

# Quarter Century Review of Velopharyngeal Insufficiency Rates between Palatoplasty Techniques among Patients with Robin Sequence

Idean Roohani, BS; Collean Trotter, BA, MAT; Pasha Shakoori, MD, DDS, MA; Dylan G. Choi, BS; Sarah Alfeerawi, BS, MS; Artur Fahradyan, MD; Jessica A. Lee, MD; Mark M. Urata, MD, DDS; Jeffrey Hammoudeh, MD, DDS; William P. Magee, MD, DDS

## Background

- Robin Sequence (RS) are often seen with a **wide U-shaped** cleft palate (CP)
- Compared to non-syndromic CP patients, RS patients with CP have worse speech outcomes and **high velopharyngeal insufficiency** (VPI) rates
- However, a specific causative factor *has yet to be clearly identified*

## Objective

- Compare **VPI rates** between *palatoplasty techniques* (**Furlow** double-opposing Z-plasty vs. **straight-line repair [SLR]**) among the RS population

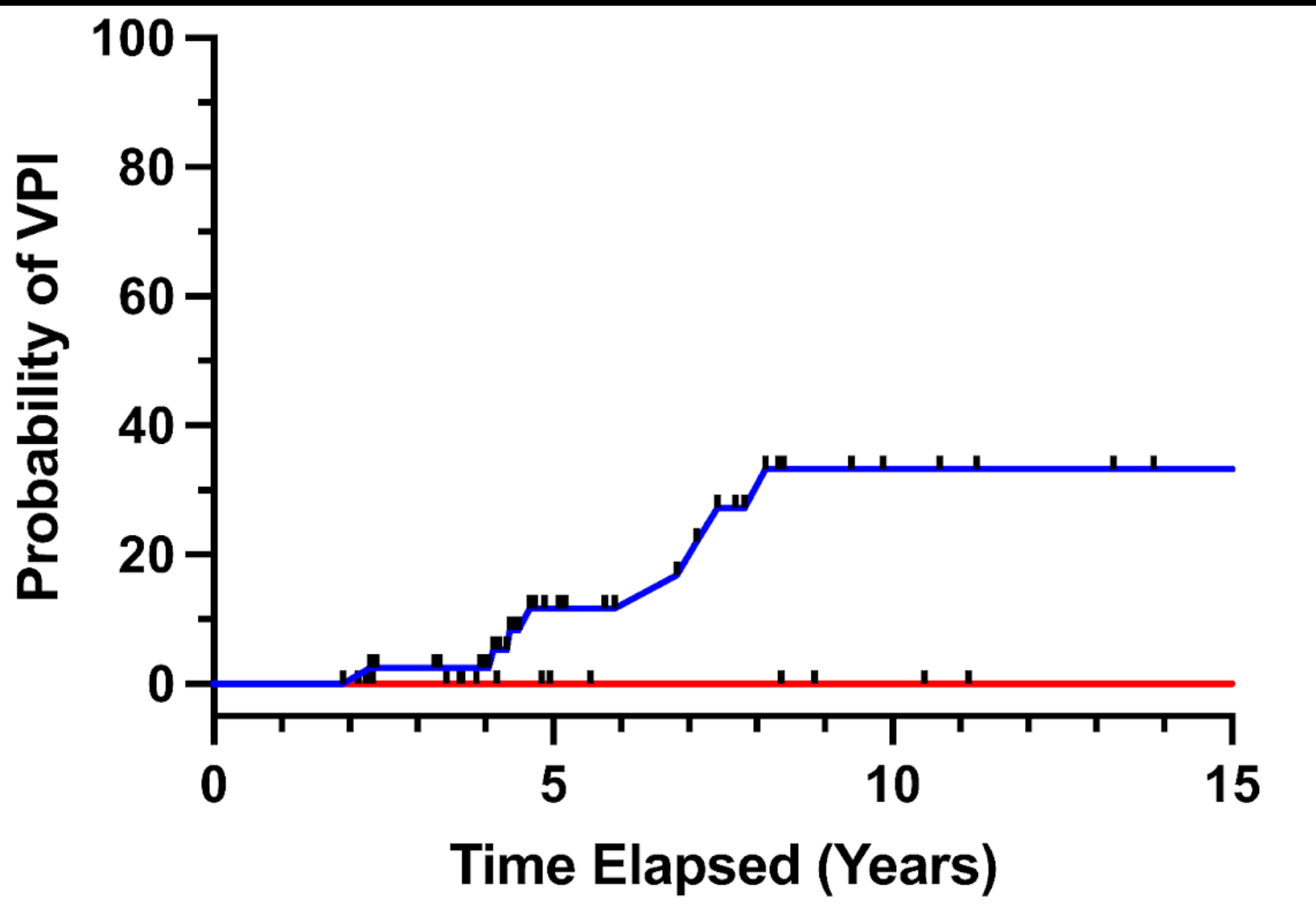
## Methods

- Retrospective cohort study evaluating patients with **isolated RS** who underwent palatoplasty from 1997-2022
- Data Collection:** Demographics, syndromic status operative data, and speech interventions/outcomes
- Persistent VPI was defined as VPI which was refractory to speech therapy and required speech-correcting surgery
- Statistical analyses:** Fisher-exact, independent t-test, and Kaplan-Meier analyses were used

Table 1. Speech Outcomes and Interventions between Surgical Technique Cohorts

|                                                                | Total      | Furlow Double-<br>Opposing Z-Plasty | Straight-Line Repair | p-value |
|----------------------------------------------------------------|------------|-------------------------------------|----------------------|---------|
| Total Patients                                                 | n=79       | n=55                                | n=24                 |         |
| Age of Palatoplasty (Years)                                    | 1.5±1.3    | 1.6±1.4                             | 1.4±0.9              | 0.599   |
| Clinical VPI                                                   | 17 (21.5%) | 15 (27.3%)                          | 2 (8.3%)             | 0.077   |
| Resolved with Speech Therapy                                   | 8 (10.1%)  | 6 (10.9%)                           | 2 (8.3%)             | >0.999  |
| Persistent VPI                                                 | 9 (11.4%)  | 9 (16.4%)                           | 0 (0.0%)             | 0.111   |
| Follow-up Time (Years)                                         | 5.7±4.6    | 6.4±4.8                             | 4.2±4.0              | 0.051   |
| After excluding patients with less than 24 months of follow-up |            |                                     |                      |         |
| Subtotal                                                       | n=59       | n=42                                | n=17                 |         |
| Clinical VPI                                                   | 17 (28.8%) | 15 (27.3%)                          | 2 (11.8%)            | 0.066   |
| Resolved with Speech Therapy                                   | 8 (13.6%)  | 6 (14.3%)                           | 2 (8.3%)             | >0.999  |
| Persistent VPI                                                 | 9 (15.3%)  | 9 (21.4%)                           | 0 (0.0%)             | 0.048*  |

Figure 1. Kaplan-Meier Analysis Estimating the Probability of Persistent VPI based on Surgical Technique



### 5-Year Predicted VPI Rate

Furlow Cohort: 11.6 %  
Straight-Line Repair Cohort: 0.0%  
p=0.066

## Results

- 91 patients with isolated RS → **79 patients with concomitant CP**
- Soft palate repair techniques: **55 Furlow** and **24 SLR**
  - Follow-up time: 6.4±4.8 years (Furlow) and 4.2±4.0 years (SLR; p=0.055)
- Overall Persistent VPI rate: 11.4%**
  - Furlow:** 15 patients (Clinical VPI) → 6 patients (Persistent VPI)
  - SLR:** 2 patients (Clinical VPI) → 0 patients (Persistent VPI)
- After excluding patients with < 2 years of follow-up:
  - SLR cohort had a significantly **lower persistent VPI rate** compared to the Furlow cohort (21.4% vs. 0.0%; **p=0.038\***)
- Kaplan-Meier analysis revealed a **lower median 5-year persistent VPI rate** for SLR (0.0%) compared to Furlow (11.6%; p=0.066)

## Conclusion

- Our findings suggest the **straight-line repair may have lower persistent VPI rates** than Furlow among patients with RS.
- Although the Furlow technique offers palatal lengthening → *may compromise velum function* in this **wide cleft** RS population
- Future Studies:** Multicenter studies, larger sample size