

Rescue Cervical Cerclage in the Second Trimester: A Case Series Evaluating Maternal and Perinatal Outcomes

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Abstract

Rescue cervical cerclage is an emergent procedure performed for women in the second trimester presenting with painless cervical dilatation and exposed fetal membranes. It is a critical intervention aimed at preventing extreme preterm birth. This report details the outcomes of three antenatal women (aged 23-27 years) who underwent emergency McDonald cerclage between 20 and 22 weeks of gestation due to cervical insufficiency with membrane exposure. All patients received preoperative infection screening, tocolytics, prophylactic antibiotics, and progesterone support postoperatively. The latency period from cerclage to delivery was recorded. The gestational age at cerclage ranged from 20+1 to 21+4 weeks. The subsequent delivery occurred at 32, 36, and 37+5 weeks, respectively, yielding a mean latency period of 13.6 weeks. All three neonates were live-born with good Apgar scores, and there were no major maternal complications. This case series demonstrates that rescue cerclage, when performed in carefully selected patients under aseptic conditions with adjunctive medical therapy, can significantly prolong pregnancy to viable and near-term gestations, resulting in favourable perinatal outcomes. It remains a valuable procedure for mitigating second-trimester pregnancy loss.

Introduction

Cervical insufficiency, a condition historically and colloquially known as cervical incompetence, represents a significant and challenging obstetric complication. It is classically characterized by the painless, passive dilatation and effacement of the cervix during the second trimester, often in the absence of uterine contractions, labour, or placental abruption.[1] This silent, progressive process, if undetected and unmanaged, frequently culminates in mid-trimester pregnancy loss or extreme preterm delivery, with its associated risks of neonatal morbidity and mortality.[2] The etiology is multifactorial, encompassing both congenital factors, such as inherent developmental weaknesses of the cervical stroma or uterine anomalies, and acquired causes, most commonly iatrogenic trauma from previous surgical procedures like cervical conization or forcible dilatation during uterine evacuation.[1]

In contemporary practice, the diagnosis often begins with transvaginal ultrasonographic surveillance, where a shortened cervical length, particularly below 25 mm, or the presence of funneling (where the internal os opens into a V or U shape), raises suspicion.[3] However, the clinical scenario becomes acutely critical when a patient presents with advanced, painless cervical changes, including dilatation of several centimetres and the ominous finding of bulging fetal membranes into the vagina. At this juncture, the window for preventative, elective cerclage has closed, and management options become limited. It is in this precarious context that rescue cervical cerclage, also termed emergency cerclage, emerges as a high-stakes, fertility-preserving intervention. This procedure involves the surgical placement of a suture around the cervix through the vagina after the cervix has already begun to dilate and the membranes are exposed or prolapsed.[4] The primary objective is mechanical: to provide external support to the failing cervix, re-establishing a functional barrier, with the ultimate goal of prolonging the pregnancy to a viable gestational age and improving neonatal outcomes.

The decision to perform a rescue cerclage is fraught with complexity and is the subject of ongoing debate. The procedure carries inherent risks, most notably iatrogenic rupture of the bulging membranes and the introduction of infection, which can lead to chorioamnionitis and sepsis.[5] Consequently, its application is reserved for carefully selected patients who show no clinical signs of infection, labour, or placental bleeding. Despite these risks, a growing body of evidence suggests that when performed under strict aseptic conditions with adjunctive medical therapy including perioperative antibiotics, tocolytics, and progesterone support—rescue cerclage can significantly prolong gestation.[2, 4] This case series aims to contribute to this clinical evidence by evaluating the maternal and perinatal outcomes of three patients who underwent emergency McDonald cerclage at a tertiary care centre, demonstrating its potential as a vital intervention for preventing extreme preterm birth in the face of advanced cervical insufficiency.

Methods

This case series was conducted over a six-month period. The study involved a review of hospital records for three antenatal women who presented between 16–26 weeks of gestation with findings of painless cervical dilatation and bulging fetal membranes, and who subsequently underwent an emergency McDonald cerclage.

Patient Selection and Procedure: Patients were included after a preoperative evaluation confirmed cervical insufficiency via transvaginal ultrasonography and clinical examination, demonstrating significant cervical shortening and funneling with membrane prolapse. Active labour, clinical chorioamnionitis, and vaginal bleeding were exclusion criteria. All procedures were performed under spinal anesthesia in the Trendelenburg position. The McDonald technique was employed, using a non-absorbable suture (2-0 Ethilon) to encircle the cervix. Techniques to reduce bulging membranes, such as gentle pressure with a wet sponge or Foley catheter balloon, were utilized as needed.

Postoperative Management: Postoperatively, all patients received a course of prophylactic antibiotics (Cefotaxime), tocolytics (Nifedipine), and progesterone supplementation (either intramuscular Hydroxyprogesterone Caproate or oral Dydrogesterone). Patients were advised strict bed rest with foot-end elevation. They were monitored for signs of labour, infection, or PPRM.

Data Collection: Data were collected retrospectively from patient medical records on maternal demographics, gestational age at cerclage, preoperative findings, latency period (defined as the time from cerclage placement to delivery), gestational age at delivery, mode of delivery, and neonatal outcomes (birth weight and Apgar scores).

Ethical Considerations: All patient identifiers were anonymized to ensure confidentiality.

Case Presentations

Case 1: Rescue Cerclage in a Multiparous Patient with Prior Second-Trimester Loss

The first case involved a 27-year-old woman, gravida 3, para 1, living 1, abortion 1 (G3P1L1A1), with a significant obstetric history of a previous full-term delivery by lower-segment cesarean section (LSCS) for fetal distress and a subsequent spontaneous second-trimester loss at 20 weeks of gestation. She presented at 21 weeks and 3 days of her current pregnancy with a primary complaint of a persistent foreign body sensation per vaginam. She reported no abdominal pain, vaginal bleeding, or fluid leakage and confirmed perceiving fetal movements.

Clinical examination revealed stable maternal vitals. Abdominal examination was consistent with a 20–22 week gestation, and the fetal heart rate was audible. The striking findings were on speculum and digital vaginal examination. The cervix was soft, situated posteriorly, and already dilated to 3–4 cm. The amniotic membranes were visibly bulging through the external os. A transvaginal ultrasound confirmed the diagnosis, showing cervical incompetence with a U-shaped funneling of the entire cervical canal. The patient was immediately admitted. Management was initiated with intramuscular progesterone (Inj. Susten) and strict bed rest in a Trendelenburg position. After obtaining informed consent and excluding active infection, an emergency rescue cervical cerclage was performed using the McDonald technique with a 2-0 Ethilon suture. The postoperative course was managed with a regimen of antibiotics, continued progesterone supplementation (both oral and intramuscular), and tocolysis with Nifedipine, which was tapered over time. The cerclage successfully prolonged the pregnancy for 10.5 weeks. At 32 weeks of gestation, the patient underwent an emergency LSCS due to the onset of labour in the context of her previous uterine scar. The outcome was a live female infant weighing 1.80 kg, with Apgar scores of 7 and 8 at 1 and 5 minutes, respectively.

Case 2: Rescue Cerclage in a Primigravida with Gestational Diabetes

The second patient was a 23-year-old primigravida who was referred at 21 weeks and 4 days of gestation following a routine antenatal ultrasound. Her pregnancy was complicated by Gestational Diabetes Mellitus (GDM), which was well-controlled with medical nutrition therapy (MNT). The ultrasound revealed a critically short cervical length of 2.0 cm with significant funneling of the amniotic sac, measuring approximately 3.0 x 2.1 cm.

On examination, her general condition was fair and she was afebrile. Speculum examination revealed a copious amount of white discharge and an open cervical os, through which the bag of membranes was visible. Digital examination confirmed a soft, mid-position cervix, approximately 2 cm long, admitting one finger loosely, with the membranes palpable. A diagnosis of cervical insufficiency was made.

She was admitted and treated for a vaginal candidiasis infection identified on a high vaginal swab. After stabilization, a rescue cerclage was performed at 22 weeks of gestation under spinal anesthesia. Her postoperative recovery was uneventful, supported by progesterone supplements, antibiotics, and strict glycemic control. The cerclage remained in situ until 37 weeks, when it was electively removed. The patient subsequently achieved a full-term vaginal delivery at 37 weeks and 5 days. She delivered a live baby girl with a birth weight of 2.78 kg and Apgar scores of 6 and 8.

Case 3: Elective Cerclage for Incipient Incompetence in a Primigravida

The third case was a 25-year-old primigravida with a pregnancy complicated by Impaired Glucose Tolerance (IGT) managed by MNT. A routine ultrasound at 20 weeks and 1 day demonstrated an early sign of cervical insufficiency: widening of the internal cervical os to 6.9 mm, though without reported membrane funneling or prolapse at that time. The patient was asymptomatic, perceiving fetal movements well, and had no complaints of pain, discharge, or bleeding.

Given the sonographic evidence of cervical changes, a decision was made to perform a prophylactic, though urgently indicated, cervical cerclage to prevent further dilatation. A McDonald cerclage was successfully carried out under spinal anesthesia on 18/12/23. The intraoperative and postoperative periods were straightforward. The patient was discharged on postoperative day 2 with a comprehensive regimen including antibiotics, analgesics, progesterone support (both oral and weekly intramuscular injections), and tocolytics. The cerclage provided sufficient cervical support to prolong the pregnancy to 36 weeks of gestation, at which point she had a spontaneous vaginal delivery, resulting in a favourable neonatal outcome.

Discussion

This case series provides a compelling narrative on the potential of rescue cervical cerclage to alter the trajectory of pregnancies threatened by second-trimester cervical insufficiency. The experiences of our three patients, culminating in deliveries at 32, 36, and 37+5 weeks, offer a microcosm of the procedure's spectrum of outcomes and underscore the critical factors that underpin its success. The mean latency period of 13.6 weeks achieved in our cohort is notably significant, as it effectively bridges the perilous gap between pre-viability and a gestational age associated with markedly improved neonatal survival and reduced long-term morbidity.[4] Our findings resonate with the broader literature, which consistently highlights pregnancy prolongation as the primary achievable benefit of this emergency intervention.

A pivotal element for success, as demonstrated in our cases, is the stringent process of patient selection. The absence of clinical chorioamnionitis, active labour, or significant vaginal bleeding in our patients was a crucial prerequisite for proceeding with the cerclage. This aligns with established contraindications, as performing the procedure in the presence of infection not only risks failure but can also precipitate maternal sepsis.[5] The preoperative workup in our series, which included screening for vaginal infections (as seen in Case 2, where candidiasis was treated), is a standard and essential practice.

The surgical technique itself, while conceptually simple, demands meticulous execution. The McDonald cerclage, employed in all our cases, is often favoured in emergency settings for its simplicity and speed, not requiring dissection of the bladder.[2] A key technical challenge, vividly illustrated in Case 1, is the management of the bulging amniotic sac. The gentle reduction of the membranes back into the uterine cavity, often facilitated by Trendelenburg positioning, Foley catheter balloon traction, or moist sponge pressure, is a delicate manoeuvre. The goal is to avoid membrane rupture while providing enough space to place the suture high on the cervix. The success in our cases without iatrogenic rupture underscores the skill involved and is a critical determinant of outcome. As noted by Daskalakis et al., the ability to successfully reduce the membranes is independently associated with a significantly longer latency to delivery.[6]

Postoperative management forms the third pillar supporting a successful outcome. The adjunctive use of antibiotics, tocolytics, and progesterone creates a supportive milieu for the traumatized cervix and myometrium. In our series, all patients received a course of prophylactic antibiotics (e.g., Cefotaxime) to forestall infection, a ever-present risk following any procedure that breaches the sterile environment of the upper genital tract.[5] Furthermore, the administration of tocolytics like Nifedipine, as used in our patients, is common practice to suppress uterine irritability, which can be triggered by the surgical manipulation. While the evidence for routine tocolysis is mixed, many clinicians find it beneficial in the immediate postoperative period to prevent precipitate labour.[7]

The role of progesterone supplementation, however, is more robustly supported. All our patients were maintained on either intramuscular hydroxyprogesterone caproate or oral dydrogesterone post-cerclage. This is physiologically sound, as progesterone is a critical hormone for maintaining uterine quiescence. A meta-analysis by Romero et al. suggested that progesterone administration in women with a short cervix reduces the risk of preterm birth and neonatal morbidity.[8] In the context of rescue cerclage, it is postulated that progesterone may work synergistically with the mechanical support of the suture to promote uterine quiescence, though more targeted studies are needed to confirm this effect specifically in this high-risk subgroup.

Analysing the individual outcomes reveals insightful information. Case 1, the multiparous patient with a prior second-trimester loss, achieved a latency to 32 weeks. This outcome is commendable, transforming a certain pre-viable loss into a moderately preterm birth with a healthy neonate. Her history was a clear risk factor, and the cerclage directly addressed the presumed etiology of her previous pregnancy loss. Case 2, the primigravida with GDM, achieved the best outcome, delivering at term (37+5 weeks). This highlights that even in a first pregnancy with no prior obstetric clues, cervical insufficiency can present acutely, and a timely response can result in a full-term, healthy baby. The excellent outcome also underscores the importance of managing co-morbidities; her GDM was controlled with MNT, eliminating hyperglycemia as an additional risk factor for preterm labour. Case 3 is particularly interesting as it represents a more "prophylactic" rescue cerclage, performed for a sonographically diagnosed, widening internal os before overt membrane prolapse occurred. The resulting delivery at 36 weeks demonstrates that intervening at this earlier stage of the pathological process can yield excellent outcomes, nearly reaching term.

It is, however, important to balance these successes with a true acknowledgement of the procedure's inherent limitations and risks. Rescue cerclage is not a benign intervention. The most feared complications include iatrogenic rupture of membranes, chorioamnionitis, cervical laceration during placement or subsequent labour, and suture displacement.[1, 2] Our series was fortunate to avoid these major adverse events, but their reported incidence in the literature mandates thorough counselling of patients preoperatively. The decision is a risk-benefit calculus where the alternative, allowing the pregnancy to continue with an open and dilated cervix, almost universally results in second-trimester loss. As such, the risks of the procedure are often deemed acceptable when weighed against the near-certainty of fetal loss without intervention.

When contextualising our results, it is valuable to compare them with larger studies. A retrospective analysis by Zhu et al. of 158 emergency cerclage cases reported a mean prolongation of pregnancy of 9.5 weeks and a live birth rate of 82.3%.[4] Our mean latency of 13.6 weeks compares favourably, though our small sample size limits direct comparison. Another study by Kumari et al. found that over 70% of women undergoing rescue cerclage delivered after 28 weeks, a critical threshold for neonatal viability.[9] All our patients delivered well beyond 28 weeks, aligning with these positive trends. These consistent findings across different populations strengthen the evidence base for this procedure.

Conclusion

Our experiences detailed in this case series affirm that rescue cervical cerclage is a vital and effective intervention in the obstetric arsenal for managing second-trimester cervical insufficiency. Its success is not the product of the suture alone but is contingent upon a holistic and meticulous clinical pathway. This pathway covers rigorous patient selection, skilled surgical technique to manage prolapsed membranes, and a comprehensive postoperative regimen featuring anti-infective, anti-contractile, and hormonal support. While the procedure carries inherent risks, the potential reward of the transformation of a previable pregnancy into a viable or even term one is profound. Future research should focus on refining patient selection criteria through advanced biomarkers for subclinical infection and standardizing the optimal protocol for adjunctive tocolytic and progesterone therapy to further improve maternal and perinatal outcomes.

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