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# The Treatment of Nail Pricks of The Horse's Foot

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SOUTH DAKOTA

# Agricultural College

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EXPERIMENT STATION

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BROOKINGS, SOUTH DAKOTA

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THE TREATMENT OF NAIL PRICKS OF  
THE HORSE'S FOOT

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DEPARTMENT OF VETERINARY MEDICINE

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## THE TREATMENT OF NAIL-PRICKS OF THE HORSE'S FOOT

E. L. Moore

The cases forming the basis for this work were for the most part presented at the regular clinics of the college, although some were private patients, and in the latter cases there were no special means for control beyond what one usually finds around the farm. When the horse was presented at clinics he was placed upon the operating table in order to confine him and prevent undue movement during the operation. In a few cases only was the injury of recent date. The term foot will be held to include only those structures inclosed within the horny box.

Briefly reviewing the anatomy of this part, it will be found to consist of a framework made up of three bones: the lower portion of the short pastern bone, the navicular bone and the coffin bone. These bones are united in such a manner as to form a joint, the navicular joint. At the upper and back portion of the coffin bone and on each side are the lateral cartilages, half-moon shaped pieces of gristle extending upwards above the wall, and backwards towards the heels. Occupying the entire space behind and between the wings of the coffin bone is the plantar cushion. This structure acts much as does a rubber heel on a shoe. Over all is drawn a specialized skin, covering all of the parts much as a sock covers the foot. This skin, according to the character of the horn which it secretes, may be divided into five regions, the **periole**, which secretes the thin varnish-like layer covering the outer surface of the wall; the **coronary band**, which secretes the middle layer of the wall; the **sensitive laminae**, which secrete the inner layer of the wall and bind the wall to the foot; the **sensitive sole**, which secretes the horny sole; and the **sensitive frog**, which secretes the horny frog. In addition, the foot is richly supplied with blood vessels and nerves.

Even slight injuries to the foot, on account of the character of the offending body as well as to the fact that the foot is constantly in contact with dirt and filth, are almost universally accompanied by pus formation. The pus being imprisoned by the firm horn, presses upon the sensitive structures within, causing exquisite pain, and lacking free outlet, it bur-

rows its way under the horn, separating it from the skin which secretes it, i. e., the horn becomes "under-run." The character of the lameness thus produced varies somewhat with the portion of the foot which is affected. In general there is a tendency to favor the foot in standing, and as the foot is brought to the ground in walking or trotting the horse distinctly avoids bringing weight to bear upon the wounded portion. A careful examination of the foot with the hand, the hoof-testers and the hoof-knife verifies the suspicion. The old saying, "If a horse is lame in his head, examine his foot," should be religiously held in mind.

The method of treating these cases is as follows: A twitch is placed on the horse's nose, the foot is then thoroughly cleansed with soap and water, after which the horn is freely cut away from around the affected point until by the oozing of blood it is positive that all under-run portions of the horn have been removed. The foot is now washed in a solution of mercuric bichloride 1-500, a piece of absorbent cotton is saturated in a solution of the same strength and applied so as to cover the wound; another piece of cotton of sufficient size to cover the entire foot is then soaked in the same solution and firmly bandaged over the foot, allowing a part of the cotton to extend above the bandage; a thick coating of tar is then applied over all. The tar serves to retain the bandage in place, and, of more importance, prevents any germ-laden dirt or moisture from reaching the wound. On account of the cotton extending above the bandage it is an easy matter to pour a 1-500 solution of bichloride of mercury into the top of the bandage and rely upon its reaching the entire foot. Frequently this daily application of bichloride (1-500) is made by means of a rubber bulb syringe, the end of which is introduced between the cotton and the foot. This dressing is to be left in place for from seven to ten days without being disturbed. Unless complications arise, such as swelling above the bandage, the longer time is to be preferred. At the end of this time the dressing is to be removed, and if any pus is still present the bandage is to be applied as before; otherwise the foot is now washed with a 1-500 bichloride solution, thoroughly dried, and then dusted with a powder consisting of equal parts of iodoform and tannic acid.

The same powder is freely applied to a large piece of cotton and the foot again bandaged and coated with tar. The foot is now left undisturbed for two weeks. At the end of this time another dressing of iodoform and tannic acid may be made if necessary. As a rule, however, little need be done at this time except to provide some protection to the newly forming horn. This may be accomplished by means of a leather sole placed underneath the shoe.

The keynote of success in following this method of treatment lies in the complete removal of all portions of horn that have become under-run with pus, and the thorough cleansing and asepsis of the foot.

The following cases are described as illustrative of this method of procedure, and show what may fairly be expected in the way of results:

**Case A**—A large gelding, which had the history of going lame suddenly on the right hind leg, and was unable to bear weight upon the same. There was also considerable swelling above the hoof, extending upward as far as the fetlock joint. Subsequent examination showed that all of the frog and fully half of the outer portion of the sole was under-run with pus. All such portions were completely removed and the foot bandaged in a bichloride solution as described. The owner was directed to pour some sublimate solution into the top of the bandage twice daily. In a week this bandage was removed, the foot again washed in a sublimate solution, thoroughly dried and dressed with a powder consisting of equal parts of iodoform and tannic acid. This bandage was left in position for ten days, and as at the end of this time new horn had formed to replace that which had been removed, he was taken to the farrier's and a shoe applied with a false sole of heavy leather underneath it. The horse was now allowed to resume his work of plowing.

**Case B**—This case is reported in order to show what untoward results may follow what is too often considered an unimportant injury. A mare sustained a nail prick of the frog, involving the underlying sensitive structures. No attention was paid to the case until the pain had become so exquisite that she was unable to bear any weight upon the affected leg. Examination showed that the frog had become



under-run with pus and that the region of the fetlock was very badly swollen. On removing the frog a relatively large amount of pus escaped. The foot was trimmed out, cleansed and bandaged in a bichloride solution, the application of tar, however, being omitted. The owner was directed to give notification if any further attention seemed necessary. Evidently not being satisfied with the way the foot was doing, and probably largely influenced by outside opinions, the owner had the bandage removed and a cow-manure poultice applied to the entire foot. Within a few days after this a telephone message was received to come immediately, as the horse was very much worse. The symptoms showed a well developed case of tetanus or lock-jaw, from which the horse died in two days. Tetanus is not frequent in this locality, and the clinical history would seem to support the theory that the wound was inoculated with tetanus bacilli contained in the dirt and filth of the cow-manure poultice. This furnishes one reason, and a strong one, for absolutely condemning the use of such a poultice.

**Case C**—An incomplete history prevented accurate knowledge being obtained as to the nature of the injury in this case. The horse had been lame, but subsequently had made sufficient recovery to permit of his being again put to work. The owner had made an examination of the foot, but had been unable to detect anything wrong. The horse had been used for hauling grain to town on a Saturday, and according to report went but slightly lame. Later he became excessively lame, being unable to bear any weight on his leg. He was loaded on a wagon and brought to the hospital on the following Tuesday. It was found that the foot had suffered an injury and that the entire sole and frog had become under-run with pus. After placing the horse upon the operating table the foot was thoroughly washed with soap and water and all of the horn covering the bottom of the foot was removed. After being cleansed in a 1-500 solution of bichloride of mercury, the foot was bandaged and coated with tar. He was then removed to the hospital, and after-treatment consisted solely in the daily application of a bichloride solution at the top of the bandage. In ten days the bandage was removed and the foot dressed with equal parts of tannic acid and iodo-

form and the patient discharged. He was seen again in two weeks, when it was found that for the most part new horn had formed over the bottom of the foot, the only exception being at the buttresses, where there was a slight amount of pus. The foot was dressed with powder as before, and from this on recovery was uneventful.

**Case D**—A bay driving mare suffered from a nail prick of the frog, and received no further treatment than the application of a cow-manure poultice. At the time she was placed under our care the wound produced by the nail was suppurating, and the pus had worked its way upward, discharging by an opening in the hollow of the heel, and another about two inches above this on the posterior aspect of the pastern. The frog and both wings of the sole were removed, and then an incision was made passing from the uppermost opening to the cleft of the frog. Into this was firmly pressed a piece of cotton soaked in the usual strength of sublimate, and cotton and a bandage applied as in other cases. By means of a syringe a 1-500 solution of sublimate was introduced at the top of the bandage twice daily. In addition the mare was placed on dram doses of calcium sulfid twice daily, as there was some fever. In a week the bandage was removed, when it was found that the wound presented a perfectly healthy appearance. A sublimate bandage was again applied and left in position for another week. The foot was then dressed in the usual powder, the application of which was repeated twice. The wound made complete recovery, although the mare remained lame for a considerable time thereafter.

**Case E**—This horse was used on a delivery wagon, and stepping on a piece of glass, sustained a transverse cut across the frog, penetrating the fleshy frog. A poultice had been applied as in the preceding case. Later the owner made some attempt at asepsis by bandaging the foot in a bichloride solution, but since no provision had been made for the escape of pus by cutting away the frog around the edges of the wound, consequently there was no improvement in the case, as the pus continued to burrow between the horny and the sensitive frogs. Treatment in no respect differed from the methods already described, and recovery was both rapid and satisfactory.



**Case F**—A two-year-old stallion was reported lame from thrush. On seeing the patient he was found standing, resting the right hind leg with the foot flexed. Not having any instruments, the foot was simply picked up, inspected and palpated with the hand. There was every evidence of thrush, and the diagnosis seemed to be sustained, since there was marked pain on pressure over the base of the frog. The owner was directed to treat for thrush. In about a week word was received that the colt was not doing well. At this time he was unable to bear any weight on the leg, and there was some swelling around the pastern and fetlock. Previous to this a farrier had been called to examine the foot, but had been unable to detect anything wrong with it. The bottom of the foot was pared with the hoof-knife, but in spite of the most diligent search no trace could be found of any injury. Examination of the rest of the leg failed to reveal any cause for the lameness. Recalling the adage previously quoted with reference to the necessity of a thorough inspection of the foot in all cases of lameness, it was again subjected to the hoof-knife, since the hoof-testers failed to reveal any sore point. After again paring the sole a place was found which yielded more than normally to pressure. A little more paring with the knife and pus escaped. From this on it was a simple proposition and differed in no respect from the cases already cited. All under-run horn was removed, the foot cleansed, bandaged and coated with tar. Recovery occurred so satisfactorily that the patient was not seen again. This case especially illustrates how readily one pathological condition of the foot may interfere with the recognition of a second, should the latter be not so self-evident.

To this record of cases could be added several more of a similar nature, but they would be but a repetition of the preceding. Sufficient have been cited to show how dire may be the results if such injuries are neglected or treated in a manner that departs one iota from the principles of asepsis; and how such injuries to parts naturally subjected to infection can be treated satisfactorily and with a minimum amount of attention.