

A Comparison of Palatoplasty Techniques on Transverse Dental Arch Dimensions and Orthodontic Interventions

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Background

- Cleft lip and palate requires up to 9 operations for full correction
- Surgical intervention is associated with risk of midface hypoplasia
- Midface hypoplasia is associated with malocclusion, need for orthognathic surgery, maxillary dental arch abnormalities, anterior crossbite and lingual inclination of premolars

Objective

- This study aimed to identify the effect of the soft palate repair technique on the transverse dimensions of the maxillary dental arch and the extent of orthodontic interventions

Methods

- IRB-approved retrospective review of pediatric patients undergoing palatoplasty(2003-2022)
- Patients with submucous and atypical Tessier clefts or index operations at an outside institution were excluded
- Primary Outcomes → maxillary narrowing, crossbites, transverse palatal expansion (TPE)
- Compared patients undergoing Straight line repair (SLR) to Furlow

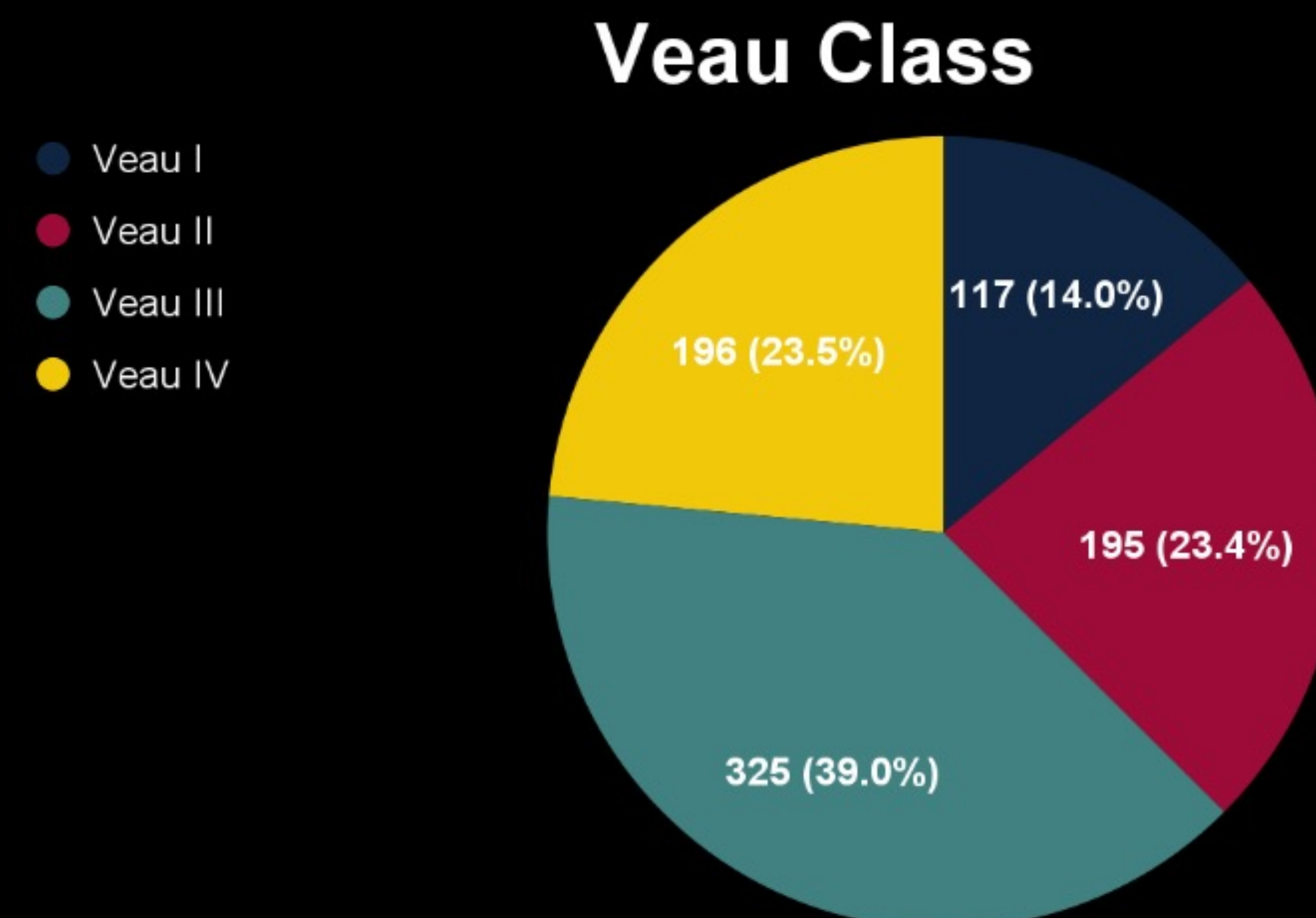


Figure 1. Distribution of Veau Classes

	Overall	Furlow Repair (n=161)	Straight Line Repair (n=165)	p-value
Maxillary Dental Arch Narrowing	50.50%	56.60%	44.40%	0.041*
Transverse Palatal Expansion	21.50%	31.20%	12.10%	<0.001*
Any Crossbite	86.30%	89.70%	83.10%	0.144
Bilateral Crossbite	34.80%	44.10%	25.70%	0.001*

Table 1. Comparison of Maxillary Dental Arch Outcomes in based on Soft Palate Repair Technique in Patients with Veau III Clefts

Results

- 1552 patients underwent palatoplasty, of which 833 met inclusion criteria
- 417 SLR, 416 Furlow Repair
- 39% of patients had Veau III anomalies (Figure 1)
- Of patients with Veau III anomalies, patients undergoing Furlow repairs had higher rates of maxillary narrowing, TPE and bilateral crossbites (Table 1)
- Logistic regression demonstrated Furlow palatoplasty as the only significant contributor to risk of TPE after adjusting for surgeon, age, gender, syndromic status and vomer flap utilization (Odds Ratio: 4.2, 95% Confidence Interval (1.477-12.226, p=0.001)

Conclusions

- Among Veau III clefts, Furlow repairs were associated with higher rates of maxillary dental arch narrowing and palatal expansion
- Furlow palatoplasty was the only significant contributing factor to risk of TPE
- Furlow repairs lengthen the soft palate at the extent of width
- Our results suggest this transverse deficit may extends to the maxillary dental arch