

# Z-palatoplasty in the treatment of severe obstructive sleep apnea – our experience using 4 MHz radiofrequency

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Obstructive sleep apnea is a serious health condition characterized by episodes of interruption or slowing of the breathing pattern during sleep. There exist medical and surgical therapies for treating this disorder. In this report we are presenting our experience with radiofrequency as a tool for performing Z-palatoplasty in patients with severe obstructive sleep apnea.

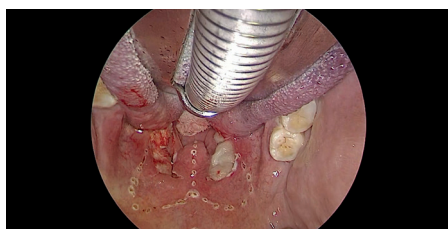
**Introduction:** Obstructive sleep apnea is a disorder characterized by partial or complete airway obstruction. Symptoms may include snoring, mouth breathing, excessive daytime sleepiness, lack of concentration at work etc. Diagnosis may be based on overnight polysomnography and/or drug-induced sleep endoscopy (DISE) with the options of various surgical and medical therapies. Commonly, compliance with non-surgical treatment, namely CPAP, tends to be weak. For patients who do not tolerate CPAP, surgical therapy may be an alternative. The type of surgery required for each patient is tailor-made and designed to fit the patient's anatomical profile. Z-palatoplasty is a type of surgery performed on patients with severe obstructive sleep apnea.<sup>1</sup> There are various tools for performing the surgery, such as coblation, diathermy, radiofrequency, and the use of cold steel instruments. We will discuss the specific advantages offered by 4 MHz radiofrequency in performing this surgery.

**Patients:** A number of 65 patients underwent Z-palatoplasty in our center during the last 4 years. The preoperative assessment in our center includes a detailed history, the recording of height, weight and the body mass index as well as patient self-assessment using the Epworth sleepiness scale. Subsequently, a thorough examination of the nose and throat is performed. Patients are then subjected to a level 3 home sleep study and fiberoptic laryngopharyngoscopy with Muller's maneuver.

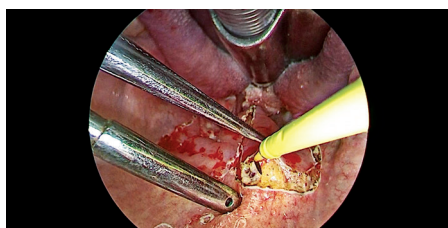
Patients undergo Z-palatoplasty in addition to nasal surgery or tongue-base surgery at stages II and III on the Friedman score or when the location of obstruction is at the level of the soft palate causing circumferential collapse of the airways and contributing to OSAHS.

**Methods:** This surgery is undertaken under general anesthesia in all our patients. Detailed informed consent is required prior to surgery. Tonsillectomy was performed in all patients while Z-palatoplasty was applied in isolation or as a combined procedure together with nasal or tongue base surgery. For Z-palatoplasty, the area of the mucosa of the soft palate to be excised is marked out with the help of a radiofrequency cutting probe as shown in the picture below. The tissue on the soft palate is excised using an ARROWtip™ radiofrequency cutting probe. 4 MHz radiofrequency offers the specific advantage of precise excision, minimal lateral heat generation, reduced blood loss, and less intraoperative time.<sup>2</sup> Thus, the instrument offers the surgeon great ease of operation. The plane between the submucosal tissue and muscle layer is achieved at minimal damage to the underlying muscles. After excision of the mucosa the soft palate is split in midline and then sutured in two layers. An objective improvement of the retropalatal space can be seen immediately during surgery. Postoperatively the patient has to observe a liquid diet and a soft diet for 2 weeks. A reduction in snoring and an improvement of the symptoms can already be stated directly after the intervention.

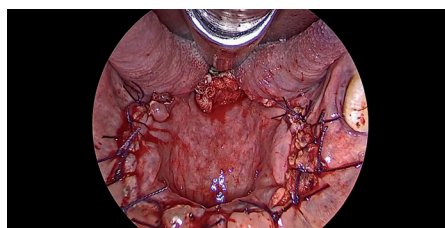
**Results:** Subjective reduction in snoring and day time somnolence were indicated by all of our patients. We advised a post operative polysomnography to all our patients. However, financial restrictions prevented the recording of objective AHI data confirming the reduction in a postoperative sleep study. However, 28 of our patients underwent an additional polysomnography. An objective improvement in the AHI is shown in the graph below.



Intraoperative picture showing the marking applied for resection as well as narrow oropharyngeal space.



Intraoperative picture showing the resection of the palatal mucosa with an ARROWtip™ microdissection electrode.

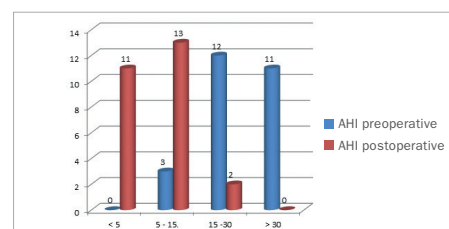


Enlarged oropharyngeal inlet immediately after surgery.



CURIS® 4 MHz radiofrequency generator.

No complications were observed in our patient group. Pain killers were administered for patients complaining temporarily of difficulties in swallowing for two to three days. A few patients suffered from transient velopharyngeal insufficiency and a change in voice. All patients received oral and intravenous medications.



Graph showing preoperative and postoperative improvement in the AHI.

**Conclusion:** Compared to other methods, 4 MHz radiofrequency technology promises to be a valid option for all types of palatal surgeries for the treatment of snoring and obstructive sleep apnea.



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**References:** 1. Wang L, Liu J, Wang Y, Yang C, Qin Y. [Result of Z-palatoplasty for treating severe obstructive sleep apnea hypopnea syndrome]. *Lin Chung Er Bi Yan Hou Tou Jing Wai Ke Za Zhi*. 2012;26(6):263-5, 269. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/22675935>. Accessed July 26, 2017. 2. Hoffmann TK, Schuler PJ, Bankfalvi A, et al. Comparative analysis of resection tools suited for transoral robot-assisted surgery. *Eur Arch Otorhinolaryngol*. 2014;271(5):1207-13. doi:10.1007/s00405-013-2615-9.

# Featured Products



Qty.	REF	Description
2	36 03 42	<b>ARROWtip™</b> monopolar microdissection electrode, straight, Ø 2.4 mm, total length 107 mm, 45° angled



[REF 87 00 10] **CURIS®** 4 MHz radiofrequency generator  
basic set with single-use patient plates



Qty.	REF	Description
1	36 01 00-01	<b>CURIS®</b> 4 MHz radiofrequency generator (incl. main cord, user manual and test protocol)
1	36 01 10	Footswitch two pedals for CURIS® (cut & coag), 4 m cable
1	37 01 54L	Bipolar cable for CURIS®, length 3 m
1	36 07 04	Monopolar handpiece (pencil) cut & coag, shaft 2.4 mm, cable 3 m
1	36 02 38	Cable for single-use patient plates, length 3 m
1 (x50)	36 02 22	Safety patient plates, single-use, packing 5 x 10 pcs. (not shown)

### Unit settings / Other accessories\*

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**ARROWtip™** microdissection electrode: Monopolar CUT 2  
Power adjustment: 12 watts

Valid for the **CURIS®**  
with the orange label.



**CURIS®**  
4 MHz radiofrequency generator

**ARROWtip™** microdissection electrode: Monopolar CUT 2  
Power adjustment: 25 to 40 watts

\* Please consider that this information is not meant to serve as a detailed treatment guide. Always adjust according to patient and application.



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