Dog Maxillary 2\textsuperscript{nd} +/- 1\textsuperscript{st} Molar Tooth Extraction Made Easier with Introduction of a Less-Anatomically Disruptive Closure Technique

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Objectives

• Indications including when to consider adjacent “toothanasia”
• Instrumentation
• **Flap Techniques**
• Partial Alveolectomy (how low can/do we go?)
• Root Sectioning
• Kerfing (what?) against damage to crowded adjacent teeth
• Systematic root loosening and removal

• Root fracture/loss ART (Avoidance-Recognition-Treatment)
• When and why to biopsy / Culture
• Techniques to hasten bone regrowth
• Prevention of Gingival recession @ Adjacent teeth
• **Tensionless easier and less invasive and hence more comfortable closure technique**
Maxillary M2 +/-1 Extraction

Indications

PERIODONTAL > ENDO DISEASE; 1o or 2o
(extension from adjacent crowded teeth)

Caries (endodontic infection)
Cyst (Radicular/Dentigerous)
Trauma
Neoplasia
UPM2 +/- UPM1 Surgical Extraction Technique

- Nerve Block?
- Prophy ("asepsis")
- X-ray
- Mucogingival Flap Raised
- Tooth sectioned into thirds
- Moderate Buccal (vestibular) osteotomy-alveoloplasty
- (Mesial crown kurfed for "toe hold")
- Palatal root loosened, then vestibular roots (luxator/winged elevator 15s)
- Palatal root removed gently & inspected
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To Block or Not To Block?
Contraindications to Regional N. Block

Absolute Contraindications
• Local infiltration by tumor/infection
• Epinephrine-containing @ CV disease

Relative Contraindications
• Pregnancy
• CV dz
• Hepatic disease
• Neuro dz
Regional Oral Anesthesia
caudal maxillary (IFO) block

Current Infraorbital Method

• Threading the canal
  – allows close proximity to nerve & less drug infusion
  – blocks complete quadrant
  • Maxillary n. before IFO, pterygopalatine and pterygoid canal nerve branching
    – IFO n.
    – Pterygopalatine n.
    – Pterygoid canal n.
  – must use long, small gauge needle
  – must be very careful to not damage neurovascular bundle

• Always aspirate
Major Palatine Nerve Block
Unneeded with Cd IFO Block

Cd IFO ie Caudal Infraorbital regional anesthesia also blocks the major palatine nerve as it blocks the Maxillary n. before IFO, pterygopalatine and pterygoid canal nerve branching IFO n.
Ptterygopalatine n.
Ptterygoid canal n.
Dangers of the Caudal maxillary block

Old Intraoral Method

• Blocks quadrant
• Blocks zygomatic arch
• Enter from oral cavity caudal to M2 (M1 in cat) and direct needle towards the caudal zygoma
• Less accurate drug placement
• Orbit & Optic Nerve are at risk
Dangers of the Caudal maxillary block

Old Intraoral Method

- Breed and skull shape variation can cause delivery error
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Complete Dental Prophylaxis prior to surgery – aseptic surgical environment
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X-ray Plate Orientation for Max. Molars

Horizontal
X-ray Plate Orientation for Max. Molars

Vertical
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Gingival/Mucogingival Flap Design

• **Horizontal Release (Envelope Flap)**

• **Vertical Release (Vertical + Horizontal)**
  – Single Mesial Release
  – Double Release
The Envelope Flap

Sulcus/gingiva

tooth
Gingival Incisional Release

release attached gingiva circumferentially along internal gingival margin
(to preserve maximum amount of attached gingiva)
sometimes all that holds you up during an extraction is the coronal attached gingiva
The ‘roll back’
Rules of Vertical Release in Mucogingival Flap Design

• Heed Line Angles
Rules of Vertical release in Mucogingival Flap Design

Vertical incisions should be made at angles of teeth; dehiscence more likely otherwise (middle of the papilla or on the facial surface of the root)
Performing the Deed

• Be bold with your incisions – go full thickness if you intend to elevate a full-thickness flap
Mucogingival Flap Elevation

• Begin at the Mucosa and elevate toward the gingiva
  – (vertically +/- horizontally
    ie bottom to top +/- side to side)

• Chewing Forces are coronal to apical such that periosteal fibers are designed to resist this directional force
Mucogingival Flap Elevation
When your elevator fails you, do not be afraid to use your scalpel blade
Single Release Mucogingival Flap for Max M1 extraction

- Single vertical release
  - Mesial (Rostral)
  - On Line Angle
  - Over bone
  - Preserve major structures
  - Extend beyond MGM (Blue) BUT CAREFUL!!!!

- Gum/Gingiva = Collagen
- Mucosa = Elastin (stretch)
Vertical Flap for UM1/2 XSS

Zygomatic gland
Orifice of major zygomatic duct
Orifice of parotid duct

Parotid Duct Orifice
Horizontal Flap for UM1/2 XSS
Remove sulcular nonkeratinized epithelium with diamond bur
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Cross Cut Taper Fissure Bur
Tooth Sectioned into 3 roots
(makes for three “simple” extractions)
Moderate Vestibular Osteotomy-Alveoplasty
Moderate Vestibular Osteotomy-Alveoplasty

– B4 tooth sectioning

– After tooth sectioning
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Extraction Principles
Luxator Wedge & Rotation

Luxator

Teeth Or Roots

Forces Applied
Extraction Principles
Fulcrum & Lever
Extraction Principles
Lever & Wheel

Roots/Teeth

Elevator
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Order Of Section Removal
Extraction Principles
Fulcrum & Lever
Extraction Principles
Lever & Wheel

- Elevator
- Roots/Teeth
Order Of Section Removal
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Extraction Principles
Luxator Wedge & Rotation

Luxator

Teeth Or Roots

Forces Applied
Luxator

- Wedges between tooth and alveolar bone
- Use “short stop” grip to prevent trauma from slipping
- Allow time for pdl hemorrhage
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Examine Extracted Tooth

- Tooth and root are symmetrical
- Cementum covers all of root
- Root apex is smooth and rounded
Retained Root?

- Tooth is always whiter than bone
- Tooth does not bleed
- Remove more bone
- Diamond-tipped root forceps (Cislak)

- If cannot for life of you remove, Inform owner and counsel possible referral...
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Debride, Biopsy, Culture
Open Root Planing-Subgingival Curettage of Adjacent Teeth
Epithelial Debridement and Alveoloplasty
Concurrent or Separate (B4/After)
Epithelial Debridement
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Mucogingival Flap Closure

• Debride sulcular epithelium
• No tension, No tension, Noooo tension!!!
  – Mucoperiosteal release
  – Vertical Mattress suture pattern
• Osseopromotive Implant ?
• Adequate tissue bites
Testing for Tension
Further Relief of Tension prn
Osseoconductive Implant?

- Bioglass
- Synthetic bone graft particulate
- Osteoproductive(?)
- Nurtamax Labs.
- 1-800-925-5187
- www.nutramaxlabs.com
First Suture placement @ strategic remaining teeth
Fastidious Closure @ remaining Adjacent teeth
Absorbable Suture
3/0 - 5/0
Suture Needles

Reverse cutting
FS-2
P-3

Taper point

Cutting

Incision line
Ridge formed by Masseter muscle

Zygomatic Duct Orifice

Parotid Duct Orifice

Buccinator Muscle
Buccinator Muscle

- arises from the outer surfaces of the alveolar processes of the maxilla and mandible, corresponding to the three pairs of molar teeth; and behind, from the anterior border of the pterygomandibular raphé which separates it from the constrictor pharyngis superior.

- The fibers converge toward the angle of the mouth, where the central fibers intersect each other, those from below being continuous with the upper segment of the orbicularis oris, and those from above with the lower segment; the upper and lower fibers are continued forward into the corresponding lip without decussion.
Buccinator Muscle

- Innervated by facial nerve
- FUNCTIONS to pull back the angle of the mouth and to flatten the cheek area, which aids in holding the cheek to the teeth during chewing. This action causes the muscle to keep food pushed back on the occlusal surface of the posterior teeth, as when a person chews. By keeping the food in the correct position when chewing, the buccinator assists the muscles of mastication.[3]
- It aids **whistling** and **smiling**, and in **neonates** it is used to **suckle**.
Ridge formed by Masseter

Soft Palate
D. Masseter. B. Mm. masseter and pterygoideus medialis. D. M. masseter, cut to show the deep portion.
Fig. 2-4. Mandibular muscles of the dog (schematic, lateral aspect, zygomatic arch removed).
Ridge formed by Masseter m

Soft Palate