Application of a Hormonal Intrauterine Device Causing Uterine Perforation: A Case Report

Milica Berisavac[1], Radmila Sparić[1], Rajka Argirović[1], Gernot Hudelist[2], Vojislav Žižić[1]

[1]Clinic for Gynaecology and Obstetrics, Clinical Centre of Serbia, Belgrade, Serbia;
[2]Endometriosis and Pelvic Pain Clinic, Wilhelminen Hospital Vienna, Vienna, Austria

SUMMARY

Introduction The last decade of the usage of intrauterine contraception has been marked by the application of levonorgestrel-releasing hormonal devices. A hormonal intrauterine device (IUD) releases a certain amount of progestogen, whose effect on endometrium is such that, apart from preventing unwanted pregnancy, also regulates the menstrual bleeding by reducing the quantity and the duration of haemorrhage. This effect of hormonal IUDs has led to their additional indications and use, so that nowadays these IUDs are used not only as contraceptives but for therapeutic purposes as well.

Case Outline After examination and treatment in an out-patient department, a 38-year-old woman was referred to our hospital due to suspected spontaneous uterine perforation caused by hormonal IUD (Mirena®) one month after its application. Clinical and sonographic examinations were unable to determine the uterine perforation or the exact IUD location. Radiographic examination confirmed the presence of the IUD in the abdomen, so it was decided to operate on the patient. Perforation in the isthmus of the uterus and to the right was identified intraoperatively. By exploration of the genital organs and the abdominal cavity, the IUD was finally located in the omentum.

Conclusion Even in cases of adequate indications for hormonal IUD application, the doctor's experience and complying with all the principles of appropriate insertion, we should always consider the possibility of the occurrence of serious complications, which sometimes may even require surgery. The extragenital position of IUD, as in this case, may create serious difficulties in the detection of location. A possible development of asymptomatic complications additionally emphasizes the necessity of regular check-ups of all IUD users.

Keywords: intrauterine contraceptive device; uterine perforation; operation; complication

INTRODUCTION

Possibilities of unwanted pregnancy prevention have been the subject of considerable interest since ancient times. Intrauterine contraception was not widely used at the end of the 19th and in the first half of the 20th century because the percentage of side effects and serious complications was significant, which naturally compromised the contraceptive method itself [1]. The discovery of inert polyethylene materials in the second half of the 20th century led to the expansion of intrauterine contraception. Experiences have shown that smaller dimensions of a device provide stronger protective effect and contribute to a lower incidence of spontaneous expulsions [1]. In the application of smaller devices, a reduced occurrence rate of side effects has been noticed, but also a significant number of spontaneous expulsions and unwanted pregnancies [1]. Modern intrauterine devices (IUDs) are much smaller and contain hormones or metals (copper or silver), added to the polyethylene mass for the purpose of achieving better contraceptive effect. During the last decade, levonorgestrel-releasing hormonal devices have been most widely used intrauterine contraceptives [2]. These IUDs have local hormonal effect thus making endometrium unsuitable for the implantation [3].

Hormonal IUD release a certain amount of progestogen, which affects endometrium and consequently prevents unwanted pregnancy, and which also regulates the menstrual cycle by reducing the quantity and the duration of menstrual bleeding. This effect of hormonal IUDs has led to their additional indications and use, so that nowadays these IUDs are used not only as contraceptives but for therapeutic purposes as well [4]. Local effect of IUD-contained levonorgestrel on the endometrium and the reduction of menstrual bleeding is a possible method of treating therapy-resistant menorrhagia in women of reproductive age.

The occurrence rate of complications caused by the application of the device is not high. They include syncope, spontaneous expulsion, menstrual cycle disturbances, pain, bleeding, uterine perforation and infection [1]. By properly selecting future users, taking into consideration indications and contraindications, and by choosing the adequate device type as well as by correctly performing the insertion procedure, the incidence of these complications can be reduced even further [5].

Uterine perforation is a very rare but potentially life-threatening complication. The incidence of perforation ranges from 0.2 to 5 per 1000 applications, and it is mostly related to the application of T-shaped devices due to their

Correspondence to:
Radmila SPARIĆ
Clinic for Gynecology and Obstetrics
Clinical Centre of Serbia
Višegradska 26, 11000 Belgrade
Serbia
radmila@rcub.bg.ac.rs

shape [1]. The perforation may occur during device application but also as the result of gradual erosion of the uterine wall or attempts at the device extraction. Together with inflammatory diseases it is one of the most severe complications. Risk factors for the uterine perforation occurrence are the following: clinician's inexperience, nulliparity, unfavourable uterine position, uterine scars, changes and deformities of the cervical canal, as well as the time of the application in relation to the phase of the menstrual cycle. In clinical terms, the perforation may be complete or partial and usually occurs in the isthmus or fundus of the uterus. It is diagnosed by clinical and ultrasound examination, by radiography and hysteroscopy.

In case of cervical or isthmic perforation, the device should be removed. Fundal perforations are considerably more difficult to detect clinically as they are often asymptomatic. Uterine perforation with the migration of the device into the peritoneal cavity always requires surgical treatment.

CASE REPORT

After examination and treatment in an out-patient department, a 38-year-old woman was referred to our hospital due to suspected spontaneous uterine perforation caused by hormonal IUD (Mirena®), one month after its application.

The patient's history recorded two vaginal deliveries and one abortion, while personal and family histories contained no significant diseases. During the preceding 3 years, the patient's menstrual cycles were 28 days long with excessive and prolonged bleeding lasting 8 to 10 days. The patient's gynaecologist disclosed the presence of two intramural myomas; one in the left cornu, 28×30 mm in size, and the other one on the front wall of the uterus, 17×21 mm in size. As other conservative methods for treating bleeding gave unsatisfactory results, the patient was advised to apply a levonorgestrel-releasing hormonal device for therapeutic purposes. After adequate preparation (haemogram test, erythrocyte sedimentation rate, C-reactive protein, cervical and vaginal culture test, colposcopy and Pap test), the application of the device was performed on the seventh day of the menstrual cycle. Upon the completed insertion, the position of the device was checked sonographically, and was found to be normal. On the first check-up performed after the following menstrual cycle the doctor determined that there was no visible device thread in the cervical canal. Sonographic examination of the pelvic region revealed the absence of the device from the uterine cavity. Radiographic examination determined the presence of the device in the abdomen, after which the patient was referred to the hospital for further treatment.

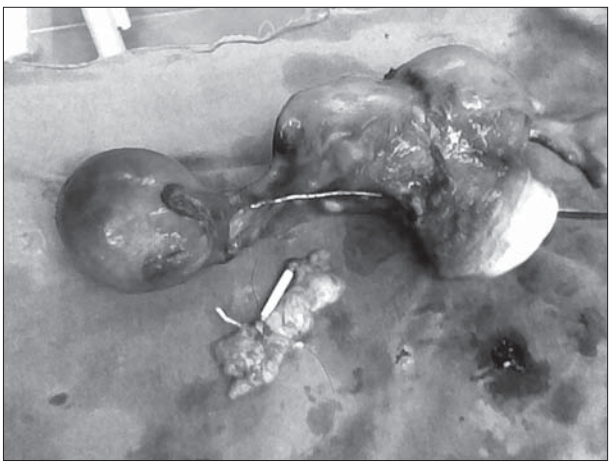

Figure 1. Perforation in the isthmus of the uterus and to the right confirmed by passing the probe and a part of the omentum removed together with the IUD

On admission, the patient was conscious, afebrile, with mild pains in the periumbilical region. The abdomen was soft, with normal respiratory movements, insensitive to pain on deep palpation, with audible bowel sounds. Arterial blood pressure was 120/75 mm Hg, and pulse 68 beats per minute. Immediately on admission, the patient underwent all laboratory, bacteriological, ultrasound and clinical tests and examinations. Broad spectrum parenteral antibiotics were administered. A haemogram test indicated anaemia (haemoglobin level 101 g/l), whereas the values of other haemogram parameters were normal (leucocytes 8.0×10^9/l). The value of the C-reactive protein was 14.4 µg/l. A sonographic examination was unable to determine either the exact position of the uterine perforation or of the device. Cysts of approximately 50 mm and 40 mm in size were detected on both ovaries. Following adequate preoperative preparation, the patient underwent surgery. Intraoperatively uterine myomas were identified, as well as cysts on both right and left ovaries of 50 mm and 40 mm in diameter, respectively. Perforation in the isthmus of the uterus and to the right was identified and additionally confirmed by passing a probe (Figure 1). Upon the performed exploration of the genital organs and the abdominal cavity, the IUD was located in the omentum. At the patient`s request, despite her age, total hysterectomy with bilateral adnexectomy was performed. Due to the location of the IUD, a part of the omentum together with the device was removed (Figure 1). Intraoperative abdominal cavity bacteriological culture results were negative. The patient had an uneventful post-operative period and was discharged from hospital on the seventh post-operative day.

DISCUSSION

IUDs have a broad range of application due to their numerous advantages in comparison with other contraceptives. Partial perforation caused by the contractions of uterus may become complete, with an expulsion of the device into abdominal cavity, as happened in the presented case.

Uterine perforations can be asymptomatic and thus more difficult to identify clinically, which clearly shows the necessity of regular check-ups of all device users in order to confirm intrauterine presence of the device and therefore assuring contraceptive efficacy. One of the signs of possible perforation may be a missing, invisible thread. Consequently, the location of the device should be eval-

doi: 10.2298/SARH1112815B

uated. Dislocation of the device can be identified in the pelvic region, causing peritoneal reaction, in broad ligaments, rarely in the bladder and in the pouch of Douglas, where it can be palpated on rectal examination. In rare cases, the device can be found in the mesocolic region, in the bowel convolutions, in the appendix or the omentum, which happened in the presented case [1].

Asymptomatic isthmic perforation was determined in our patient one month following the application of the device and, due to the absence of symptoms, it was difficult to establish the exact time of its occurrence. It was unlikely that the perforation occurred on the application of the device, after which, as normally required, the position of the device was checked. The absence of perforation symptoms in the presented case can be explained by the localization of the device in the omentum.

For a number of years IUD has been applied solely during the menstrual bleeding as the dilatation of the cervical canal which occurs in that period facilitates the application, and the possibility of pregnancy is almost completely excluded [1]. The application of the device in this period carries a certain risk of spontaneous expulsion, as well as of the infection of the genital organs. The time of the application of the device in the presented case was probably one of the factors that contributed to the spontaneous uterine perforation. It is possible that the contractions of the uterus at the end of the menstrual cycle together with the present myomas were etiological factors in the expulsion of the device into the abdominal cavity. We should bear in mind the fact that, although the application of the device is more difficult to perform in the period immediately after the cessation of menstrual bleeding, the possibility of spontaneous expulsion occurrence is considerably reduced at that time, so that may be an ideal moment for the application of the device.

Negative attitude towards the usage of IUDs has existed for quite some time, and the reason for it can be partly explained by insufficient familiarity with the indications for the device use and fear of possible pelvic inflammatory disease, ectopic pregnancy or malignancies of genital organs prevailing over the benefits of long-term effective contraception [1, 6]. The idea of postponing a surgical intervention by application of hormonal IUD for the purpose of efficient treatment of menorrhagia, enhances the woman's quality of life, and has been accepted as a therapeutic option by a number of authors [7].

Extragenital presence of IUD and uterine perforation should be considered in asymptomatic patients following IUD insertion in cases of sonographic findings suggesting absence of the device. The unpredictable serious complication like uterine perforation following the application of the device requires surgical treatment, while the extent of the intervention depends of the patient's age and preferences, as well as of the operative findings.

The possibility of the development of asymptomatic complications additionally emphasizes the necessity of regular check-ups of all IUD users. Adequate preparation for the device insertion, and bacteriological examinations in particular, as well as continuous clinical observation after the insertion reduce the risk of additional infective complications, which is again proved by the presented case [1, 8].

REFERENCES

1. Berisavac M, Sparić R, Argirović R. Contraception: modern trends and controversies. Srp Arh Celok Lek. 2009; 137(5-6):310-9.
2. Batar I. State of the art of intrauterine contraception. Eur J Contracept Reprod Health Care. 2006; 11:262-9.
3. Doyle J, Stern L, Hagan M, Hao J, Gricar J. Advances in contraception: IUDs from a managed care perspective. J Women's Health (Larchmt). 2008; 17:987-92.
4. Jensen JT, Nelson AL, Costales AC. Subject and clinician experience with the levonogrestrel-releasing intrauterine system. Contraception. 2008; 77:22-9.
5. Nelson AL. Contraindications to IUD and IUS use. Contraception. 2007; 75(6 Suppl):S76-81.
6. Hurskainen R, Teperi J, Rissanen P, Aalto A, Grenman S, Kivela A, et al. Quality of life and cost-effectiveness of levonorgestrel releasing intrauterine system versus hysterectomy for treatment of menorrhagia: a randomized trial. Lancet. 2001; 357(9252):273-7.
7. Berisavac M, Argirović R, Milenković V, Sparić R, Marković N. Tubo-ovarian abscess as a complication of intrauterine contraception. Eur J of Contracept Reprod Health Care. 2008; 13:135.
8. Stubbs E, Schamp A. The evidence is in. Why are IUD's still out? Can Fam Physician. 2008; 54:560-6.

Спонтана перфорација материце после примене хормонског интраутерусног улошка – приказ болесника

Милица Берисавац[1], Радмила Спарић[1], Рајка Аргировић[1], Гернот Худелист[2], Војислав Жижић[1]

[1]Клиника за гинекологију и акушерство, Клинички центар Србије, Београд, Србија;
[2]Клиника за ендометриозу и пелвични бол, Болница „Вилхелминен", Беч, Аустрија

КРАТАК САДРЖАЈ

Увод Последњу декаду коришћења интраутерусне контрацепције обележила је примена хормонских уложака са левоноргестрелом. Хормонски интраутерусни уложак (ИУУ) ослобађа одређену количину прогестагена, који својим деловањем на ендометријум, поред спречавања нежељене трудноће, утиче и на регулацију менструалног циклуса, смањујући количину и трајање крварења. Овај ефекат хормонских ИУУ довео је до проширења индикационог подручја за њихову примену, те се данас ови улошци, осим у контрацепцијске, користе и у терапијске сврхе.

Приказ болесника Жена стара 38 година је након амбулантног испитивања и лечења упућена у нашу установу због сумње на спонтану перфорацију материце хормонским ИУУ (*Mirena*®) месец дана након његове примене. Клиничким и ултразвучним прегледом није било могуће установити место перфорације материце, нити тачну локализацију ИУУ. Радиографским прегледом откривен је ИУУ у абдомену, те је одлучено да се болесница оперише. Током операције је у пределу истмуса материце и са десне стране уочена перфорација материце. Експлорацијом гениталних органа, а потом и трбушне дупље, утврђено је да се ИУУ налази у оментуму.

Закључак Уз одговарајуће индикационо подручје за примену хормонског ИУУ, искуство лекара и поштовање свих принципа правилне инсерције, треба имати на уму и могућност настанка тешких компликација, које се могу решити једино хируршки. Екстрагенитална позиција ИУУ, као у приказаном случају, може створити озбиљне тешкоће при откривању локализације улошка. Асимптоматске компликације указују на неопходност одласка жена које користе интраутерусну контрацепцију на редовне контролне прегледе.

Кључне речи: интраутерусни контрацептивни уложак; перфорација материце; операција; компликације

Примљен • Received: 18/10/2010 **Прихваћен • Accepted:** 24/03/2011

doi: 10.2298/SARH1112815B