the oral cavity during surgery, and antibiotics were administered to prevent infection .Two semicircular incisions were made to fit the nasolabial sulcus, and a careful dissection preserves nerves and vessels, crucial for maintaining sensation, muscle function the buccal area and flap viability ,the orbicularis oris muscle is then detached from adjacent tissue and the myocutaneous flaps are rotated medially to close the defect, ensuring the vermillion border alignment for aesthetic outcomes. We restored then the oral sphincter function by reapproximating the orbicularis muscle. Closing

mucosa and the lip's wet-dry transition with resorbable interrupted sutures, and skin incision with nonabsorbable sutures in segments. (FIG 2)

Postoperatively, the patient had a clear liquid diet, which is gradually advanced as tolerated. Prophylactic treatment for nausea and vomiting was administered perioperatively to minimize the risk of disrupting flap closure. Additionally, the patient received pain medication for comfort.

At the six-month postoperative follow-up, the patient showed no evidence of tumor recurrence. Although there was some thinning of the red-lipped mucosa of the lower lip and slight microstomia, the patient was very satisfied with the overall results. (FIG 3)

FIG. 1 Preoperative Markings Of The Karapandzik Flap

FIG 2 Intra-Operative Photography Showing Harvested Bilateral Karapandzic Flaps

FIG 3 1 Year Post-Treatment Photography

III. Discussion

Reconstructive options for full-thickness lip defects depend on the size and location of the defect. Defects of one-quarter to one-third of the upper lip can be closed primarily, while larger defects (one-third to two-thirds

of the lower lip width) may require flaps such as Karapandzic, Abbe, or Estlander. The Karapandzic flap is preferred for commissure involvement due to its ability to maintain oral competence. Larger lower lip defects (more than two-thirds) can be treated with the Karapandzic flap for up to three-fourths of the lip, or with Bernard-Burow's techniques for full reconstruction if sufficient cheek tissue is available.

Cancer treatment in the perioral region must adhere to oncological principles while considering functional and aesthetic outcomes. Disease-free resection is crucial for maintaining function and restoring aesthetics. For the lower lip, direct closure is possible for lesions involving less than one-third of the lip; otherwise, flap reconstruction is necessary. When reconstructing medium (one-third to one-half) and large (greater than two-thirds) lip defects, balancing functional restoration (oral competence, speech, facial expression) with aesthetic outcomes is essential. Disruptions to the orbicularis oris muscle and nerve branches (infraorbital and mental) can lead to sensory and functional deficits, such as insensate and adynamic lips, chronic dental trauma, and speech difficulties.

The Karapandzic flap is advantageous because it requires only a single surgery, preserves important vascular and nerve networks, and maintains lip mobility and sensation (FIG 5). However, complications like microstomia, asymmetry, altered sensation, and lip tightness can occur. Microstomia, often more evident in patients with dentures or large defects, might necessitate subsequent commissuroplasty if severe. Other complications include visible scarring, upper and lower lip mismatch, and commissure blunting. In other studies, common complications included altered sensation and lip tightness, but normal postoperative diets and functional outcomes were generally achieved. For larger defects, an extended Karapandzic flap, incorporating perioral cheek tissue, can limit the extent of microstomia while allowing for sufficient oral reconstruction.

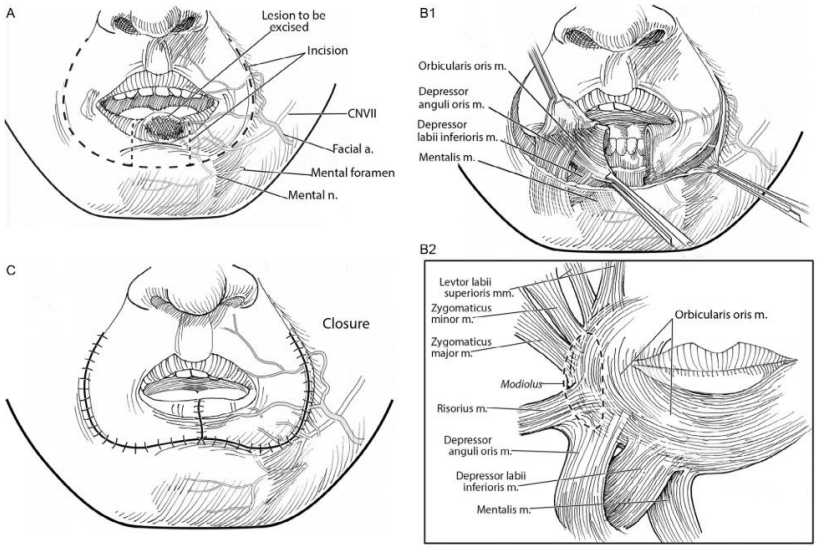

FIG 5 Lower Lip Reconstruction With Karapanzick Flap

The Karapandzic flap is overall a reliable technique for achieving functional and aesthetic outcomes following both upper and lower lip defects. Careful patient selection and consideration of individual comorbidities are crucial for successful lip reconstruction, ensuring both oral comtinence and aesthetic satisfaction.

IV. Conclusion

The Karapandzic flap is considered a reliable choice for lip reconstruction, particularly when there is sufficient cheek tissue available for mobilization and no need for additional lip tissue. It is relatively straightforward to perform and effectively covers large lip defects.

However, one drawback is the potential for suboptimal aesthetics, as the final closure may not align with natural skin creases. Additionally, microstomia can be a concern, particularly with larger defects that require reconstruction.

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