CASE REPORT

Spontaneous bilateral cornual uterine dehiscence early in the second trimester after bilateral laparoscopic salpingectomy and in-vitro fertilization

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A bilateral cornual uterine dehiscence is reported, which occurred 14 weeks after in-vitro fertilization (IVF) in a patient having a medical history of previous bilateral salpingectomy via laparoscopy. Uterine rupture is a rare obstetric complication usually occurring during the third trimester of pregnancy within a uterus which has previously undergone an operation. Ectopic pregnancy is a well known complication of IVF. Post-salpingectomy cornual localization with rupture has also been published. Possible causes are discussed and the attention of the counselling physician is directed to the necessary awareness of such a complication in this high risk population. The reported case is an extreme rarity: a similar case has not been previously published in the literature.

Key words: in-vitro fertilization/laparoscopic salpingectomy/uterine rupture

Introduction

Spontaneous rupture of the uterus during the second trimester is a rarity in obstetrics (Levrant and Wingate, 1996). Rupture of the pregnant uterus is considered spontaneous if the rupture occurs without contractile activity of the myometrium. Although it can be seen in normal, unscarred, and even primigravid uteri (Olobo-Lalobo, 1984), usually a previous operation, endoscopic intervention (Gurgan et al., 1996), various obstetric complications, use of oxytocic agents (Maymon et al., 1992), disturbed placentation and/or developmental abnormality of the uterus (Basbug et al., 1997) are revealed as causative factors in the patient’s history. The most common operation in the history of the patients affected is the Caesarian section. Few reports, however, are available on uterine dehiscence after previous salpingectomy (Bitsch, 1985; Lizan et al., 1986). Despite different diseases, the protrusion of the normal intrauterine gestational sac through the wound of the ruptured uterus and the ruptured interstitial/intramural or cornual/angular pregnancy causes clinical symptoms similar to those characteristic for acute abdomen.

We report a case of bilateral cornual dehiscence of the uterine wall with amnionic prolapse at 14 weeks gestation following bilateral salpingectomy and in-vitro fertilization (IVF). To the best of our knowledge, no similar case has been reported, where the dehiscence of the wall of the previously operated uterus occurred simultaneously in both cornual regions.

Case report

The 31 year old patient with a 10 year history of primary infertility had ovarian endometriosis and bilateral hydrosalpinx treated by ovarian wedge resection and bilateral salpingectomy without cornual resection via laparoscopic technique using mono- and bipolar electrocautery in 1997. Six months later the patient was enrolled in an IVF cycle, and received a stimulation protocol using gonadotrophin-releasing hormone agonist (GnRHa) and follicle stimulating hormone (FSH). The embryo transfer was successful and the patient conceived. Twelve weeks later she was referred to the outpatient department of a county hospital because of lower abdominal complaints and vaginal spotting. The ultrasound examination performed at admission verified a living, intrauterine fetus of 14 weeks gestational age located in the central part of the uterine cavity. In spite of administering magnesium and sedative drugs, the symptoms became more intense. The ultrasound examination a week later revealed oligohydramnion and a non-viable fetus whose lower extremities were located in a thin-walled sack protruding outside the uterine contour. Defect of the uterine wall was suspected. Despite the lack of peritoneal signs and haemorrhagic shock, the patient was referred to our clinic.

Laparotomy revealed a dehiscence of the uterine wall in the right cornual region and fetal legs in the amniotic sac protruding through the dehiscence. A dehiscence of 1 cm in length was also seen in the left cornual region on the lateral uterine wall at the place of the previous contralateral salpingectomy. No protrusion was detected through this dehiscence on the left side.

The fetal parts were replaced within the uterine cavity which was then emptied via the vaginal route. The lesions of the uterine wall were repaired with two layers of absorbable sutures. Subsequent hospitalization was uneventful and the patient was discharged without complaint on the fifth post-operative day.
Discussion

Spontaneous uterine rupture, i.e. rupture in the absence of contractions of the myometrium, is a rare obstetric complication, occurring mostly in the third trimester of pregnancy.

Increased intrauterine pressure caused by myometrial activity or by increased intrauterine volume (multiple pregnancy, polyhydramnion) may also predispose a patient to uterine rupture, explaining the extreme rarity of this entity in the first and second trimester.

Although rupture of the intact uterus during pregnancy has also been reported, usually various factors can be retrospectively demonstrated indirectly leading to or at least predisposing to uterine rupture (Lynch and Pardy, 1996).

Previously operated, scarred uteri are obviously more prone to rupture and wound dehiscence. The suture technique (one or two layers of continuous or interrupted suture), the quality of suture material used during the previous Caesarian sections, as well as the hard-to-measure operative experience of the physician may play determining roles in the tensile strength of the scar in the course of subsequent pregnancies. The rupture of these scars may often be almost free of symptoms.

The same is valid for conservative operations on the uterine musculature. Operative laparoscopy has become the gold standard operation for many indications; however, uterine rupture during subsequent pregnancies is a well known complication of laparoscopy (Dubuisson et al., 1995), though it is rare after myomectomy via laparotomy.

Post-operative disruption of the corpus of the womb may have simple mechanical reasons. However, the apparent causal relationship between a previous salpingectomy and a subsequent rupture of the lateral wall of the uterus can be misleading, if the cornual region of the uterus was intact upon previous operation and no cornual resection was necessary. On the other hand, if cornual excision and reconstruction were carried out, a technical deficiency in the reconstruction of the uterine wall could well predispose a patient to dehiscence of the lateral wall of the uterus.

Obviously, the localization of the pregnancy and placental abnormalities are major factors in spontaneous uterine rupture. Cornual pregnancy, i.e. nidation of the conceptus in the uterine horn, in the close vicinity of the utero–tubal junction and classified as a rare type of ectopic pregnancy, may cause uterine cornual dilatation, something for which the horn is not equipped (Chen et al., 1998). Rupture of the uterine musculature in this case is obviously to be expected.

Another anatomical predisposing factor is a rudimentary horn of a bicornuate uterus. Disturbed nidation can lead to intramural or interstitial pregnancies, and result in spontaneous rupture of the uterus in the further course of the pregnancy (Achiron et al., 1992). Postulated mechanisms to account for this outcome also include adenomyosis, previous uterine trauma, abnormal endometrial glands, increased trophoblastic activity, and perforation of the uterine blood vessels. The common feature in these types of ectopic pregnancy is the lack of ability of the thin-walled horn to dilate according to the needs of the pregnancy growing in it.

Considerable intra-abdominal bleeding with peritoneal signs and symptoms of shock may prevail, rendering urgent laparotomy unavoidable. Uterine rupture, one of the most feared obstetric catastrophes, may also be a consequence of abnormal placentaion (e.g. placenta increta or percreta). Rupture of the womb with placenta percreta is generally well known in the third trimester, but has also been reported in earlier stages of gestation (Smith and Mueller, 1996). Predisposing factors include previous dilatation and curettage, uterine scarring, advanced maternal age or previous endometritis. Hysterectomy is usually the therapy of choice, conservative reconstruction of the uterus with overseeing the uterine defect is only occasionally undertaken, mainly in patients planning further pregnancies.

Abnormal localization of the pregnancy conceived after IVF has been previously reported (Gleicher et al., 1994; Arbab et al. 1996). In our case a normal nidation in the central part of the uterine cavity was present and verified by previous ultrasound examinations. Furthermore, the placenta showed no sign of increased trophoblastic activity.

It can be postulated that salpingectomy with cornual resection, performed in order to reduce the possibility of interstitial pregnancy, may attenuate musculature in the cornual region, which can then lead to rupture even early in the course of a subsequent pregnancy. Moreover, it cannot be excluded that connective tissue factors may be involved in the pathomechanism of uterine rupture.

Cornual ruptures after salpingectomy without cornual resection may also occur.

In our case, the previous salpingectomy was performed by the monopolar coagulation technique. At the time of the operation, no macroscopic alteration of the uterine muscle in the region of the uterine horns was detected. Taking the local and distant adverse effects of monopolar current into account, it cannot be excluded, however, that broad propagation of the monopolar electrical coagulation, causing desiccation and burn, spread on the uterine horns towards the uterus prior to salpingectomy, and that might have weakened these areas and may have contributed to the bilateral rupture. Indeed, this explanation seems plausible. It also seems possible that the coagulation was performed on the rudimentary or elongated horns of a (hypoplastic) uterus. Although laparoscopy was theoretically a possible choice for reconstructing the uterine wall, taking into account the difficulties of proper closure of the uterine wound and the obviously increased risk of recurrent dehiscence in the course of a future pregnancy, we voted for the laparotomic intervention.

Salpingectomy may be indicated, especially for candidates in an IVF programme. This can be for several reasons: bilaterally severely damaged tubes, hydrosalpinges, salpingitis isthmic nodosa, recurrent ectopic pregnancy; all of these diseases may warrant removal of the tubes on both sides. Because of its efficiency and simplicity, monopolar electrocautery is the method of choice in many hospital settings. However the physician should take into account the possible spread of the electrical and thermal damage onto the cornual region of the uterus, which can weaken the resistance of the uterine muscle, possibly leading to uterine rupture or dehiscence in the course of subsequent pregnancies.
In order to avoid this complication, either partial salpingectomy (leaving the critical region free of possible electrical damage) or salpingectomy and simultaneous cornual resection with operative reconstruction of the cornual wound via sutures may be considered. The former option may lead to ectopic pregnancy within the proximal stump after IVF and embryo transfer; on the other hand, the latter option may necessitate laparotomy, and more reliable reconstruction of the lateral uterine wall should be possible. In conclusion, uterine rupture during pregnancy should be taken into account and considered as a possible late consequence of salpingectomy. Until the causal relationship between them is known, the laparoscopic technique in general and monopolar coagulation in particular should be utilized with caution. Despite the rarity of this complication, with adequate diagnostic awareness it can be detected and diagnosed by ultrasound in early pregnancy, even in asymptomatic patients. Performing laparotomy in time may prevent obstetric catastrophe and haemorrhagic shock.

In the course of subsequent pregnancies the utmost attention should be paid to the early recognition of a potential recurrence of this rare entity via frequent use of ultrasonographic evaluation.

References

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