

# Surgical Management of Septic Arthritis



Pierre-Yves Mulon, Dr Vet<sup>a,\*</sup>, André Desrochers, DMV, MS<sup>b</sup>,  
David Francoz, Dr Vet, MSc<sup>b</sup>

## KEYWORDS

• Septic arthritis • Cattle • Joint lavage • Arthrotomy • Arthroscopy

## KEY POINTS

- Diagnostic tests used to diagnose joint sepsis include radiographic studies, ultrasonography of the joint, and synovial fluid analysis.
- Treatment should be prompt and aggressive; long-term administration of antibiotics, pain management, and joint lavages are often necessary treatment.
- Joint lavage techniques include tidal irrigation, through-and-through lavage, arthroscopy, and arthrotomy.
- Commonly infected joints include the fetlock, carpus, tarsus, and stifle.



Video content accompanies this article at <http://www.vetfood.theclinics.com>.

Septic arthritis is a common cause of bovine lameness. In a study reporting incidence of lameness in dairy herds, Bargai and Levin<sup>1</sup> reported that arthritis represented 13.8% of the cases. Consequences may be dramatic if not treated adequately, resulting in chronic pain, decreased range of motion, and decreased joint function. Septic arthritis is very painful, causing alteration of normal joint physiology and leading to rapid and permanent destruction of the cartilage or bone. An early diagnosis as well as a prompt and effective treatment are essential to restoring normal function of the infected joint. In severe cases, septic arthritis may lead to culling of the animal or humane euthanasia.

## ETIOLOGY

Bacteria colonize the joint in 3 different ways: (1) through a wound directly invading the joint, (2) by close proximity of a primary infection site to the joint and migration the bacteria within the inflamed tissue into the joint, and (3) by crossing the synovial

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The authors have nothing to disclose.

<sup>a</sup> Large Animal Clinical Science Department, College of Veterinary Medicine, University of Tennessee, 2407 River Drive, Knoxville, TN 37996, USA; <sup>b</sup> Faculté de Médecine Vétérinaire, Université de Montréal, St-Hyacinthe, Quebec, Canada

\* Corresponding author.

E-mail address: [pymulon@gmail.com](mailto:pymulon@gmail.com)

Vet Clin Food Anim 32 (2016) 777–795  
<http://dx.doi.org/10.1016/j.cvfa.2016.05.014>

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membrane from the capillary vessels during bacteremia. In this manner, joints can become infected remotely from the primary source of infection.<sup>2</sup>

Adult cows tend to suffer more from the first 2 etiologies of septic arthritis and therefore a single joint is usually infected (**Fig. 1**). Calves, especially those suffering from lack of transfer of passive immunity, are more likely to have multiple joints infected owing to the bacteria present in the bloodstream. The primary sources of infection for septic arthritis in calves are commonly umbilical infection, pneumonia, otitis media/interna, and/or enteritis.<sup>3-5</sup> In a study of 39 cases of calves suffering of omphalophlebitis, septic arthritis was diagnosed on 11.<sup>3</sup> However, remote septic arthritis has also been described in adults owing to chronic endocarditis and severe mastitis.<sup>6,7</sup> Knowing the history of the calf helps the veterinarian to determine a therapeutic plan, because bacteria may differ depending on the primary disease.

### **PATHOPHYSIOLOGY**

Immediately after bacterial colonization within a joint, proliferation ensues and initiates an acute inflammatory response. This fast reaction of the joint against pathogens produces a cascade of events that leads to the increased concentration of proinflammatory mediators. A rapid recruitment of polymorphonuclear granulocytes and activated macrophages follows the bacterial proliferation, leading to the substantial release of proinflammatory cytokines such as tumor necrosis factor- $\alpha$ , and interleukins 1 and 6.<sup>8</sup> All these molecules promote osteoclast differentiation and bone reabsorption.



**Fig. 1.** Chronic, deep laceration over the plantarolateral side of the tarsocrural joint in an adult Holstein cow. The infection ultimately reached the plantarolateral recess of the tarsocrural joint. The swelling on the lateral aspect of the hock is a hygroma owing to repeated external trauma and should not be misinterpreted as joint distension.

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