

# Traumatic Conditions of the Coxofemoral Joint

## Luxation, Femoral Head-Neck Fracture, Acetabular Fracture

Emma Marchionatti, DMV\*, Gilles Fecteau, DMV,  
André Desrochers, DMV, MS

### KEYWORDS

- Cattle • Hip • Coxofemoral joint • Coxofemoral luxation • Capital physal fracture
- Femoral neck fracture • Acetabular fracture

### KEY POINTS

- Coxofemoral luxations and fractures are the most common orthopedic problems of the hip in cattle.
- Femoral capital physal fracture or slipped capital femoral epiphysis is the most common hip injury in young animals.
- Fractures of the femoral neck, the acetabulum, or the greater trochanter may be associated with coxofemoral luxations in adult cows.
- Diagnosis and treatment of hip fractures and luxations remain a challenge for the veterinarian.

### INTRODUCTION

Coxofemoral luxations and fractures are the most common orthopedic problem of the hip in cattle.<sup>1,2</sup> Septic arthritis in calves and adult cattle and hip dysplasia in various predisposed breeds have also been reported.<sup>3</sup>

The diagnosis and treatment of hip abnormalities remain a challenge for the veterinarian. The coxofemoral joint is well covered and protected by the gluteal muscles, making palpation and examination difficult. Any joint anomaly without anatomic disruption cannot be noticed easily. Joint distension from septic arthritis or subluxation is subtle and most likely missed during physical examination. However, a fractured greater trochanter or a coxofemoral luxation can be diagnosed with basic knowledge of the normal anatomy.

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The authors have nothing to disclose.

Department of Clinical Sciences, Faculty of Veterinary Medicine, Université de Montréal, 3200 rue Sicotte, Saint-Hyacinthe, Québec J2S 2M2, Canada

\* Corresponding author.

E-mail address: [emma.marchionatti@umontreal.ca](mailto:emma.marchionatti@umontreal.ca)

Vet Clin Food Anim 30 (2014) 247–264  
<http://dx.doi.org/10.1016/j.cvfa.2013.11.001>

[vetfood.theclinics.com](http://vetfood.theclinics.com)

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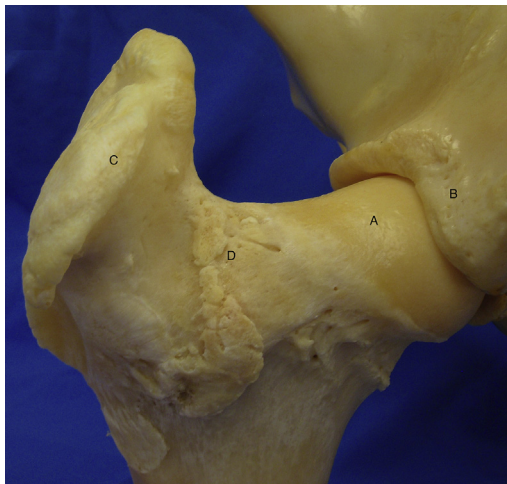
The hip joint is a spheroid-type joint that unites the femur to the coxal bone (**Fig. 1**). The coxal bone receives the femoral head in a cuplike structure formed at the union of the 3 pelvic bones—ilium, ischium, and pubis—the acetabulum. The semilunar articular surface of the acetabulum presents a cranioventral notch and is deepened by a fibrocartilaginous rim, the labrum acetabulare, which is in continuity with the bony margin. The transverse acetabular ligament is a part of the labrum and it crosses the acetabular notch. The joint capsule is attached to the margin of the acetabulum.<sup>4</sup> In cattle, the acetabulum is shallower than in horses, but the labrum is wider.<sup>4,5</sup>

The cylindroid femoral head, supported by the femoral neck, points in an axial direction (**Fig. 2**). The hemispherical articular surface presents a medioventral shallow notch, the fovea capitis, which provides attachment for the femoral head ligament; it is cylindroid and runs from the femoral head to the acetabular fossa. Lateral to the head is the greater trochanter, which provides attachment for the gluteal muscles. The trochanteric fossa separates the greater trochanter and the neck of the femur and provides a site of insertion for the deep hip muscles.<sup>6</sup>

The hip joint stability depends on 3 distinctive structures: the joint capsule, which is reinforced cranially, the cylindroid femoral head ligament and the massive muscle mass formed by the gluteal muscles and the deep hip muscles. The hip joint is naturally flexed when the animal is standing. The significant movements of the hips are the flexion and extension. The gluteal muscles (gluteus superficialis, gluteus medius, gluteus accessorius, gluteus profundus) originate at the coxal bone and end at the greater trochanter and allow the movement of extension, and limited movement of abduction and rotation of the limb. The cranial and caudal gluteal nerves, branches of the sciatic nerve, innervate them. The deep hip muscles (obturatoris externus, gemelli, quadratus femoris) allow very limited adduction and rotation of the limb and are innervated by the sciatic and obturator nerves.<sup>7</sup>

### ***Physical Examination and Diagnostic Procedures Specific to the Hip***

The onset of clinical signs is sudden and varies from severe lameness to recumbency. An animal with a chronic hip problem will usually have gluteal atrophy with a prominent greater trochanter. The gluteal muscles of the normal leg can be hypertrophied and



**Fig. 1.** Right coxofemoral joint of an adult cow, cranial view. A, femoral head; B, acetabulum; C, greater trochanter; D, femoral neck.

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