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Z-palatopharyngoplasty

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KEYWORDS
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Palatal surgery traditionally seeks to widen the airway, reducing obstruction of the tongue base, retropalatal, and lateral dimensions. Correction of the palate with the classical uvulopalatopharyngoplasty, however, often results in a narrowed palatal arch. The Z-palatoplasty was first developed as a modification of the traditional uvulopalatopharyngoplasty, with the intent to widen the retropalatal space while maintaining or increasing the lateral space. Since its first description, the Z-palatoplasty has been modified to include tonsillectomy and lateral pharyngoplasty. We describe the author's technique and the evolution and successful application of the procedure.

Introduction

The uvulopalatopharyngoplasty (UPPP), as described by Fujita[1] in 1981, marked a breakthrough for the evolving field of sleep surgery. However, the limited success and cure of obstructive sleep apnea-hypopnea syndrome (OSAHS) using this procedure resulted in the need to develop modifications of UPPP. Persistent retropalatal obstruction following traditional UPPP has remained a limiting factor to the success of UPPP.[2-4] Surgical success was extremely variable, with an estimated success rate of 40%.[5] Furthermore, patients who previously had tonsils removed were often poor candidates for UPPP.

The zetapalatoplasty (ZPP) was first described as a modification of the UPPP in patients with absent tonsils.[5] Subsequently, multiple modifications have been reported. The procedure is now used for patients with and without previous tonsillectomy. The modified procedure includes a lateral pharyngoplasty. The goal of the procedure, similar to that of the UPPP, is to widen the space between the palate and the posterior pharyngeal wall and between the palate and tongue base and to either maintain or widen the lateral dimensions of the pharynx. However, the ZPP procedure seeks to correct the problem of narrowed lateral dimensions, which can be caused by contracture of the wound in UPPP. The ZPP, a double Z-plasty applied to the palate, changes scar contraction tension lines from the anterior-medial pull in the classic UPPP to an anterior-transverse direction.

Patient selection

As with all surgical treatment of OSAHS, patients should be recommended first to a trial of conservative measures, including lifestyle changes, continuous positive airway pressure (CPAP), and oral appliances. All surgical patients should have a documented history of intolerance or noncompliance to these methods of treatment. As with any other surgical procedure, adequate medical clearance and informed consent should be obtained.

Patient anatomy should be carefully considered when selecting a potential ZPP patient. All patients should have noted obstruction at soft palate, determined by fiber-optic examination before procedure. Patients with and without tonsils can both be considered. As the ZPP procedure

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Table Friedman staging system as determined by Friedman tongue position (FTP), tonsil size, and body mass index (BMI).

Stage	FTP	Tonsil size	BMI (kg/m^2)
I	I, IIa, and IIb	3 or 4	<40
IIa	I, IIa, and IIb	0, 1, or 2	<40
IIb	III or IV	3 or 4	<40
III	III or IV	0, 1, or 2	<40
IV*	I-IV	0-4	>40

*All patients with significant craniofacial or other anatomical abnormalities.

significantly widens the retropalatal space, it should be reserved for significantly symptomatic patients with diagnosed moderate to severe OSAHS. Friedman anatomic staging should also be considered.[6,7] Patients with stages II and III diseases have historically responded poorly to UPPP, but are candidates for ZPP. Stage II is defined as having Friedman tongue position (FTP) I or II and tonsil grades 0, 1, or 2 or FTPs III and IV with tonsil grade 3 or 4. Stage III is a combination of FTP III or IV with tonsil grades 0, 1, or 2. Patients with stages II and III diseases should all have body mass index $<40\ kg/m^2$ (Table). Patients who have previously undergone conservative palatal surgery such as a classical UPPP may also be candidates for ZPP.

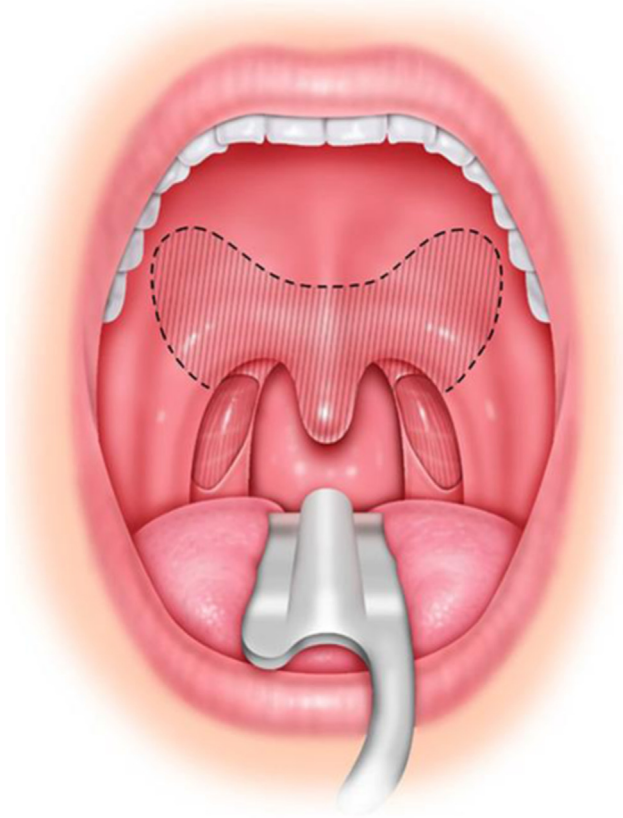

Figure 2 Marking of the palatal flap incision. (Color version of figure is available online.)

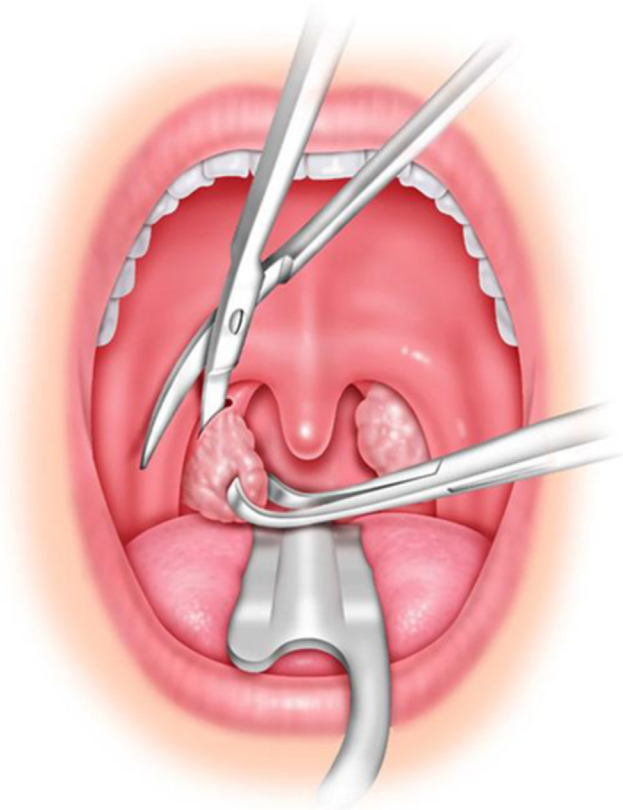

Figure 1 Tonsillectomy is performed with cold steel to avoid tissue damage for improved healing. (Color version of figure is available online.)

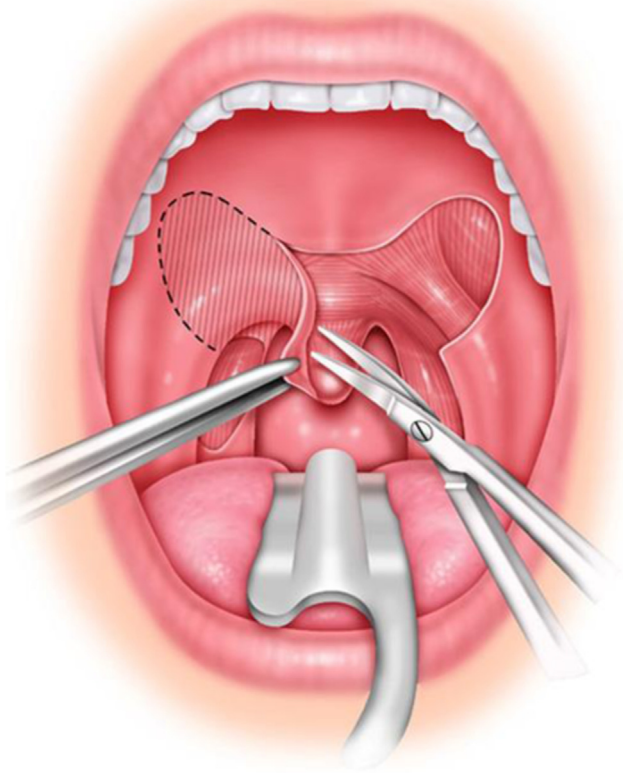

Figure 3 The anterior mucosa of the palatal flap is removed to expose palatal musculature. (Color version of figure is available online.)