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Brief Overview of Dental Disease in Pet Rabbits

P Profile

Definition

Dental disease in rabbits can be *congenital* or *acquired*, and can involve incisors, cheek teeth, or both. Primary disease of incisors often produces secondary disease of cheek teeth, or vice versa.

Incidence/Prevalence

Exact data on the incidence of dental disease in rabbits are unavailable; however, exotic animal practitioners report it as a common presentation in practice. There appears to be no sex predilection.

Causes

Congenital dental disease is secondary to jaw malformation. For *acquired* dental disease, there are 2 leading theories regarding the cause: 1) inadequate wearing of teeth due to inappropriate diet (ie, a diet low in high-fiber hay), and 2) metabolic bone disease leading to thinning of the jawbone and alveolus. Dental disease is also produced by traumatic injury to the jaw or teeth.

Risk Factors

Rabbits that are receiving inappropriate diets (low-fiber pellet mixtures, grains, seeds, and nuts) appear at higher risk and comprise the majority of patients in clinical practice. However, many rabbits receiving poor diets do not develop severe dental disease, suggesting that other unknown factors may play a role.

Pathophysiology

All rabbit teeth continually grow throughout the life of the animal. In the normal rabbit, incisors and cheek teeth are maintained at proper length and shape by the action of teeth upon teeth during normal chewing and jaw movements. Any condition that disrupts normal wear can lead to elongation and dental disease.

Signs

History. Some owners may notice substantially abnormal or overgrown incisors, or facial swellings produced by dental abscesses. However, patients can present with a variety

of clinical signs, many seemingly unrelated to disease of the oral cavity (**Table 1**).

Physical Examination. Any of the signs noted in Table 1 can be detected at physical examination. Careful examination of the incisors can reveal subtle deviations in length and shape. Examination of the oral cavity of the conscious rabbit with an otoscope or other similar device can reveal abnormalities of cheek teeth. However, dental lesions are commonly missed with this technique; it must never be used to rule out dental disease in patients with clinical signs or histories suggesting otherwise.

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Table 1. Clinical Signs Associated with Dental Disease in Rabbits

Clinical Sign	Significance
Decreased food intake, anorexia	Pain, dysphagia
Weight loss	Pain, dysphagia
Teeth grinding	Often indicates discomfort
Ptyalism	Suggests oral lesions
Ocular discharge	Tooth root compression of nasolacrimal duct (elongation of roots of maxillary cheek teeth or incisors)
Perineal soiling	Discomfort, stress, inability to groom because of incisor abnormalities
Soft stool/diarrhea	Stress, inability to consume normal high-fiber diet
Exophthalmos	Retrolbulbar abscess of caudal maxillary cheek teeth
Facial dermatitis	Secondary to ptyalism
Facial masses	May represent dental abscesses

Dx Diagnosis

Definitive Diagnosis

Complete evaluation of dental disease in rabbits requires at minimum full oral examination performed under anesthesia and skull radiographs. Anesthetic protocols for rabbits are described elsewhere. Oral examination is greatly facilitated by endoscopy. Proper instrumentation is required for thorough evaluation (Table 2, Figure 1).

Imaging

Dental radiology is critical for evaluating tooth roots, staging dental disease, and determining the degree of overgrowth (Figure 2). Radiographs taken after a procedure help determine whether correction or reduction is adequate. Five views are required for complete evaluation: lateral, right oblique, left oblique, dorsal/ventral or ventral/dorsal, and rostral/caudal. Dental radiographs must be of excellent quality in terms of both technique and positioning. Computed tomography of the skull is extremely useful to help characterize dental disease in rabbits.



Tabletop mouth gag with cheek spreaders for positioning of the rabbit or rodent for dental evaluation. Note the endotracheal tube taped into position.

Tx Treatment

The goals of treatment of dental disease are to restore incisors and cheek teeth to as close to normal length and shape as possible; control infection (including abscesses), inflammation, and pain; and address secondary disease processes (see Table 1).

Restoration of Length & Shape

Normal length and shape are restored by using precision dental equipment (Figure 3). Efficacy of treatment is determined by oral examination and evaluation of postprocedural radiographs.

The ideal handpiece is straight, with long-shank burs rotating at 25,000 to 50,000 revolutions per minute. Higher speeds are too dangerous and lower speeds are less effective and can create excessive thermal injury as more pressure is used to compensate for

inadequate speed. Burr shape is largely based on surgeon preference. The author prefers conical silicon and round metal burs.

The use of cutting instruments to reduce the length of teeth should be avoided—they cannot restore normal shape and can result in rough, jagged edges and iatrogenic fracture of the reserve crown, leading to dental abscesses.

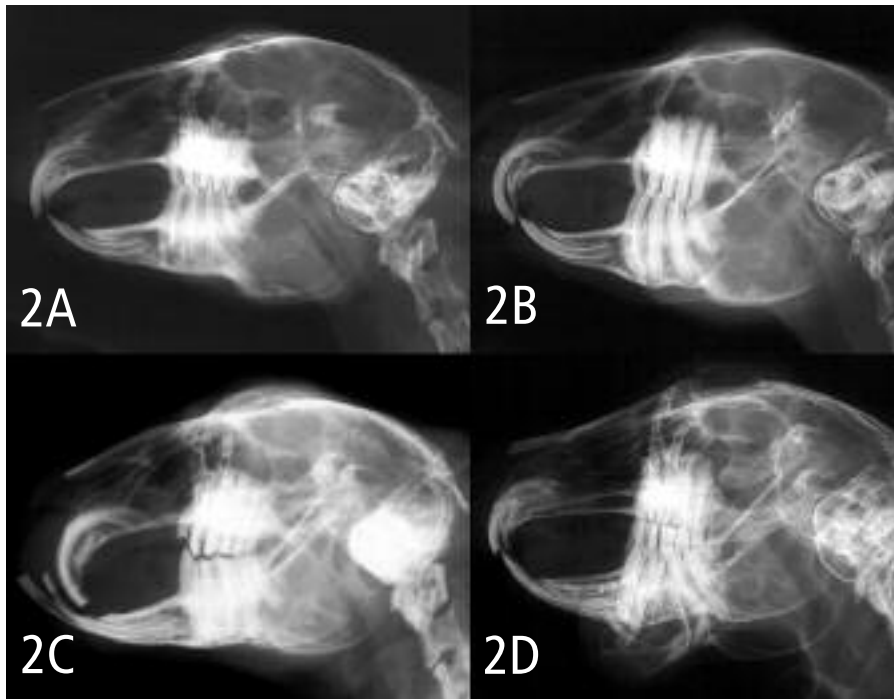
Extractions

Teeth that are loose or abscessed should be extracted by using intraoral or extraoral approaches, depending on tooth location and accessibility (Figure 4). In addition, early extraction of traumatically fractured teeth prevents the onset of secondary complications.

Extraction of normal opposing cheek teeth is not recommended because the procedure is

Table 2. Instrumentation for Diagnosis & Treatment of Dental Disease in Rabbits

Rabbit mouth speculum
Tabletop rabbit mouth gag
Cheek spreaders, various sizes
Spatula
Crossley cheek tooth extractor
Crossley incisor extractor
Dental probe
Extraction forceps
Moist cotton tip applicators
Variable-speed dental equipment for burring



Lateral radiograph of normal rabbit skull (A), radiograph of early acquired dental disease (B), radiograph of malocclusion of incisor teeth secondary to acquired dental disease of cheek teeth (C), and radiograph of advanced acquired dental disease and osteomyelitis of the mandible (oblique position) (D).

difficult, and every effort should be made to maintain normal teeth for as long as possible. Normal wide grinding motions often result in adequate wear of teeth, despite extraction of an opposing tooth.

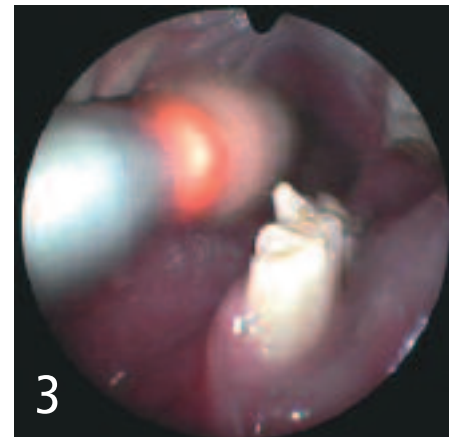
However, loss of both primary maxillary or mandibular incisors will require lifetime reduction of the length of the opposite teeth, or extraction. Similarly, loss of several adjacent cheek teeth often necessitates lifetime reduction of the opposite cheek teeth. In most cases, irreversible damage to tooth roots results in progressive dental disease, which will require lifetime treatment.

Abscesses

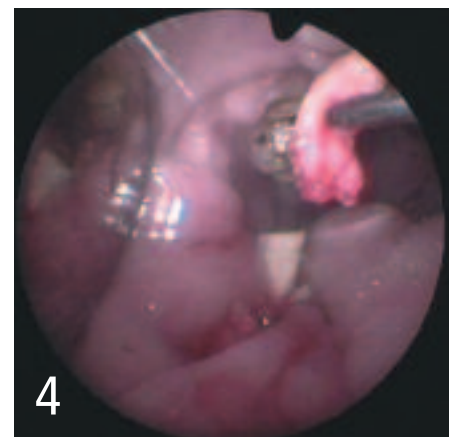
Many options exist for treating dental-related abscesses, and most authorities agree that treatment success depends on wide excision of the abscess, capsule, and diseased teeth or bone.

Options for wound management after surgery include closure with application of antibiotic-impregnated polymethylmethacrylate beads or other materials. The author prefers marsupialization of the abscess site for repeated flushing and debridement until healing by second intention occurs (See Procedures Pro: Surgical Treatment of Periapical Mandibular Abscess in Rabbits, September 2006, available at www.cliniciansbrief.com). Simple lancing of dental abscesses without aggressive removal of diseased teeth and bone rarely results in resolution.

Since many dental abscesses involve anaerobic organisms, aerobic and anaerobic culture and sensitivity help plan antibiotic therapy. For some cases of severe osteomyelitis, humane euthanasia may be the best alternative.



Use of higher-speed dental unit with silicon bur to restore teeth to normal length and shape.



Extraction of a deformed, loose right mandibular cheek tooth. The Crossley molar laxator is used to separate the tooth from the alveolus and bone, and an extractor grips and removes the tooth. Note the deformed apex.

Treatment of Secondary Complications

Many rabbits with advanced dental disease are moderately debilitated and may not return to normal food consumption right away. Treatment plans often include fluids, analgesia, and support feeding. Anorexic rabbits can be hand fed by syringe feeding of liquid critical care diets for convalescing herbivores (Critical Care,

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www.oxbowhay.com). Rabbits that refuse hand feeding may require feeding by nasogastric tube.

Nutritional Aspects

Increasing the amount of high-fiber hay in the diet of rabbits with acquired dental disease may slow down disease progress because consumption of hay increases grinding motions of teeth. All rabbit owners should be encouraged to feed their rabbit unlimited high-quality grass hay.



Follow-Up

Client Education

Owners must understand the extent and severity of their pets' dental disease, and the level of commitment in terms of after-care and finances that will be required for management.

Prevention

Acquired dental disease due to insufficient wear can be prevented by feeding the rabbit high-quality high-fiber hay, with limited hay-based pellets and greens. It is uncertain how dental disease due to metabolic bone disease can be prevented, as this appears to be a consequence of early nutrition and may exist before the rabbit is acquired. Rabbit breeders must strive to provide high-quality nutrition to gestating and lactating rabbits and to their young.

Complications

Complications of treatment for dental disease include anesthetic death, damage to oral structure during treatment, and (in the case of treatment of dental abscess and osteomyelitis) jaw fracture, in particular, mandibular fracture.



In General

Relative Cost

Treatment of congenital incisor malocclusion (incisor extraction) is expensive but offers the possibility of complete cure (\$\$\$). Treatment of acquired dental disease, with the exception of very mild abnormalities, is lifelong and therefore cumulatively expensive (\$-\$\$\$ per treatment). The most expensive aspect of treatment of dental disease is treatment of severe dental abscess and osteomyelitis, which can involve advanced techniques, such as hemimandibulectomy (\$\$\$\$-\$\$\$\$\$).

Cost Key

\$ = < \$100	\$\$\$\$ = \$500-\$1000
\$\$ = \$100-\$250	\$\$\$\$\$ = > \$1000
\$\$\$ = \$250-\$500	

Prognosis

With excellent owner compliance, prognosis for management of acquired dental disease is good. Cure is unlikely, with the exception of very mild early acquired disease, traumatic injuries, or congenital incisor malocclusion. Failure to manage acquired dental disease results in increasing debilitation and death from starvation or secondary complications. ■

See Aids & Resources, back page, for references, contacts, and appendices. Article archived on www.cliniciansbrief.com

Figure Credit

Figures reprinted from *Rabbit and Rodent Dentistry Handbook*. Lennox AM (ed)—Ames, IA: Blackwell Publishing, 2005, with permission from Blackwell.

Lennox was voted Exotic Speaker of the Year at the 2007 NAVC Conference and was awarded Exotic DVM of the Year at the International Conference on Exotics in 2005. Dr. Lennox received her DVM from Purdue University.

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