



BRUXISMS

**CHARACTERISTICS
and
CONSEQUENCES**

BRUXISMS

The classification of the various forms of bruxism starts from the definition of the terminology used and continues with the anatomical-functional description (which muscles are involved and how they act), the clinical signs, and the corresponding electromyography of the masseter muscle.



In order to have a detailed and complete report, the holter must be set to 24h of monitoring.

It is thus possible to distinguish the possible bruxisms of wakefulness from those of sleep (patients have to report at what time they fell asleep and at what time they woke up).

The holter exam also provides data on the work done by the masseter muscle.



<https://www.dia-bruxo.it>
<https://biotechnovations.com>

All this allows us to have qualitative (bruxisms) and quantitative (muscle work) type of analysis.

The semeiotics refers to the main reason why the holter was done.

The sleep apnea report makes it possible to distinguish patients into two categories (sleep apnea is often accompanied by bruxism episodes).

On the following pages, a collection of the different types of bruxism, accompanied by the relative explanations, follows.

POSSIBLE CONSEQUENCES OF BRUXISMS

Dental

- Usury
- Fracture
- Mobility and migration
- Abfractions
- Increased sensitivity

Periodontal

- Gingival recession
- Bone pockets

Facial pain

- Muscular
- ATM
- Otagia

Headache

Cervicalgia

Tinnitus

Dizziness

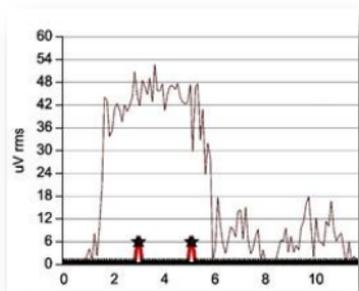


TONIC CLENCHING

Definition

Closure of the mouth with great muscular power, almost isotonic and isometric, with centric or eccentric contact between the dental arches, or without dental contact.

(e.g., the interposition of tongue, lips, cheek, or any object such as pen or pencil) for a period of ≥ 2 seconds.



Muscles Involved

The involved muscles are the elevators of the mandible (masseter, temporal, internal pterygoid).

These act by contracting with high power in an almost isotonic and isometric way for a period ≥ 2 seconds.

Clinical Signs

We can notice masseter and temporal hypertrophy, generalized tooth wear, linea alba, and dental impressions on the tongue, abfractions. An isotonic and isometric muscular action (masseter and temporal) is observed for a time ≥ 2 seconds.

This form of bruxism does not produce tooth rubbing noise.

MASSETER EMG

The electromyography analysis shows an activity of the masseter muscle $\geq 36 \mu\text{Vrms}$ for 2 or more seconds.

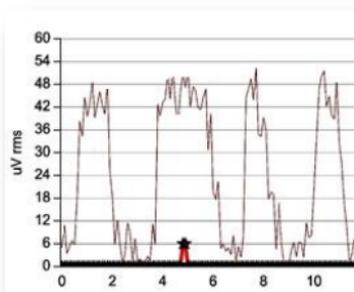
RYTHMIC or PHASIC CLENCHING

Definition

Repeated and alternating episodes (from 2 to 4 every 6 seconds) of mouth closure with great muscular power, almost isotonic and isometric with or without direct dental contact.

Muscles Involved

The involved muscles are the elevators of the mandible (masseter, temporal, internal pterygoid). These act by contracting with an almost isotonic and isometric power, for a time ≥ 0.5 seconds, after which they rhythmically relax (from 2 to 4 episodes every 6 seconds).



Clinical Signs

Masseter and temporal hypertrophy, generalized tooth wear, linea alba and dental impressions on the tongue, abfractions.

There is a rhythmic activity of the masseter and temporal muscles (slower than observed during chewing).

This form of bruxism does not produce tooth rubbing noise.

MASSETER EMG

Electromyography analysis shows a repetitive and rhythmic activity $\geq 36 \mu\text{Vrms}$ (from 2 to 4 episodes every 6 seconds) where each episode has a duration ≥ 0.5 seconds..

LIGHT GRINDING OR RUBBING THE TEETH

Definition

Light dental contact with rubbing of the teeth in a protrusive-retrusive and / or lateral pattern or with combined movements.

Muscles Involved

The main muscles involved are the external or lateral pterygoids while the masseter, temporal and internal pterygoid show a reduced activity, that is enough to cause a slight dental contact.

The external or lateral pterygoid muscles act rhythmically alternatively (lateral movements of the jaw) or contemporaneously (lateral movements of the jaw) or in a mixed pattern (combined lateral and protrusive-retrusive movements of the jaw).

Clinical Signs

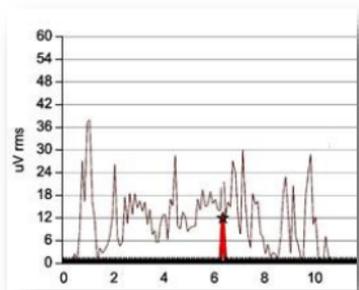
Generalized type of dental wear.

A lateral and / or protrusive-retrusive or combined movement of the mandible is observed, accompanied by noise generated by dental rubbing, that can be more or less intense.

(N.B. this is the only form of bruxism that produces noise).

MASSETER EMG

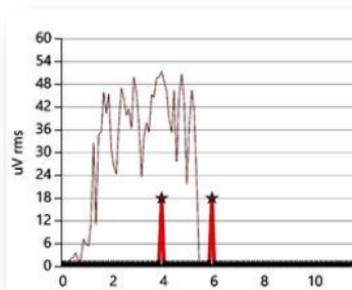
The electromyography analysis of the masseter shows an activity mostly between 10 and 30 μ Vrms and continue for at least 4 seconds.



HEAVY GRINDING

Definition

Strong dental contact in maximum intercuspation accompanied by rhythmic action of the external or lateral pterygoid muscles, which, however, do not produce mandibular movement because the force exerted in intercuspation prevents it.



Muscles Involved

The involved muscles are the elevators of the mandible and simultaneously the external or the lateral pterygoid muscles.

The elevator muscles of the mandible act with sufficient power to determine and maintain maximum intercuspitation. Meanwhile, the external or lateral pterygoid muscles contract rhythmically in an alternating or simultaneous way or together with high power but without making the jaw to move because intercuspation prevents it.

Clinical Signs

Masseter and temporal hypertrophy, periodontal pockets, gingival recessions, linea alba, dental mobility, dental impressions on the tongue.

Non-isometric and isotonic temporal and masseter muscle activity is observed.

No mandibular movements are observed.

This form of bruxism does not produce tooth rubbing noise.

MASSETER EMG

Electromyography analysis demonstrates a considerable masseter activity, mostly between 20 and 40 μ Vrms, and continues for at least 4 seconds.

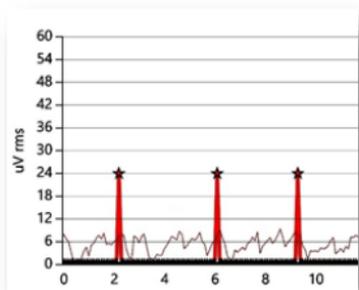
BRACING

Definition

Keeping the mandible locked in a forced manner in a centric, static, and long-lasting position (at least 10 sec) without dental contact.

Muscles Involved

Both the elevating and lowering jaw muscles are involved with an isometric and isokinetic contraction that determines an increase in the antagonistic muscles' tone.



Clinical Signs

The mandible is forcibly immobile, centered, and without contact between the dental arches.

The jaw has difficulties in performing movements in every movement.

This type of bruxism does not produce tooth rubbing noise.

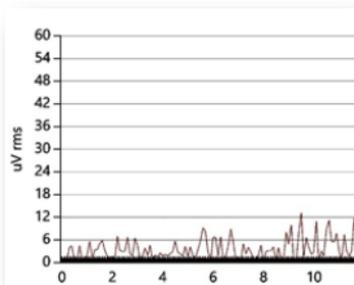
MASSETER EMG

The electromyographic examination of the masseter demonstrates an almost isotonic and isometric activity between 4 and 12 μ Vrms (similar to that which occurs during speech but which differs from the latter due to the minor oscillation of the recording and the fact that in this case, the recorded value always remains above the "0").

THRUSTING OF THE MANDIBLE

Definition

Forcefully pushing and locking the mandible in an eccentric (lateral or protrusive or combined), static, and long-lasting position (at least 10 seconds) without dental contact.



Muscles Involved

Involved muscles are the external or lateral pterygoid with isometric and isokinetic contraction lasting for a long time (at least 10 seconds).

Clinical Signs

The mandible is forcibly motionless, eccentric, and difficult to contract in every movement.

This type of bruxism does not produce tooth rubbing noise.

MASSETER EMG

The electromyography analysis of the masseter shows little or no activity because the muscle is little or not involved at all.

ACTIVITY OF THE MASSETER MUSCLE

The calculation of the masseter's muscular activity refers to the maximum peak detected during the entire observation period (24h), which represents the maximum reference of 100%.

(maximum theoretical work carried out in 24h if the maximum peak detected would be constant for the entire recording period).

It is expressed as a percentage and is the average of the work values instantly recorded in the 24h, referred to as the maximum peak detected.

