Distinguishing Between Temporomandibular Joint Luxation and Open-Mouth Jaw Locking
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Introduction
Luxation of the temporomandibular joint (TMJ) is often confused with open-mouth jaw locking. Both conditions may present with inability to close the mouth, but their causes, manifestations and treatments differ. A diagnosis is made by means of clinical examination and radiography (e.g., dorsoventral view). Luxation of the TMJ can usually be resolved with a pencil placed between the maxillary and mandibular carnassials and then closing the mouth. However, the same treatment modality is impractical and will cause further trauma and pain to the patient with open-mouth jaw locking.

Temporomandibular Joint Luxation
Luxation of the TMJ occurs as a result of trauma, with the mandibular condyle usually displaced in a rostrodorsal direction. The lower jaw then shifts forward and to the contralateral side, resulting in the inability of the animal to close its mouth due to abnormal contact between the maxillary and mandibular canine and cheek teeth (Figure 1). Caudal displacement of the mandibular condyle is rare, but may occur with fracture of the retroarticular process of the temporal bone. Radiographic examination facilitates diagnosis of TMJ luxation. A dorsoventral radiographic view will show an increased width of the joint space and displacement of the mandibular condyle. Lateral oblique views are also useful in establishing a diagnosis.

Reduction of rostrodorsal TMJ luxation is achieved by placing a hexagonal wooden pencil between the maxillary fourth premolar and mandibular first molar teeth on the affected side only and forcing the mouth closed. If the luxation is on the left side, the pencil should be rotated clockwise to facilitate repositioning of the mandibular condyle into the mandibular fossa (counterclockwise if the luxation is on the right). Following reduction the TMJ capsule may be lax and the mandibular condyle unstable. A tape muzzle for 2 to 4 weeks will prevent the patient from opening the mouth wide, thus reducing the likelihood of recurring displacement. Chronic luxation is treated by condylectomy.

Open-Mouth Jaw Locking
Dysplasia of the bony and/or soft tissues of the TMJ is congenital or acquired during life and has primarily been reported in Persian cats and dogs such as Bassets. It may result in increased laxity of the TMJ capsule and open-mouth jaw locking. Yawning often precipitates an event. In contrast to rostrodorsal TMJ luxation, there is no contact between maxillary and mandibular teeth, and the patient presents with its mouth wide open (Figure 2). A dorsoventral radiographic view will reveal the coronoid process of the mandible having flared laterally, locking onto or ventrolateral to the zygoma. Computed tomography is of academic interest and may not be necessary to make a diagnosis. An ipsilateral protuberance on the ventrolateral aspect of the zygomatic arch may be visible or palpable, particularly in very lean patients. Locking occurs on the opposite side of the dysplastic joint. However, both joints can be affected, and manual locking of the apparently unaffected side should be attempted under sedation or anesthesia prior to surgical treatment. Open-mouth jaw locking can also occur without TMJ dysplasia as a result of trauma.
Acute open-mouth jaw locking is treated by opening the mouth further to release the coronoid process from the ventrolateral aspect of the zygoma, and then closing the mouth. Tape muzzling is a temporary solution. Definitive treatment involves partial coronoidectomy, partial zygomectomy, or preferably a combination of both.\textsuperscript{1,3,5,6} A curvilinear incision is made parallel to the zygoma, muscle attachments are dissected from the bone with a periosteal elevator, and the coronoid process locked ventrolateral to it is identified. A segment of the zygoma and a portion of the coronoid process are removed with a rongeur, followed by closure of the surgical site.

\textbf{References}


\begin{figure}[h]
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\includegraphics[width=\textwidth]{figure1.png}
\caption{Photograph (left) and dorsoventral radiographic view (right) of the head of a cat with left rostrodorsal TMJ joint luxation. Note shifting of the lower jaw to the right and contact between the right maxillary and mandibular canines (thick circle) and cheek teeth (thin circle). The left mandibular condyle (asterisk) is displaced rostrodorsally. R=right side.}
\end{figure}
Dental Quiz

Figure 2: Photograph (left) and dorsoventral radiographic view (right) of the head of a cat with open-mouth jaw locking. Note no contact between maxillary and mandibular teeth (double-ended arrow). The left mandibular coronoid process (asterisk) is locked ventrolateral to the zygoma. R=right side.

Dental snapshot
Illustrative Case Report

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