Two-Flap Palatoplasty

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Basic Principles

• All palate clefts are not created equal
• All patients with cleft palate are not create equal
• Safety is paramount, “to abstain from doing harm”
  - It is, at times, appropriate to not repair a cleft palate,
  - But do not let a diagnosis or genetic test result be the decision maker.
  - We do not treat diagnoses, we treat individual patients/children.
• Goals of repair
  - Separate the oral and nasal cavities and create a competent velar mechanism that is able to aid in,
    • Speech production with appropriate resonance, and
    • Prevention of nasal regurgitation of food and liquids.
History

• Janusz Bardach (1967) is generally credited with modern description and the rise in popularity of the two flap palatoplasty.
• Extension of techniques described by Veau using oral and nasal mucosal flaps
• In his description, the entire palate, hard and soft, were closed in a single procedure.
• No attempt is made in retroposition (pushback) of the palatal flaps.
• Minimal or no exposed bone remains after the procedure, thus reducing scarring and deleterious effects on growth.
Indications and Timing

• Complete unilateral and bilateral clefts of the primary and secondary palate
• Modifications allow the closure of almost all clefts, regardless of width
• Keys include
  ▪ Dissection, retropositioning and reconstruction of the palatal muscular sling
  ▪ Use of vomer mucosa for nasal closure
  ▪ Lengthening but preservation of neurovascular pedicle
Surgical Technique

• Patient preparation
  ▪ Supine, oral RAE ETT, shoulder roll, neck extended
  ▪ Slight Trendelenburg position, good lighting
  ▪ Antibiotics, local anesthesia and vasoconstriction
  ▪ Dingman mouthgag

• Flap marking, design, and incisions
  ▪ Dissect one side at a time.
  ▪ Incision along cleft edge
  ▪ Incision along lingual surface of alveolus
  ▪ Maximize use of vomer mucosa
  ▪ Don’t be afraid of NVB
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Surgical Technique

• Elevate mucosa off of hard palate
• Identify NVB. Don’t be afraid of it
• 360° around NVB. Hockey stick elevator helpful here.
• Dissect nasal mucosa off hard palate “around the corner” as far as possible/necessary.
• Dissect palatal muscle off back of hard palate and free edge of cleft. Push it posteriorly.
• Free muscle and submucosal tissue from oral side of soft palate.
• Move to the other side and repeat.
• Incise and elevate vomer mucosal flap.
Surgical Technique

• Work especially careful on anterior palate. Smaller fistulas at alveolus are desirable – less speech impact, less food, easier to close at ABG. Right angle Beaver blade helpful in making incisions here. Dental mirror can even be used in elevating mucosa.
• Check all flaps for adequate length.
• Lengthen NVB as necessary
  ▪ Backcut and dissect off undersurface of anterior flap
  ▪ Stretch it hockey stick elevator
  ▪ Osteotomy through the posterior foramen
Surgical Technique

• Closure from front to back, then back to front
• Nasal mucosa closed against vomer mucosa as far back as possible. I use a 5-0 Monocryl with a TF needle. I run this stitch in the middle with interrupted sutures anteriorly near alveolus (remember…smallest fistula possible at alveolus).
• Once I run out of vomer, I switch to interrupted sutures closing nasal side of palatal mucosa to same on the other side. Use same suture material with knots on the nasal side.
Surgical Technique

- Close retropositioned muscle with BIG bites. I use 4-0 PDS, usually 3-5 sutures.
- This often removes much of the tension for the subsequent oral closure.
Surgical Technique

- Oral mucosal closure proceeds from back to front.
- Uvula and the crappy tissue here closed with mattress sutures.
- Proceed anteriorly. If it gets tight switch to vertical mattress suture technique. Many use mattresses all along here.
- Once you reach anterior palate use three bites with the second bite grabbing the nasal layer to anchor the hard palate mucosa.
Surgical Technique

- Anchor anterior mucosa to alveolar mucosa. These sutures may be air knots.
- Fill lateral defects, if desired, with material of your choice. I use Surgicel rolled in little cigar shapes (one scub tech says they are little “nickel joints” held with a mosquito hemostat). Air knots over the top to hold them in place.
Postoperative Care

- Humidified O²/RA, Monitor SaO²
- Pain control
- 23 hr stay in most
- Discharge criteria
  - Adequate PO intake
  - Room air SaO² > 92% when sleeping
  - Good pain control
- Follow-up
  - 2 weeks, 6 weeks, 6 months
- Controversial
  - Arm splints (No-No’s)
  - Diet – liquids only
  - Antibiotics
Results

  - $N = 382$
  - 8.92% needed secondary palatal surgery
  - Decreased with surgeon’s experience

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Two-Flap Palatoplasty: 20-Year Experience and Evolution of Surgical Technique

*Background:* The two-flap palatoplasty was described more than 30 years ago, but there are few reports of long-term results using this technique. There are also very few long-term series of a single method of palatoplasty from a single surgeon.

*Methods:* The authors reviewed the technique of the two-flap palatoplasty, with emphasis on the senior author’s (K.E.S.) modifications. The authors also retrospectively reviewed 382 two-flap palatoplasties performed by the senior author in nonsyndromic patients over a 20-year period. The incidence of secondary velopharyngeal surgery was established. Detailed speech analysis was performed in a subset of 150 patients.

*Results:* The proportion of patients with velopharyngeal insufficiency over 20 years...
Complications

• Early
  ▪ Bleeding
  ▪ Airway

• Late
  ▪ Fistula
  ▪ VPI
  ▪ Maxillary Growth disturbance
Surgical Techniques in Cleft Lip and Palate

- Janusz Bardach and Kenneth E. Sayler
- Published in text form most recently in 1991
- Available online at http://medpro.smiletrain.org/