https://jsras.rcc.edu.ly/
Vol.3 No.2 (2026), 194-196
Article history:
Received: 3 Aug .2026
Accepted:10.Sep . 2026
Published: 5 Oct .2026

Journal of Sustainable Research in Applied Sciences

JSRAS

Double McDonald Cerclage in a Woman With Recurrent Spontaneous Preterm Birth: Case Report

Prof. Ibrahim Larbah [1] and Hanan Eljabu [2,*].

[1] Gynecology And Obstetrics Depat., Alhikma Hospital, Misuratam Libya.

[2] Gynecology And Obstetrics Depat, Faculty of Medicine, Misurata University, Misurata, Libya.

* Corresponding author: hananeljabu2023@gmail.com and WhatsApp NO.:00218924562996.

keywords

Cervical incompetence, Recurrent Preterm birth, Double McDonald Cerclage, .

Abstract

Preterm birth is one of leading cause for neonatal death. Cervical incompetence is a primary reason for preterm birth and the single McDonald cervical cerclage technique is commonly used to manage this problem. However, theoretically; in certain clinical scenario such as bulging membranes (funneling cervix), double-level cerclage significantly prolonged the pregnancy and so reduced preterm birth. This presentation described a case of 30 years old with history of three lost babies because of prematurity (cervical incompetence). She had single McDonald cervical cerclage during second and third pregnancies. At this pregnancy, double McDonald carclage was applied at thirteen weeks gestation and patient kept on tocolytics on needed. At thirty seven weeks with four days, elective operative delivery was done and baby girl with average birth weight. Conclusion: double cerclage provides comparable outcomes to single cerclage when used preventatively on certain cases. So, utilizing both mechanical and infection-preventing techniques could enhance cervical strength and extend the duration of pregnancy in certain individuals.

تطويق مزدوج لعنق الرحم لدى امرأة عانت من تكرار في الولادة المبكرة

ايراهيم الارباح[1]، حنان الجبو[2]*

[1]مستشفي الحكمه، قسم النساء والولاده، مصراته، ليبيا

[2] المركزالوطني لتشخيص وعلاج العقم، مصراته، ليبيا

* حنان الجبو hananeljabu2023@gmail.com and WhatsApp NO.:00218924562996.

الكلمات المفتاحية

قصور عنق الرحم، الولادة المبكرة المتكرر تطويق عنق الرحم المزدوج.

الملخص

تُعد الولادة المبكرة أحد الأسباب الرئيسية لوفيات المواليد، وتُعتبر "قصور عنق الرحم" سبباً رئيسياً لحدوثها؛ ولعلاج هذه المشكلة، يشيع استخدام تقنية "ماكدونالد" لربط عنق الرحم بشكل أحادي (مستوى واحد). ومع ذلك، ومن الناحية النظرية، وفي حالات سريرية محددة - مثل بروز الأغشية الجنينية أو توسع عنق الرحم على شكل قمع أدى استخدام تقنية الربط المزدوج (على مستويين) إلى إطالة فترة الحمل بشكل ملحوظ، وبالتالي تقليل احتمالية الولادة المبكرة. يستعرض هذا العرض حالة مريضة تبلغ من العمر 30 عاماً، ولديها تاريخ سابق لفقدان ثلاثة أجنة بسبب الولادة المبكرة الناجمة عن قصور عنق الرحم؛ حيث خضعت لعملية ربط أحادي لعنق الرحم بطريقة "ماكدونالد" خلال حمليها الثاني والثالث. أما في هذا الحمل، فقد أُجري لها ربط مزدوج لعنق الرحم بطريقة "ماكدونالد" في الأسبوع الثالث عشر من الحمل، مع إعطائها أدوية مانعة للانقباضات الرحمية عند الحاجة. وفي الأسبوع السابع والثلاثين وأربعة أيام، أُجريت لها عملية ولادة مبرمجة، وأنجبت طفلة بوزن طبيعي عند الولادة. الخلاصة: يوفر الربط المزدوج لعنق الرحم نتائج مماثلة للربط الأحادي عند استخدامه كإجراء وقائي في حالات معينة؛ لذا فإن الجمع بين التقنيات الميكانيكية والتدابير الوقائية ضد العدوى قد يعزز من قوة عنق الرحم ويطيل فترة الحمل لدى بعض الحالات.

1. INTRODUCTION

Preterm birth is one of leading cause for neonatal death. Cervical incompetence is known to be a cause of premature delivery. Even though applying cervical cerclage considered as the main treatment modality used in this situation, certain patients need more reinforcement due to cervical insufficiency. Warning signs related to cervical insufficiency involve painless dilation of the cervix and delivery during the second trimester which occurs in about 1 percent of all pregnancies. This disorder is more likely to affect Cervical cerclage, the McDonald procedure, is the usual method of treatment for cervical insufficiency (Hochuli and Vogt,1987).

Usually, during pregnancy, the cervix is kept closed tightly. However, there might be in certain instances where the cervix opens too soon and leads to early pregnancy loss usually during second trimesters and this can be very traumatic, and even stressful. The cervical cerclage procedure, which was first developed by Shirodkar (Shirodkar, 1955) and McDonald (McDonald,

1957), has been the foundation treatment modality for individuals who are at risk since long ago.

Pregnancy loss is distressing problem, and a pregnancy later in gestation is especially troubling situation. Moreover, severe preterm births can lead to negative outcomes, as infants who survive might still face disabilities. Repeat cerclage poses potential risks such as cervical tears, rupturing membranes, bleeding, and preterm labor. Consequently, the approach of implementing double cerclage is viewed as an alternative method, especially for women who possess several compounding risk factors following numerous unsuccessful attempts with single-level cerclage techniques. As evidence develops and standardization advances, double cerclage could shift from being an empirically based rescue technique to a fundamental component of precision perinatal medicine (Damalie, et. al. 2024).

Double cerclage is provide better anatomical coverage, the maintenance of the mucus seal, and increased protection against cervical pressure and so prevent amniotic membrane prolapse. Generally, repeated cerclage has some risks, such as infection, cervical laceration, rupture of membranes, bleeding, and premature labor (Park, Y. and Park M., 2023). More important, there are few studies that have reported on the use of repeat cerclage procedures; these findings show that repeat cerclages despite the risk can prevent pregnancy losses in selected patients (Vaughan et al., 2025).

2. CASE PRESENTATION

This case presented as 30-year-old female with Para three and all previous deliveries were preterm 32weeks, 31weeks and 31weeks. All babies died during early neonatal period because of prematurity complications. The previous obstetric history was significant with previous lost three consecutive pregnancies because of cervical incompetence despite the applying of single cerclage McDonald technique. At first antenatal visit, the ultra sonography revealed 6weeks pregnant with no any history of medical nor surgical problem.

The Investigations for the patient were carried out and resulted as the HIV, HBS and HCV tests were negative, BG: B positive and blood sugar and hemoglobin level were within normal. Ultra-Sonography showed single viable fetus corresponding to 9weeks gestation and cervix was funnel in shape. After taking written informative consent from the patient, she was taken to operation theater table, and under effect of general anesthesia, lithotomy position, cleaned well and covered. The posterior part of the vaginal wall was pulled back using a Sims speculum, and the front edge of the cervix was grasped with sponge-holder forceps. A suture was placed at the 3, 6, 9, and 12 o'clock positions using 1-0 Prolene. Following the first knot being secured, the other knots were taken 1cm away from the first one, and good Hemostasis achieved. Postoperatively, vaginal progesterone (400 mg daily) was prescribed for the patient. The patient discharged from hospital well. After a while, USG report indicated the presence of a single fetus in the uterus displaying a healthy heartbeat and movement, with an estimated gestational age of 18 weeks and 4 days.

During the period of this pregnancy, patient developed recurrent attacks of uterine contractions. Laboratory tests showed a slightly increased C-reactive protein (CRP) level of 10 mg/L (normal <5 mg/L). She received tocolysis treatment and was given a preventive broad-spectrum antibiotic. The patient remained on intramuscular and oral progesterone, magnesium sulfate, iron, and calcium supplements. Nutritional advice was given to prevent constipation and reduce straining. At 30 weeks of pregnancy, a series of antenatal corticosteroids (betamethasone) were given in two doses of 12mg each, spaced 12 hours apart, to promote fetal lung development.

Repetitive ultrasound scans showed consistent results in the cervical area and normal development of the fetus. Doppler ultrasound at 33 weeks and at 35 weeks showed no abnormalities. At 37 weeks with four days pregnant, the stitches in the cervix were taken out, and a planned C-section was done. A baby girl weighing 3,490 g was born with excellent Apgar scores at 1 and 5 minutes. The mother and baby were both released from the hospital in good health.

3. DISCUSSION

It is clear that there is a potential benefit of using a double cervical cerclage in order to withstand a pregnancy when the first single cervical cerclage fails. So, achieving powerful outcomes always depend on proper diagnosis, the clearance of infection and careful management for uterine contraction (Kosi et al., 2023).

The clinical value of a cervical cerclage was first conceptualized by Hochuli and Vogt (1987) (Hochuli and Vogt,1987), in order to manage the mid-trimester pregnancy loss. Furthermore, this cervical cerclage was developed by (Ogawa et al. 1999), who used a consistent two level technique in situations with advanced cervical dilation. Afterward, (Park et al. 2000), created a modified transvaginal double McDonald cerclage augmented with fibrin sealant.

(Lee et al. 2004), similarly exhibited positive results with the adjusted double-level technique in comparison to the traditional single McDonald method, aligning with prior Korean findings. These studies illustrate a crucial groundwork for subsequent global adaptations of double cervical cerclage. Banerjee and colleagues (Banerjee et al., 2020), reported initial findings from singleton pregnancies at high risk, indicating similar positive patterns in favor of the revised cerclage method. In a case report by Damalie and team (Gnanarathne, and Rathnayake, 2025), it was also noted that the use of double cerclage feasible for women who had experienced previous second-trimester miscarriages or had significantly shortened cervixes (Damalie, et. al. 2024).
Despite having started use of double Mcdonald cerclage many years ago, advancements have been sluggish due to various reasons such as the gathering of strong forward-looking proof has been slower than expected. It is strongly recommended to do clinical randomized trials to validate its safety and effectiveness, and to become the most appropriate approach for carefully select cases based on individual risks.

4. CONCLUSION

Double cerclage is most effective in specific situations, such as those identified during examinations, as it helps to extend pregnancy duration and decrease the occurrence of extremely premature births. The routine application of double cerclage in cases determined by medical history or ultrasound is not yet endorsed. However, given the lack of serious negative results and signs of advantages, it could be cautiously contemplated for specific high-risk patients. The mechanical and protective mechanisms responsible for the success of double cerclage could potentially improve outcomes for preventive purposes.

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Funding: This research received no external funding.

Consent: Patient's consent had been taken for publication.

Acknowledgments: The authors express their sincere gratitude to all staff members in journal, The authors have reviewed and edited all work and take full responsibility for the content of this publication.