

Insights From 800 Cleft Palate Repairs: Long-term Outcomes And Risk Factors From A Single-institution Study

Eloise W. Stanton, MD; Melanie Bakovic, BS; Raina Patel, BS; Asli Pekcan, BS; Valeria Mejia, BS; Mark Urata, MD, DDS; Jeffrey Hammoudeh, MD, DDS

Introduction

Patients undergoing cleft palate (CP) repair may require additional procedures for palatal fistulas, velopharyngeal insufficiency (VPI), and midface hypoplasia.

Objective

Examine **long-term outcomes** in CP repair and evaluate risk factors for secondary procedures at a single institution.

Methods

Retrospective review at a tertiary children's hospital

Inclusion Criteria: CP surgery from 1994 to 2019

Exclusion Criteria: <5 years of follow-up

Outcome Variables: Post-CP-repair palatal fistulas, VPI surgeries, and orthognathic surgeries or recommendations for orthognathic surgery

Statistical Analysis: Univariate regression and multivariate regressions.

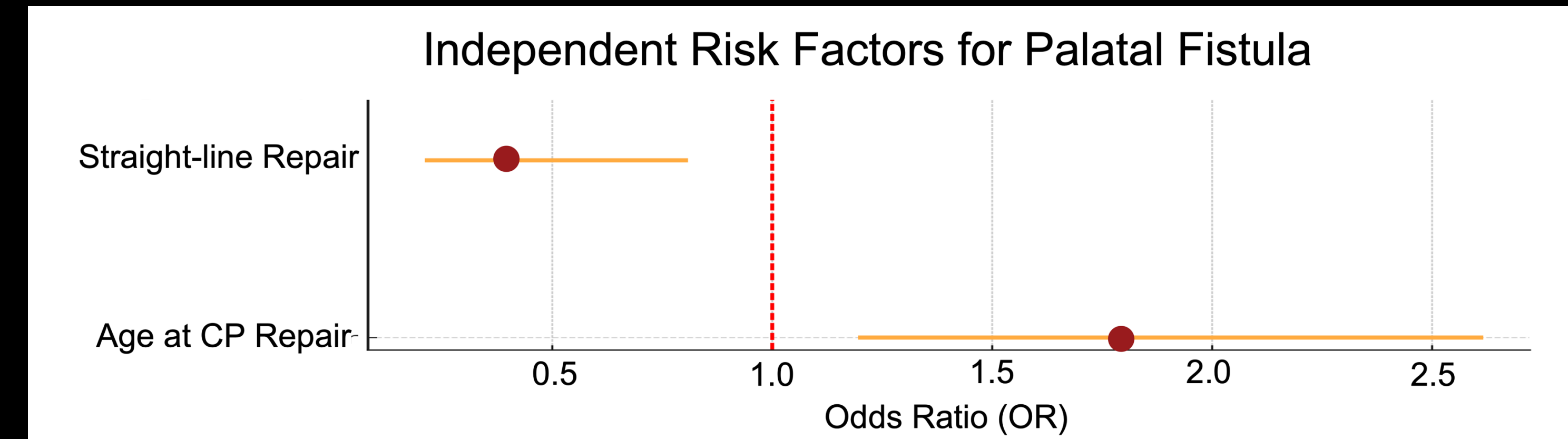


Figure 1. Independent Risk Factors for Palatal Fistula After CP Repair. On multivariate regression, older age at CP repair was a risk factor for palatal fistulas, while straight-line repair was protective.

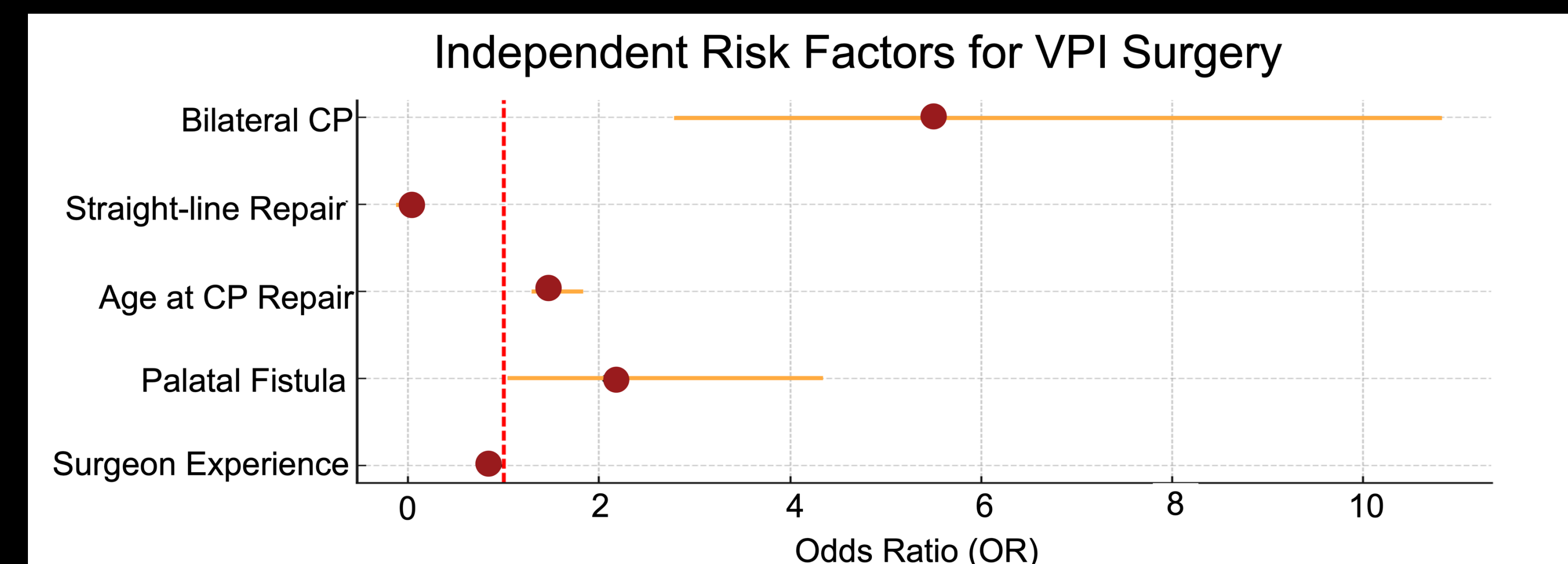


Figure 2. Independent Risk Factors for VPI Surgery After CP Repair. On multivariate regression bilateral CP, older age at CP repair and palatal fistula's were risk factors for VPI surgery, while straight-line repair and surgeon experience were protective.

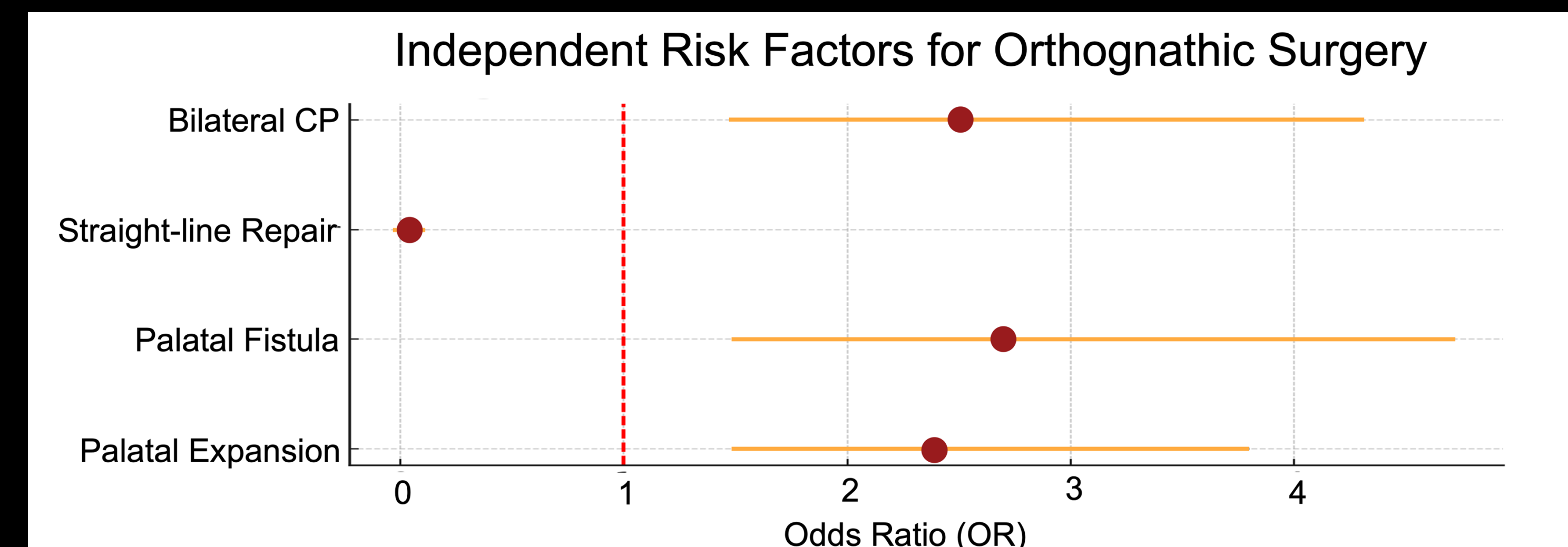


Figure 3. Independent Risk Factors for Orthognathic Surgery After CP Repair. On multivariate regression bilateral CP, palatal fistula, and palatal expansion were risk factors for VPI surgery, while straight-line repair was protective.

Results

- 812 patients met inclusion criteria
 - 630 non-syndromic patients (78%)
- Average age at CP repair: 12.1 months
- Median follow-up of 11.8 years
- Rates of palatal fistulas ($\beta = -0.808$, $p < 0.001$), VPI surgeries ($\beta = -0.395$, $p < 0.001$), and orthognathic surgeries ($\beta = -4.612$, $p < 0.001$) **significantly decreased despite a rising trend in CP repairs** ($\beta = 1.476$, $p < 0.001$).
- Multivariate regressions identified protective and risk factors for palatal fistulas (Fig. 1), VPI surgery (Fig. 2) and orthognathic surgery (Fig.3)

Conclusion

In high-volume institutions, factors like **cleft type, repair timing, repair technique, and surgeon experience** significantly influence outcomes.

Targeted interventions may optimize long-term results.