

## Secondary bladder stone formation on polypropylene suture after burch colposuspension and abdominal hysterectomy

### *Burch kolposüspansiyonu ve abdominal histerektomi sonrası polipropilen sütüre ikincil mesane taşı oluşumu*

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#### Abstract

Bladder calculies are stones or calcified materials found in the bladder. Foreign bodies that come into contact with the urine may cause bladder stones. Examples of foreign body include suture materials, clips, catheters, ureteral stents, urinary incontinence meshes or migration of an intrauterine device. A 63-year-old female patient was admitted to our urology clinic with dysuria, frequent urination and mixed type urinary incontinence for a year. The patient had a history of abdominal hysterectomy and Burch colposuspension two years ago. Computerized tomography of the patient revealed a bladder stone measuring 2.9x2.6 cm. The patient underwent cystolithotripsy with Holmium (Ho: YAG) laser. The bladder stone was found to be attached to the bladder wall by a polypropylene suture. The suture material was removed endoscopically. The patient has no complaints during the 2-year follow-up. The presence of nonabsorbable suture material in the bladder is a well-known cause of urinary tract infection and stone formation and defined complication of hysterectomy and colposuspension. Information on the lithogenic properties of various suture materials is unfortunately limited to only in vitro and in vivo animal studies. In humans, experience with stone formation related to suture materials is limited to case reports. It has been observed that lithogenicity is related to the longevity of the suture material and in the studies carried out it has been observed that the rate of calcification with non-absorbable sutures is higher. Treatment includes disintegration of the stone and removal of the foreign body causing the stone.

**Key words:** Bladder stone, polypropylene, hysterectomy, colposuspension.

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#### Öz

Mesane içi kalküller mesanede bulunan taşlar veya kalsifiye olmuş materyallerdir. İdrarla temas eden yabancı cisimler mesane taşlarına neden olabilmektedir. Yabancı cisim örnekleri arasında dikiş materyali, klipsler, kateterler, üreteral stentler, üriner inkontinans meşeleri veya intrauterin cihazın göçü sayılabilir. 63 yaşında kadın hasta üroloji kliniğimize yaklaşık 1 yıldır var olan idrar yaparken yanma, sık idrara çıkma ve mikst tip idrar kaçırma şikâyeti ile başvurdu. Hastanın iki yıl önce geçirilmiş abdominal histerektomi ve Burch kolposüspansiyon öyküsü mevcuttu. Çekilen bilgisayarlı tomografide 2,9x2,6 cm ebatlarında mesane taşı saptandı. Hastaya Holmium (Ho: YAG) lazer ile sistolitotripsi yapıldı. Mesane taşının mesane duvarına bir polipropilen sütür ile bağlı olduğu görüldü. Sütür materyali endoskopik olarak çıkarıldı. Hastanın 2 yıllık takibinde herhangi bir şikâyeti bulunmamaktadır. Mesanede emilmeyen sütür materyalinin varlığı, idrar yolu enfeksiyonu ve taş oluşumunun iyi bilinen bir nedenidir ve histerektomi ve kolposüspansiyon operasyonlarının tanımlanmış komplikasyonlarındandır. Çeşitli dikiş malzemelerinin litojenik özelliklerine ilişkin bilgiler, ne yazık ki, sadece in vitro ve hayvansal in vivo çalışmalarla sınırlıdır. İnsanlarda dikiş materyallerine bağlı taş oluşumuyla ilgili

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deneyimlerle vaka raporlarından ibarettir. Litojenitenin sütün materyalinin uzun ömürlülüğü ile ilişkili olduğu ve yapılan çalışmalarda, emilmeyen sütürlerle taşlaşmanın daha yüksek oranda gerçekleştiği görülmüştür. Tedavi ise taşın parçalanmasını ve taşa sebebiyet veren yabancı cismin çıkarılmasını içerir.

**Anahtar kelimeler:** Mesane taşı, polipropilen, histerektomi, kolposüspansiyon.

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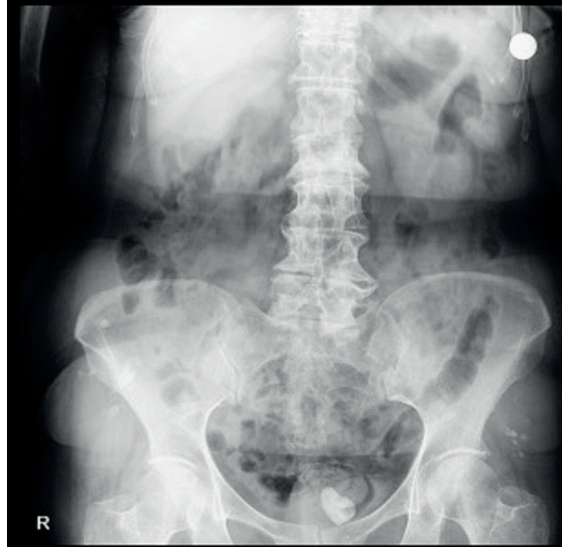
## Introduction

Bladder calculies are stones or calcified materials found in the bladder (or in a structure that acts as a urinary reservoir instead of a bladder). Bladder outlet obstruction is the most common cause of bladder valculi in adults. In addition, foreign bodies that come into contact with the urine may cause bladder stones. Examples of foreign body include suture materials, clips, catheters, ureteral stents, urinary incontinence meshes or migration of an intrauterine device [1]. Approximately 2% of all bladder calculi occur in women. The presence of bladder stones requires careful consideration of the cause [2]. Recently the number of patients undergoing obstetric surgery with the implantation of foreign bodies into the bladder increases and this situation increases bladder stone formation. In this article, we present a 63-year-old female patient who had calculus over suture material in bladder following prior abdominal hysterectomy and Burch colposuspension.

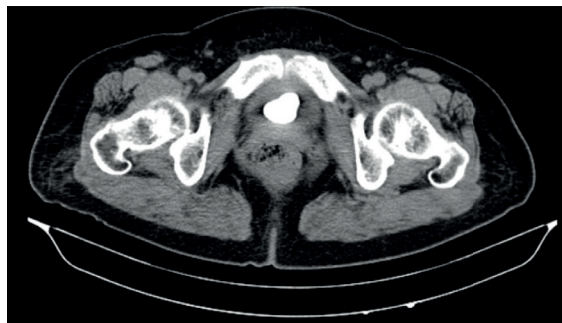
## Case report

A 63-year-old female patient was admitted to our urology clinic with dysuria, frequent urination and mixed type urinary incontinence for a year. The patient had a history of abdominal hysterectomy and Burch colposuspension two years ago. Physical examination of the abdomen and external genitalia did not reveal any abnormal findings. Urine culture yielded no bacterial growth. Complete blood count and blood biochemistry were within normal range. The KUB (kidney, ureter and bladder) film revealed a radiopaque shadow of 2.4cmx1.7 cm size over the pelvis (Figure 1) and computerized tomography of the patient revealed a bladder stone measuring 2.9x2.6 cm (Figure 2). Thereafter the patient underwent cystolithotripsy with Holmium (Ho: YAG) laser under spinal anesthesia. The bladder stone was found to be attached to the bladder wall by a polypropylene

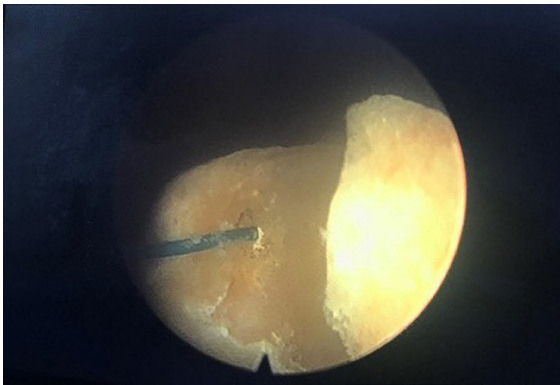
suture. The suture material was removed endoscopically (Figure 3a, 3b, 3c). The next day the patient was discharged. The patient was asymptomatic at 1-month follow-up and urine culture was sterile. On postoperative 1-month cystoscopy, the suture region was completely healed. The patient has no complaints during the 2-year follow-up.



**Figure 1.** Abdominal X-ray showing a radiopaque shadow of 2.4cmx1.7 cm over the pelvis



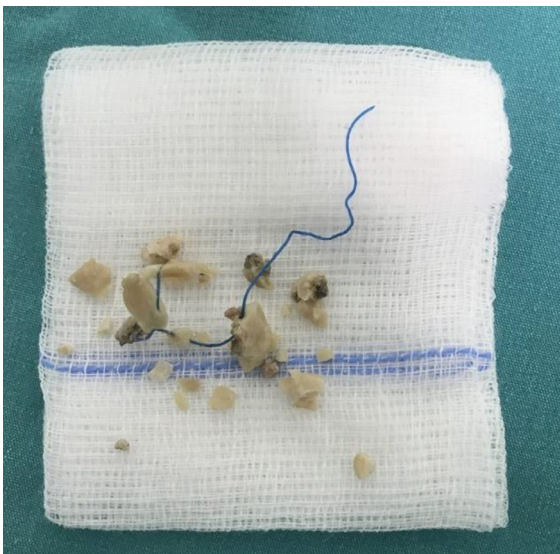
**Figure 2.** Image of a transverse plane of CT-scan shows 2.9x2.6 cm bladder stone



**Figure 3a.** The bladder stone attached to the bladder wall by polypropylene suture



**Figure 3b.** Suture material after removal of stone around it



**Figure 3c.** Post-operative suture material and some stone fragments

## Discussion

Bladder calculi constitute 5% of the urinary tract calculi and usually occur due to foreign bodies, obstructions or infections [3]. Approximately 2% of all bladder calculi occur in women. The presence of bladder stones requires careful consideration of the cause [2]. As in our patient in a patient with intravesical stone, lower urinary tract symptoms such as pain, urgency and / or intermittent urine stream are usually observed. However, some patients may not have symptoms and urine analysis may be normal or symptoms may occur only as recurrent dysuria and pyuria [4]. The detailed past medical history and physical examination remain the most valuable tools in the diagnosis despite the new advances in diagnostic methods. The presence of nonabsorbable suture material in the bladder is a well-known cause of urinary tract infection and stone formation [5] and defined complication of hysterectomy and colposuspension. Information on the lithogenic properties of various suture materials is unfortunately limited to only in vitro and in vivo animal studies [6, 7]. In humans, experience with stone formation related to suture materials is limited to case reports. It has been observed that lithogenicity is related to the longevity of the suture material and in the studies carried out it has been observed that the rate of calcification with non-absorbable sutures is higher [8]. The nonabsorbable suture we found in the bladder was possibly as a result of the accidental insertion into the bladder while suturing or subsequent erosion of a loop of suture in the bladder lumen, creating a nidus for stone formation [3]. The main stimulus in the formation of calculi is crystal formation. Nucleation occurs around a foreign object as a result of infection or secondary to obstruction with resulting super saturation and then aggregation, proliferation for crystal growth and eventual stone formation [2]. Intravesical stone formation caused by extravesical surgical procedures is rare. Such complications can be avoided by the usage of absorbable sutures such as polyglycaprone, polyglactin, polydioxanone and careful passage of the needles and sutures from the bladder layers. In addition, intraoperative cystoscopy during incontinence surgery is necessary to avoid complications [9]. The main principle of treating a bladder stone is to eliminate the underlying cause of stone formation such as bladder outlet obstruction or bladder infection.

When encrustation or stone formation occurs on the foreign body, the stone forceps can be used to crush the stone to facilitate removal of the foreign body or endoscopic laser lithotripsy can be used as we did. However, open surgery may be necessary because sometimes the foreign body is too large or its nature makes this mandatory.

Bladder stones are rare in women. Suspicion is important for early diagnosis. Previous gynecological and other pelvic surgeries should be questioned. Investigations should include plain radiography, urinalysis, ultrasonography or computed tomography. The diagnosis is confirmed by cystoscopy. Treatment includes disintegration of the stone and removal of the foreign body causing the stone.

**Conflict of interest:** The authors have no conflicts of interest to declare.

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## Contributions of authors

O.Ç. and Y.Ö.İ. sets up the main idea and hypothesis of the study. Ç.B. and E.K. operated the patient and edited the photographs. The discussion section of the article was written by M.H.Ö., B.E, T.Ç. and M.Y.Y. critically reviewed and revised the manuscript. All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.