Laparoscopic removal of a dermoid cyst in one ovary and an endometrioma in the other: A case report and literature review

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ABSTRACT

The coexistence of an endometrioma and a dermoid cyst is very uncommon, and there are few case reports of both conditions in the ovaries. A 41-year-old patient presented with left pelvic pain. She was referred with a bilateral pelvic mass. Magnetic resonance imaging (MRI) confirmed a dermoid cyst on the left ovary and an endometrioma on the right side. The patient was taking ibuprofen to relieve pain until the day of surgery. She was advised to proceed with bilateral laparoscopic cystectomy. During the laparoscopic procedure, the inspection showed that ovaries were bilaterally enlarged with cystic appearances. Bilateral ovarian cystectomy was performed in which a left dermoid cyst was removed intact within the ovary followed by a rupture of the endometrioma on the right. The patient tolerated the procedure without any complications. This case of coexistence of endometrioma and dermoid cyst in each ovary, confirmed by MRI due to atypical findings on ultrasound, highlights how efficient removal of both cyst is crucial.

1. Introduction

Endometriosis is the most common cause of chronic pelvic pain in reproductive-age women and is strongly associated with painful ovulation, menstruation and infertility \cite{1}. It is estimated that around 10% of women worldwide of reproductive age have endometriosis \cite{2}. Ovarian endometrioma is the clinical phenotype of endometriosis and is found in up to 44% of patients with endometriosis \cite{3,4}. Some results suggest that endometriomas may originate from adhesions between peritoneum and ovarian surface implants \cite{5}. Endometrioma itself can have a negative impact on ovarian reserve, characterized as the number and quality of follicles within an ovary \cite{5-6}. Early removal of this benign cyst is crucial to help prevent any negative outcome on ovarian pathophysiology \cite{5}.

Mature ovarian cyst teratoma, also called ovarian dermoid cyst, is the most common teratoma and accounts for 20% of all ovarian tumors \cite{4}. Although it does not have an impact on fertility, removal of a dermoid cyst must be done cautiously in order to keep the ovarian reserve \cite{4}. Moreover, a dermoid cyst can be complicated by rupture, torsion and malignant change \cite{7}.

Coexistence of both benign conditions is extremely rare. Diagnosis of endometrioma and dermoid cyst will help determine a preferred treatment plan.

2. Case Presentation

A 41-year-old woman (G3P2012) was referred with a bilateral pelvic mass. Severe left pelvic pain was the chief complaint. Her pelvic pain had significantly progressed bilaterally, and she took ibuprofen for pain control. The patient described the pain as sharp and rated its severity 5 on a 10-point scale, worse on the left than the right. The patient was alert, afebrile and had normal vital signs. No other symptoms were associated with the pelvic pain. Upon palpation, bilateral adnexal tenderness was present without guarding or rebound.

Transvaginal ultrasound, as the first screening tool, showed a bilateral adnexal mass measuring 3.75 $\times$ 4.79 cm and corresponding to ovarian cysts. The right ovarian cyst was compatible with hemorrhagic cysts, whereas the left ovarian cyst showed some peripheral calcification with solid components. Bilateral dermoid cysts in ovaries were suspected. Due to atypical findings on ultrasound and a concern about malignancy, pelvic magnetic resonance imaging (MRI) was undertaken. It showed a possible right endometrioma or hemorrhagic cyst and a left dermoid cyst (Fig. 1). The right ovary was an ovoid structure of 3.9 cm demonstrating a precontrast T1 hyperintensity and intermediate to low

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T2 signal without definite contrast enhancement corresponding most likely to endometrioma. The left ovary demonstrated a 3.8 cm fat structure consistent with a dermoid cyst. However, whether the pathology was benign or malignant could be confirmed with certainty only with histological examination.

After discussing treatment options, the patient was advised to proceed with bilateral laparoscopic cystectomy. She understood the risks of surgery and consented to the procedure. She had no other medical or surgical problems. She was monogamous and had had two normal vaginal deliveries. She denied any tobacco or alcohol abuse. There was no family history of breast, ovarian or colon cancer. The patient had no known allergies. She used condoms for contraception. She had normal periods and no history of sexual transmitted infections or inflammatory condition.

Under general anesthesia, laparoscopic surgery was performed. The ovaries were bilaterally enlarged with a cystic appearance. The left cyst was dissected with electrocautery and resected intact from the ovary without any remarkable bleeding. While trying to similarly remove the endometrioma from the right ovary, it ruptured as a chocolate cyst which was vigorously irrigated without remarkable bleeding. Removal of the cystic wall from the right ovary in an Endopouch was performed. The dermoid cyst removed from the left ovary was also put into an Endopouch. A few pelvic adhesions were noted and lysed during the procedure. Hemostasis was achieved with minimal blood loss (estimated 20–25 cc). The ovaries remained intact with removal of bilateral cysts. Specimens were sent to the pathology department (Fig. 2).

The pathology department provided microscopic and gross description of all specimens. The right cyst wall, collected from the ruptured endometrioma, demonstrated a hemorrhagic ovarian wall with epithelial lining. There were extensive hemorrhages and hemosiderosis with some rare endometrial-type glands and stromal tissue. The specimen was received in four fragments of tan-brown, homogenous tissue with areas of thick, white fibrotic tissue. The left dermoid cyst demonstrated a mature cystic teratoma. The cyst was lined by keratinizing squamous epithelium with a granular cell layer. Skin adnexal structures, hair follicles and hair structures were also present. An adjacent simple ovarian cyst was also present. There was no evidence of malignancy in any of the specimens.

The patient was prescribed oral analgesics. Next day, she confirmed there were no complications and reported having no pelvic pain. Two weeks later, she returned for removal of the sutures made at the end of the procedure. The patient reported feeling well with no complications.

3. Discussion

The coexistence of dermoid tumor and endometrioma in the ovaries is extremely rare. To our knowledge, this is the first report of the presentation of an endometrioma in one ovary and a dermoid cyst in the other ovary. We used bilateral ovarian cystectomy as the intervention in order to preserve ovarian tissue for the patient’s general and reproductive health.

Most reported cases have concerned either bilateral dermoid cysts with endometrioma or a unilateral dermoid cyst with an endometrioma in the same ovary. A total of four articles were found and these are summarized in Table 1, which shows the coexistence of endometrioma with dermoid cyst including the imaging used for diagnosis and treatment. The first study listed in Table 1 found a total of seven women, whereas the second study reported two women with an endometrioma and a dermoid cyst [8–9]. This makes the present case report the 12th case of a woman diagnosed with co-existing endometrioma and dermoid cyst to our knowledge.

The first article listed in Table 1 summarizes a retrospective study in which 313 women with endometrioma were compared to 172 cases with dermoid cyst, with mean ages of 35.8 ± 7.2 and 34.2 ± 6.8, respectively [8]. Within the endometrioma group, the authors found that 5 women also had co-existent dermoid cyst. They also found 2 other women with mixed endometriomas in the dermoid group. However, they did not specify which ovary was affected with each condition. Although they proceeded with laparoscopic surgery, imaging procedures prior to surgery were not mentioned. Their overall results showed unilateral

Fig. 1. Magnetic resonance imaging (MRI) (A & B) Coronal view of left and right dermoid cyst and endometrioma (C) Transverse view of anterior and posterior pelvic with left and right dermoid cyst and endometrioma.
endometrioma more commonly affected the left ovary (65.4%), whereas unilateral dermoid cyst more commonly affected the right ovary (60.6%). In contrast, other results suggested that a unilateral endometrioma can also appear on the right side due to the anatomical position of the sigmoid colon, which is in direct contact with the left ovary [10]. This position may prevent the reflux of endometrial tissue passing through the left fallopian tube and preventing its growth during menstruation. Although this concept applies to this case report, no known study to our knowledge has explored the reasons for a dermoid cyst on the left ovary coexisting with an endometrioma on the right side.

The second study listed in Table 1 presented 2 cases [9]. The first was a 25-year-old woman with a two-year history of infertility, who desired pregnancy, and had pelvic pain and dysmenorrhea. On initial transvaginal ultrasound there were atypical endometrioma findings on the left ovary and a cystic mass. MRI confirmed atypical endometrioma mixed with dermoid cyst on the left ovary. The serum marker CA-125 was within the normal range. The second case was a 22-year-old virgin patient who presented with pelvic pain and dysmenorrhea unresponsive to nonsteroidal anti-inflammatory drugs. She had come to the clinic 8 years earlier due to ovarian torsion which was consistent with a dermoid cyst. However, she presented later with a mixed endometrioma coexisting with a dermoid cyst on the left ovary which was confirmed by MRI after atypical findings on abdominal ultrasound. Both women had laparoscopic cystectomy, except that oophorectomy was performed for the ovarian torsion in the second case.

The third case report in Table 1 described a 22-year-old woman with flank pain [11]. An abdominal ultrasound found bilateral cystic ovarian masses with atypical findings on the left ovary. CA-125 was in normal limits. During surgery, both ovaries were enlarged and in close proximity behind the uterus due to adhesions. Histology results showed bilateral dermoid cysts and a left endometrioma which was consistent with their pre-operative diagnosis on MRI.
The final case in Table 1 concerned a 33-year-old pregnant woman who came in for her routine 12-week ultrasound [12]. An incidental finding on trans-abdominal ultrasound was a right ovarian cyst. Trans-abdominal ultrasound was repeated at 16 weeks and showed complex features. CA-125 was elevated, at 77 U/ml, at 16 weeks. The cyst continued to enlarge at 18 weeks with irregular borders raising suspicion for malignancy. CA-125 had increased to 104 U/ml at 24 weeks. MRI confirmed an endometrioma coexisting with a dermoid cyst on the right ovary. After delivery and closure of the uterus at 38 weeks, right salpingo-oophorectomy was performed after the cyst ruptured during oophorectomy.

Imaging used for diagnosis of dermoid cyst and endometrioma can be challenging. In this case, cysts on both ovaries with atypical findings were seen on transvaginal ultrasound. MRI helped to confirm the diagnosis. However, MRI showed a left dermoid cyst and a possible right endometrioma separately. The severity of the condition, whether benign or malignant, could be confirmed only by the pathology department. Among the four cases described in Table 1, only three used ultrasound, MRI and frozen section at the pathology department [9,11–12]. The imaging process used in this case report is in agreement with most of the studies described in Table 1 (though imaging was not specified in the first study in Table 1). We suggest that imaging with transvaginal ultrasound followed by MRI should be the gold standard when endometriomas coexist in the same ovary, with atypical findings and raising concern for malignancy. This will provide a better diagnosis of the condition before proceeding with any surgery. However, when lesions are present on separate ovaries with clear findings on transvaginal ultrasound, MRI would unnecessarily increase both costs and patient discomfort. Another study also recommended that MRI should be used after ultrasonography to further characterize the type of lesions and to distinguish solid from non-solid tissue lesions such as fat, blood or debris [13].

Most of the other studies found bilateral dermoid cysts coexisting with endometriosis or endometriotic deposits [14–20]. Although the coexistence of endometrioma and dermoid cyst is rare, one study suggested that FOXP3+ cytokine (Treg) is significantly higher in women with endometriosis and dermoid cysts compared with healthy women [21]. Furthermore, endometriomas have a high tendency to rupture, whereas dermoid cysts can be removed intact from the ovary without any rupture in the pelvic area. This will help surgeons better prepare before the surgery and know what to expect in terms of intervention. Other cases found cysts on ultrasound and proceeded with urgent surgery, with specimens sent to the pathology department to confirm diagnosis while surgeons were not sure about the diagnosis before closure [14–16,20]. Finally, cyst removal must be done very cautiously. It is recommended to proceed with laparoscopic surgery and cystectomy to help preserve ovarian tissue and its function [22]. Future studies are recommended to understand the pathophysiology of the coexistence of endometrioma and dermoid cyst for better diagnosis and treatment options.

4. Conclusion

In conclusion, we report here a case of endometrioma on the right ovary and dermoid cyst on the left. To our knowledge, this is the first report of the coexistence of both gynecological conditions in each ovary. Most previous studies have concerned a mixture of endometrioma with dermoid cyst either unilaterally or bilaterally. When bilateral ovarian cysts are found on transvaginal ultrasound, obstetricians-gynaecologists must keep in mind that endometrioma and dermoid cyst can coexist silently. Laparoscopic intervention for dermoid cyst and endometrioma should be discussed carefully by the physician and patient. Laparoscopic surgery must be done cautiously by an experienced surgeon in order to help keep ovarian reserve, either by intact removal of the dermoid cyst or removal of the capsule within the ovary in the event of rupture of an endometrioma.

Patient perspective

My menstrual pain was so severe prior to the surgery, and I was constantly taking pain killer medications. I am so glad I received a bilateral ovarian cystectomy. I am pain free now and no longer need pain killers.

Contributors

Nora Shero was involved in patient care, participated in the conception of the case report, acquired and interpreted the data, and drafted the manuscript.

David S. Kim was involved in patient care, contributed to data interpretation and revised the article critically for important intellectual content.

Both authors approved the final submitted manuscript.

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Patient consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Conflict of interest statement

The authors declare that they have no conflict of interest regarding the publication of this case report.

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