

## Research Letter

## Nonobstructive megaureter diagnosed by laparoscopy in two women

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There are multiple well-described differential diagnoses for tubular cystic adnexal masses [1]. The most common of these are dilated pelvic veins, fluid-filled bowel loops, hydrosalpinx, and ovarian cysts [2,3]. One of the lesser-known differential diagnoses is a dilated ureter [1,4,5]. Here, we describe two women with laparoscopically diagnosed nonobstructive megaureter, originally suspected to be hydrosalpinx or ovarian tumor.

A 38-year-old woman, G1P1, presented at our outpatient department complaining of abdominal pain for 3 days. Pelvic ultrasonography revealed a sausage-shaped 7.5-cm × 2.5-cm mass with septum and fusiform tail (Fig. 1A). Subsequent hysterosalpingogram showed no hydrosalpinx. Pelvic examination was also negative for lifting pain. The patient was admitted for diagnostic laparoscopy 20 days after visiting the outpatient department (OPD), and an enlarged peristaltic tubular mass of the right ureter was found (Fig. 1B). Postoperatively, the patient was referred to a urologist and underwent intravenous urogram, ureteroneocostomy, and ureteroplasty.

A 47-year-old woman, G4P3, presented at the OPD with the chief complaint of abnormal menstruation but no abdominal pain. Ultrasonography revealed a sausage-shaped right cystic mass approximately 5.6 cm × 2.2 cm. However, the adnexal mass had regressed at follow-up 3 months later. Nine months after her initial OPD visit, she visited the OPD again because of abnormal menstruation. Pelvic examination was negative and Pap smear was normal. Ultrasonography revealed an endometrial polyp, adenomyosis, and a sausage-shaped septated mass approximately 6.4 cm × 3.1 cm in the right adnexal region. Carcinoma antigen 125 level was 10.6 U/mL. Diagnostic laparoscopic surgery was performed 18 days later. Intraoperatively, an enlarged peristaltic tubular mass of the right ureter was found (Fig. 2A). Postoperative abdominal

computed tomography scan revealed a duplicated collecting system of the right kidney and ureter, which was associated with hydronephrosis of the right upper pole kidney and megaureter (Figs. 2B–D). No further treatment was indicated because of the absence of clinical symptoms.

These two cases of primary nonobstructive megaureter illustrate that the laparoscopic appearance of dilated distal ureter can mimic a dilated fallopian tube or ovarian cyst. Diagnostic laparoscopy in both of these cases was performed under suspicion of right hydrosalpinx or ovarian cyst. However, the ovaries and fallopian tubes in both cases were found to be of normal content, shape, and size. The retroperitoneal masses in both cases appeared as a tubular structure with thick walls, running along the pelvic sidewall. The masses appeared to show peristaltic motion but no pulsation. These findings are consistent with the diagnosis of megaureter. Table 1 [4–9] compares the symptoms, ultrasound findings, and operative findings of the present cases with previous case reports of megaureter.

Although there are numerous differential diagnoses for tubular cystic adnexal mass, the most commonly reported are dilated pelvic veins, fluid-filled bowel loops, ovarian cyst, hydrosalpinx, and pyosalpinx [1–3]. Megaureter is very rare in adults, and is more commonly seen in children [10]. Previous pelvic surgery, disease, or malignancy is more frequently the cause of megaureter in adults. Flank pain, hematuria, recurrent urinary tract infection, and urolithiasis are the major associated findings [5]. However, in the absence of any of these findings, the diagnosis could be difficult as in the present cases. The abdominal pain in Case 1 and the menstruation irregularity in Case 2 made differential diagnosis of megaureter difficult. Given the common occurrences of hydrosalpinx and pyosalpinx, it is not surprising that a sausage-shaped, fluid-filled structure in the adnexal region is often presumed to be a dilated tube.

The symptoms of megaureter vary widely. Although flank pain and urinary infections are the most common symptoms reported, some patients present without specific symptoms. Lower abdominal pain was the main presenting symptom in Case 1, and abnormal menstruation was the main presenting

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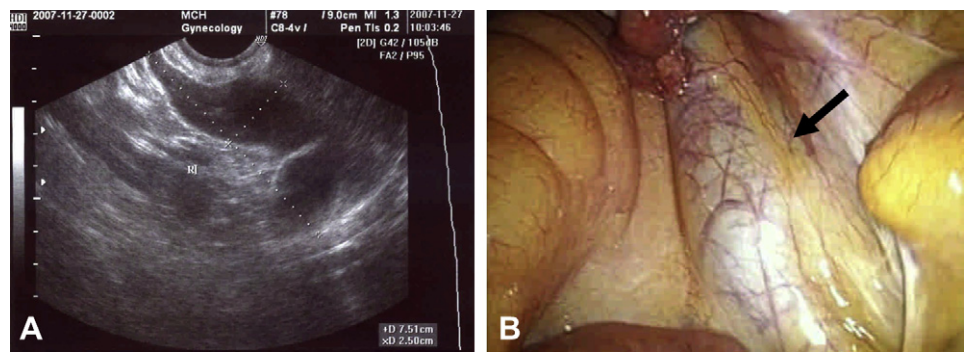


Fig. 1. (A) Ultrasonography revealed a sausage-shaped 7.5-cm × 2.5-cm mass with septum and fusiform tail. (B) Laparoscopic findings of megaureter. Arrow: ureter.

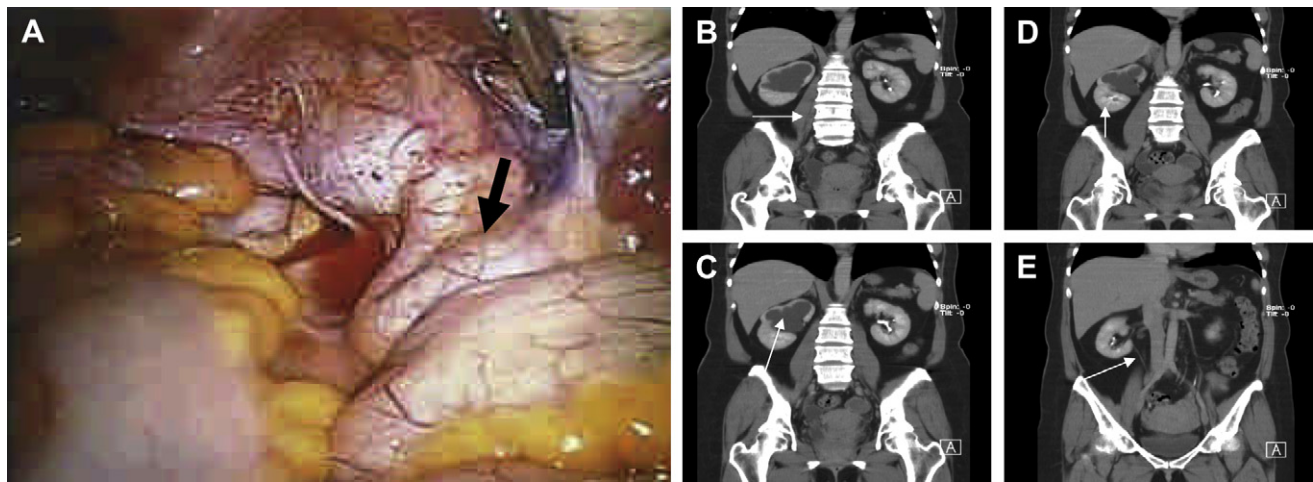


Fig. 2. (A) Laparoscopic findings of megaureter. Arrow: ureter. (B–D) Computed tomography scan findings. Arrows in (B) indicate the megaureter, in (C) the hydronephrosis, in (D) the normal kidney, and in (E) the normal ureter.

symptom in Case 2 of this article. These symptoms suggested the need to differentiate adnexal and uterine problems in these patients. Pelvic ultrasound is the most useful tool to diagnose uterine and adnexal pathology. In these two cases, ultrasound showed a fusiform-like mass in the adnexal region. However, subsequent examinations after the identification of a fusiform mass vary in different subspecialties and are more likely to include intravenous urogram in the genitourinary section [6,7],

hysterosalpingography (HSG) and magnetic resonance imaging in the infertility section [9], and laparoscopy in the gynecology section, as in the present cases. A preoperative diagnosis is rare in adults with primary nonobstructive megaureter, which was an incidental intraoperative finding in our patients.

In Case 2, laparoscopy identified a dilated and contorted ureter and its location within a duplicated collecting system

Table 1  
Literature review of megaureter regarding symptoms, ultrasound, and operative findings

Authors	Publication year	Symptoms	Ultrasound findings	Operative findings
Hamilton Sand Fitzpatrick JM [6]	1987	Pain	IVU diagnosis	No surgery
Kim JM et al [4]	2003	Chronic, right, low-abdominal discomfort	Right tubular cystic mass	Right marked hydroureter
Fagotti A et al [5]	2006	Asymptomatic	Cystic pelvic mass	Left megaureter
Fraser L et al [7]	2007	Urinary tract infection	IVU diagnosis	No surgery
Hernandez-Rey AE et al [8]	2007	Chronic pelvic pain and recurrent urinary infections	MRI suspected hydrosalpinx	Ectopic hydroureter
Choi JM et al [9]	2009	Asymptomatic	Two large cystic masses adjacent to and separate from the ovaries	No surgery
Present case	2009	Menstruation irregular, lower abdominal pain	Sausage-like adnexal mass	Right megaureter

IVU = intravenous urogram; MRI = magnetic resonance imaging.

and a normal-sized ureter on the right side. This condition was unexpected and missed during the initial computed tomography examination.

This article describes the laparoscopic diagnoses of two rare cases of nonobstructive megaureter in women who were admitted to the hospital with a preoperative diagnosis of a pelvic mass. Because laparoscopy has been recommended as the standard surgical procedure for women with adnexal masses, it may also serve as a diagnostic tool for megaureter.

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