Puerperal inversion of the uterus

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Summary

Puerperal inversion of the uterus is a complication of the third stage of labor. The two main reasons are excessive cord traction and Crede fundal pressure. Its frequency in Israel is unknown. A case of acute, complete inversion of the uterus is presented, treated promptly by immediate reposition and manual separation of the placenta. The various modes of treatment are discussed. Puerperal inversion is a rare and dangerous complication. Prompt diagnosis and the proper choice of treatment will decrease the morbidity and mortality associated with this complication.

Puerperal inversion; Uterus; Post-partum hemorrhage; Labor complication

Introduction

Puerperal inversion of the uterus is a complication of the third stage of labor in which the uterine wall is pushed toward the uterine cavity until partial or complete inversion of the uterus occurs. It is caused by an outside force which overcomes the internal forces which maintain the uterus in its regular shape and position. There are many who believe that uterine inversion is a result of mismanagement of the third stage of labor and is associated with excessive cord traction and Crede fundal pressure. Once a dimple has been produced in the fundus, the uterus tends to contract and expel the inverted portion. Other possible causes are uterine atony, a congenital weakness of the uterine wall, and a wide and loose cervix which allows the passage of the inverted uterus [1–3].

The complication is critical, but rare. Its frequency varies from 1 in 2000 to 1 in over 250,000 deliveries [2–6], and depends on the quality of the medical care and the type of population. Unless treated promptly, the mortality rate is 10–20% [1,3,4,6,7].

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The frequency in Israel is unknown. The case of uterine inversion presented here is the only one in our institution, in which approximately 90,000 infants have been delivered since its opening in 1965.

Case report

The patient was a 28-yr-old G4 P1 when the complication occurred. Her first and second pregnancies ended with premature delivery at 24 weeks and first-trimester abortion, respectively. Her third pregnancy ended at 42 weeks with a normal vaginal delivery of a 2370 g female; however, the placenta had to be separated manually.

In the fourth pregnancy she was admitted in labor at 38 weeks of gestation. Labor progressed normally after amniotomy and i.v. oxytocin administration (5 mU/min) and she delivered a 2440 g male infant. Because the placenta again did not separate spontaneously, the rate of oxytocin administration was increased, the uterine fundus was massaged and gentle traction on the umbilical cord was applied. Suddenly, the patient complained of strong contractions and complete uterine inversion accompanied by massive vaginal bleeding occurred. Under general anesthesia, the uterus was promptly repositioned manually while the placenta was still attached. Lysis of the placenta and revision of the uterine cavity were done afterwards. Because of shock due to blood loss, the patient was given 3 liters of Hartman’s solution and 5 units of blood. The post-partum course was uneventful.

Subsequently, the patient had 2 additional deliveries: a normal vaginal delivery at 39 weeks of gestation after which the placenta had again to be removed manually, and a delivery by cesarean section, because of placenta previa. It may be of interest that this placenta was of the membranacea type.

Discussion

Three types of uterine inversion have been described according to the degree of severity [8]: (a) incomplete inversion—when the inverted uterine wall does not pass through the internal cervical os; (b) complete inversion—when the inverted uterus passes through the ostium externum; (c) total inversion—uterus + vagina inverted. These types may be traumatic or spontaneous.

Uterine inversion may also be divided according to the time of its occurrence in relation to the delivery, into acute inversion, which is recognized shortly after delivery and before a cervical ring is formed, chronic inversion, diagnosed 4 weeks after delivery and after cervical ring develops, and sub-acute inversion, in which a cervical ring also develops and which is diagnosed at an intermediate time.

Our case represents a typical acute, complete inversion of the uterus, diagnosed and treated promptly. It was probably caused by the combined effect of the following factors: abnormal placental implantation, fundal massage, i.v. oxytocin administration and traction on the umbilical cord. The two main features accompanying the inversion in our case, as well as those described by others, were massive
bleeding and shock [3,5]. The shock may be caused by excessive bleeding, although it is stated that sometimes it is not correlated to the amount of blood loss.

In the past, the predominant approach was to treat first the shock and only afterwards to reposition the uterus [9,10]. Nowadays, there is a consensus that when the diagnosis is prompt, treatment should begin with repositioning of the uterus. The earlier this is done, the better the outcome, otherwise congestion of the cervix will cause the formation of a cervical ring, making later repositioning very difficult.

There are two modes of uterine repositioning: non-operative and operative. Since the diagnosis in our case was made promptly, the uterus was repositioned non-operatively. In most cases of non-operative repositioning of the uterus, general anesthesia, preferably by Halotan, for maximal uterine relaxation, is required. After repositioning, all anesthesia should be stopped, oxytocic agents should be given and the fundus should be massaged in order to prevent reinversion. Recently i.m. prostaglandin F2α has been used in the post-reposition management [7].

In our case, the placenta was removed only after the uterus was repositioned, and those who support this approach [11] believe that thereby the amount of bleeding is diminished. However, the more common approach [4] is first to remove the placenta and thus facilitate uterine repositioning. When the diagnosis is not immediate and more than 30 minutes have passed since inversion occurred, it is preferable not to remove the placenta and first to administer fluids and blood as needed. Only then is a trial of manual reposition recommended under general anesthesia [2].

The method of manual non-operative repositioning has many variations. Johnson [12] described a maneuver that has been favored widely. The fundus is grasped in the palm of the hand with the fingers directed toward the posterior fornix. The uterus is lifted cephalad out of the pelvis and forcefully held in the abdominal cavity above the level of the umbilicus. When the inverted uterus is thus elevated, the pull of the uterine ligaments is so great as to cause correction of the inversion.

There are also several surgical methods for uterine repositioning after inversion. The Huntington maneuver uses the abdominal approach [13]: a laparotomy is performed and traction on the structures just within the inversion orifice is used to reinvert the uterus. A vaginal approach has been described by Spinelli [1]. In this operation a median incision is made on the anterior aspect of the inverted part of the uterus and lengthened until the inversion ring is cleaved. It is necessary to displace the bladder first. A similar vaginal approach, in which a comparable incision on the posterior surface of the inverted part is made and the pouch of Douglas is entered, has been described by Kustner [1]. Vaginal or abdominal hysterectomy may also be done for the treatment of uterine inversion.

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The risk of recurrence of uterine inversion is unknown, but several cases of repeat inversion have been reported. In our case, placental separation was not spontaneous after any of the patient's 3 vaginal deliveries, but uterine inversion occurred only once.

Puerperal inversion of the uterus is a dramatic and dangerous complication. Although the complication is very rare, every obstetrician should be familiar with the techniques of uterine repositioning. Prompt diagnosis and the proper choice of treatment will decrease the morbidity and mortality associated with this complication.
References