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Case Report

Large primary vaginal stone secondary to vesico-vaginal fistula in a 63-year-old woman

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ABSTRACT

Vaginal stones are incredibly rare. Primary stones are seen in cases of urethro-vaginal or vesico-vaginal fistula. Secondary stones are more common and caused by deposition of calcium over foreign bodies introduced into the vagina. This report presents a case of a 63-year-old woman with vesico-vaginal fistula incidentally diagnosed to have large vaginal stone. The patient was referred to our practice suffering from urine dribbling through the vagina for a long time secondary to vesico-vaginal fistula. She has had repetitive unsuccessful attempts of surgical repair. MRI examination of the pelvis was requested aiming to locate the site of the fistula.

1. Introduction

Vaginal stones (calculi or vaginoliths) are an extremely rare condition that has been registered as case reports [1–3].

Vaginal stones are classified into primary and secondary depending on the presence or absence of a foreign body [1,2].

Primary vaginal stones derive from the stasis of urine in the vagina [4,5]. Stasis of urine induces deposition of urinary salts. When infection by bacteria such as *Proteus mirabilis*, *Klebsiella*, or *Escherichia coli* occurs the metabolic activity of the bacteria can change the normally acidic pH of the vagina to more alkaline conditions and initiate creation of vaginal stones [6].

Secondary vaginal stones result from the crystallization of urinary constituents around a foreign body in the vagina [4,5].

2. Case

A 63-year-old woman with a long standing (over 20 years) history of urine dribbling from the vagina secondary to vesico-vaginal fistula was referred to our practice for pre operative MRI examination. She has had prior few repetitive unsuccessful attempts of surgical repair and she was still suffering from same complaint. Her referring physician decided to schedule another setting of operative intervention for her using cystoscope aiming to close the fistula. He asked for MRI examination of the pelvis to locate the exact site of communication between the urinary bladder and vagina.

The examination was performed using 1.5 T machine (Toshiba Medical Systems, New York, USA). The classical protocol was followed including thin cuts sequences with as sagittal (T2WI), axial (T1 and T2 WI) and coronal (T1, T2 WI and STIR) sequences. During monitoring the examination, a large structure of dark T1 and T2 signal was seen inside the upper part of the vagina indenting the posterior wall of the bladder. First it was thought to be either a foreign body/applied device such as vaginal cap or retained blood products. The patient denied the application of any devices. The decision was taken to do further studies for our patient. Non contrast CT scan using Aquilion One 320 scanner (Toshiba Medical Systems, New York, USA) and digital radiographic examinations of the pelvis in antero-posterior and lateral views were performed after patient's approval and written consent. It turned out to be large opaque stone lodged in the vagina as it appeared dense in non contrast CT scan (650-700HU) and opaque in plain film. The stone measured about $5.9 \times 5.4 \times 4.8$ cm in transverse, antero-posterior and cranio-caudal diameters respectively (see Figs. 1 and 2).

3. Discussion

The first reported case of vaginal stones was in 1900 [7], and there have since been only about couple of dozens of case reports of vaginal stones. Primary vaginal calculi are reported in patients with urogenital tract abnormalities such as vesico-vaginal fistulas and vaginal outlet obstruction [8]. Secondary vaginal stones are

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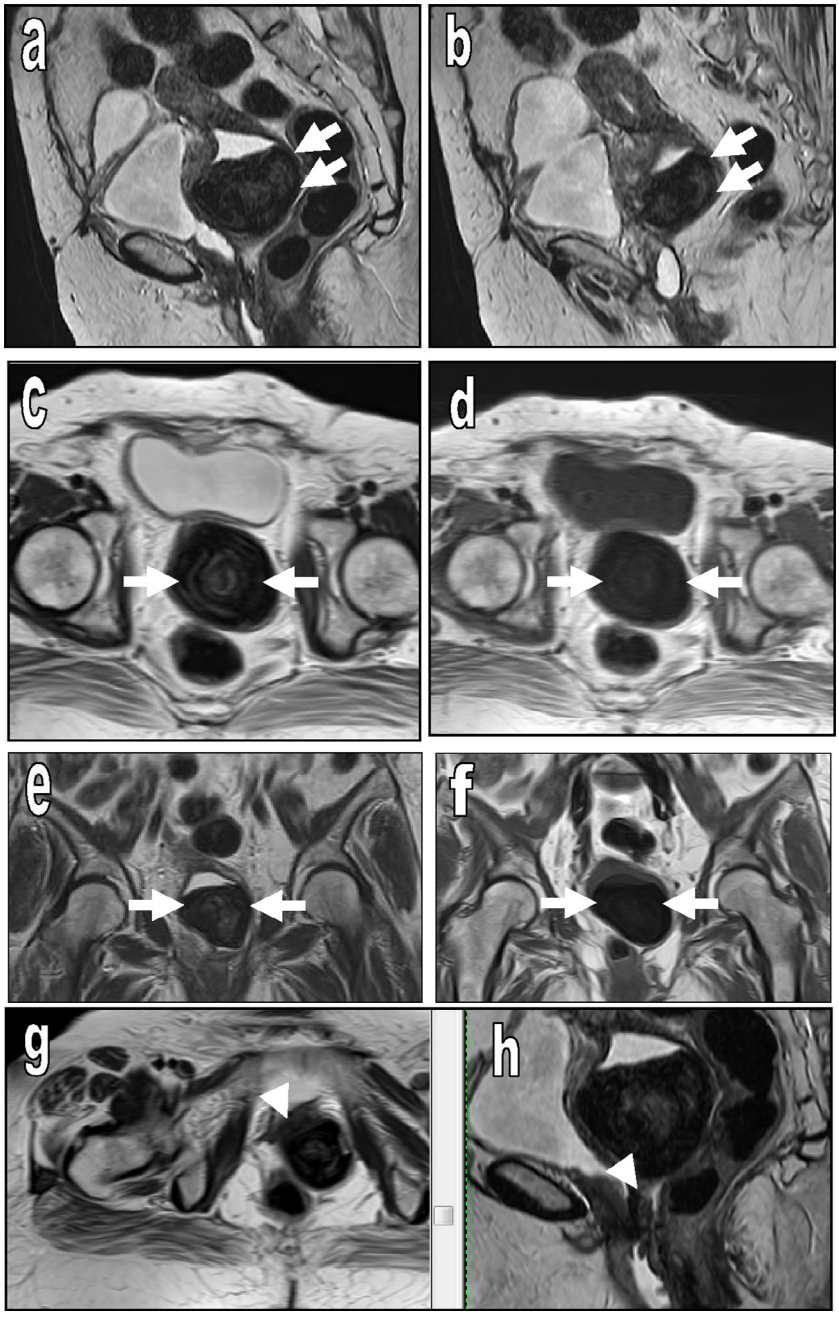

Fig. 1. MRI examination: (a and b) sagittal T2 WI, (c and d) axial T2 and T1 WI, (e and f) coronal T2 and T1 WI. The vaginal stone appears as large structure of dark T1 and T2 signal lodged at the upper part of vagina below the cervix (arrows). Note the presence of fluid of low T1 and high T2 signal within the vagina above and below the stone. The irregular shape of the urinary bladder is assumed to be consequence of prior repair trials. (g and h) axial T2 WI and sagittal T2 WI showing the site of the vesico-vaginal fistula (arrow heads).

formed over foreign objects within the vagina including retained medical gauze [9], missed vaginal pessary [10], or an intrauterine contraceptive device [11].

Very few reported cases of primary vaginal stone in patients without any anatomic abnormalities were identified in women who had severe disabilities, which allowed pooling of urine within the vagina after prolonged periods in the recumbent position [12–16]. Malhotra et al. [6] reported a case of young female complaining of primary infertility and the diagnosis was confirmed by US and plain examination. Oguzkurt et al. [8] used MRI and plain radiographic examination to diagnose vaginal stone in female child suffering from urinary tract infection. Avsar et al. [12] relied on CT examination in diagnosis of primary vaginal stone in 22 years old woman with paraplegia, deep pelvic pain and urinary incontinence. Recently, Winkelman et al. [17] published the last reported case with primary vaginal stone in 72 years old female. The patient came complaining of deep abdominal pain and the low set stone was visualized after application of vaginal speculum and was removed in same setting under anesthesia.

This report presents a case of long standing vesico-vaginal fistula for more than 20 years as stated by the patient. As the formation of stones is slow and they are always asymptomatic, the diagnosis of vaginal stones can be difficult and they may remain undetected as in current case. However, our patient mentioned the sensation of deep pelvic pains in last year or two and this encouraged her to seek medical advice again despite the prior

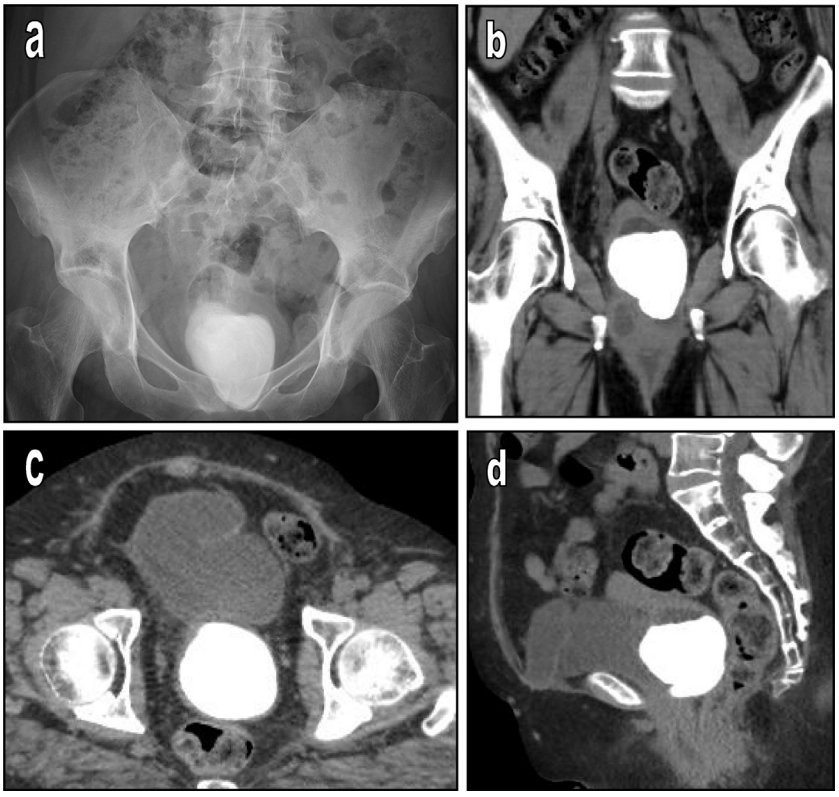

Fig. 2. Complementary digital radiographic and CT examinations. (a) Digital radiographic examination in antero-posterior supine view and (b–d) coronal, axial and sagittal 2D multiplanar non contrast CT images. The vaginal stone appears as large opaque stone projected over the bladder in the plain film. Its location within the vagina is clearly seen in reformatted CT images. It indents the posterior wall of the urinary bladder with obvious line of cleavage with the rectum posteriorly and clear deep pelvic fat planes.

failed procedures. The urine existence in the vagina initiated the formation of this large primary stone following the theories reported in literature.

Vaginal stones should be included in the differential diagnosis of cases of calculi noted in the pelvis in any imaging modality. Imaging studies including US, CT, excretory urography, cystourethrography, and MR urography may be useful in diagnosing this rare condition.

The extreme rarity of this condition means that most radiologists may never see a case of a vaginal stone throughout their life. The diagnosis of vaginal stones can be difficult and requires that the physician is highly suspicious of this possible diagnosis.

Conflict of interest

We have no conflict of interest to declare.

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