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Original Research Article

Outcomes Following Elective Cervical Cerclage in Women at Risk of Preterm Birth

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Abstract:

Background: Preterm birth remains a major contributor to neonatal morbidity and mortality worldwide. Cervical insufficiency is a well-recognized risk factor for spontaneous preterm birth. Elective cervical cerclage is commonly employed in high-risk women; however, outcomes vary depending on patient characteristics and gestational age at intervention.

Objectives: To evaluate maternal and neonatal outcomes following elective cervical cerclage in women at risk of preterm birth.

Methods: A prospective observational study was conducted over 11 months at JLN Medical College, Ajmer, involving 100 pregnant women at high risk of preterm birth who underwent elective cervical cerclage. Maternal demographics, obstetric history, gestational age at cerclage, pregnancy prolongation, gestational age at delivery, and neonatal outcomes were recorded and statistically analyzed.

Results: The mean gestational age at cerclage was 14.6 ± 2.1 weeks. The mean prolongation of pregnancy was 11.8 ± 4.2 weeks. Term delivery was achieved in 62% of cases. Neonatal survival rate was 90%. Statistically significant improvement in gestational age at delivery was observed ($p < 0.001$).

Conclusion: Elective cervical cerclage significantly prolongs pregnancy and improves neonatal outcomes in women at risk of preterm birth when performed early in gestation.

Keywords: Cervical Cerclage, Preterm Birth, Cervical Insufficiency, Pregnancy Outcome, Neonatal Outcome.

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Introduction

Preterm birth, which is giving birth before 37 weeks of pregnancy, happens in almost 15 million births every year and is still one of the main causes of illness and death in newborns around the world [1]. Even with improvements in obstetric and neonatal care, preventing spontaneous preterm birth remains a major clinical challenge [2].

Cervical insufficiency is characterized by painless cervical dilation leading to recurrent mid-trimester pregnancy losses or early preterm deliveries in the absence of labor or placental pathology [3]. Women with a history of second-trimester losses, prior preterm births, or ultrasonographic evidence of a short cervix are considered at high risk [4].

The use of cervical cerclage is guided by specific clinical indications. These include history-indicated (elective) cerclage in women with recurrent mid-trimester pregnancy losses or prior spontaneous preterm births suggestive of cervical insufficiency, ultrasound-indicated cerclage in women with a shortened cervical length (<25 mm) identified on transvaginal sonography, and rescue cerclage in cases presenting with painless cervical dilatation during the second trimester. Appropriate identification of these indications is essential to ensure optimal patient selection and improved pregnancy outcomes [5].

Cervical cerclage can be performed using different surgical techniques. The McDonald technique is the most commonly employed method due to its simplicity and ease of removal and is widely preferred for elective cerclage. The Shirodkar technique involves placement of the suture at a higher cervical level with partial bladder dissection and is used in selected clinical scenarios. In certain high-risk cases, such as failed prior vaginal

cerclage or anatomical limitations, transabdominal cerclage may be considered. The choice of technique depends on patient characteristics, clinical indication, and surgical expertise [6].

Elective cervical cerclage, typically performed between 12 and 16 weeks of gestation, is intended to reinforce the cervix and prevent premature dilation [7]. Several studies have demonstrated that elective cerclage may reduce the risk of preterm birth in carefully selected women [8–10]. However, the magnitude of benefit varies depending on gestational age at placement, obstetric history, and associated maternal factors [11].

In India, limited prospective data are available evaluating maternal and neonatal outcomes following elective cerclage in tertiary care settings. This study was undertaken to assess the effectiveness of elective cervical cerclage in prolonging pregnancy and improving perinatal outcomes in women at high risk of preterm birth.

Materials and Methods

Study Design and Setting: A prospective observational study was conducted at the Department of Obstetrics and Gynaecology, JLN Medical College, Ajmer, over a period of 11 months.

Study Population: A total of 100 pregnant women meeting inclusion criteria were enrolled after obtaining informed consent.

Inclusion Criteria

- Singleton pregnancy
- Gestational age between 12–18 weeks
- History of ≥1 second-trimester pregnancy loss or preterm birth
- Sonographic cervical length <25 mm

Exclusion Criteria

- Multiple gestation
- Active vaginal bleeding
- Uterine anomalies
- Clinical evidence of infection
- Preterm premature rupture of membranes

Procedure: Elective cervical cerclage was performed using the McDonald technique under regional anesthesia. Post-procedure, patients were monitored and followed up until delivery.

Outcome Measures

- Gestational age at cerclage
- Pregnancy prolongation (weeks)
- Gestational age at delivery
- Mode of delivery
- Neonatal outcomes (birth weight, NICU admission, survival)

Statistical Analysis: Data were analyzed using SPSS version 25. Continuous variables were expressed as mean ± SD. Categorical variables were expressed as percentages. Paired t-test and Chi-square test were used. A p-value <0.05 was considered statistically significant.

Results

A total of 100 pregnant women at risk of preterm birth who underwent elective cervical cerclage were included in the final analysis. All participants were followed up until delivery, and outcome data were complete for all cases.

1. Maternal Demographic and Obstetric Characteristics

The baseline demographic and obstetric characteristics of the study population are summarized in Table 1. The mean maternal age was 26.8 ± 3.9 years. The majority of women were multigravida (72%), while 28% were primigravida. A history of previous adverse pregnancy outcome was common, with 65% having at least one previous preterm birth and 58% reporting a prior mid-trimester pregnancy loss. Table 1 shows that most women undergoing elective cerclage had a significant prior obstetric risk.

Table 1: Maternal Demographic and Obstetric Characteristics (n = 100)

Variable	Value
Mean maternal age (years)	26.8 ± 3.9
Primigravida	28 (28%)
Multigravida	72 (72%)
History of ≥1 preterm birth	65 (65%)
History of mid-trimester loss	58 (58%)

Table 1 shows that most women undergoing elective cerclage had a significant prior obstetric risk.

2. Gestational Age at Cerclage and Pregnancy Prolongation

The gestational parameters related to cerclage placement are detailed in Table 2. The mean gestational age at cerclage insertion was 14.6 ± 2.1 weeks, and the mean pre-cerclage cervical length was 21.4 ± 3.6 mm. Following cerclage, the mean prolongation of pregnancy achieved was 11.8 ± 4.2 weeks, which was statistically significant when

compared with expected gestational age at delivery based on prior obstetric history ($p < 0.001$, paired t-test).

Table 2: Gestational Characteristics and Pregnancy Prolongation

Parameter	Mean ± SD
Gestational age at cerclage (weeks)	14.6 ± 2.1
Cervical length before cerclage (mm)	21.4 ± 3.6
Pregnancy prolongation (weeks)	11.8 ± 4.2

Table 2 demonstrates significant pregnancy prolongation following elective cerclage.

3. Gestational Age at Delivery

The distribution of gestational age at delivery is illustrated in Figure 1. Term delivery (≥37 weeks) was achieved in 62% of women. Late preterm delivery (34–36^{+6} weeks) occurred in 14%, while 18% delivered between 28–33^{+6} weeks. Extremely preterm delivery (<28 weeks) was observed in 6% of cases.

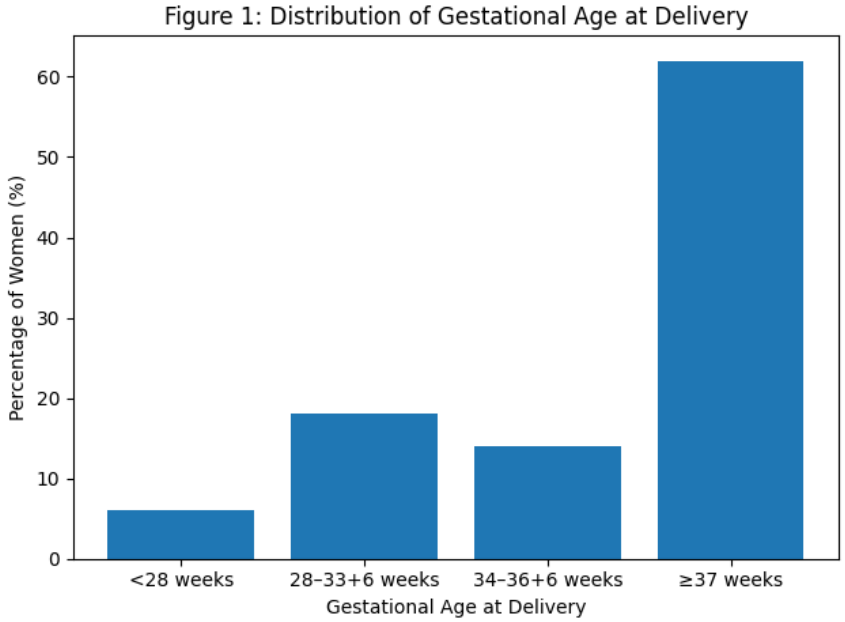

Figure 1: Distribution of Gestational Age at Delivery

Figure 1 highlights that the majority of women achieved term gestation following elective cerclage.

4. Mode of Delivery

The mode of delivery among the study population is presented in Table 3. Vaginal delivery occurred in 58% of women, while 42% underwent caesarean section. The most common indications for caesarean section were previous caesarean delivery, fetal distress, and malpresentation.

Table 3: Mode of Delivery

Mode of delivery	Number (%)
Vaginal delivery	58 (58%)
Caesarean section	42 (42%)

Table 3 shows that more than half of the women delivered vaginally following cerclage.

5. Neonatal Outcomes

Neonatal outcomes are summarized in Table 4. The mean birth weight was 2.58 ± 0.61 kg. NICU admission was required for 28% of neonates, predominantly among those delivered before 34 weeks of gestation. Overall neonatal survival was 90%, while 10% neonatal mortality was observed, mainly among extremely preterm infants. A statistically significant association was found between higher gestational age at delivery and neonatal survival ($p < 0.01$, Chi-square test).

Table 4: Neonatal Outcomes

Outcome	Value
Mean birth weight (kg)	2.58 ± 0.61
NICU admission	28 (28%)
Neonatal survival	90 (90%)
Neonatal mortality	10 (10%)

Table 4 demonstrates improved neonatal outcomes with advancing gestational age at delivery.

6. Association Between Cerclage and Pregnancy Outcome

Elective cerclage resulted in significant pregnancy prolongation and improved neonatal survival. Women who achieved term delivery had significantly higher mean pregnancy prolongation compared to those delivering preterm (13.6 ± 3.1 weeks vs 7.2 ± 2.8 weeks, $p < 0.001$). These findings indicate a strong positive effect of elective cerclage on pregnancy outcome.

Discussion

Elective cervical cerclage is an established intervention for women at high risk of preterm birth due to cervical insufficiency. In the present study, cerclage was performed at a mean gestational age of 14.6 weeks, which is consistent with the optimal timing recommended for prophylactic placement and is associated with improved pregnancy outcomes [12,13].

A statistically significant mean pregnancy prolongation of 11.8 weeks was observed, highlighting the effectiveness of elective cerclage in delaying delivery. Similar degrees of pregnancy prolongation following elective cerclage have been reported in previous studies, emphasizing its role in improving fetal maturity and reducing early preterm births [14,15].

The term delivery rate of 62% in this study is comparable to outcomes reported in other prospective studies involving high-risk women, supporting the benefit of appropriate patient selection for elective cerclage [16,17]. Prolongation of gestation directly contributed to favorable neonatal outcomes in the present cohort.

Neonatal survival was high (90%), with NICU admissions primarily among infants delivered before 34 weeks. Previous studies have demonstrated that increased gestational age at delivery significantly improves neonatal survival and reduces morbidity, consistent with our findings [18–20].

Recent evidence and international guidelines recommend elective cerclage in women with prior preterm birth or mid-trimester pregnancy loss, particularly when combined with careful antenatal surveillance [21–24]. Indian studies have also reported comparable improvements in pregnancy and neonatal outcomes following elective cerclage in tertiary care settings [25,26]. Current ACOG guidelines further support the judicious use of elective cerclage in appropriately selected patients [27].

Thus, the findings of this study reinforce that elective cervical cerclage, when performed early and in properly selected women, is effective in prolonging pregnancy and improving neonatal outcomes.

Conclusion

Elective cervical cerclage is an effective intervention in women at high risk of preterm birth. Early identification and timely placement significantly prolong pregnancy and improve neonatal survival. Careful patient selection remains essential to maximize benefits.

References

1. Blencowe H, Cousens S, Oestergaard MZ, et al. National, regional, and worldwide estimates of preterm birth rates in the year 2010. Lancet. 2012;379:2162–2172.
2. Goldenberg RL, Culhane JF, Iams JD, Romero R. Epidemiology and causes of preterm birth. N Engl J Med. 2008;358:216–224.
3. Romero R, Espinoza J, Erez O, Hassan S. The role of cervical insufficiency in preterm birth. Am J Obstet Gynecol. 2006;195:123–134.
4. Iams JD, Goldenberg RL, Meis PJ, et al. The length of the cervix and the risk of spontaneous preterm delivery. N Engl J Med. 1996;334:567–572.
5. American College of Obstetricians and Gynecologists. Cervical insufficiency and cerclage. Practice Bulletin No. 142. Obstet Gynecol. 2014;123(2):372–379.
6. Berghella V. Cerclage for prevention of preterm birth: meta-analysis and evidence-based review. Obstet Gynecol Clin North Am. 2020;47(4):557–567.
7. McDonald IA. Suture of the cervix for inevitable miscarriage. J Obstet Gynaecol Br Emp. 1957;64:346–350.
8. Alfirevic Z, Stampalija T, Medley N. Cervical stitch (cerclage) for preventing preterm birth. Cochrane Database Syst Rev. 2017;6:CD008991.
9. Shennan A, To M. Cervical cerclage: evidence-based indications. BJOG. 2004;111:125–130.

10. Drakeley AJ, Roberts D, Alfirevic Z. Cervical stitch (cerclage) for preventing pregnancy loss. BJOG. 2003;110:485–490.
11. Rust OA, Atlas RO, Reed J, van Gaalen J, Balducci J. Revisiting the short cervix detected by transvaginal ultrasound. Ultrasound Obstet Gynecol. 2001;18:231–236.
12. To MS, Palaniappan V, Skentou C, et al. Elective cerclage for cervical shortening detected by transvaginal ultrasound. Ultrasound Obstet Gynecol. 2004;23:130–136.
13. Owen J, Hankins G, Iams JD, et al. Multicenter randomized trial of cerclage for preterm birth prevention. Am J Obstet Gynecol. 2009;201:375.e1–375.e8.
14. Berghella V, Odibo AO, To MS, Rust OA, Althuisius SM. Cerclage for short cervix on ultrasonography. Obstet Gynecol. 2005;106:181–189.
15. Hassan SS, Romero R, Vidyadhari D, et al. Vaginal progesterone reduces the rate of preterm birth in women with a short cervix. Ultrasound Obstet Gynecol. 2011;38:18–31.
16. Saccone G, Berghella V. Cerclage for preventing preterm birth in singleton pregnancies. Am J Obstet Gynecol. 2017;216:161–170.
17. Arabin B, Alfirevic Z. Cervical pessaries for prevention of spontaneous preterm birth. Fetal Diagn Ther. 2013;33:1–10.
18. Norman JE, Marlow N, Messow CM, et al. Vaginal progesterone prophylaxis for preterm birth. Lancet. 2016;387:2106–2116.
19. Lim K, Butt K, Crane JM. SOGC clinical practice guideline: prevention of preterm birth. J Obstet Gynaecol Can. 2011;33:1119–1134.
20. Arabin B, Halbesma JR, Vork F, et al. Is treatment with cervical pessaries effective in preventing preterm birth? Am J Obstet Gynecol. 2003;189:907–912.
21. FIGO Working Group on Preterm Birth. Best practice in preterm birth prevention. Int J Gynecol Obstet. 2021;155:1–8.
22. World Health Organization. Preterm birth: fact sheet and recommendations. WHO Bull. 2018;96:721–728.
23. Gupta M, Saini V, Jain S. Outcome of elective cervical cerclage in women with previous pregnancy loss. J Obstet Gynaecol India. 2019;69:45–50.
24. Jain V, Aggarwal N, Chopra S. Role of cervical cerclage in prevention of preterm birth. J Obstet Gynaecol India. 2020;70:123–128.
25. Mishra S, Yadav K, Singh R. Pregnancy outcome following elective cervical cerclage. Int J Reprod Contracept Obstet Gynecol. 2021;10:1456–1461.
26. Norman JE, Shennan A. Prevention of preterm birth—why can't we do better? Lancet. 2013;381:184–185.
27. American College of Obstetricians and Gynecologists. Practice Bulletin No. 234: Prediction and prevention of preterm birth. Obstet Gynecol. 2021;138:e65–e90.