

ASSESSING DEHISCENCE AND FISTULA FORMATION

Following Anterior Palatal Reconstruction With Vomer Flap

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INTRODUCTION

The Role of the Vomer Bone

Vomer flap reconstruction is a surgical procedure used to repair a unilateral or bilateral cleft palate. In this procedure, a flap of vomer mucoperiosteal tissue is mobilized and repositioned to cover the cleft. One side of the tissue remains attached to the bone to retain its original blood supply, while the other is sutured to the lateral nasal or oral wall.

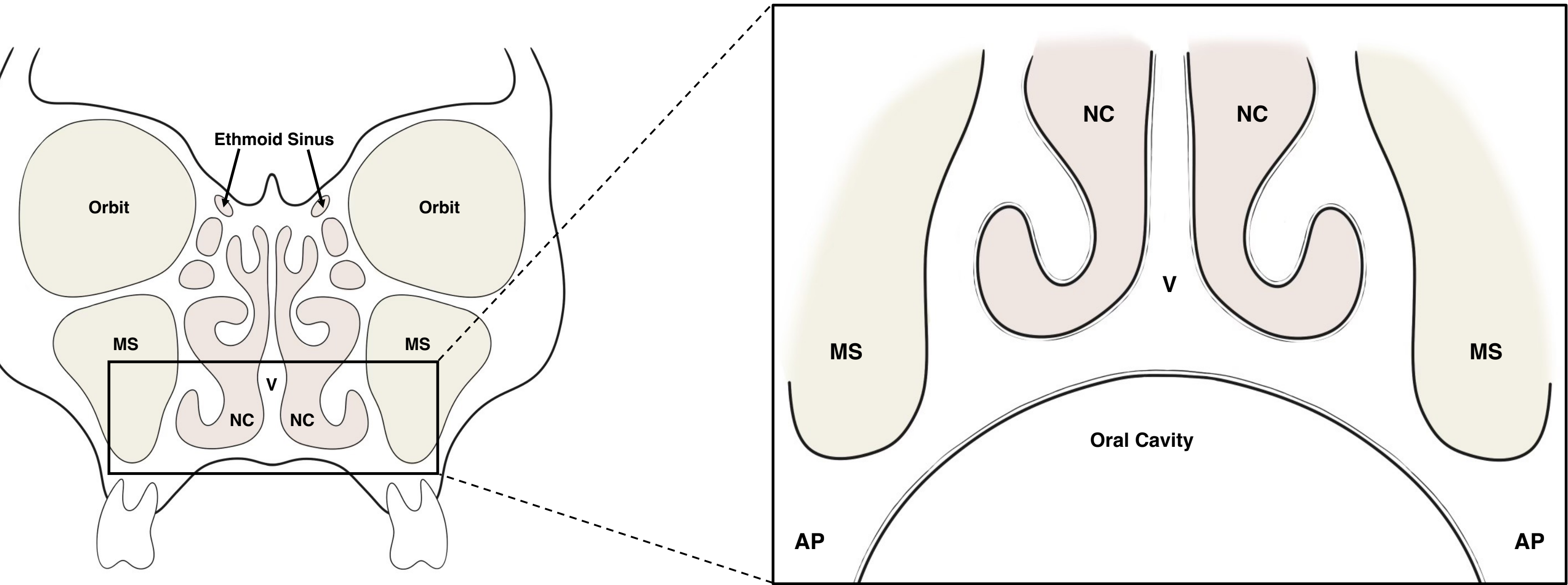


Figure 1. An enlarged coronal section of a face showing the relative position of the vomer bone to the nasal and oral cavities in a non-cleft palate. V = Vomer, NC = Nasal Cavity, AP = Alveolar Process of the Maxilla, MS = Maxillary Sinus.

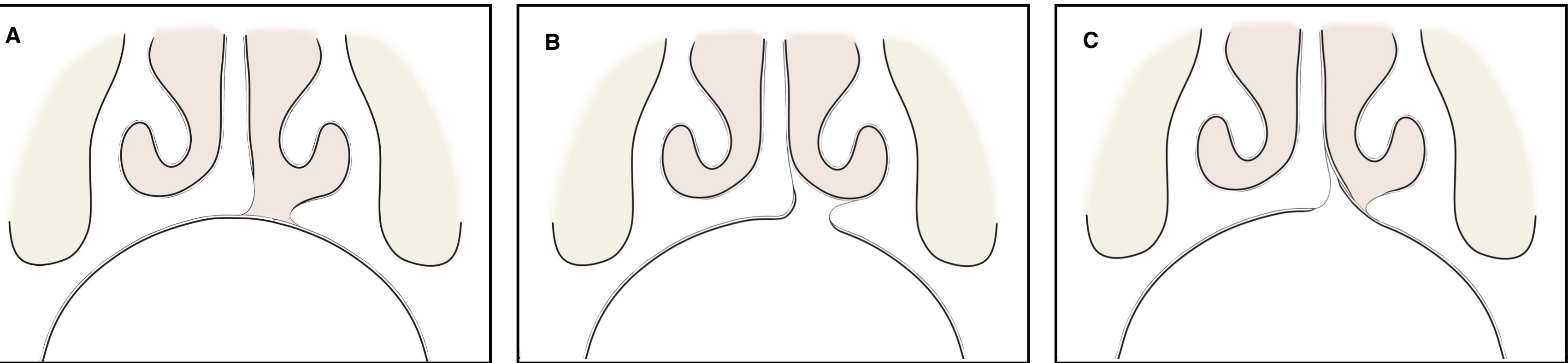


Figure 2. Surgical Techniques: the vomer mucoperiosteal tissue can be attached to the lateral wall using an (A) inferior-based, (B) superior-based, or (C) overlapping flap technique.

Advantages

1. The vomer flap is **proximal, well-vascularized**¹ and provides an effective nasal lining.
2. Reduces **size of residual cleft**², **nasal regurgitation**³, and **risk of midfacial growth disturbances**⁴.
3. **Reduces velopharyngeal insufficiency**⁵ by helping to normalize speech production.
4. **Associated with reduced morbidity**⁶ as compared to tissue taken from other donor sites.

Disadvantages

1. The vomer flap provides **limited tissue**, which may not be sufficient to completely cover larger defects.
2. Risk of postoperative complications such as **dehiscence**⁷, **fistula formation**⁷, **bleeding**, **infection**, and **flap necrosis**⁷ due to compromised blood supply.
3. These may necessitate **additional procedures**.
4. The extended duration and complexity of vomer flap reconstruction surgeries translate to **greater anesthesia exposure**⁸ at a younger age.

METHODS

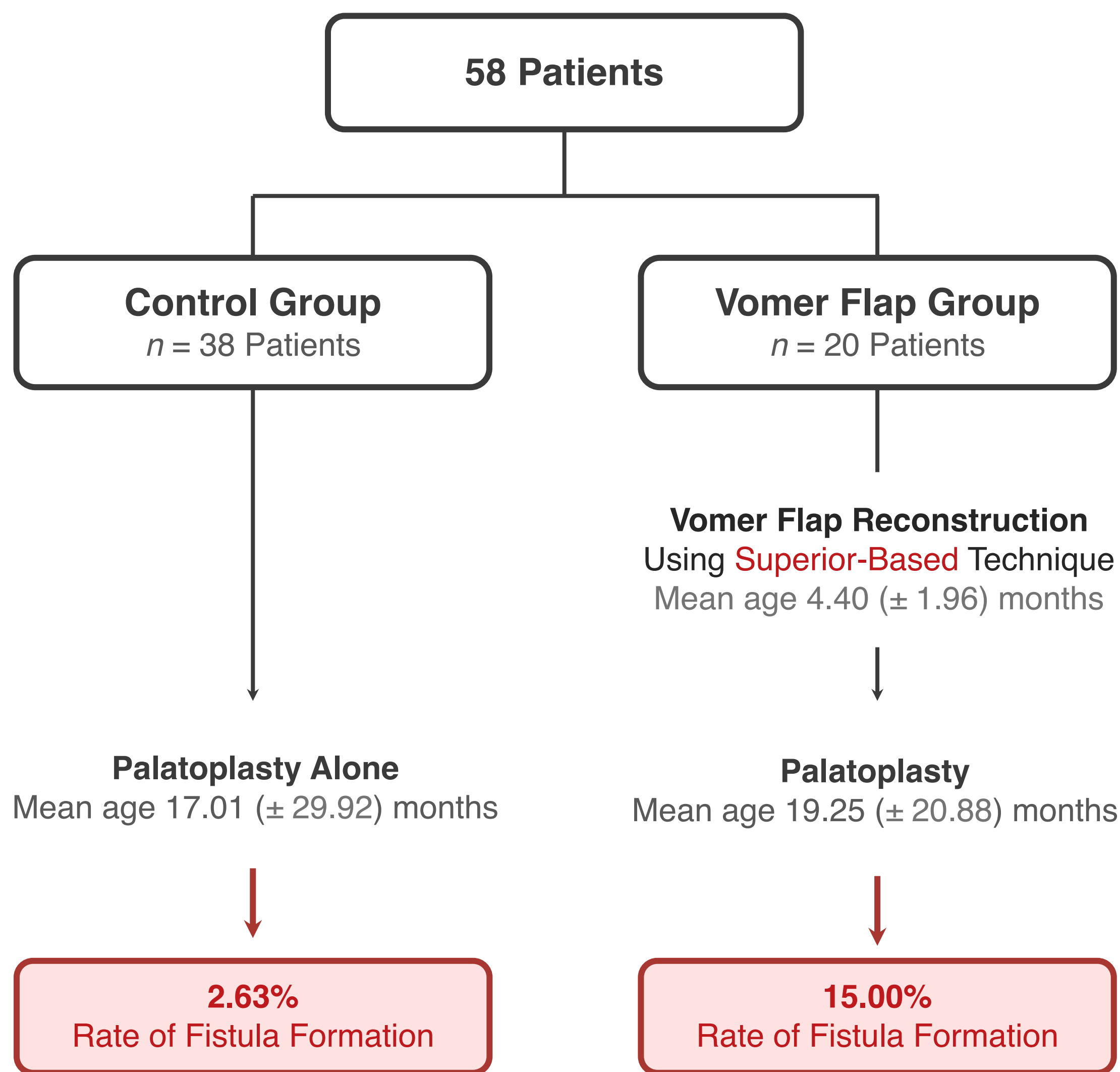
A retrospective review was conducted of all cleft palate repairs conducted by the senior author over a seven-year period. All patients who underwent vomer flap reconstruction prior to palatoplasty were assigned to the **vomer flap cohort**. Those who underwent palatoplasty alone were assigned to the **control cohort**.

Primary outcomes included **dehiscence** after vomer flap reconstruction (vomer flap cohort only) and **fistula formation** of the anterior hard palate (both cohorts). Fistula formation was assessed no sooner than three months and no later than one year after palatoplasty. All vomer flap reconstructions were performed using a superior-based flap technique.

RESULTS

Fifty-eight patients met study inclusion criteria. Among these, $n = 38$ patients underwent palatoplasty alone (**control group**) and $n = 20$ patients underwent vomer flap reconstruction prior to palatoplasty (**vomer flap group**).

Within the vomer flap group, **68% of cases had dehiscd** by the time of palatoplasty and were considered failures. Following palatoplasty, three of the 20 vomer flap cases developed anterior hard palate fistulas (**15.00%**) as compared to only one in the control group (**2.63%**).



CLINICAL IMPLICATIONS

This study documents high rates of both **dehiscence** and **fistula formation** following a superior-based flap technique, underscoring the significant impact that surgical technique can have on postoperative trajectory. Given these results, our institution has moved towards a change in methodology with adoption of an overlapping flap approach (**Figures 3 & 4**). While follow-up for recent cases remains ongoing, preliminary results suggest a significantly reduced need for surgical revision following this new technique.

We suspect that the failures associated with the superior-based flap technique were due to the single-layer nature, edge-to-edge approximation of the mucosa. Instead, we posit that the overlapping approach may maximize contact between the two raw mucosal surfaces to provide the best chance for closure and healing.

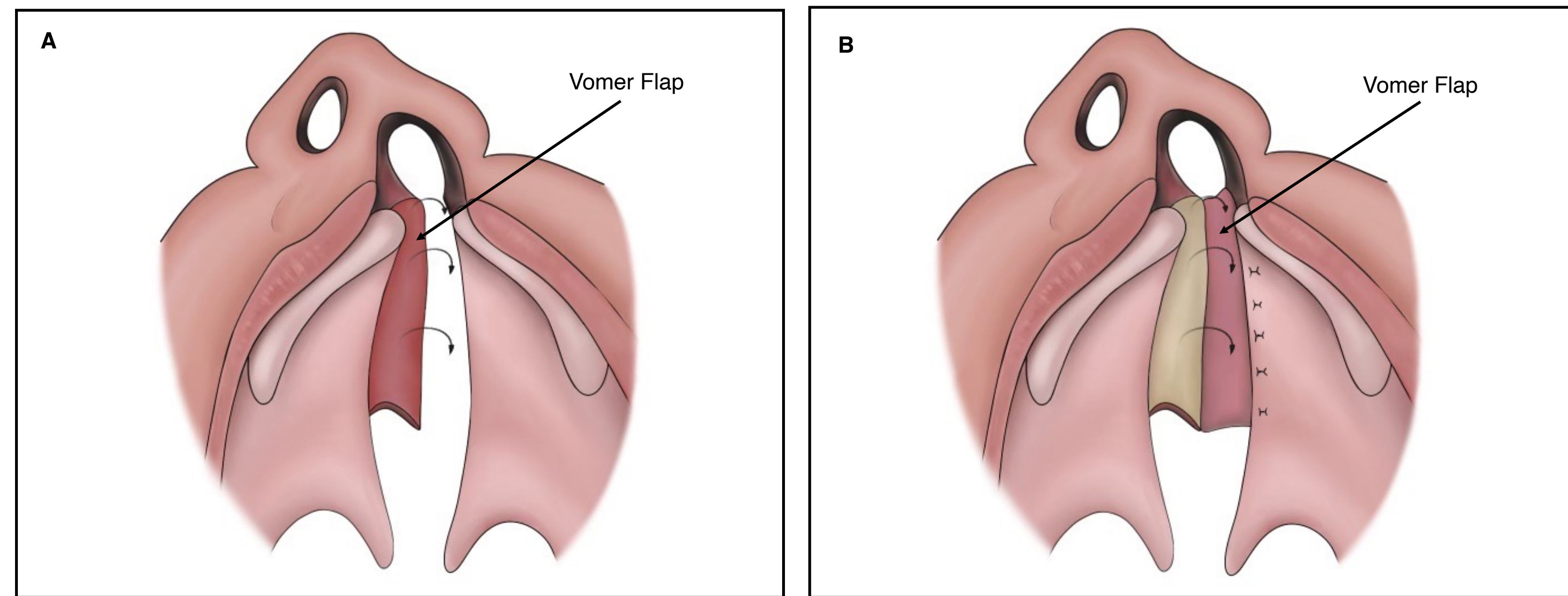


Figure 3. (A-B) Depiction of vomer flap reconstruction using an **overlapping** flap technique, in which the mucoperiosteal flap is reflected and inset under anterior hard palate mucoperiosteal edge.

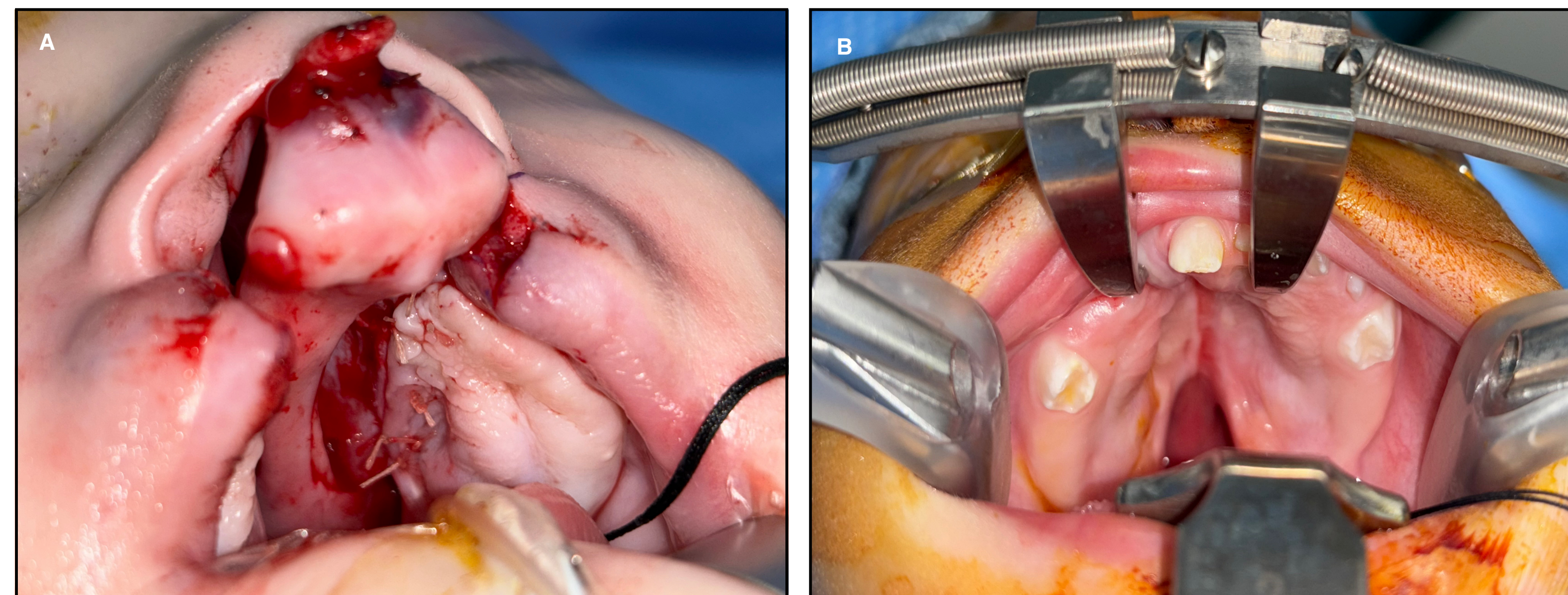


Figure 4. (A) Intra-operative picture of vomer flap reconstruction using **overlapping** flap technique **(B)** alongside intraoperative picture of the same technique at time of palatoplasty, after vomer flap reconstruction has healed.

