

An Outcome Evaluation of Sphincter Pharyngoplasty for the Management of Velopharyngeal Insufficiency

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Sphincter pharyngoplasty is frequently used for the management of children with velopharyngeal insufficiency. The purpose of this study was to evaluate outcome and revision rates of sphincter pharyngoplasty at the authors' institution. Two hundred fifty patients underwent sphincter pharyngoplasty for velopharyngeal insufficiency between January of 1987 and March of 2001. There were 117 female patients and 133 male patients, with a mean age at primary sphincter pharyngoplasty of 7.6 years (range, 1 to 45 years). Diagnoses included velopharyngeal insufficiency alone ($n = 63$), velopharyngeal insufficiency associated with cleft palate ($n = 127$), velocardiofacial syndrome ($n = 32$), submucous cleft ($n = 15$), and other ($n = 13$). Pharyngoplasty revision was defined as any secondary surgical revision of the sphincter as determined by clinical evaluation and objective speech assessment. The pharyngoplasty revision rate was found to be 12.8 percent ($n = 32$). A favorable outcome was demonstrated in 30 of these patients (93.8 percent) after pharyngoplasty revision. Two patients, one with a diagnosis of a submucous cleft and velocardiofacial syndrome and the other with a cleft palate, required a second revision because of persistent velopharyngeal insufficiency. The revision rate was highest in those patients with velocardiofacial syndrome (21.8 percent) and lowest in patients with velopharyngeal insufficiency alone (6.3 percent). Patients who required revision had significantly higher preoperative oral sentence nasometry (55.2 percent versus 46.1 percent; $p < 0.01$) and larger velopharyngeal areas (23.7 mm² versus 18.9 mm²). There was no significant difference in age or sex for those patients who required a revision compared with those who did not require revision. Mean follow-up was 2.4 years (range, 4 months to 13.6 years). Sphincter pharyngoplasty is an effective procedure for the treatment of velopharyngeal insufficiency using revision rate as the standard of success. It had an 87 percent primary success rate that increased to 99 percent after a single revision. Patients with velocardiofacial syndrome, more severe pre-

operative hypernasal resonance, and larger velopharyngeal areas were more likely to require pharyngoplasty revision. (*Plast. Reconstr. Surg.* 112: 1755, 2003.)

Velopharyngeal insufficiency results from a structural or functional defect at the level of the nasopharynx in which there is an inability to accomplish adequate velopharyngeal closure. Surgical management of velopharyngeal insufficiency has undergone many modifications since first introduced by Passavant in 1862.¹ The rationale behind any surgical intervention is to diminish airflow through the nose during speech by reducing the area of the nasopharynx.

Sphincter pharyngoplasty is usually performed for the correction of velopharyngeal insufficiency. The procedure results in a soft-tissue "diaphragm," narrowing the nasopharynx and enabling velopharyngeal closure.^{2,3} The sphincter pharyngoplasty is easily modified, which enhances the success rate of this procedure.^{2,4} A successful outcome is often determined by perceptual analysis and quantified by a detailed objective instrumental evaluation. However, it is also important to evaluate the incidence of surgical revision, as this reflects success of the surgical technique, patient selection, and flexibility of the surgical procedure. The purpose of this review was to examine the revision rates for sphincter pharyngoplasty in

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