Entrance Examination for Tokyo Dental College Graduate School, Feb 28. 2026

No Name

Test 1 Based on the contents from "**Dual attachment of the buccinator muscle at the pterygoid hamulus: implications for pterygoid implant surgery**" (Yang T et al. 2025 DOI: 10.1186/s40729-025-00663-1)", please answer the following questions.

1. Translate the sentence (underline ①) into Japanese.

2. Explain what can be revealed by this research method in Japanese (underlined ②).

3. Explain the attachment of the buccal muscles to the pterygoid hamulus in Japanese.

4. In summary, what does this paper report? Describe in Japanese.

Purpose: Pterygoid implants are a viable alternative to sinus-lifting procedures; however, their placement may risk damaging adjacent soft tissues (underline ①). This study aimed to clarify the morphology of the buccinator muscle (Bu), particularly its attachment to the pterygoid hamulus, and to assess the risk of injury during implant surgery.
Methods: Cadaveric dissection, histological analysis, and micro-computed tomography were performed (underline ②). Bone morphometry was used to evaluate the maxillary tuberosity. Histological sections were analyzed to measure the distance between the Bu and the maxillary tuberosity, as well as to examine its attachment to the pterygoid hamulus.
Results: Substantial individual variation was observed in the shape and bone density of the maxillary tuberosity, with some specimens exhibiting low bone volume fraction (BV/TV). The Bu was located immediately posterior to the tuberosity at the root of the pterygoid hamulus (mean: 0.61 mm), but more distant at the tip (mean: 2.37 mm). The muscle exhibited a dual mode of attachment: tendinous at the root and periosteal at the tip. Implant perforation near the root may therefore pose a higher risk of muscle injury.
Conclusions: This study revealed a dual attachment of the buccinator muscle to the pterygoid hamulus and emphasized its close proximity to the maxillary tuberosity. Additionally, low BV/TV values in some specimens highlight the anatomical variability of this region. Understanding individual differences in bone structure and the precise location of soft tissue attachments is essential for safer and more predictable pterygoid implant placement.