Computed Tomography and Magnetic Resonance Imaging of the Equine Temporomandibular Joint Anatomy: Technique and Normal Appearance in Cadaveric Specimens

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Computed tomography and magnetic resonance imaging of the equine temporomandibular joint may be useful to achieve an early diagnosis of clinical problems related to this joint and its surroundings. Authors’ addresses: Department of Medicine and Surgery, Veterinary School, University of Murcia, 30100 Espinardo, Murcia, Spain (Rodríguez, Agut, Soler); Department of Anatomy and Comparative Anatomy, Veterinary School, University of Murcia, 30100 Espinardo, Murcia, Spain (López-Albors, Latorre); and Faculty of Veterinary Medicine and Zootechny, Autonomous University of the State of Mexico, Mexico D.F. (Arredondo); mjrodri@um.es. © 2009 AAEP.

1. Introduction
Difficulties in diagnosing temporomandibular joint (TMJ) disorders may be because of its anatomical complexity, especially when radiography is used. Little previous attention has been given either to computed tomography (CT) and magnetic resonance imaging (MRI) protocols or to the interpretation of the structures displayed in the images of the normal joint in horses. The aim of this study was to provide a CT and MRI atlas of the normal sectional anatomy of the equine TMJ.

2. Materials and Methods
TMJs from 12 Spanish Purebred cadaver horses underwent CT and MRI examination. CT scans were processed with an appropriate algorithm in transverse, sagittal, and dorsal planes. The MRI protocol consisted of four sequences (spin-echo T1-weighting, gradient-echo T2-weighting, fat-suppressed fast proton density weighting and fast spin-echo T2-weighting) in oblique sagittal, transverse, and dorsal planes. Anatomical cryosections were obtained for each plane (1 plane/articulation) and then photographed and plastinated to assist the interpretation.

3. Results
From CT scans, the articular surfaces, articular cartilage, subchondral bone, and other osseous components were assessed, accurately showing different levels of attenuation, although soft tissues were poorly visualized. By MRIs, both bone and soft tissues were evaluated simultaneously, showing variable signal intensities.
4. Discussion

Transverse and sagittal planes were the most informative planes in both studies. CT is an excellent method to evaluate bony TMJ structures, whereas MRI enables simultaneous assessment of both bone and soft tissues with high resolution. The imaging technique should be selected depending on the pathology suspected and the patient’s condition, because the time of anesthesia in MRI examinations take longer than in CT examinations.