Aspects of Treatment of Severe Claw Diseases in a Large Animal Practice

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Summary

This paper reports on causes of lameness in cattle due to severe claw disease, on methods of restraint and anesthesia for their treatment and on the treatment itself in a large animal practice. Intravenous anesthesia can easily be carried out on the raised leg of the sedated animal. In the case of phalangeal joint involvment, puncture of these joints will give information about subsequent treatment. A wooden block attached to the unaffected claw will give relief to the treated one.

About 90% of all cause of lameness in cattle derive from the claw area. Hoof diseases are still an important economical factor in raising cattle and quite often they are the cause for selling these animals. Amstutz (1974) estimated the economic loss due to lameness of dairy-cows in the USA at $150. In most cases the patient is not presented for veterinary treatment until the animal is extremely lame. The milk yield is already reduced significantly and the patient has rapidly lost weight and the general state of health is affected.

Causes of Lameness

When checking for possible connection between lameness and hoof care, as well as the way the animals are kept in the stable, Hortig (1979) showed that poor care of the hoofs is the main reason for claw diseases. He stresses the importance of professional and timely hoof care.

On well cared hoofs, possible diseases appeared only as aseptic pododermatitides and diseases beginning from the median of the claw (nail ulcer-panaritium), whereas in cases of bad care, purulent pododermatitides with its complications predominated (dilatations of claw joints). Nevertheless, also well cared hooves can become diseased due partly to the wrong size of cattle pen and surface conditions of the floor where the cattle stand. Mistakes in feeding and metabolic diseases as, e.g. rumen acidosis, can lead to irreversible damages of claws (Dirksen and Stober, 1978). Sommer and Kowertz (1980) believe there is a close relationship between claw diseases and feed not appropriate for ruminants (a deficiency in crude fibres, a surplus of protein or energy).

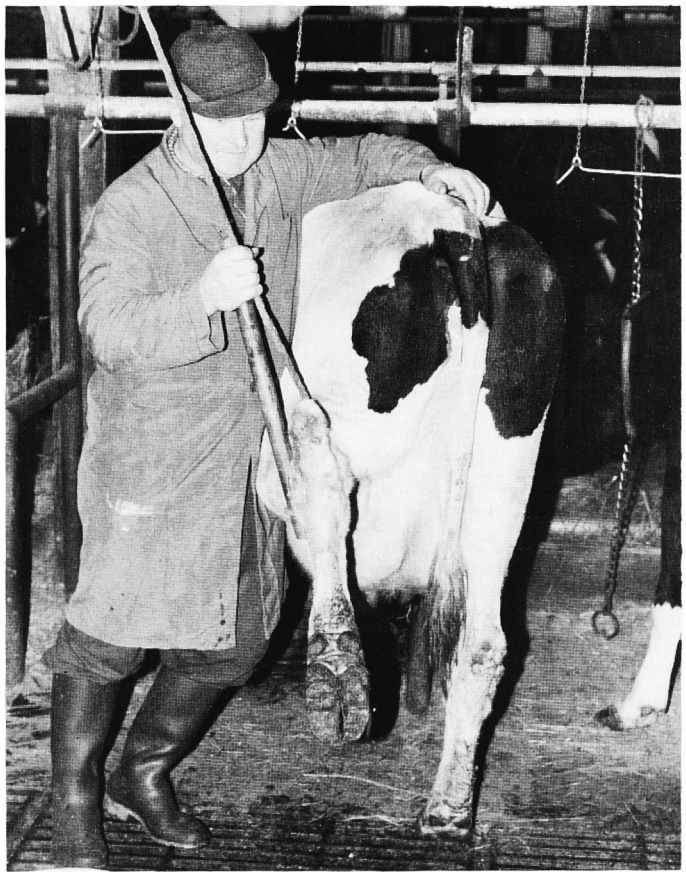
Restraining Devices for the Claw Treatment

Besides mobile operating tables a number of stationary and mobile claw-care-stands are in use. In most cases the practitioner has less expensive treatment methods for the lifting and restraining of the joints. A possible device to lift hind legs, already described by Schneider in 1860, is a limb frame with a closed rope loop above the heel protuberance. A toggle rod is more or less firmly twisted "restraining" the leg. Afterwards the rod is placed into the bend of the hock-joint so that it can be lifted by two assistants. The clamp of Bron (1962) has the same effect. These measures require several assistants and are suitable for examinations and for less painful operations. Besides lifting with a pully or a fork-lift, a procedure, described by Jensen and Sonnichsen (1964) to lift the hind leg for claw operations, can be recommended. At the end of a rope suspended from the ceiling above the hind quarters of the lame patient, tie a stick at the height of the hock joint. The stick can be up to one meter long and should be pitchfork handle size. This stick is passed from behind between the poster or legs and powerfully lifted in the hock joint of the affected leg. This way the leg can be kept up by an assistant even for a longer period without any effort. The free end of the stick can also be tied to the rope. The procedure Stober (1971) modified by turning the rod 90° in order to restrain the heel-tendon. The simple method for lifting the posterior extremities can be executed without great effort, expenses and difficulties. It is possible to do a proper examination, and after due preparation, even surgery on an extremity raised in this manner. (Fig. 1).

Exclusion of Pain in the Claw

For a painful surgical operation on the affected claw, anesthesia is imperative. The patient is tranquilized with Xylazin® (approx. 1ml intravenous for 500 kg body-weight.) Beside the common infiltration anesthesia, the regional intravenous anesthesia introduced by Antalovsky (1965) is the method of choice: after the proximal applica-tion of an Esmarch rubber ligature to the metatarsus, the ramus cranialis of the vena saphena lateralis with its two branches can easily be palpated. A palm sized area must be thoroughly cleaned, shaved and disinfected. Then the vein is punctured with an 1.8 mm disposable canula and the blood released. The procedure can be hastened by bending the claw slightly several times. Afterwards 20 ml of 2% local-anesthetic are injected. During and after the removal of the canula, the

Figure 1: The lifting of left hind leg according to *Jensen* and *Sonniochsen* (1964). The animal has been previously tranquilized with iml Xylazine®



puncture-point must be compressed with a wad of cotton soaked with iodine to prevent the anesthetic from flowing back. Within three minutes, any pains are eliminated below the Esmarch ligature. (Fig. 2) With some experience it is possible to eliminate the pain on the sedated animal in most cases. Hauck-Bauer (1977) recommends as an additional therapy in case of purulent claw infections, the injection of 500 to 1000 mg Oxytetracycline in the vein already punctured for the anesthesia. Fehlings (1980) tested the regional intravenous anesthesia successfully on the fore-joints by puncturing the vena digitalis dorsalis communis III.

Claw Treatment

In cases of deeper reaching hoof defects involving the claw joint, the joint should be punctured after eliminating the pain. The puncture point lies dorsally above the hoof where the horn and the haired skin meet. (Fig. 3) With a slightly distally pointed puncture one can achieve a dorsal protrusion of the claw joint. An increased amount of the joint-liquid drains out spontaneously and can be inspected superficially (Dirksen, 1977). To examine the joint capsule,

Figure 2: Puncture of the congest V. digitalis dorsalis communis IV with the help of a rubber tube, for the injection of local anesthetics. The blood has been drained by bending the claw repeatly. Within 3 minutes after the injection complete anesthesia sets in below the ligation.

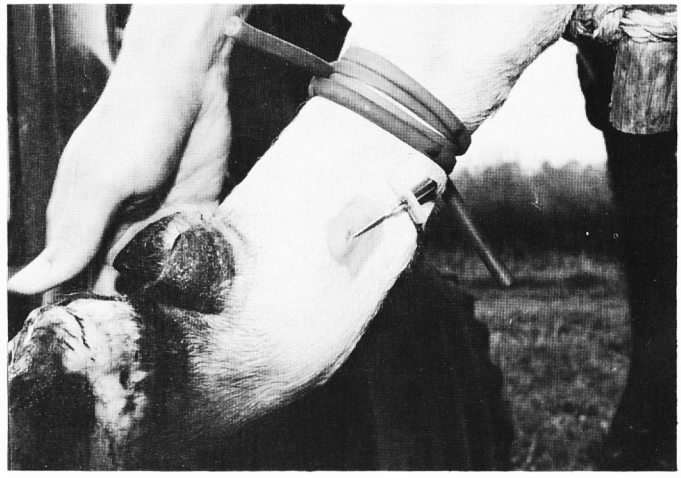
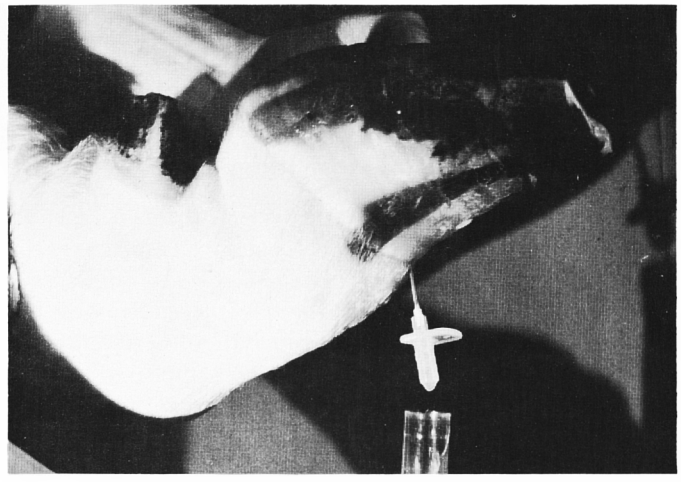


Figure 3: Puncture of the dorsal protrusion of the claw joint-puch for inspection of the synovia. To examine the joint-capsule an antibiotic is injected into the claw-joint with pressure.



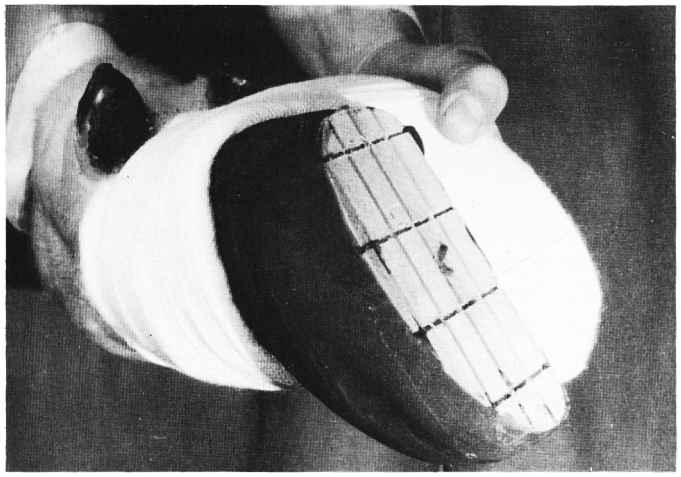
antibiotic (in liquid form) is injected into the claw joint under pressure. If the joint-capsule is injured the injected antibiotic will spill out of the exposed defect. In case of an injured joint capsule, a dissection of the claw-sesamoid bone or a claw amputation is inevitable.

In case of claw joint necrosis, the bone can easily be cleaned of necrotic parts by using a commercial drill and a suitable milling tool.

In serious hoof defects with or without involvement of the claw joint, the treated claw should be relieved of strain for a quicker recovery. The degree of lameness lessens significantly with this relief. For this purpose a wooden block should be glued onto the opposite hoof with Technovit®

6091. It is, however, necessary that the opposite claw is completely healthy so that it can carry the double weight. The following procedure has shown to be effective to attach the wooden block: After several corrections the sole and lateral hoof must be cleaned with a rasp or a hoof-knife and well with alcohol. An angle grinder works well for a quick and thorough preparation. According to instructions of the manufacturer, powder and liquid must be mixed well, until it is a thick homogenous dough. This material is spread as a thick layer over the bottom of the hoof and the wooden block. While the assistant holds the block, the surgeon should soap his hands to keep the resin from sticking to his hands. The block is now fixed into position and the remaining Technovit® glue carefully spread over the side of the hoof and the wooden block until the material has polymerized. One must avoid sharp edges especially in the intermediate space of the hoof and in the bunion area which could lead to irritations or even injuries if weight is put onto the claw. (Fig. 4) In cool temperature, the polymerization process can be speeded up with the aid of an electric hair dryer.

Figure 4: A wooden block has been glued to the adjacent claw with Technovit® to relieve the treated claw.



In case of definite surgical indication, it is easier to affix the block before the operation and bandaging. A block, glued with Technovit® to a thoroughly cleaned hoof has long durability and adhesion, and even stands the enormous strain of modern gratings. Removal of the wooden block is done in due time with a scraper or a chisel. Indications for relief of the treated claw, with a wooden block on the other side, are all claw diseases with high degree of lameness as for instance: claw-bone-fracture, deep sole ulcers with and without inclusion of the claw joint and the deep flexor tendon as well as large purulent pododermatitides. The relief of the diseased claw contributes significantly to the mitigation of pain, shortens the healing process and diminishes the number of bandage changes. This method makes healing of claw-bone-fracture or the condition after a resection of the sesamoid bone possible.

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