

**Critical Review: Effectiveness of Sphincter Pharyngoplasty Compared to Pharyngeal Flap Surgery in Reducing Hypernasality in Individuals with Velopharyngeal Insufficiency**

Bianchi, L.C.

M.Cl.Sc. (SLP) Candidate

School of Communication Sciences and Disorders, U.W.O.

This critical review examines several studies to determine the effectiveness of sphincter pharyngoplasty (SP) compared to pharyngeal flap surgery (PF) in reducing hypernasality in individuals with velopharyngeal insufficiency (VPI). Overall, research indicates preliminary evidence that both surgeries produce similar results in reducing hypernasality. However, some questions arose as to the strength of the research designs. Additionally, further research is recommended in a variety of areas.

***Introduction***

Velopharyngeal insufficiency (VPI) occurs when there is a deficit in the closure of the velopharyngeal port (i.e. the junction of the velum and the lateral and posterior pharyngeal walls). This may occur from inadequate movement or reduced length of the velum, resulting in a gap between the velum and the



only seventy-five had both pre- and post-operative assessment results. The measures used were the Bzoch base-10 index of Nasal Air Emission (NAE), Bzoch Cul-de-Sac Test, Bzoch Error Pattern Articulation Test, multiview videofluoroscopy and nasendoscopy. Outcome criteria for success was considered to be a score of 2/10 or less for NAE and hypernasality, and a score of 4/10 or less for hyponasality. The results indicated a 95.8% success rate for the 24 patients (21 were primary surgeries, 3 were secondary surgeries) who had undergone SP, 8% had resulting hyponasality. A 90.9% success rate was reported for the 11 patients who had undergone PF, 18.2% had resulting hyponasality. The statistical significance of the results was not reported. Chart reviews indicated that neither surgery resulted in obstructive sleep apnea. The researchers concluded that the success rates among the surgeries were similar. They regarded this as tentative support for individualizing a particular surgical approach based on thorough pre-operative assessment.

(n=19: SP=9, PF=10), who were classified as having severe hyponasality (n=19: SP=9, PF=10).  
s(r)-5.00129(o)-7.00166(.85849.356603(i)0.356.64432(l)-11.7149(y)17.

#### Randomized Control Trial Studies

The VPI Surgical Trial Group (2005) undertook a multi-centre randomized trial to investigate effectiveness and risk of PF and SP. Based on detailed inclusion criteria related to general development and diagnosis, 103 patients from a referred group of 144 were randomized into two treatment groups. A sample size of 97 was available for pre- and post-operative analysis. The surgical procedures were standardized between the surgeons from five treatment centres. Several outcome measures were examined including resonance. Resonance was evaluated along a four-point scale (normal, mild, moderate, severe) based on a speech sample collected using standard protocol between the centres. Results were compared using a Chi-Square test. At three months post-operative SP was 42% successful while PF was 82% successful at reducing hypernasality. This difference was statistically significant ( $p < 0.01$ ). The patients were assessed again 12 months post-operative. The researchers analyzed these results along two outcome measures. When outcome measures designated resulting hyponasality as acceptable, SP was 78% successful and PF was 83% successful in reducing hypernasality. When outcome measures designated resulting hyponasality as an indication of unsuccessful treatment, SP was 76% successful and PF was 81% successful in reducing hypernasality. Therefore, by 12 months post-operative, neither analysis demonstrated a significant difference between the two surgeries (p-values = 0.45 and 0.81 respectively). The data of a subgroup of patients

The sample sizes were small, which affected the ability of each study to detect a significant difference between the two surgical treatments and limited the researcher's capacity to make definite conclusions. The VPI Surgical Trial Group (2005) calculated a sample size required to achieve 80% power; however, they were limited by the number of available patients and were unable to achieve a sufficient sample. None of the other studies reported the level of power.

The VPI Surgical Trial Group (2005) selected patients who had undergone primary palatal repair from each of the five participating clinics. Ysunza et

All of the studies included an operational



Willging, J.P. (1999). Velopharyngeal insufficiency.  
*International Journal of Pediatric Otorhinolaryngology* 49(1): S307-S309.

Ysunza, A., Carmen Pamplona, M., Ramirez, E.,  
Molina, F., Mendoza, M., & Silva, A.  
(2002). Velopharyngeal surgery: A  
prospective randomized study of pharyngeal  
flaps and sphincter pharyngoplasties.  
*Plastic and Reconstructive Surgery* 110  
(6): 1401-1407.