Surgical Treatment of Facial Abscesses and Facial Surgery in Pet Rabbits

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KEYWORDS

• Abscess • Osteomyelitis • Empyema • Retrobulbar • Marsupialization
• Mandibulectomy

KEY POINTS

- Understanding of dental and anatomic features of the jaws and the skull is critical for interpretation of diagnostic imaging and for the surgical treatment of odontogenic facial abscesses and their complications.
- Thorough diagnostic imaging (including radiography, oral endoscopy, computed tomography, and magnetic resonance) is of paramount importance for diagnostic accuracy, prognosis, and for planning surgical treatment.
- Medical therapy alone is unrewarding, but important as an adjunct to the surgical therapy.
- Aggressive surgical treatment is necessary to remove the abscess capsule, extract the diseased teeth involved, and address the focal osteomyelitis.
- Further complications, such as retromasseteric and retrobulbar abscesses, extensive osteomyelitis of the mandible, and empyemas of the skull, should be addressed with specific surgical techniques and approaches.

INTRODUCTION

The most common complications of acquired dental disease in pet rabbits are periapical infections, osteomyelitis of the jaw, and facial abscesses.[1–4] They comprise a considerable portion of acquired and progressive dental disease syndrome (ADD). Facial abscesses appear as large masses, usually located at the ventrolateral aspect of the mandible or the lateral aspect of the maxilla.[1,2,4] Some rabbits may have an obvious unilateral exophthalmos.[4,5]

The abscess does not represent the primary disease, therefore thorough diagnosis (including standard or advanced diagnostic imaging) should be pursued to make a

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proper prognosis, identify surgical candidates, and plan the most effective treatment using the most appropriate surgical approach.[5] Medical therapy alone is unrewarding, although it is an important adjunct to the dental and surgical treatment, which is usually a combined intraoral and extraoral approach. Numerous variations of surgical techniques have been reported, but the extraoral treatment is intended to address all 3 pathologic components: to remove the entire abscess including the capsule, extract the tooth fragments involved, and debride the osteomyelitic bone.[2]

Further complications, such as retromasseteric and retrobulbar abscesses, extensive osteomyelitis of the mandible, and empyemas of the skull, may require more invasive and challenging surgical techniques.[5]

ANATOMY AND SURGICAL ANATOMY

Detailed knowledge of the normal, topographic, and surgical anatomy of the teeth and skull with a focus on the mandible and maxilla is important for understanding classification of the abscesses and empyemas and their pathophysiology. It is also critical for interpretation of diagnostic imaging techniques, and to perform surgical techniques.

Mandible

The topographic anatomy outlines 3 portions of the rabbit mandible.[5,6]

1. The incisive part, in which the 2 mandibles are joined rostrally by the mandibular symphysis. This portion includes the reserve crown and apex of the incisor teeth.
2. The body of the mandible, which includes the reserve crowns and apices of the premolar and molar teeth.
3. The masseteric fossa and the branch of the mandible, with the condylar process. The area of the masseteric fossa is very thin, because it accommodates the masticatory muscles in a double groove both laterally and medially. The masseter muscle, positioned laterally, is composed of 2 main layers (the superficial and the deep part) and is of particular surgical interest.

Maxilla and Skull

The alveolar bulla is a unique bony structure specific to rabbits, which includes the reserve crowns and apices of the 4 distal (caudal) maxillary cheek teeth (the third premolar, and the 3 molar teeth, CT3–CT6).[1,5–7] Reserve crowns of the first 2 premolars (CT1 and CT2) are located more cranially and outside the alveolar bulla. The dome of the alveolar bulla is adjacent to the cranioventral aspect of the orbital fossa, and caudolaterally adjacent to the lacrimal bone.

The lacrimal bone separates the cranial aspect of the alveolar bulla from the nasolacrimal duct, and craniomedially from the maxillary recess.[8]

Rabbits have 3 main lacrimal glands (lacrimal gland proper, accessory lacrimal gland, and the gland of the nictitating membrane) of which 2 are divided into multiple lobes.[6,7,9,10] The lacrimal gland proper is located in the caudodorsal area of the orbit. The accessory lacrimal gland is much larger and divided in 3 lobes: the orbital, the retro-orbital, and the infraorbital. The gland associated with the nictitating membrane is commonly referred to as the harderian gland and is divided into the superficial gland and the deep gland.

The nasolacrimal duct runs from the orbital fossa to the nasal cavity. It curves medially, passes through the infratrochlear incisure and the foramen of the lacrimal bone, and enters the bony nasolacrimal canal medial to the maxillary bone, being adjacent to the maxillary recess.[8,11,12]

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