



## Applications of Radiofrequency in ENT

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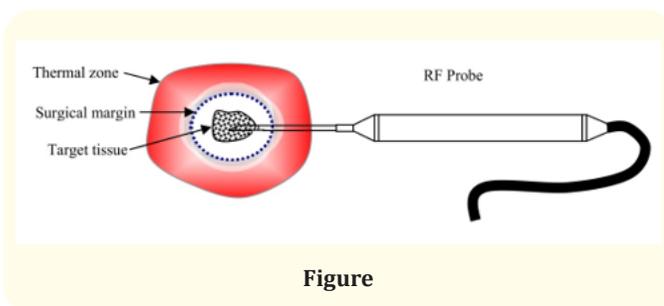
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### Abstract

Radiofrequency proves to be an useful tool for snoring and obstructive sleep apnoea cases. Its advantages include relative precision in incision making, relatively bloodless fields if used appropriately, decrease postoperative pain and excellent healing with fibrosis which aids in stiffening tissues.

Radiofrequency is high frequency alternating current used to ablate (cut/coagulate) tissues. Radiofrequency ablation treatment can be applied to nasal turbinates, soft palate, tongue base, tonsils etc and it can be used in various surgeries in the cutting mode to improve obstructive sleep disordered breathing.

**Keywords:** Radiofrequency; Sleep Disordered Breathing; Precision



**Figure**

### Introduction

Radiofrequency proves to be an useful tool for snoring and obstructive sleep apnoea cases. Its advantages include relative precision in incision making, relatively bloodless fields if used appropriately, decrease postoperative pain and excellent healing with fibrosis which aids in stiffening tissues [1,2].

### Objectives/Aim of the Study

Was to assess efficacy of Radiofrequency as a tool for procedures for snoring - sleep apnoea. The parameters assessed were: postoperative pain-scores, intra and postoperative blood loss, re-

duction in subjective snoring sounds by patient and partner and reduction in AHI postoperatively.

### Methods

The procedures were carried out over a period of three years. All cases that came to us with complaints of snoring, difficulty in breathing, and sleep disturbances at the various hospitals were included in the study. A total-of-around 25 cases were studied. A thorough history, clinical examination in all and where feasible, flexible endoscopy and sleep study were carried out. Radiofrequency Sutter BM 7180 machine was used to treats cases over the time period. The power settings used varied from 2 - 6 in the cutting and coagulation mode. Procedures were carried out under local or general anaesthesia with oral intubation and a throat pack.

### Radiofrequency tonsillectomy

Exposing the tonsil on either side, the to-bite Radiofrequency forceps or the Rf needle was used to incise/open the plane for tonsillar dissection. Dissection was carried out with the same, achieving haemostasis at the same time. If adequately carried out, bleeding was minimal and pain scores were low post operatively. Fossa

deepens and stiffens post operatively. Rf setting: 2 - 3 in cutting mode and 5 - 6 in coagulation mode.

### Radiofrequency adenoidectomy

Can be performed after retracting lower edge of the palate with tongue depressors or tourniquets and coagulating the adenoid with bipolar forceps. Lower edge of the adenoid can be also be dissected using Rf needle or ball point. Bleeding is negligible and wound heals well. No case of post-operative haemorrhage was encountered. Ideal for recurrent adenoids. Rf setting: 5 - 6 in the coagulation mode.

### Radiofrequency somnoplasty

It is temperature controlled Rf volumetric tissue reduction of the palate in order to stiffen or scar the soft palate. The Sutter Rf bipolar probe is used to deliver energy to the soft palate at various points. Blanching has to be avoided. The subsequent stiffening occurred over 6 weeks. Procedures can be done as office procedures and under local anaesthesia, and involved no bleeding and pain scores were very low. Subjective decrease in snoring was achieved even in 1 sitting.

## Results

Procedures	No: of cases	Pain scores (0 - 5)	Intra op bleeding (ml)	Post op bleeding
RF Somnoplasty/Palate	5	1-4	Nil	Nil
RAUP	6	3-4	Negligible	Nil
RF Tonsils	6	4-5	3 - 10 ml, 3-Nil	Nil
RFUP3	2	4-5	Nil	Nil
RF Tongue Base	4	0-1	Nil	Nil
RF Adenoids	4	0	Nil	Nil

## Discussion

- Of the 27 patients who underwent some form of treatment with radiofrequency,
- Of the 5 somnoplasty patients, 2 patients got a pain score of 4 and 3 patients 0 - 1.
- RAUP patients had a varied score from 1 - 4.
- RF adenoidectomy was relatively pain free.
- RF Tonsillectomy was between 4 and 5.
- RF tongue base had very low pain scores

### Radio frequency tongue base reduction

It is temperature controlled volumetric reduction of the tongue base achieved by giving Rf energy to multiple sites of posterior tongue base with Sutter RF bipolar probes. Three sittings of application gives a significant reduction in tongue base tissue. There was no incidence of tongue base oedema or infection. The procedure can be carried out under local or general anaesthesia.

Radio frequency UP3 (Rf assisted uvulopalatopharyngoplasty) is achieved by uvular and lateral cuts with Rf in cutting mode and tonsillectomy with pillar suturing. The post-operative widening, contracture/stiffening helps in achieving a good result.

RAUP (Rf assisted uvulopalatoplasty) for snoring is done by uvular and lateral cuts and redefining the posterior pillars. Tonsillectomy maybe combined. It achieves its result due to removal of the redundant mucosa and subsequent healing with fibrosis. Subjective decrease in snoring is achieved in most patients. Rf is used in cutting mode.

- There was no post bleeding in any of the cases. Intra operative bleeding was encountered in tonsillectomy cases when RF was used in the cutting mode. Rf somnoplasty, 1 sitting can give a reduction in snoring by 50-70%. RF in cutting mode if used inappropriately can give rise to bleeding otherwise not.

## Conclusion

Radiofrequency appears to be an efficient tool for snoring sleep apnoea:

- Ability to cut fast and with precision and maintain a relatively blood less field.

- Ability to cut and coagulate.
- Decrease intraoperative blood loss.
- Induces fibrosis and stiffening of tissue.

### Other advantages include:

1. The instrument/unit appears dynamic with a good feel.
2. Procedures can be performed under local/general anaesthesia.
3. Instruments are autoclavable/recurring cost is low.
4. Machine is ambulatory.
5. Minimally invasive.

### Bibliography

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