

Punctate diathermy of the soft palate: a new approach in the surgical management of snoring

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Abstract

We present our experiences in the surgical management of 21 snorers, utilizing a new approach designed to stiffen the palatal musculature, without compromising its function. This was achieved by using a punctate pattern of intrapalatal diathermy to achieve fibrosis within the palate and hence the requisite stiffening. The initial results of this procedure are encouraging showing a subjective improvement in snoring in 85.7 per cent of patients and an increase in sleeping in the same room as their partner every night, from 14.3 per cent pre-operatively to 57.1 per cent post-operatively.

Key words: Snoring; Palate, soft, surgery

Introduction

Snoring is a common problem, with 19 per cent of the population habitually snoring and up to 50 per cent of people over 60 years of age (Lugaresi *et al.*, 1980). It has been implicated as a risk factor in the aetiology of serious cardiovascular diseases (Lugaresi *et al.*, 1980; Koskenuovo *et al.*, 1985; Norton and Dunn, 1985; Partinen and Palomaki, 1985; Koskenuovo *et al.*, 1987).

Snoring also has psychosocial consequences. It may result in marital discord, and leads to increased daytime somnolence and diminished attention (Stradling *et al.*, 1991) – endangering drivers and machine operators.

Several different surgical approaches have been used in the management of both apnoeic and non-apnoeic snoring. Uvulopalatopharyngoplasty (UPPP) was first described by Fujita *et al.* (1981) and was advocated as a potential cure for snoring by Simmons *et al.* (1983). Golding-Wood *et al.* (1990) suggested that a lesser procedure (tonsillectomy with advancement of the posterior faucial pillars and apposition of the palatopharyngeus to the palatoglossus) might be applicable in some patients without sleep apnoea. More recently Ellis *et al.* (1993) has presented his preliminary work on palatal stiffening using a Nd-YAG laser.

We report our experiences with 21 patients who underwent a palatal stiffening procedure developed in our unit by the senior author (PGB), and present the results of a retrospective analysis of this procedure.

Subjects and methods

Patients attending the Outpatients Department complaining of snoring were assessed to elicit the severity of their symptoms, to detect any patients with a history suggestive of obstructive sleep apnoea (OSA), and to exclude any significant non-palatal anatomical deformity. Any patient in whom OSA was suspected was sent for overnight pulse oximetry, and formal polysomnography (oxygen saturation, electroencephalography, electro-oculography, electromyography, electrocardiography, thoraco-abdominal movement and naso-oral airflow) if the oximetry suggested possible OSA. Advice was given with regard to alcohol consumption, weight loss and smoking where appropriate.

We did not perform any special investigations in patients without a history suggestive of OSA. Specifically we did not routinely perform nasendoscopy (with or without the Muller manoeuvre), nor sleep nasendoscopy as these tests are primarily intended for identification of the level of obstruction in OSA and not of the noise source in snoring.

Punctate, unipolar diathermy was carried out to the soft palate in 27 patients under general anaesthesia. An oro-tracheal tube was used to maintain anaesthesia, and a Boyle-Davis gag with Doughty blade to keep the mouth open. Ten to 15 penetrations of the mucosa were performed and the palatal muscles diathermized on each puncture to achieve a stiffening of the palate, palpable to the surgeon (see Figure 1). Xylocaine gel was smeared onto the palatal surface, and all patients were treated with an oral antibiotic (metronidazole) and offered diclofenac and co-codamol for analgesia.

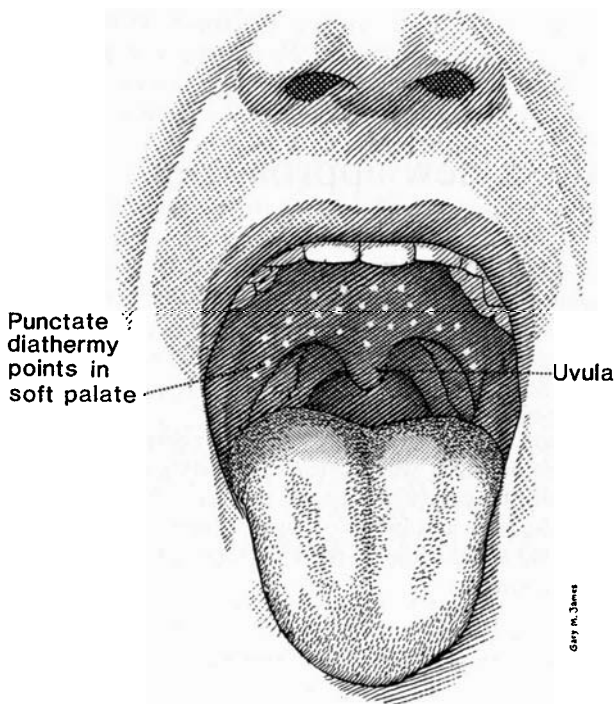


FIG. 1
Punctate diathermy of the soft palate.

Post-operative questionnaires (see Appendix I) were sent to 27 patients to enquire as to their recovery, complications and improvement in snoring.

Results

Twenty-one patients responded to the questionnaire (77.8 per cent response rate), 19 males and two females, with ages ranging from 30 to 77 years (mean 51.9 years). The time delay between surgery and the questionnaire being completed varied from two to 10 months (mean 5.6 months).

There were no serious peri-operative complications and no reported episodes of nasal regurgitation. One case of rhinolalia aperta was reported, which resolved spontaneously.

Only three patients (14.3 per cent) reported that prior to their surgery they always slept in the same room as their partner (Table I), whilst post-operatively this had risen to 12 (57.1 per cent) $p = 0.003$ McNemar symmetry Chi-square test).

Twelve patients (57.1 per cent) slept apart on three or more nights per week pre-operatively, and this dropped to six (28.6 per cent) post-operatively (Table II). Nine patients (42.9 per cent) slept apart

TABLE I
SLEEPING HABITS PRE- AND POST-OPERATIVELY

		Nights apart pre-operatively	
		0	1-7
Nights apart	0	3	9
Post-operatively	1-7	0	9

$p = 0.003$
(McNemar symmetry Chi-square test)

TABLE II
SLEEPING HABITS PRE- AND POST-OPERATIVELY

		Nights apart pre-operatively	
		<3	>3
Nights apart	<3	9	6
Post-operatively	>3	0	6

$p = 0.014$
(McNemar symmetry Chi-square test)

on less than three nights per week before their surgery, rising to 15 (71.4 per cent) post-operatively ($p = 0.014$ McNemar Chi-square test).

Eighteen patients (85.7 per cent) experienced some subjective improvement in their snoring, of whom seven (38.9 per cent) felt they had a greater than 70 per cent improvement. Three patients (14.3 per cent) experienced no improvement at all, and yet two of these patients felt the operation was worthwhile; both because they were 'sleeping better', and one because he was sleeping with his partner more frequently as well.

Of the nine patients who slept apart from their partner on less than three nights per week, six (66.7 per cent) had a greater than 70 per cent improvement in snoring compared with only one (8.3 per cent) of the 12 patients who slept apart three or more nights per week ($p = 0.016$ Fisher exact test) (Table III).

Overall 81 per cent of patients said that they felt the procedure was therefore worthwhile.

Discussion

Palatal flutter is a recognized source of noise production in people who snore, and previous authors have postulated that this can be reduced by stiffening the soft palate (Ellis *et al.*, 1993). A widely used surgical alternative is uvulopalatopharyngoplasty (UPPP), which has a significant morbidity and mortality. In a recent review of 101 UPPPs, Haavisto and Suonpaa (1994) found 56 per cent of patients experienced nasopharyngeal regurgitation at six weeks post-operatively, reducing to 24 per cent at one year, and one patient died of airway obstruction. Difficulties in swallowing (10 per cent) and speech (seven per cent) also persisted at one year in their series whilst post-operative haemorrhage occurred in six per cent of their patients. Whilst not denying the role of UPPP in the management of snoring we feel that the associated morbidity and mortality make it a procedure not to be undertaken lightly. Any alternative which can

TABLE III
PRE-OPERATIVE SLEEPING HABITS AND SUBJECTIVE IMPROVEMENT IN SNORING POST-OPERATIVELY

		Perceived improvement in snoring (%)	
		<70	>70
Nights apart per week	<3	3	6
Pre-operatively	>3	11	1

$p = 0.016$ (Fisher exact test)

reduce the morbidity and mortality whilst still achieving a satisfactory result should therefore be considered seriously.

In our series of 21 patients, we excluded those with OSA, using pulse oximetry, and those with a history suggestive of OSA, and formal polysomnography in patients with significant episodes of hypoxia. We did not subdivide non-apnoeic snorers in any way.

Our follow-up times averaged 5.6 months post-operatively, (range two to 10 months) which is probably suboptimal. Recent information with regard to improvement following UPPP indicates a reduction of success rates at 13 months (46 per cent) from 87 per cent initially (Levin and Becker, 1994).

One of the difficulties encountered when trying to analyse the treatment of snorers and their outcome, is that snoring and OSA are a continuous spectrum of disease (Catterall and Whinney 1993). Hence whilst some non-apnoeic snorers are simple snorers, others will be tending towards OSA, with apnoeas of insufficient frequency to qualify as true OSA. This leads to difficulties in subdividing the patients who tend to be homogenously studied as non-apnoeic snorers without reference to the severity of their symptoms. We have taken social disruption, measured in terms of nights sleeping apart from one's partner, to gauge the severity of snoring.

One can postulate that the less severe snorer will respond better to palatal stiffening than those closer to the apnoeic end of the spectrum, and there is a significant correlation between a greater than 70 per cent subjective improvement in snoring and patients who slept apart on less than three occasions per week pre-operatively ($p = 0.016$).

As stated, there was a significant increase in the number always sleeping in the same room as their partner from 14.3 per cent pre-operatively to 57.1 per cent post-operatively ($p = 0.003$), a valuable index of operative success, in view of the socially disruptive nature of the problem.

In this small series of 21 cases, we encountered only one episode of temporary rhinolalia aperta, and had no other complications except for local pain.

This is a simple procedure to perform, using unipolar diathermy which is cheap and readily available. It can be performed as a day case providing adequate analgesia is provided.

We believe that punctate diathermy of the soft palate (PDSP), with its lower morbidity, has a place in the management of less severe, non-apnoeic snorers as an alternative to UPPP.

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APPENDIX I

SNORING SURGERY

POST-OP QUESTIONNAIRE

Date of enquiry:
 Date of surgery:
 Interval since the operation:
 Type of operation:

Name:
 Hospital No:
 Age:

please circle Y or N

Since the operation:
 — have you suffered at any point with regurgitation of food/drink into our nose? Y / N
 if yes has this resolved now? Y / N
 how long did it last (weeks) ?
 — have you experienced escape of air into your nose as you speak, affecting
 te quality of your voice? Y / N
 if yes has this resolved now? Y / N
 how long did it last? (weeks) ?

Do you have any residual discomfort in the back of your throat?			Y / N
for how long after the operation was it uncomfortable? (weeks)		
			✓
how long did you stay off work?	not working		<input type="checkbox"/>
	1 week or less		<input type="checkbox"/>
	1 to 2 weeks		<input type="checkbox"/>
	more than 2 weeks		<input type="checkbox"/>
How much has your snoring been improved? (as judged by your partner)	not at all		<input type="checkbox"/>
	less than 30%		<input type="checkbox"/>
	30 to 70%		<input type="checkbox"/>
	70 to 99%		<input type="checkbox"/>
	100% – completely resolved		<input type="checkbox"/>
Do you feel that <u>you</u> (not your partner) are sleeping better?			Y / N
Do you feel more alert, refreshed, or generally better in yourself?			Y / N
Has the operation been worthwhile, i.e. would you have it again?			Y / N
Are you single or married/living with your partner?			Y / N
Did you sleep in separate rooms before the operation?			Y / N
			✓
	if yes	every night?	<input type="checkbox"/>
		3–5 × per week?	<input type="checkbox"/>
		less often?	<input type="checkbox"/>
Do you sleep in separate rooms now?			Y / N
			✓
	if yes	every night?	<input type="checkbox"/>
		3–5 × per week?	<input type="checkbox"/>
		less often?	<input type="checkbox"/>
is this because of your snoring?			Y / N

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