In search of a good night's sleep: PART 2

Dr Genna Levitch is well known to readers as a dentist and contributor to this magazine. In this, the second and final of two articles, he writes about his personal experience with obstructive sleep apnoea (OSA), the results of his recent sleep tests and summarises the current thinking about OSA.

By Dr Genna Levitch

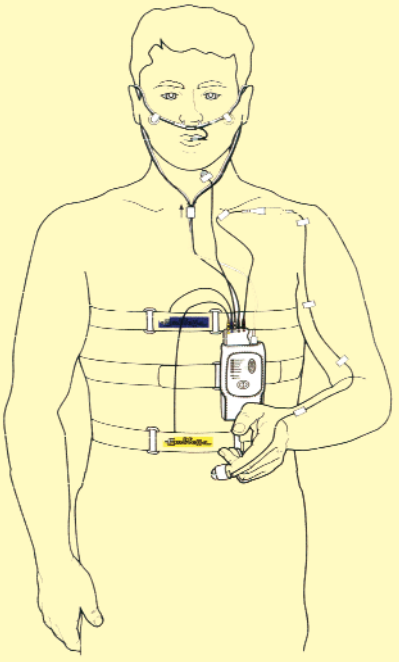
After six years of using a CPAP (Continuous Positive Airway Pressure) machine, I was ready to explore new options that had come on the market.

The most interesting of these options is the SomnoMed MAS appliance. It uses an upper and lower bite splint with an inclined plane on the buccal surface to advance the mandible when the jaw opens. It operates on the principle that advancing the mandible will prevent the distal part of the tongue from obstructing the airway. There are a number of appliances and surgical methods of achieving this. They are only suitable for mild to moderate OSA sufferers, or as an alternative for severe sufferers who cannot tolerate or get claustrophobic with CPAP.

SomnoMed has an innovative product with the MAS, but it takes a lot more than that to make it a success. SomnoMed is the first dental laboratory to float as a public company. This has given it the capital to establish a purpose-built, state-of-the-art laboratory and fund a marketing campaign to both dentists and the general public.

I spoke to Ashley Truitt (Vice President Business Development at SomnoMed) at a dental exhibition and she suggested I try the MAS. I decided to trial it with a sleep test so there could be some objective data for comparison purposes. Resmed (who make the CPAP I use) have a home diagnostic kit, the 'Embletta', which is the size of a large mobile phone. It straps to your chest and has wires and tubes that you tape everywhere to measure Heart Rate, Breathing Rate, Nasal Tidal Volume and body movements. They agreed to loan me a unit for several nights.

My dentist, Andrew Prideaux, took some silicone impressions, which I dropped off at the SomnoMed lab. Their turn-around time was a few days but unfortunately, the upper splint didn't fit. On the second attempt it was perfect. I wired myself up, popped in the splint and leapt into bed. There is nothing like an experiment to build the excitement. Especially experiments in bed!



Studying sleep - Clockwise from top left: A typical CPAP system; the Embletta home diagnostic kit; and the SomnoMed MAS.

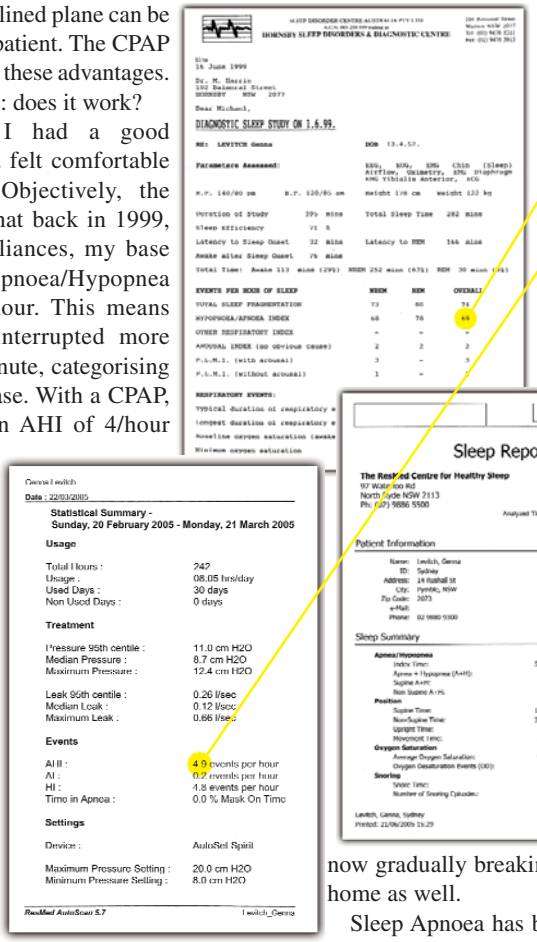
Yes, I slept well, even if I dreamed about an octopus clamped to my chest while I dangled from a spider's web. The MAS was more comfortable to wear than any of the previous hinged or mouthguard types of appliances I have tried (see part one in ADP Mar/Apr 2005). The occlusal surfaces are flat, allowing for simultaneous treatment of bruxism. They are labelled and come in their own mouthguard container. My suggestion was the appliances could be thinner and smaller to make it more acceptable to the general public. I was informed it was designed this way in order not to break easily. The acrylic is mauve coloured, which makes it distinctive, but it is harder for the dentist to see when grinding an adjustment.

Most CPAP appliances are over $2000 with health funds paying around $500 and allowing one every five years. In comparison, the SomnoMed MAS is $1500 with the patient being able to claim back from between $200 to $1,000, depending on your fund and class of cover. It is small, light, quiet, internal, portable, requires no

power and the inclined plane can be advanced by the patient. The CPAP can claim none of these advantages.

The question is: does it work?

Subjectively, I had a good night's sleep and felt comfortable and refreshed. Objectively, the results showed that back in 1999, without any appliances, my base line AHI (Apnoea/Hypopnea Index) was 69/hour. This means my sleep was interrupted more than once per minute, categorising me as a severe case. With a CPAP, it is 4.9/hour (an AHI of 4/hour is considered normal) and in comparison it was 4.6/hour with the MAS, which leads me to believe that either the MAS is a viable alternative and/or using CPAP for six years has reduced my AHI. Either way, it felt good to look after my health. While my wife and I have become used to the CPAP ritual each night, the results of this experiment have shown I get a better night's sleep with the SomnoMed MAS. I have now switched to using this device when I travel and am now gradually breaking the habit at home as well.



HORNSBY SLEEP DISORDERS & DIAGNOSTIC CENTRE

DIAGNOSTIC SLEEP STUDY ON 1.6.99.

Dear Michael,

RE: LEVITCH Genna DOB 13.4.57.

Parameters Assessed:

Duration of Study 395 mins Total Sleep Time 282 mins

Sleep Efficiency 71 %

Latency to Sleep Onset 32 mins Latency to REM 144 mins

Awake after Sleep Onset 75 mins

Total Time: Awake 113 mins (29%) REM 252 mins (67%) REM 30 mins (8%)

EVENTS PER HOUR OF SLEEP — REM — NREM — OVERALL

TOTAL SLEEP FRAGMENTATION 73 80 76

HYPOPNOEA/APNOEA INDEX 68 78 69

OTHER RESPIRATORY INDEX - - -

AROUSAL INDEX (no obvious cause) 2 2 2

P.L.M.I. (with arousal) 3 - 3

P.L.M.I. (without arousal) 1 - 1

RESPIRATORY EVENTS:

Typical duration of respiratory e

Longest duration of respiratory e

Baseline oxygen saturation (awake

Minimum oxygen saturation

Genna Levitch

Date : 22/03/2005

Statistical Summary -
Sunday, 20 February 2005 - Monday, 21 March 2005

Usage

Total Hours : 742
Usage : 08.05 hrs/day
Used Days : 30 days
Non Used Days : 0 days

Treatment

Pressure 95th centile : 11.0 cm H2O
Median Pressure : 8.7 cm H2O
Maximum Pressure : 12.4 cm H2O

Leak 95th centile : 0.26 l/sec
Median Leak : 0.12 l/sec
Maximum Leak : 0.66 l/sec

Events

AI II : 4.9 events per hour
AI : 0.7 events per hour
HI : 4.8 events per hour
Time in Apnoea : 0.0 % Mask On Time

Settings

Device : AutoSet Spirit

Maximum Pressure Setting : 20.0 cm H2O
Minimum Pressure Setting : 8.0 cm H2O

ResMed AutoScan 5.7 Levitch_Genna

Somnologica

Sleep Report

The Resmed Centre for Healthy Sleep
97 Waterloo Rd
North Ryde NSW 2113
Ph: (02) 9886 5500

Analysed Time: 8 hours 48 min 6ss (528 minutes)
Analysis Start Time: 10/06/2005 23:20
Analysis Stop Time: 11/06/2005 8:07

Patient Information

Name: Levitch, Genna
ID: Sydney
Address: 14 Rushall St
City: Pymble, NSW
Zip Code: 2073
e-Mail:
Phone: 02 9880 9300

Date of Birth: 13/04/1952
Age: 53
Gender: Male
Height: N/A m
Weight: N/A kg
BMI: N/A

Sleep Summary

Apnea/Hypopnea
Index Time: 505.1 minutes
Apnea + Hypopnea (A+H): 39 4.6 /h
Supine A+H: 18 6.6 /h
Non Supine A+H: 21 3.7 /h

Position
Supine Time: 163.0 minutes 32.3 %
Non-Supine Time: 342.0 minutes 67.7 %
Upright Time: 2.3 minutes 0.5 %
Movement Time: 70.1 minutes 4.0 %

Oxygen Saturation
Average Oxygen Saturation: 92.7 %
Oxygen Desaturation Events (OD): 162 19.2 /h

Snoring
Snore Time: 7.1 minutes 1.5 %
Number of Snoring Episodes: 12

Levitch, Genna, Sydney
Printed: 21/06/2005 15:29
Sleep Report
Study Date: 10/06/2005

Overall Hypopnoea/Apnoea Index

Normal	4.0 events per hour
Baseline - G. **Levitch** - June 1999	69.0 events per hour
Using CPAP - March 2005	4.9 events per hour
Using SomnoMed MAS - June 2005	4.6 events per hour

Sleep Apnoea has been identified as the causative factor in a swag of conditions. A sufferer is three times more likely to die from heart disease than a smoker. CPAP may soon become the treatment of choice for high blood pressure. Chronic tiredness causes depression, memory loss, lack of concentration and personality changes. Sleep deprivation is a favourite technique of torturers and its effects are well-documented when associated with post-natal depression. It can lead to relationship breakdowns and is often difficult to diagnose with conventional medical methods. It is often accompanied by denial, which in some cases can be strident if not violent. In children it is now being linked to AD/AHD. It has been suggested that the inverse relationship between the drop in tonsillectomies and the rise of AD/AHD is due to a greater number of children experiencing OSA due to tonsillitis.

The cause of Sleep Apnoea is unknown; perhaps in the future as we look at the body in a more holistic manner, we may find more clusters of conditions that are linked to a central causative factor.

The author wishes to thank Resmed for the loan of the Embletta and Lisa Erikli RN for technical analysis and assistance.