Fig. 1. Computerized tomography, showing uterine necrosis (presence of numerous areas of gas) and dilated intestinal loops.

pyrexia, uterine contractions, an elevated C reactive protein, leucocytosis and severe fetal tachycardia for which an emergency caesarean section was performed. The patient experienced severe postpartum haemorrhage during the procedure. No satisfactory haemostasis was obtained after medical treatment by intravenous oxytocin and sulprostone. She therefore underwent multiple vascular ligation and Cho compressive uterine sutures. The haemorrhage was controlled after these procedures. She made a good immediate recovery with normal postpartum bleeding and a decrease in C reactive protein and leucocytosis under antibiotic treatment by amoxicillin and clavulanic acid.

Six days after delivery the patient presented with a febrile bowel obstruction syndrome. A CT scan showed a necrotic uterus, peritoneal effusion and dilated intestinal loops. An exploratory laparotomy was performed 8 days after the delivery and confirmed a necrotic uterus associated with a bowel obstruction caused by an epiploic adhesion. The adhesion was released and an abdominal subtotal hysterectomy without oophorectomy was performed. The patient made a good recovery and left the hospital eleven days after the caesarean delivery.

Severe postpartum haemorrhage is a major cause of maternal morbidity and mortality. The square suture technique described by Cho [1] is an excellent method to achieve haemostasis during postpartum haemorrhage and to avoid haemostatic hysterectomy, particularly when uterine artery embolization is not available. Uterine necrosis is rare because of the increased vascularisation of the uterus during pregnancy with its extensive anastomotic pelvic vessels. Several publications, however, report cases of uterine necrosis following uterine compression sutures [2,3]. Pyometra is also described as a possible complication of the technique, especially when chorioamnionitis is associated, as observed in our second case. Occlusion of the uterine cavity by the square sutures may indeed allow retention of blood and other infected debris. Our first patient, however, had no history of clinical intraamniotic infection, but her vaginal delivery was complicated by a uterine inversion which was treated by manual reposition. This may therefore have increased the risk of infection and uterine ischemia. On the other hand, several authors have reported similar complications after embolization [4].

With the increasing number of uterine compression sutures performed for postpartum haemorrhage, reports of rare complications such as uterine necrosis and pyometra will most likely increase. Physicians should therefore be aware of these complications in cases of multiple compression sutures.

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19 September 2011

doi:10.1016/j.ejogrb.2011.12.015

Can a mother get a tattoo during pregnancy or while breastfeeding?

Dear Editor,

We found that issues related to tattooing *during* pregnancy or breastfeeding has never been reported in the literature [1].

In 2007, a young woman underwent a tattoo session while diagnosed pregnant. The session was performed at 6 week gestation and lasted 5 h. Black outlines were drawn from the ankle to the groin and from the lower back to one shoulder. A second session at 21 week gestation lasted 2 h and consisted in tattooing the left flank and 1/4 of the arm with black outlines and some colours. Sessions were uneventful, except important asthenia the evening of the second session. Fetal ultrasound follow-up disclosed three lung cysts of the right base. Delivery was uneventful and no neonatal complication occurred.

In 2011, a tattooist, concerned as one of her customers was breastfeeding when presenting for her tattoo session, asked for advice. Avoidance of tattooing during the breastfeeding period was suggested.

No complication regarding either the mother or the infant has been reported to date, after a mother has undergone tattoo session(s) *during* pregnancy or breastfeeding [1]. Most of the tattooists, parturient patients and breastfeeding mothers *most likely* avoid tattooing during that period. However, some may undergo tattoo sessions at the very beginning of their pregnancy while they are still unaware of it. Others may omit mentioning that they are breastfeeding. Therefore, the real prevalence of such situations and their potential complications are unknown. Potential complications include the risks for the parturient and those for

the foetus. In the first case scenario, complications are the same as for any other individuals [1]. The risk of transmission of infection and toxic chemicals through the placenta and the milk have never been evaluated. Inoculation of micro-organisms with local infection after tattooing or of blood-transmitted diseases such as hepatitis remains low in parlour that respects rules of hygiene, asepsis and sterilization [2]. A potential bacterial dissemination, although always possible, is exceptional. Besides, maternal bacterial infections are rarely transmitted to their infants through breast milk. Temporary cessation of breastfeeding may be proposed for a limited time. Antibiotics are usually not a contraindication for breastfeeding, but have to be chosen carefully during pregnancy. Tattoo colorants are made of inorganic metallic salts, organic molecules of different kinds and auxiliary ingredients/additives. Several studies showed the presence of metallic salts and potential toxic/carcinogen products in those inks [3], while various toxic environmental chemicals (heavy metals, amines, PAHs [3], etc.) are known to be transferred through the human placenta [4]. There is few data available regarding metals, solvents and various chemicals in breast milk. Metals are said not to accumulate that much in breast milk. The question of the potential distribution of tattoo pigments, various component and by-products beyond the skin and local lymph nodes in the systemic circulation and therefore, possibly through the placenta during pregnancy or in the milk, is not known. This risk is rather theoretical and speculative as migration of tattoo pigments beyond regional lymph nodes have not been proved. Recent discovery of nanoparticules (particules that are under the size of 100 nm) in tattoo inks [5] reopens this question.

Overall data regarding the potential risks of undergoing tattooing *during* pregnancy or breastfeeding is inexistent. However, it remains wise to suggest abstention of tattooing procedure from the pregnancy diagnosis until the end of breastfeeding. A tattoo can always be performed afterwards. Additionally, the risk for the foetal development in heavily tattooed mothers is not known either. The risk related to tattooing as a potential environmental occult source of toxic chemicals for the foetus should be thoroughly investigated.

Competing interest statement

None.

The author designed, wrote and drafted the manuscript.

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18 January 2012

doi:10.1016/j.ejogrb.2012.01.012