Is the lateral pterygoid muscle palpable?

A pilot study for determining the possibilities of palpating the lateral pterygoid muscle

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Introduction

In numerous studies, the intraoral palpability of the lateral caput of the lateral pterygoid muscle has been questionable because of its topography [Türp and Minagi 2001, Stratmann et al. 2000, Mahlendorf and Stratmann 1989]. Thus, none of the recently published studies has provided reliable proof for or against the possibility of digital intraoral palpation, although palpation of the muscle is part of most of the examination catalogues for clinical functional analysis. Topography: In the infratemporal fossa originating at the lateral pterygoid plate and attached to the condylar process. Function: Protrusion and abduction (bilateral activity), mediotrusion (unilateral activity). Significance of digital palpability: In manual functional diagnostics, the muscle structure and pain sensation can be determined by digital palpation and subsequently treated by functional massage (opening and closing the mouth during digital palpation).

Material and Methods

Inclusion criteria:

2. Course of the examination:
   a. Checking the postulated access pathway based on anatomical preparations (figures 6-8).
   b. Digital palpation of the lateral pterygoid muscle. After laterotrusion of the mandible to the examined side, the index finger is run parallel to the superior alveolar process along the oral vestibule beyond the maxillary tuberosity up to the lateral pterygoid plate. The cranial part of the medial pterygoid muscle is crossed here. During palpation, the palpating finger makes a craniomedical movement at the end.
   c. MRI examination with acquisition of statistic T2-weighted axial slices for verifying bilaterally equivalent muscle conditions. Subsequent determination of the scanning axes and kinematic real-time imaging (true fisp) during intraoral digital muscle palpation. MRI apparatus: Siemens Symphony 1.5 Telsa
   d. Electromyogram: Localization and identification of the lateral pterygoid muscle using an EMG apparatus from the Dantec Co. (Keypoint Portable, Keypoint System Software 3.03). The electrode needle (monopolar lumen electrode from the Medtronic Co. 50 x 0.45 mm) is dorsocranially inserted about 3.5 cm into the middle of the soft-tissue gap, which is formed by the semilunar incisure and the zygomatic bone. For maximal innervation of the lateral pterygoid muscle, the patient is asked to shift the lower jaw in the contralateral direction. The monitor setting is adjusted to 100 ms. The amplification is in the 100-500 µV range.

Figure 1: Palpation of the incisure
Figure 2: Insertion of the electrode
Results

a. Digital muscle palpation was performed intraorally according to the above-mentioned criteria (see 2b, Materials and methods) on five preparations after exposure of the infratemporal fossa and visualization of the lateral pterygoid muscle. Direct digital palpation of the lateral pterygoid muscle was seen in all five cases.

b. The successful palpation was carried out and approved during laterotrusion to the examined side (relaxation). While opening and closing the mouth (contraction) the muscle is palpable.
c. In the real-time kinematic measurements, an impression of the lateral caput of the left lateral pterygoid muscle was found up to 6 mm.

d. Electromyographic detection by direct signal conduction with concomitant palpation is possible. The injection electrode tested in situ in the muscle was felt transorally with the palpating finger.

Conclusions
In contrast to reports in the literature [Türp and Minagi 2001, Stratmann et al. 2000, Mahlendorf and Stratmann 1989], we reliably confirmed the palpation of the lateral pterygoid muscle, which was controlled by two imaging procedures. All three of the procedures confirmed palpation. The difficulty in reliably identifying the muscle seems to be due to the fact that the medial pterygoid muscle must be passed before palpating the lateral pterygoid muscle.

**Literature**

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Introduction

In numerous studies, the intramuscular palpability of the lateral pterygoid muscle has been questionable because of its anatomical location and its small size. However, the recent published studies have provided reliable results in assessing the feasibility of intramuscular palpation, although palpation of the muscle is part of the examination programmes for clinical and functional analysis.

Materials and methods

1. Inclusion criteria: A total of 30 patients (16 women and 14 men) were included in the study. All participants were healthy and free from any contraindications.

2. Course of the examination:
   a. Creating the palpable access pathway based on anatomical considerations
   b. Digital palpation of the lateral pterygoid muscle. After palpation of the muscle on the examined side, the palpating finger is placed parallel to the muscle to assess its size and shape.

3. Results:
   a. In the real-time ultrasonic measurement, the palpable area of the lateral pterygoid muscle was found to have a size of 6 mm.

Discussion

It is possible to palpate the lateral pterygoid muscle. Despite its small size, it is still possible to palpate the muscle. The palpation of the muscle seems to be due to the fact that the lateral pterygoid muscle must be palpated before palpating the transverse tarsal muscle.

Conclusion

The basic requirement for successfully palpating the lateral pterygoid muscle is careful knowledge of muscle anatomy and the intramuscular palpation. After documented palpation, the muscle is palpated in order to evaluate the feasibility of intramuscular palpation. The findings suggest that the lateral pterygoid muscle is palpable in most cases. The palpation technique seems to be essential and beneficial for clinical practice.

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Literature