

WHAT YOU WILL FIND IN THIS ISSUE

Foreword

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Editor-in-chief of this Issue

From May to July, off the coast of Transkei province, South Africa is what they call the "sardine run", a migration of sardines. For two months, the South African coastal waters are teeming with billions of sardines which have left the cold waters of Cape Agulhas and are heading for the more tropical climes of Kwazulu Natal and Mozambique.

This, as yet unexplained phenomenon, provides the opportunity to observe shoals of silvery sardines extending over hundreds of miles and every year attracting curious crowds and predators of all species.

Then the shoal of sardines returns to where it started from.

We often hear that the canine is the key tooth in occlusion and that the size of its root proves it. But does this assertion hold up when we evaluate it with an "evidence based" approach? Our art is embellished with a wealth of affirmations, observations and experiments that confirm our certainties. But the canine remains the richest subject of all for heated theoretical debate about its fundamental role.

How should we interpret its ontogeny and phylogeny?

The canine is a tooth which is characteristic of carnivorous hunter predators like the tiger or the lion.

The image of a smilodon or sabre-toothed tiger, a prehistoric animal that lived in America between 2.5 million and 10 thousand years before the modern era, has captured our imagination.

The smilodon was given its name because of the gigantic 18 cm long, knife-shaped canine teeth that it doubtless used to "stab" its victims, a feat that even in our wildest imagination we cannot picture our own upper canine teeth performing!

The essential characteristic of the wild boar's dentition is the presence of hollowed-out teeth which grow continuously and develop after eruption. While in French different names are sometimes assigned to maxillary canines (*grès*) and mandibular canines (*défenses*) in English both the upper and lower canines of wild boars are called tusks. In any language boars use their canines, along with their noses, to dig up soil in search of food. But the canine teeth of boars do not take part in prehension or mastication. They do exhibit a strong sexual dimorphism.

P. PICO asserts that, in apes a link exists between the organization of social relationships among males and females and the shape and size of their canines.

The marvels of nature both teach and inspire us. We are astonished to observe such different roles for canine teeth in the animal kingdom.

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Canines occupy an anterior position in the dental arch between the incisors and the premolar and molar cheek teeth. The specific relationship of the canines and neural crest-derived ectomesenchyme makes this a unique and unusual tooth. In the course of its maturation, it is often the last tooth to erupt in the arch. But the gnathological system cannot wait for it in order to organize itself and start functioning, an issue of timing that may help to put the importance of this tooth into perspective. This ontogenic approach is described in the following pages by R. BENOIT who puts the canine back in the dento-alveolar system for a general functional approach.

In order to appropriately understand the position of the canine and its importance in orofacial functions we must possess accurate knowledge of its anatomy. While elephants use their canines to move tree trunks, humans are compelled to employ them in much more sophisticated ways. To comprehend how they function we need to have more than good anatomical information. We also have to consider how the neuromuscular system operates in a complex phylogenetic and articular context. In a magisterial fashion, A. EL ZOGHBY enlightens us on these matters, reviewing in detail the anatomical-functional characteristics of the canine tooth as seen by a gnathologist.

R. GARCIA offers a summary of the problems and solutions affecting the canine, by creating a decision-making tree comprehensive enough to serve as a guide for even the most intrepid clinicians. As we all know, in making therapeutic choices we must take a great number of factors into consideration, always mindful that a choice of one type of treatment always requires the rejection of another. The procedure

proposed enables us to make choices on a solid, objective and well-formulated basis. Modern three-dimensional imaging gives us a tool for conducting our diagnostic investigations on a remarkably high level and helps in the preparation of the most effective treatment plans. With the advent of Digital Cone Beam Computed Tomography, many more practitioners have easy access to this type of exploration, which provides increased information but a decreased level of irradiation to patients, even lower than that of hospital scanners. We present a general overview of these techniques to highlight their indications and define the benefits they provide.

But what was the point of that sardine story at the beginning of the foreword?

During the run, the sardines don't eat or reproduce. They are not moving towards more favourable conditions... Scientists have not found a rational explanation for this migration. The best hypothesis so far available suggests that the sardines have preserved memories of a migration, the purpose of which has disappeared over time.

Even if we have no clear understanding of the whys and wherefores of a question, we must never get discouraged or seek the solace of a dogmatic, unsubstantiated theory provided by a charismatic guru. The hard information that we do have is that canine teeth play a physiological role in occlusion that we must understand in order to make informed therapeutic choices and that their place in the occlusal scheme is the result of evolution. But the whys and the wherefores of their shape and size in modern humans may, like the sardine run, have a purpose which is now obsolete, lost in the darkness of time.