Outcomes of radiofrequency ablation (RFA) of the palate and tongue base a tertiary sleep surgery unit

Ryan Chin Taw Cheong¹, Vik Veer^{1,2}, Bik Kotecha^{1,2}

¹Barking, Havering and Redbridge University Hospitals NHS Trust, ²Royal National Throat, Nose and Ear Hospital

Introduction

Powell et al. were the first to demonstrate that radiofrequency ablation (RFA) could reduce tongue volume in a porcine model in 1997. The literature on RFA provides evidence that the short-term results are promising; however, the long-term efficacy is a matter of contention. The outcomes of RFA of the palate and tongue base at a tertiary sleep surgery unit are assessed.

Long-term safety and efficacy of radiofrequency ablation in the treatment of sleep disordered breathing: a meta-analysis

The overall Visual Analogue score from six studies showed the overall mean improvement to be 4.3 (confidence intervals 3.4–5.12) with a positive score indicating improvement in symptoms. Minimum follow-up duration of 12 months.

Results

The patients were followed-up for an average of 315 days with a subjective improvement in 93.4% of the 202 patients who had RFA.

95.8% of 72 'RFA only' patients had a subjective improvement at an average of 265 days follow-up.

Complications reported were globus (3.8%), mucosal ulceration (1.4%) and post-operative pain (0.9%).

Failure rate: 1 patient worsened after treatment, 2 patients reported no improvement.

Methods

202 medical case notes of patients who underwent RFA were retrieved via medical records and pre-determined outcome measures of subjective improvement and complication rates were extracted and processed with Microsoft Excel. The technique used is 10 applications of 10 Watts to the palate and 6 applications of 6 Watts to the tongue base with the Celon bipolar device.

Conclusion

The outcomes demonstrate that RFA is a safe technique to be used as a multilevel treatment in combination with other sleep disordered breathing surgical techniques. The evidence suggests that RFA for sleep disordered breathing results in a significant improvement in follow-up times of at least a year. Since RFA can be applied in a clinic setting and leads to minimal disruption to daily life, this treatment option can be considered for those unwilling to participate in the more traditional surgical options for sleep disordered breathing. Further work to measure objective outcomes such as polysomnography findings, respiratory disturbance index (RDI) and lowest oxygen saturations.

References

1. Powell, Nelson B., et al. "Radiofrequency volumetric reduction of the tongue: a porcine pilot study for the treatment of obstructive sleep apnea syndrome." *Chest* 111.5 (1997): 1348-1355.
2. Veer V, Yang WY, Green R, Kotecha B. Long-term safety and efficacy of radiofrequency ablation in the treatment of sleep disordered breathing: a meta-analysis. *Eur Arch Otorhinolaryngol*. 2014 Nov;271(11):2863-70
3. Farrar et al. Radiofrequency ablation for the treatment of obstructive sleep apnea: a meta-analysis. *Laryngoscope*. 2008 Oct;118(10):1878-83
4. Baba RY, Mohan A, Metta VV, Mador MJ. Temperature controlled radiofrequency ablation at different sites for treatment of obstructive sleep apnea syndrome: a systematic review and meta-analysis. *Sleep Breath*. 2015 Sep;19(3):891-910