

Laser Resection of Palatopharynx on the Snorers

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= Abstract =

Recently, a new method for treating snoring, called laser resection of palatopharynx(LRPP) was developed and we were to evaluate the clinical effect of LRPP on the snorers.

The subjects of this study were 537 patients who were operated on from June, 1993 through June, 1994 at Severance Hospital. The operations were done with CO₂ laser(Sharplan Co., Israel) and applicators at 20 watts and continuous mode. We evaluated the snorers in three different ways : I. assessment of subjective symptoms II. psychodynamic analysis done by psychiatrist III. assessment of subjective satisfaction by patient's evaluation.

The improvement of snoring was obtained in 76.4% and of irregular respiration in 80.5%. The symptom of mouth dryness was improved in 54.5% and headache in 28.7%. In psychodynamic analysis, insomnia was noted in 20.7% and was improved significantly after the operation but depression didn't show any significant improvement. The improvement of subjective satisfaction was the greatest in 4th week(84.4%) and decreased on the progress of follow-up.

The most common intraoperative problem was bleeding(9.3%) and the most common postoperative complication was foreign body sensation(32.1%).

LRPP had some advantages of an outpatient based operation with local anesthesia and little complications and is an effective method to lessen snoring and irregular respiration. However, the long term follow-up will be needed to determine its full effect.

KEY WORDS : Snoring · Laser resection of palatopharynx · CO₂ laser.

Introduction

Snoring is the obnoxious noise produced in the partially obstructed pharynx during sleep and is the common condition affecting 25~45% of normal adults⁴.

The problem of snoring may be the sleep disturbance, psychological problems(marital or social difficulties), and the association with sleep apnea syndrome. Patients affected by sleep apnea syndrome frequently have serious morbidity such as hypertension, angina, myocardial infarction, and cardiovascular accident⁵.

Recently, a new method for treating snoring, called laser resection of palatopharynx(LRPP) was developed and we were to evaluate the clinical effect of LRPP in the snorers.

Subjects and Methods

The subjects of this study were 537 patients who were operated on from June, 1993 through June, 1994.

The operations were done with CO₂ laser(Sharplan Co., Israel) and applicators at 20 watts and continuous

mode. It was performed with the patient sitting in an exam chair in the upright position. At first, intraoral spray with 15% lidocaine was applied and 1~2 ml of 2% lidocaine was injected into the base of uvula and both side of uvula. After inspection of full anesthesia, the bilateral vertical incisions through and through the palate at the base of the uvula were made. Once the palatal incision had been made, then the uvula was shortened and reshaped. The lateral portions of the incisions were vaporized and widened. After the resection and vaporization of soft palate, posterior pillar and uvula were vaporized, if the abnormalities were noted.

We evaluated the snorers in three different ways : I. assessment of subjective symptoms II. psychodynamic

Table 1. Items of psychodynamic analysis

Insomnia

1. latency of sleep
2. difficulty staying asleep in night
3. nocturnal arousal
4. dream
5. difficulty of staying asleep in early morning
6. difficulty of staying awoken during the day
7. difficulty of concentration

Depression

1. tendency to feel depressed
2. tendency to feel good in morning
3. tendency to feel crying
4. tendency of difficulty falling asleep
5. appetite
6. sexual desire
7. reduction of body weight
8. constipation
9. palpitation
10. tendency to feel tired
11. tendency to feel bright
12. ability to stay on task
13. tendency to feel irritable
14. tendency to feel hopeful
15. tendency to feel nervous
16. tendency to feel decisive
17. tendency to feel attractive
18. meaning of life
19. tendency of suicide
20. tendency of satisfaction

analysis done by psychiatrist III. assessment of subjective satisfaction by patient's evaluation.

As the subjective symptoms, the following symptoms were evaluated : snoring, irregular respiration, mouth dryness, and headache. They were graded as follows : I. None ; II. Occasional ; III. Frequent ; IV. Always. These were evaluated preoperatively and 4 weeks-postoperatively and the interpretation of symptom scores was done as follows : marked improvement, improvement, no change, and aggravation. The term of marked improvement meant that the postoperative symptom scores were improved more than 2 grades. The term of improvement meant postoperative improvement of one grade. The overall improvement included the marked improvement and improvement groups.

Psychologic analysis, insomnia and depression, was studied by psychodynamic analysis with the aid of a psychiatrists. The insomnia included 7 contents and the depression 20 contents (Table 1), and these were evaluated in the same way as that for subjective symptoms and analysed by paired t-test.

The subjective satisfaction by the patient's assessment was analysed 4 weeks, 8 weeks, 12 weeks, and 24 weeks postoperatively via interview with patients. It was evaluated by following scale : score 100 as subjective full satisfaction and score 0 as dissatisfaction and the score was graded into 10(0, 10, 20, ..., 90, 100). The scores above 70 were regarded as improvement.

Results

The mean age was 47.3 years, and men were 3.2 times more likely to snore than women. Snoring was more commonly diagnosed in men in their 50's and 60's and women in their 60's and 70's (Table 2).

The improvement of snoring was obtained in 76.4% (Table 3) and of irregular respiration in 80.5% (Table 4). The symptom of mouth dryness was improved in 54.5% and headache in 28.7% (Fig. 1).

In psychodynamic analysis, insomnia was noted in

Table 2. Age and sex distribution

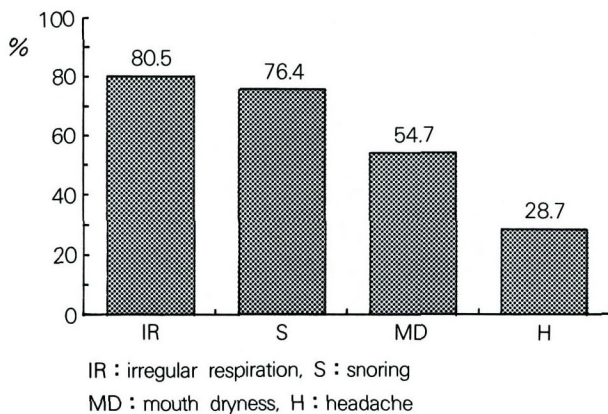
Age	Male	Female	Total
20-29	27	12	39
30-39	76	14	90
40-49	165	21	186
50-59	125	42	167
60-69	15	40	55
Total	408	129	537

Table 3. Improvement of snoring

Marked improvement	278(51.8)
Improvement	132(24.6)
No change	106(19.7)
Aggravation	21(3.9)
Total	537(100.0)

Table 4. Improvement of irregular respiration

Marked improvement	196(41.5)
Improvement	185(39.0)
No change	92(19.5)
Aggravation	0(0)
Total	537(100.0)

**Fig. 1.** Effect of laser resection of palatopharynx in various symptoms at postoperation 4 weeks.**Table 6.** Intraoperative problems and postoperative complications in laser resection of palatopharynx

Intraoperative problems		Postoperative complications	
	No. of patients(%)		No. of patients(%)
Bleeding	50(9.3)	Foreign body sensation	172(32.1)
Dyspnea	25(4.7)	Pain	139(26.0)
Pain	20(3.7)	Bleeding	7(1.4)
Hot sensation	13(2.4)	Velopharyngeal insufficiency	0(0)
Total	108(20.1)		318(59.2)

20.7% and was improved significantly after the operation but depression didn't show any significant improvement (Table 5).

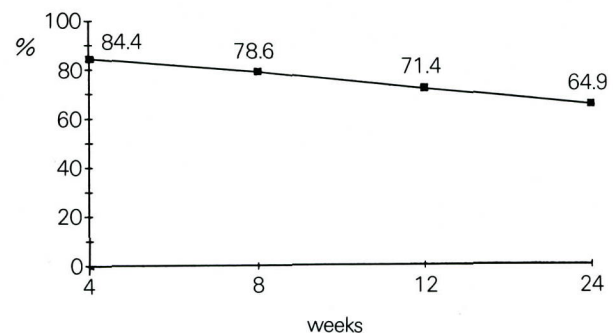
The improvement of subjective satisfaction was the greatest in 4th week(84.4%) and decreased on the progress of follow-up(Fig.2).

The most common intraoperative problem was bleeding(9.3%) and the most common postoperative complication was foreign body sensation(32.1%)(Table 6). The bleeding was easily controlled by electric cautery or tying and foreign body sensation disappeared spontaneously within 3 to 6-months postoperation.

Table 5. Psychodynamic analysis by psychiatrist

No. of patients(%)		Change of scores	
		Preop.	Postop.
Insomnia	72(20.7)	13.47 ± 4.57	11.75 ± 2.92*
Depression	65(18.7)	36.06 ± 8.33	34.78 ± 9.25

n = 348 *P < 0.05

**Fig. 2.** Subjective satisfaction by patient's assessment at postoperation 4, 8, 12, 24 weeks :

The numbers meant the percentage of subjects, improved more than 70 scores, to total numbers at that week.

Discussion

The treatments of snoring include the elimination of impacting factors such as allergy, nasal obstruction, sleeping position, use of alcohol or other drug and excessive body weight. Oral retainer and nasal continuous positive airway pressure could be applied but have poor compliance rates²⁾. Finally, if a surgical approach is selected, a procedure known as a uvulopalatopharyngoplasty (UPPP), is performed. It can also be used to treat simple snoring, but is a rather aggressive approach having many grave complications such as massive bleeding, nasal reflux, hypernasality, middle ear dysfunction and death⁷⁾.

A new method for treating snoring, called a laser resection of palatopharynx(LRPP) was first reported in 1990 by a French physician named Kamami²⁾. And the success of LRPP relies on advances in the laser delivery system and in the technique used to perform the surgery³⁾⁸⁾. The LRPP can be done as outpatient based operation and with local anesthesia. And ingestion is possible in the immediate postoperative period.

The success rate of snoring was 76.4% , but other reports showed 93~98%⁶⁾, 96%⁷⁾, 94%¹⁾ success rate. Our success rate was worse than others, but the subjects of our study included both simple snorers and sleep apnea syndrome. In other words, the simple snorers are the best candidates for LRPP. Therefore UPPP, the aggressive resection of velum and removal of tonsil, has certainly a better outcome than LRPP. The success rate of irregular respiration was 80.50% and it was a better result than other reports of 72%⁷⁾. This implies that there was improvement of some apnea symptoms, but the further investigation will be needed. Other results of mouth dryness and headache were disappointing, and this showed that LRPP is not as effective for sleep apnea syndrome as it is for snoring.

Those with insomnia showed significant improvement after the operation and this may be the result of improvement of irregular respiration.

Subjective satisfaction was the greatest at 4th week but it had a decreasing tendency during the follow-up period. As seen in traditional uvulopalatopharyngoplasty, a recurrence of snoring can occur. This may be due to a variety of causes including velopharyngeal hypotonia, tobacco use, alcohol use, or other factors. This indicates the need of a long term follow-up. In this study, we couldn't analyse the factors of recurrence or reduction of improvement and further investigation will be needed to clarify the factors associated in recurrence as prospective study.

As to the complications, intraoperative bleeding and dyspnea were noted, but these were minimal and no major complications were noted in the postoperation period.

Conclusions

Snoring is a common disturbance in human society. Many treatment modalities have been applied but the possibilities of some complications had the snorers avoiding treatment.

Recently laser resection of palatopharynx(LRPP) was introduced and this treatment had some advantages of an outpatient based operation with local anesthesia and little complications, when compared to uvulopalatopharyngoplasty(UPPP).

LRPP is an effective method to lessen snoring(76.4%) and irregular respiration(80.5%).

However, the long term follow-up will be needed to determine its full effect

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