

Background

- Up to 75% of patients with cleft palate require surgical correction of midface hypoplasia (MFH) following palate repair.
- The influence of different surgical techniques on maxillary growth remains unclear.

Purpose:

- To investigate the long-term impact of Furlow double-opposing Z-plasty versus straight-line palate repair (SLR) techniques on midface growth and subsequent orthognathic surgery
- The secondary is to identify other contributors to inhibited sagittal maxillary growth.

Methods

- Retrospective review of patients who underwent primary palatoplasty with Furlow or SLR techniques from 1994-2023.
- Excluded: patients <14 years old at most recent follow-up or diagnosed craniofacial syndrome
- Primary outcomes: rates of orthognathic surgery and rates of recommendation for orthognathic surgery to correct MFH**
- Cephalometrics at the time of orthognathic surgery recommendation were traced to validate MFH.
- Statistical analyses:
 - Chi-squared
 - Multivariate logistic regression for factors associated with future orthognathic surgery

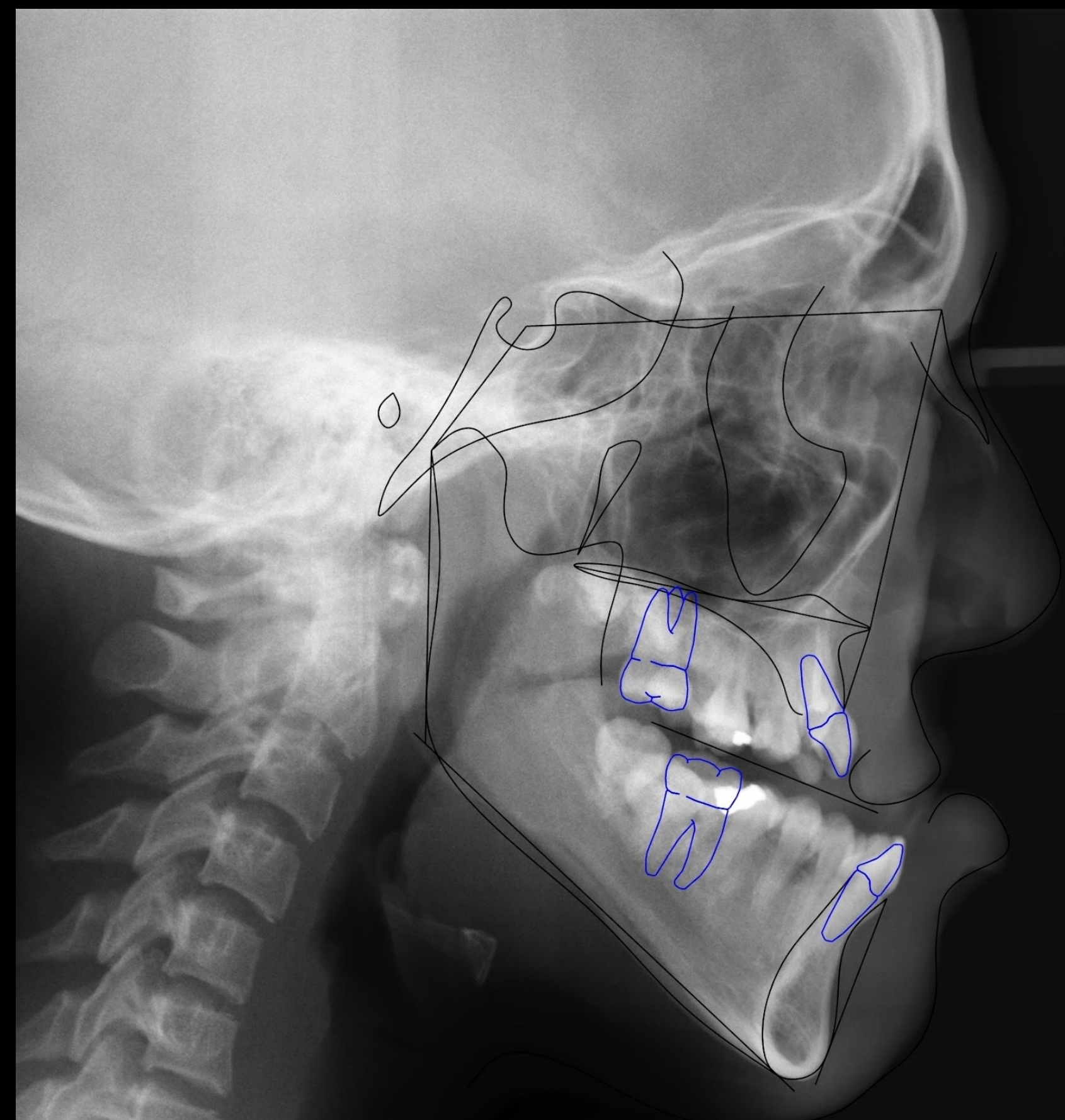


Figure 1. Example of a lateral cephalometric tracing showing cephalometrics indicative of midface hypoplasia in a 14-year-old patient.

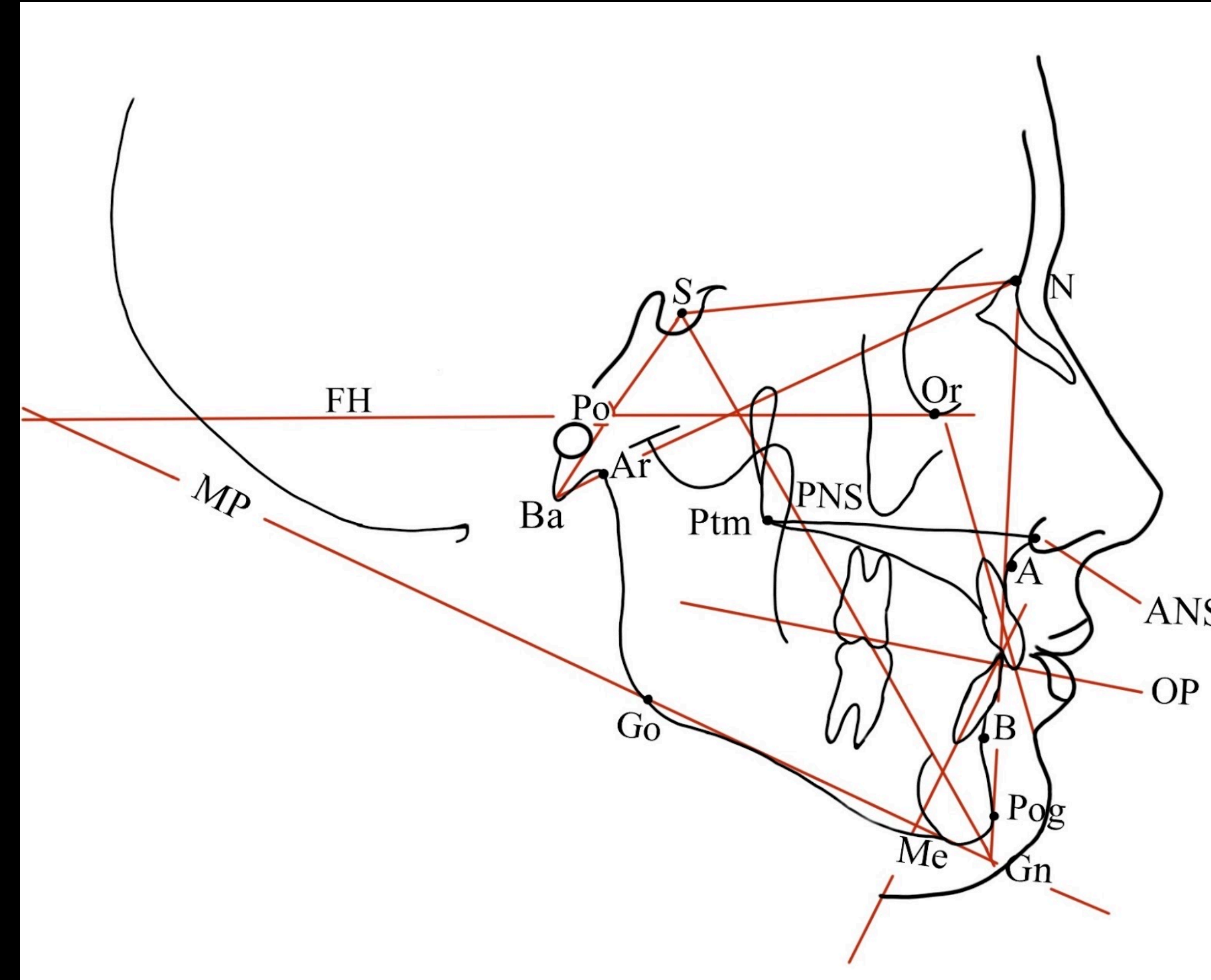


Figure 2. Lateral cephalometric tracing. A, Point A (most posterior point on maxilla); ANS, Anterior nasal spine; Ar, Articulare; B, Point B (most posterior mandibular point); Ba, Basion; FH, Frankfort horizontal; Gn, Gnathion; Go, Gonion; Me, Menton; MP, Mandibular plane; OP, Occlusal plane; Or, Orbitale; PNS, Posterior nasal spine; Po, Porion; Pog, Pogonion; S, Sella

Orthognathic Surgery Rates Between Palatoplasty Techniques

	Straight-line repair	Furlow	p-value
Total	n=49	n=286	
Recommended surgery:	29 (59.2%)	172 (60.1%)	0.900
Underwent LeFort I:	12 (24.5%)	86 (30.1%)	0.428
Veau I	n=3	n=13	
Recommended surgery:	1 (33.3%)	6 (46.2%)	1.000
Underwent LeFort I:	0 (0.0%)	1 (7.7%)	1.000
Veau II	n=4	n=14	
Recommended surgery:	1 (25.0%)	1 (7.1%)	0.405
Underwent LeFort I:	0 (0.0%)	1 (7.1%)	1.000
Veau III	n=26	n=178	
Recommended surgery:	14 (53.9%)	110 (61.8%)	0.520
Underwent LeFort I:	6 (23.1%)	55 (30.9%)	0.497
Veau IV	n=16	n=81	
Recommended surgery:	13 (81.3%)	55 (67.9%)	0.378
Underwent LeFort I:	6 (37.5%)	29 (35.8%)	1.000

Results

- 335 patients were included (49 SLR, 286 Furlow)
- Average age at last follow-up = 18.5±2.6 years old
- Rate of orthognathic surgery = 29.3%,
- Rate of recommendation = 60.0%
- Patients who underwent Furlow versus SLR palatoplasty showed no significant difference in rates of orthognathic surgery (p=0.428) or rates of recommendation for orthognathic surgery (p=0.900).**
- Patients who were recommended to undergo orthognathic surgery had more negative ANB angles (p=0.012) and smaller SNA angles (p=0.019) than patients not recommended for orthognathic treatment, demonstrating maxillary hypoplasia.
- Upon multivariate regression, patients with **Veau III (Odds Ratio [OR]: 3.62; p=0.003) and Veau IV (OR: 4.98; p=0.001) had an increased need for orthognathic surgery.**

Conclusion

- Our findings suggest that higher cleft severity contributes to future orthognathic surgery.
- Palatoplasty technique did not influence orthognathic surgery rates.**
- Consequently, surgeons should perform their preferred palate repair technique when considering sagittal growth restriction.