

The effect of laser - assisted uvulopalatoplasty (LAUP) on rhonchopathy

Language: English

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Date/Event/Venue:
05.04.2000-08.04.2000
78th general session of the IADR
Washington, DC, USA

Introduction

The retrovelar space is the narrowest region within the pharyngeal airway. This region causes complete or partial obstruction in most patients with OSAS (1). As a result of the altered neuromuscular activity during sleep and the mechanisms that occur at the same time, which have been discussed as being the cause of the obstruction, as a result of the vibration of the uvula, the velum, the arcus palatoglossus and palatopharyngeus, a more or less pronounced snoring noise may be produced. Factors which promote or trigger this are, in particular, hyperplasia of the soft palate, the arcus palatoglossus and palatopharyngeus and the tonsils, retrognathia, adiposity with a high standing tongue or macroglossia. Consequently, there are a multitude of approaches to therapy for reducing snoring (2). By means of a protrusive mandibular device (PMD), the mandible can be positioned in a more ventral position in relation to the maxilla, and in so doing a relative dilation of the oropharyngeal airway results (6,7,8). The success rate for the various surgical alternatives (3) depends to a large extent upon the indication status for such operations (8). The plastic correction of the soft palate parts down to the pharynx (UVPP) has been well documented in the literature (5,10), but can only be carried out under general anaesthesia with the patient receiving treatment as an inpatient. A new technique was introduced by Kamami (4) as a treatment which places less strain on the patients and which can also be carried out ambulant, under local anaesthesia, using a CO₂ laser (LAUP).

Objective

The LAUP is a modified UVPP with a shorter time required for surgery, which enables the procedure to be carried out as outpatient treatment under local anaesthesia, with less discomfort for the patient (4,5). Reduction in snoring produced by LAUP has also been demonstrated, as has the therapeutic effect on OSA (10). This retrospective study was intended to contribute to the clarification of the questions of the extent to which a reduction in snoring can be achieved using LAUP and which typical complications may appear in this context, in order to be able to discuss additional indications for this surgical method.

Figure 1 and 2:

Situation with normal tongue position (Fig. 1) and low standing tongue (Fig.2) before (a), immediately after (b) and 2 years after LAUP.

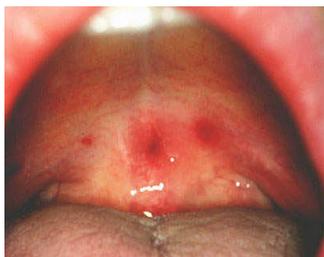


Fig. 1a



Fig. 1b



Fig. 2a



Fig. 2b



Fig. 3a

Fig. 3b

Material and Methods

In the period from 1996 to early 1998, 200 patients were treated with snoring problems (m: 179; f: 21; average age 47 years) with obstructive sleep apnoea (OSA, AHI < 20). Patients had undergone initial somnography or polysomnography. The assessment of anatomical factors and the corresponding classification into three groups, A, B, and C, with different primary therapies (Table 1) took place with reference to clinical and radiological examinations. In the case of patients in groups A and B, treatment consisted primarily of weight reduction or treatment with protrusive mandibular device (PMD), respectively. For the remaining 100 patients belonging to group C, we first of all carried out a LAUP. Operations were performed by two surgeon of the same team. We reduced the free margin of the hyperplastic soft palate structures (uvula, velum) down to the pharynx (arcus palatoglossus and arcus palatopharyngeus), without affecting the musculature. The patients in group C were examined one year after the operation and were questioned about any postoperative complications and complaints.

Table 1

Classification into three groups A, B, and C.

Groupe	A	B	C
n = 200 (AHI<20)	4	96	100
Characteristics	BMI > 28	Retrognathia and /or h-s tongue	u-v-p hyperplasy
Initial treatment	weight loss > 10 kg, PMD	Protrusive mandibular device (PMD)	LAUP

Results

The following complications were established (100 patients, m: 85, f: 15): two patients with minimal subsequent bleeding and who required no surgical intervention, two otitis media which could be controlled with conservative therapy and one temporary rhinolalia aperta. There were no wound infections. The average duration of pain following the operation was around 7 days (table 2). 83% of the patients reported that disturbing noises due to snoring no longer occurred or that noises due to snoring no longer occurred at all (table 3).

Table 2

Mean numbers of days with pain after LAUP.

Days of pain	0	3-5	7-9	10-14	14-28
n=100	1	14	72	10	3

Table 3

The effect of LAUP on rhonchopathy between 6 weeks and 1 year.

Results	Dissapearence of snoring	Acceptable improvement	Failed early relaps (< 6 Mo)	late relaps (> 6 Mo)
n=100	22	61	6	4
				7

Discussion and Conclusions

A complete or partial reduction in snoring without disturbing effect was observed in 83% one year after the first operation (LAUP). A discrepancy between objective and subjective assessment of the reduction in snoring has indeed been reported (5). What is decisive for the success of the treatment of this group of patients with light OSA (AHI < 20) is, however, solely the subjective feeling. The rate of complications after a LAUP has been carried out under local anaesthesia is comparable with other investigations (4) and is less than that for UVPP carried out under general anaesthesia (5). After the LAUP, no serious or persistent complications occurred - the need for inpatient care could be avoided. The further treatment of patients without a reduction in snoring or with only an insufficient reduction in snoring following LAUP is to be sought not in a renewed operation but rather in therapy with PMD (6,7,9). The indication for LAUP is not limited exclusively to patients with primary rhonchopathy, but extends to patients with OSA (10).

Conclusion

The investigation confirmed the high rate of success with LAUP, as well as the extremely low rate of complications associated with this surgical procedure. Wider establishment of an indication for LAUP within the framework of step by step combination therapy (LAUP, PMD, PAP), in the case of patients with OSA, is therefore entirely justified and is to be considered as being therapeutically useful.

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