

# Management of a high-risk pregnancy with a severe form of bladder infiltrating endometriosis. Case report and literature review

Monica  
Cirstoiu<sup>1,2</sup>,  
Luciana  
Arsene<sup>1</sup>,  
Diana Voicu<sup>1</sup>,  
Octavian  
Munteanu<sup>1,2</sup>,  
Oana Bodean<sup>1</sup>,  
Sorin  
Vasilescu<sup>1</sup>,  
Delia Grădinaru-  
Fometescu<sup>1</sup>

1. Obstetrics and Gynecology  
Department,  
Bucharest Emergency  
University Hospital,  
Bucharest, Romania  
2 "Carol Davila" University  
of Medicine and Pharmacy,  
Bucharest, Romania

Correspondence:  
Dr. Octavian Munteanu  
e-mail: octav\_munteanu@  
yahoo.com

All authors  
have participated equally  
in developing this study.

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## Abstract

Endometriosis is a gynecological estrogen-dependent disease, characterized by the presence of active endometrial tissue, represented by glandular epithelial and stromal cells, outside the uterine cavity. There have been described three types of endometriosis: peritoneal superficial endometriosis, ovarian endometriomas, and deep infiltrating endometriosis (DIE). DIE is defined from a histologically perspective as a lesion that extends more than 5 mm into the peritoneal space or which affects the wall of the pelvic organs. Endometriosis of the bladder is considered to be a form of deeply infiltrating endometriosis. The relation with infertility involves multiple and complex mechanisms. It is estimated that over half of the patients affected by this condition are subfertile. Many women with either minimal, mild or severe endometriosis experience difficulties in conceiving or maintaining a pregnancy. We report the case of a woman diagnosed with a severe form of infiltrating endometriosis, with endometrioma in the bladder, who obtained a pregnancy and delivered in the 39 week of gestation by caesarean section and had a good evolution.

**Keywords:** bladder endometriosis, pregnancy, infertility, deep infiltrating endometriosis

## Introduction

Endometriosis is a gynecological estrogen-dependent disease, characterized by the presence of active endometrial tissue, represented by glandular epithelial and stromal cells, outside the uterine cavity<sup>(1-8)</sup>. This disease was originally named adenomyoma and was first described more than 150 years ago by Rokitansky<sup>(2,5)</sup>. It was described as epithelial glands and stroma that resembled those found in the mucosal lining of the uterus<sup>(9)</sup>. Endometriosis can affect various peritoneal sites such as the ovaries, uterus, cul-de-sac, rectosigmoid region and in rare cases the urinary tract, (less than 5% of the cases<sup>(3)</sup>), among which 84% involves the bladder<sup>(4)</sup>. There have been described three types of endometriosis<sup>(5)</sup>. Bladder endometriosis usually presents as an adenomyotic nodule located in the anterior uterine wall, developing towards the bladder<sup>(5)</sup>. Ultrasound technique is useful in detecting the bladder involvement; it can be performed transabdominal but transvaginal examination is recommended, showing hypoechogenic nodules in vesicouterine pouch.

Clinically, one can experience menstrual-cycle-dependent painful and unpleasant symptoms<sup>(10,11)</sup> such as suprapubic pain, pollakiuria, dysuria, hematuria or

urinary urgency<sup>(2)</sup>. The clinical presentation is variable, as approximately one third of women with bladder endometriosis, remain asymptomatic<sup>(2)</sup>. It was showed that women with vesical endometriosis are represented by 20%<sup>(12)</sup>. These cycle-associated issues of urination are most common in premenopausal women<sup>(13)</sup>.

## Case report

We report the case of a 33 years old female, gravida 1, para 1 diagnosed with a severe form of infiltrating endometriosis, with a large endometrioma in the bladder, who obtained a pregnancy and delivered in the 39 week of gestation by caesarean section.

Her personal female history includes menarche at 13 years old, regular menstrual periods, but with several episodes of menstrual pain. Dysmenorrhea increased over the next years and usually extended several days over the period. This was accompanied by lower back pain. The patient did not present menorrhagia or menometrorrhagia. For the last 7-8 years she complained about dyspareunia. She had no history of abortions for undesired pregnancies. At the age of 22 years old she started a treatment with contraceptive pills for birth control purpose only, unaware of the underlying

condition. During this time the symptoms ameliorate and she did not address the gynecologist for further investigation.

At the age of 29 years old she stopped the hormonal treatment as she wanted to conceive. Failing to get pregnant in the following year she addressed the physician for professional advice and treatment. She was diagnosed with mild endometriosis and no treatment was indicated. As the symptoms got worse, including suprapubic pain and dysmenorrhea, the patient also started to experience hematuria and dysuria. In the first Figure it is shown the transvaginal ultrasound aspect of a urinary bladder endometriosis - a well defined hypoechoic mass arising from the posterior wall, with dimensions of 2.45/0.9 cm. Because of the small and intramural nature of bladder endometriosis, it was better to perform imaging like ultrasound during menstruation as it was done in our case (Figure 1) as it can be normal in normal in non-menstruation days.

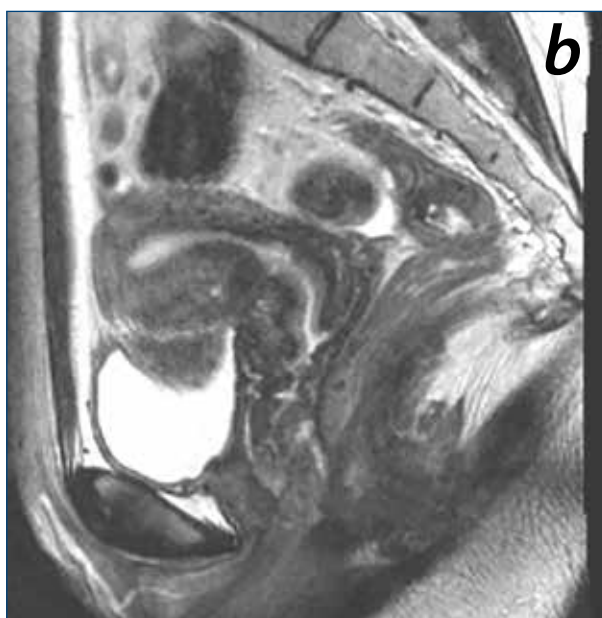
At the physician advice she underwent an magnetic resonance imaging (MRI) assessment of the whole pelvis in order to determine the presence and extent of endometriosis and to decide whether surgical intervention is preferred. On MRI superficial lesions are often not visible. Neither transvaginal ultrasound nor MRI is sensitive enough to screen for these endometriotic lesions. The MRI scan suggested deep pelvic endometriosis and bladder endometriosis (Figure 2). This form of endometriosis is composed of fibro-muscular hyperplasia surrounding the endometrial glands. Assessment via cystoscopy suggested the same diagnostic. At the age of 32 years old she underwent endoscopic intervention along with the abscission of a multilobulated mass of approximately 4/3 cm.



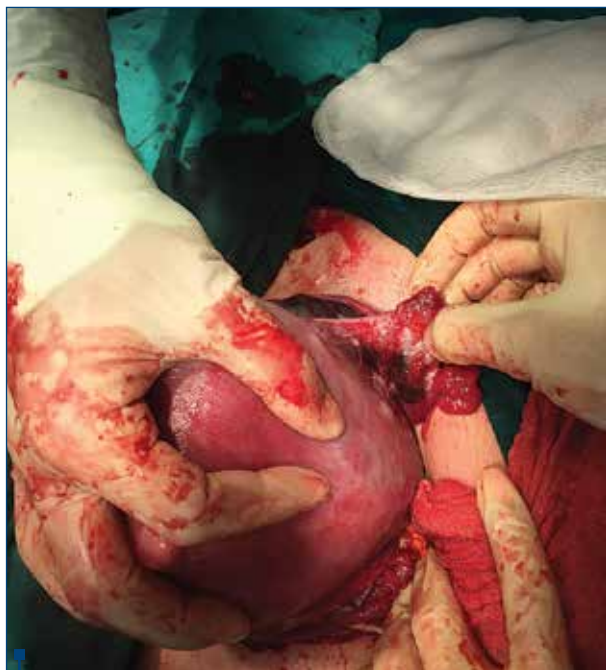
**Figure 1.** Ultrasound aspect of urinary bladder endometriosis. Images through the bladder which show a well-defined hypoechoic mass arising from the posterior wall; 2.45/0.9 cm (red arrows)

Vesical endometriosis histopathology examination showed stroma with the proper bladder musculature without any atypia. About 6 months after the intervention the patient started the treatment with triptoreline (GnRH analogue) in order to conceive after *in vitro* fertilization, but she got pregnant after one dosage. From the medical history of the patient we noted that she suffers from inherited thrombophilia and she also had a urinary tract infection (the urine culture came back positive for *E. Coli*, which was treated with antibiotics and that came out negative on the follow up).

During the pregnancy she had made regular visits to her physician and had made usual laboratory investigations according to gestational stages of development. As being previously diagnosed with placenta praevia and considering her medical history of bladder endometriosis



**Figure 2.** Coronal T2-weighted image (a) and sagittal (b) showing hypointense wall thickening of the upper bladder wall. The lesion seems to project into the lumen. When infiltrating endometriosis of the bladder is suspected, it is advisable to obtain an MRI scan while the patient's bladder is full, as was done in this case



**Figure 3.** Intraoperative aspect of the right ovary - note the presence of multiple dark-blue and light-brown masses with variable dimensions located on the surface of the ovary and the posterior aspect of the uterus

the patient was subjected to cesarean section delivery in the 39 week of gestation.

Hysterectomy incision was carefully performed. The fetus was extracted in cephalic presentation with without any difficulty with a score of APGAR 9.

During the surgical intervention multiple endometriotic sites were detected on the peritoneum of the uterus (especially the anterior cul du sac - with extension in the fundus of the bladder) but also on the ovaries (Figures 3 and 4). The patient's recovery after surgery was within normal limits with the re-installation of the intestinal transit and then was discharged after 3 days from the hospital.

There are several theories proposed for the pathogenesis of endometriosis. According to the theory of retrograde menstruation through the fallopian tubes, the cells are causing ectopic implantations of endometrial tissue, including the bladder<sup>(14)</sup>. Bladder endometriosis is considered to be a metaplastic differentiation of coelomic wall-epithelium<sup>(15)</sup>. Deep infiltrating endometriosis has been frequently associated with infertility, but there is still not enough evidence<sup>(7)</sup>. The pathophysiology of endometriosis is still not well understood until present. Infertility occurs in up to 60% of the cases affected by endometriosis<sup>(16)</sup>. Peritoneal macrophages can lead to increased phagocytosis of healthy spermatozoa that were to fertilize the ovary, thus affecting the fertility in early stages<sup>(17)</sup>. But even if the spermatozoon will thrive in fertilizing the oocyte, due to endometriosis, it could be a potentially compromised oocyte (Table 1). Women diagnosed with this condition also present a greater risk of miscarriages or ectopic pregnancies compared with the one without the disease. They may have fewer children, but nowadays this problem start to remediate due to artificial conceived pregnancies<sup>(18)</sup>. Furthermore, some studies sustain the fact that endometriosis showed to affect ovarian and tubal function<sup>(18)</sup>. In women with endometriosis the normal conception is rarely achieved, due to evident reasons. It is known that at least three months of treatment with GnRH agonists showed to improve pregnancy rates. For the definitive diagnosis it is necessary to perform a laparoscopic or surgical examination and histopathological confirmation of the lesions<sup>(22)</sup>.

Endometriosis can be classified as stage I (minimal), II (mild), III (moderate), or IV (severe) (Table 2) according to the American Society for Reproductive Medicine. It showed a series of characteristics such as number, location, or the presence/absence of adhesion.

## Discussion

In women affected by endometriosis and complaining of lower urinary tract symptoms or hematuria,



**Figure 4.** Intraoperative aspect of the anterior aspect of the uterus. a) note the presence of multiple dark-blue and light-brown masses with variable dimensions located on the surface of the vesico-uterine peritoneu but also infiltrated the bladder; b) note the macroscopic aspect of the anterior aspect of the uterus



**Table 1** Factors involved in infertility

Fertility in women with endometriosis	
Central nervous system	Pituitary-ovarian axis dysfunction Extended follicular phase <sup>(31)</sup>
Folliculogenesis	Reduced number of follicles Low concentration of estradiol <sup>(19)</sup>
Ovulation	Failure of ovulation (luteinized unruptured follicle syndrome) <sup>(20)</sup> Altered oocytes quality <sup>(17)</sup> Luteal deficiency
Fertilization / implantation	Increased peritoneal macrophages Impaired sperm transport Poor embryo quality (slow growth and delayed blastocyst hatching) <sup>(21)</sup>

cystoscopy is advisable. Prior to this, every patient presenting suggestive symptoms for pelvic endometriosis should undergo an ultrasound, latter followed by one for the upper urinary tract even if is urologically asymptomatic<sup>(1)</sup>. Vesical endometriosis may present with variable symptoms and subtle onset, and could be confusing with recurrent cystitis<sup>(12)</sup>.

In case of a cystoscopic examination bladder endometriosis will appear as a mass that is pushed towards the bladder cavity<sup>(10,11)</sup>. Some women may present severe symptoms while others remain asymptomatic. MRI technique is very useful because of high contrast resolution with high sensitivity for detection of hemorrhage<sup>(6)</sup>. Some features of the MRI sustain the fact that represent the tools of choice for correct disease diagnosis<sup>(6)</sup>.

European Society of Urogenital Radiology guidelines for MRI of pelvic endometriosis suggested no other recommendation for timing of MRI in relation to the menstrual cycle in deep pelvic endometriosis evaluation<sup>(23)</sup>.

Bladder endometriosis is so rare that is hard to decide, due to lack of evidence, if surgical treatment is more appropriate than the medical one<sup>(24)</sup>, as some good

results were obtained after medical management<sup>(25)</sup>. The medical attitude depends on the reproductive intention of the woman and age is also important. For postmenopausal patient, hormonal treatment is preferred<sup>(26,27)</sup>.

Furthermore, this method is also preferred when the patient have previously children and mild symptoms. Endometriosis cells express estrogen and progesterone receptors which develop a positive answer at endocrine treatments<sup>(28,29,30)</sup>.

Some specialists have recommended immunohistochemical studies in order to appreciate the aggressiveness and recurrence risk of endometriosis<sup>(31)</sup>.

In patients that wish to conceive, partial cystectomy or laparoscopic excision is recommended<sup>(26,27,32)</sup>.

## Conclusions

When the diagnosis of urinary tract endometriosis are considered, it should be a higher index of suspicion with or without hematuria, especially in premenopausal women. In contrary, in younger women multidisciplinary intervention is the treatment of choice. ■

**Table 2** The stages of endometriosis (according to American Society for Reproductive Medicine)

Stage	Disease	Description
I	minimal	A few superficial implants
II	mild	More and slightly deeper implants
III	moderate	Many deep implants, small endometriomas on one or both ovaries and some filmy adhesions
IV	severe	Many deep implants large endometriomas on one or both ovaries and many dense adhesions, sometimes with the rectum adhering to the back of the uterus

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