Primary Cleft Palate Surgery

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GSR Institute of Facial Plastic Surgery

- Non-profit hospital established in 1996
- Dedicated Cleft & Craniofacial Centre of Excellence
- Presently 1600 cleft and cranio-facial surgeries are done every year
- 2 surgeons and 4 fellows with full support team
- More than 20,000 cleft & craniofacial surgeries have been performed since 1996
- 600 primary new born cleft children are treated every year

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Cleft Palate

Cleft of hard and soft palate associated with cleft lip

Type Ia
Unilateral complete cleft palate associated with cleft lip with palatal shelves at the same level anteriorly

Type Ib
Unilateral complete cleft palate associated with cleft lip with palatal shelves at the different levels anteriorly
How do we identify the affected part?
Cleft Palate
Cleft of hard and soft palate associated with cleft lip

Type IIa
Bilateral complete cleft palate associated with cleft lip with palatal shelves at the same level of the premaxilla anteriorly

Type IIb
Bilateral complete cleft palate associated with cleft lip with palatal shelves at the different levels of the premaxilla anteriorly
How do we identify the affected part?

Cleft Palate

Isolated Cleft Palate

Type IIIa
Cleft of soft palate

Type IIIb
Cleft of hard and soft palate
How do we identify the affected part?
Cleft Palate

Type IVa
Submucous cleft palate

Type IVb
Bifid uvula
SOFT PALATE AND SPEECH

- Tensor veli palatini muscle
- Levator veli palatini muscle
  (To move Soft Palate Cranially)
- Palatopharyngeus muscle
- Palatoglossus muscle
  (To move Soft Palate Pharyngeally)
- Musculus Uvulae

Source: Gray’s Anatomy

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**HARD PALATE AND GROWTH**

In non-cleft subjects:

- Transverse growth of the maxilla depends on the activity of the overlying palatal mucosa.

- Divided into three distinct zones.

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Source: Complete Management of Cleft Lip and Palate : Chapter 5: A. F. Markus, W. P. Smith, J. Delaire
In cleft palate patients

Complete unilateral cleft palate patients:
• The vomer is continuous with the palatal shelf on non-cleft side.

• The palatal fibro mucosa is reduced but maxillary and gingival fibro mucosa are identical to that is found in non-cleft subjects.

Complete bilateral cleft palate patients:
• The vomer is reduced in height though it is anatomically correct position.

• Palatal mucosa on cleft side is same as that of unilateral cleft palate.

Source: Complete Management of Cleft Lip and Palate : Chapter 5: A. F. Markus, W. P. Smith, J. Delaire

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How do you decide which is the best way to repair the palate
Palatoplasty

Stage

One Stage
Two Stage

Technique

Bardach
Delaire
Radical Muscle Dissection
Furlows
Nasal layer carefully preserved and detached from superior to the palatal shelves and sutured.

Medial Incisions and Lateral incisions to expose the soft palate musculature and mobilize the hard palate flaps.

Nasal layer carefully preserved and detached from superior to the palatal shelves and sutured.
Uvula sutured posteriorly.

Detached muscle sutured to the corresponding muscle on the other side.
Palatal mucosa approximated.

Adaption sutures placed to hold down hard palate mucosa reducing dead space.
Sling sutures placed laterally.

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Single Stage Bardach Repair (1997-2001)

COMPLETE PALATE CLOSURE (At 12 months)

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Two Stage Delaire Repair (2001-2007)

Rationale

Following closure of the soft palate and cleft lip there is function both anteriorly and posteriorly causing the distance between the hamular processes, the tuberosities and the divided hard palate to dramatically diminish by age of about 12 months.

The residual hard palate cleft can be closed at that time, often without the use of lateral palatal incisions.

Source: Oral and Maxillofacial Surgery: Volume 6: Chapter 3: David S. Precious

www.craniofacialinstitute.org
Two Stage Delaire Repair (2001-2007)

SOFT PALATE CLOSURE (At 8 months)

Transverse incisions are given to move the soft palate medially.

Muscles are completely freed from the nasal layer and reoriented medially towards the midline.

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Two Stage Delaire Repair (2001-2007)

HARD PALATE CLOSURE (At 18 months)
Review of Surgical Repair (2010)

Retrospective comparison 100 consecutive patients treated with two stage palatoplasty and 100 consecutive patients treated by a single stage palatoplasty

- Number of patients 174
  - Two stage palatoplasty 86
  - Single stage palatoplasty 88

- Follow up period 8 years

Source:
Comparison of treatment outcomes for children operated with one stage and two stage palate repair for complete unilateral cleft palates Reddy R, Gosla Reddy S, Berge SJ, Kuijpers-Jagtman, AM; Submitted for publication to Plastic and Reconstructive Surgery

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One Stage Palatoplasty

Complete Palate Repair

Follow up at age 8 years

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Two Stage Palatoplasty

Stage I Soft Palate Repair

Stage II Hard Palate Repair

Follow up at age 8 years

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Review of Surgical Repair (2010)
Post operative index for primary cleft palate repair (Using GOSLON Index and Nasometry)
Comparison of 100 consecutive patients treated with 2 stage palatoplasty with 100 consecutive patients treated with 1 stage palatoplasty

<table>
<thead>
<tr>
<th>Condition</th>
<th>2 Stage</th>
<th>1 Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anterior palatal fistulae</td>
<td>09</td>
<td>11</td>
</tr>
<tr>
<td>Fistulae at junction of hard &amp; soft palate</td>
<td>03</td>
<td>01</td>
</tr>
<tr>
<td>VPI (Nasometry)</td>
<td>29</td>
<td>31</td>
</tr>
<tr>
<td>Disturbed maxillary growth (Crossbite)</td>
<td>48</td>
<td>51</td>
</tr>
</tbody>
</table>

Source:
Comparison of treatment outcomes for children operated with one stage and two stage palate repair for complete unilateral cleft palates Reddy R, Gosla Reddy S, Berge SJ, Kuijpers-Jagtman, AM; Submitted for publication to Plastic and Reconstructive Surgery
Systematic Review

No Randomized Clinical Trials comparing techniques as on December 31, 2015

Source:
Two Stage Repair with muscle dissection (2010)

SOFT PALATE CLOSURE (At age 10 months)

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Two Stage Repair with Muscle Dissection (2010)

SOFT PALATE CLOSURE (At age 10 months)

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Two Stage Repair with muscle dissection (2010)

HARD PALATE CLOSURE (At age 18 months)

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Nasal layer carefully preserved and detached from superior to the palatal shelves and sutured. Uvula sutured posteriorly.

Medial Incisions and Lateral incisions to expose the soft palate musculature and mobilize the hard palate flaps.

Detached muscle sutured to the corresponding muscle on the other side. Palatal mucosa approximated.

Adaption sutures placed to hold down hard palate mucosa reducing dead space. Sling sutures placed laterally.
Review of Surgical Protocol (2016)
Effect of One and Two Stage Palatoplasty in Children with Unilateral Complete Cleft Lip and Palate on hypernasality and fistula formation: A Randomized Controlled Trial


Prospective randomised study of 100 consecutive children operated for cleft palate repair in complete unilateral cleft defects between January 2010 and December 2010.

The 100 children were divided into two groups (A and B) through block randomization with 20 children in in each block.

Group A  one stage repair  (Complete palate at age 12 months)
Group B  two stage repair  (Soft Palate at age 10 months, Hard Palate at age 18 months)
Effect of One and Two Stage Palatoplasty in Children with Unilateral Complete Cleft Lip and Palate on hypernasality and fistula formation: A Randomized Controlled Trial


All patients studied for speech and fistula rates.

RESULTS:

Nasalance was statistically higher in the one stage repair

Fistula rate was higher in the two stage repair
Two Stage Furlows Palatoplasty (2011)

SOFT PALATE CLOSURE (At age 10 months)

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Two Stage Furlows Palatoplasty (2011)

HARD PALATE CLOSURE (At age 18 months)

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Bring the Smile Back

Thank You

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