

Case Report

Successful Rescue Cerclage at Advanced Cervical Dilatation in the Second Trimester

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Abstract

Cervical cerclage has been used in the management of cervical insufficiency for several decades, yet the indications are uncertain and benefits questionable. It remains a controversial intervention. We present a case of cervical incompetence in a 33-year-old Gravida 5 Para 0+4 woman who had an emergency cervical cerclage at 18 weeks gestation and subsequently delivered of a live male infant at 29 weeks gestation following preterm premature rupture of fetal membrane.

Key words: McDonald, preterm delivery, recurrent pregnancy loss, rescue cervical cerclage

INTRODUCTION

Pregnancy loss at any stage is distressing but especially so when this happens later on in the pregnancy. Extreme prematurity can also have severe implications as babies that survive may have a residual handicap. The cervix normally stays tightly closed during pregnancy, with a mucus plug sealing the opening. At the onset of labor, the cervix begins to dilate, ready for the baby to be born. Occasionally, the cervix starts to open early in the pregnancy, leading to a miscarriage. For a few women, this process seems to recur in subsequent pregnancies. This may be due to cervical weakness (incompetence) if the miscarriage occurs in the second (12–23 weeks 6 days) or early third trimester (after 24 weeks).^[1]

Cervical incompetence during pregnancy has been described as early as the 17th century^[2] and complicates about 1% of an obstetric population^[3] and 8–15% of a recurrent miscarriage population who have suffered mid-trimester pregnancy losses.^[4] There is, however, no consistent definition of cervical incompetence^[5] which hampers knowledge of the true incidence.

The use of cervical cerclage in the prevention of preterm delivery was described by Shirodkar^[6] in 1955 and then by McDonald^[7] 2 years later. It is not clear why dilatation and

effacement of the cervix occur prematurely, but it is thought that the forced mechanical closure of an “incompetent” cervix with a suture maintains the cervical length as well as the mucus plug – both of which have a role in preventing labor. However, there is a lack of good large randomized controlled trials to help clinicians and patients decide whether or not to insert a cervical suture – the three main randomized controlled trials having conflicting results.^[8–10]

Cervical cerclage may be performed prophylactically in the first trimester when the clinical history suggests risk of mid-trimester loss or when cervical resistance studies confirm low cervical resistance.^[3,7] It may also be performed when there is evidence of a short cervix (<25 mm) or cervical shortening on ultrasound.^[6] More rarely, a rescue cervical suture may be inserted when the patient presents with a cervix that is already dilated with the membranes bulging into the vagina but no signs of labor, infection, or heavy vaginal bleeding.^[11] We, therefore, present a case of successful rescue cervical cerclage in a 33-year-old nulliparous woman.

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CASE REPORT

A 33-year-old G5P0⁺⁴ woman at 18 weeks gestation who presented to the outpatient clinic of Omolola Specialist Hospital, Ilorin, Kwara state, Nigeria on account of the feeling of heaviness in the genital of 3 h duration. There was no history of abdominal pain, vaginal discharge, fever, and liquor drainage. The index pregnancy was booked at a private hospital in Bauchi State, Nigeria and had been uneventful before presentation but decided to relocate to Ilorin in search of better care on account of four recurrent pregnancies loss she had suffered in the last 3 years at 22, 20, 18, and 16 weeks, respectively. There were no significant findings on general physical examination at presentation. Abdominal examination revealed gravid uterus about 18 weeks size. An urgent bedside two-dimensional pelvic ultrasonography done using curvilinear probe showed a single viable intrauterine fetus that is constantly changing position with adequate liquor volume and anterior placentation; biparietal diameter of 40 mm which corresponds to 17 weeks + 5 days gestation. Pelvic examination revealed prolapsed fetal membrane outside the vagina introitus. Urgent packed cell volume, white blood cell count, vagina, and urine culture were normal. She was, however, counseled and prepared for rescue cervical cerclage under general anesthesia. She received a stat dose of intravenous Augmentin (1 g) and metronidazole (500 mg) before the commencement of surgery.

Operative findings [Figure 1] revealed normal external genitalia with bulging but intact fetal membrane outside the vagina introitus which measures 55 mm × 76 mm. Cervix was adjudged to be 6 cm dilated and 50% effaced. McDonald technique was applied: Patient in steep Trendelenburg position, a slight pull on the cervix by Rampley Forcep and slight pressure on the membrane with a small pad mounted on a clamp facilitated its reposition into the uterine cavity and a purse string suture of number 4 Mersilene tape on a Mayo needle is inserted around the exocervix as high as possible to approximate to the level of the internal os. This is at the junction of the rugose vagina and smooth cervix. Four bites with the needle were made from 7 to 8 O'clock, 10–11, 1–2, and 4–6 O'clock. The tape was pulled tight enough to close

the internal os, railroaded, and knotted posteriorly between 6 and 7 O'clock position. The ends of the sutures were left long enough to facilitate subsequent division. Eleven weeks later, she presented to the hospital on account of lower abdominal pain and liquor drainage of 2 h duration. This necessitated the removal of the mersilene tape and subsequent vagina delivery of live male fetus at 29 weeks gestation with birthweight of 1.2 kg. Baby was nursed in the Neonatal Intensive Unit of University of Ilorin Teaching Hospital, Ilorin, Nigeria for 8 weeks before discharged home [Figure 2].

DISCUSSION

Treatment options with advanced cervical dilatation are limited to either expectant management versus placement of an emergency cervical cerclage. These 2 options may carry a significant risk; as a result, clinicians typically face a major dilemma in this setting. Stupin *et al.*^[12] conducted the largest trial; this was retrospective and included 161 women with amniotic sac prolapse. The perinatal outcome was improved in the cerclage group, including improved live birth rate, increased birth weight, and prolonged pregnancy. Consistently, other smaller observational retrospective trials have found significantly increased interval from treatment-to-delivery and increased mean birthweight^[13,14] in the cerclage groups. In addition, higher neonatal survival rates^[13,14] and live birth rates^[13] with decreased Neonatal Intensive Care Unit stay in the emergency cerclage groups were observed.^[13,14] This is inconsonance to the findings in this report.

The findings from a prospective nonrandomized study of 37 women with cervical dilatation of 4 cm or greater (mean 6 cm) between 20 and 27 weeks of gestation (mean 22–23 weeks) reported that the insertion of a rescue cerclage in 22 cases prolonged pregnancy for on average 4 weeks more than the 15 pregnancies managed with bed rest alone. The mean age at delivery was 33 ± 4.4 weeks of gestation in the cerclage group and 28 ± 4.3 weeks of gestation in the bed rest group. There was no significant difference in perinatal survival (73% in the cerclage group vs. 67% in the bed rest group).^[15] This, however, influenced the attempt at rescue cervical cerclage in the index case.



Figure 1: Prolapsed fetal membrane.



Figure 2: Baby in Neonatal Intensive Unit.

There is no clear evidence that the gestation at which the cerclage is inserted affects the magnitude of prolongation in gestation; however, consideration should be given to the fact that in cases presenting before 20 weeks of gestation, insertion of a rescue cerclage is highly likely to result in a preterm delivery before 28 weeks of gestation.^[15] Furthermore, the decision to place a rescue cerclage beyond 24 weeks of gestation should be individualized and take into account the local gestational age of viability. Improvements in Neonatal Intensive care have advanced the gestational age of viability to 24 weeks of gestation in most developed countries and given the potential risk of iatrogenic membrane rupture and subsequent preterm delivery; rescue cerclage can rarely be justified after this gestation.^[15] On the contrary, the index case was reported from a third-world country where gestational age of viability is 28 weeks. Hence, the justification for attempt at rescue cerclage.

Protruding membranes that are exposed to the vaginal flora could potentially increase the risk of ascending infection. The perinatal mortality rate reported by Romero *et al.*^[16] was significantly higher among patients with membranes protruding through the cervix on admission compared with a control group without membrane protrusion. Moreover, prolapsed membranes beyond the external os were found to predict preterm delivery^[17] and shorter duration between intervention and delivery.^[17] In a larger series by Debby *et al.*,^[18] patients with hourglass bulging of fetal membranes into the vagina had a shorter intervention-to-delivery interval than did patients without membrane protrusion. The intervention to delivery interval is 0–14 weeks with a mean of 6 weeks.^[11] This is, however, similar to our report of intervention delivery interval of 11 weeks.

Studies evaluating systemic markers of infection and association with perinatal outcome have had contradictory results. Caruso *et al.*^[19] did not find a significant difference in white cell count and vaginal, cervical, and urine cultures on admission between patients with good pregnancy outcome (live birth) and those with poor outcome (defined as stillbirth or neonatal death). On the contrary Minakami *et al.*^[20] and Gupta *et al.*^[21] found that preoperative markers of infection, such as elevated C-reactive protein and white blood cell count, temperature, and maternal tachycardia were associated with a poor outcome. In this report, systemic markers for infection were normal; this could be attributed to the successful outcome coupled with aggressive neonatal care at our facility.

CONCLUSION

Emergency cervical cerclage is a simple surgical procedure with lower complication rates and can effectively prolong gestation to viability. It is associated with minimal morbidity and a >50% chance of survival for the infant; we urge that this procedure be considered for the patient with cervical dilatation in the midtrimester who is not in labor, and is without evidence of infection and placental abruption.

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Conflicts of interest

There are no conflicts of interest.

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