International Journal of Medical Science and Clinical Research Studies

ISSN(print): 2767-8326, ISSN(online): 2767-8342

Volume 05 Issue 02 February 2025

Page No: 207-210

DOI: https://doi.org/10.47191/ijmscrs/v5-i02-01, Impact Factor: 8.188

Cervico-Isthmic Cerclage Intra-Abdominal Approach for the Management of Cervical Incompetence: Case Report

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ABSTRACT

Introduction: Cervical incompetence is defined as the inability of the cervix to retain an intrauterine pregnancy in the absence of signs and symptoms of clinical contractions or labor during the second trimester of gestation.

Case Report: We present a case of cervical incompetence with two previous preterm births and the use of Espinoza Flores cerclage. In this pregnancy, an abdominal cerclage was placed, resulting in a viable pregnancy until 36.5 weeks of gestation. The pregnancy concluded with a cesarean section due to premature rupture of membranes, resulting in the birth of a newborn with adequate weight and Apgar score.

Discussion: The management of cervical incompetence can be performed through transvaginal cerclage; however, there are alternatives such as an intra-abdominal approach, which has shown excellent results.

Conclusion: Intra-abdominal cerclage may be an option for the management of cervical incompetence in patients with previous preterm births and inadequate results with transvaginal management.

KEYWORDS: Incompetence, cervical cerclage, preterm, abdominal.

ARTICLE DETAILS

Published On:
05 February 2025

Available on:
https://ijmscr.org/

INTRODUCTION

Cervical incompetence (CI) is defined as the inability of the cervix to retain an intrauterine pregnancy in the absence of clinical signs or symptoms of contractions or labor during the second trimester of gestation.[1] Current types of CI can be classified as anatomical, functional, or congenital.[2] CI complicates 1% of all pregnancies and approximately 8% of the population with recurrent miscarriages. The pathophysiology remains poorly understood; risk factors for CI include cervical trauma secondary to gynecological or obstetric procedures, congenital Müllerian anomalies, and deficiencies in cervical collagen and/or elastin.[1,2]

The classic history suggestive of CI is painless dilation followed by prolapse, rupture of the amnion, and fetal expulsion. The diagnosis is usually made retrospectively, based on clinical history and the exclusion of other causes of preterm uterine activity. [3.]

There is no definitive diagnostic test for cervical incompetence; however, transvaginal ultrasound for cervical length assessment has become a reproducible method for

detecting cervical shortening, which is correlated with a higher risk of preterm birth. [3]

Cerclages can be divided into prophylactic versus therapeutic, depending on their indication for placement. [1,4]

Most cases of CI can be treated with transvaginal cerclage techniques such as Shirodkar and McDonald. For women unable to undergo a transvaginal procedure due to cervical scarring, an extremely short cervix, or absence of the cervix, and for women with failure of a previous transvaginal cervical cerclage, an abdominal approach is preferred. [2,4.]

Abdominal cerclage (AC), first described by Benson and Durfee in 1965, was the only surgical option for prophylactic or therapeutic correction of CI. Currently, it is performed via an open or laparoscopic approach. [2,5.]

AC is placed between weeks 10 and 16 of pregnancy as a prophylactic measure. A Mersilene tape is placed through an abdominal approach, at the junction of the uterine body and cervix, medial to the uterine arteries. This band strengthens the cervix against uterine expansion. Conventionally, this procedure is performed via laparotomy, but it can also be performed laparoscopically with or without robotic assistance. [1,6]

This procedure is considered the gold standard in cases of failure of conventional transvaginal cerclage, but the morbidity associated with the abdominal procedure limits its use. The two main objections to the abdominal technique are the need for multiple laparotomies and the risk of significant blood loss. Other complications include chorioamnionitis and premature rupture of membranes. [1,6]

CASE REPORT

A 37-year-old female, a resident of Mérida, Yucatán, employed, with a completed university degree, and blood type A+. History includes placement of an in-situ Espinoza Flores cervical cerclage in 2019, which caused cervical trauma upon removal, and a cesarean section 3 years ago due to preterm labor (at 26 weeks of gestation).

Gynecologic and obstetric history: Menarche at age 12, regular menstrual cycles lasting 4 days with moderate bleeding. Three pregnancies: One cesarean section due to risk of fetal compromise (Male, 26 weeks, 700 grams, required 2 months in the NICU, currently alive). One preterm birth at 25 weeks of gestation (850 grams, died of perinatal complications). During this pregnancy, an Espinoza Flores cerclage was placed, causing cervical trauma upon removal.

Current pregnancy: Presented at 11.6 weeks gestation with a crown-rump length of 20 mm and a cervical length of 20 mm. Experienced a threatened abortion at 12 weeks of gestation. Chromosomal screening was negative, and routine laboratory tests were unremarkable. TORCH and urine culture were negative. Given a history of two preterm births, unsuccessful previous pregnancy with cervical cerclage, and current short cervix, an abdominal cerclage was decided upon. The patient was fully informed of the risks and complications of the procedure and provided written consent. Surgery was scheduled at 14 weeks gestation.

Procedure - Abdominal cerclage: Under aseptic and antiseptic conditions, with epidural anesthesia, a midline abdominal incision was made (through the previous cesarean scar). After dissecting through the abdominal layers, the uterus was identified. The bladder flap was dissected to expose the uterocervical junction. A Mersilene tape was passed through the anterior and posterior aspects of the cervix, medial to the uterine arteries, and tied. The procedure was completed without complications, with a blood loss of 50 ml (Figure 1).

Figure 1. Abdominal cerclage: Posterior view of Mersilene (5mm) suture placed at the cervico-isthmic junction.

Postoperative period: The patient had a favorable recovery. Prophylactic tocolysis with indomethacin, antibiotics, analgesia, bed rest, and thromboprophylaxis were initiated. Progesterone was prescribed for two weeks. At a follow-up visit at 17 weeks, an ultrasound showed a cervical length of 36 mm. At 19.6 weeks, Duphaston was started. A structural ultrasound at 24 weeks was unremarkable. Fetal Doppler flowmetry showed a single umbilical artery.

At 32 weeks, the patient was asymptomatic. Fetal weight, amniotic fluid, and placenta were normal. Cesarean section was scheduled at 38 weeks of gestation, but she experienced premature rupture of membranes and preterm labor at 36 weeks, necessitating an emergency cesarean section. A live male newborn weighing 2700 grams with an Apgar score of 8/9 was delivered. The cerclage was removed without complications, with a blood loss of 400 mL. The postpartum period was uncomplicated.

DISCUSSION

Cervical insufficiency complicates 0.05% to 1.00% of pregnancies and is characterized by painless cervical dilation leading to early delivery, typically in the middle of the second trimester of pregnancy. There are several innate risk factors for cervical. insufficiency, including müllerian anomalies and diseases with abnormal collagen, such as Ehlers-Danlos syndrome. In addition, various acquired risk factors for cervical insufficiency have been described, including cervical trauma, pro- longed second stage of labor, repeated mechanical dilation, and loop electrosurgery excision procedures (LEEPs) or cold knife conization procedures. Our patient had cervical trauma caused by the cerclage on her last pregnancy. Cerclage is the mainstay of treatment for cervical insufficiency. There is clear evidence of benefit in patients with a history of preterm birth before 34 weeks of gestation and a cervical length of <25 mm and in patients with an advanced cervical dilation before 24 weeks of gestation.[1]

Cerclage is typically performed via a vaginal approach. Transabdominal cerclage is the treatment of choice for women with failed vaginal cerclage, it is superior to low vaginal cerclage in reducing risk of early preterm birth and fetal loss in women with previous failed vaginal cerclage.[2,4]

Benson and Durfee first described this technique in 1965. Alternatively, it is typically offered to patients in whom a transvaginal cerclage would be exceedingly difficult to place for anatomic reasons or patients with a history of an unsuccessful vaginal cerclage placement in a previous pregnancy. [2,3]

Our patient had a history of 2 preterm births of less than 28 weeks of gestation, a cervical length on this gestation 20 mm, and a cervical trauma caused by the cerclage on her last pregnancy, so we offered this alternative.

Several studies have evaluated whether there are advantages of laparoscopic TAC placement compared with open TAC (Transabdominal cerclage) placement. The society for maternal-fetal medicine suggest that both laparoscopic TAC and open TAC are acceptable, and the decision of approach may depend on gestational age, technical feasibility, available resources, and expertise. Transabdominal cerclage should be performed before pregnancy or before 22 weeks of gestation.[3,4,5,6]

The TAC in our patient was placed in 14 weeks of gestation with no surgery complications and with great results after cesarean delivery.

CONCLUSION

Abdominal cerclage is appropriate for patients with a history of cervical incompetence and failed vaginal cerclage; however, it requires a multidisciplinary evaluation, the surgeon's experience and skill, and the patient's informed consent.

FINANCING

This research has not received any type of funding from public or commercial sector agencies; or for profit.

CONFLICT OF INTERESTS

The authors declare no conflict of interest.

Ethical Considerations: This article does not involve human subjects or the use of patient data; therefore, informed consent was not required. Similarly, as there was no intervention, manipulation, or handling of information, the study was considered low-risk and did not require review or approval by the local ethics committee. Nevertheless, it complies with current research regulations, and the confidentiality of identifying and personal data, as well as the anonymity of participants (all healthcare workers who participated voluntarily), are guaranteed. This article does not contain personal information that could identify the participants.

ACKNOWLEDGE

Special acknowledgment to the “Facultad de Medicina de la Universidad Autónoma de Yucatán (UADY)”.

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