

Difficult Tooth Extractions

Mini Series

Session One: Which teeth should I
extract: the decision making process in
tooth extraction

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Dental Examination in dogs and cats

Dental examination in dogs and cats is the first diagnostic stage in carrying out a dental procedure. It comprises both conscious examination and examination under anaesthesia, with the aim of identifying and recording dental pathology for the formulation of a treatment plan. It is an essential procedure, and will reduce the risk of missing pathology, which if happens may require subsequent anaesthesia to identify and treat. It is also often the first point of contact with the client, and will allow for effective communication of the treatment plan (Gorrel, 2004).

History

A thorough history should first be taken which will provide information on oral health, patient health and will also help the clinician to assess likely post-operative compliance in home care. This latter point cannot be emphasised enough as it will have a huge bearing on decision making during treatment. With an owner that will have high post-operative compliance, treatment for periodontal disease can be aimed at the preservation of dentition; however, if post-operative home care is unlikely to be followed, then treatment decisions are more likely to lean towards extraction as more complex treatments are unlikely to be successful (Gorrel, 2004).

Oral health, and in particular pain, are very difficult to assess in our animal patients. The pain associated with dental pathology is often chronic and 'low grade' and is unlikely to affect appetite and eating habits. We know that even with what can be for us severe dental pain, we would often still continue to eat. Diligent owners may however notice pets that chew preferentially on one side, or who are reluctant to eat certain foods (Harvey and Emily, 1993).

Patient health is important to assess, as with any other medical condition, and indeed an emphasis should be placed on systemic illness that is likely to affect decisions regarding anaesthetic technique. Renal disease, diabetes and cardiac disease for example may affect the choices we make. Some systemic diseases may also have an impact on oral health, and this would include viral infection in cats.

Conscious examination

Conscious examination is the next step but it should be emphasised to owners that this is by no means the definitive oral examination, as additional pathology is often found with the more detailed examination under anaesthesia. Some aspects of the oral examination, such as an assessment of occlusion, are however best performed in the conscious patient, as this will give more information about the function of the mouth (Gorrel, 2004).

A full body examination should first be carried out, as again, systemic disease may affect oral health and decision making in anaesthesia. Body condition may also give an indication of the severity of disease in, for example, Feline Chronic Gingivostomatitis.

Examination of the head includes assessment of facial symmetry, palpation of the facial bones, the muscles of mastication, lymph nodes, salivary glands, eye position as all can give indication of oral pathology. The jaws should be opened for an assessment of the function of the temporomandibular joints. The lip should then be manipulated and retracted for assessment of the perioral skin, lips, vestibular mucosa and teeth.

Anatomical assessment and occlusion can next be assessed. The teeth should be counted to ensure they are there, as missing teeth may be an indicator of root fracture or abnormal development and eruption. The patient's facial symmetry should again be noted, along with the relative jaw lengths,

widths and shapes. The incisor, canine and premolar/molar occlusions and positions can then be assessed (Fig. 1).

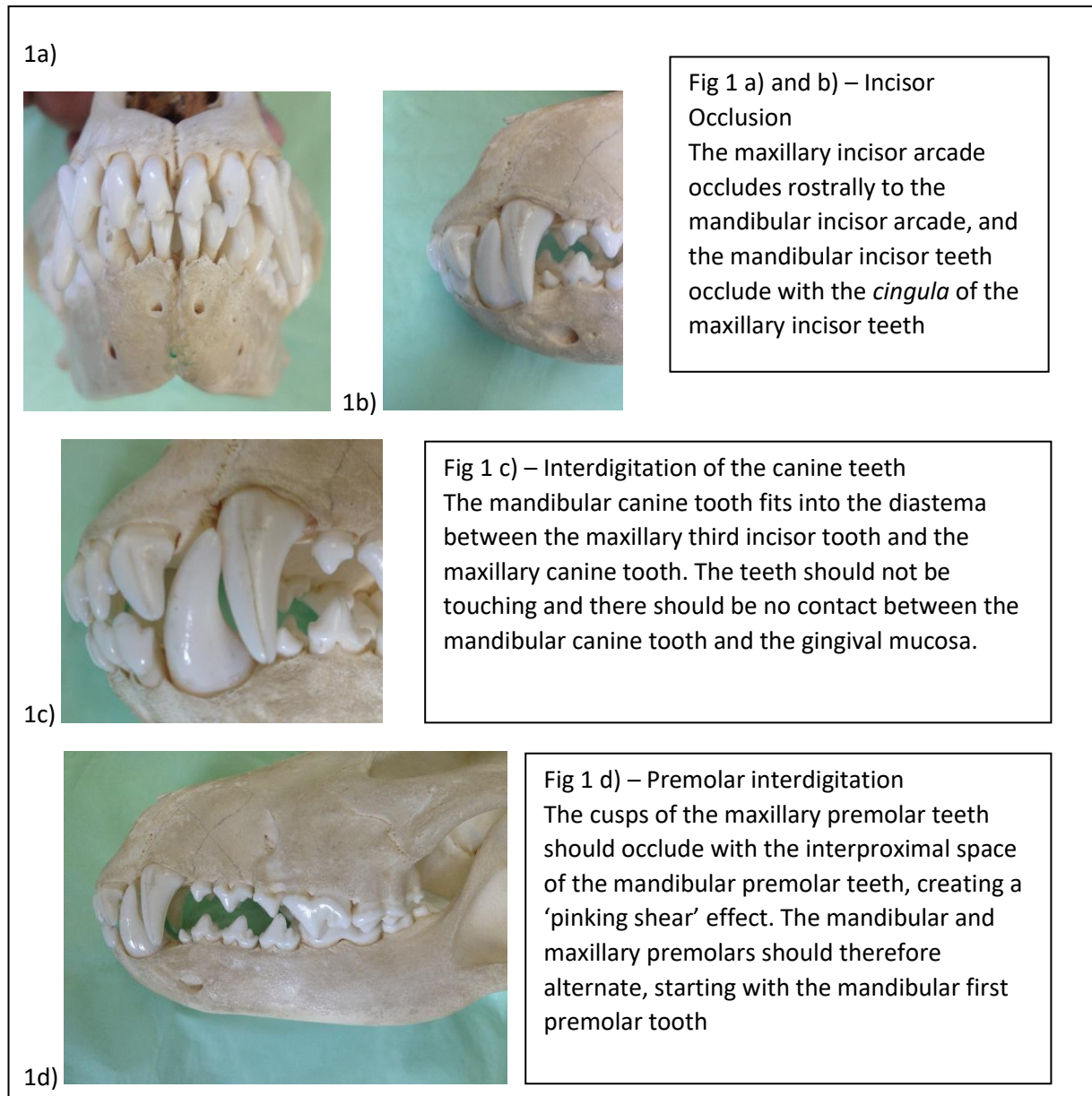


Fig 1. (From Oxford, M., 2014)

Conscious dental examination is useful as it allows the discussion to start regarding the treatment plan as any gross pathology is noted. The buccal aspect of the teeth can be assessed, along with the occlusion. In the author’s opinion, the lingual aspect of the teeth is very difficult to assess. The teeth should be examined for the gross signs of periodontal disease (such as calculus amounts, gingivitis, gingival recession or enlargement, furcation exposure and potentially tooth mobility), tooth trauma (such as crown fractures, abnormal wear or tooth discolouration), and developmental defects affecting the tooth surface. Malodour is often useful to note here too. Open mouth examination may allow assessment of some parts of the tongue, the caudal mouth and pharyngeal structures and mucosa.

Examination under anaesthesia

This stage is again essential, as it will provide the detail for the treatment plan. This is a detailed and methodical examination, the findings of which should be recorded on a dental chart. The use of a dental chart has number of important functions which include: providing a structure to the examination to ensure it is complete; to provide a medico-legal record of pathology present; to allow a concise but complete treatment plan to be formulated; and to act as an historical record for future treatment and to assess the progression of pathology.

The tools for this examination are the periodontal probe, the dental explorer and the dental mirror, and these would comprise the author's 'Examination pack' which is available for each patient (Fig 2) (Robinson, J. 2007).



Fig 2. The Author's 'Examination Pack' consists of (from top to bottom) – the periodontal probe, the dental explorer and the dental mirror. These should be available for every patient.

The periodontal probe

This instrument is perhaps the most important dental instrument. With the prevalence of periodontal disease at approximately 70% in our adult patients, it should be ever present next to the dental workstation (Fig 3). The probe itself is a blunt ended, graduated probe which is held using a pencil grip. The probe is atraumatically inserted in the gingival sulcus until resistance is felt. Although records may only be made at 4 locations around the crown, the probe should be gently run around the circumference of the gingival sulcus. The probe is used to measure: gingivitis and gingival index; Periodontal Probing Depth; gingival recession; furcation exposure; tooth movement; and is used in the assessment of Clinical Attachment Level (Table 1).

The dental explorer

This instrument has a sharp point and is used to assess the surface of the crown, in particular the enamel. Enamel is smooth and hard, and when the explorer is run across the surface it should be revealed as such (Fig 4). If there is any defect in the enamel, then the explorer will catch on this which will be felt by the operator. Defects include developmental defects (such as enamel dysplasia), traumatic damage (including cracks and an exposed pulp chamber), or pathological processes such as caries and tooth resorption

Dental Mirror

This is a valuable and often under-utilised instrument and is used for assessing the lingual/palatal and distal aspects of the teeth (Fig 5). It should be clean when used, and can be wiped on the mucosa to prevent fogging. With practice, it is useful both in examination and for some treatments, and will allow the operator to sit in a comfortable position for work.

The periodontal probe in action



The periodontal probe is inserted atraumatically into the gingival sulcus and then run circumferentially around the sulcus to assess gingivitis, periodontal probing depths, gingival recession, furcation exposure, and tooth movement



a) and b) severe periodontitis affection the left maxillary 4th premolar with a periodontal pocket in excess of 10mm.

c) and d) severe periodontitis affection the left maxillary canine with a periodontal pocket in excess of 10mm.

e) the periodontal probe here is placed in a buccopalatal orientation indicating an oronasal fistula

Fig 3. These images all demonstrate the use of a periodontal probe. On initial inspection, there may be little obvious pathology. However, the periodontal probe soon demonstrates the extent of the periodontitis.

The dental explorer in action

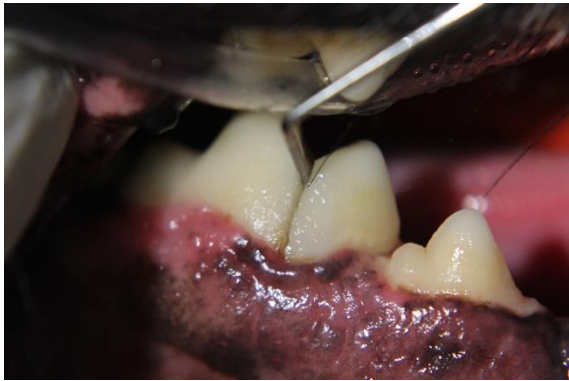
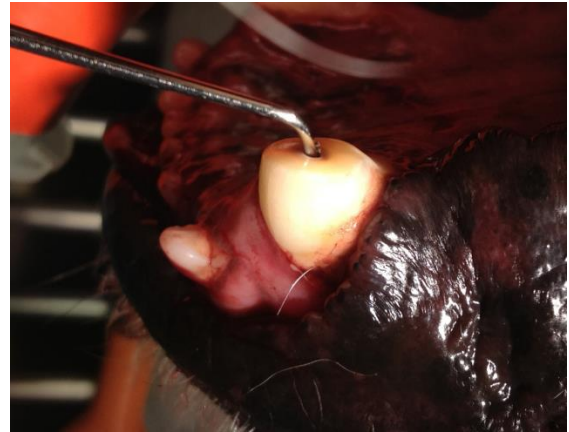


Fig 4

a) and b) the dental explorer is used to locate defects in the tooth surface. In this case the explorer can pass completely into the exposed pulp.

c), d) and e) This 'crack' in the enamel initially seems quite superficial, but the dental explorer along with the radiograph demonstrates the extent of this crown-root fracture

The dental mirror in action



Fig 5. a) and b) This right mandibular 1st molar tooth was undergoing tooth resorption (as seen in the radiograph), but the only lesion visible in the oral cavity was present on the lingual aspect of the crown at the furcation. Therefore, examination of the lingual/palatal aspect of the tooth is essential, and is more easily done using a dental mirror.

Detailed examination

The detailed examination consists of a well-structured assessment of the teeth and the periodontium. In addition to this, examination of the lips, the mucocutaneous junction, the mucosa of the vestibule and oral cavity, the gingiva, the tongue and sublingual mucosa, the hard and soft palate and the pharynx. A more considered evaluation of the jaws and temporomandibular joints can also be made (Gorrel, 2004).

For the author, the examination starts at the mesial aspect of the first maxillary incisor, whereby the periodontal probe is run around the gingival sulcus. From here, the probe is moved from tooth to tooth working distally, ensuring the gingival sulcus around all teeth has been assessed. Whilst this is happening, a superficial assessment of the crown can also be made. The same process is then carried out on the mandibular teeth. Once this stage is complete, with recordings made, the sharp explorer is run across the areas of suspect damage noted in the initial exam, and records can be made of enamel defects. The dental mirror is then used to make sure a complete visual assessment of all of the crown structures have been made.

Once all the abnormalities have been recorded, radiographs are taken for further assessment, and then a treatment plan can be formulated. Good dental charts will have areas where treatment can also be recorded, for use in the future.

Grade score	Gingivitis index	Periodontal Index*	Furcation exposure	Tooth Mobility
0	No inflammation	No attachment loss	No furcation exposure	No mobility
1	Mild gingivitis – mild reddening and swelling of gingiva but no bleeding when probed	Upto 25% attachment loss	The furcation can be felt with the periodontal probe. Bone loss would typically be <1/3 width of the furcation	Single root – horizontal mobility <1mm
2	Moderate gingivitis – gingival inflammation with reddening and swelling and will bleed when probed	Between 25 and 50% attachment loss	The periodontal probe can be placed >1/3 of the width of the furcation	Single root – horizontal movement >1mm Multiple roots – horizontal movement <1mm

3	Severe gingivitis – significant swelling of gingiva, sometimes with ulceration. Will bleed spontaneously	Greater than 50% attachment loss	The periodontal probe can be placed through the furcation from the buccal to the lingual/palatal side	Single root – horizontal and vertical movement Multiple roots – horizontal movement >1mm and/or vertical movement
<p>Periodontal Probing Depth (PPD) – This is measured by placing the periodontal probe into the sulcus around the circumference of the tooth. Records of the depth from the free gingival margin are made at 4 locations around the tooth. Normal values are 1-3mm for the dog and 0.5-1mm for cats. Measurement greater than this without evidence of gingival enlargement are indicative of apical migration of the gingival attachment owing to periodontitis</p> <p>Gingival Recession (GR) – this is measured with the periodontal probe, and is the measurement from the cemento-enamel junction to the free gingival margin</p> <p>*Attachment loss is the total sum of the Periodontal Probing Depth and Gingival Recession, reflected as a percentage of the root length.</p>				

Table 1. Summerised from Gorrel, 2004

Conclusion

Dental examination is an important but often overlooked procedure in dental cases. Time well spent on this methodical approach reduces the risk of mishap, and ensures that good records are made for follow up use.

References and Further Reading

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