

# Encrusted Bladder Stone on Non-absorbable Sutures after a Cesarean Section: A Case Report

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We report an unusual case of a bladder stone which formed on a non-absorbable suture in a woman with a previous cesarean section. After endoscopic disintegration of the stone, a ring-shaped silk suture which was encrusted in the bladder stone was unveiled. Based on the literature, most foreign bodies in the bladder are subject to stone formation on the bladder wall, but rarely become encrusted into a stone within the bladder. However, our patient's bladder wall was intact, and the bladder stone had a normal appearance without evidence of enclosure by a foreign body. In our opinion, we suggest that bladder stone formation should be excluded in the clinical evaluation of women with recurrent urinary tract infections (UTIs). Therefore, complete evaluation including urinalysis, and imaging studies such as x-ray, ultrasound, and cystoscopy are necessary to assess recurrent UTIs. (JTUA 20:143-5, 2009)

*Key words:* urinary bladder stone, urinary tract infection, cesarean section, foreign body.

## INTRODUCTION

According to the literature, bladder stones rarely occur in females. Careful assessment of the disease etiology is essential in these patients. Bladder stones usually occur due to bladder outlet obstruction, causing urinary stasis and rarely from a foreign body intrusion. Recently, there is an upward trend of patients undergoing obstetric surgery with implantation of foreign bodies in the bladder, leading to increased formation of bladder stones. Most of these foreign bodies include birth control devices, vaginal slings, and so forth, with few reports of non-absorbable sutures. We report a case of a bladder calculus following a cesarean section.

## CASE REPORT

We report on a 34-year-old female who was transferred to our urology clinic due to recurrent urinary tract infection (UTI). Tracing back her history, she had undergone a cesarean section at 3 years previous and then had suffered from repeated UTIs starting 2 years previous. She visited our clinic with the chief complaints of dysuria, suprapubic pain, and gross hematuria for several days. The urine test demonstrated significant pyuria,

while the roentgenogram (Fig. 1) and ultrasonic examinations (Fig. 2) revealed a bladder stone. The cystoscopic examination showed edematous bladder mucosa, and the bladder stone measured 2 cm. The bladder stone was then crushed and smoothly washed out by cystoscopic manipulation. A ring-shaped silk suture with a knot was discovered to be encrusted in the bladder stone (Fig. 3). The prime component of the stone was found to be apatite by a stone analysis. She was discharged 1 day after surgery and was followed-up for 2 weeks. The urine test and cystoscopic examination were uneventful.

## DISCUSSION

Bladder stones occur more frequently in males, across nations, races, and age groups. The frequency of occurrence increases yearly after the age of 50 years.<sup>1</sup> Females account for only 2% of all patients with bladder stones caused by bladder outlet obstruction.

It was found in animal experiments that non-absorbable sutures, such as silk and Mersilene, cause substantial tissue reactions. Stones are formed when these sutures are exposed in the bladder cavity. However, monofilament polypropylene sutures do not cause such reactions.<sup>2</sup> Differences in the formation of stones were found in the bladders of different breeds of mice when silk sutures were implanted.<sup>3</sup> This suggests that there might be other factors determining or leading to stone formation.

Human experiments cannot be performed to investigate this cause of bladder stone formation for ethical

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Fig. 1. Roentgenogram showing a bladder stone.

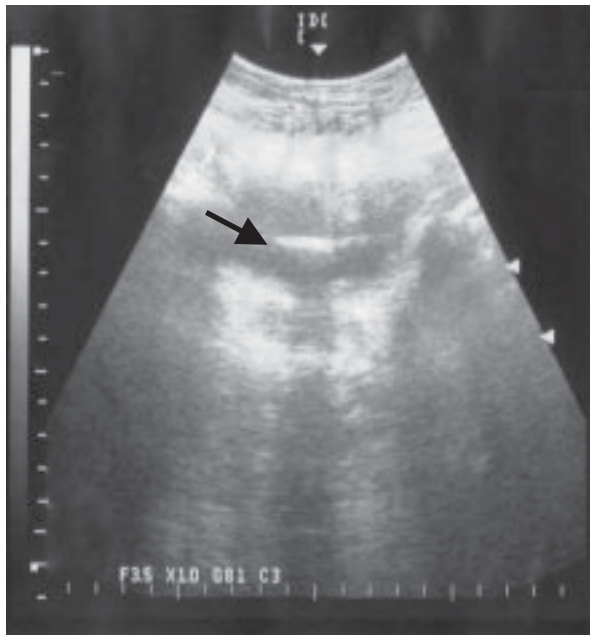


Fig. 2. Stone in the urinary bladder with an acoustic shadow.

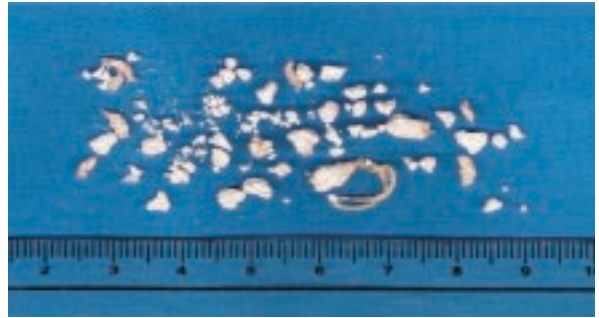


Fig. 3. Encrusted silk suture in the shape of a ring with a knot.

reasons. Nevertheless, from case reports in the literature, one can classify stone formation among females into extracystic objects such as intrauterine devices which moved ectopically into the bladder,<sup>4</sup> intracystic equipment like catheters or sutures left in the bladder,<sup>5,6</sup> and bladder damage during surgery with objects such as sutures left embedded in the bladder wall.<sup>7-10</sup> This type of bladder stone is fixed on the bladder wall and leads to difficulties in its removal. Suture equipment discovered includes clips, sutures, and other foreign objects.

Endoscopy is an effective and safe method for removing bladder stones. However, a bladder stone resulting from a foreign body that has become fixed on the bladder wall may require a laparotomy for its removal. The main principle for treating a bladder stone is to remove the underlying cause of stone formation, such as bladder outlet obstruction or bladder infection.

According to the literature, bladder stones caused by foreign bodies involving sutures contain components such as calcium, ammonium, phosphate, oxalate, and uric acid. These components mostly exist as mixtures. The bladder stone in our patient was made of carbonate, i.e., apatite, which is not uncommon.

An unusual bladder stone similar to the one in our patient was reported in 1967. The suture in the shape of a ring with a knot was completely encrusted in stone, and the suture was only discovered after the stone was fractured. It was thought that there were two possibilities causing this rare phenomenon. One possibility is injury to the bladder during surgery when using non-absorbable sutures. Since the suture could not be absorbed, it entered the bladder and became a nidus. Another possibility is that the suture was immediately outside the bladder. It entered the bladder by eroding the bladder wall. The wall completely healed, the suture was free in the bladder, and it eventually formed a nidus.

## CONCLUSIONS

This case reminds us that in the diagnoses of recurrent urinary tract infections in young females, bladder stones should be considered in the differential diagnosis, especially for patients who have had gynecologic, urologic, or pelvis-related surgeries. In addition to a urine test, one should consider x-ray, ultrasound, or cystoscopic exams to exclude the possibility of a bladder stone.

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