Case Report

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Three Successful Cases of Transabdominal Cerclage: A Case Report

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ABSTRACT

BACKGROUND AND OBJECTIVE: Cerclage surgeries for the treatment of cervical insufficiency are performed transvaginally. However, in some patients, due to anatomical changes of the cervix caused by congenital factors or previous surgery, they cannot be performed transvaginally. Transabdominal cervicoisthmic cerclage (TCIC) is considered in these cases. The aim of the present study was to report the results of three successful cases of transabdominal cerclage.

CASE REPORT: The first patient was a 34-year-old woman with a history of failed curettage and transvaginal cerclage. By the seventh week of pregnancy, the patient underwent transabdominal cerclage via laparotomy due to the possibility of preterm delivery and cervical insufficiency. The next patient was a 40-year-old woman with a history of performing six IVF sessions and having two live fetuses, underwent TCIC laparotomy at 13th week of pregnancy due to the possibility of preterm delivery and cervical insufficiency. Another patient was a 24-year-old woman with a history of transvaginal curettage and cerclage and 2 miscarriages. This patient also underwent laparoscopic TCIC surgery due to the possibility of preterm delivery and cervical insufficiency. All three patients underwent cesarean section at 38th week of gestation and gave birth to healthy babies.

CONCLUSION: According to the present study, transabdominal cerclage via laparoscopy or laparotomy in patients with preterm delivery or cervical insufficiency has favorable results in women with unsuccessful transvaginal cerclage.

KEY WORDS: *Cerclage, Uterus, Transabdominal, Case Report.*

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Introduction

Today, preterm delivery is one of the most important challenges for women and increases the risk of complications and infant mortality (1). To prevent premature birth, cerclage is performed usually between 12 and 16 weeks of pregnancy (2). Cervical insufficiency means the inability of the uterus to maintain intrauterine pregnancy and is one of the causes of miscarriage or preterm delivery (3, 4).

Cervical insufficiency occurs in 0.1 to 1% of all pregnancies and is responsible for 8% of recurrent miscarriages that occur in the second trimester of pregnancy (5). Moreover, women who are pregnant with twins are 50% more likely to give birth prematurely and 5 times more likely to experience stillbirth compared to other women (6). Therefore, to prevent premature rupture of embryonic membranes and preterm delivery due to cervical insufficiency, the use of cerclage surgery as a therapeutic or prophylactic in the late first trimester or early second trimester of pregnancy is recommended (3, 6-8).

In a retrospective cohort study of 125 women who underwent cerclage surgery, their neonatal survival rate was 91% after 14 weeks (7). The study by Carter et al. showed that 13% of women with cervical insufficiency, despite having transvaginal cerclage, are not successfully treated and experience premature birth (9). In a 25-year-old woman reported by Shin et al., transvaginal cerclage could not be performed due to technical problems and the patient was treated with laparoscopic cervical cerclage (10).

Cervical insufficiency may have congenital or acquired causes. Causes of cervical insufficiency include prenatal injury, previous miscarriage, especially when the cervix is more than 10 mm open, repeated pregnancies, stress and prostaglandins, or cervical obstruction (11, 12). The conventional treatment for cervical insufficiency is vaginal cervical cerclage. However, in some cases, cervical cerclage cannot be performed through vagina due to anatomical changes in the cervix caused by congenital factors or previous surgeries. In such cases, transabdominal cervicoisthmic cerclage (TCIC) can be considered (3).

The technique of transabdominal cerclage can be performed by laparoscopy and laparotomy (8). Laparoscopic TCIC is not usually performed after 13 weeks of gestation because the size of the uterus is too large for surgery. The average gestational age for laparotomic TCIC is significantly higher than the laparoscopic procedure (9). TCIC is difficult to perform after the 18th week of gestation due to lack of space to perform surgery and it may lead to rupture of the fetal membranes and preterm delivery. However, despite the late diagnosis of cervical insufficiency after the 18th week of pregnancy, cerclage is necessary (3). Due to the importance of transabdominal cerclage in preventing miscarriage and preterm delivery, modern clinical methods and international guidelines with different approaches have played an important role in the treatment and survival of patients. However, the need for clinical studies and case studies and the integration of clinical knowledge and experience to generalize the results of evidence-based clinical studies will be very helpful (13, 14). In this study, successful transabdominal cerclage via laparoscopy and laparotomy was reported in three patients.

Case Report

After obtaining informed consent for presenting the results by observing the principle of maintaining the confidentiality of patients' information, the results of this study will be reported with the code of ethics IR.MUK.REC.1399.061. All patients in the operating room underwent standard anesthesia monitoring including pulse oximeter, cardiac monitoring, sphygmomanometer and capnography (15).

First Patient: A 34-year-old woman with a history of two pregnancies and one child and a history of curettage procedure and one unsuccessful transvaginal cerclage. The patient referred to Mehr-e-Hazrat Abbas Hospital in Mashhad in the seventh week of pregnancy. Using clinical evidence and examinations, it was determined that the patient had cervical insufficiency. The ultrasound confirmed the health of the fetus. Due to the possibility of miscarriage and the failure of transvaginal cerclage, the patient became a candidate for transabdominal cerclage surgery via laparotomy. After the patient underwent general anesthesia, cerclage surgery was performed with Mersilene thread size 0 at the seventh of pregnancy. No complications were observed at the end of the operation. The patient was discharged 4 days after surgery. No complications were observed in subsequent follow-ups at weeks 15 and 29. At 38th week of gestation, the patient underwent elective cesarean section and gave birth to a baby with an Apgar score of 9 and a weight of 2990 grams. Mersilene thread was removed after delivery.

Second patient: The patient was a 40-year-old woman who had a history of 6 in vitro fertilization (IVF) sessions and a history of curettage surgery and 2 abortions. The patient referred to Mehr-e-Hazrat Abbas

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Hospital in Mashhad in the 11th week of pregnancy. Examinations revealed that the patient had cervical insufficiency. Ultrasound showed 3 separate gestational sacs in the uterus. Two gestational sacs contained live fetuses and normal heart rate and movements. The third sac was seen small in size and without embryo, and it appeared that the gestational sacs did not develop. The length of the cervix was 38 mm and due to the possibility of miscarriage and preterm delivery, the patient underwent general anesthesia and transabdominal cerclage via laparotomy at 13th week of gestation. The cerclage operation was performed with Mersilene thread size 0. No complications were observed at the end of the operation and the patient was discharged from the hospital after 6 days. No complications were observed in subsequent follow-ups at 20 and 32 weeks of pregnancy. The patient underwent cesarean section at 38th week of gestation and two infants weighing 3280 g and 2539 g with an Apgar score of 9 were born. After performing cesarean section, the Mersilene thread was removed.

Third patient: The patient was a 24-year-old woman with a history of transvaginal curettage and cerclage surgery, as well as 1 vaginal delivery with a healthy child and 2 abortions. The patient was referred to Mehr-e-Hazrat Abbas Hospital in Mashhad in the 12th week of pregnancy and cervical insufficiency was confirmed based on clinical signs and observations. Ultrasound confirmed the health of the fetus. To prevent miscarriage and preterm delivery for the patient, transabdominal cerclage via laparoscopy was performed at 13th week of gestation using Mersilene thread size 0. The patient did not have any complications after the operation. The patient was discharged from the hospital after 1 day. No complications were observed in the subsequent follow-ups performed at 19 and 29 weeks of pregnancy. The patient underwent cesarean section at 38 weeks of gestation and gave birth to a baby weighing 2670 grams with an Apgar score of 9. After performing cesarean section, Mersilene thread was removed.

Discussion

In this case report, three patients who were candidates for cerclage surgery due to cervical insufficiency and underwent laparoscopic and laparotomic transabdominal cerclage surgery are reported. Cervical insufficiency can be controlled using transvaginal cerclage, but sometimes patients with cervical insufficiency have very short, deformed, and scarred cervix that cannot be managed in the typical way (16). In these patients, transabdominal cerclage (TCIC) can be a good option (5). The reason TCIC is more successful than transvaginal cerclage is the placement of the suture, which is placed at the inner surface of cervix, and strengthens the cervix (4).

When performing TCIC, there are no precise criteria for laparoscopy or laparotomy (5, 16). However, in some centers, cerclage is performed via laparoscopy in pregnancies under 15 weeks and via laparotomy for pregnancies over 15 weeks due to the difficulty of the laparoscopic procedure (3). In our study, the uterus was very small and there were no complications after surgery. According to Mansouri et al., the patient underwent laparoscopic TCIC surgery at the 12th week of gestation and finally gave birth to a healthy baby at 34th week of gestation (4).

In a report published by Joung et al., two patients with cervical insufficiency, one at the 21st week of gestation and the other at the 18th week of gestation, underwent TCIC via laparotomy, both of whom successfully delivered their infants at the 38th week of gestation (3). In a study conducted by Nahar et al., the results showed the success of cerclage surgery by transabdominal method (17). Most reports indicate the favorable results of transabdominal cerclage; 80 to 85% of pregnancies have ended by cesarean section at the 38th week (11, 12). In our study, all patients gave birth to healthy infants without any complications.

The main disadvantage of the TCIC approach by laparotomy is the need for two laparotomies, one for cerclage and one for cesarean section. Postoperative abdominal adhesion and hospitalization are disadvantages of the open method (18). Some of the complications of TCIC by laparotomy include bleeding, visceral injury, pregnancy loss and anesthesia risks (19), but none of these complications occurred in our study. In a systematic review article conducted by Burger et al. with the aim of comparing laparoscopic and laparotomic transabdominal cerclage, the results showed that live births at 34 weeks of gestation were 78.5% in laparoscopic method and 84.8% in laparotomy method. Therefore, laparotomic cerclage was more successful than laparoscopic method (20). However, a prospective cohort study by Ades et al. between 2007 and 2014 showed that both laparoscopic and laparotomic transabdominal cerclage were successful in survival of 100% of intents; surgical complications were reported 22% in the laparotomy group and 2% in

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the laparoscopic group (21). Accordingly, in a study conducted by Kim et al., the complications of laparoscopic transabdominal cerclage were less than those of laparotomy, but the results of both methods are similar in the birth of healthy infants (22). On the other hand, in a study conducted by Huang et al., they concluded that laparoscopic transabdominal cerclage was beneficial in women with cervical insufficiency, twin pregnancies, or a history of unsuccessful transvaginal cerclage with a very short cervix (6). In our study, the neonates of all three patients were born without any complications and at the right time. According to previous studies and the present study, which indicates the success of this method to prevent miscarriage and preterm delivery, laparoscopic or laparotomic transvaginal cerclage can be an effective treatment and preventive method to prevent miscarriage and premature birth in patients with cervical insufficiency, especially in patients with a history of recurrent miscarriages due to failure of transvaginal cerclage, shortened cervix, presence of ulcers on the cervix and deformed cervix.

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