

Masseter muscle atrophy impairs bone quality of the mandibular condyle but not the alveolar process early after induction

Balanta-Melo, Julián

Torres-Quintana, María Angélica

Bemmann, Maximilian

Vega, Carolina

González, Constanza

Kupczik, Kornelius

Toro-Ibacache, Viviana

Buvinic, Sonja

© 2018 John Wiley & Sons LtdBackground: Masseter muscle function influences mandibular bone homeostasis. As previously reported, bone resorption markers increased in the mouse mandibular condyle two days after masseter paralysis induced with botulinum toxin type A (BoNTA), followed by local bone loss. Objective: This study aimed to evaluate the bone quality of both the mandibular condyle and alveolar process in the mandible of adult mice during the early stage of a BoNTA-induced masseter muscle atrophy, using a combined 3D histomorphometrics and shape analysis approach. Methods: Adult BALB/c mice were divided into an untreated control group and an experimental group; the latter received one single BoNTA injection in the right masseter (BoNTA-right) and saline in the left masseter (Saline-left). 3D bone microstructural changes in the mandibular condyle and alveolar process were determined with high-resolution microtomography. Additionally, landmark-based geometric morphometrics was impl