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EXTRACTION TECHNIQUES FOR CANINES AND CARNASSIAL TEETH
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Indications for extraction include fracture, periodontal disease, endodontic disease, malposition, overcrowding, and location within a fracture line. Extraction of teeth is considered a surgical procedure and techniques should be used to minimize trauma and postoperative discomfort and encourage rapid healing. Canine teeth are considered difficult to extract because of the curved long root, while maxillary 4th premolars have 3 divergent roots and mandibular 1st molars have 2 large roots firmly embedded in the mandible. The methods described below are for periodontally sound teeth where a mucoperiosteal flap allows for better visualization and access to the tooth root(s). Sound surgical principles and proper techniques make accomplishment of exodontias rewarding.

1) Perioperative pain management
2) Broad based flaps
3) Quick, clean and kind tissue handling
4) Conservative bone removal
5) Proper use of instruments
6) Curettage and debridement
7) Tension free flaps
8) Sutures supported by bone

Maxillary canine teeth

An ipsilateral infraorbital nerve block should be performed. An intraoral radiograph should be taken to assess the tooth. The gingival attachment around the tooth should be incised using a #11 or 15 blade. Then the apex of the root should be digitally palpated and divergent releasing incisions made taking into consideration the line angle of the tooth. The releasing incisions should extend beyond the mucogingival line. An incision is then made along the alveolar ridge interproximally from the line angle incision to the crown of the canine tooth. A periosteal elevator is then used to lift the gingiva and mucosa off the underlying bone. Working apically and laterally until the whole flap is lifted. Care should be taken to protect the flap from puncture since it will be sutured back into place after the extraction.

The buccal bone plate covers the root of the tooth and will need to be drilled away. Remove ½ to 2/3 of the buccal bone plate using a #4 round bur on a high-speed handpiece with continuous water irrigation. In cats a #2 round bur can be used while #6 can be used in a large or giant breed dogs. The bur is then used to make a trough in the alveolar bone both mesially and distally along the root.

A luxator is placed in the trough and gentle apical pressure is applied. As the periodontal ligament (PDL) is stretched, the luxator can be advanced farther apically. Blood will enter the periodontal ligament space and help stretch the PDL via hydraulic pressure. Be sure to work circumferentially around the
tooth. A surgical elevator can be used circumferentially with gentle apical and rotational pressure along the long axis of the root. Hold this position for 10 seconds to fatigue the PDL. Be careful when elevating the palatal aspect of the root, you don’t want to lever the crown buccal or the root apex will enter the nasal cavity. Elevate the root until the PDL is broken and the tooth can be easily extracted with gloved fingers or extraction forceps. The root tip should be inspected to make sure no fragments were left behind. Take a post extraction radiograph.

A long cylindrical diamond bur can be used to perform alveoloplasty. The socket should be curetted and flushed with saline. Any bone fragments adhered to the gingival flap must be removed. The edge of the gingival flap and palatal mucosa are trimmed with iris scissors to freshen the edge. The mucoperiosteal flap should be replaced and evaluated. The flap edges should meet without tension. If necessary, iris scissors should be used to bluntly dissect the flap submucosally. The freed submucosal layer is then cut to allow the flap to be stretched over the extraction site. It is imperative that NO tension be present. Once the length is adequate, synthetic bone grafting material can be placed. It should be moistened with blood or saline and packed into the alveolus until its level. The mucogingival flap is then sutured into place using absorbable suture with a swaged on cutting needle. A simple interrupted suture pattern is placed using a surgeon’s knot and 4 additional throws. Sutures are placed 3mm apart, and the ends are left short (1-2mm long).

For the other teeth, only differences in the technique will be discussed.

**Mandibular Canine Teeth**

An ipsilateral middle mental foramen nerve block should be performed. An intraoral radiograph should be taken to assess the tooth. The gingival attachment around the tooth should be incised. A buccal flap is raised with a releasing incision made mesially. Avoid a distal releasing incision since we don’t want to disturb the neurovascular bundle exiting the mental foramen. A gingival flap is also raised on the lingual aspect of the tooth with a distal releasing incision made if needed. The crown is then amputated with a #701 cross cut taper fissure bur to allow for better access to the lingual aspect of the root. One quarter to 1/3 of the buccal bone plate is drilled away with a round bur while about 20% of the lingual alveolar bone plate is removed. Mesial and distal troughs are made as previously described. Luxators and elevators are again used. If needed, additional alveolar bone may be removed, however, be conservative, as we want to preserve the strength of the mandible. Radiograph and close the defect as previously described.

**Maxillary 4th Premolar**

An ipsilateral infraorbital nerve block should be performed. An intraoral radiograph should be taken to assess the tooth. The gingival attachment
around the tooth should be incised. A buccal flap is raised with releasing incisions from the distal root of the maxillary 3rd premolar to the mesial aspect of the maxillary 1st molar. The infraorbital foramen should be palpated and care must be taken to avoid cutting the neurovascular bundle exiting the infraorbital foramen. Buccal bone is removed to expose the furcation and the tooth is then sectioned into three. About ¼ of the buccal bone plate is removed and troughs made. Each root is elevated and removed. A post extraction radiograph is taken and the flap is sutured in place without tension.

**Mandibular 1st Molar**

An ipsilateral mandibular nerve block should be performed. An intraoral radiograph should be taken to assess the tooth. The gingival attachment around the tooth is incised. A buccal flap is raised with a releasing incision made from the distal root of the mandibular 3rd premolar and if needed a small releasing incision can be made along the mesial line angle of the 2nd molar. Buccal bone is removed to expose the furcation and the tooth is then sectioned. About ¼ to 1/3 of the buccal bone plate is removed and troughs made as previously described. Care should be taken to not damage the neurovascular bundle in the mandibular canal. Post extraction radiographs are taken and the flap is sutured without tension.

Surgical principles apply to the oral cavity as well as the rest of the body. Flaps allow better visualization and access when faced with a challenging extraction. Sound surgical principles and proper technique will make your extraction efficient and rewarding.

**Reference**