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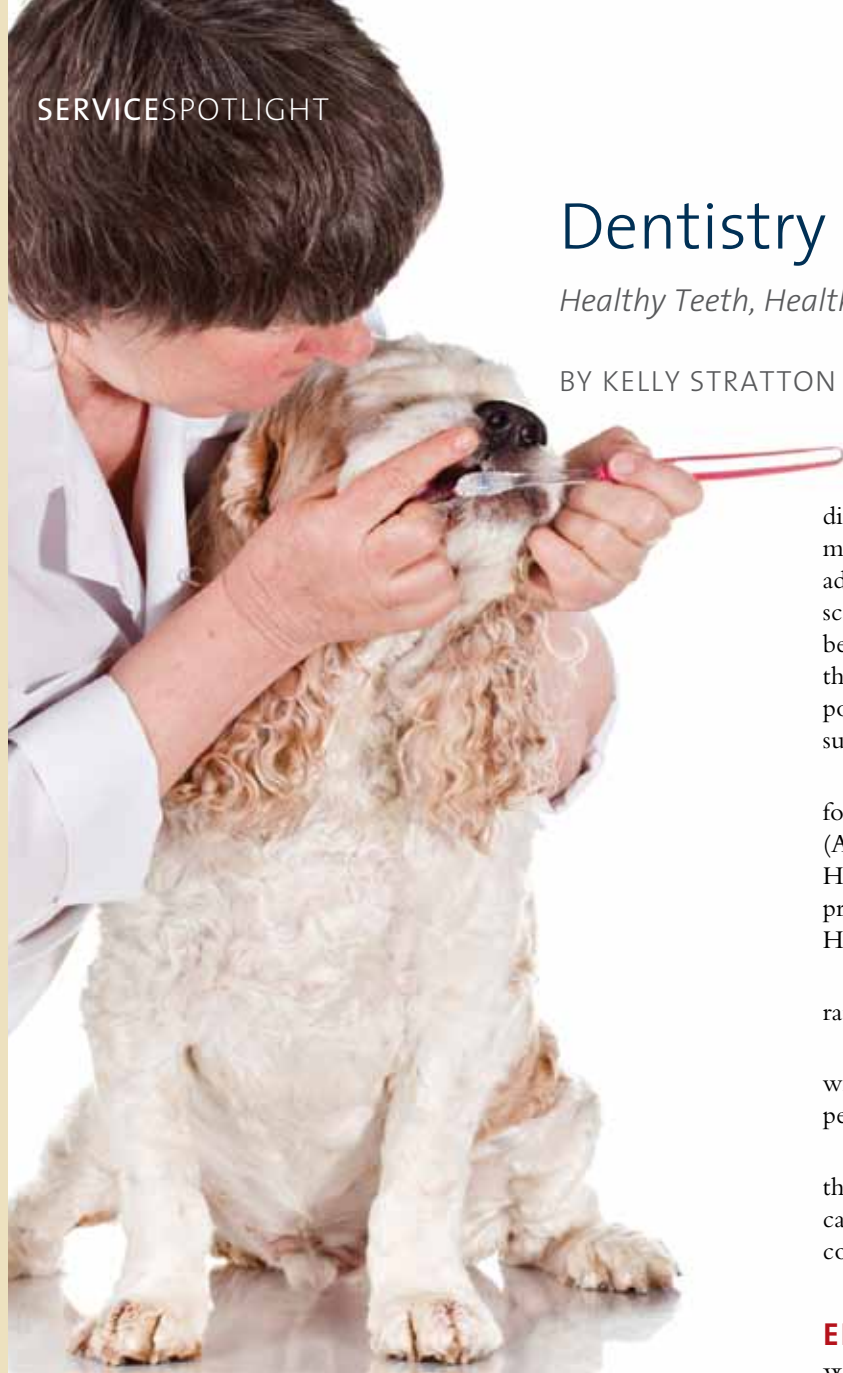
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Dentistry and Oral Surgery

Healthy Teeth, Healthy Pets

BY KELLY STRATTON



According to the American Veterinary Dental Society (AVDS), up to 80 percent of dogs and 70 percent of cats show signs of oral disease. The most common oral disease, periodontal disease, begins as a buildup of plaque in a pet's mouth and is the most frequently diagnosed health problem in dogs and cats.

Periodontal disease appears to have effects on human health, and we suspect there are similarities to its impact on our pets, including effects on heart, kidney and liver health, lack of diabetes control, and low infant birth rate due to effects of plaque bacteria and toxins on the body that are released into the bloodstream.

Plaque is formed by food particles, saliva, bacteria and their toxins. When not brushed off, plaque hardens to form calculus (tartar). While calculus is not the bad actor that plaque is when it comes to causing periodontal

disease, it provides a rough surface where plaque can more easily accumulate. Once large amounts of calculus adhere to the teeth, hand instruments and ultrasonic scalers become necessary to clean the teeth above and below the gumline. After thorough supragingival (above the gumline) and subgingival (below the gumline) scaling, polishing of the teeth is necessary to restore smooth surfaces to the scaled teeth.

To emphasize the importance of routine oral care for pets, the American Veterinary Medical Association (AVMA) has claimed February as National Pet Dental Health Month. But John R. Lewis, VMD, assistant professor of dentistry and oral surgery at Penn Vet's Ryan Hospital, wants to make something clear:

"Dental health is a not a month-long proposition, but rather a life-long effort," he said.

Still, in his day-to-day appointments and interactions with clients, Dr. Lewis is surprised by the number of people who never considered brushing their pet's teeth.

"Make no mistake," said Dr. Lewis, "daily brushing is the single most important and least expensive thing clients can do for their pet to maintain dental health and perhaps contribute to overall health."

EFFECTIVE BRUSHING

While daily brushing with a soft-bristled brush is ideal, Dr. Lewis understands that for owners with busy schedules, this addition to their daily schedule may be a challenge. If possible, however, Dr. Lewis recommends brushing at least every other day.

"A soft-bristled brush, in a circular motion at a 45-degree angle to the gumline is a powerful tool against plaque and gingivitis," he said. "The mechanical effect of the bristles is more important than what is placed on the brush. Human toothpaste is not recommended since it contains fluoride and shouldn't be swallowed."

ADDITIONAL HOME ORAL HYGIENE MEASURES

The phrase "home oral hygiene" refers to measures taken by pet owners to control or prevent plaque and calculus accumulation. These measures include special diets, chew toys, treats, rinses and water additives.

Special diets use the cleansing action of specially engineered kibble, and/or additives, such as sodium hexametaphosphate, that prevent calculus formation. Dental treats may also use similar mechanisms of action.

Toys may provide a cleansing effect while chewed on by pets, but care should be taken to avoid toys that are hard enough to cause tooth fractures. Dogs can generate large amounts of force with their jaws, and chewing on a real bone or other hard object can result in inappropriate tooth wear or painful tooth fractures.

Rinses, gels and pet toothpastes can be applied to a toothbrush or directly to the teeth and gingiva as an adjunct preventive measure. Home oral hygiene, when performed properly, may allow for longer intervals between professional dental cleanings.

In addition, owners should start when pets are young.

“When they’re still puppies and kittens, they can learn that it’s okay for their owner to open their mouth, lift their tongue and feel around,” said Alexander M. Reiter, Dr. med. vet., head of the Dentistry and Oral Surgery Service. “Starting brushing early is important – and the earlier something different is noticed, the more treatable it is.”

GETTING A PROFESSIONAL’S HELP

Just like in human dentistry and oral health, even the most dedicated brusher needs to see a specially trained professional for regular checkups and cleanings as needed.

So, just as people get their teeth professionally cleaned, so should pets.

The specialists of the American Veterinary Dental College (AVDC) have defined the phrase “professional dental cleaning” as scaling (supragingival and subgingival plaque and calculus removal) and polishing of the teeth with power/hand instrumentation performed by a trained veterinary health care provider under general anesthesia.

This is in contrast to “non-professional dental scaling,” which refers to dental scaling procedures performed on pets without anesthesia, often done by individuals untrained in veterinary dental techniques.

“Non-professional dental scaling, while it may be cosmetically pleasing, provides a false sense of security,” said Dr. Lewis. “Even though the crowns of the teeth look like new again, this kind of cleaning neglects the most important part of the teeth — the subgingival areas.”

Owners should be wary of practices that tout anesthesia-free dental cleanings as a professional cleaning. Unless the dog or cat is placed under general anesthesia so that the subgingival area can be cleaned properly, Dr. Lewis warns this type of cleaning is not effective treatment for established periodontal disease. Even the most tolerant dog or cat will not let you clean well under

HISTORY OF THE SERVICE

Penn Vet was the first veterinary school in North America to offer an organized program in veterinary dentistry and oral surgery in the 1970s. Borne out of collaboration between Penn Vet and Penn’s Dental School, clinical and educational programs developed from discussions and case interactions. Dental and oral surgical cases were managed by various surgeons until it became a particular topic of interest to Professor of Surgery Colin Harvey, BVSc, and the caseload increased as a result.

The Veterinary Dentistry and Oral Surgery Service was established as a separate clinical entity within the Section of Small Animal Surgery in the mid-1980s, offering a full range of endodontic, periodontal and restorative procedures as well as involved oral and maxillofacial surgery procedures. An elective educational program for Penn Vet students was first offered in the early 1980s, the first in the world.

From the early 1980s onwards, sponsored veterinary dental and oral surgical research projects have been conducted at Penn, with funding provided by foundations and commercial sponsors.


In 1994, a symposium hosted by the University of Pennsylvania focused on the awareness and importance of oral hygiene in veterinary patients led to the formation of the Veterinary Oral Health Council (VOHC), which was established three years later in 1997. This organization, of which Dr. Harvey serves as director, exists to recognize products that reach pre-set standards in retarding accumulation of dental plaque or tartar in dogs or cats.

the gumline when awake, and it is impossible to take dental X-rays when the patient is awake.

PICKING THE RIGHT PRODUCTS

The Veterinary Oral Health Council (VOHC) places its seal of acceptance on products that meet pre-set standards of slowing development of plaque and calculus (tartar) in dogs and cats. Products are awarded the VOHC Seal of Acceptance following data review from trials conducted according to VOHC protocols. For more information on VOHC-accepted products, visit www.vohc.org.

Providing dental care for companion animals requires effort that continues throughout the patient’s life. However, this effort is likely to be rewarded.

“More and more evidence exists that attention to dental health may result in more comfortable, healthier, and longer lives for our beloved pets,” said Dr. Lewis. 

About the Dentistry and Oral Surgery Service

While clinicians and technicians in the Dentistry and Oral Surgery Service see their share of dental cleaning patients, most of their caseload is comprised of animals needing specialized care.

“Primary care veterinarians send us all kinds of rare cases,” said Dr. Lewis. “On a day-to-day basis we see oncology cases, jaw fracture fixations, palate defect repairs.”

Dr. Lewis and Dr. Reiter are the experts called upon when something is complicated.

“We are very good at complicated periodontal surgery; palate surgery; severe head trauma with jaw fractures; maxillofacial cancer with reconstructive surgery of the face or lips; and endodontic therapy with prosthetic dentistry,” said Dr. Reiter.

Splitting the duties of supervising the clinical caseload 50/50, Dr. Reiter and Dr. Lewis also share on-call duties with dentistry and oral surgery residents (Drs. Rice, Menzies, Soltero-Rivera and Jennings) during weekends and holidays.

In addition to their clinical responsibilities, Drs. Lewis and Reiter are also involved in furthering the field of veterinary dentistry through research and clinical trials. One area of current focus is Dr. Lewis’ studies on squamous cell carcinoma. Two clinical trials, led



Ryan Hospital Dentistry and Oral Surgery Service team during a recent procedure.

through Penn Vet’s Veterinary Clinical Investigations Center (VCIC), have just wrapped up and are awaiting publication.

THE TEAM

COLIN HARVEY, BVSC



Dr. Colin Harvey is professor of surgery and dentistry at Penn Vet. He graduated BVSc from the University of Bristol (UK) in 1966 and then completed an internship and residency in surgery at Penn Vet after which he became assistant professor in 1969. In 1980 Dr. Harvey became a professor and six years later was awarded a Fellowship of the Royal College of Veterinary Surgeons (RCVS) for his thesis on “Laryngeal Surgery in the Dog.” In recognition of having received training in dental procedures from colleagues at Penn’s School of Dental Medicine and his charter membership in the AVDC, his academic appointment was renamed professor of surgery and dentistry in 1990.

Dr. Harvey is a Diplomate of the American College of Veterinary Surgeons; member of the Organizing Committee and charter Diplomate of the American Veterinary Dental College and of the European Veterinary Dental College. He is also a charter Diplomate of the European College of Veterinary Surgeons.

He was section chief of Small Animal Surgery (1974–80) and vice chair of the Department of Clinical Studies (1996–2002) and was the founding head of the Dentistry and Oral Surgery Service at the University of Pennsylvania.

Dr. Harvey was editor of the journal *Veterinary Surgery* from 1982–87 and editor of *The Journal of Veterinary Dentistry* from 1994–2000 and has been a reviewer or review board member for numerous other journals. His publications include approximately 70 chapters in textbooks, 130 papers in peer-reviewed journals and 100 abstracts and other papers on surgical or dental topics. Dr. Harvey has written, edited or co-edited five books on small animal surgery and dentistry.

His research interests include veterinary and comparative periodontal disease (including comparative microbiology, standardization of periodontal scoring, plus prevention and treatment), the interaction of infectious oral diseases, particularly periodontal disease, with the rest of the body, specifically distant organ and systemic effects, and the utility and effectiveness of antimicrobial drugs in the management of patients with oral diseases.

JOHN LEWIS, VMD

Originally from Wilkes-Barre, PA, Dr. John Lewis decided early in life that he wanted to become a veterinarian.

After earning a biology degree from Bucknell University in Pennsylvania, Dr. Lewis applied to Penn Vet. It was during his time on rotations that he got his first taste of clinical veterinary dentistry. After earning his VMD in 1997, Dr. Lewis joined a general practice in Raleigh, NC.

“I had only a one-week rotation in dentistry during my time at Penn Vet,” said Dr. Lewis, “but because the vets I worked with in general practice had no training in dentistry or oral surgery, I became the expert by default. Today, Penn Vet students have more opportunities for learning dentistry than any other vet school, including a two-week rotation, third-year elective course and the Student Chapter of the AVDS.”

His interest in dentistry and oral surgery grew so he applied for a residency at Penn Vet, which he began in 2002. In 2006, he was appointed assistant professor.

At present, in addition to his clinical interests, Dr. Lewis teaches students, interns and residents, and is heavily involved in making strides in understanding squamous cell carcinoma, a common oral cancer in cats, dogs and humans.



thesis study on “Tooth Resorption in Domestic Cats,” Dr. Reiter became standing faculty at Penn Vet in 2003 and today is an associate professor and the head of the Dentistry and Oral Surgery Service.

Dr. Reiter focuses his research on causes and pathogenesis of multiple tooth resorption; impact of periodontal disease on renal function; evaluation of techniques for periodontal surgery, jaw fracture healing and palate defect repair; microsurgery and maxillofacial reconstruction; and development of new treatment strategies for the oral and maxillofacial cancer patient.



ALEXANDER REITER, DIPL. TZT., DR. MED. VET.

Dr. Alexander Reiter is a Diplomate of the American Veterinary Dental College (AVDC) and the European Veterinary Dental College (EVDC). He is the recipient of the 2004 European Veterinary Dental College/European Veterinary Dental Society Award and the 2006 AVDS/Hill’s Research and Education Award.

Always having an appreciation for animal documentaries as a child and teenager, Dr. Reiter knew he wanted to do something with animals. After spending a year in the Austrian army, where he also worked with the dogs and horses of the mountain unit, Dr. Reiter graduated from the University of Veterinary Medicine in Vienna in 1996.

The day after he graduated, Dr. Reiter moved to the US — to Mesa, AZ — where his interest in dentistry and oral surgery developed. Dr. Reiter completed a two-year residency at Penn Vet in 2000. After staying on as lecturer for three years and completion of a postgraduate



RESIDENTS, TECHNICIANS AND DENTAL HYGIENISTS

A full-time veterinary dentistry and oral surgery residency training program, the first in the world, was established at Penn Vet in 1989. This program has trained far more board-certified veterinary dentists and oral surgeons than any other program, and these veterinary dental Diplomates are now practicing in the USA, Canada, Europe, South America and Japan. Our current residents demonstrates that international influence: Dr. Robert Menzies hails from Australia, Dr. Soltero-Rivera is originally from Puerto Rico, and Dr. Michael Jennings, originally from Michigan, is closer to home.

Hygienists and specialized technicians have played a huge role in the teaching, research and clinical missions of the service. Bonnie Miller, BS, RDH, has provided her expertise at Penn Vet for 21 years. Jeanette Hernandez, RDH, CVT, spends half her week at a human dental practice and the other half at Penn Vet. Amy Kressler, CVT, is the service’s newest addition. Both she and Jeanette are working toward specialization in veterinary dentistry offered by the Academy of Veterinary Dental Technicians (AVDT). 