



# Mucoperiosteal Hinge Flap to Primary Closure of Adult Cleft Palate

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## Abstract

**Aim:** Provide an alternative to conventional pediatric surgical techniques to primary closure of large adult cleft palate.

**Methods:** Here we report a novel technique for primary closure of hard palate with a mucoperiosteal hinged flap through a clinical case.

**Results:** First we closed the nasal plane by the 180° rotation (rotation point on the anterolateral side of the cleft) of an oral mucoperiosteal flap. Next, oral plane was closed by approximately 60° rotation of the contralateral fibromucosa after an incision according to Veau-Wardill-Kilner. An anterolateral area was left in wound healing. We had easy postoperative recovery periods (good healing, no fistula, getting back to normal eating habits).

**Conclusion:** Pediatric primary surgical techniques for closing hard cleft palate aim at limiting the effects on maxillary growth. In case of primary closure of adult cleft palate, conventional pediatric surgery cannot be proposed because of the size of the defect. Maxillary growth is no longer the priority, so turning the mucoperiosteal with a nasal pedicle and a hinge on the anterolateral side of the cleft, was in our experience a good technique thanks to the vascular safety of the flap and to the robustness of the fibromucosa.

**Keywords:** Cleft palate; Cleft palate repair; Pedicled palatal flap; Mucoperiosteal hinge flap; Palatal rotation flap

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## Introduction

Primary closure of cleft palate usually occurs between the ages of 6 and 18 months, in one or two times, depending on the clinical forms and the management protocols [1,2]. Adult primary closure of cleft palate may occur in the context of the humanitarian surgery [3], care of refugee patient, or patient completely outside the health system. The surgical principles used in children are difficult to transpose to adults because of excessive loss of substance. We report technical alternative to childhood primary surgeries in order to achieve the primary closure of a large cleft palate (adult cleft palate).

## Materials and Methods

Excluding humanitarian mission, we performed the primary closure in a 23-year-old patient with a complete unoperated cleft palate (Figure 1).

To close the nasal plan we made a hinge flap from the anterolateral side fibromucosa. Oral plan was closed by rotation of contralateral mucoperiosteal using a Veau-Wardill-Killner incision leaving an anterolateral zone in wound healing (Figure 2).

The intervention was performed in the adult surgical area in similar conditions to those in pediatric sector (general anesthesia and suprazygomatic blocks) [4]. Staphylorrhaphy was performed at the same time to close soft palate. The flaps were lifted as previously described (Figure 3). After 180° rotation, the hinged flap was stitched to the contralateral nasal mucosa by separate points of Vicryl 4/0 (Figure 4). Closure of the oral mucosa on the median line was obtained by medial rotation of about 60° of a mucoperiosteal flap. The anterolateral area was left in wound healing (Figure 5).

We had easy postoperative recovery periods (getting back to soft eating at D0, discharge D2).



Figure 1: Preoperative photo: cleft palate, 3 cm x 4 cm.

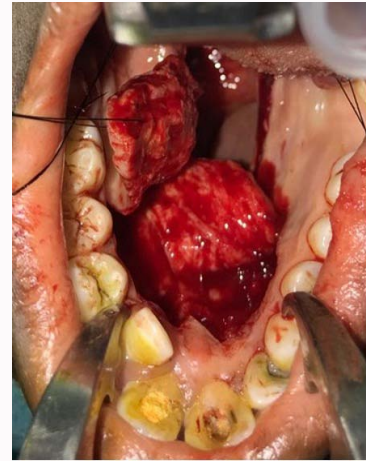


Figure 3: Perioperative photo: Flap dissection.

Local care (mouth and nasal washes) implemented and associated with painkillers (paracetamol and tramadol). Patient consulted at 2 weeks postoperatively to ensure the vitality of the flaps then at 3 months to judge the healing and the absence of fistula. At 3 months postoperatively, patient had good healing and no fistula (Figure 6). Orthorhombic care begins after complete healing.

### Discussion

Few surgical techniques have been described on primary closure of adult cleft palate. Functional interest in adults, and especially in developing countries, is rather limited (humanitarian missions focus more on child surgery [2]).

Primary closure of a adult total cleft palate remains a technical challenge. Clefts are wider and palatal segments more vertical because of the prolonged interposition of the tongue [3]. Main surgical problem is the difficulty of rebuilding a tight and solid anterior nasal floor.

Closure of the cleft by pediatric conventional surgery did not achieve closure in adults. Indeed, in children, the objective of the current techniques is to limit the palate scars and so promote maxillary growth. In adults, maxillary growth is no longer a problem.

Wardill's primary closure technique has been described in adults



Figure 4: Perioperative photo: Setting up the hinged flap.

but reported a significant number of post-operative bleeding from the wound healing area and secondary fistulae [5].

The hinged flap principle was originally derived from hand surgery [6,7]. This process found its place in post-palatoplasty fistula surgery [8,9], and in the secondary reconstruction surgery of the

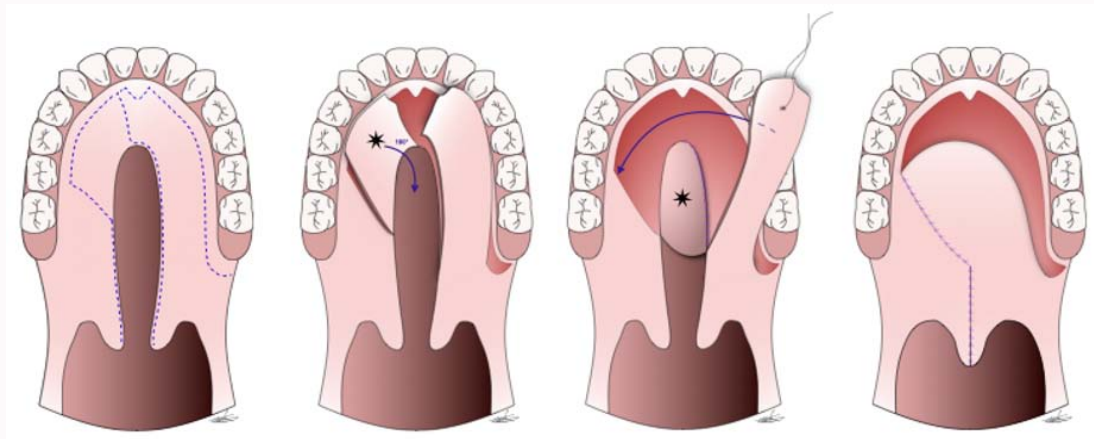


Figure 2: Surgical procedure: The star shows the hinge flap returned at 180° and used as nose floor.



**Figure 5:** Perioperative photo: Stitch of Wardill flap, look the left anterolateral area leaving in wound healing.



**Figure 6:** Postoperative photo.

palate [10], with interest as mucoperiosteal tissue is a resistant tissue of proximity. But in this indication there was a major risk of residual fistula [11].

In the case of primary surgery, hinged flap is removed from a non-scarred area from anterior-lateral mucoperiosteal tissue, allowing vascular safety and good coverage of the anterior part of the cleft.

### Conclusion

Primary closure of total adult cleft palate requires technical adaptations. The use of mucoperiosteal 180° rotation hinged flap (nasal plan) associated with a contralateral mucoperiosteal 60° translation flap (oral plan) allowed us to perform primary closure of a large adult cleft palate, combining robustness and vascular safety.

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