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Original Research Article

Rescue cerclage revisited: the role of adjunctive pessary in cervical incompetence

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ABSTRACT

Background: Emergency cervical cerclage is an established intervention for women presenting with painless cervical dilatation; however, outcomes are strongly influenced by the degree of cervical compromise at presentation and multiple other factors. Cervical pessary is a non-invasive option for preventing preterm birth, but its role as an adjunct to emergency cerclage remains inadequately explored.
Methods: This was a retrospective observational study in women with cervical insufficiency who underwent emergency cervical cerclage between January 2020 and December 2025 at a tertiary care centre in India. Pregnancy and neonatal outcomes were compared between women who underwent emergency cerclage with adjunctive pessary (Group A) and those who underwent cerclage alone (Group B). A predefined subgroup analysis was performed among women presenting with advanced cervical dilatation (≥2 cm).
Results: Thirty women were included (Group A, n=7 and Group B, n=23). Women in group A presented with significantly greater cervical dilatation at admission (2.57 vs 1.44 cm; p=0.002). Overall pregnancy outcomes, including latency period, gestational age at delivery, and neonatal survival, were comparable between groups. In the subgroup with cervical dilatation ≥2 cm at the time of presentation (Subgroup A, n=6; Subgroup B, n=6), early pregnancy expulsion occurred more frequently in subgroup B (50%) than subgroup A (0%), showing a trend toward statistical significance (p=0.053). Subgroup A demonstrated a longer mean latency period (10.8 vs 6.8 weeks), though this difference was not statistically significant (p=0.37).
Conclusions: In women undergoing emergency cervical cerclage, particularly those with advanced cervical dilatation, adjunctive pessary use may reduce pregnancy loss at earlier gestation and support pregnancy prolongation.

Keywords: Cervical insufficiency, Emergency cerclage, Cervical pessary, Preterm birth

INTRODUCTION

Preterm birth, defined as delivery before 37 weeks of gestation, remains a major cause of neonatal mortality and long-term morbidity worldwide.[1] Cervical insufficiency contributes significantly to spontaneous mid-trimester pregnancy loss and extreme preterm birth and is characterized by painless cervical shortening and dilatation in the absence of uterine contractions.[2] Cervical cerclage is an established intervention for the management of cervical insufficiency and may be performed as history-indicated, ultrasound-indicated, or emergency cerclage.[3] Emergency cervical cerclage has been shown to prolong pregnancy and improve neonatal outcomes when compared with expectant management; however, its success is strongly influenced by the degree of cervical dilatation, cervical length, and presence of bulging membranes at presentation.[4,5]

The Arabin pessary has been proposed as a non-invasive option for preventing preterm birth by altering the utero-cervical angle and reducing pressure on the internal os.[6] Initially, the pessary was used as an alternative treatment for cervical insufficiency. While some studies reported favourable outcomes, results were inconsistent, and its effectiveness as a sole treatment in high-risk cases

remained uncertain. In women with advanced cervical changes, pessary alone was often insufficient to prevent early pregnancy loss.

Given these limitations, it is now used increasingly as an adjunct to cervical cerclage, with the aim of providing additional cervical support. Studies evaluating elective cerclage with adjunctive pessary have reported mixed results-some demonstrating benefit, while others found no significant additional advantage. Evidence evaluating this combined approach remains limited, particularly in emergency cerclage populations and in Indian settings. The present study aims to compare pregnancy and neonatal outcomes in women undergoing emergency cervical cerclage with and without adjunctive pessary placement.

METHODS

Study design: This was a retrospective observational study conducted in the Department of Obstetrics and Gynaecology, Sri Ramakrishna Hospital, Coimbatore, India.

Study population: Women with cervical insufficiency who underwent emergency cervical cerclage between January 2020 and December 2025 were included.

Inclusion criteria

Singleton or multiple pregnancies, cervical dilatation <4 cm without uterine contractions, emergency cerclage performed between 12 and 28 weeks of gestation were included in the study.

Exclusion criteria

Clinical evidence of infection, uterine contractions, ruptured membranes at presentation and major fetal anomalies were excluded from the study.

Study groups

Patients were categorized into: Group A: Emergency cerclage with adjunctive pessary and group B: Emergency cerclage alone

Outcomes

Outcomes assessed included gestational age at delivery, latency period between cerclage and delivery, neonatal outcomes (birth weight, NICU admission, and neonatal mortality), mode of delivery, and maternal complications such as infection, preterm premature rupture of membranes, preterm labour, and other adverse effects.

Statistical analysis

Data were analysed using SPSS version 25. Continuous variables were compared using Mann-Whitney U test. Categorical variables were analysed using Chi-square or Fisher's exact test. A $p<0.05$ was considered statistically significant.

Ethical approval

Institutional ethics committee approval was obtained. As this was a retrospective record-based study, informed consent was waived.

RESULTS

Baseline characteristics: A total of 30 women were included in the analysis: 7 women underwent emergency cervical cerclage with adjunctive pessary (Group A) and 23 women underwent emergency cervical cerclage alone (Group B).

Baseline maternal characteristics of the two groups are summarized in Table 1. The groups were comparable with respect to maternal age, height, weight, and body mass index (all $p>0.05$). At presentation, however, women in group A demonstrated significantly more advanced cervical compromise. The mean cervical dilatation was significantly higher in group A compared with group B (2.57 cm vs 1.44 cm; $p=0.002$). Mean cervical length was shorter in group A (1.08 cm vs 1.48 cm). Gestational age at presentation, inflammatory markers (WBC count and CRP positivity), and duration of hospital stay showed no statistically significant differences between groups, although group A required a substantially longer hospital stay (34.3 vs 8.7 days; $p=0.21$), which reflects intentional prolonged inpatient monitoring in a high-risk cohort aimed at maximizing pregnancy prolongation, rather than adverse outcomes.

Pregnancy and neonatal outcomes: Pregnancy outcomes are detailed in Table 2. The gestational age at delivery did not differ significantly between the two groups ($\chi^2=8.20$, $p=0.084$). The mean latency period following cerclage was comparable between the two groups (9.85 weeks in group A vs 10.56 weeks in group B; $p=0.747$). Mode of delivery was similar between groups, with no statistically significant difference in rates of normal vaginal delivery, caesarean section, or expulsion ($p=0.52$). Neonatal outcomes are summarized in Table 2. Live birth rates were comparable between group A and B (85.7% vs 86.9%; $p=1.00$). There was no statistically significant difference in neonatal mortality ($p=1.00$). Mean birth weight was lower in group A compared with group B (1.96 kg vs 2.01 kg), though this difference was not statistically significant ($p=0.435$). NICU admission was more frequent in group A (57.1% vs 30.4%), but this did not reach statistical significance ($p=0.37$). The mean duration of NICU stay was also comparable between the groups ($p=0.20$).

Subgroup analysis

To account for the imbalance in cervical dilatation at presentation between the two groups and greater difference in sample size, a subgroup analysis was

performed including only women who presented with cervical dilatation ≥2 cm in both groups (Subgroup A: n=6; subgroup B: n=6).

Baseline cervical parameters were comparable between the two subgroups, with no significant differences in gestational age at presentation, cervical dilatation, cervical length, CRP positivity, or PPROM rates. Despite similar baseline cervical findings, important clinical differences were observed. Early pregnancy expulsion (<24 weeks) occurred more frequently in subgroup B (50%) compared with subgroup A (0%), showing a trend toward statistical significance (p=0.053). Subgroup A demonstrated a longer mean latency period, showing increase of approximately 4 weeks compared with Subgroup B (10.8 vs 6.8 weeks), although the difference was not statistically significant (p=0.37). Subgroup A experienced longer hospital stays (29.3 vs 11.8 days; p=0.68), which reflects intentional prolonged inpatient monitoring in a high-risk cohort aimed at maximizing pregnancy prolongation, rather than adverse outcomes. Neonatal outcomes mirrored these gestational trends. Subgroup A had a higher mean birth weight (1.96 vs 1.67 kg), higher NICU admission rates (66.7% vs 33.3%), and longer NICU stay, though none of these differences reached statistical significance. No neonatal mortality occurred in subgroup A, whereas 1 neonatal death occurred in subgroup B (p=1.00).

This subgroup analysis suggests that in women presenting with advanced cervical dilatation (≥2 cm), the management strategy used in subgroup A was associated with reduced early pregnancy loss and improved gestational prolongation. These findings support the potential role of more aggressive or adjunctive interventions in carefully selected women with advanced cervical changes.

Table 1: Baseline characteristics.

Parameters	Group A, (n=7)	Group B, (n=23)	P value
Mean maternal age (in years)	30.1	29.8	0.73*
Mean height (cm)	157.7	156	0.59*
Mean weight (kg)	73.0	68.7	0.38*
Mean BMI (kg/m²)	29.4	28.3	0.64*
Primigravida	4 (57.1%)	8 (34.8%)	0.39#
Multigravida	3 (42.9%)	15 (65.2%)	
Twin pregnancy	1 (14.3%)	6 (26.1%)	1.00#
Previous PTB	0 (0%)	2 (8.7%)	1.00#
Previous 2nd trimester loss	2 (28.6%)	1 (4.3%)	0.13#
Mean cervical dilatation (cm)	2.57	1.44	0.002*
Mean cervical length (cm)	1.08	1.48	0.11*
Gestational age at presentation (weeks)	~20	~21+6	0.28*
Mean WBC (/mm³)	10,547	12,137	0.75*
Positive CRP	3 (42.9%)	6 (26.1%)	0.64#
Mean hospital stay (days)	34.3	8.7	0.21*

*Mann-Whitney U test; #Fisher's exact test

Table 2: Pregnancy and neonatal outcomes.

Variables	Group A, (n=7)	Group B, (n=23)	P value
Outcome parameters			
Delivery <24 weeks	1 (14.3%)	4 (17.4%)	0.084$
Delivery 24–28 weeks	0 (0%)	1 (4.3%)	
Delivery >28 weeks	4 (57.1%)	2 (8.6%)	
Delivery >32 weeks	1 (14.3%)	6 (26.1%)	
Delivery >37 weeks	1 (14.3%)	10 (43.5%)	
Mean latency period (weeks)	9.85	10.56	0.747*
Mode of delivery			
NVD	2 (28.5%)	12 (52.2%)	0.52$
LSCS	4 (57.1%)	8 (34.8%)	
Expulsion	1 (14.3%)	3 (13.0%)	
Neonatal outcomes			
Live birth	6 (85.7%)	20 (86.9%)	1.00#
Neonatal mortality	0 (0%)	1 (4.3%)	1.00#
Mean birth weight (kg)	1.96	2.01	0.435*
NICU admission	4 (57.1%)	7 (30.4%)	0.37#

*Mann–Whitney U test $Chi-square test; #Fisher's exact test

Table 3: Subgroup analysis-women with cervical dilatation ≥ 2 cm at presentation.

Parameters	Subgroup A, (n=6)	Subgroup B, (n=6)	P value
Mean gestational age at presentation (weeks)	~20+6	~20+6	0.87*
Mean cervical dilatation (cm)	2.75	2.33	0.20*
Mean cervical length (cm)	1.01	1.00	0.93*
Positive CRP	3 (50%)	3 (50.0%)	1.00#
Mean hospital stay (days)	29.3	11.8	0.68*
Mean latency period (weeks)	10.8	6.8	0.37*
PPROM	1 (16.7%)	1 (16.7%)	1.00#
Expulsion <24 weeks	0 (0%)	3 (50.0%)	0.053$
Delivery 24-28 weeks	0 (0%)	1 (16.7%)	
Delivery >28 weeks	4 (66.7%)	0 (0%)	
Delivery >32 weeks	1 (16.7%)	0 (0%)	
Delivery >37 weeks	1 (16.7%)	2 (33.3%)	
Mean birth weight (kg)	1.96	1.67	0.43*
NICU admission	4 (66.7%)	2 (33.3%)	0.57#
Mean NICU stay (days)	11.16	16.25	0.74*

*Mann–Whitney U test $Chi-square test; #Fisher's exact test

DISCUSSION

Emergency cervical cerclage has been shown to improve outcomes compared with expectant management, particularly by prolonging pregnancy and reducing fetal loss.[4] However, success is strongly influenced by baseline cervical status and associated risk factors.[5] Contributors such as uterine irritability or associated tightening, as well as technical difficulties encountered during the procedure due to advanced gestational age, further reduce the likelihood of success. Thus, in emergency cases where cervical muscle integrity is significantly compromised, cerclage alone may be inadequate. An adjunct such as a pessary could provide additional support, whereas inadequate reinforcement may lead to persistent cervical shortening and the need for repeat intervention.

Cervical pessary was initially introduced as a non-surgical treatment option for cervical insufficiency, in women with a short cervix. The proposed mechanism of action includes alteration of the utero-cervical angle, redistribution of uterine weight away from the internal os, and reduction of direct pressure on the cervix.[6] The advantages of pessary use include its non-invasive nature, ease of insertion and removal, avoidance of anesthesia, and lower risk of procedure-related complications compared with surgical cerclage. Additional benefits reported include reduced bleeding, less pelvic pain, and improved maternal comfort.[7,8] However, pessary use is also associated with disadvantages such as increased vaginal discharge, discomfort in some women, uncertainty regarding optimal timing and patient selection, and inconsistent effectiveness across studies.[9,10]

Several studies have evaluated cervical pessary as an alternative to cerclage in the management of cervical insufficiency. Observational studies have suggested that pessary may achieve pregnancy outcomes comparable to cerclage in selected populations. Pizzicaroli et al reported similar gestational and neonatal outcomes between pessary and cerclage, highlighting the lower invasiveness and better cost-benefit profile of pessary use.[11] Jafarzade et al found significantly higher gestational age at delivery and lower rates of preterm birth before 34 weeks in women treated with pessary compared with McDonald cerclage.[12] In contrast, larger randomized trials have produced conflicting results. The PC Study failed to demonstrate non-inferiority of pessary compared with cerclage and reported higher perinatal mortality in the pessary group among women at high risk of recurrent preterm birth.[9] Similarly, a randomized factorial trial in twin pregnancies with a short cervix showed higher rates of extreme prematurity and perinatal death in the pessary group, leading to early termination of the trial.[10] These findings suggest that pessary should not be used as a substitute for cerclage in high-risk populations. However, these studies largely excluded women with advanced cervical dilatation and focused on elective cases, whereas the present study uniquely evaluates the role of cervical pessary as an adjunct to emergency cerclage in women presenting with acute cervical insufficiency and exposed or bulging membranes.

Pessary alone is inadequate in high-risk cases, leading to its use as an adjunct to emergency cervical cerclage. The rationale for combined therapy is that while cerclage provides mechanical closure of the cervix, the pessary may offer additional support by reducing ongoing mechanical stress, thereby stabilizing the cervix after suturing.[7,13] Maneschi et al demonstrated that adjunctive pessary following emergency cerclage significantly prolonged latency period and increased gestational age at delivery compared with cerclage alone.[13] Similarly, Ples et al reported the highest mean gestational age at delivery and

absence of spontaneous abortions in women receiving combined therapy.[7]

In our study, women who underwent emergency cerclage with adjunctive pessary presented with significantly more advanced cervical dilatation compared with those undergoing cerclage alone, a factor known to predict poorer outcomes following emergency cerclage.[4,5] Despite this higher-risk cervical profile, pregnancy prolongation and neonatal outcomes in the combined therapy group were comparable to those in the cerclage-only group. Notably, subgroup analysis restricted to women with cervical dilatation ≥2 cm demonstrated reduced early pregnancy loss and a trend toward longer latency in the adjunctive pessary group. These findings suggest that adjunctive pessary use may be particularly beneficial in women with advanced cervical dilatation, a population often excluded from randomized trials.

Neonatal outcomes in our study reflected gestational trends. Although NICU admission rates were higher in the adjunctive pessary group, neonatal survival was preserved and no neonatal mortality was observed, suggesting that improved pregnancy prolongation may increase neonatal survival rather than morbidity. These findings are consistent with prior observational studies reporting improved gestational outcomes with combined therapy without a corresponding increase in adverse neonatal outcomes.[7,13] Overall, our findings support a potential role for pessary as an adjunct to emergency cerclage in selected women with advanced cervical compromise.

Strengths

The study includes detailed clinical data, subgroup analysis, and provides evidence from an Indian setting.

Limitations

Its retrospective design, small sample size, and possible selection bias limit definitive conclusions.

CONCLUSION

In women undergoing emergency cervical cerclage, especially those with advanced cervical dilatation, adding a pessary may help reduce pregnancy loss at earlier gestation and prolong pregnancy. Our study highlights the need for larger prospective studies focused specifically on emergency cerclage populations to define optimal patient selection and confirm the benefit of combined therapy.

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