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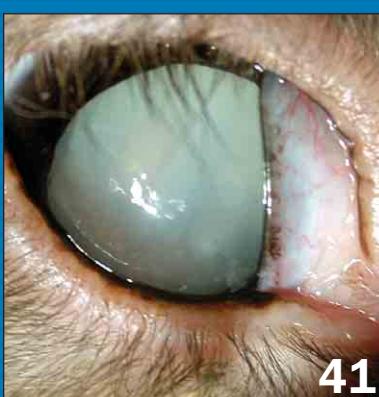
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Endoscopic Assessment and Treatment of Cheek Teeth Malocclusion in Pet Rabbits

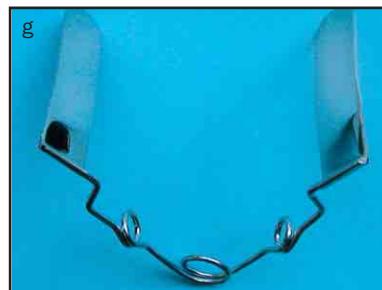
Vittorio Capello, DVM

ADVANTAGES OF ORAL ENDOSCOPY IN RABBITS

- Very simple endoscopic procedure
- Does not require particular skill
- Allows thorough inspection of the oral cavity
- Offers a magnified perspective of dental disease
- Highly reduces the risk of missing lesions or an early diagnosis
- Facilitates coronal reduction and other therapeutic procedures
- Facilitates endotracheal intubation
- Allows observation of the clinical case by multiple veterinarians
- Allows documentation of images for a database that can be shown to the owner to illustrate pathology

Resources at a Glance

- Endoscopic equipment: 18-cm, 2.7-mm, 30° rigid endoscope, light source and light cable, video camera for endoscope, monitor, recording device (a) - Karl Storz Veterinary Endoscopy, www.karlstorzvet.com
- Heavy-duty flex shaft tool with foot control speed lever (b) and 12.7-mm hand piece (c), steel and silicon burrs (d,e) - Dremel, www.dremel.com
- Soft tissue protector for straight nose cone (f), rabbit cheek dilator (g), rabbit spatula for tongue (h) - Sontec Instruments, Englewood, CO, www.sontecinstruments.com; Veterinary Instrumentation, Sheffield, UK, www.vetinst.com



Normal Endoscopic View



Fig 1. Shown is the appearance of the entire oral cavity upon introduction of the rigid endoscope. The light pink area on the dorsal aspect of the tongue, pictured in the center of the photo, is the torus. The lower cheek teeth arcades are visible lateral to the tongue on each side.



Fig 2. Lower right dental arcade. Rabbits have 5 lower cheek (2 premolars and 3 molars), all with similar anatomy. The normal occlusal plane is roughened to allow crushing of vegetation. Light spurring of the medial aspect of the cheek teeth is also normal (see inset).



Fig 3. Upper right dental arcade. There are 6 upper cheek teeth in rabbits (3 premolars and 3 molars), the only anatomic difference among them being that the 6th tooth is smaller than the others. The crowns of the upper cheek teeth are shorter than those of the lower ones, and the upper dental arcade is normally curved with a slight lateral convexity.

Endoscopic Patterns of Acquired Dental Disease

Many different endoscopic patterns may be recognized in cases of acquired dental disease and secondary pathology involving both hard and soft tissues, and the severity of the pathology can be staged. Endoscopic evaluation and diagnosis are particularly important when the cheek teeth are maloccluded, because the patient's clinical signs may only be mild or may be absent altogether. Compared to radiography, endoscopy allows a more detailed examination of the oral cavity.

Early diagnosis is the key to early treatment and resolution of lesions involving soft tissues of the gum, tongue and oral mucosa, which can be a source of constant pain for the pet rabbit. Prompt treatment will also thwart progression of dental disease.

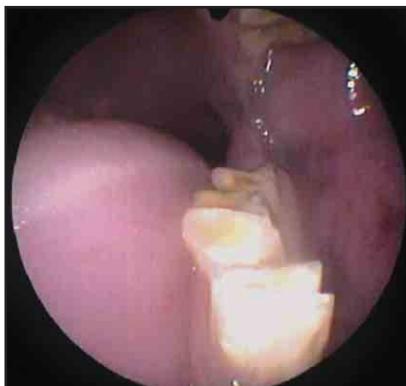


Fig 4. The early stage of malocclusion is represented by excessive and irregular crown elongation. The occlusal plane is no longer regular, with differences in height of a few millimeters between one tooth and its neighbor. This stage is called "step mouth." Moreover, the entire tooth begins to curve, predisposing to development of spurs.



Fig 5. A similar pattern of malocclusion is called "wave mouth." In this case, the gaps between teeth are smaller than with "step mouth," and the occlusal plane is cranio-caudally curved like a wave. In cases of both "step mouth" and "wave mouth," sharp spurs are not present; therefore, clinical signs may be mild or absent.

Endoscopic Patterns of Acquired Dental Disease (continued)



Fig 6. The most commonly diagnosed stage of malocclusion involves dental spurs on one or more teeth. Spurs are usually most pronounced on the medial aspect of the lower cheek teeth where they are directed toward the tongue. These sharp, overgrown points are due to continuous growth of the tooth in a curved direction such that the medial aspect of the tooth is not worn down.



Fig 7. Overgrown teeth can impinge on the tongue and affect chewing and swallowing. At this stage, clinical signs are detectable as "chewing without food," reluctance to chew, selection of a particular food, excess salivation and signs referable to gastrointestinal disorders. The signs are most severe when spurs are present bilaterally, such as in this case.



Fig 8. The upper cheek teeth can also demonstrate overgrowth and curved growth subsequent to malocclusion of the lower teeth and decreased food intake. Spurs involving the upper cheek teeth are typically directed laterally, causing ulcerations of the mucosal surface of the cheek. Clinical signs are usually less severe than those associated with spurs on lower cheek teeth.



Fig 9. Tongue lesions are a common result of spurs involving the lower cheek teeth. Even if the spur is not particularly developed, the edge can be very sharp and lacerate the lateral aspect of the tongue (arrow). Following the development of these lesions, the rabbit may become completely anorexic or demonstrate pronounced hypersalivation.



Fig 10. Anorexic rabbits may eventually be able to adapt to severe tongue lesions caused by unilateral spurs. This photo demonstrates a very long, sharp spur involving the 2nd lower right cheek tooth, which has caused severe ulceration of the tongue. According to the rabbit's history, this tongue lesion was likely present for many months, and its margins are partially healed.



Fig 11. Periapical infections and abscessation of cheek teeth are common complications of acquired dental disease. This photo demonstrates abundant purulent material exiting a fistula from a periapical abscess involving the 3rd right lower cheek tooth.

Endoscopic View of Intraoral Treatment of Cheek Teeth



Fig 12. A diamond rasp can be used to reduce a sharp spur on a cheek tooth. In the author's experience, however, use of this instrument is not particularly efficacious and poses the risk of fracturing the tooth. Manual rasping is not sufficient to reduce the extreme growth of many molar spurs.



Fig 13. A "molar cutter" has been specifically designed for cutting molar crowns. The author strongly discourages this procedure, because it is likely to result in longitudinal fracture of the cheek tooth. However, a molar cutter may be used to cut single, small, sharp spurs, as illustrated. Alternatively, spurs can be removed by burring, but this may increase the risk of damage to adjacent soft tissues.



Fig 14. Treatment of cheek teeth malocclusion is a delicate procedure that can be performed with the use of the Dremel flex shaft tool with foot control lever and the smallest handpiece. Alternatively, a professional dental unit may be used. A steel burr is positioned close to this severely overgrown 1st lower cheek tooth. The tongue is manipulated and protected by a spatula.

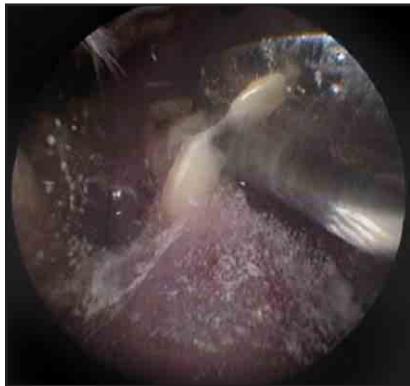


Fig 15. The rotating burr reduces excess crown length. In this photo, the tip of the endoscope is placed close to the burr for demonstration purposes, but the operator has to carefully avoid accidentally damaging the endoscope with the burr.



Fig 16. The tooth is moistened with saline before and during trimming to reduce the risk of thermal damage and the production of "tooth dust," which can be removed with cotton swabs.



Fig 17. A silicone or aluminum dioxide head can be used for properly shaping the crown. This softer material allows more precise contouring and reduces the risk of lesions to the gum and tongue. All cheek teeth must be burred to the same height in order to restore a proper occlusal plane.

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