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CASE REPORT

Uterine rupture following hysteroscopic lysis of synechiae due to tuberculosis and uterine perforation

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A patient with genital tuberculosis who conceived with in-vitro fertilization and embryo transfer following hysteroscopic synechiolysis complicated by a fundal uterine perforation subsequently presented with uterine rupture at 36 weeks gestation. Immediate Caesarean section and repair of the ruptured uterus were performed. Women with a history of uterine perforation should be counselled regarding the risk of uterine rupture during their subsequent pregnancies.

Key words: hysteroscopy/synechiae/tuberculosis/uterine rupture/uterine perforation

Introduction

In-vitro fertilization (IVF) and embryo transfer is the only therapeutic option in infertile women suffering from tuberculous salpingitis. However, the safety of IVF in patients with genital tuberculosis has yet to be determined. Moreover, life-threatening disseminating tuberculosis has been described as a consequence of surgical manipulations in the pelvis (Crafton and Douglas, 1981) and after IVF procedures (Addis *et al.*, 1988). Endometrial involvement is noted in 50–60% of subjects and the uterine cavity may be partially or totally obliterated by intrauterine synechia (Varma, 1991). Despite the lack of data supporting its efficacy, hysteroscopic lysis of synechiae is indicated prior to treatment with IVF.

We report a patient with genital tuberculosis who conceived with IVF and had uterine rupture at 36 weeks gestation, following accidental uterine perforation during hysteroscopic lysis of dense intrauterine synechiae.

Case report

A 27 year old woman, nulligravid and nulliparous, applied to our IVF programme for treatment for infertility due to genital tuberculosis. Hysterosalpingogram displayed bilateral 'golf-club' appearance of the Fallopian tubes, which was typical for obliterative sequela of tuberculosis salpingitis (Figure 1), and it is known that a diagnosis of genital tuberculosis can be established with hysterosalpingography displaying pathognomic signs of tubal affliction (Klein *et al.*, 1976), including golf-club, beaded and Maltese cross appearance of the Fallopian tubes with or without intrauterine synechiae. The distal isthmic portions of both Fallopian tubes were dilated and rigid, terminating in ectasic bulges. Intravasation and intrauterine synechiae displaying a pseudomalformative appearance of the uterine cavity simulating a corporeal septate uterus were also noted (Figure 1).

Dense intrauterine synechiae involving the anterior and posterior walls of uterine cavity were confirmed at hysteroscopy. Hysteroscopic lysis of the synechiae was performed with a resectoscope (Hopkins 26157 B: Karl Storz, GmbH & Co., Tuttlingen, Germany) without laparoscopic control. In our experience, concomitant laparoscopy is not necessary where the intrauterine synechiae simulate a corporeal septate uterus, as in this case. Currently, we do not perform concomitant laparoscopy for hysteroscopic septum resection, finding it appropriate only in 'difficult' cases such as total corporeal synechiae. Glycine (Glisin 1.5%: Eczacibasi A.S., Istanbul, Turkey) was used as the distention medium. As the operation was completed a fundal perforation occurred. Laparoscopy was then performed and revealed a fundal perforation of 1 cm in diameter. Haemostasis was completely achieved with bipolar cautery via laparoscopy, so suturing was not used.

A post-operative hysterosalpingogram performed 3 months after the procedure revealed a normal uterine cavity without

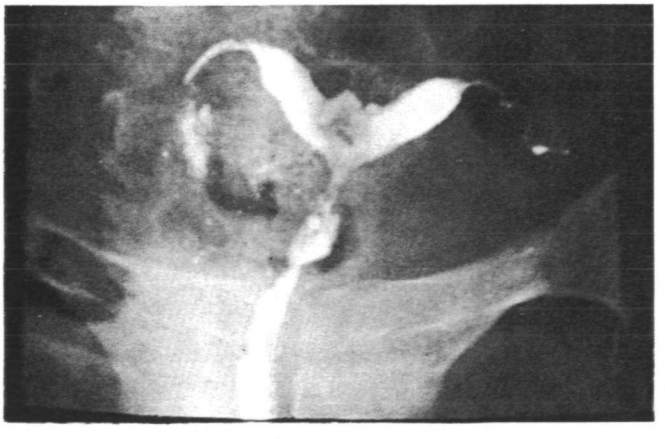

Figure 1. Pre-operative bilateral 'golf-club' appearance of the Fallopian tubes with intravasation and intrauterine synechiae simulating a corporeal septate uterus.

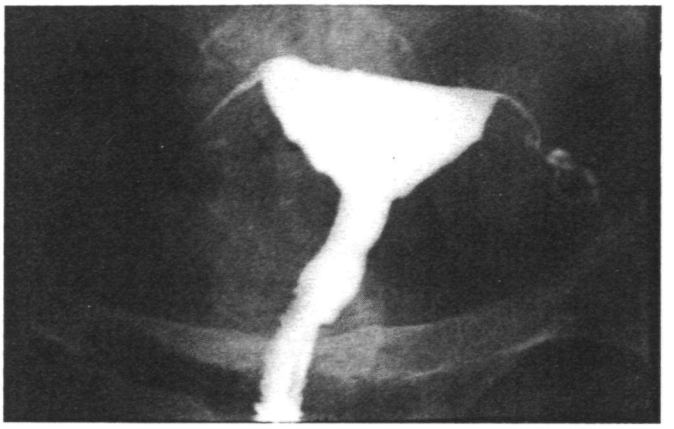

Figure 2. Post-operative normal intrauterine cavity without any uterine defect.

any uterine defect (Figure 2). The patient conceived at the first IVF attempt 14 months after the operation. She had an uneventful course of pregnancy until 36 weeks gestation.

At 36 weeks gestation, the patient was admitted to hospital with a sudden onset of severe abdominal pain. On admission, the vital signs were normal. The fetus was in vertex presentation, and the cervix was formed. Non-stress test was reactive and ultrasonography revealed an apparently normal fetus of 36 weeks gestational age. The placenta was fundal in location with no evidence of a retroplacental haematoma. A small amount of free fluid was noted in the cul-de-sac. Haemoglobin was 10.7 g/dl and white blood cell count was 7600/mm^3. Urinalysis was normal.

Several hours after admission, abdominal pain intensified and signs of acute abdomen appeared. An urgent exploratory laparotomy was performed. A bleeding fundal rupture of 2 cm in diameter at the site of previous uterine perforation and 200 ml of free intra-abdominal blood were noted. The edge of the placenta had prolapsed out through the rupture. A low segment Caesarean section was performed and a male infant of 3050 g was delivered with Apgar scores of 9 and 10 at 1 and 5 min respectively. The rupture site was closed with a double layer of 2–0 polyglactin 910 suture (Vicryl: Ethicon, Edinburgh, Scotland). The post-operative course was uneventful. The patient and the newborn were discharged on the fifth post-operative day.

Discussion

A 1.3% incidence of uterine perforation has been reported for all types of operative hysteroscopic procedures (Peterson *et al.*, 1990). There is a paucity of data regarding the subsequent pregnancy outcome following operative hysteroscopic procedures and accidental uterine perforation. The risk of uterine defect or rupture during a subsequent pregnancy is theoretically increased following accidental uterine perforations. However, uterine defect or rupture during pregnancy has only been reported in three cases following uterine perforation at operative hysteroscopy, two following septum resection (Creinin and Chen, 1992; Howe, 1993) and one after submucous myomectomy (Yaron *et al.*, 1994).

To our knowledge, this is the first reported case of uterine rupture during pregnancy following accidental uterine perforation during hysteroscopic lysis of intrauterine synechiae secondary to tuberculous endometritis.

Several factors may contribute to the development of uterine rupture following uterine perforation during hysteroscopy. Overresection of the dense intrauterine synechiae at the time of operative hysteroscopy may result in trauma and therefore thinning and weakening of the adjacent myometrium. Uterine perforation indeed represents the most severe local trauma to the myometrium. The risk of uterine defect or rupture at a subsequent pregnancy may even be increased following myometrial resection and trauma without frank uterine perforation. A reported case of uterine rupture during pregnancy following hysteroscopic septum resection with no perforation at the time of hysteroscopy supports this hypothesis (Lobaugh *et al.*, 1994). It should be emphasized that the nature of intrauterine synechiae associated with tuberculosis is invariably very dense and cohesive. Finding the appropriate cleavage plane during hysteroscopic lysis of such intrauterine synechiae may technically prove to be very difficult with unavoidable myometrial damage, and accidental uterine perforation may rarely occur.

The impact of various surgical modalities used at operative hysteroscopy on the risk of adjacent myometrial trauma and uterine rupture during a subsequent pregnancy is highly controversial. Electrosurgery or laser is associated with thermal damage to the adjacent endometrium and/or myometrium to a varying extent, whereas scissors using mechanical energy avoid such thermal damage. However, there are no data available to compare the risk of uterine rupture in subsequent pregnancies following accidental uterine perforations at operative hysteroscopy using different surgical modalities.

Electrocautery used to achieve haemostasis of the uterine perforation may contribute to thermal injury with the resultant weakening of the adjacent myometrium. Alternative approaches that can be undertaken to control bleeding of the perforation site are laparoscopic suturing and/or the administration of dilute vasopressin solution into the nearby myometrium. However, none of the above appears to eliminate the risk of uterine rupture during a subsequent pregnancy (Yaron *et al.*, 1994).

The underlying pathology for intrauterine synechiae, in this case, was the sequela of tuberculosis endometritis. As the myometrium is not involved in synechiae secondary to tuberculosis endometritis, tuberculosis *per se* was not considered to contribute to uterine rupture during pregnancy.

Uterine over-distention is an unlikely contributing factor for the development of uterine rupture in our case, since the pregnancy was singleton, in contrast to a case report of uterine dehiscence in a twin pregnancy at 37 weeks gestation following hysteroscopic septum resection and uterine perforation (Creinin and Chen, 1992).

Although an uncommon complication, uterine perforation should be avoided during operative hysteroscopic procedures. Absence of any uterine defect at a follow-up hysterosalpingogram does not eliminate the risk of uterine rupture during a subsequent pregnancy. Women suffering uterine perforation at hysteroscopy and/or difficult hysteroscopic lysis of intrauterine

synechiae warrant counselling that their subsequent pregnancies may be at risk of occult or catastrophic uterine rupture. Lack of an effective method to predict impending rupture results in difficulties for monitoring of such patients.

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