Penicillin in the Treatment of an Open Joint

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in extreme pain at intervals and spent much of his time lying down. The urine was bloody and it could not be detected if it was coming from the urethral opening or not. It was decided to place the patient on the operating table for further examination.

The next day the bull was cast and placed in a left lateral recumbent position on the operating table. He died there a few minutes later.

Autopsy revealed both kidneys to be about twice their normal size and each contained thousands of abscesses up to 5 cm in diameter. Both renal pelves were filled by uroliths up to about 60 gm. in weight. The ureters were 10 mm. in diameter and the walls were chronically thickened. The urinary bladder walls were chronically thickened with connective tissue to about 8 mm. The bladder contained hundreds of uroliths from sand-like grains up to about 1 cm. in diameter. The stones had eroded the bladder wall, causing hemorrhage; for free blood and numerous clots were present in the lumen of the bladder. The urethra contained a few small uroliths.

The kidneys were X-rayed and each contained thousands of uroliths varying greatly in size from small grains up to 1 cm. in diameter. Each little abscess contained one or more uroliths.

The abscesses were cultured and revealed a pure culture of *Corynebacterium renalis*; however, death of this animal was due to terminal uremia. —A. Neuman, '49

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**Penicillin in the Treatment of an Open Joint.** On the evening of April 18, 1947 an albino 3 year old mare was entered at the Stange Memorial Clinic with the history that the right hock had been cut on a fence the morning of April 17, 1947. The veterinarians who first attended the animal had applied a pressure bandage infiltrated with powdered sulfanilamide to control hemorrhage and administered tetanus antitoxin. They gave a very unfavorable prognosis and recommended taking the animal to Iowa State College. On April 19, or approximately 48 hours after the injury, the bandage was carefully removed and a liquid that resembled synovial fluid oozed from the wound. The wound was extensive and deep on the anterior surface of the hock, and it extended from the lateral side of the proximal end of the metatarsal bone in an upward and medial direction toward the tibial tarsal bone. The horse could not extend the leg. The wound was not probed to determine whether or not it extended into the joint cavity because of the possibility of starting hemorrhage again. It was decided to inject penicillin suspended in cod liver oil into the tibio-tarsal and the tarso-metatarsal synovial sacs. According to Sisson, the tibio-tarsal synovial sac lubricates the joint formed by the distal end of the tibia and the trochlea of the tibial tarsal bone. It communicates with the proximal intertarsal synovial sac which lubricates articulations between tibial and fibular tarsal bones and the central and fourth tarsal bones. The tarso-metatarsal synovial sac lubricates the articulations between the proximal ends of the metatarsal bones and those formed by the third tarsal with the bones on either side. Fifty thousand O.U. of penicillin suspended in 4 cc of cod liver oil were injected into the tibio-tarsal and the tarso-metatarsal synovial sacs. The site for the injection was located by palpating the proximal end of the metatarsal bones on the lateral side. The same amount was injected into the tibio-tarsal sac from the posterior side. The place for inserting the needle was determined partly by palpating the tarsal bones and partly by estimating where it should be in relation to the first needle site. When the needle was inserted into the tibio-tarsal sac, synovial fluid flowed out through the needle showing that the sac had not been invaded by the wound. A sulfanilamide pack was bandaged over the the wound. Fifty thousand O.U. of penicillin were administered intramuscularly every 6 hrs. for the next 48 hrs. Two days later, the intramuscular injections of penicillin were discontinued and 50,000 O.U. of penicillin suspended in 5 cc of cod liver oil were injected into the the tarso-metatarsal sac. This time methylene blue was added to the suspension of
penicillin in an attempt to trace it. Immediately after the injection, blue fluid appeared on the wound surface proving that the tarso-metatarsal synovial sac had been opened. The wound was insufflated with sulfanilamide and bandaged. The same treatment was continued for 9 days, or until May 2. On April 24, the swelling around the joint was greatly reduced and on April 28, an unsuccessful attempt was made to close the joint capsule with metal sutures. On April 30, synovial fluid ran out of the needle when it was inserted into the synovial sac to inject penicillin, indicating that it had closed. On May 2, the temperature rose to 103.6°F, and a hard swelling appeared on the posterior surface of the tarsal joint. Synovial fluid again appeared on the surface of the wound. Boric acid and air-slaked lime powder (equal parts) was now substituted for sulfanilamide during the remainder of the treatment. The next day the temperature was 103.2°F. Sulfanilamide was given per os for 5 days and the temperature dropped on the third day. On May 5, 2 cc of fluid were withdrawn from a fluctuating area in the center of the swelling posterior to the wound. One hundred thousand O.U. of penicillin suspended in cod liver oil were injected into the cavity from which the fluid was withdrawn. The fluid was taken to the bacteriology laboratory, where it was cultured and proved to be negative for microorganisms. On May 7, synovial fluid again oozed from the wound. On May 12, synovial fluid appeared on the wound surface for the third and last time, since the tarso-metatarsal sac had closed first on April 30. On May 24, the horse was discharged with instructions to apply boric acid and air-slaked lime powder daily. According to the local veterinarians the progress was satisfactory and on Sept. 9, one of the authors (Arnold) had an occasion to see the horse. The wound had healed well with the exception of two areas of exuberant granulations. The owner credited the occurrence of granulation tissue to hogs which he had seen bite the wound when the horse was lying down. The local veterinarians were going to remove the exuberant granulation as soon as the fly season was over. The tarsal joint was somewhat thickened and the horse dragged the leg a little when walking; however, no disturbance of gait could be noticed while running in the pasture. The owner had several other saddle horses, and this horse could out run any of them when the horses ran from one part of the pasture to another. The owner was well satisfied with the results and intended to break the horse to ride after the removal of the exuberant granulation tissue.

In conclusion, it cannot be stressed too strongly that this is only one case, and that more cases would have to be treated in this manner before an evaluation could be made of repeated injections of penicillin in the joint cavity where the synovial sac has been opened. Also the writers were aided in this case by the skillful and prompt care given by the local veterinarians and the quiet disposition of the patient which permitted thorough treatment. Because of the cost of the number of times a veterinarian would have to visit the patient, this therapy would not be economical unless the horse had a high value as a breeding animal or was of great sentimental value to the owner.


### 3 Granuloma and Amputation of a Claw

A Shorthorn cow, aged 2 years, was admitted to Stange Memorial Clinic Nov. 7, 1947. The animal was depressed, emaciated, weak and in a very debilitated condition. Examination of the animal revealed the presence of a jagged wound over the anterior medial surface of the pastern area of the left hind leg. There was extreme swelling over the pastern, fetlock, and extending proximally up the leg. The cow was unable to bear any weight on the afflicted leg, and the area was very painful as evidenced by flinching upon palpation of the swelling.

It was learned that the wound over the pastern was the result of a wire cut. Since the patient was in poor condition, the owner desired information regarding the possibility of successful treatment. It was decided to X-ray the wound to determine