

Managing Rabbit Dental Disease and Owner Expectations for the Referring Veterinarian



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April 2025

Introduction

Rabbits are the third most popular companion mammal in America, behind dogs and cats, with an estimated 1.5 million households owning them, according to the AVMA.¹⁵ Dental disease is one of the most common disorders of rabbits, affecting 10% or more of rabbits presenting to referral hospitals and up to 40% of rabbits considered healthy by owners.^{9,6} Dental disease tends to be overwhelmingly due to incorrect diet, and severe disease can occur as early as 4 months of age.⁶ It is important to continually assess dentition in any rabbit presenting either for wellness or emergency medical care and to have husbandry discussions with owners right away to reduce the risk of serious progressive disease.

Dental Anatomy and Causes of Disease

Rabbit dental anatomy is highly unique, and understanding it is integral to diagnosing, assessing, and treating dental disease. It is highly recommended to review the information found here: [Dentition and Disease of the Domestic Rabbit \(*Oryctolagus cuniculus*\)](#) by MSPCA Angell's Brendan Noonan, DVM, DABVP.⁸

RABBIT DENTAL ANATOMY

NORMAL SKULL AND TEETH

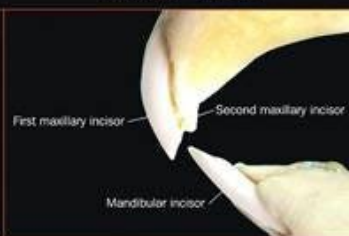
Lateral View



Cheek Teeth

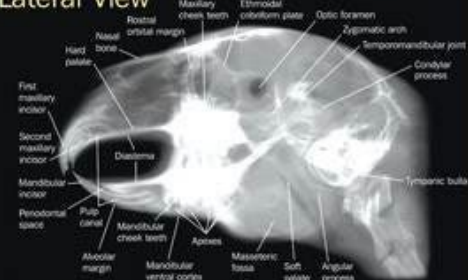


Incisor Teeth



NORMAL RADIOGRAPHS

Lateral View



Lateral Oblique View



Ventrodorsal View



NORMAL GROSS ANATOMY

Incisor Teeth



NORMAL ENDOSCOPY

Endoscopic View



DENTAL FORMULA

2I	0C	3P	3M	
1I	0C	2P	3M	= 28

Rabbit dental anatomy chart.³

Diagnosis and Clinical Signs

Rabbits often present emergently with vague clinical signs of reduced appetite and defecation, summarily labeled “GI stasis”. However, “GI stasis” is not a diagnosis; rather, it is a collection of clinical signs, including hyporexia to anorexia and reduced to absent fecal production. GI stasis can be caused by anything from stress to organ failure and everything in between, most certainly including dental disease. Other clinical signs that can indicate underlying dental disease include ptyalism, moist dermatitis of the chin and/or neck, change in feed preferences, quidding (spitting out partially chewed feed), bruxism, facial masses, exophthalmia, ocular discharge, and respiratory disorders.^{13,6}

A combination of physical exam and imaging should make the diagnosis. The physical exam should involve an extraoral assessment with palpation along the maxilla and mandible to assess for swellings, bony irregularities, lack of symmetry, or moisture. Additionally, an intraoral exam should be performed by direct visualization of the incisors and with an otoscope featuring a wide-diameter cone, or, if available and with some training, a bivalve nasal speculum, to view the cheek teeth. The cheek teeth arcades should

be assessed for wavemouth or stepping of the arcade (some teeth in the arcade being taller than others), points (also observe and note any suspected gingival proliferation of the maxillary gums, as this can hide the severity of buccal points), and ulcerations of the tongue or cheeks. In cases of more severe infection, you may see or smell purulent material and/or brown, misshapen, or missing teeth.

Intraoral exam, while necessary, is inherently limited by the small gape of a rabbit and only reveals about 20% of potential disease.¹ Skull radiographs or CT can be utilized for imaging, though CT is largely preferable. If taking skull radiographs, deep sedation is needed for exact positioning for truly diagnostic images. Essential views of the head include laterolateral (LL), right-to-left and left-to-right latero-oblique (LO), and dorsoventral (DV) or ventrodorsal (VD).⁵ Rostrocaudal and intraoral views assess other specific areas.⁵

CT also requires sedation, although a CT scan can often be achieved with lighter sedation in a faster timeframe, as positioning is simpler. Furthermore, with a CT assessment, superimposition is inherently avoided, image quality is improved, and 3D visualization enables superior assessment, resulting in an 80% increase in diagnosis accuracy and over a 56% increase in guiding extraoral treatment plans.²

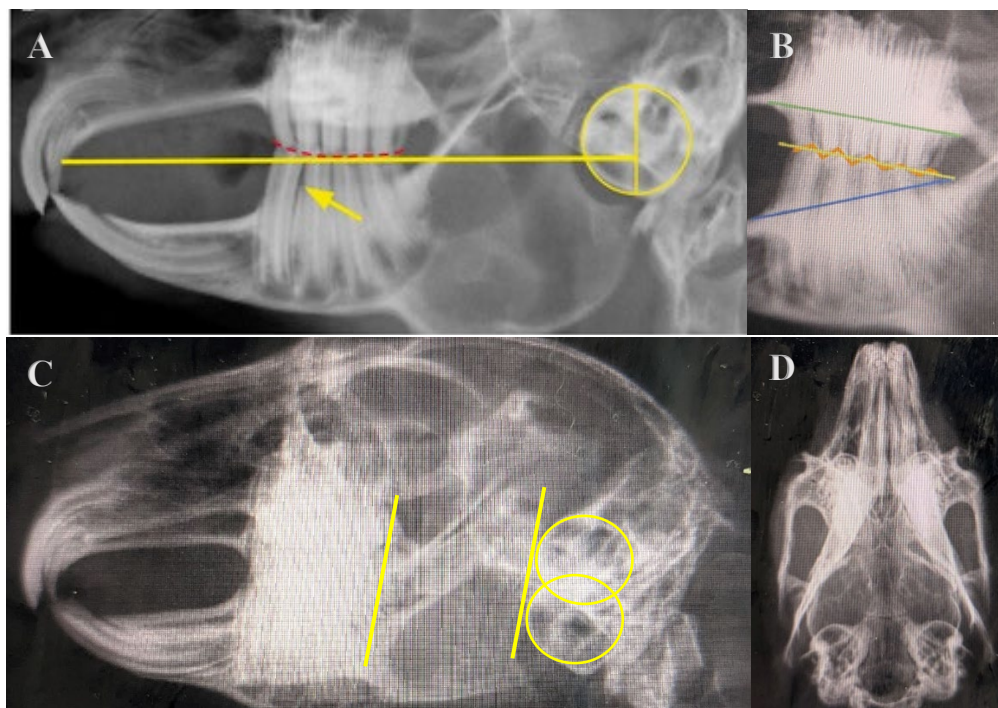


Figure A. LL - applied Böhmer and Crossley anatomical reference line shows elongation of the first mandibular premolar causing bending, a widening adjacent space (arrow), and subsequent caudal slant to the maxillary occlusal surface (red dashed line).¹ **Figure B.** LL - normal cheek teeth with lines showing occlusal surface (orange), common axis (yellow), hard palate (green), and mandible dorsal margin (blue).⁵ **Figure C.** LO - proper alignment of a 10 to 20 degree rotation showing tympanic bullae overlap (yellow circles) and parallel angle of arcades and bullae (yellow lines), both R and L should be taken.^{5,14} **Figure D.** VD - DV is also acceptable.³

Treatment, Prognosis & Setting Expectations

Animals that present in unstable or weakened states should be stabilized and have supportive care prior to addressing their dental disease in more depth. This often will involve subcutaneous fluids (60 to

100mL/kg/day split over BID to TID administration, depending on potential heart disease and level of dehydration), analgesia (buprenorphine or hydromorphone SQ in hospital, meloxicam 1mg/kg q24, gabapentin 5-15mg/kg PO q8-12h, tramadol 10mg/kg PO q8-12h if needed at home), and syringe feeding with a critical care herbivore diet at 50mL/kg/day split over TID administration. It is always preferred to have a CBC and Chemistry Panel performed prior to sedation, anesthesia, and NSAID use to assess systemic health. Owners should be informed that anesthesia carries a 1.39% to 4.8% risk of anesthetic death if the patient is systemically healthy versus sick, respectively, compared to 0.1% to 0.2% in dogs/cats. However, it is necessary for the chronic management of dental disease.¹⁰

Management, Not a Cure

It is imperative to provide clear, compassionate, and practical information that emphasizes the chronic nature of the condition and the necessity of ongoing care with frequent follow-up. Owners must understand that once disease is present, medical care is entirely about management, not a cure. There are several ways to manage this process, depending on the severity, extent, location of the disease, and owner factors, including finances, willingness to accept risk, and compliance with home care.

Explaining the dental anatomy of rabbits and how the continuous growth of their teeth can initiate a progressive cycle of malocclusion helps enable owners to understand why ongoing management is so important. It must be discussed that often numerous arcades are affected, malocclusion is progressive, and the start or relapse of infection is not uncommon. Note that extraction and debridement may be required to treat infection, but can result in chronic malocclusion, which needs to be assessed with regular dental trimmings. Rechecks with an awake intraoral exam at a minimum, and imaging ideally, are recommended every four to six months for life. Management is a lifelong process that requires regular rechecks, good compliance with at-home care and monitoring, and often a significant financial investment, regardless of the chosen management method. Potential exceptions may be purely palliative care or management of acute, mild, and quickly treated cases of dental disease.

Proper Diet

A proper diet and continuous chewing are essential for maintaining rabbit teeth; disease will progress if the diet is not suitable. Hay should always be available and continuously eaten. Timothy hay is the ideal roughage; however, some rabbits will not eat this, especially if they are already experiencing dental pain. Softer hays, such as those from orchards and botanical sources, can also be offered. Alfalfa hay should never be offered; it is high in protein and calcium and can lead to obesity and calciuria or urinary stones. Pellets should be limited to 1/8 cup once or twice daily and consist of Timothy hay with no added seeds or fruits. Rabbits that are fed *ad lib* pellets often underconsume hay, leading to dental overgrowth due to a lack of wear. Toys and rabbit-safe sticks are good forms of enrichment, but they will not help manage dental disease.

Dental Trimming

It is important to address the need for deep sedation or anesthesia for trims, as well as owner concerns about cost, time, and safety. It is essential to note that rabbits have a narrow mouth opening and are often resistant to oral examinations. With an unsedated exam, it is impossible to fully assess dental disease, let alone properly treat it. The jaw must be fully relaxed to determine disease severity, ensure proper

occlusion after correction, and decrease the risk of severe trauma and stress. Furthermore, incorrect trimming of teeth can cause worsened malocclusion, and an occlusal angle of 10 degrees must be maintained to prevent further progression of the disease. Finally, improper tools risk fractured teeth and gum trauma. Incisor overgrowth or malocclusion can often be more easily corrected with the use of a Dremel diamond wheel and a tongue depressor used as a tissue guard, either while awake or under light sedation. However, cheek tooth elongation, points, and malocclusion require general anesthesia and special equipment for proper grinding and safety.

Odontogenic Abscesses

Inform the owner that there are several options for treating abscesses, and that these cases can have very challenging long-term management needs, often requiring frequent procedures and imaging. The importance of proper antibiotic use, pain control, imaging, and nutritional support should be emphasized. It is also important to discuss with owners the unique caseous nature of rabbit pus and that lancing and draining are not an effective or cost-saving treatment. Instead, anesthetized procedures to fully debride abscesses and perform antibiotic packing, as well as marsupialization with or without flushing of the site at home, may be necessary to resolve abscesses. Additionally, potential tooth extraction and orofacial surgery may be required to resolve the abscesses.^{14,7} Rabbits treated solely with systemic antibiotic therapy have about a 25% to 31% abscess resolution rate, depending on whether antibiotic selection is empiric or guided by culture, respectively, while surgical intervention can result in a 90% to 93% rate of resolution.⁷ However, owners must be informed that resolution relies heavily on owner compliance with medications, wound care, and diet at home, as well as regular follow-up exams, imaging, and potentially procedures. The recurrence rate for odontogenic abscesses ranges from 8% to 16%, and the disease-free time after resolution varies from four to sixty months, with a mean of 29 months.⁶

When facing the need for antibiotic use, remember that penicillins, lincosamides, macrolides, and cephalosporins are toxic when given orally to rabbits. Culture is always recommended. The best samples to submit include a piece of an abscess capsule or infected tooth or bone; thus, obtaining a sample may not even be possible until a procedure is performed. When empiric antibiotic use is necessary prior to debridement, or when palliative care only is elected and culture is declined or sampling is not possible, consider antibiotic stewardship, bone penetration, and common bacteria associated with these abscesses. Odontogenic abscess flora typically consists of a mixture of gram-positive and gram-negative aerobes and anaerobes.⁷ Trimethoprim sulfa 25-30mg/kg PO q12h is a recommended first-line broad-spectrum antibiotic to prescribe prior to the return of culture results, which has been shown to be effective against many common bacterial isolates from these abscesses.¹⁴ Fluoroquinolones, azithromycin, and beta-lactams have good bone penetration; however, fluoroquinolones are second-tier drugs and should be avoided when possible for empirical use. Azithromycin is slightly more likely to cause gastrointestinal upset and is less broad-spectrum; beta-lactams cannot be given orally. Penicillin Procaine G at a dose of ~65,000 IU/kg SQ q24-48h is a suitable first-line antibiotic with bone penetration, effective against many common odontogenic bacteria. However, this treatment requires consistent administration by the owners and requires careful cleaning of any spilled drug immediately to prevent accidental ingestion. Chloramphenicol is an effective second-line oral alternative, but the risk of aplastic anemia to the owner must be discussed. Metronidazole 20mg/kg PO q12h is an appropriate and effective choice for coverage of anaerobes.

Take Home Points

When preparing to refer a rabbit for dental disease management, it is essential to clarify that dental trims are not a one-time fix. A proper diet and compliance with recommended home care are crucial, and treatment plans can change drastically based on the severity and progression of the disease; therefore, regular follow-up is required. The frequency of trims, medications, and potential other interventions depends on the specific nature of the dental disease and the rechecks, which may require imaging, sedation, or anesthesia, as well as revision procedures. Before treating or referring, it is essential to set clear expectations about what managing dental disease entails, including the time, financial investment, and prognosis, based on the individual patient's case as well as a comprehensive understanding of rabbit dental disease. Reinforce that early intervention can dramatically improve quality of life and overall prognosis.

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