

### Case 4 - Obese Patient with Moderate OSA

This case reveals that some patients with moderate sleep apnea can fail to experience an efficacious response to OAT, despite protruding the mandible to the patient's upper limit (i.e. maximum protrusion).

#### Patient Profile

- 76 year old male
- Pre-study AHI = 17.9
- BMI = 32.0

#### Dental Assessment






(OATRx scale readings for titration study)

- Lower Limit (Habitual Bite – 1mm) = 12.0mm
- Upper Limit (Maximum Protrusion) = 19.0mm

#### MATRx Study Analysis

During the study, the patient slept reasonably well (sleep efficiency = 83.8%) but had a high arousal index (48.1). Three REM cycles were observed; one in the supine position. Arterial oxyhemoglobin saturation was normal throughout the study, except for periods of mild desaturation during REM sleep. Numerous periodic limb movements were recorded during the night, including during REM sleep. Effective mandibular protrusion was not achieved in REM supine (Interval 3), despite titrating to the patient's upper limit (i.e. maximum protrusion). Effective mandibular protrusion was only observed in NREM periods in the supine position (Interval 2) and the lateral position (Interval 4).

#### Mandibular Titration Summary

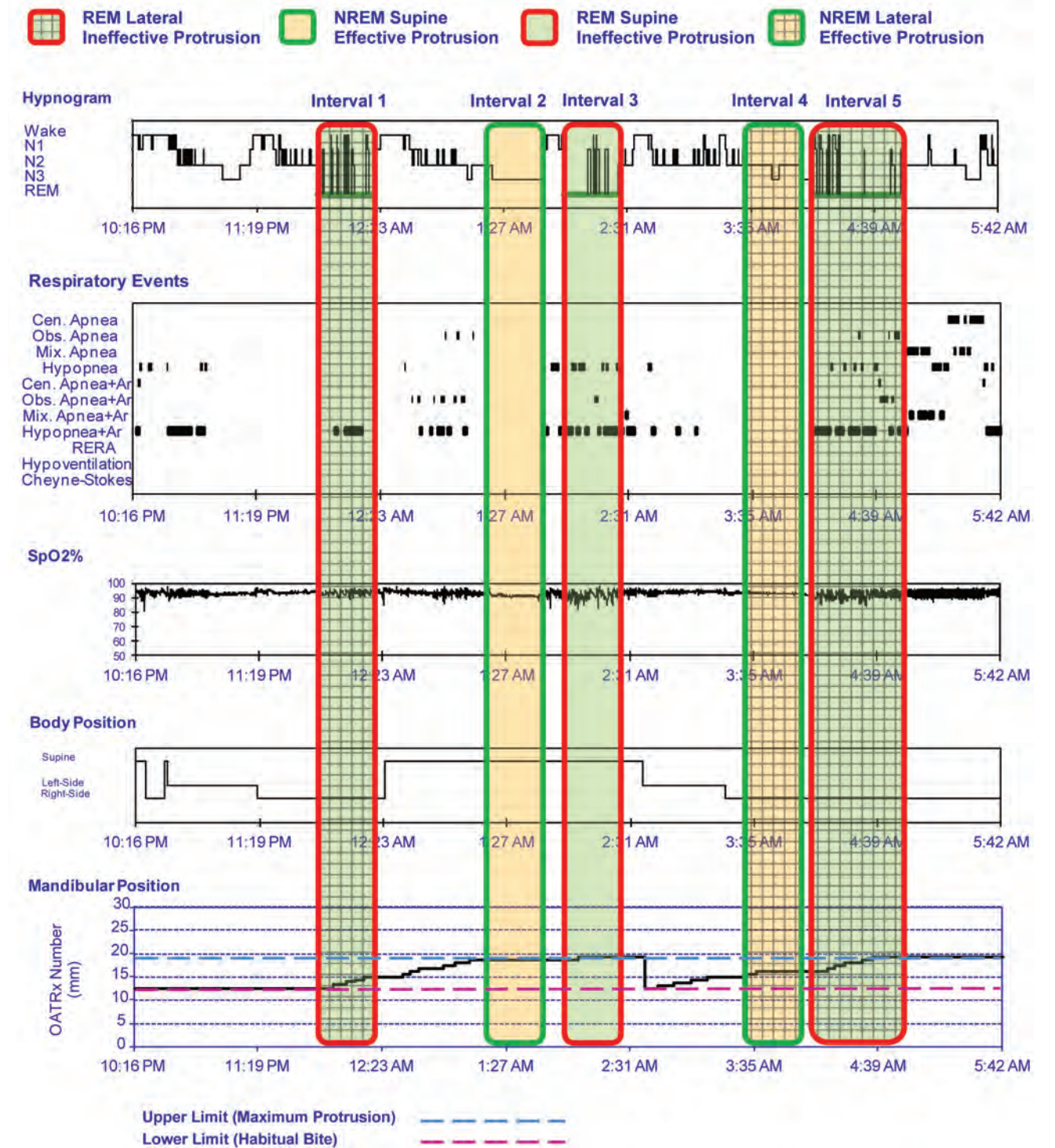
<p> <b>Interval 1</b> REM cycle; 30 minutes LATERAL position Ineffective protrusion » mandibular position 12.4–15.0mm</p>	<p> <b>Interval 3</b> REM cycle; 30 minutes SUPINE position Ineffective protrusion » mandibular position 19.0mm (Upper Limit)</p>	<p> <b>Interval 5</b> REM cycle; 45 minutes LATERAL position Ineffective protrusion » mandibular position 16.5–19.0mm (Upper Limit)</p>
<p> <b>Interval 2</b> NREM cycle; 30 minutes SUPINE position Effective protrusion » mandibular position 19.0mm (Upper Limit)</p>	<p> <b>Interval 4</b> NREM cycle; 30 minutes LATERAL position Effective protrusion » mandibular position 14.9mm–16.5mm</p>	

#### MATRx Study Interpretation

- **Prediction:** Patient is a predicted failure

#### Therapeutic Outcome

The patient was fitted with a SomnoDent® oral appliance adjusted to 70% of the patient's full protrusive position. A therapeutic outcome study, with the appliance set at this position, revealed an increase in AHI to 20.8 compared to a pre-study AHI of 17.9. A repeat therapeutic outcome study, at maximum protrusion failed to further reduce the patient's AHI.



## Case 5 - Overweight Patient with Moderate OSA

This case reveals that some patients with moderate sleep apnea, who are known supine sleepers, can fail to experience an efficacious response to OAT despite protruding the mandible to the patient's upper limit (i.e. maximum protrusion). In this case, the patient was unwilling to sleep in the lateral position and slept supine all night.

### Patient Profile

- 55 year old male
- Pre-study AHI = 17.2
- BMI = 27.1

### Dental Assessment

(OATRx scale readings for titration study)

- Lower Limit (Habitual Bite – 1 mm) = 10.0mm
- Upper Limit (Maximum Protrusion) = 18.0mm

### MATRx Study Analysis

During the study, the patient slept well (sleep efficiency = 87.2%), but had a somewhat elevated arousal index (30.0). The patient slept in the supine position all night with only two REM cycles observed. Arterial oxyhemoglobin saturation was normal throughout the study, except for periods of mild desaturation during REM sleep. No periodic limb movements were recorded. Effective mandibular protrusion was not achieved in either period of REM supine (Intervals 1 and 2), despite titrating to the patient's upper limit (i.e. maximum protrusion).

### Mandibular Titration Summary

#### Interval 1

- REM cycle; 23 minutes
- SUPINE position
- Ineffective protrusion
- » mandibular position 13.9mm–16.1mm

#### Interval 2

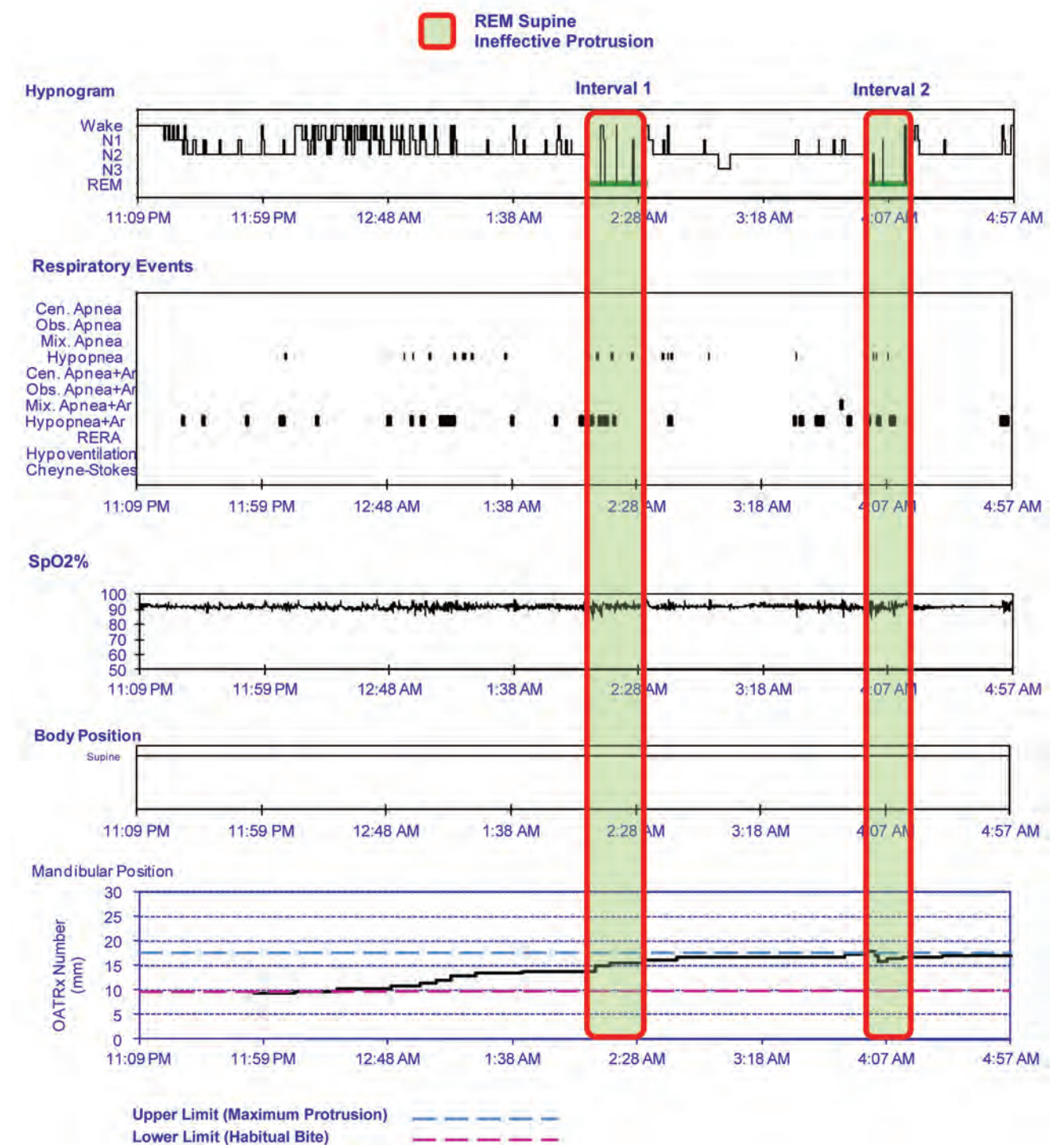
- REM cycle; 13 minutes
- SUPINE position
- Ineffective protrusion
- » mandibular position 16.0mm–18.0mm (Upper Limit)

### MATRx Study Interpretation

- **Prediction:** Patient is a predicted failure

### Therapeutic Outcome

The patient was fitted with a SomnoDent® oral appliance adjusted to 70% of the patient's full protrusive position. A therapeutic outcome study, with the appliance set at this position, revealed a reduction of the AHI to 14.6. A repeat therapeutic outcome study, at maximum protrusion failed to reduce the patient's AHI significantly.



### Case 6 - Obese Patient with Mild OSA

This case reveals that in some OSA patients, mandibular protrusion may paradoxically increase airway collapsibility and promote the occurrence of apneas and hypopneas. In this patient with mild sleep apnea, titration to maximum protrusion resulted in an increased number of observed apneas and hypopneas.

#### Patient Profile

- 57 year old female
- Pre-study AHI = 11.5
- BMI = 30.5

#### Dental Assessment

- (OATRx scale readings for titration study)
- Lower Limit (Habitual Bite – 1mm) = 8.0mm
  - Upper Limit (Maximum Protrusion) = 12.0mm

#### MATRx Study Analysis

During the study, the patient slept reasonably well (sleep efficiency = 70.8%), but had an elevated arousal index (37.3). Three REM cycles were observed; two occurring near the end of the study in the supine position. Arterial oxyhemoglobin saturation was normal throughout the study, except for periods of mild desaturation during REM sleep. No periodic limb movements were recorded. Effective mandibular protrusion was not achieved in REM supine (Interval 3), despite titrating to the patient's upper limit (maximum protrusion). Effective mandibular protrusion was only observed in a period of NREM lateral (Interval 1) and in a brief period of REM lateral (Interval 2).

#### Mandibular Titration Summary

Interval 1	Interval 2	Interval 3
NREM cycle; 30 minutes	REM cycle; 14 minutes	REM cycle; 32 minutes
LATERAL position	LATERAL position	SUPINE position
Effective protrusion » mandibular position 9.8–10.5mm	Effective protrusion » mandibular position 11.1–11.4mm	Ineffective protrusion » mandibular position 12.0mm (Upper Limit)

#### MATRx Study Interpretation

**Prediction:** Patient is a predicted failure

#### Therapeutic Outcome

The patient was fitted with a SomnoDent® oral appliance adjusted to 70% of the patient's full protrusive position. A therapeutic outcome study, with the appliance set at this position, revealed an increase in AHI to 24 compared to a pre-study AHI of 11.5.

