Dental disease is probably the most common reason for presentation of rabbits to veterinary clinics.

Common sequelae to dental disease in rabbits are pain, anorexia, dysbiosis, ileus, conjunctivitis, and rhinitis.

**DENTAL FORMULA**

\[ I 2/1, C 0/0, P 3/2, M 3/3 = 28 \]
CONTINUOUS GROWTH (Elodont)
- Constantly replenished, elongated reserve crown that persistently erupts into function as the occlusal surface is worn away
  - About 2-3 mm/week

INCISORS
- 1st incisors chisel-like
  - Enamel thicker on facial surface
- 2nd maxillary incisors (peg teeth)
  - Unique to lagomorphs

MOLAR TEETH
- Zig-Zag occlusal line
- Transverse ridges that interlock with the opposing teeth during chewing
- Folded tooth structure

Folding of enamel adds to wear resistance
- Increased surface area of enamel at occlusal surfaces
**RABBIT AND RODENT DENTISRY**

**RABBIT DENTAL ANATOMY**

**MOLAR TEETH**

**RABBIT DENTAL ANATOMY**

**MASTICATION**
- Abnormal tooth chewing pattern
  - Uses only the edges of the teeth
  - Used to crack hard pellets or grain

**NASOLACRIMAL DUCT**
- Normal Narrowing
  - Root of upper incisors
  - Upper 2nd premolar root near nasolacrimal duct
- Most common cause of epiphora in rabbits

**CLINICAL SIGNS OF DENTAL DISEASE**
- Anorexia
- Weight loss
- Ptyalism (slobbers)
- Halitosis
- Abscesses
- Mucosal ulcers

**CLINICAL SIGNS OF DENTAL DISEASE**
- Lacrimal overflow or discharge
- Facial alopecia
- Soft and hard tissue facial swellings
- Incisor malocclusion
- Altered jaw movement patterns

**PHYSICAL EXAMINATION**
- Palpate jaws
- Look at incisor occlusion
- “Otoscopic” oral examination
  - Requires good restraint


**RABBIT AND RODENT DENTISRY**

### INTRAORAL EXAMINATION

<table>
<thead>
<tr>
<th><strong>Difficult and limited in awake rabbits</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited mouth opening</td>
</tr>
<tr>
<td>Long narrow oral cavity</td>
</tr>
<tr>
<td>Lips and tongue obstruct visualization</td>
</tr>
</tbody>
</table>

### INTRAORAL EXAMINATION

#### Anesthesia

- General anesthesia with intubation

### INTRAORAL EXAMINATION

#### Speculums

- Use mouth gags & cheek dilators

### INTRAORAL EXAMINATION

#### LAPRASCOPE

- 30 degrees
  - INCREASED VIEW
  - ROTATE ON LONGITUDINAL AXIS

### RADIOGRAPHIC EVALUATION

<table>
<thead>
<tr>
<th><strong>Part of the routine workup</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk of teeth embedded in jaw</td>
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<tr>
<td>Requires anesthesia for positioning</td>
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</tbody>
</table>

### RADIOGRAPHIC EVALUATION

<table>
<thead>
<tr>
<th><strong>Views</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lateral</td>
</tr>
</tbody>
</table>
RABBIT AND RODENT DENTISTRY

RADIOGRAPHIC EVALUATION

RABBIT AND RODENT DENTISTRY

RADIOGRAPHIC EVALUATION

- Views
  - Lateral
  - Two lateral obliques

RADIOGRAPHIC EVALUATION

- Views
  - Lateral
  - Two lateral obliques

RADIOGRAPHIC EVALUATION

- Views
  - Lateral
  - Two lateral obliques
  - Dorso-ventral

RADIOGRAPH CASE

CT SCAN

CT SCAN
DENTAL DISORDERS
INCISOR MALOCCLUSION

CAUSES
- Inherited mandibular prognathism
  - Autosomal recessive
  - Upper incisors curl into the maxilla
  - Lower incisors protrude and can grow into the nose
RABBIT AND RODENT DENTISRY

DENTAL DISORDERS

INCISOR MALOCCLUSION

CAUSES
- Incisor malocclusion due to prior trauma

INCISOR MALOCCLUSION

CAUSES
- Malnutrition
  - Possible role of too much phosphorus (Degus)?

Group A fed 2:1 Ca to P, while group B was fed diet with a 1:1 ratio for 1.5 years

DENTAL DISORDERS

INCISOR MALOCCLUSION

CAUSES
- Often secondary to cheek tooth overgrowth

TREATMENT
- Use burr in a high speed dental handpiece
  - Use tongue depressors and speculums to protect soft tissue
    - Use water and allow burr to cool between cuts
  - Don’t overheat teeth

DENTAL DISORDERS

INCISOR MALOCCLUSION

TREATMENT
DENTAL DISORDERS
INCISOR MALOCCLUSION

TREATMENT - INCISOR EXTRACTION
- Crossley rabbit incisor luxator
- Bent 16-18 gauge needles
- Loosen the periodontal ligament
- Avoid breaking the tooth
- Remove pulp (root) to prevent re-growth

DENTAL DISORDERS
INCISOR FRACTURE

INCISOR TOOTH FRACTURES
- Caused by trauma
- Examine for pulp cavity exposure
- Evaluate for jaw fracture
- Grind edge smooth
- Remove embedded tooth fragments
- Teeth will continue to erupt root is healthy

DENTAL DISORDERS
MOLAR MALOCCLUSION

CAUSES
- Low fiber diet that is not abrasive
- Molar overgrowth
- Periodontal infection
- Genetics?
- Geriatric disease
- Malnutrition (Possible metabolic bone disease?)

DENTAL DISORDERS
MOLAR MALOCCLUSION

STAGING GRADES
1) Normal
2) Root elongation
3) Malocclusion
4) Cessation of tooth growth
5) End-stage dental disease

MOLAR SPURS
- Most common cause of oral trauma
  - Usually grades 2-3
- Commercial pelleted rabbit diets leads to inadequate and abnormal tooth wear
  - Causes abnormal chewing pattern
- Affected teeth continue to erupt until pressure from opposing teeth at rest prevents further eruption.

DENTAL DISORDERS
MOLAR MALOCCLUSION

MOLAR SPURS

DENTAL DISORDERS
MOLAR MALOCCLUSION

ORAL ABSCESES

- MUCOSAL TRAUMA 2° MOLAR SPURS
- PERIODONTAL INFECTIONS
- ACTS LIKE EXPANSILE MASSES
- MARKED BONE CHANGES
- REQUIRES SURGERY TO CORRECT

DENTAL DISORDERS
MOLAR MALOCCLUSION

ORAL ABSCESES

- Usually anaerobes
  - Prevotella
  - Fusobacterium
  - Actinomyces
- Also *Streptococcus*
- Almost never *Pasteurella multocida*

DENTAL DISORDERS
MOLAR MALOCCLUSION

TREATMENT - MEDICAL

- Antibiotics are not sufficient without surgery
  - Only 7% susceptible to trimethoprim sulfa (TMS)
  - Enrofloxacin (54% susceptible)
  - Metronidazole, Chloramphenicol, Azithromycin are better choices for gram positive anaerobes
  - Clindamycin kills rabbits

DENTAL DISORDERS
MOLAR MALOCCLUSION

TREATMENT - MOLAR REDUCTION

- Use burr in a high speed dental handpiece
  - Use tongue depressors and speculums to protect soft tissue
  - Use water and allow burr to cool between cuts
  - Be conservative
    - Don’t grind the molars to the gum

DENTAL DISORDERS
MOLAR MALOCCLUSION

TREATMENT - SURGERY

- Physical removal of all impacted foreign material, necrotic tissue, and loose teeth are essential to healing
- Can also place antibiotic-impregnated polymethylmethacrylate beads

ISAZA, 2017
RABBIT AND RODENT DENTISRY

DENTAL DISORDERS
MOLAR MALOCCLUSION

TREATMENT - SURGERY

Myomorpha
(Mice, Rats, Gerbils, Hamsters)

- DENTAL FORMULA
  - I 1/1, C O/O, P 0/0, M 3/3 = 16
- Only incisors elodont
- Molars do not grow
- Dental disease uncommon
- Hamsters can get dental caries in their molars

Hystricomorpha
(Chinchillas, G pigs, Degus)

- DENTAL FORMULA
  - I 1/1, C O/O, P 1/1, M 3/3 = 20
- Dentistry similar to rabbits
- No peg teeth
- Only one PM
  - Evenly matched molars

Hystricomorpha
(Chinchillas, G pigs, Degus)

- More angled, narrower dental arcades
  - Tends to trap tongue rather than cutting
  - Quidding, Ptyalism, “slobbers”

Hystricomorpha
(Chinchillas, G pigs, Degus)

- “A” and “B” are normal
RABBIT AND RODENT DENTISRY

Hystricomorphia
(Chinchillas, G pigs, Degus)

- Guinea pigs stress easily
- G Pigs are pain intolerant
- Scurvy
- Chinchillas are hardy, tolerate disease
  - Do better with treatment
  - Disease often advanced by time of diagnosis
- Degus smaller, but hardy

“Other” Hystricomorphia

- Not all in this group have elodont cheek teeth
  - Porcupines

Sciuromorpha
(Prairie dogs, Squirrels)

- DENTAL FORMULA
  - I 1/1, C O/O, P 1-2/1, M 3/3 = 20
- Only incisors elodont
- Elodontomas
  - Respiratory obstruction
  - Very bloody surgical removal

CONCLUSIONS

- Understanding the anatomy and function of the teeth is important
- Treatment is focused on restoring normal function

QUESTIONS