

Mechanical Laminitis: In Need of A Funeral

by Jaime Jackson (Sept. 26, 2011)

The rationale for what is called "mechanical laminitis" is rooted in the bogus science of the conventional "hoof mechanism" model. It's been around as long as I can recall, but finally "put to death" by Dr. Christopher Pollit's research and genuine NHC. Unfortunately, it's official "funeral" hasn't taken place yet. That's where we come in — and I mean the AANHCP, because we're the only organization that I know of which disputes this transgression of common sense.

I'm completely revamping the 1997-written *Horse Owners Guide to NHC* at this time, where, for the first time, the NHC model for the hoof mechanism will be laid out, along with the pathophysiology of Supercoriatitis (laminitis) within the interpretation of this model, in a new book, *The Natural Trim: Principles and Practice (TNT)*. The plan, then, will be to get this work out widely to help further change towards our vital mission and a better understanding of NHC. And to put to rest nonsense science that continues to wreak havoc upon domesticated horses worldwide.

For now, my advice to our NHC practitioners is to direct horse owners to our *AANHCP Field Guide to Natural Hoof Care* until I complete the revisions of our educational materials: *Paddock Paradise* stands as written. The content of the current *AANHCP Official Trimming Guidelines* has been completely revised and will be integrated, like the HOG, into *TNT. Founder: Prevention and Cure The Natural Way*, while still important and useful. will also have to go in its current form.

Even though we know that NHC provides the correct solutions to problems facing horses, the fact remains, the old models are still out there terrorizing people and their horses. Consequently, any one of our clients are vulnerable if a smooth talker (vet, generic barefooter, farrier, etc.) gets to them, and there are plenty of these kinds of people out there to go around. Nevertheless, our science is rock solid and will prevail in time. We just need to keep working it.

In the meantime, I would avoid instigating any enlarged debate over "mechanical" laminitis, since it already has too much wind in its sails. My opinion is that it really needs to be explained within the context of NHC hoof mechanics and good science if it is to make any sense at all. But because I had one of our UK CPs ask about this recently, I decided to share with our entire practitioner base a brief snapshot (but not a direct quote) from one of the new chapters of *TNT*:

Mechanical laminitis is one of many explanations proposed by veterinarians, farriers and others for the separation of the hoof wall from the sole. The "mechanical" rationale for this pathology is, for the most part, not new, and has been described by many authorities for generations. One purported cause is riding horses, shod or unshod, on hard ground. Another states that it will happen to horses with genetically "inferior" feet. More recently, and widely believed by generic barefoot trimmers and their clients not grounded in NHC sci-

ence, it is attributed to extraordinary lever and weight-bearing forces acting upon the hoof's *lamellar attachment mechanism* (LAM). Here, the direct cause cited is excessive toe length or a toe that has advanced too far forward of its natural position, of which "slipper toe syndrome" and "long toe, run-under heel syndrome" are classical examples.

The LAM has been studied extensively for nearly two decades by Dr. Christopher Pollit of the Australian Laminitis Research Unit (Queensland University). It refers to the manner by which the hoof wall is bound to the lowermost of the three bones in the horse's foot, that is the *coffin bone* (aka the Distal Phalanx and P3). The inner hoof wall (**Figure 1**) is combed with a vertically oriented network of some 600-plus parallel, epidermal leaf-like structures, called lamina (Latin - "a thin piece" like a blade of grass). These epidermal leaves of the inner hoof wall are called the *primary epidermal lamina*, or PEL. The PEL interdigitate ("connect") with another set of parallel *dermal leaves* (DL) that are attached to the coffin bone (**Figure 2**).

Pollit discovered that the PEL and DL are themselves separated by yet another structure

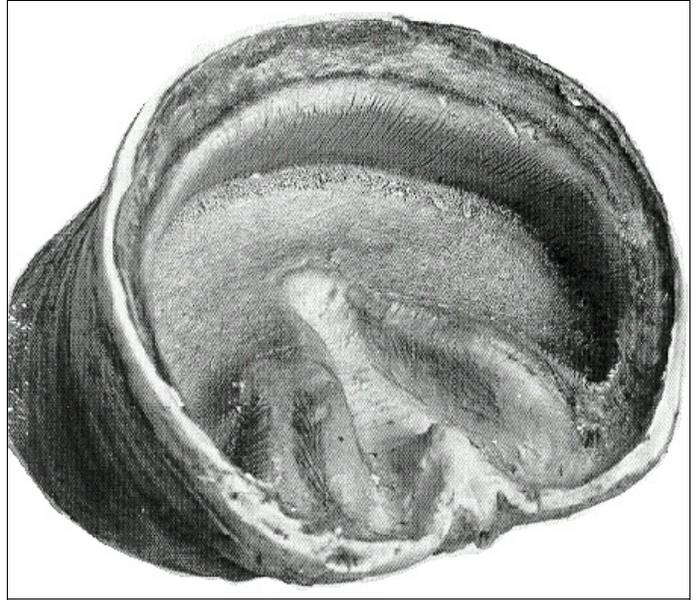


Figure 1. Inside the capsule showing the epidermal lamina that ring the entire inside of the hoof wall. (photo credit: Emery, Miller and Van Hoosen)

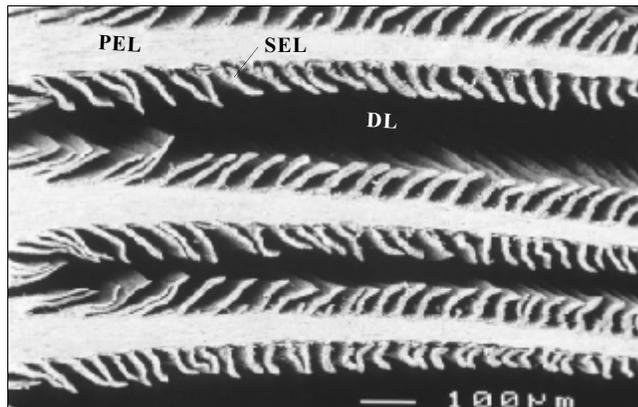


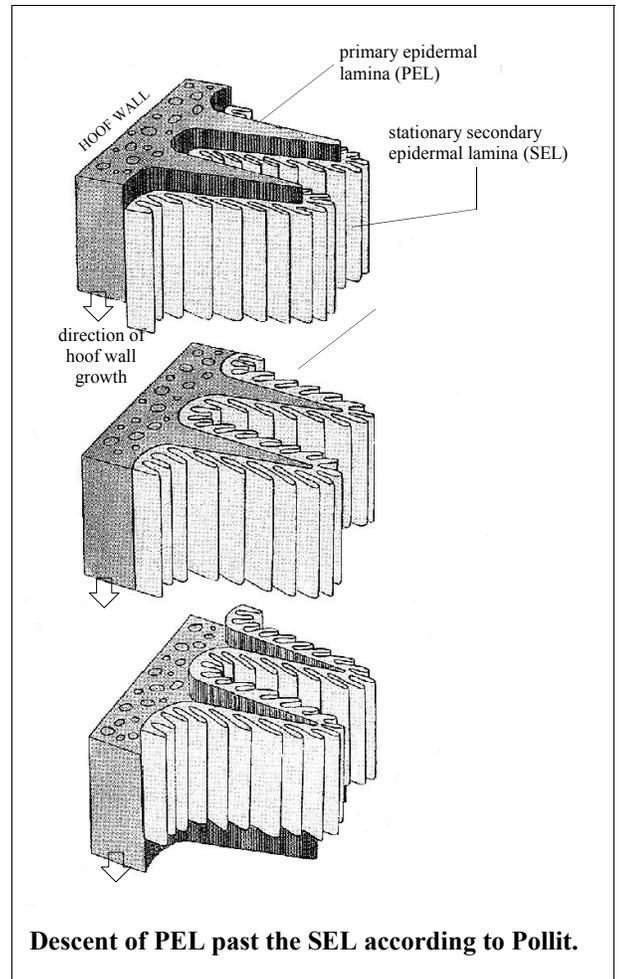
Figure 2. Interdigitation of the lamellar attachment mechanism (LAM). PEL = primary epidermal lamina; SEL = secondary epidermal lamina; DL = dermal lamina. (photo credit: C. Pollit)

identified as the *basement membrane* (BM). Moreover, that the BM itself extrudes a thin layer of epidermal connective tissue called the *secondary epidermal lamina*, or SEL, which intermesh with the PEL (**Figure 2**). The LAM, then, is comprised of the PEL, SEL, BM, and DL. Pollit has shown that the LAM disengages between the PEL and SEL during normal wall growth (**Figure 3**). This separation, which allows the wall to grow past the stationary coffin bone is “momentary” and perfectly natural. It is caused by the proteolysis (Gk, -lysis, “breaking down” of proteins) of the attachment by a class metalloproteinase enzymes.

Pollit showed that the same proteolysis of the LAM also occurs during laminitis, calling it a “normal process gone wrong.” This laminitic separation is visible as the tell-tale “stretched white line” between the sole and hoof wall, particularly in cases of chronic laminitis. The “stretched lamina” are actually disorganized epidermis, according to Pollit.

Significantly, Pollit has demonstrated that the LAM breakdown is caused by dietary toxicity, including sugar enriched feeds and fructan rich pastures (green grass). NHC advocates also point to chemical and biological toxicity as causes for the separation — any agent that compromises the bacterial balances responsible for normal fermentation in the horse's hind gut. It is important to note that Pollit did not show that mechanical forces were responsible for the LAM attachment failure, or that they contributed in any way. This is consistent with what is well known among professional NHC practitioners and farriers alike: many hooves with long toes have no abnormal separation of the LAM or other confirmed symptoms of laminitis (e.g., bleeding in the white line, stress rings in the outer wall, and pain). I have personally trimmed hooves with toes in excess of 10 inches on more than one occasion with perfect LAM conformation — surely there would be “mechanical separation” if there were any substance to that rationale?

Many farriery and veterinary texts such as *Lameness In Horses* by O.R. Adams



DIRECTORS MESSAGE

of a generation ago cited "mechanical separation" (also known as "road founder") as a cause of laminitis. But their authors lacked Pollit's recent research findings and the abundance of NHC anecdotal evidence that demonstrate clearly dietary toxicity lies at the bottom of all laminitis. This is not to indict the science of that generation as bogus by intent -- only that they wrote what they understood with the information available to them in their time. Unfortunately, those texts are still with us today, and many vets, farriers, and generic barefoot trimmers continue to believe what they read or hear. Until the arrival of NHC, I believed them myself at one time!

Long toes, and pathologically forward-migrated toes, nevertheless, do exert unnatural lever forces that do obstruct the natural gaits. Couple these to unnatural horsemanship practices, and they can contribute significantly to Navicular Syndrome and devastating clinical lameness. As a near 40 year veteran farrier turned NHC practitioner, my observation has been that horse owners have a responsibility to feed their horses reasonably natural diets (sans sugars and green grass pastures), keep shoes off of their horse's feet, learn to ride in harmony with the natural gaits, and insist on proven NHC guidelines for their hoof care. Most problems faced by horses today are simply man-made. Following nature's way is a good way to put them, including "mechanical separation", to rest.