



How to do it?

Nasıl yapılır?

Modified sling snoreplasty: double triangle shaped suture uvulopalatopexy

**Modifiye askı snoreplastisi:
Çift üçgen şekilli sütür uvulopalatopeksi**

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Following the uvulopalatopharyngoplasty and laser assisted uvulopalatoplasty as treatments for mild obstructive sleep apnea syndrome (OSAS) originating from the soft palate, palatal stiffening operations began to be described as causing less morbidity, interfering less with velopharyngeal and mucosal functions, and being applicable in outpatient settings. We present modified uvulopalatopexy procedure which can be used in mild OSAS patients is a simple, minimally invasive and effective new method. In this article, we present a modified form of sling snoreplasty method and two cases in whom this method was used.

Key Words: Palatal sling suture; primary palatal snoring; suture uvulopalatopexy; treatment.

Orta şiddetli obstrüktif uyku apne sendromu (OUAS)'nın tedavisinde, yumuşak damağa yönelik uvulopalatofarengoplasti ve lazer yardımcı uvulopalatoplasti ameliyatlarından sonra, daha az morbiditesi olan ve ayaktan tedavi edilen hastalara da uygulanabilen, velofarengal ve mukozal fonksiyonları daha az etkileyen palatal germe ameliyatları tanımlanmıştır. Orta şiddetli OUAS hastalarına uygulanabilecek yeni bir yöntem olarak modifiye sütür uvulopalatopeksi işlemi basit, minimal invaziv ve etkilidir. Bu makalede daha önce literatürde tanımlanmış olan sling snoreplasty yönteminin modifiye edilmiş formu iki olgu eşliğinde sunuldu.

Anahtar Sözcükler: Palatal askı sütürü; primer palatal horlama; sütür uvulopalatopeksi; tedavi.

Surgical technique

After topical soft palate anesthesia with Lidocaine 10% pump spray (Xylocaine® AstraZeneca AB, Sodertalje, Sweden), additional 5 to 10 ml

Lidocaine HCl 2% + 1:100.000 Epinephrine (xylocaine® with Epinephrine 20 mg/0.01 mg/ml carpules, AstraZeneca AB, Sodertalje, Sweden) is injected along suture lines (Figure 1a). Using a

no. 15 blade, two horizontal incisions of approximately 5 mm each are made 1 cm posterior to, and parallel with, the posterior edge of the hard palate to serve as suture starting points (Figure 1b). Braided absorbable Polyglactin 910 (Vicryl™, Johnson & Johnson Ethicon, Cincinnati OH) 4-0 sutures with an RB-1 needle are used for suturing. Running stitches are placed beginning at the incised starting point and proceeding posteriorly, laterally, and antero-medially back to the starting point (Figure 1c). With each successive stitch, the needle is reinserted at its previous exit point to preserve mucosal integrity, taking care not to leave any stitch outside the oral (or nasal) mucosa (Figure 1c). The final knot is embedded into the soft palate via the horizontal incision after completion of suturing (Figure 1d, e). This

method reorients the soft palate antero-superiorly (Figure 1d, f arrows) by giving tonus. The retro-palatal airway is enlarged and palatal collapse is reduced with this technique (Figure 2).

The procedure was carried out on the following patients, from whom informed consent was obtained.

CASE REPORT

Case 1– A 36-year-old Turkish male was admitted to our clinic with a history of long-term daily snoring. Oral examination revealed a large flaccid soft palate. His body mass index (BMI) was 28. His diagnostic polysomnogram revealed a mild sleep apnea syndrome [apnea-hypopnea index (AHI) score: 10/h]. His Epworth sleepiness scale (EPSS)

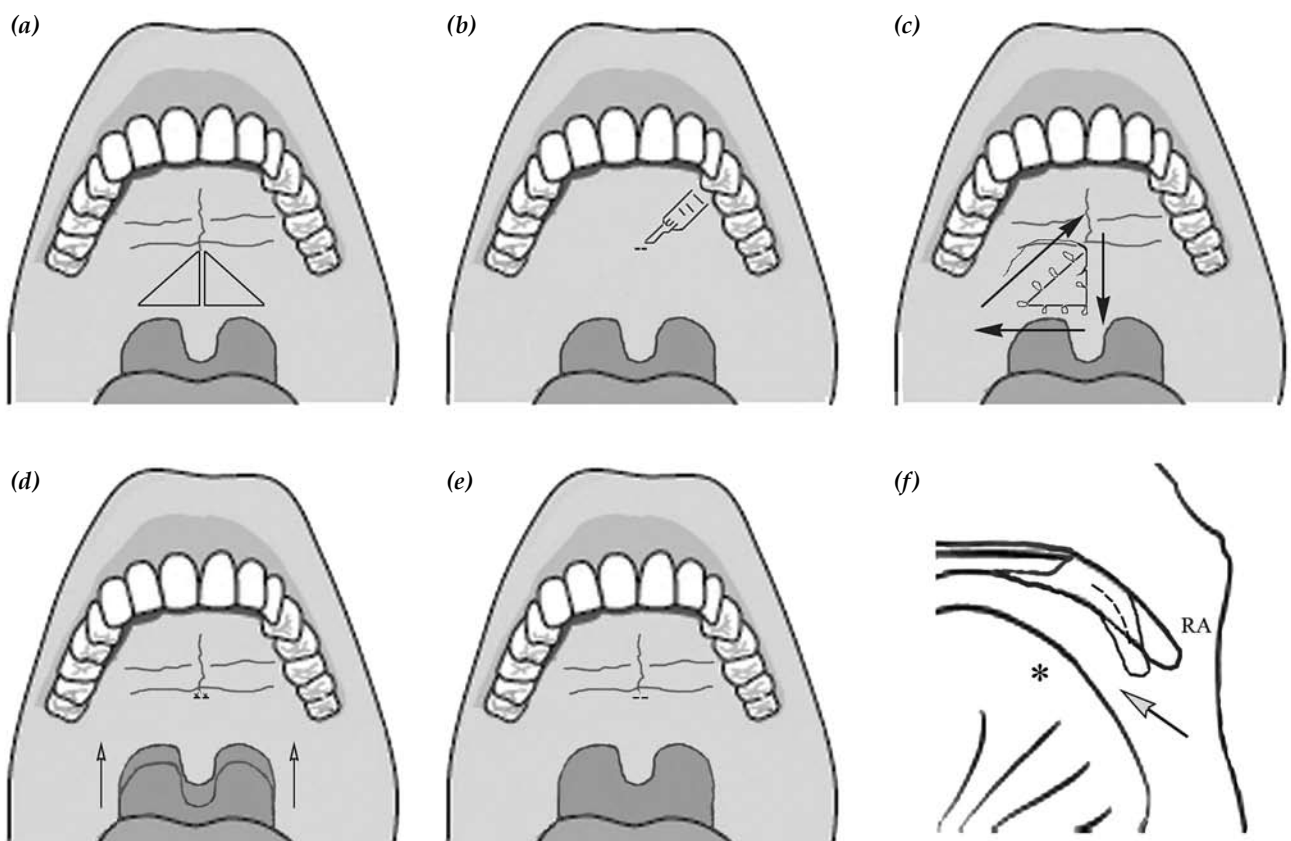


Figure 1. (a) Illustration of modified sling snoreplasty (Double triangle shaped suture) uvulopalatopexy. After topical soft palate anesthesia with lidocaine spray 10%, 5 to 10 ml lidocaine 1% with epinephrine solution is injected along the projected suture lines corresponding to an imaginary triangle. (b) Two horizontal incisions of approximately 5 mm each are made 1 cm posterior to, and parallel with, the posterior edge of the hard palate to serve as suture starting points. (c) Running sutures are placed beginning at the incised starting point and proceeding posteriorly, laterally, and antero-medially back to the starting point following the outline of the imaginary triangle (black arrows). With each successive stitch, the needle is reinserted at its previous exit point to preserve mucosal integrity, taking care not to leave any stitch outside the oral (or nasal) mucosa. (d) Double triangle shaped suture uvulopalatopexy can lead to antero-superior repositioning of the soft palate (arrows) by giving tonus. (e) The final knot is embedded into soft palate via a horizontal incision after the completion of suturing. (f) The retro-palatal airway ("RA") is enlarged and palatal collapse is reduced with this technique (arrow), (black asterisk is tongue base).

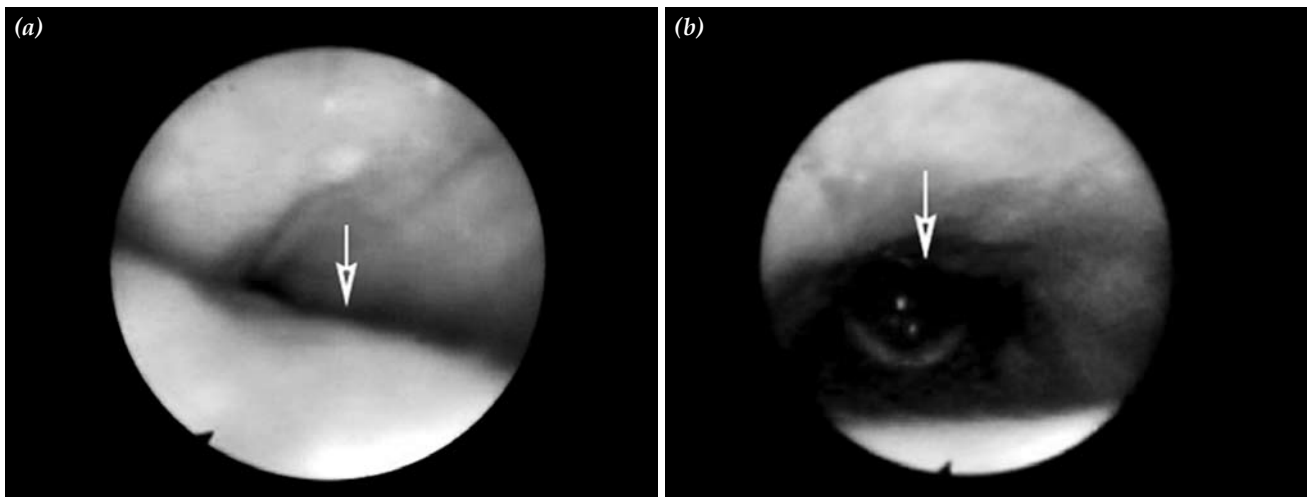


Figure 2. Flexible nasopharyngoscopy. (a) Preoperatively, the retropalatal airway is obstructed by the soft palate (white arrow). (b) Postoperatively the retropalatal airway is normal (white arrow)

was 13 out of a possible 24. The rest of the ear nose throat (ENT) examination was otherwise unremarkable. Flexible endoscopy revealed palatal collapse while the rest of the upper airway was normal (Figure 2). A clinical diagnosis of primary palatal snoring was made, and the double triangle shaped suture uvulopalatopexy was performed. The patient recovered uneventfully with no post-operative complication. His postoperative 6th month AHI was 4/h, Epworth sleepiness scale was six out of a possible 24. He was followed up to 10 months without any further complaints of snoring or daytime somnolence.

Case 2– A 32-year-old Turkish female was referred to the ENT outpatient clinic with a history of long-term daily snoring. Her diagnostic polysomnogram revealed a mild sleep apnea syndrome (AHI score: 9/h). Her EPSS was 15 out of a possible 24. Oral examination revealed a minimally enlarged uvula and flaccid soft palate. Her BMI was 25. The rest of the ENT examination

was otherwise unremarkable. Flexible endoscopy revealed palatal collapse while the rest of the upper airway was normal and the patient subsequently underwent double triangle shaped suture uvulopalatopexy. The patient recovered uneventfully with no postoperative velopharyngeal incompetence. She was reviewed at six months postoperatively. Her postoperative 6th month AHI was 4/h, EPSS was six out of a possible 24. The patient was pleased and remained well with no further complaints of snoring or daytime somnolence.

DISCUSSION

Various office-based methods such as pillar palatal implant, injection snoreplasty, soft palate radiofrequency, cautery-assisted palatal stiffening operation (CAPSO) and uvulopalatal flap (UPF) have been described for the treatment of primary palatal snoring.^[1-8] The aim of modern office-based palatal procedures such as pillar implant, palatal

Table 1. Possible advantages and disadvantages of double triangle shaped suture uvulopalatopexy

Advantages of double triangle shaped suture uvulopalatopexy

- It can be performed in an outpatient setting with minimal instruments
- It is less expensive, without requiring special implants, radiofrequency generators or other hand pieces
- It can be performed in combination with, following failure of, or after inadequate treatment with other methods
- This method does not seem to interfere with physiologic palatal functions.
- Postoperative pain is minimal
- Postoperative taste disturbances are less likely because tissue damage is minimal

Disadvantages of double triangle shaped suture uvulopalatopexy

- Patients may find it difficult to cooperate throughout the procedure

radiofrequency and injection snoreplasty treats palatal collapsibility with palatal fibrosis or scar tissue.^[1-8] Postoperative scarring may interfere with vibration and stertor generation at this site and jeopardize physiologic functions of the soft palate.

The Pillar® palatal implant system consists of three polyester threads that are permanently implanted in the soft palate to reduce airway obstruction in individuals with mild to moderate obstructive sleep apnea (OSA) and snoring.^[2] This minimally invasive surgical procedure causes mild, transient patient discomfort and has been associated with such complications as granuloma formation, palatal fistulae and partial extrusion of the implant, requiring removal and replacement. Implants sometimes lead to foreign body sensation in the soft palate.^[2] At present, there are insufficient studies to determine whether palatal implants are an effective treatment option for patients with mild to moderate OSA due to palatal obstruction.^[2]

Injection snoreplasty (soft palate sclerotherapy) uses sclerosing agents injected into the soft palate submucosa. This technique can reduce or eliminate primary palatal snoring by inducing scarring or controlled fibrosis in the vibratory area of the soft palate.^[3] However, a globus sensation (lump in the throat) and soft palate fistulae can ensue after injection snoreplasty.^[3]

Temperature-controlled radiofrequency (TCRF) treatment can be applied on the inferior turbinates, palate, and tongue.^[4-6] Ulcerations of the soft palate and dysphagia necessitating hospital admission have been reported following TCRF.^[4] Brown et al.^[5] emphasized that radiofrequency tissue ablation of redundant soft palate tissues lacks clinical efficacy in patients with moderate sleep-disordered breathing.

The uvulopalatal flap (UPF) is a mucosal procedure but soft palate functions can be negatively affected and taste disturbances due to electrocautery may be seen after this procedure.^[6-8]

Similar to the UPF, the cautery-assisted palatal stiffening operation is a mucosal surgery that induces a midline palatal scar that stiffens the floppy palate. It may be a more painful procedure than others because of excessive mucosal damage.^[8] Taste disturbances may also be seen because of electrocautery.

The sling snoreplasty as a new treatment method for primary palatal snoring was first described by Hur.^[1] His method used three triangular, tetragonal or pentagonal shaped stitches applied into the soft palate muscle layer using nylon no. 4 or no. 3 sutures (Ailee Co. Ltd, Busan, South Korea).^[1] We instead used buried running stitches and braided absorbable Polyglactin 910 (Vicryl,™ Johnson & Johnson Ethicon, Cincinnati OH). His method employed nonabsorbable sutures and involved a longer operating time than ours. Although his method could treat primary palatal snoring, the nylon sutures could also lead to excessive foreign body sensation in the soft palate and be uncomfortable for patients over a long time period.

The possible advantages and disadvantages of double triangle shaped suture uvulopalatopexy technique are summarized at the Table 1. However, this method must be compared with other simple palatal procedures such as the pillar implant, injection snoreplasty, soft palate RF, CAPSO and UPF in further studies to elucidate these advantages and disadvantages.

Our method aims is to maximize the potential retropalatal air space without negatively affecting the physiologic functions of the soft palate (speech, deglutition and prevention of nasal regurgitation). It is designed to enlarge the retropalatal airway and reduce or eliminate palatal collapse during sleep by giving tonus to the soft palate with palatal suspensory sutures. This method may facilitate a more cost-effective treatment of primary palatal snoring with minimal side-effects and risks. Further investigations are required to assess of its effectiveness and safety in different patient populations.

REFERENCES

1. Hur J. A new treatment for snoring: sling snoreplasty with a permanent thread. *Acta Otolaryngol* 2008;128:1381-4.
2. Allison C. Obstructive sleep apnea: a palatable treatment option? *Issues Emerg Health Technol* 2007; 97:1-4.
3. Brietzke SE, Mair EA. Injection snoreplasty: how to treat snoring without all the pain and expense. *Otolaryngol Head Neck Surg* 2001;124:503-10.
4. Stuck BA, Starzak K, Verse T, Hörmann K, Maurer JT. Complications of temperature-controlled radiofrequency volumetric tissue reduction for sleep-disordered breathing. *Acta Otolaryngol* 2003;123:532-5.
5. Brown DJ, Kerr P, Kryger M. Radiofrequency tissue reduction of the palate in patients with moderate sleep-disordered breathing. *J Otolaryngol* 2001;30:193-8.

6. Enoz M. Triangular uvulopalatal flap. *J Otolaryngol* 2007;36:111-2.
7. Hsiao HR, Li HY. Taste disturbance after palatopharyngeal surgery for obstructive sleep apnea. *Kaohsiung J Med Sci* 2007;23:191-4.
8. Enoz M. Cautery-assisted palatal stiffening operation for the treatment of obstructive sleep apnea syndrome. *Otolaryngol Head Neck Surg* 2005;133:648-9.