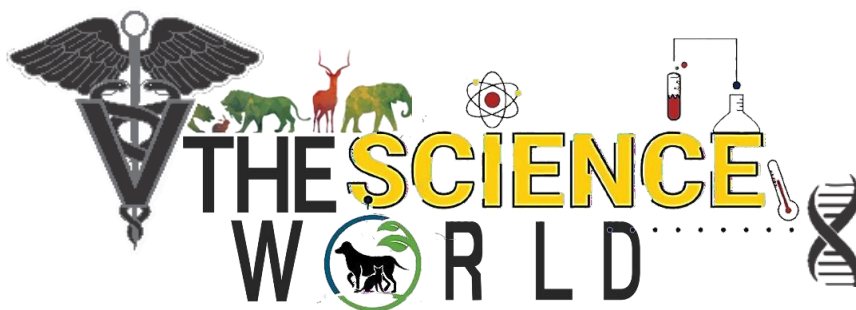




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Obstructive urolithiasis in buffalo calves: a serious but preventable problem

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Abstract

Obstructive urolithiasis is an important and potentially life-threatening urinary disorder in young male buffalo calves. The condition is influenced by factors such as inadequate water intake, excessive concentrate feeding, high-phosphorus feed ingredients and mineral imbalance. Early signs include repeated attempts to urinate, straining, restlessness and passage of little or no urine. Delayed treatment may result in bladder rupture, abdominal fluid accumulation and severe systemic illness. Early veterinary examination and appropriate diagnostic evaluation are essential for timely management. In cases of complete obstruction, surgical procedures such as tube cystostomy may provide an alternative route for urine drainage and improve recovery. Prevention depends largely on adequate clean water, balanced nutrition, sensible use of concentrates and close observation of calves. Prompt veterinary attention can prevent severe complications, improve survival and reduce economic losses.

Keywords: Obstructive urolithiasis; Buffalo calves; Urinary obstruction; Tube cystostomy; Bladder rupture; Calf management

Obstructive urolithiasis, commonly known as **urinary stone disease**, is an important problem in young male buffalo calves and can cause serious economic losses to farmers. In this condition, mineral stones form in the urinary tract and block the normal passage of urine. Male calves are particularly vulnerable because their urinary passage is long and narrow, with certain



bends and narrow points where stones can become lodged. Once complete obstruction develops, the condition can rapidly become life-threatening.

The development of urinary stones is influenced by several factors, particularly feeding, water intake and mineral balance. Feeding excessive amounts of concentrate and phosphorus-rich ingredients such as wheat bran and rice bran may increase the risk. Early weaning, sudden changes in diet and inadequate availability of drinking water can further favour the development of urinary stones. Therefore, feeding management has an important role in protecting young calves from this condition.

Adequate water intake is one of the simplest and most important preventive measures. When a calf drinks insufficient water, urine becomes more concentrated and minerals are more likely to come together and form crystals and stones. Water intake may decrease during cold weather, which can partly explain the higher number of cases observed during winter. In a study of 149 male buffalo calves, nearly 58% of retained-urine cases were recorded during December, January and February.

Farmers should be able to recognize the early warning signs. The affected calf may repeatedly try to urinate but pass only a few drops or nothing at all. It may become restless, repeatedly change its posture, move its tail, strain while attempting to urinate and show signs of abdominal pain. Loss of appetite and reduced rumen movement may also occur. Sometimes the calf may stand with its tail raised and repeatedly attempt to pass urine. These signs should never be ignored.

As the obstruction becomes more severe, urine continues to accumulate inside the bladder. The bladder becomes overstretched and painful. If the blockage is not relieved in time, the bladder or urinary passage may rupture. When the bladder ruptures, urine enters the abdominal cavity and the calf may develop a swollen or pear-shaped abdomen. The animal can become dull, weak and dehydrated, with sunken eyes, reduced feed intake and difficulty in movement. In advanced cases, a characteristic uremic smell from the breath and even recumbency may occur.

The duration of urine retention is also important. Calves presented early, while the bladder is still intact, generally have a better chance of recovery. In the reported study, calves with an intact bladder commonly had a history of 1–3 days of urine retention, whereas longer periods of retention were associated with bladder rupture. This highlights the importance of calling a veterinarian at the first sign of difficulty in urination rather than waiting for the condition to become severe.

Veterinary examination is important because the outward signs may not always reveal whether the bladder has already ruptured. Ultrasonography can help the veterinarian assess the



condition of the urinary bladder and detect fluid accumulation in the abdomen. In an animal with an intact bladder, the bladder may appear greatly enlarged, whereas a ruptured bladder may appear smaller with free fluid present in the abdomen.

If the obstruction is complete, medicines alone may not be sufficient and surgical treatment may be necessary. One commonly used approach is tube cystostomy, in which a tube is temporarily placed into the urinary bladder to provide an alternative route for urine drainage. This allows the animal to pass urine while the original urinary passage gets an opportunity to recover. In the study involving 149 buffalo calves, 95.3% of the animals returned to normal urination within 7–14 days following tube cystostomy.

However, prevention should remain the main focus at the farm level. Young buffalo calves should have regular access to sufficient clean drinking water. Farmers should avoid unnecessarily high amounts of concentrate and should provide a properly balanced ration with adequate roughage. Particular attention should be given during the weaning period, when changes in feeding practices can increase the risk. Phosphorus-rich feed ingredients should not be fed excessively, and the overall mineral balance of the ration should be maintained.

Farmers should also avoid delaying treatment when a calf shows repeated attempts to urinate. **Do not wait for the abdomen to become swollen or for the animal to become weak and depressed.** Early veterinary intervention can prevent progression to bladder rupture and greatly improve the chances of saving the animal. Repeated administration of medicines without veterinary advice may delay proper treatment and allow the obstruction to become more severe. Good management can substantially reduce the risk of this disease. Adequate water intake, balanced feeding, sensible use of concentrates, proper mineral nutrition and close observation of calves are simple measures that can protect both animal health and farm income. Veterinary attention should be sought immediately if a calf strains repeatedly to urinate, passes only small amounts of urine or stops urinating completely.

Obstructive urolithiasis is therefore not merely a urinary problem—it can quickly become a life-threatening emergency and an avoidable economic loss for the farmer. Recognizing the early signs and taking immediate veterinary advice, together with proper feeding and water management, are the most important steps in preventing serious complications and improving the survival of affected buffalo calves.

