



# Laparoscopic and hysteroscopic discovery of intrauterine fallopian tube incarceration after dilatation and curettage: a case report and review of the literature

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**Background:** Uterine perforation is a complication of dilation and curettage (D&C), and intrauterine fallopian tube incarceration can occasionally occur after uterine perforation. Only 20 cases of intrauterine fallopian tube incarceration have been reported since 1978. Almost all of them had obvious symptoms. We here report a case without obvious symptoms and found the diagnosis of intrauterine fallopian tube incarceration accidentally.

**Case Description:** We report the case of a 32-year-old woman with intrauterine fallopian tube incarceration. The patient complained of slight lower left abdominal pain occasionally after a D&C. Gynecologic examination revealed a left adnexal cystic mass approximately 4 cm in size, mobile, well-bounded with tenderness. Transvaginal ultrasound showed a left cystic ovarian mass and an intrauterine mass. Blood analyses were all negative. With the diagnosis of an ovarian mass and intrauterine mass, laparoscopy and hysteroscopy were performed. Intrauterine fallopian tube incarceration was found accidentally and a salpingectomy was performed. After operation, the patient's pain resolved completely. The patient showed no signs of relapse of endometriosis and abdominal pain, till January 2022.

**Conclusions:** As the symptoms and the accessory examinations are not typical, care should be taken when performing intrauterine procedures in order to avoid uterine perforation. Differential diagnosis of polyps and the incarceration of tissue should be considered when polypoid lesions in the uterus are present.

**Keywords:** Uterine perforation; fallopian tube; laparoscopy; dilatation and curettage; case report

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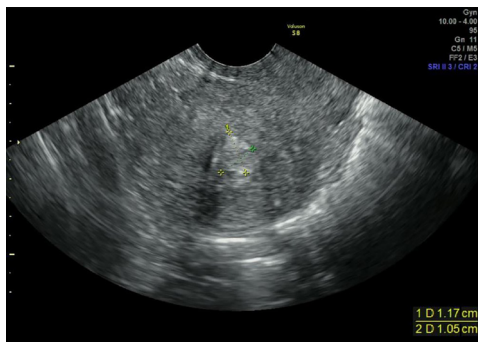
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## Introduction

Dilation and curettage (D&C) is the most commonly performed gynecological procedure, and uterine perforation

is one of the most common severe complications (1). Many perforations are undetected during intrauterine procedures. A minority of perforations may accompany intestinal injuries or active bleeding, which require surgery. Previous

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**Figure 1** Transvaginal ultrasound showed fallopian tube incarceration misdiagnosed as a polyp.

reports have described the small intestine, appendix, omentum, fallopian tube or ovary entering the uterine cavity due to uterine perforation (1-4). Patients may have painful symptoms such as the typical triad of abdominal pain, abnormal vaginal discharge, and dyspareunia, or amenorrhea occasionally. We here report a 32-year-old woman admitted to our department due to an ovarian mass and intrauterine mass without any obvious symptoms, who was found to have fallopian tube incarceration caused by a D&C. We present the following case in accordance with the CARE reporting checklist (available at <https://gpm.amegroups.com/article/view/10.21037/gpm-22-1/rc>).

### Case presentation

In April 2019, a 32-year-old woman presented to our department complaining of mild pain in the lower left abdominal quadrant for 3 years. The patient underwent D&C of the uterine cavity one month after term delivery due to space-occupying lesions 3 years ago. After surgery, she had mild abdominal pain when walking for a long distance or when carrying heavy weights. She did not have fever, menometrorrhagia, dysmenorrhea, vaginal discharge, or dyspareunia. There was no relevant personal and family history. Physical examination showed that the patient was in good general condition. Her vital signs were stable, and no other abnormalities were found. Gynecologic examination revealed a left adnexal cystic mass approximately 4 cm in size, mobile, well-bounded with tenderness. Blood analysis revealed a normal leukocyte count. Serum tumor markers were all negative. Transvaginal ultrasound showed a cystic mass of about 4 cm on the left side of the ovary suspected to be an ovarian endometriosis cyst and endometrial polyps in the cavity (*Figure 1*).

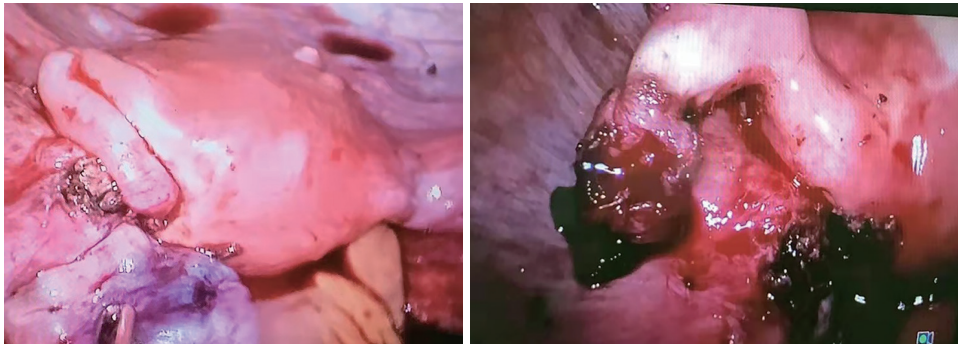
Hysteroscopy was performed first, and showed a mass on the left side of the uterine wall provisionally identified as polyps, blocking the left orifice of the fallopian tube similar to the hysteroscopic view in the case report by Ceccaldi (5). This was mistakenly thought to be a polyp and was removed. However, after removal of the polyp-like mass, a similar mass appeared at the same location. Laparoscopy confirmed intrauterine incarceration of the left fallopian tube from the uterine fundus. In addition, a left ovarian mass which was full of chocolate-colored fluid with a smooth capsule was suspended without adhesion to the surrounding tissues. The fallopian tube was carefully pulled out of the uterus and both salpingectomy and oophorectomy were performed after informed consent was obtained again from her husband. Finally, the uterine wall defect and ovary were repaired with Monocryl sutures (*Figure 2*). The patient recovered quickly after operation, and was discharged 2 days after operation without any adverse or unanticipated events.

The pathological report confirmed that the intrauterine mass contained tubal epithelium due to incarceration of the fallopian tube, and the left ovarian cyst was the result of endometriosis. After surgery, the patient's pain was totally resolved. The patient received three cycles of gonadotropin-releasing hormone agonist therapy. The patient shows no signs of relapse of endometriosis, till January 2022.

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

### Discussion

Uterine perforation is extremely rare after D&C. The incidence of uterine perforation during the first trimester termination of pregnancy has been estimated to be 0.8–6.4/1,000 procedures. However, the incidence rate cannot be accurately estimated as most uterine perforations are successfully treated conservatively and not reported. Furthermore, many perforations are undetected. Kaali found that uterine perforation occurred in 14/707 (19.8/1,000 procedures) of first trimester elective abortions, where direct visualization was employed at the time of the procedure (6), which is at least three times higher than the incidence



**Figure 2** Laparoscopic visualization of the left fallopian tube incarcerated into the uterus and the fallopian tube pulled out of the uterus.

previously mentioned. Uterine perforations are usually diagnosed as a result of physician's suspicion. Definite diagnosis can be made on rare occasions when abdominal contents are found in the cervix or instruments can reach beyond the cavity during intrauterine procedures. When uterine perforations are accompanied by active bleeding or intestinal injuries, surgery should be considered. However, most uterine perforations heal themselves. Only a few patients develop symptoms if uterine perforations are not identified quickly, which are always complicated with tissue incarceration. Incarcerated tissues may include the intestine, omentum, fallopian tube, or even the ovary. Patients may have painful symptoms such as the typical triad of abdominal pain, abnormal vaginal discharge, and dyspareunia, or amenorrhea occasionally (7). As the symptoms and the accessory examinations are not typical, clinical diagnosis is still difficult. Definite diagnosis can only be made during surgery with laparotomy, laparoscopy or hysteroscopy.

In 1978, Steigrad first reported intrauterine fallopian tube incarceration (8). Since then, a total of 20 cases of fallopian tube incarceration have been reported (*Table 1*). All of them were caused by D&C. Five cases received D&C due to retained placenta or postpartum hemorrhage after delivery, 12 for first trimester pregnancy, 1 for second trimester pregnancy, and the remaining 2 patients received surgical abortion without specific gestational age. Only 2 of these cases were diagnosed quickly and underwent emergency surgery due to postpartum hemorrhage and suspected appendix injury (9,19). The others had abnormal vaginal discharge, vaginal bleeding, dyspareunia, dysmenorrhea, menometrorrhagia, amenorrhea, pelvic or abdominal pain, secondary fertility or even ectopic pregnancy (18). A few cases developed a tender uterus or cervical motion tenderness, whereas most were asymptomatic. With regard to accessory examinations,

transvaginal ultrasound usually revealed a mass in the uterine cavity misdiagnosed as an endometrial polyp or submucous leiomyoma. Furthermore, magnetic resonance imaging and hysterosalpingography may contribute to the diagnosis of intrauterine fallopian tube incarceration. Most commonly, hysteroscopy and laparoscopy were used. In some emergent situations or where there is a lack of surgical expertise, laparotomy may be necessary. Salpingectomy or salpingoplasty can be selected depending on the anatomy and patients' pregnancy wishes. However, the fallopian tube in four cases was resected before choices could be made due to misdiagnosis (7-10). Two patients delivered successfully via cesarean section and one was still pregnant without any related complications in the second trimester (5,14,22).

According to the cases above, we can see that the history of intrauterine operation is necessary for the diagnosis of intrauterine fallopian tube incarceration. The most commonly differential diagnoses are endometrial polyp and submucous leiomyoma which are showed by the transvaginal ultrasound. Sometimes it may be misdiagnosed as uterine vascular lesions which can be ruled out by the ultrasound with colour Doppler (20). Advanced examinations of magnetic resonance imaging and hysterosalpingography can be helpful for the diagnosis. However, hysteroscopy and laparoscopy are needed to make a definite diagnosis and treatment.

Our patient was the 21st case of intrauterine fallopian tube incarceration. There are several learning points from our case. Firstly, most severe perforations are diagnosed quickly. Delayed presentation of uterine perforation is extremely rare. In this case, after reviewing her history, we confirmed that the intrauterine fallopian tube incarceration was caused by D&C. The use of ultrasound guidance during surgical termination can reduce the complications related to D&C (16). Secondly, the pain in our patient

**Table 1** Reported cases of intrauterine fallopian tube incarceration

N	Author	Year	Age (years)	Time from D&C	Reasons for D&C	Symptoms	Pelvic examination	Accessory examination	Treatment	Fallopian tube	Conception
1	Steigrad <i>et al.</i> (8)	1978	26	10 months	Postpartum hemorrhage after delivery	Abnormal vaginal discharge, vaginal bleeding, dyspareunia	A polypoidal mass passing through the cervix into the vagina	n/a	Twisted away and then laparotomy	Twisted away from vagina	Sterilized
2	Lapas <i>et al.</i> (9)	1987	38	Immediately	n/a	n/a	n/a	n/a	Emergency laparotomy	Already removed during D&C	n/a
3	Thomas (10)	2003	36	6 months	First-trimester pregnancy	Dysmenorrhea, menometrorrhagia, lower back pain	Not specific	Ultrasound	Hysteroscopy	Salpingectomy	n/a
4	Deffieux <i>et al.</i> (11)	2008	34	5 years	First-trimester pregnancy	Pelvic pain	Not specific	MRI	Laparoscopy, hysteroscopy	Salpingectomy	n/a
5	Alanbay <i>et al.</i> (12)	2009	28	2 years	First-trimester pregnancy	Secondary infertility	Not specific	Hysterosalpingography, ultrasound	Laparoscopy, hysteroscopy, mini-laparotomy	Preserved	n/a
6	Trio <i>et al.</i> (13)	2010	31	4 days	First-trimester pregnancy	Abdominal pain, vaginal bleeding	n/a	Ultrasound	Laparoscopy	Preserved	n/a
7	Ceccaldi <i>et al.</i> (5)	2011	33	18 months	n/a	Secondary infertility	n/a	Hysterosalpingography	Laparoscopy, hysteroscopy	Preserved	Pregnant in the second trimester
8	Damiani <i>et al.</i> (7)	2011	25	18 months	First-trimester pregnancy	Pelvic pain, dyspareunia, nausea, vomiting, diarrhea, vaginal bleeding, abnormal vaginal discharge	Tender uterus	Ultrasound	Hysteroscopy	Removed by forceps	n/a
9	Damiani <i>et al.</i> (7)	2011	30	3 months	Postpartum hemorrhage after delivery	Amenorrhea	Not specific	Ultrasound	Hysteroscopy, laparoscopy	Salpingectomy	n/a
10	Cremieu <i>et al.</i> (14)	2012	28	n/a	First-trimester pregnancy	Secondary infertility	Not specific	Hysterosalpingography	Laparoscopy	Preserved	Cesarean section at term
11	Kondo <i>et al.</i> (15)	2013	22	11 months	Retained placenta and postpartum hemorrhage after delivery	Pelvic pain, amenorrhea	Tender uterus	Ultrasound and MRI	Laparoscopy	Salpingectomy	n/a
12	Guzel <i>et al.</i> (16)	2014	25	3 years	First-trimester pregnancy	Secondary infertility	Not specific	Ultrasound	Laparoscopy, hysteroscopy	Preserved	n/a
13	Nkwabong <i>et al.</i> (17)	2014	36	n/a	First-trimester pregnancy	Abdominal pain, vaginal bleeding	Tender uterus	n/a	Laparotomy	Salpingectomy	n/a
14	Lin <i>et al.</i> (18)	2015	39	6 years	First-trimester pregnancy	Vaginal bleeding, ectopic pregnancy	Tenderness in the right adnexa	Serum HCG positive	Laparoscopy, hysteroscopy	Salpingectomy	n/a
15	Dean <i>et al.</i> (19)	2017	31	Immediately	Second-trimester pregnancy	Postpartum hemorrhage	Not specific	Ultrasound	Laparoscopy	Preserved	n/a
16	Boujenah <i>et al.</i> (20)	2017	33	9 months	Retained placenta after delivery	Abdominal pain, spotting and amenorrhea	Not specific	3D endovaginal ultrasound	Laparoscopy, hysteroscopy	Salpingectomy	n/a
17	Camus <i>et al.</i> (21)	2019	29	9 months	First-trimester pregnancy	Abnormal vaginal discharge	Not specific	Ultrasound and MRI	Laparoscopy, hysteroscopy	Preserved	n/a
18	Boughizane <i>et al.</i> (22)	2020	22	2 years	First-trimester pregnancy	Secondary infertility	Not specific	Ultrasound and hysterosalpingography	Laparoscopy, hysteroscopy	Preserved	Cesarean section at term
19	Sedrati <i>et al.</i> (23)	2021	33	6 months	First-trimester pregnancy	Pelvic pain	Cervical motion tenderness	Ultrasound	Laparoscopy, hysteroscopy	Salpingectomy	n/a
20	Shu <i>et al.</i> (24)	2022	n/a	2 months	Retained placenta after delivery	Pelvic pain	Not specific	MRI, diagnostic hysteroscopy and laparoscopy	A robotic surgical platform	Salpingectomy	n/a
21	Present case	2022	32	3 years	Retained placenta after delivery	Mild abdominal pain	Not specific	Ultrasound	Laparoscopy, hysteroscopy	Salpingectomy	n/a

MRI, magnetic resonance imaging; n/a, not available; D&amp;C, dilatation and curettage; HCG, human chorion gonadotropin.

was ignored by herself and the doctor because of the mild degree of pain and without any other complications related. The fallopian tube incarceration was found coincidentally. If this patient did not have an intrauterine mass or an ovarian mass, the incarceration would not have been identified, which may be present for the rest of her life. We first performed hysteroscopy but did not recognize the fimbriae of the fallopian tube and removed the fimbriae. If we had suspected the mass to be fallopian tube fimbriae and did not remove it, or we had performed laparoscopy first, salpingectomy could have been avoided as shown in the report by Boughizane *et al.* and Camus *et al.* (21,22).

## Conclusions

Intrauterine fallopian tube incarceration is a rare complication of D&C which occurred after uterine perforation and may show only ambiguous symptoms. Care should be taken to recognize uterine perforation when performing D&C and differential diagnosis should be considered.

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## Footnote

*Reporting Checklist:* The authors have completed the CARE reporting checklist. Available at <https://gpm.amegroups.com/article/view/10.21037/gpm-22-1/rc>

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*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this case report and accompanying

images. A copy of the written consent is available for review by the editorial office of this journal.

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