

# A Comparison Of Palatoplasty Techniques

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The efficacy of palate lengthening procedures and intravelar veloplasty performed at the time of primary cleft palate repair was studied in a series of eighty patients by comparing speech results, pressure flow studies, and the ultimate need for pharyngeal flaps. The results indicate that intravelar veloplasty yields better speech through better velopharyngeal function and less frequent pharyngeal flap procedures.

Controversy abounds in cleft surgery, but few procedures generate as much energetic discussion and conflicting reports as does palatoplasty. The von Langenbeck procedure, employing bipedical flaps with no pushback, is the oldest technique still in common use. Its proponents maintain that minimal stripping of the periosteum avoids maxillary hypoplasia (Blocksma et. al. 1975) and speech is as good as with other procedures (Lindsay 1971). Kaplan et. al. (1978) found speech after von Langenbeck palatoplasty to be acceptable, citing only 20% velopharyngeal incompetence. Subsequently, Krause, Tharp, and Morris (1976) in a series of 267 patients from Iowa found this repair gave slightly better speech results than lengthening procedures in soft palate clefts but that V-Y pushback was superior in more extensive clefts. Musgrave et. al. (1975) also demonstrated superiority of a lengthening procedure.

In the midst of this controversy, Braithwaite (1968), Kriens (1969), and Edgerton (1971 and 1969) reported improved speech results by careful dissection and relocation

of the levator veli palati muscle, thereby reconstructing the levator sling thought to be important in velopharyngeal competence (Kaplan 1975 and Dickson 1972). Tahboub (1981), however, presented a series of seventy-four cases showing levator reconstruction palatoplasty gives a 15 percent higher incidence of velopharyngeal incompetence than other repairs.

## Sample and Method

A series of eighty patients who underwent palatoplasty at the University of North Carolina from 1966 through 1978 were assessed (Table 1).

The twenty-one cases from 1966 through 1969 were repaired with the von Langenbeck method utilizing two bipedical muco-periosteal flaps advanced to the midline. Seventeen of these were done by one surgeon. The thirty-seven cases from 1970 through 1975 were repaired using palate lengthening procedures, consisting of a V-Y or island pushback procedure, and were performed by several other surgeons. The third group consists of twenty-two cases repaired using von Langenbeck's procedure with the addition of levator reconstruction (intravelar veloplasty) and performed by the same surgeon who performed the seventeen earlier von Langenbeck cases. Excluded from the study were all patients with inadequate follow-up, on whom acceptable speech samples could not be obtained, who were mentally retarded,

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TABLE 1. Palatoplasty at UNC, 80 Cases, 1966-1978

	<i>Period</i>	<i>n</i>	<i>Mean Age at Palatoplasty</i>	<i>Mean Time between Palatoplasty and Pharyngeal Flap for Those Requiring Flap</i>	<i>Mean Follow-Up</i>
Von Langenbeck	1966-1969	21 cases	22.9 mos.	4 yrs. 6 mos.	10 yrs. 6 mos.
Lengthening procedures	1970-1975	37 cases	19.3 mos.	4 yrs. 4 mos.	7 yrs. 6 mos.
Levator reconstruction	1976-1978	22 cases	18.9 mos.	2 yrs. 3 mos.	4 yrs. 7 mos.

or who had a pharyngeal flap at the time of palatoplasty. No attempt was made to divide the group by the extent or type of cleft.

Two evaluation techniques were used. Speech was evaluated by speech pathologists specializing in cleft palate speech. The speech was rated as "excellent" only if all observers agreed that there was no undue nasal emission. Those patients in the "acceptable speech" group were found to have mild nasal emission (usually during connected speech). Those patients classified as having "poor speech" manifested enough velopharyngeal incompetence after adequate speech therapy to warrant an operative procedure. Pressure-flow (or rhinomanometry) testing was also done utilizing computerized computation of velopharyngeal orifice size. Adequate velopharyngeal closure was considered to be less than 10 mm<sup>2</sup> (Warren 1979).

**Results**

Speech evaluation after palatoplasty revealed no significant difference between those children with simple von Langenbeck closure and those undergoing palatal lengthening procedures (Table 2). Those children with levator reconstruction demonstrated superior speech results. Only two children of twenty-two showed poor speech postoperatively.

Results of pressure-flow studies after palatoplasty revealed good closure in 57% of the palate lengthening group and 52% of the von Langenbeck group. The levator reconstruction procedure gave 91% with good closure.

The ultimate test of palatoplasty is the need for a pharyngeal flap. The percent of patients receiving flaps in this series is 38%

TABLE 2. Speech Evaluation after Palatoplasty

	<i>von Langenbeck</i>		<i>Palate Lengthening</i>		<i>Levator Reconstruction</i>	
Excellent	6/21	29%	10/37	27%	11/22	50%
Acceptable	7/21	33%	13/37	35%	9/22	41%
Poor	8/21	38%	14/37	38%	2/22	9%

for both the von Langenbeck (8 of 21) and palate lengthening group (14 of 37), while only 9% (2 of 22) levator reconstruction have required flaps at this time.

When the results of one surgeon doing a von Langenbeck repair are compared with his results with the same procedure but with levator reconstruction added, the results are equally striking. The percent of patients requiring flaps decreased from 35% to 9%.

**Discussion**

A concern with this series is the shorter follow-up on those patients with levator reconstruction. However, the patients included in this levator reconstruction series were felt to have adequate speech for testing and at this early time seem to be quite superior to those children repaired with other procedures.

The fact that one surgeon performed most of the simple von Langenbeck cases and all of the intravelar veloplasty cases adds validity to the comparison. Several surgeons participated in the palatal lengthening series which introduces worrisome uncontrolled variables.

**Conclusion**

Based on the results of this series of patients, careful reconstruction of the levator sling (intravelar veloplasty) at the time of palatoplasty increases the number of patients achieving velopharyngeal com-

petency as compared with the simple von Langenbeck closure or palatal pushback procedures.

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