Suture Granoloma Mimicking Bladder Stone: A Diagnostic Challenge

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Received: 08-11-2023; Received in revised form: 23-12-2023; Accepted: 15-01-2024

Abstract

Bladder stones are a rare complication of urinary stones, with a higher prevalence in male patients. They can be categorized as primary or secondary, with secondary bladder stones often associated with underlying conditions such as bladder outlet obstruction, urinary tract infections, and foreign bodies. This case report presents the surgical intervention for a 27-year-old woman with a history of mental retardation and asthma who presented with urinary incontinence and other urinary symptoms. Imaging confirmed the presence of a large bladder stone attached to a nylon suture string. The stone was successfully fragmented and removed, and the suture material was cut and extracted. Follow-up showed resolution of symptoms, and the patient was discharged with appropriate medication. This study highlights the association between bladder stones and foreign bodies, particularly suture materials used in vesicle surgeries. Previous studies have reported bladder stone formation related to both absorbable and non-absorbable sutures. This emphasizes the need for further research to investigate preventative measures and the choice of suture materials to minimize the risk of bladder stone formation. It is important for clinicians to be aware of this potential complication when performing bladder surgeries and to consider alternative suturing techniques or materials to reduce the risk of stone formation.

Keywords: Bladder stone, Suture granuloma, Foreign body, Urinary incontinence, Vesical surgery

Citation: Nasrollahzadeh Saravi M., Mohseni M., Vahidi S. **Suture Granoloma Mimicking Bladder Stone: A Diagnostic Challenge.** *Acad J Surg*, 2024; 7 Special Issue: 18-20.

Introduction

Urinary stones are a commonly encountered complication, with a prevalence of up to 17 percent within the general population [1] However, bladder stones are relatively rare, constituting only 5 percent of all urinary stones. Additionally, they have a higher propensity to occur in male patients. Bladder stones can be categorized into two major groups: primary and secondary. Primary bladder stones are often associated with nutritional deficiencies and are more frequently observed in children. The etiology of secondary bladder calculi is linked to underlying conditions such as bladder outlet obstruction, neurogenic bladder, urinary tract infections (UTIs), bladder diverticula, urinary diversions, bladder augmentation, and foreign bodies. Indeed, any foreign body placed within or near the bladder can act as a nidus for stone formation [2] Suture materials, in particular, can serve as foreign bodies in this context.

Case Report

Patient Information and Clinical Findings

A 27-year-old woman with a history of mental retardation and asthma, who had undergone VUR surgery at the age of 13 due to recurrent UTIs and urinary incontinence, presented at the authors' clinic with complaints of urinary incontinence. She also reported symptoms such as dysuria, increased frequency, foul-smelling urine, and urinary retention, which had started approximately a week ago. Urine analysis revealed mild leukocyturia, while the culture was negative. All other laboratory parameters were within the normal range. Renal and bladder

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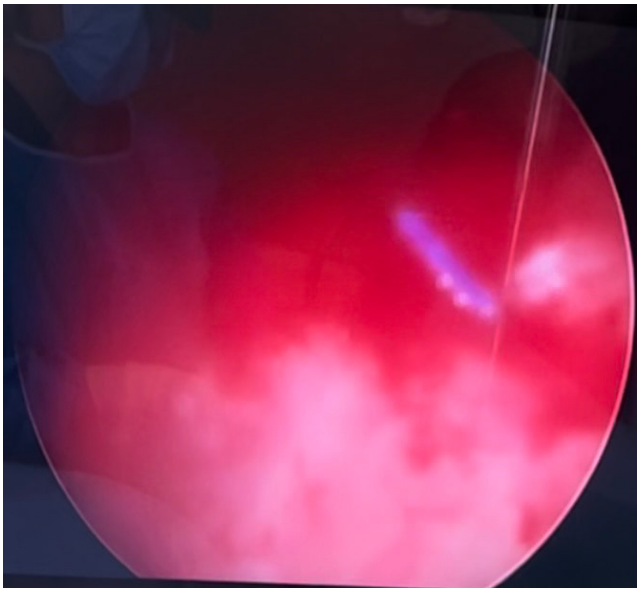

Fig. 1: 3.5 cm Bladder stone on the bladder floor approximately 2 cm above the upper side of the right orifice (right basolateral), where it was affixed to the underlying surface by a nylon suture string

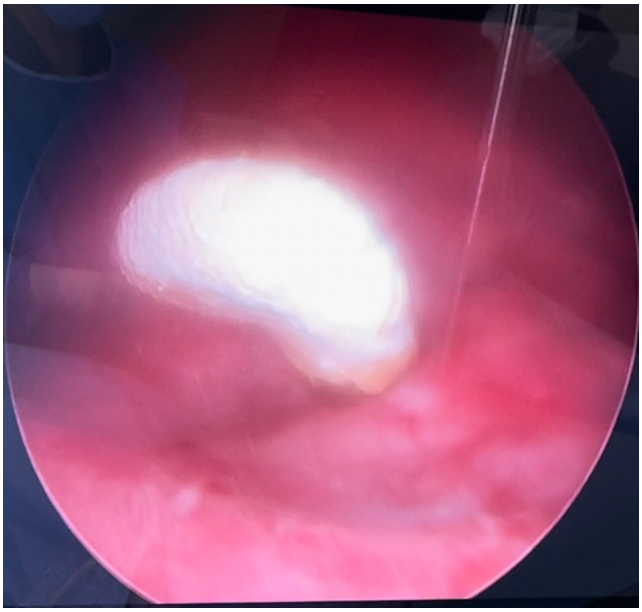

Fig. 2: nylon suture string on bladder floor where stone was formed and fixed on it

ultrasonography demonstrated a 35 mm stone located in the bladder, accompanied by bladder base wall thickening consistent with cystitis. The patient had previously been treated with tamsulosin due to difficulty in emptying the bladder.

Surgical Intervention

Following the necessary preoperative preparations, the urethra was dilated using size 11 bougie dilators. A cystoscopy sheet was then utilized to access the urinary tract. A large, oval-shaped stone measuring 3.5 cm in diameter was observed on the bladder floor, approximately 2 cm above the upper side of the right orifice (right basolateral), where it was affixed to the underlying surface by a nylon suture string. Initially, the authors' intention was to use a pneumatic stone crusher to break the stone, but this approach proved unsuccessful. Subsequently, the authors dilated the tract with size 13 bougie dilators and successfully fragmented the stone into smaller pieces using a lithoclast. These smaller fragments were then extracted. During the procedure, a 5 mm nylon suture material was discovered at the site of

attachment, which was promptly cut and removed using endoscopic scissors. It's important to note that an outlet obstruction was observed at the beginning of the operation (the patient had previously been on medication for bladder dysfunction), and both obstructive and irritative symptoms were resolved after the operation. The remaining portions of the bladder were found to be normal, a Foley catheter was secured, and clear urine was observed.

Patient Follow-up

The patient remained symptom-free after the operation, and the Foley catheter was removed 12 hours post-surgery. The patient was discharged with a prescription for cefixime, naproxen, and phenazopyridine.

Discussion

Bladder stones, although rare, are more frequently observed in men and are commonly associated with outlet obstruction and urinary tract infections [3]. They can also arise as a complication of foreign bodies. Several cases have been reported in which suture materials acting as foreign bodies have led to the formation of urinary stones. In a study conducted by Wen-Chen Huang and colleagues, a bladder stone was found around a non-absorbable suture used in the Marshall-Marchetti-Krantz operation [4]. Julian and Agil (2021) presented a case of a bladder stone that developed due to a non-absorbable suture 20 years after a hysterectomy in a 54-year-old patient [5]. They suggested that this could be prevented by using absorbable suture materials, although in another paper by Hashayida and colleagues, a bladder stone was reported 28 years after a renal transplant involving an absorbable suture [6]. Additionally, in Cursio R's study, a large bladder stone originating from an absorbable suture used in a radical prostatectomy in a 60-year-old male patient was reported [7]. It is apparent that regardless of the type of suture material used in vesicle surgeries, whether absorbable or non-absorbable, there exists a risk of stone formation at the suture site due to its role as a foreign body. This underscores the need for further research to explore whether the choice of suture material or specific surgical interventions can mitigate the risk of such occurrences.

Conclusion

In conclusion, bladder stones, although relatively rare compared to urinary stones, can be a complication associated with various underlying conditions such as bladder outlet obstruction, neurogenic bladder, urinary tract infections, bladder diverticula, and foreign bodies. This case report presented a unique instance of bladder stone formation caused by a nylon suture material. The successful surgical intervention involved the fragmentation and extraction of the stone, as well as the removal of the suture material. The patient experienced symptom relief and remained free of complications post-operation. However, this case highlights the potential risk of stone formation at the suture site regardless of the type of suture material used, emphasizing the need for further research to explore preventive strategies. It is crucial for healthcare professionals to be aware of this rare complication and consider it as a differential diagnosis in patients with urinary symptoms and a history of suture placement in the bladder.

Conflict of interest

The authors declare no conflict of interest

Acknowledgment

The authors acknowledge the colleagues of the pediatric urology research center of Tehran for supporting this report.

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