MARS
Petcare

Defining a new standard for assessing dog chew products for textural safety

What is the issue?

- There are currently **no limits** for the textural properties or hardness of chews, food and toys for dogs.
- Veterinary dental specialists have been trying to raise awareness of the link between hard chews and tooth fractures for a number of years, but until now no significant data has been published.
- Reports of tooth fracture cases in veterinary practice are **extremely common**[1-6], but very few studies have been written up for publication.
- Tooth fractures have the potential to **severely impact dogs**, leading to:
  - Extreme pain
  - Infection
  - Decreased appetite[7]
- Fractures can be **hard for owners to spot** as dogs, being stoical in nature, hide their discomfort well.

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Hear it from the specialists

“While chew products can be a good way to help maintain a dog’s oral care, as part of a robust dental regime, we would not consider all of them to be safe. Recently toys have been introduced to simulate chewing of bones, such as cleaned up antlers or nylon bones - these objects are extremely hard and can often result in fractured teeth that are referred to us for treatment. Our advice is simply not to give your dog anything to chew that you cannot dent with a thumbnail or would not bend or break in the mouth when in contact with teeth.”

Norman Johnston
RCVS, European & American Specialist in Veterinary Dentistry
DentalVets, North Berwick

Concern over increase in cases of fractured teeth

Dear editor,
We, the undersigned, are writing with our concerns regarding the increased number of fractured teeth we are seeing as a result of treated antlers that are available in many pet stores, online and also through many veterinary practices.

Antler chews are marketed as safe, natural and even suitable for puppies to chew, but the websites selling one such chew appear to acknowledge there are safety concerns with its products: “Chewing it too hard could damage his teeth” and “keep a watch that your dog is gnawing on the antler and not trying to break it or bite it”.

Unfortunately, we have seen an increased number of slab fractures to maxillary carnassials and also maxillary canines where dogs hold an antler chew with their front paws and bite down too hard. Our concern is many of these fractures will result in pulp exposure and, ultimately, pain for these dogs. Any tooth with pulp exposure cannot be left and needs treatment – either extraction or endodontic treatment. If an object given to a dog to chew is too hard

Letter to the Editor - Veterinary Times
22nd July 2013

July 22, 2013

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for the tooth to penetrate, the tooth will fracture and this seems to be the case with antlers. Antlers are not alone in the myriad of inappropriate “dental chews” available and we also strongly advise against nylon bones, treated bones and even large rawhide chews for the same reason – the tooth does not penetrate the chew, but fractures when the dog chews on these hard objects.

We strongly urge veterinary practices in the first instance to stop selling these chews as they are clearly damaging dogs’ teeth and we ask them to take a lead in educating clients in toys that are relatively safer for dogs’ teeth and those that carry a high risk of damaging the teeth – and refrain from recommending or selling the latter.

Yours faithfully,
LISA MILELLA, BVSc, MRCVS,
European veterinary specialist in dentistry;
SIMONE KIRBY, DipECVCP, DipEVDC, MRCVS,
European veterinary specialist in dentistry;
PETE SOUTHERDEN, BVSc, MRCVS,
European and RCVS recognised specialist in veterinary dentistry;
CEDRIC TUTT, BVSc, BSc, MRCVS,
European veterinary specialist in dentistry; and
NORMAN JOHNSTON, BVM&S, DipEVDC, DipAVDC, MRCVS, American, European and RCVS recognised specialist in veterinary dentistry.

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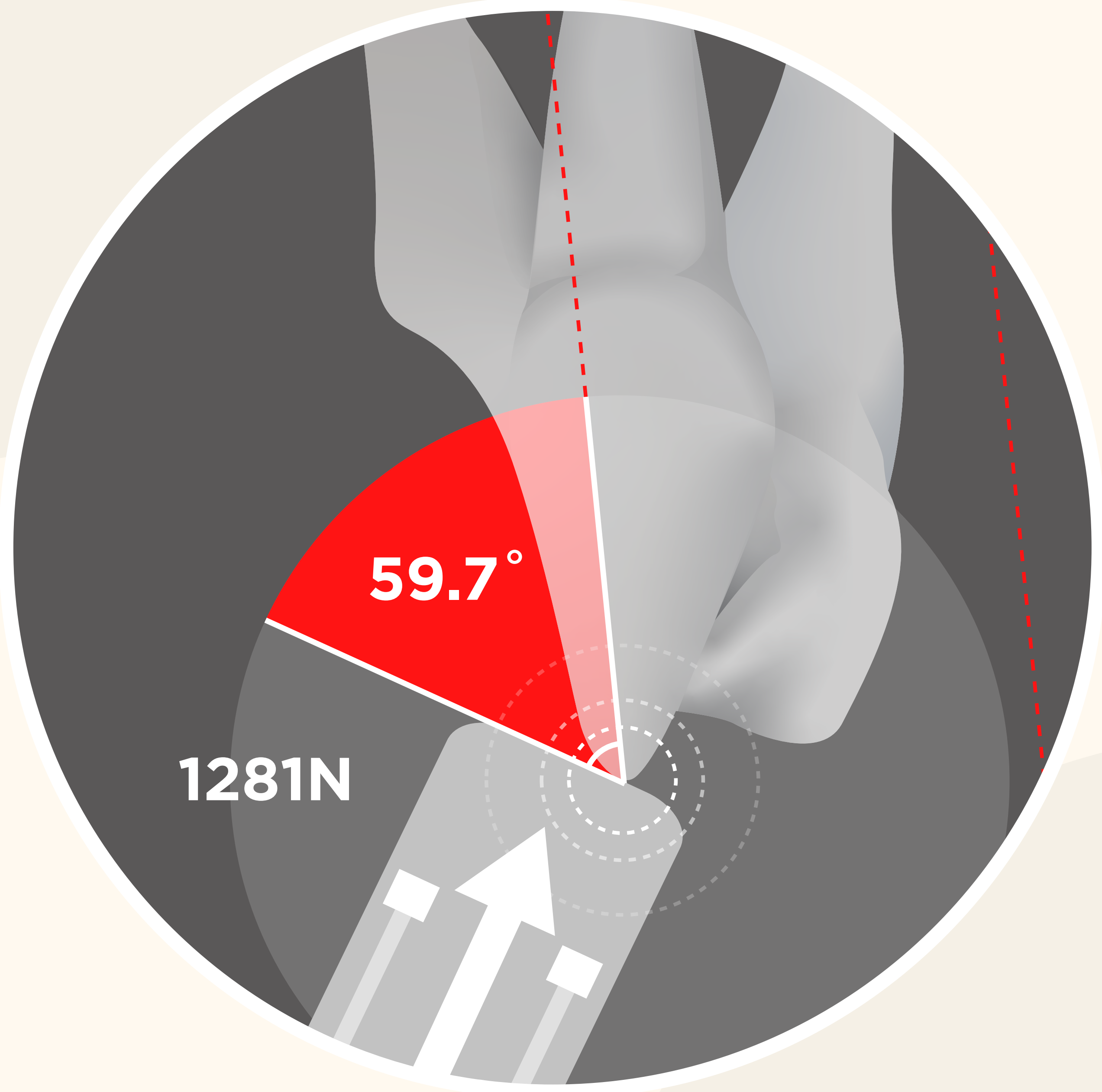
The research – an overview

- Pioneering research has confirmed that dog's teeth can fracture if they chew on products that are too hard.
- The independent research is centered on a study which investigated the forces that are required for these fractures to occur.
- The research was conducted by scientists at the **University of Pennsylvania School of Veterinary Medicine**, led by **Prof. Alex Reiter Dipl. Tzt., Dr. med. vet., Dipl. AVDC, EVDC.**

PennVet

The research has passed through multiple vet dentist peer review steps and has been screened by the WALTHAM Centre for Pet Nutrition Peer Review Panel.

The research showed that on average the maximum load a tooth could sustain was 1,281 N at an impact angle of 59.7°



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The research – a closer look

The study

Study sample: 24 maxillary fourth premolar teeth.

Procedures: Sample teeth were held by an aluminum device at an angle of 60° with respect to the ground. An axial compression test was performed, creating a force upon the crowns of the teeth. The highest compressive force prior to failure was considered to be the maximum load sustained by the teeth.

Summary of findings:

The mean maximum load (+/- SD) sustained by the tested teeth at the point of fracture was 1,281 N (+/- 403 N)
at a mean impact angle (+/- SD) of 59.7° (+/- 5.2°).

The most common fracture type that occurred among all samples was a complicated crown fracture (n=12), followed by an uncomplicated crown fracture (n=6). There was no statistically significant correlation between dog age, weight or impact angle and the maximum load applied before fracture.

The study has confirmed a clinically relevant pattern of fracture of maxillary fourth premolar teeth under angled compression at forces within the maximum chewing capability of the average domestic dog.

What does this mean?

- Any chew or toy that does not break under the maximum load a tooth could sustain may have the potential to cause a fracture.
- This research has proven that we are now able to assess products using this method and determine whether or not they are likely to cause a tooth fracture.

Which products are impacted?

There are many products on the market that are extremely hard and have the potential to cause a fracture.

The most likely implicated products will sit within rawhide and non-manufactured chews, such as bones and antlers, however not all such products will be impacted.

Mars Petcare has defined an internal protocol to assess all our chew products for textural safety and introduced a new texture standard for our dog products.

Mars' involvement

For a number of years, independent veterinary dentists have voiced concerns to different parties regarding unsafe products and increasing fracture cases, requesting support to fund much needed research in this area.

Funding for this research was provided by Mars Petcare to better develop this science in this area and increase understanding of the issue.

Mars Petcare placed no special terms to the methodology, assessment or submission criteria.

In response to the research findings, Mars Petcare has reviewed its entire range of products to make sure all fall below the upper limit for causing tooth fractures.

In line with the Mars Petcare mission - 'A Better World for Pets' - we feel it is our duty to ensure that veterinarians and pet owners are able to make an informed assessment on what is safe for a dog to chew.

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Our goal...

Our plan is to first work alongside the University of Pennsylvania, the pet care industry, veterinarians and retailers to discuss the application of this research to all relevant products sold around the world.

We want to communicate this new knowledge to all concerned stakeholders in a responsible and accessible way.

In time, we hope that manufacturers and retailers will adopt a standard of safety for texture and hardness, with new, safer, products being made available to pets over time.

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Timeline

November 2018
University of Pennsylvania presents research to veterinary dental specialists at World Veterinary Dental Forum in Arizona on 16th November 2018.

December – January 2018/19
Research findings previewed to the pet food industry, through trade association meetings.

February – May 2019
Engagement with the wider veterinary community

March - July 2019
Educational campaign to pet owners around the world

2020 – onwards
Working towards a standard of safety for texture and hardness across the industry

Our proposed message to pet owners

Chews and toys form an important part of a dog's daily enrichment, helping provide mental stimulation, as well as maintaining good oral health and preventing the progression of harmful disease.

However, new research has found that some could have the potential to damage dogs' teeth because of their texture and hardness and the immense forces applied when a dog chews on them.

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We would suggest to pet owners, that if they are uncertain whether a product may be too hard for their dog's teeth, that they should ask their veterinarian for advice. We encourage pet owners to continue using the wide variety of safe chew toys that are available.

What could you do to help?

Veterinary professionals

Vets are in the best possible position to educate pet owners on what is safe for their pets to chew. Mars will be sharing the the outcomes of the study to help aid these important conversations, and also for veterinary professionals to find out more about the research.

Remember that fractured teeth with pulp exposure should never be left, instead they can be root filled or extracted.

Be aware that root canals often can save teeth without encountering problems seen in difficult extractions.

For more information on treating fractured teeth go to www.dentalvets.co.uk/common-cases/fractured-teeth

To access more information and for updates on this research, vets can visit www.waltham.com or **Click here** to read the full paper.

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References

1. Golden AL, Stoller N, Harvey CE. A survey of oral and dental diseases in dogs anesthetized at a veterinary hospital. J Am Anim Hosp Assoc.(1982) 18:891–9.

2. Le Brech C, Hamel L, Le Nihouuannen JC, Daculsi G. Epidemiological study of canine teeth fractures in military dogs. J Vet Dent. (1997) 14:51–5.

3. Hamp SE, Olsson SE, Farso-Madsen K, Viklands P, Fornell J, et al. A macroscopic and radiologic investigation of dental diseases of the dog. Vet Radiol. (1984) 25:86–92.

4. Lopes FM, Gioso MA, Ferro DG, Leon-Roman MA, Venturini MA, Correa HL. Oral fractures in dogs of Brazil - a retrospective study. J Vet Dent. (2005) 22:86–90

5. Butkovic V, Simpraga M, Sehic M, Stanin M, Susic V, Capak J, et al. Dental diseases of dogs: a retrospective study of radiological data. Acta Vet Brno. (2001) 70:203–8.

6. Capik I, Ledecky V, Sevcik A. Tooth fracture evaluation and endodontic treatment in dogs. Acta Vet Brno. (2000) 69:115–22.

7. BSAVA Manual of Canine and Feline Dentistry and Oral Surgery. 4th edition 2018. Pages 102-103.

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