

# Orthopaedic measures with laminitis to the horse

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## Introduction

Today, all clinicians are in agreement that the ideal treatment of a laminitis-afflicted horse consists of releasing the affected hooves completely from the body weight. This opinion has formed from scientific investigations, which, besides toxically caused damage to the coffin bone carrier, have additionally identified mechanical influences on the affected coffin bone carrier in consequence of which inter alia rotation and lowering set in. The purely mechanical pathogenesis of stress laminitis can be deemed to be substantiation for this. Unfortunately, there is no treatment regime up to now, which makes such a pressure-free treatment for laminitis possible. Through the introduction of azepromazine as a long-term medication, the horses at least lie down at times and relieve the load on their hooves. Now, the anaesthetists are called upon to develop a drug combination, which brings to effect that the horses remain lying down over a longer period.

Several years ago in an article for equine medicine, a working party about Obel suggested taking horses acutely affected by laminitis into the lateral position and then preventing them from standing up by means of a barrier lowered from the box ceiling. At the time, I rejected the announcement, as an adviser for equine medicine, because I did not consider it compatible with animal protection according to my assessment at that time. In the meantime, I have altered my opinion. In terms of the pain that is to be borne by the affected horse over months and years after coffin bone lowering and rotation, the enforced lying down for several weeks is the procedure more compatible with animal protection, if it were then to work. (See image 1)



Image 1

Both in the acute and in the chronic stage of a laminitis, an orthopaedic treatment is indispensable and comparatively more successful than the administration of drugs, whose impact on the laminitis event is contentious. (See image 2a and 2 b)

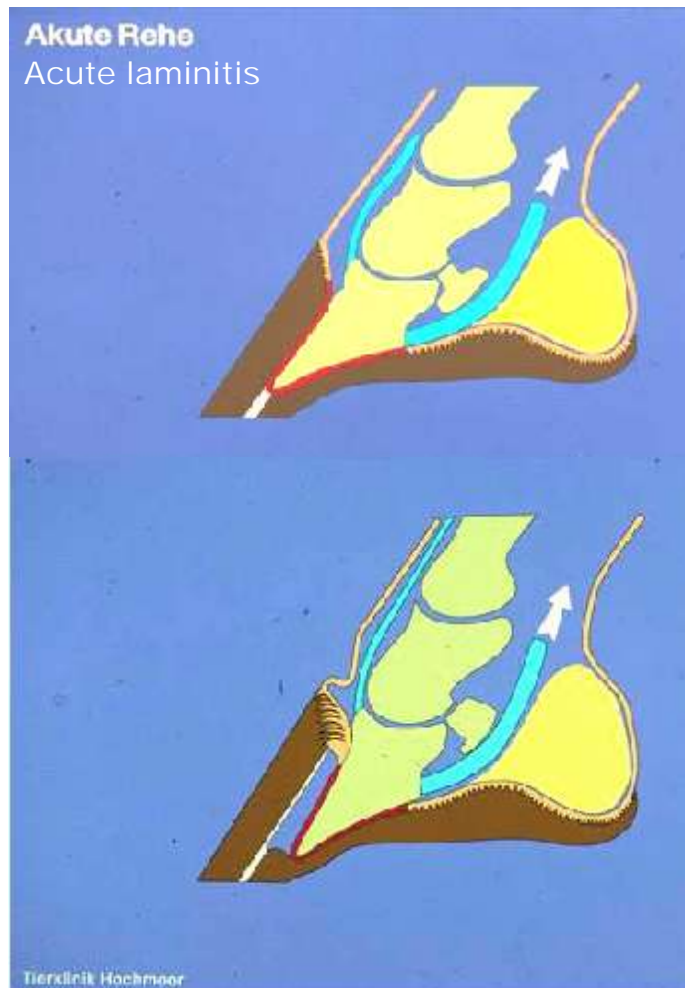


Image 2a and 2b

## Orthopaedic treatment

The objective of orthopaedic treatment must be to relieve the load on the affected coffin bone carrier and to burden the normally still healthy palmar or plantar hoof elements, to which the tracts, the bars, the heel bulbs, and the frog belong.

The effect of the body weight on the diseased coffin bone carrier, in so far as it is completely damaged, results in the lowering of the coffin bone.

The drawing of the deep flexor tendon and the lever action of the tip of the toe result in a rotation in connection with the affected coffin bone carrier of the anterior wall.

As one neutralises the forces that impact on the coffin bone through a different distribution, one can prevent the sagging and the rotation of the coffin bone in mild cases and reduce them in serious cases.

Among the clinicians, the most important measure in this sense is deemed to be to eliminate the drawing of the deep flexor tendon, as one raises the tracts in a wedge-shape by ca. 3 -4 cm.

Two systems are available today for orthopaedic treatment:

- the traditional horseshoe, which can be transformed to a therapeutic shoe with or without additions made of iron or plastic and adapted to specific situations
- the hoof shoe made of plastic, which has now been developed ready to be used in general practice and is marketed by the company Dallmer e.g. as Rehefix.

In the case of acute laminitis, we first cut a toe suspension apparatus. (See image 3)



Image 3

Next, and even before all other measures, a laminitis plaster cast or a laminitis fix is fitted to the affected hooves. (See images 4 and 5)



Image 4



Image 5

▶ We prefer the laminitis plaster cast, as it can be adjusted to any hoof form. For the laminitis plaster cast, one requires 3 plaster bandages and a plastic bandage.

With both systems, one always begins with the more seriously affected hoof, for which one would like to maintain the traumatisation of the weight transfer to the least.

A small piece of foam material placed on the sole and coated with several layers of a plastic bandage also protects the sole against ground pressure. The effect is amazing, with most horses the lameness decreases considerably at once.

In practice, also, the laminitis plaster cast is probably preferred for these reasons. Nevertheless, it has the disadvantage that it requires several minutes to make it and for the hardening and one has to get a certain amount of practice if one wishes to put it on correctly, particularly as the horses do not always stand quietly.

If the laminitis is healed within 4-10 days and no evidence exists radiologically for a coffin bone lowering and/or a rotation, the laminitis plaster cast (laminitis fix) may be removed again after 14 days. However, if a rotation and/or lowering have resulted in the specified period, the laminitis plaster cast stays for approximately 3 weeks, and is then superseded by other orthopaedic measures, which relate to the X-ray results.

Starting from the moment when radiological changes are identified, the incident is classified and treated as chronic laminitis. (See image 6)

No orthopaedic treatment for laminitis without a connected radiological examination, with which one gets a detailed picture regarding lowering and/or rotation of the coffin bone. But after shoeing, one should also monitor, by means of an X-ray examination, whether the required position of the coffin bone to the horseshoe was attained or not.

We also utilise the laminitis plaster cast presented here with horses that are at risk of developing a laminitis as a result of serious illnesses. In our clinic, they are primarily horses with gastric and intestinal disorders - for which they are treated conservatively or surgically - ca. 1% are affected by laminitis.

From 45 cases examined, 36 developed a laminitis after a large intestinal disorder and 9 after a small intestinal disorder. In 11 instances, there was a thyphlocolitis!



Image 6

Since this investigation by Scheidemann et al in 1999, we also use the laminitis plaster cast prophylactically. Of course, not in the belief that it could prevent a laminitis - but in the hope that, through the plaster cast, the drawing of the flexing sinew is reduced to the extent that mechanically caused changes to the inflamed coffin bone carrier have a less serious impact, particularly as this prophylaxis certainly has an effect if the horses are not yet conspicuous due to the incipient laminitis.

In the meantime, we were able to observe a perceptibly milder development of the laminitis with several horses, which were provided with a laminitis plaster cast and a laminitis developed. Nevertheless, more cases are necessary in order to be able to form a conclusive judgment.

A peak coffin bone eruption arises in the later development of a laminitis disorder with sagging or rotation and is heralded initially by a convex arching before the frog tip. In the literature, a warning is given against cutting the sole thinly in such cases and thus expediting a sole eruption. The opposite is correct, certainly, if the first signs are there, one should make the sole as thin as possible, so that pressure from the sole is not possible on the sole surface of the coffin bone.

More often than not, an accumulation of fluid is found in this area as well, which, with an intact sole, has an effect on the coffin bone tip like a compartment syndrome.

If it is assumed from this that the sole dermis in its dorsal segment is necrotic, we remove the sole above the coffin bone tip in the palmar direction until one reaches a line where the horn again has a solid connection with the coffin bone dermis.

If the coffin bone tip is clear, shoeing is executed with an inversely applied shoe, which is formed with a base plate. A hoof pad absorbs the entire weight of the limb along the palmar. (see images 7a, 7b, 8 and 9)



Image 8



Image7a



Image 9



Image7b

As the shoeing on the dorsal side is open, the coffin bone tip can not only be monitored from here, but also treated. The anterior opening will be closed subsequently with an adhesive strip.



### Stress laminitis

Stress laminitis occurs if, in the event of a loss of function of the highest degree to a limb, the contralateral limb is constantly overloaded. The horses then stand, rooted to the spot, on the initially still healthy limb and hardly move. (See images 11 and 12)

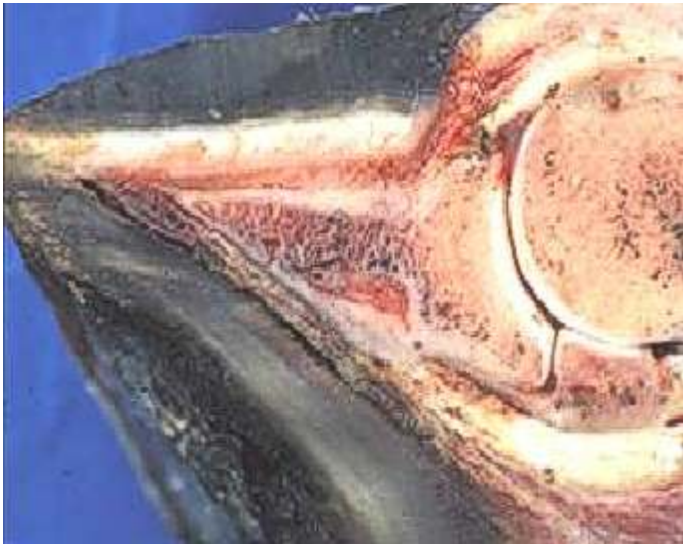


Image 11



Image 12

The weight-carrying limb is placed medially under the middle line of the body, with the result that the lateral side of the hoof has to carry considerably more weight than the medial side.

The overloading of the coffin bone carrier and of the sole results in a mechanically caused ischaemia. As, in the case of the horse, the forehead is more overloaded than the hindquarters (the reason for this is the weight of the head and of the long neck) the laminitis occurs to the shoulder limbs even faster than to the pelvic limbs. (See image 10)



Image 10

In the case of horses that are predestined for a stress laminitis, one should even carry out the preventative measures on the operating table in connection with the operation to the diseased limb, as one naturally cannot lift up the limb on the standing horse.

We consider the abnormal position as a type of position close to ground and treat the hoof accordingly: (See image 13)



*Image 13*

The lateral tract and side wall is clearly shortened and a shoe with a widened outer flange added. In addition, with prophylactic shoeing, the sole arch is filled with a soft hoof pad, which inter alia should help to distribute the resulting pressure across the entire sole surface.

