Case report

Teflon pharyngoplasty in incompetent velopharyngeal closure

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Velopharyngeal closure is essential in the production of normal speech. Speech with imperfect closure is characterized by excessive nasal emission of air with concomitant hypernasality and inadequate oral air stream.

Causes of incompetent velopharyngeal closure are cleft palate, congenital short palate, palatal paralysis, and postoperative complications of tonsillectomy and adenoidectomy. Many procedures have been used to correct velopharyngeal insufficiency. Injection of Teflon into the posterior pharyngeal wall, although clinically in the experimental stage, is currently being used in many centers. Teflon was first used for this purpose in 1964 by Lewy et al[1] after it had been used successfully to treat vocal cord paralysis. Other substances had been implanted in the posterior pharyngeal wall, such as paraffin, cartilage, bone dust, fat, fascia, silicone, and silicone with a Dacron felt back.[2, 3] These materials, however, either produced unpredictable results or caused serious complications. Lewy et al,[1] Ward,[4] Ward et al,[5] and Sturim and Jacob[3] have reported excellent results with injection of Teflon.

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One of the advantages of this procedure is immediate improvement in speech. The nature of the etiology of velopharyngeal incompetency suggests that most cases should be treated in childhood or shortly after the onset of the insufficiency.

Case report

A 22-year-old man had a lifelong history of hypernasal speech. The diagnosis was not clear-cut at the initial examination. The patient appeared to have ample velar length. Good pharyngeal wall motion and velar action were demonstrable, but there was not adequate closure of the velum in speech. Hypernasal speech was accompanied by considerable nasal emission of air, particularly in sibilant sound production. There was also discernible nasal emission in the production of the *f, p, th,* and *ch* sounds. This was less apparent in the voiced cognates. The only obvious compensatory mechanism during speech was frequent constriction of the nares.

All speech sounds were articulated clearly in conversational speech despite a moderately rapid rate. There were no glottal stop substitutions or pharyngeal fricatives. Cul-de-sac resonance was pronounced when the patient read phrases of nonnasal sounds while manually occluding his nares. The patient could sustain the *s* sound for only 5 seconds, but the time increased to 20 seconds when he pinched his nares.

Oral pressure, measured by Wright's respirometer, was 2.8 to 3.5 liters with the anterior nares open, and 5 liters with the nares occluded. Cineradiography showed only about 50% closure of the velopharyngeal port on fricative production and lingual elevation of the palate for velar plosives.

A Teflon pharyngoplasty was performed in January 1971. The needle tip was inserted just above the prominence made by the tubercle of the atlas. Teflon paste was then injected and confined to the submucosa and superior constrictor muscle. Because of the narrow velopharyngeal gap, only 4 cc was injected into the posterior pharyngeal wall. The amount of Teflon paste injected is usually as much as 30 cc.

There was immediate and dramatic improvement in speech. The patient had normal vocal quality, and there was no nasal emission of air during speech. He could sustain the *s* sound for 18 seconds with or without pinching the nares. The compensatory habit of nares constriction was no longer evident. The patient has maintained normal speech without further injection for the past 1½ years.

Comment

This patient made a spontaneous and immediate, functional adaptation to the injection procedure, despite two decades of severe hypernasality and nasal emission of air. It may be presumed that the patient had achieved maximal compensatory adjustments consistent with good articulation during that time. Corrective speech therapy was unnecessary after he was provided with an artificial ridge for reduction of his velopharyngeal incompetency.

Summary

A 22-year-old man with a lifelong history of velopharyngeal incompetency was treated with Teflon pharyngoplasty. Only 4 cc of injected paste produced a dramatic and abrupt improvement in speech, despite two decades of significant hypernasality and nasal emission of air. For the past 1½ years the patient has maintained normal speech without further injection.

References

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