

New Individually Adapted Intraoral Electrode for Electromyostimulation of the Geniohyoid Muscle - First Experiences

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Introduction

For electromyostimulation (EMS) of the geniohyoid muscle up to now extraorally applied electrodes or enoral-cutaneous electrodes have been used, which could not safely be placed to the mouth floor due to its anatomical shape.

Material and method

For the preparation of the individual intraoral electrode first a pattern of the lower jaw is produced with special casting of the mouth floor. On the basis of this a negative form of the mouth floor is produced, on both sides of the M. geniohyoideus an electrode is integrated and a feed line is led to the extraoral area. The negative form with the attached electrode can additionally be stabilized by a biteguard splint. In the electrode, the area of the lingual frenulum is left free. The negative form with the electrodes has to be cleaned like a prosthesis and is also applicable for longterm therapy. It is possible to adapt each EMS apparatus to this new device.

Results

The new intraoral device consists of an electrode which is placed to the mouth floor and next to the mylohyoid muscles and is individually adapted to the anatomical form of the mouth floor because it presents the negative shape. The form therefore is attached to the mouth floor without pressure. Due to the negative shape the exact placement of the electrodes is also ensured by additional pressure of the tongue on the electrodes. An additional guidance by a biteguard splint also enhances the stability. First applications in patients over a period of 1 year showed improved comfort and handling of the device.

Conclusions

The individually adapted intraoral mouth floor electrode for EMS is expected to improve the effectivity and comfort of the EMS in therapy of obstructive sleep apnea. Further studies should therefore be carried out.

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