



Case Study

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An Uncommon Clinical Condition of Persistent Urachus Induced Cystorrhaxis in a Cross Bred Heifer and its Management

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ABSTRACT

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A 2 year old cross bred Jersey heifer was presented with distended abdomen, history of anuria and anorexia since three days. On per rectal examination urinary bladder was palpable as an elongated, cylindrical structure of which the apex could not be reached. Left oblique flank exploratory laparotomy revealed the case of persistent urachus and a rent was found in the urachal remnant which resulted into uroperitoneum. Dissection of persistent urachus and cystorrhaphy were performed in the present case and uneventful recovery was recorded. A case of persistent urachus and uroperitonium in a heifer was managed surgically.

Introduction

The umbilicus in calves consists of the urachus, umbilical vein and paired umbilical arteries. These latter structures are often referred to as the umbilical remnants. The urachus, umbilical vein, and umbilical arteries normally regress after birth to become a vestigial part of the bladder apex, round ligament of the liver and lateral ligaments of the bladder, respectively (Fubini and Ducharme, 2004).

When the urachus does not close (persistent urachus), or closes and re-opens at a later date (patent urachus). Persistent or patent urachus

is a condition of young foals in which the urachus fails to close spontaneously at or shortly after parturition (Lilich *et al.*, 2006). If the condition persists for some time, retrograde infection generally results in infection of the umbilical area (Oehme and Prier, 1974). The condition is more frequently seen in foals and rare in other animals (O'Connor, 1980) and it can be associated with a normal patent urethral opening and also with congenital stricture or occlusion of the urethra (Weaver, 1966). Treatment of patent urachus usually is by application of blister round the orifice and cauterization or surgical correction of the umbilical remnants by ligation of the urachus (O'Connor, 1980).

In this study, clinical examination of an uncommon condition of persistent urachus induced cystorrhesis in a cross bred heifer along its successful surgical management is reported.

Case description

A 2 year old cross bred Jersey heifer was presented with the history of anuria and anorexia since three days with distended abdomen. History revealed no abnormality in the animal since birth and was bred by AI. Owner had not noticed any abnormal signs since birth. Per rectal examination revealed an elongated, cylindrical bladder, of which the apex could not be reached. It appeared that animal had developed uroperitoneum. It was decided to perform exploratory laparotomy by standing oblique left paralumbar incision.

Treatment

First animal was stabilized by administering normal saline intra venously. Under local infiltration using 2% for exploratory laprotomy under standing left oblique paralumbar incision was given. After incision and entering into the abdominal cavity, urine profusely poured out from the abdomen. Care was taken not to remove abdominal fluid too rapidly since the rapid fluid shift could lead to collapse of the animal due to shock. On exploration it was found that urinary bladder was longitudinally stretched and a band like structure was connected from apex of the bladder to umbilical region. It was concluded as a case of persistent urachus and the band like structure was urachal remnant. The tip of the bladder was exteriorized easily with the abdominal incision. There was also a rent in the urachal remnant through which the urine seepage was occurring from the bladder leading to uroperitonium. After placing stay suture at the tip of the bladder on either side near the apex using chromic catgut no. 2

urachus was resected near the apex of the bladder (Fig. 1). Umbilical end of the urachus was also ligated as near to the umbilicus as possible and resected to prevent adhesion with other abdominal organs. Animal was able to void urine normally within minutes after bladder was filled. Abdominal incision was closed routinely using no. 2 chromic catgut by simple continuous pattern in two layers and skin was apposed in routine manner.

Post operatively animal was administered with Ceftriaxone 2.5g intra venous for 5 days and Meloxicam 0.2mg/kg BW intra muscular for 3 days. Animal was followed for 1 month post operatively and recovered uneventfully.

Results and Discussion

Persistent urachus condition in older cattle (frequently yearlings) involves uroperitoneum due to perforation. The urachus and tip of the bladder should be resected. Leaving a portion of the urachus may lead to an urachal diverticulum that does not empty completely at urination and therefore could contribute to cystitis (Baird, 2008). Similar technique was followed in the present case.

A urachal cyst is a condition in which the middle section of urachus remains patent with obliteration at both ends with uroperitoneum from bladder rupture is a common sequelae of this condition (Lischer *et al.*, 1994).

Rupture of the bladder or urachus is the most common cause of uroperitoneum in female cattle (Braun *et al.*, 2006). The main clinical sign is a pear-shaped enlargement of the abdomen accompanied by gradual deterioration in demeanour and appetite. Abdominocentesis yields light yellow fluid. A peritoneal-to-serum creatinine concentration ratio of 2 or greater is diagnostic of uroperitoneum. Treatment consists of surgical repair of the defect (Braun and Nuss, 2015).

Fig.1 Band like structure ligated at umbilicus and exteriorised



Fig.2 Ligated and resected band like structure at the tip of the bladder



A persistent urachus consisting of a thin band of tissue has been reported to cause small intestinal strangulation in an adult cow (Fig. 2). Additionally, rupture of a persistent urachus that communicated with the lumen of the bladder resulted in uroperitoneum in a yearling bull (Fubini and Ducharme, 2004). Persistent urachal remnant causing intestinal strangulation in a cow has been reported by (Mesaric and Modic, 2003; Baxter *et al.*, 1987) and is said to be a very rare occurrence.

It is therefore concluded that persistent urachus led cystorrhesis can be managed successfully by resecting the urachus as close to the apex of bladder and umbilicus followed by cystorrhaphy.

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