

# Laparoscopic Cervicoisthmic Cerclage for the Treatment of Cervical Incompetence

## Case Reports

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### ABSTRACT

*Cervical insufficiency/incompetence occurs in 0.5–1% of all pregnancies, often resulting in significant pregnancy lost. Three women with a history of second trimester miscarriages after failed transvaginal cervical cerclages were reviewed. A laparoscopic cervicoisthmic cerclage (LCC) was placed before pregnancy without any intra-operative or postoperative complications. Two patients have since delivered live babies at term by Caesarean section. This small case series supports the conclusion that LCC is a safe and cost-effective procedure in properly selected patients. Laparoscopic cervicoisthmic cerclage costs less, is less invasive, has fewer complications and should replace the traditional laparotomy technique.*

**Keywords:** Cervicoisthmic cerclage, laparoscopy, miscarriages.

# Cerclaje Cérvico-ístmico Laparoscópico en el Tratamiento de la Incompetencia Cervical

## Reporte de Casos

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### RESUMEN

*La insuficiencia/incompetencia cervical ocurre en 0.5-1% de todos los embarazos, trayendo a menudo como consecuencia una pérdida significativa de embarazos. Se revisaron los casos de tres mujeres con una historia de abortos en el segundo trimestre después de cerclajes cervicales transvaginales fallidos. Un cerclaje cérvico-ístmico laparoscópico (CCL) se realizó antes del embarazo sin ninguna complicación intraoperatoria o postoperatoria. Desde entonces, dos pacientes han parido bebés vivos a término por cesárea. Esta pequeña serie de casos sustenta la conclusión de que el CCL es un procedimiento seguro y costo-efectivo en pacientes propiamente seleccionados. El cerclaje cérvico-ístmico laparoscópico cuesta menos, es menos invasivo, tiene menos complicaciones, y debe reemplazar la técnica de laparotomía tradicional.*

**Palabras claves:** Cerclaje cérvico-ístmico, laparoscopia, abortos

West Indian Med J 2011; 60 (5): 590

### INTRODUCTION

Cervical incompetence occurs in 0.5–1% of all pregnancies and typically presents in the second trimester with: pelvic pressure, mucoid vaginal discharge and painless cervical dilation (1). Support for the use of cervical cerclage in women with a history of second trimester miscarriages came from the Medical Research Council/Royal College of Obst-

tricians and Gynaecologists (MRCOG) randomised trial in 1993 (2), which revealed that cervical cerclage appeared to prolong pregnancy in women with a history of recurrent miscarriages or preterm delivery. The percentage of deliveries before 33 weeks was 13% for women after cerclage, in comparison with 32% for women with no cerclage [ $p < 0.05$ ] (2).

Success rates after transvaginal cervical cerclage are high [87%] (3). Cervical cerclage is typically performed transvaginally during the late first trimester and early second trimester in patients with a history suggestive of cervical insufficiency or a previously confirmed diagnosis of cervical insufficiency. However, for those patients with one or more

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failed transvaginal cervical cerclages, or those in whom the vaginal approach is not possible because of anatomic cervical distortions, the transabdominal route has been successfully used (4, 5).

The use of laparoscopy for transabdominal cervicoisthmic cerclage was first reported in 1998 (3). Laparoscopy reduces postoperative pain and adhesions and provides faster recovery than laparotomy and may be used before and during a pregnancy. Obstetric results are favourable and comparable to transabdominal cervicoisthmic cerclage, with the advantage of reduced morbidity and cost (6–8).

This paper reports on the first three cases of laparoscopic cervicoisthmic cerclages performed in Jamaica.

## CASE REPORTS

### Case 1

A 26-year old female, gravida 2, para 1<sup>+1</sup>, was referred to our hospital with a history highly suggestive of cervical incompetence. She had a miscarriage at 16 weeks of gestation in her first pregnancy. In her second pregnancy, a transvaginal cervical cerclage was inserted at 12 weeks of gestation. At 29 weeks of gestation, she had a preterm delivery of a live infant. At her follow-up visit, vaginal examination revealed an exceedingly short cervix that was flush with the lateral vaginal fornix. It was determined that she was a candidate for a transabdominal cervicoisthmic cerclage because of the medical history and her short cervix. Extensive counselling regarding the risks and benefits of the procedure performed either laparoscopically or *via* laparotomy were provided. She had a laparoscopic cervicoisthmic cerclage (LCC) inserted as described below.

She became pregnant approximately six months after the cervicoisthmic cerclage was inserted. At 16 weeks of gestation, she was started on vaginal progesterone pessaries cyclogest® (Cox Pharmaceuticals, Barnstaple, EX32 8NS, England) and discontinued at 36 weeks of gestation.

A Caesarean section was planned for 38 weeks of gestation but the patient went into labour at 36 weeks and six days. At Caesarean section, there was filmy scar tissue covering the cerclage knot. A transverse lower segment incision was employed to deliver a male infant with Apgar scores of 8 and 9 at one and five minutes respectively. The cervicoisthmic cerclage was left *in situ*. Her postoperative period was uneventful.

### Case 2

A 33-year old married, para: 0<sup>+1</sup>, gravida: 1 was referred to our hospital with a history of large loop excision of the transformation zone (LLETZ) in 2001 for cervical intraepithelial neoplasia (CIN) III complicated by laceration of the posterior vaginal fornix and haemorrhage requiring proctosigmoidoscopy and laparotomy.

In her first pregnancy (2006), a cervical cerclage was inserted at 13 weeks of gestation for a very short, thin cervix

with a scar defect at the 6 O'clock position. At 18 weeks, she was admitted for five days with bleeding per vaginam. At 19 weeks, the cervix measured 2.5 cm on ultrasound assessment. The following week she was admitted with ruptured membranes and aborted after the cerclage was removed.

In 2007, the patient was admitted for laparoscopic placement of a cervical cerclage. At surgery, she was found to have a normal size uterus and ovarian adhesions bilaterally. There were ampullary adhesions of the left fallopian tube and a small anterior subserous fibroid. Adhesiolysis was performed to mobilize the ovaries and left tube. A cervicoisthmic cerclage was inserted as described below. The procedure was uncomplicated and she was discharged from the hospital approximately four hours after the surgery.

One year later, she presented in early pregnancy. A triple test was performed at 16 weeks of gestation. An anomaly scan was done at 20 weeks and an O'Sullivan test to screen for diabetes at 28 weeks. At 20 weeks, she began having cramps so cyclogest® (Cox Pharmaceuticals, Barnstaple, EX32 8NS, England) vaginal progesterone pessaries 200 mg daily was commenced. At 28 weeks, she was admitted and had dexamethasone administered, to advance fetal lung maturity. Caesarean section was planned for 37 weeks of gestation but the patient went into labour at 36 weeks and four days. The delivery was brought forward.

At Caesarean section, the fetus was in a breech presentation. The lower segment was ballooning. There was scar tissue covering the cerclage knot. A transverse lower segment incision was employed to deliver a 2.97 kg female infant with Apgar scores of 9 and 9 at one and five minutes respectively. She had some discomfort above the abdominal incision at the six-week postnatal visit and the cervix and left adnexa were also tender. She was interested in Norplant® for contraception, so she was referred to the Family Planning Clinic.

### Case 3

A 33-year old female, gravidity 3, parity 1<sup>+2</sup> was referred to our unit with a history of two mid-trimester miscarriages and one preterm labour at 26 weeks. Of significance, she has had three failed cervical cerclages in all three pregnancies. Investigations revealed no evidence suggestive of functional cervical insufficiency (1). Examination revealed evidence of an old cervical laceration extending up to the vaginal fornix. The internal cervical os admitted a size 9 mm Hagar's dilator without any resistance. A diagnosis of severe mechanical cervical insufficiency was made, and she was scheduled for insertion of laparoscopic cervicoisthmic cerclage and diagnostic hysteroscopy.

Interval laparoscopic cervicoisthmic cerclage was performed as described below. The diagnostic hysteroscopy revealed a normal uterine cavity except for marked laxity of the internal cervical os. She is currently in the second trimester of an uneventful pregnancy.

### Surgical procedure

Under general anaesthesia, the patient was placed in the dorsal lithotomy position, a Foley catheter was inserted *via* the urethra and laparoscopy was performed *via* the standard three ports. A disposable uterine manipulator was used for uterine manipulation. First the vesico-uterine peritoneum was incised horizontally with the 5-mm curved Harmonic scalpel (Ethicon, Inc, Somerville, NJ) and the bladder was reflected downward.

Blunt and sharp dissections were performed inside the cardinal ligament toward the posterior surface. The objective was to create a window in the cardinal ligament, medial to the ascending and descending branches of the uterine artery. Care was taken not to injure any of the arterioles or venules in the ligament, because bleeding may render dissection very difficult, increase risk of ureteric injury and achieving haemostasis is usually difficult in this region. A similar dissection was then performed on the contralateral side.

After creating the windows in the cardinal ligament, a 5-mm dissecting laparoscopic forceps (Karl Storz Endoskope, Tuttlingen, Germany) was introduced through the 5-mm suprapubic port. A 5-mm mersilene tape (RS-21; Ethicon, Inc, Somerville, NJ) without needles was then pulled through the window at the level of the internal os. The manoeuvre was repeated on the contralateral side (Fig. 1).

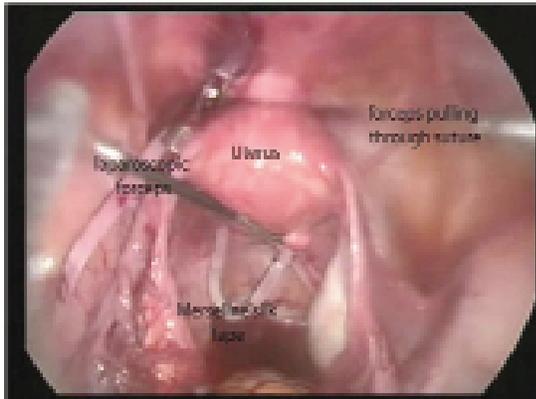


Fig. 1: Laparoscopic view of the 5-mm mersilene tape that was being pulled through the window in the broad ligament at the level of the internal os.

Finally, the tape was tied anteriorly with an intracorporeal surgeon's knot and the vesico-uterine peritoneum was sutured over the knot with a 2-0 multifilament polyglactin suture (Fig. 2).

### DISCUSSION

Benson and Durfee in 1965 were the first to describe transabdominal cervicoisthmic cerclage as an obstetrical procedure (9) and the use of laparoscopy for transabdominal cervicoisthmic cerclage was first reported in 1998 (10). Laparoscopy has many advantages over laparotomy including: better visibility, less intra-operative haemorrhage, reduced postoperative pain, decreased adhesions, reduced



Fig. 2: Laparoscopic view of the 5-mm mersilene tape that was tied anteriorly with an intracorporeal surgeon's knot.

hospital stay and a faster recovery. Another advantage of LCC is a reduced risk of chorioamnionitis; this may be as a result of the absence of a foreign body in the vagina (1).

Laparoscopic cervicoisthmic cerclage may be performed in the interval period or during the first and early second trimesters. The patients LCCs were performed in the interval period because there is less bleeding and no risk of inducing a miscarriage. Hysteroscopy was also done before laparoscopy to rule out any intrauterine pathology. The three cases we have performed to date were uncomplicated and in two cases the obstetric outcomes were very good. The third case is in the second trimester of her pregnancy.

One major drawback of LCC is the possible difficulty in removing the mersilene tape in the event of a second trimester miscarriage. In the cases of first trimester miscarriages in patients who had undergone LCC, there is usually enough cervical dilatation to perform a suction curettage without removal of the cerclage (3, 4). However, for more advanced gestational ages, a second laparoscopic surgery or a colpotomy will have to be performed for removal of the cervical cerclage (4).

Cervical insufficiency is a complex disease that may be divided into two main groups (mechanical and functional) with multiple aetiologies (1). Postulated risk factors for mechanical insufficiency include: cervical structural anomalies due to *in utero* diethylstilboestrol exposure, excessive dilatation of the cervix, cervical trauma from conization or loop electrosurgical excision procedures, congenital mullerian anomalies, obstetric trauma including cervical lacerations, prolonged second stage of labour and precipitous delivery (1). Functional incompetence is the premature triggering of the cervical ripening process that normally occurs at term; postulated risk factors include subacute or acute infection of the genitourinary tract and/or uterine cavity, abnormal placental development and suspension of the anti-inflammatory effects of progesterone (1). Each risk factor for functional insufficiency promotes cervical ripening for which a laparoscopic cervical cerclage alone will not be

effective. These patients will require additional treatment depending on the aetiology.

It is therefore very important to rule out functional cervical insufficiency before performing LCC. Drakeley *et al* (11) reported a 5% dual pathology rate in women with second trimester miscarriages. We recommend that the following investigations should be performed before LCC: evaluation of the uterine cavity, thrombophilia screen, reviewing previous placental pathology, endocervical swab and endometrial biopsy.

This small case series supports the conclusion that LCC is a minimally invasive, extremely safe and effective procedure in properly selected patients and should replace the traditional laparotomy technique.

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