



Assessment of Various Surgical Techniques of Obstructive Urolithiasis in Male Goat

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Abstract

Introduction: Condition of urethral blockage by stone/calculi, is common in many countries of the world, including Pakistan. Urolithiasis is a condition having multifactorial causes in which the urinary tract develops tiny calculi, or the production of "stones" or agglomerate of mucin, protein, and minerals ions in the urinary tract. It is the frequent and irritating condition in male small ruminants especially buck.

Methods and materials: Google Scholar, Pub Med, Scopus, Embase, and Medline were searched. The search was performed with keywords calculi, urolithiasis, recurrence, diet, Perineal urethrostomy, tube cystotomy, prepubic cystostomy with search limits of the above year 2010, and free full-text articles. On keywords, approximately 30+ published articles are retrieved, out of which almost 15+ articles are chosen for review.

Conclusions: Because the ailment has a history of recurrence following any surgical treatment, it's advisable to stick to the recommended diet and proper management.

Keywords: Urolithiasis; Recurrence; Diet; Perineal urethrostomy; Tube cystotomy; Calculi

Introduction

Urolithiasis is a disorder that causes urinary calculi to form in the urinary system, resulting in a restriction of urine outflow [1]. Urolithiasis is the most common and clinical disease of small ruminants, with a death rate of up to 40% in the winter [2] After respiratory tract problems, it is the second leading cause of death. Dietary imbalances resulting from disproportionate calcium-phosphorus ratios have been incriminated information of uroliths and crystals in the urine [3]. Uroliths come in a variety of shapes and sizes and are normally generated in the pH range of 6.5-8.8 in the urinary system. Because of the resulting uremia, animals with chronic blockage are always regarded as poor surgical risk patients. Proper prognosis and diagnosis are necessary. Managing these animals' surgical and anesthesia needs is a difficult task. As a result, the current literature study was designed to establish specific surgical procedures for the treatment of a urinary blockage in goats.

Literature Review

According to the literature, treatment of obstructive urolithiasis is currently based on pharmacological and/or surgical procedures [4]. Urolithiasis can be treated surgically by many methods to develop the patent urethra [5] but post-operative complications like recurrent urolithiasis, urethral strictures, and other post-surgical complications are all too prevalent [6]. Many surgical procedures to treat stones and prevent recurrence in small ruminants have been described in the literature. The diagnosis is made by ultrasonography, and the animals then are divided into a complete, incomplete, and partial obstruction or rupture. The condition is more prevalent in male goats [7].

Tube cystotomy is a technique of urinary diversion in which a Foley catheter is placed in the urinary bladder lumen through the laparotomy procedure. Diagnostic research was carried out by Tamilmahan et al. He aesthetized the animal's 23 goats (lumbosacral and 2% lignocaine) and aseptically prepared them for surgery and then an incision is made at anterior to rudimentary teats. After complete palpation, Foleys catheter was inserted by making a tunnel to the prepuce for four days. There were no complications in any of the instances, and appropriate analgesia was achieved at the operative site. The catheterization of the urinary bladder and the placing of the tube went off without a hitch. The flow of urine *via* the tube was detected in all cases after tube placement. Another research study was performed on 12 male goats with the same findings. Another case was reported in which sheep goats and pigs were treated by tube cystotomy but recurrence was 54.9% in goats (highest of all) and he concluded that the risk of complications is higher in goats [8]. Tube cystotomy is an easy and field-adopted procedure but the disadvantage is the chance of recurrence obstruction after treatment.

Perineal Urethrostomy (PU) is a major surgery in which a permanent hole into the urethra is created by an incision in the skin between the scrotum and the anus. The research was performed on 25 goats, treated with PU and it was noted that out of 25, 13 were alive and 9 died after the follow-up period of 36 months. The most common complication of this surgery was hemorrhage [7]. This treatment offers long-term protection, but it should be used with caution because it can result in a life-threatening condition that results in death due to hemorrhages. Tobias et al. presented another case study in which they conducted the PU on 11 adults' castrated male goats and found that one goat died out of the eleven. The postoperative complications were identical to those seen in the earlier patient [6]. Although this treatment is technically sound and safe, postoperative complications nevertheless exist.

A permanent hole between the bladder and the belly wall at the prepuce can be constructed for animals with structured (narrowed) perineal urethrostomy sites and subsequent re-obstruction by a surgical technique called as, known as "marsupialization" of the bladder. This is a straightforward method that necessitates less apparatus, a shorter stay in the hospital, less post-operative care, and fewer complications Mohsin et al. used this technique on two rams and one buck in the literature. A 2.5-inch incision was made in the supra pubic region, just anterior to the scrotal connection. The bladder was found, flushed, and then the skin was incised on the surface of the bladder. Animals were observed, and it was discovered that this procedure produces the best outcomes [9]. This technique was also used by May et al. in 19 goats. Urinary flow was restored in all 19 goats, with two goats experiencing minor surgical complications

(bladder mucosal prolapse and death). In two of the animals, major problems such as cystitis and fibrotic stomal closure occurred [10]. This technique can be used with good results in long-term clearance of urine outflow blockage with minimal morbidity.

The most difficult and time-consuming stage of prostatectomy is the vesicourethral anastomosis in which the bladder neck is attached to the membranous urethra. This procedure was carried out on four goats, and long-term follow-up revealed problems such as cystitis and abscess formation [11]. Although an efficient and novel surgical technique still this procedure is time intensive and has the potential for problems [12].

Conclusion

Various treatment techniques both medical and surgical are developed in almost all the species. If the case is tackled early enough, it can be successfully treated. The therapy is primarily surgical, but as with any surgical surgery, there are post-operative complications to be aware of. Recurrent urolithiasis, calculi deposition at many sites, leakage, hemorrhages, stenosis, and necrosis of subcutaneous tissues are some of the symptoms that might occur. Except for aseptic surgery and the best postoperative care, there is no way to avoid postoperative problems. The easiest method to avoid urolithiasis is to maintain a healthy diet.

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