Arthroscopy in Cattle
Technique and Normal Anatomy

Hélène Lardé, Dr Med Vet, DES[a,*], Sylvain Nichols, DMV, MS[b]

KEYWORDS

• Cattle • Arthroscopy • Surgery • Anatomy

KEY POINTS

- Arthroscopy has all the advantages of minimally invasive surgery in cattle.
- Specialized equipment and knowledge of normal joint anatomy of cattle are mandatory for successful arthroscopy.
- The surgical technique is different in cattle compared with the horse. Thick skin and joint capsules complicate movement of the arthroscope within the joints.
- In cattle, septic arthritis and osteochondrosis are the most frequent disorders suitable for arthroscopic treatment.

INTRODUCTION

Arthroscopy in cattle was first described many years ago.[1–3] However, it remains unpopular among food animal surgeons because of the prohibitive cost of the equipment needed and the necessity to do the procedure under general anesthesia. The arthroscopic approach to the bovine joints is described to be similar to that in the horse.[4] Studies have recently highlighted the differences between the two species and have shown that cattle articulations need to be approached differently those of the horse.[5]

This article serves as a guide to bovine arthroscopy. Emphasis is placed on equipment, technique, and normal anatomy. Different disorders that can benefit from arthroscopy are discussed elsewhere in this issue.

ARTHROSCOPY VERSUS ARTHROTOMY

Arthroscopy has all the advantages of minimally invasive surgery. It improves evaluation of the articular cartilage, it allows evaluation of intra-articular structures (meniscus, ligaments, and bones) and pouches, it decreases hospitalization time, and it speeds up recovery.[6] It is a complement to other diagnostic imaging techniques (radiography and ultrasonography) and helps determine the prognosis of joint disease.

[a] Centre Hospitalier Universitaire Vétérinaire (Veterinary Medicine Teaching Hospital), Université de Montréal, 3200 Rue Sicotte, St-Hyacinthe, Quebec J2S 2M2, Canada; [b] Department of Clinical Sciences, Faculty of Veterinary Medicine, Université de Montréal, 3200 Rue Sicotte, St-Hyacinthe, Quebec J2S 2M2, Canada
* Corresponding author.
E-mail address: helene.larde@umontreal.ca

Vet Clin Food Anim 30 (2014) 225–245
http://dx.doi.org/10.1016/j.cvfa.2013.11.004 **vetfood.theclinics.com**
0749-0720/14/$ – see front matter

Despite these advantages, arthroscopy is not routinely performed on cattle for reasons related to the species and to the practice. First, specialized and expensive equipment is needed to perform arthroscopy and there is a steep learning curve to become familiar with the procedure. In adult cattle, thick joint capsules and thick skin make it difficult to manipulate the scope. Artiodactyl species have smaller distal joints (interphalangeal joints) and range of movement is limited in the metacarpophalangeal joint.[5] Adding to this, abnormal findings like proliferative synovium and fibrin formation make observation of joint structures even more difficult. General anesthesia is another drawback to performing arthroscopy in cattle. It is essential for a thorough and safe arthroscopic examination, which increases the cost of the procedure. All these factors have contributed to make arthroscopy in cattle a procedure exclusive to valuable cows in referral hospitals. However, with the value of purebred cattle continuing to increase, arthroscopic procedures for both septic and nonseptic joint disease should become more popular because the advantages compared with arthrotomy are substantial.

EQUIPMENT AND SURGERY SUITE

The equipment needed for bovine arthroscopy is similar to the equipment used in horses.

Arthroscope

A 4-mm diameter arthroscope, 160 to 180 mm in length, with a 30° viewing angle creating a field of view of 115° is usually used (**Fig. 1**). In narrow joints, a scope with a 70° viewing angle can be used to increase the field of view.

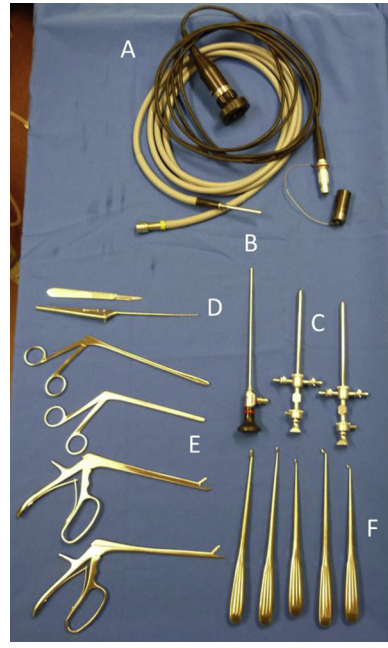

Fig. 1. Instruments needed to perform an arthroscopy. A, light cable and camera; B, 4-mm arthroscope; C, arthroscopic sleeves; D, graduate probe; E, various size and type of Ferris-Smith rongeurs; F, various types and sizes of bone curettes.