Background

- As many as 58% of patients who undergo pharyngoplasty procedures require further surgery for velopharyngeal insufficiency (VPI).
- Buccal myomucosal flaps (BMF) provide an alternative for anatomic lengthening of the palate in the treatment of VPI with the benefit of avoiding postoperative airway obstruction.
- VPI objective speech assessment is performed by cleft care teams using Cleft Audit Protocol for Speech - Augmented (CAPS-A), nasopharyngoscopy, and videofluoroscopy.

Methods

- PubMed, Embase and OVID were used to identify English-language pro- and retrospective studies assessing speech improvement following BMF palatal lengthening (Figure 1).
- PRISMA guidelines were followed. Quality of included articles was assessed with the NIH Quality Assessment Tool for Before-After (Pre-Post) Studies With No Control Group.
- Random-effects model meta-analyses were performed for hypernasality, intelligibility, and nasal emission score improvement values, derived from reported prospective and postoperative scores, and controlled for variability of scales and timing of postoperative assessment.
- Egger regressions and funnel plots assessed publication bias.
- Chi-squared tests assessed surgical techniques, patients’ languages, and mean age at time of BMF palatal lengthening.

Results

- 7 retrospective studies evaluated 283 patients and 6 prospective studies evaluated 165 patients.
- Studies had seven main surgical indications for palatal lengthening (Figure 2), varied in surgical techniques (Table 1, 2), assessed some or all speech factors from CAPS-A (Table 3), and included patients of 6 primary languages (Figure 3) from 7 countries.
- Meta analyses for intelligibility, nasal emission, and hypernasality score improvement values (Figures 4, 5, 6) demonstrated effect sizes above zero, confirming BMF utility in VPI treatment.
- There were no significant variations in speech outcomes among surgical techniques (bilateral vs unilateral BMF; predicted vs islanded flap, BMF as a standalone procedure vs combined with other palato- or pharyngoplasties), patients’ languages, or mean age (Table 4).

Results (continued)

- Egger regressions and funnel plots revealed low risks of publication bias in all three meta analyses.
- Future directions include investigating whether BMF reduces VPI revisions, improves quality-adjusted life year (QALY), and reduces healthcare costs of VPI treatment.

Conclusion

- BMF provide reliable treatment for VPI demonstrated by improved speech factors.
- Patients with large velopharyngeal gap or a history of prior VPI surgery are most likely to benefit.
- Main limitation of this study was the variability of protocols in the reviews articles.
- Future directions include investigating whether BMF reduces VPI revisions, improves quality-adjusted life year (QALY), and reduces healthcare costs of VPI treatment.

References