ISSN: 3066-8115
Research Article
Science Set Journal of Medical and Clinical Case Studies

Outcomes of Cervical Cerclage in KAMC-NGHA Jeddah, A Retrospective Cohort Study

Asma Khalil[1*], Amal Hanjour[2], Nouf Al Zahrani[2], & Shahad Bakhashwain[2]

[1]*Consultant, King Abdulaziz Medical City, National Guard Health Affairs –Jeddah, Saudi Arabia*

[2]*Resident OBGYN, KAMC, KSAU-HS- Jeddah, Saudi Arabia*

[*]**Corresponding author:** Dr. Asma Khalil, Consultant, King Abdulaziz Medical City, National Guard Health Affairs –Jeddah, Saudi Arabia.

Submitted: 13 Mar 2023 **Accepted:** 20 Mar 2023 **Published:** 25 Mar 2023

https://doi.org/10.63620/MKSSJMCCS.2023.1008

Citation: *Khalil, A., Hanjour, A., Al Zahrani, N., & Bakhashwain, S. (2023). Outcomes of Cervical Cerclage in KAMC-NGHA Jeddah, A Retrospective Cohort Study. Sci Set J of Med Cli Case Stu, 2(1), 01-06.*

Abstract

Background: *Cervical cerclage "Suture" is a surgical procedure where a stitch is placed to encircle the cervix to enforce it and prevent its dilatation prematurely. It prevents prematurity and pregnancy loss, but on the other hand, has numerous complications. Overall, there is no strong evidence approved of the benefit of cervical cerclage.*

Objectives: *This study is aimed to evaluate trends in cervical cerclage indications, outcomes, and associated complications.*

Study: *This is a retrospective cohort study with a sample size of 36 patients done at King Abdullah International Medical Research Center (KAMC-J) from January 2016 to February 2019*

Result: *We found that 61.1% of the cervical cerclage cases had spontaneous vaginal delivery (SVD), 30.6% had emergency caesarean section (CS) and 8.3% had elective CS, while no one had instrumental delivery, Furthermore, most of the cases had no complication (69.4%) and 19.4%, 5.6%, 2.8%, had preterm premature rupture membranes (PPROM) cervical laceration, and vesicovaginal fistula, respectively, while no one had labor dystocia. Moreover, 25 % of neonates needed neonatal intensive care unit (NICU) and there was no significant relationship between the timing of cervical cerclage and the need for neonatal admission to NICU ($p \geq 0.05$), GA at delivery, type of delivery, whether it was induced or not, and complications ($p \geq 0.05$).*

Conclusion: *Cervical cerclage is associated with a high rate of term delivery, good neonate outcome, and a low rate of complication.*

Keywords: Cervical, Cerclage, Suture, Incompetence, Preterm

Introduction

Preterm birth is the leading cause of neonatal mortality and morbidity [1]. Efforts have been made and are ongoing on reducing the incidence of preterm births. One of the strategies is the placement of cervical sutures [2].

Cervical cerclage "Suture" is a surgical procedure where a stitch is placed encircling the cervix to enforce it and prevent its dilatation prematurely. Typically, it is placed when the patient is having a history of two or more consecutive second-trimester losses or preterm births associated with painless cervical dilatation, where other causes of second-trimester miscarriage or preterm birth have been ruled out [3].

Cervical cerclage may help prevent miscarriages and premature labor, yet it can also cause premature contractions, cervical dystocia, rupture of membranes, intrauterine infections, or cervical lacerations [4].

The risk of recurrent fetal loss without cerclage in women considered at high risk of cervical incompetence is not known exactly, due to the lack of properly designed studies. Uncontrolled studies suggest that infant viability is about 25% without cerclage, whereas it is 75%-90% with cerclage [5].

In addition, there is evidence that cerclage is superior to no treatment in the prevention of preterm birth and that its use might

be associated with a reduction in the risk of perinatal death [6]. However, there are higher rates of febrile and infectious morbidity and an increased rate of caesarean delivery in pregnancies managed with the use of cerclage [7].

Other commonly reported complications of cervical cerclage include preterm premature rupture of membranes (PPROM), chorioamnionitis, preterm labor, cervical trauma, suture displacement, and bleeding. The reported rate of chorioamnionitis after cervical cerclage is 6.2%, while that of PPROM ranges from 18% up to 38% [8, 9]. Two of three prior randomized trials of prophylactic cerclage in singleton pregnancies showed no benefit of cervical cerclage in preventing preterm births [10, 11]. The third, largest randomized trial showed possible prevention of preterm delivery only in patients with three or more prior second-trimester miscarriages or preterm deliveries [2].

A retrospective cohort study conducted in Australia concluded that the rate of cervical cerclage has increased associated with a slight significant increase in the rate of preterm births from 20-27 weeks gestation [12]. And an Egyptian study done in 2018 to study the effect of McDonald's cerclage knot position on the different maternal and neonatal outcomes. The study concluded that Knot positioning during McDonald cervical cerclage, anteriorly or posteriorly, didn't significantly impact the studied maternal and neonatal outcomes [13].

In the kingdom of Saudi Arabia (KSA), a retrospective review was conducted on patients who had cervical cerclage performed because of suspected cervical incompetence over a 7-year period to assess the outcome of pregnancy and complications resulting from the cerclage. The study found that the outcome was not influenced by the type of cerclage and there were no complications in 90% of the cases, and no cases of the ruptured uterus, cervical lacerations and severe infections were encountered. The complications were seen more in multiple-order pregnancy and when the operation was performed as an emergency [14].

A hospital-based multicenter study done in 2013 in 18 tertiary centers from nine countries including KSA. The study aimed to evaluate the effect of cerclage, with and without cervical occlusion. This study concluded that Cervical occlusion with cerclage had no significant additional effect [15].

Another retrospective study done in 2017 and included all women with higher-order multiple pregnancies beyond 24 gestational weeks treated at the King Abdullah University Hospital in Irbid, Jordan, and King Fahad Medical City in Riyadh, Saudi Arabia. This study aimed to assess the value of prophylactic cervical cerclage in prolonging higher-order multiple pregnancies.

Selected maternal characteristics and obstetric outcomes were compared between women who received prophylactic cervical cerclage and those who did not. The study concluded that the overall, prophylactic cervical cerclage was not associated with prolongation of the pregnancy among women with higher-order multiple pregnancies in the current study [16].

Overall, there was no strong evidence suggesting significant prevention of preterm delivery and/or second-trimester losses with the placement of cervical cerclage, but significantly more frequent hospital admissions, use of tocolytic agents, and postpartum pyrexia associated with cerclage.

The present study aimed to evaluate trends in cervical cerclage indications, outcomes and associated complications in King Abdulaziz Medical City, which is a tertiary care center in Jeddah, Saudi Arabia

Patients and Methods

This is a retrospective cohort study done from January 2016 to February 2019 done at King Abdulaziz Medical City in Jeddah (KAMC-J). The study included all patients who underwent cervical cerclage in singleton pregnancies between January 2016 till February 2019. All patients who had twin/multiple pregnancies were excluded

Sample Size and Sampling Technique

The sample size was 37 patients who were the participants in this study. The method of sampling was a simple random technique

Material and Data Collection Process

A datasheet survey was prepared and filled for each patient from their electronic medical record - Best Care. No patient's consent form was required. And an ethical approval for the study was obtained from the ethics research committee of King Abdullah International Medical Research Center.

Data Analysis

Data were recorded in Excel and analyzed using SPSS as qualitative and quantitative variables. Qualitative variables were expressed as frequencies and percentages and Chi-square test was applied to assess the relationship between variables. A p-value of <0.05 was considered significant.

Results

Of the studied cases, most of them (66.7%) had an age that ranged from 26-35 years, and approximately 69.4% of cases had a parity of (P1-4) (Figure 1).

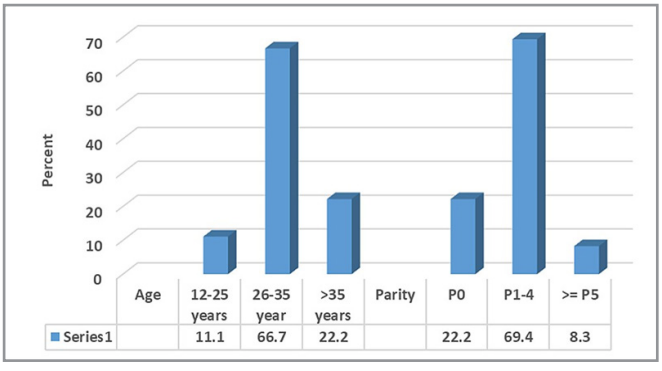

Figure 1: Distribution of the studied cases according to their age and parity (No.=36)

As for the past obstetric history of cases, none of them had previous Cone/LEEP, 86.1% had twin pregnancy, 69.4% had previous progesterone treatment, and 25% had a second-trimester miscarriage and 50% had previous cerclage and preterm Labor (Figure 2).

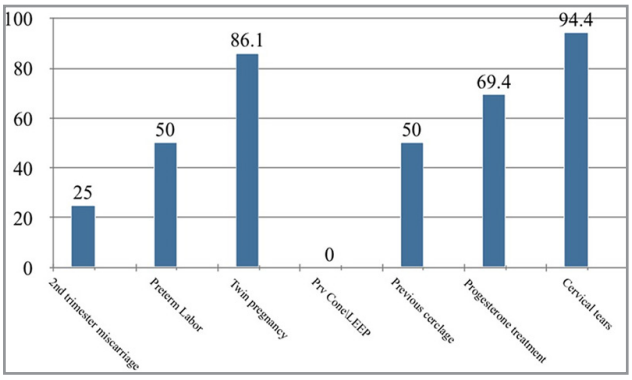

Figure 2: Distribution of the studied cases according to their past obstetric history (No.=36)

(Figure 3) shows that 47.2%, 80.6%, and 88.9% of cases had a cervical length of more than 3 cm at the 12th, 13th, and 14th weeks of pregnancy respectively.

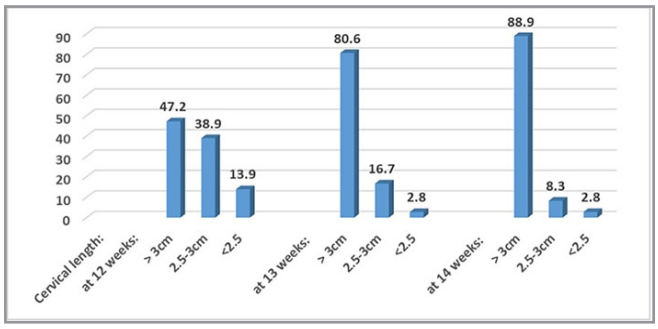

Figure 3: Distribution of the studied cases according to their cervical length at 12th, 13th and 14th weeks of pregnancy (No.=36)
Of the studied cases, most of them (47%) had the cervical cerclage at 12-14 weeks of pregnancy, 44% had it at 14-16 weeks, 6% had it at 16-20 weeks, and only 3% had it after 20 weeks of pregnancy (Figure 4). Furthermore, there was a non-significant relationship was found between the timing of cervical cerclage and GA at delivery, type of delivery, whether it was induced or not, and complications ($p \geq 0.05$) (Table 1). Moreover, (Figure 5) shows that a non-significant relationship was found between the timing of cervical cerclage and the occurrence of neonatal outcomes needing NICU ($p \geq 0.05$).

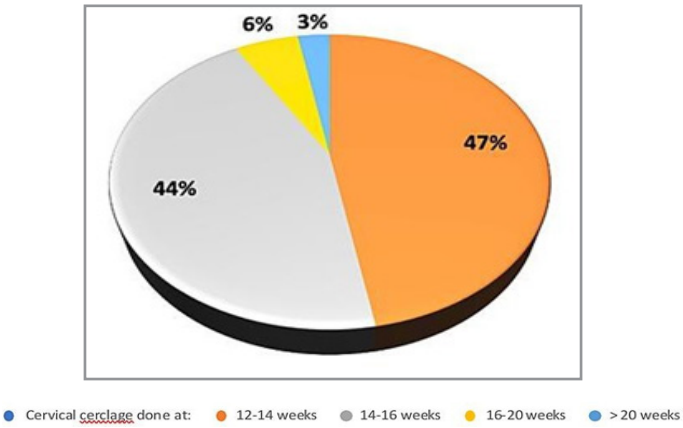

Figure 4: Distribution of the studied cases according to the timing of cervical cerclage

Table 1: Relationship between the timing of cervical cerclage and GA at delivery, type of delivery, whether it was induced or not, and complications

Variable	Timing of cerclage				$\chi 2$	p-value
	12-14 weeks	14-16 weeks	16-20 weeks	> 20 weeks		
GA at delivery:						
-24 – 28	4 (66.7)	2 (33.3)	0 (0.0)	0 (0.0)		
-28+1 - 33+6	0 (0.0)	3 (60)	1 (20)	1 (20)	15,16	0,086
-34 - 36+6	3 (100)	0 (0.0)	0 (0.0)	0 (0.0)		
->37	10 (45.5)	11(50)	1 (4.5)	0 (0.0)		
Type of Delivery:						
-SVD	11 (50)	10 (45.5)	1 (4.5)	0 (0.0)	3,39	0,75
-Elective CS	1 (33.3)	2 (66.7)	0 (0.0)	0 (0.0)		
-Emergency CS	5 (45.5)	4 (36.4)	1 (9.1)	1 (9.1)		
Was Labor Induced:						
-Yes	6 (54.5)	5 (45.5)	0 (0.0)	0 (0.0)	1,5	0,68
-No	11 (44)	11(44)	2 (8)	1 (4)		

N.B.: ($\chi 2 = 4.15$& p-value= 0.24)

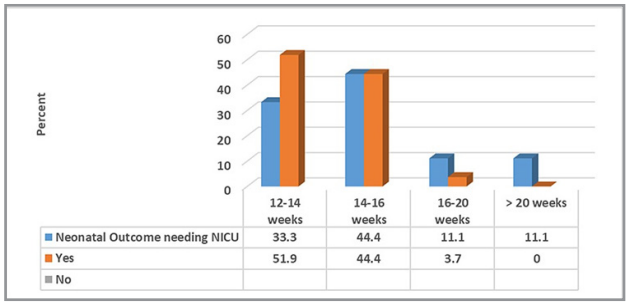

Figure 5: Relationship between the timing of cervical cerclage and occurrence of neonatal outcomes needing NICU

Most cases had progesterone therapy as an injection (50%), 13.9% had it either as a suppository or as both injection and suppository, while 22.2% of them did not receive progesterone therapy (Figure 6).

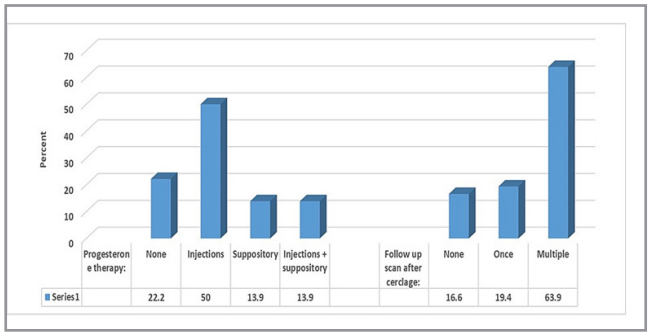

Figure 6: Distribution of the studied cases according to having Progesterone therapy and follow up scan after cerclage

Figure 7 shows that most of the participants (61.1%) removed the cerclage at or after 37 weeks, and the same percent (61.1%) delivered at or more than 37 weeks which is a smaller number than the general population at KAMC-J for the same time period that was 87.3%

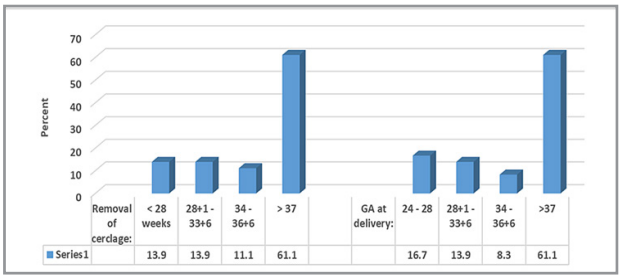

Figure 7: Distribution of the studied cases according to the timing of removing the cervical cerclage and the at delivery

Of the studied cases, 61.1% had SVD delivery, 30.6% had an emergency CS, and 8.3% had an elective CS. Which is a similar rate to the general population in KAMC-J during the same time period. No patient had an instrumental delivery (Figure 8).

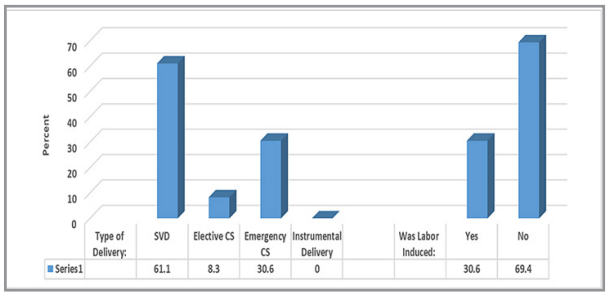

Figure 8: Distribution of the studied cases according to the type of delivery and whether it was induced or not

Regarding the complications of cervical cerclage, most of the cases (69.4%) had no complications, while 19.4% had PPROM, 5.6% had a cervical laceration, 2.8% had Vesicovaginal fistula, and no one suffered labor dystocia (Figure 9).

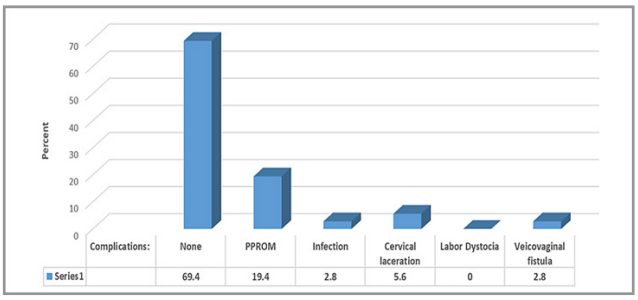

Figure 9: Distribution of the studied cases according to the complications of cervical cerclage

As for the neonatal outcome, 25% of the neonates were admitted to NICU, which is a much higher rate than the general population at KAMC-J for the same period which was around 6.2% (Figure 10).

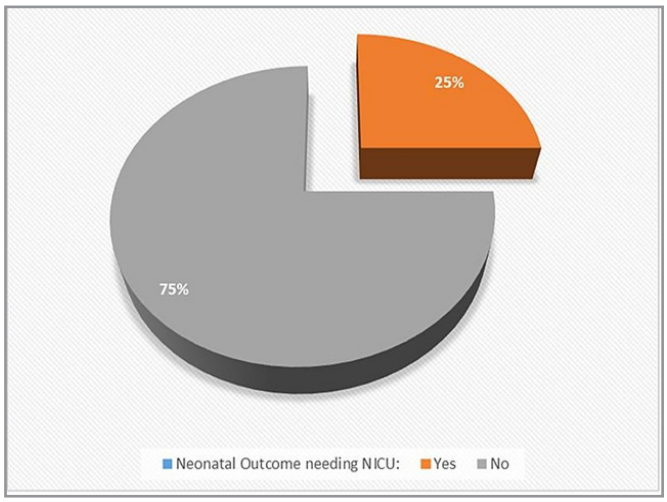

Figure 10: Distribution of the studied cases according to the occurrence of neonatal outcomes needing NICU

Discussion

This study reveals that more than half of the cases were delivered after 37 weeks (61.1%) and hence less preterm delivery rate. This was similar to the finding in a prospective observational study that included a total of 46 women with single alive

gestation at 14 to 24 weeks done at Rawalpindi, in which they conclude that the full-term delivery rate was 95.6% with cervical cerclage. Also, a retrospective study of the cohort found that 73% of the women's cerclage delivered at term (average gestational age 36.3 +_5.3 weeks). While we found that the percentage of NICU admission for neonates was (25 %), it was (18 %) and more or less (6.4%) in the Washington study and retrospective multi-institutional cohort research studied 374 had a cerclage in Ohio respectively [17, 18, 8].

A retrospective observational study done in Washington, DC found that PPROM complicated (11 %) of the pregnancies with cervical cerclage while it complicated (19.4%) of the pregnancies with cervical cerclage in the recent study. On the other hand, it was zero in the prospective study at Rawalpindi [17]. Furthermore, we found that the rate of cervical tear was (5.6%), similarly it was 2.2% in the Rawalpindi study and (3.5%) in Ohio research [17, 18]. Proven to our finding of the incidence of infection after cervical cerclage (2.8 %), Ohio study found that is 4.3%.

Similar to our findings none of the patients had a history of the previous cone or LEEP, a prospective observational study included a total of 46 women with single alive gestation at 14 to 24 weeks done at Rawalpindi, found that the percentage of the previous history of cervical surgery was zero percent [17]. In contrast to the finding that (25%) of the cases had a previous second-trimester miscarriage, it was (100%) in the Rawalpindi research. Moreover, a previous history of preterm was (50%) and (21.7%) in our study and in the Rawalpindi study, respectively, and similar to our study it was 38.2% in a retrospective multi-institutional cohort research studied 374 had a cerclage in Ohio [18].

In contrast to our finding that no one of the patients got labour dystocia after cerclage, it was (51.6%) in the Ohio study. On the other hand, they found that 6.1% of the patients had an operative vaginal delivery [8]. However, in our study, none of our patients had labour dystocia after cerclage which contradicted previous results.

Limitation

We did not reach the proper sample size for the study (80), because some of the patients have loss of follow-up in our institute after placement of cerclage, and others do not fit our criteria. Moreover, most of the patients included in the study received progesterone supplements which could be a confounding factor affecting the outcome. This variable needs further evaluation as it may be a contributing factor acting with the cervical cerclage or independently.

Conclusion

Cervical cerclage was found to be associated with a high percentage of term deliveries, yet less than the general population, no improvement in neonatal outcome was observed. A well-structured randomized controlled trial is needed to properly assess the efficacy of cervical cerclage.

References

1. Kassebaum, N., Kyu, H. H., Zoeckler, L., Olsen, H. E., Thomas, K., et al. (2017). Child and adolescent health from 1990 to 2015: Findings from the Global Burden of Diseases, Injuries, and Risk Factors 2015 study. JAMA Pediatrics, 171, 573–592.
2. Mancuso, M. S., & Owen, J. (2009). Prevention of preterm birth based on a short cervix: Cerclage. Seminars in Perinatology, 33, 325–333.
3. Sarri, G., Davies, M., Gholitabar, M., & Norman, J. E. (2015). Preterm labour: Summary of NICE guidance. BMJ, 351.
4. Eleje, G. U., Ikechebelu, J. I., Eke, A. C., Okam, P. C., Ezebialu, I. U., et al. (2017). Cervical cerclage in combination with other treatments for preventing preterm birth in singleton pregnancies. The Cochrane Database of Systematic Reviews, 2017, CD012871.
5. American College of Obstetricians and Gynecologists. (2014). ACOG Practice Bulletin No. 142: Cerclage for the management of cervical insufficiency. Obstetrics & Gynecology, 123, 372–379.
6. Alfirevic, Z., Stampalija, T., & Medley, N. (2017). Cervical stitch (cerclage) for preventing preterm birth in singleton pregnancy. The Cochrane Database of Systematic Reviews, 6, CD008991.
7. Conde-Agudelo, A., Romero, R., Nicolaides, K., Chaiworapongsa, T., O'Brien, J. M., et al. (2013). Vaginal progesterone vs cervical cerclage for the prevention of preterm birth in women with a sonographic short cervix, previous preterm birth, and singleton gestation: A systematic review and indirect comparison meta-analysis. American Journal of Obstetrics and Gynecology, 208, 42.e1.
8. Drassinower, D., Poggi, S. H., Landy, H. J., Gilo, N., Benson, J. E., et al. (2011). Perioperative complications of history-indicated and ultrasound-indicated cervical cerclage. American Journal of Obstetrics and Gynecology, 205, 53.e1.
9. Giraldo-Isaza, M. A., & Berghella, V. (2011). Cervical cerclage and preterm PROM. Clinical Obstetrics and Gynecology, 54, 313–320.
10. Rush, R. W., Isaacs, S., McPherson, K., Jones, L., Chalmers, I., et al. (1984). A randomized controlled trial of cervical cerclage in women at high risk of spontaneous preterm delivery. BJOG: An International Journal of Obstetrics & Gynaecology, 91, 724–730.
11. Lazar, P., Gueguen, S., Dreyfus, J., Renaud, R., Pontonnier, G., et al. (1984). Multicentred controlled trial of cervical cerclage in women at moderate risk of preterm delivery. BJOG: An International Journal of Obstetrics & Gynaecology, 91, 731–735.
12. Lu, C., Lim, B., & Robson, S. J. (2016). Increasing incidence rate of cervical cerclage in pregnancy in Australia: A population-based study. Healthcare, 4, 68.
13. Atia, H., Ellaithy, M., Altraigey, A., & Ibrahim, H. (2019). Knot positioning during McDonald cervical cerclage, does it make a difference? A cohort study. The Journal of Maternal-Fetal & Neonatal Medicine, 32, 3757–3763.
14. Sobande, A. A., Archibong, E. I., Sadek, A., Singagil, N. H., & Akinola, S. E. (2002). A clinico-epidemiological review of cervical cerclage from the Assir region of Saudi Arabia. Journal of Obstetrics and Gynaecology, 22, 150–154.
15. Brix, N., Secher, N. J., McCormack, C. D., Helmig, R. B., Hein, M., et al. (2013). Randomised trial of cervical cerclage, with and without occlusion, for the prevention of preterm birth in women suspected for cervical insufficiency. BJOG: An International Journal of Obstetrics & Gynaecology, 120, 613–620.

16. Obeidat, N., Alchalabi, H., Obeidat, M., Sallout, B., Hamadneh, S., et al. (2017). Effectiveness of prophylactic cervical cerclage in prolonging higher-order multiple pregnancies. Sultan Qaboos University Medical Journal, 17, e314.
17. Naheed, K. (2008). Effectiveness of cervical cerclage in women with cervical incompetence. Journal of Rawalpindi Medical College, 12, 29–32.
18. Bauer, A. M., Lappen, J. R., & Hackney, D. N. (2020). Term labor outcomes after cerclage placement in a multi-institutional cohort. American Journal of Perinatology, 37, 119–126.