Dental radiographs offer a new view

Master this diagnostic technique to provide better care.

Ari Zabell, DVM, DABVP

Advancements in technology and knowledge have allowed veterinarians to gain considerable ground in the ability to provide superior preventive Pet health care. As Pets become more like family members, the veterinary profession looks to human medicine for these advancements, and it was inevitable that veterinarians would begin exploring dentistry for Pets.

Veterinarians now realize that Pets need to have their teeth examined and cleaned on a regular basis–just like their "parents." In fact, Pets need more careful attention to dental prophylaxis because of their root structure and more rapid aging process.

One of the most important diagnostic tools for identifying or ruling out oral health issues is dental radiography. A recent study shows that 75 percent of dogs with no abnormal oral clinical signs have radiographic changes.[1] In this article, we explore how you can successfully incorporate dental radiography into your dental program.

Debunking the myths

In the past, veterinarians approached dental care for Pets with the attitude, "clean 'em or pull 'em." Even today, only a handful of veterinary schools require students to take a dental course. Many students gain their dental knowledge from elective courses or from on-the-job training once they enter practice.

Clinical studies in both human and veterinary medicine show that with the proper diagnostic and maintenance measures, periodontal disease is one of the most preventable common diseases and a lack of prevention can lead to serious disease (see "Emphasizing oral health care," page 28).

As one of those diagnostic measures, radiography is even more important in veterinary dentistry than human dentistry because the roots of Pets' teeth extend much farther below the gum line than human teeth. Human dentists rely on radiographs to conduct a comprehensive dental evaluation of the condition of the teeth and bones on a prophylactic basis. There is strong evidence that veterinarians could improve Pets' lives by adopting prophylactic dental radiography in their practices. Using radiographs as a diagnostic tool will allow veterinarians to develop a baseline to see if periodontal disease is progressing in a patient.

Some practitioners are concerned that they cannot perform dental radiography without purchasing specific equipment designed for such procedures. But many of the radiographic units already found in veterinary hospitals today can provide high-

Figure 1

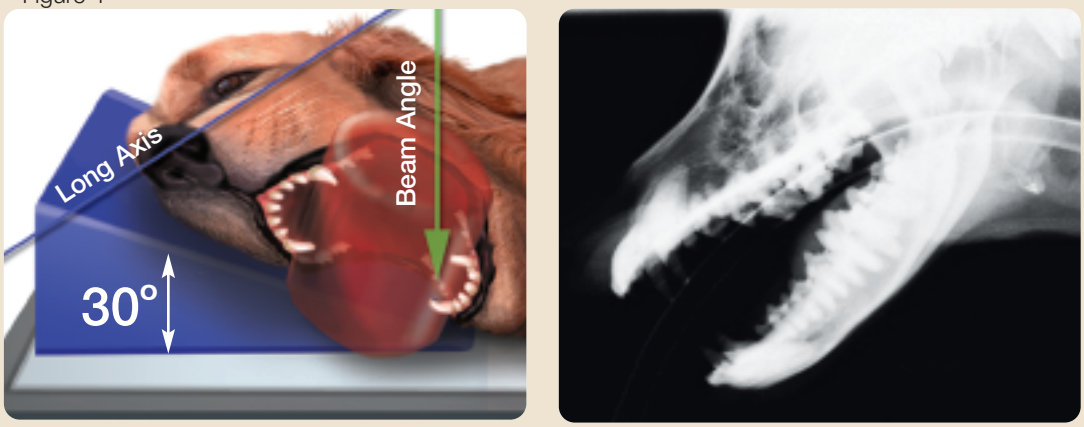


Fig. 1: Positioning for an extraoral radiograph of the mandibular premolars and molars. The Pet is in lateral recumbency and the head is positioned at an approximately 30 degree oblique angle using a radiolucent wedge with the mandible of interest closest to the film. The long axis of the muzzle should be parallel to the radiolucent wedge. It is important not to point the dog's nose up or down. The mouth is held open with a speculum, radiolucent gag (shown), or gauze to keep the maxillary dentition from shadowing the mandible. The x-ray beam is oriented perpendicular to the film cassette and focused on the tooth (or teeth) of interest.

Figure 2

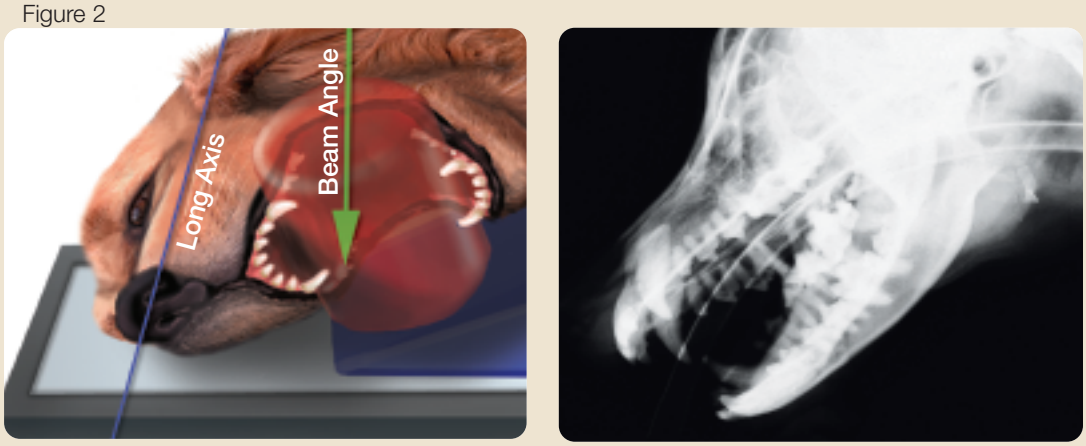


Fig. 2: Positioning for an extraoral radiograph of the maxillary premolars and molars. The Pet is in lateral recumbency and the head is positioned at an approximately 30 degree oblique angle using a radiolucent wedge with the maxilla of interest closest to the film. The long axis of the muzzle should be parallel to the plane of the film cassette. The mouth is held open with a speculum, radiolucent gag (shown), or gauze to keep the mandibular dentition from shadowing the maxilla. The x-ray beam is oriented perpendicular to the film cassette and focused on the tooth (or teeth) of interest.

Medical illustrations: Christian Hammer

quality dental radiographs. The unit only needs to tilt, be able to vary the distance of the emitter to the patient, and have a 100 mA setting. With the proper training, practices can easily incorporate radiography into their dental programs without a substantial investment in new equipment.

Getting the picture

To use dental radiography successfully, your whole team needs to receive education on the preventive and diagnostic importance of radiographs in a Pet's overall health. You'll need your team's commitment to communicate the importance

Figure 3A

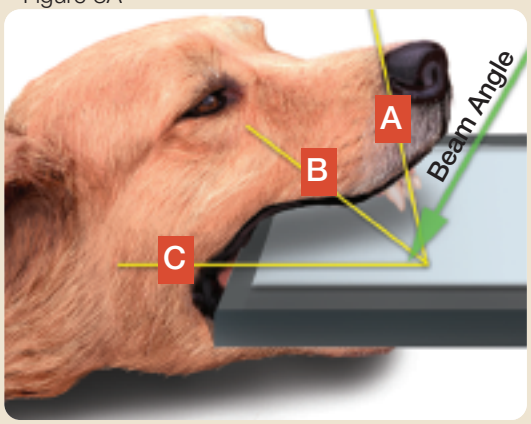


Figure 3B

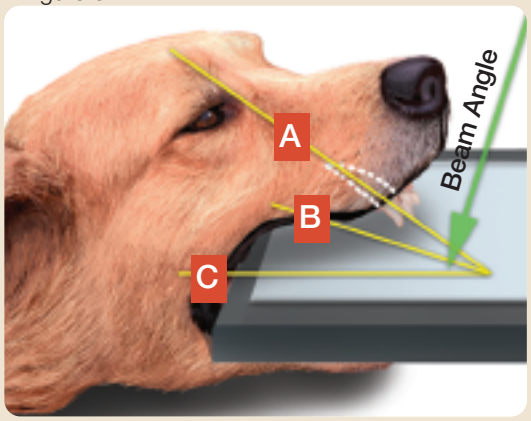


Fig. 3: Positioning for an intraoral radiograph of the maxillary incisor (*3A*) and canine (*3B*) teeth using a standard film cassette. The Pet is in sternal recumbency and the head is positioned with the mandible flat on the table. The film cassette is positioned in the mouth flat against the maxillary teeth. An imaginary line is drawn through the long axis of the teeth and the plane of the film cassette. The angle formed by the intersection of those two lines is then bisected and the x-ray beam is oriented perpendicular to the bisecting angle. As the long axis of the canines is different than that of the incisors, separate bisecting angles need to be calculated to get the best views. Smaller Pets and brachycephalic breeds may require the use of specialized intraoral film if the standard film cassette cannot be positioned back far enough in the mouth.

Figure 3A Radiograph

A = tooth plane B = bisecting angle C = cassette plane

of dental care consistently to your clients.

Also, PetNurses need adequate training on proper positioning so they can obtain high-quality, diagnostic radiographs with few retakes (*Figures 1-4*). A complete full-mouth survey includes six to 10 radiographs for dogs (depending on size) and six to eight radiographs for cats. Some Pets may require additional radiographic views because a specific tooth or region of the mouth needs further review. Views to include are:

- Upper canines and incisors
- Lower canines and incisors
- Lower molars and premolars
- Upper molars and premolars.

Together, these radiographic surveys provide a comprehensive view of the Pet's mouth. PetNurses can easily take the radiographs after anesthesia is administered but before the cleaning starts. While the PetNurse does the cleaning, doctors can review the radiographs between patients, coming back later to inspect the nurse's work or perform extractions, if needed.

(Note: Please check with your state's Practice Act to ensure PetNurses are able to perform cleanings under state law.)

Spreading the word

Once your team members are educated, it is time to have them help you educate your clients. Veterinarians and PetNurses should

Figure 4A

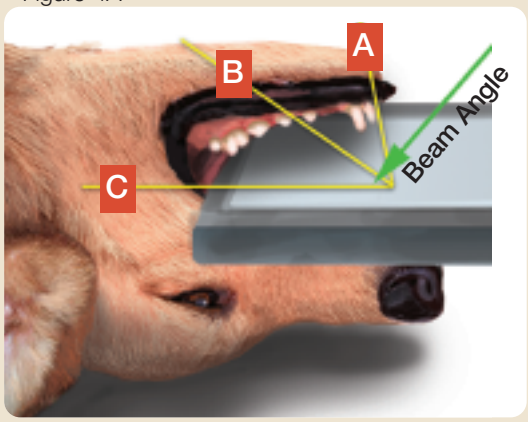


Figure 4B

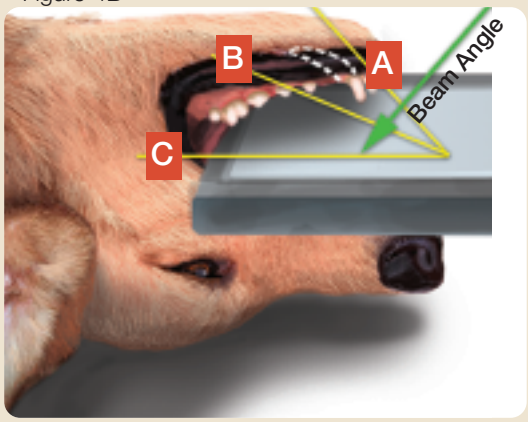
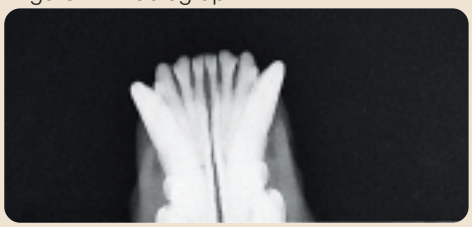


Fig. 4: Positioning for an intraoral radiograph of the mandibular incisor (*4A*) and canine (*4B*) teeth. The Pet is in dorsal recumbency and the head is positioned flat on the table. The film cassette is positioned in the mouth flat against the mandibular teeth. An imaginary line is drawn through the long axis of the teeth and the plane of the film cassette. The angle formed by the intersection of those two lines is then bisected and the x-ray beam is oriented perpendicular to the bisecting angle. As the long axis of the canines is different than that of the incisors, separate bisecting angles need to be calculated to get the best views. Smaller Pets and brachycephalic breeds may require the use of intraoral film if the standard film cassette cannot be positioned back far enough in the mouth.

For clarity of view, medical illustrations do not include endotracheal tube.

Figure 4A Radiograph



A = tooth plane B = bisecting angle C = cassette plane

Table 1: Indications for Dental Radiographs

- Prophylatic examination of teeth below the gum line
- Loose teeth (to determine whether extraction is necessary)
- Periodontal disease (to locate bony recession and pockets)
- Abscessed teeth (to determine the extent of infection)
- Fractured teeth
- Painful mouth
- Missing teeth
- Preoperative and postoperative extractions
- Feline resorptive lesions (to determine how the teeth are extracted; surgical vs. crown amputations below the gum line)
- Tooth abnormalities
- Oral tumors
- Oral fractures
- Nasal tumors
- Small exotics

discuss dental care during every appointment. To provide clients with the information they need and avoid surprises later on, always address:

- How calculus buildup can affect Pets
- The benefits of regular dental examinations and cleanings
- Clients' concerns about anesthesia
- The possibility of needing radiographs to determine the health of the teeth, bones, and the root system (see *Table 1*)
- The proper diagnosis and treatment
- The estimated costs.

If appropriate, you may also wish to discuss the possibility of extraction. Having this discussion before the examination and cleaning lets clients know that other issues could arise while the Pet is under anesthesia.

When you take radiographs, use them to educate clients about the extent of the dental disease. Seeing the evidence firsthand increases understanding, reinforces your words, and raises compliance levels.

Every successful dental program uses radiography as a diagnostic tool. But getting clients to take a stronger interest in their Pets' oral health and comply with your recommendations requires a consistent, proactive approach. As you and your team work to educate clients, remember that most see their Pets as family members. They don't want to jeopardize their Pets' health, especially when prevention is possible.

Reference

1. Tsugawa AJ, Verstraete FJ, Kass PH, et al. Diagnostic value of the use of lateral and occlusal radiographic views in comparison with periodontal probling for the assessment of periodontal attachment of the canine teeth in dogs. *Am J Vet Research* 2003;64(3):255-261.

Ari Zabell, DVM, DABVP (canine/feline), is senior medical director for Banfield, The Pet Hospital, overseeing veterinarians in California, Oregon, Washington, and northern Nevada. He worked as a practitioner in Reno, Nev., before joining VetSmart in Federal Way, Wash., as hospital director and later chief of staff before becoming a field director for western Washington.

Action Plan

Start with These Steps

Dental radiographs can reveal new information about the health of a Pet's teeth that cannot be determined from a physical exam.

• **Review the medical records of the last 10 dental cleanings that were performed.** Were radiographs taken or recommended for the Pet? If not, determine why they were not warranted.

• **Begin using dental radiography as a diagnostic tool.** Still unsure if it's worthwhile to incorporate dental radiography as a diagnostic tool? Put it to the test. Select 10 dental cases that have indications for radiographs, and shoot films to see if any changes can be noted. Chart your findings.

• **Develop a training course on dental radiography for your team.** The course can be geared to the specific teams within the hospital. Nurses will focus on radiographic techniques, client education, and dental health while the front office team can concentrate on communicating with clients.

Once you've analyzed your records, use the information to establish new programs to provide better care for Pets. Measure your results over a three- and six-month period. You will be surprised to see how using this evidence will not only build on the quality of care you offer but also add to your bottom line. Small changes can produce big results.