

Surgical Procedures of the Distal Limb for Treatment of Sepsis in Cattle



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KEYWORDS

- Bovine • Digital surgery • Septic arthritis • Septic tendonitis • Pedal osteitis
- Retrobulbar abscess

KEY POINTS

- With a thorough knowledge of the anatomy of the foot, and basic surgical instruments, digit surgery can be performed in field situations.
- Sepsis of the distal interphalangeal and proximal interphalangeal joints should be treated surgically because conservative treatment is often ineffective.
- Most of the diseases described in this article are chronic and often the animals have been suffering for some time.
- Perioperative analgesia is important to alleviate the pain of those animals. All those procedures should be performed under local or regional anesthesia.

INTRODUCTION

Claw diseases in cattle are a common cause of debilitating lameness, which result in lost production, expense of treatment, and premature culling. When trauma or infection result in compromise of the joints, bones, tendons/tendon sheaths, or ligaments, surgical treatment may be required in order for the animal to be returned to soundness, productivity, and longevity. Surgical digital diseases include septic arthritis of the distal and proximal interphalangeal (PIP) joints, flexor tendon injury, septic tenosynovitis, and pedal osteomyelitis. Most digital surgical conditions are manageable under field conditions. Postoperative care, in some cases, is demanding and may limit the extent to which producers are willing to commit to treatments. Postoperative treatment most often includes wound care, antimicrobial therapy, pain management using

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antiinflammatory drugs, and variable periods of restricted exercise. Treatment of musculoskeletal diseases often requires prolonged drug therapy; this necessitates that veterinarians and producers be cautious regarding drug residue contamination of meat and milk from animals treated for musculoskeletal diseases. Accurate withholding times have not been established for drugs administered repeatedly, for prolonged periods of time, and in disease states. Readers are advised to seek professional advice (eg, www.farad.org) regarding meat and milk withholding times in these cases.

SEPSIS OF THE BONE AND JOINTS OF THE FOOT

Sepsis of the Joints, Bone, Tendons and Tissues of the Distal Limb

Knowledge and understanding of the digital anatomy is essential before performing surgeries.¹⁻³ Sepsis of the distal interphalangeal (DIP) joint is caused mainly by extension of sole diseases, such as sole ulcers or abscesses and white line disease. A penetrating foreign body in the interdigital space or foot rot also is often implicated in sepsis of the DIP joint. In dairy cattle, the origin of DIP sepsis is most likely sole ulcers. In beef cattle, the cause is often unknown but interdigital trauma and foot rot are often suspected. The distal sesamoid bone and its bursa, the tendinous portion of the deep digital flexor (DDF) muscle, the tendon sheath of the DDF muscle, and the superficial digital flexor (SDF) muscles are in close relationship and solar infection can rapidly spread to these structures. The history of affected cattle is often typical: they have history of chronic lameness being treated unsuccessfully for foot rot or sole ulcer. Severity of the lameness is variable depending on the extent of infection and the chronicity of the disease.

The hallmarks of DIP infection are a swollen and painful coronary band with a draining tract either at the proximal aspect of the coronary band or under the sole (**Fig. 1**). A swollen heel suggests infection of the distal sesamoid bone and its bursa and the digital cushion pad, and a fistulous tract may be present at the heel skin junction. Cattle with deep sepsis of the digit show clinical signs of pain when the heel is palpated or the digit is extended. The tendinous portion of the DDF tendon (DDFT) might rupture if the necrotic process is severe, and the digit affected will tilt upward.

Radiographic evaluation of the DIP joint is helpful to determine the extent and duration of the process. Usually the lesions are not subtle because of the chronicity of the infection. Radiographic views of a DIP joint with chronic septic arthritis show an increased joint space because of subchondral bone lysis (**Fig. 2**). Distal and proximal periosteal proliferation is present. The distal sesamoid bone may show lysis of its articular surface or may be destroyed completely. The PIP joint also might be involved in



Fig. 1. Swelling localized along the lateral aspect of the coronary band indicating septic arthritis of the DIP joint (uppermost digit).

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